For Discussion Purposes

TAC CHARRETTE WORKBOOK
Utility Capacity

NEW JERSEY HIGHLANDS COUNCIL

March 28, 2006

Overview of RMP Goals and Structure

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New Jersey Highlands

Goals of the Act

- Protect and conserve the quality and quantity of drinking water
- Protect natural, scenic, recreational, cultural and historic resources
- Preserve contiguous lands in their natural state
- Preserve farmland and farming
- Promote appropriate patterns of development, redevelopment and economic growth
- Promote a sound and balanced transportation system

Highlands Regional Master Plan

I. Policy Guidance Document

- Resource Assessment
- Smart Growth
- Transportation
- Consistency
- Local Participation
- Financial

II. Technical Documentation

- Water Resource Management
- Ecosystem Management
- Agriculture and Forestry
- Land Preservation
- Historic and Scenic Resources
- Regional Development and Design
- TDR Guidelines
- Utility Capacity
- Transportation/Air Quality
- Financial Analysis

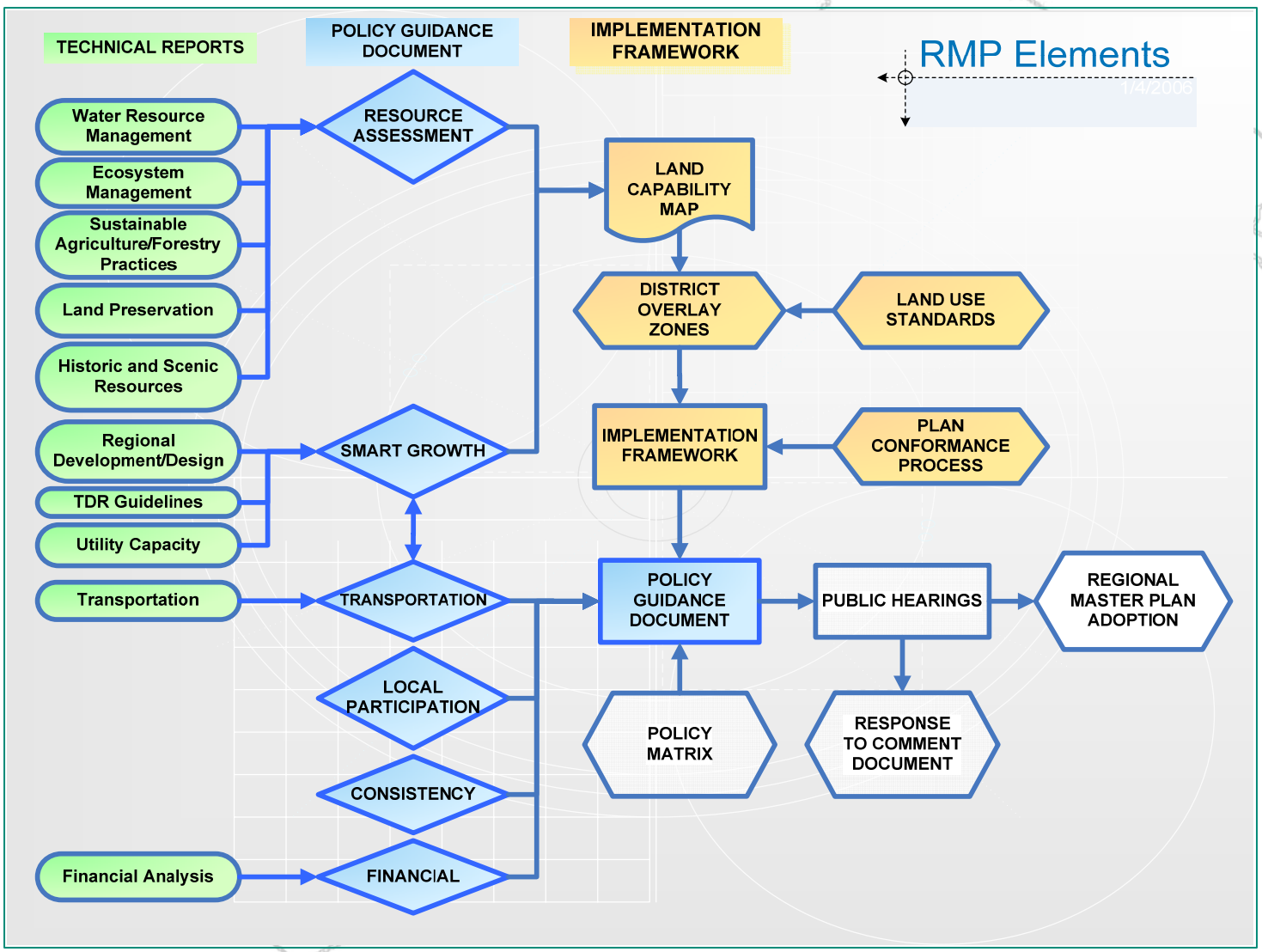
III. Implementation Framework

- Land Capability Map
- Conformance Process
- Resource Protection Standards
- Regional Growth Standards
- Adjustments/Revisions

Highlands Regional Master Plan

I. Policy Guidance Document	II. Technical Documentation	III. Implementation Framework
A statement of the goals, policies, strategies and public participation necessary to develop the RMP and implement the Act	The technical basis supporting the policies and standards, explains science and technical analyses supporting the RMP	The Land Use Capability Map, including district overlay zones and other tools for RMP conformance and implementation

Highlands Regional Master Plan



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Requirements of the Act

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Requirements of the Act

An assessment "based upon the resource assessment of opportunities for appropriate development, redevelopment, and economic growth, which shall consider infrastructure investments...identify existing developed areas capable of sustaining redevelopment activities and investment; identify undeveloped areas in the planning area...located near or adjacent to existing infrastructure, that could be developed; identify water, wastewater infrastructure that would support or limit development and redevelopment in the planning area.

Highlands Act, Section 11, N.J.S.A. 13:20-11.a(6)

Technical Approach and Methods
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Objectives

- What is the current status and existing capacity of the potable water and wastewater infrastructure of the Highlands?
- To what extent does capacity exist or can be created such that existing and future development can be served without impairing the quality or reliability of critical natural resources?

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Data Sources

- NJDEP
- County records
- Municipalities
- Water purveyors/utility owners/operators
- Wastewater treatment authorities/plant owners/operators

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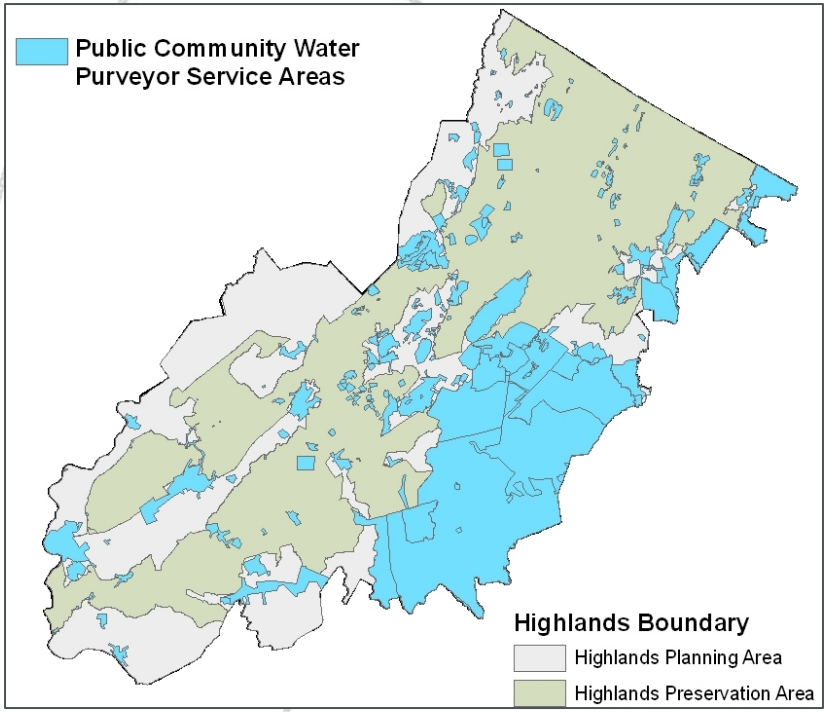
Technical Approach

- **Potable Water Supply Analysis**
  - Identify Water Supply Infrastructure
  - Water Demand Analysis
  - Water Supply Infrastructure Capacity Analysis
- **Wastewater Treatment Analysis**
  - Identify Wastewater Treatment Infrastructure
  - Wastewater Treatment Demand Analysis
  - Surface Water Pollution Assimilative Capacity Analysis (Initial Phase)
  - Wastewater Treatment Infrastructure Capacity Analysis

Utility Capacity – Potable Water Supply

Identify Water Supply Infrastructure

- **Identify the significant Public Community and Public Non-Community Water Supply Systems within or serving the Highlands Area and compile the following characteristics for each:**
  - Permitted diversion/allocation capacity by source
  - Areas currently served within each municipality
  - Planned service area and build-out system demand
  - Previously planned or committed future capacity made available as a result of service area reductions mandated by the Highlands Act
  - Current diversion rate by source



Source: NJDEP Public information

Utility Capacity – Potable Water Supply

Water Demand Analysis

- Estimate future water demand using population projections and per capita water use
- Evaluate demands based on current zoning within water service areas (Trend), planning areas (State Plan), and the RMP Land Use Capability Map, with recognition of any areas that would not be served due to environmental constraints

Utility Capacity – Potable Water Supply

Water Supply Infrastructure Capacity Analysis

- **Identify critical limitations on system capacity**
  - Resource-based
  - Regulatory
  - Physical
- **Active programs to increase service area and/or system capacity**
- **Basis of current system capacity limitations:**
  - Ground water or surface water source dependable yield
  - Physical facilities or treatment plant site limitations
  - Allocation permit or “firm capacity” under Safe Drinking Water permit
  - Threat of ground water contamination
  - Interbasin transfer limitations
  - Financial/economic

Utility Capacity - Wastewater Treatment

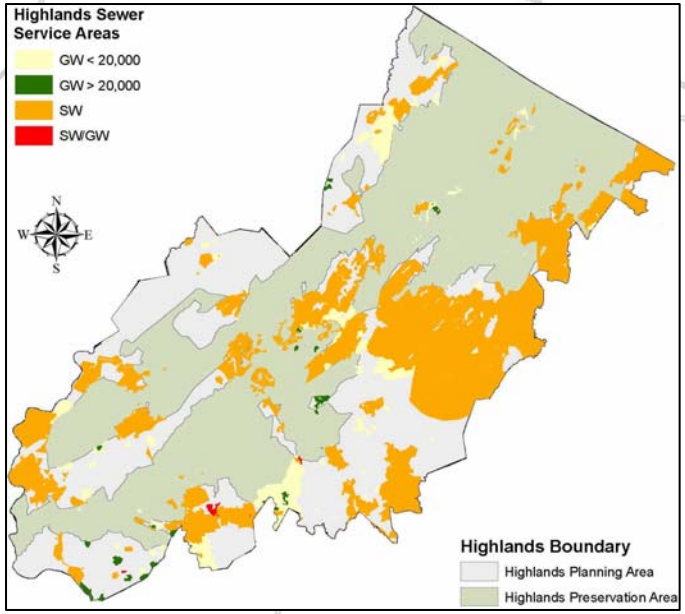
Technical Approach

- **Wastewater Treatment Analysis**
  - Identify Wastewater Treatment Infrastructure
  - Wastewater Treatment Demand Analysis
  - Surface Water Pollution Assimilative Capacity Analysis (Initial Phase)
  - Wastewater Treatment Infrastructure Capacity Analysis

Utility Capacity - Wastewater Treatment

Identify Wastewater Treatment Infrastructure

- **Identify major domestic wastewater treatment facilities (both NJPDES discharge to ground water and discharge to surface water permits) within or serving the Highlands Area and compile the following information:**
  - **Permitted discharge capacity (flow, both monthly and annual as appropriate), and "rated capacity" based on utility treatment capacity studies**



Source: NJDEP Public information

Utility Capacity – Wastewater Treatment

Identify Wastewater Treatment Infrastructure (cont)

- Areas currently served within each municipality
- Planned service area and ultimate (build-out) system demand
- Previously planned or committed future capacity made available as a result of service area reductions mandated by the Highlands Act
- Current discharge rate
- Existing commitments (e.g., development commitments and municipal contractual obligations) not reflected in current discharge rate
- Extraneous flow (infiltration & inflow)

Utility Capacity - Wastewater Treatment

Wastewater Treatment Demand Analysis

- Estimate future wastewater treatment demand based on population projections and per capita water use
- Evaluate demands based on current zoning within sewer service areas (Trend), planning areas (State Plan), and the RMP Land use Capability Map, with recognition of any areas that would not be sewered due to environmental constraints

Utility Capacity – Wastewater Treatment

Surface Water Pollution Assimilative Capacity (Initial Phase)

- Examine limitations of receiving waterways to assimilate point source and non-point source pollutant loadings
  - **Focus on areas with at least some planned or anticipated potential for growth (as identified through the Regional Master Plan)**
  - **Assess potential conflicts with surface water quality criteria (e.g., impaired waters – in particular Sublist 5; TMDLs; water quality-based effluent limits)**
  - **Assess potential conflicts with antidegradation policies (e.g., FW1, Category 1, Highlands Preservation Area)**
  - **Identify wastewater treatment facility locations and cross-reference to regulatory classifications and issues**

Utility Capacity - Wastewater Treatment

Wastewater Treatment Infrastructure Capacity Analysis – Specific to Wastewater Treatment System

- **Assess infrastructure capacity based on current and future water demand**
- **Identify resource-based, regulatory, and physical limitations on capacity specific to each wastewater treatment system**
  - Potential environmental, technical or economic conditions that cannot be overcome and prevents the increase of system capacity
  - Consideration of water conservation and wastewater reuse effects upon water supply availability and wastewater disposal
- **For facilities with currently available capacity, determine potential for restrictions or reductions in pollutant loadings through initial analysis (fatal flaw analysis)**

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Wastewater Treatment Infrastructure Capacity Analysis (cont.)

- **Active programs to increase service area and/or system capacity**
- **Basis of current or potential future limitations on system capacity**
  - Physical facilities or treatment plant site limitations
  - Receiving water assimilative capacity
  - Financial/economic
  - Compliance and/or enforcement issues that may affect treatment capacity in the short or long term

Problem Statements
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Problem Statement #1

- What are the most critical factors in determining whether a ground water or surface water supply source is limited?

Problem Statement #2

- What are the most critical factors in determining whether ground or surface waters have capacity limitations for pollutant assimilation?

Problem Statement #3

- Where more water utility capacity is needed from existing facilities, what are the best means other than physical expansion (e.g., upgrades, water conservation, beneficial indirect or direct reuse, innovative/alternative technologies) to expand that capacity?

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Problem Statement #4

- How can water quality and water quantity considerations be better integrated in determining water supply and wastewater flow strategies within a given watershed?

Problem Statement #5

- What additional factors should be accounted for in developing accurate projections of future water demand?