



Region C Water Planning Group Meeting

Arlington City Hall
Council Briefing Room
April 7, 2003

Agenda

- Population Projections
- Water Needs Projections
- Amendment for Athens MWA & GTUA
- Wholesale Water Providers
- Water Supply Schematic
- Potential Water Management Strategies

Agenda (continued)

- Neighborhood Study Work Plan (Water Conservation), Desalination & Reuse
- Quarterly Newsletter
- Newspaper Articles
- Summarized Speaker Comments
- Overall Status & Next Steps

Status of Population Projections

Region C Water Planning Group

Status of Population Projections

- TWDB approved Region C's requested revisions for population projections in March 2003
- Richardson (Collin County) was increased by 99 in 2000 to correct Census data
- Richardson (Dallas County) was decreased by 125 in 2000 to correct Census data

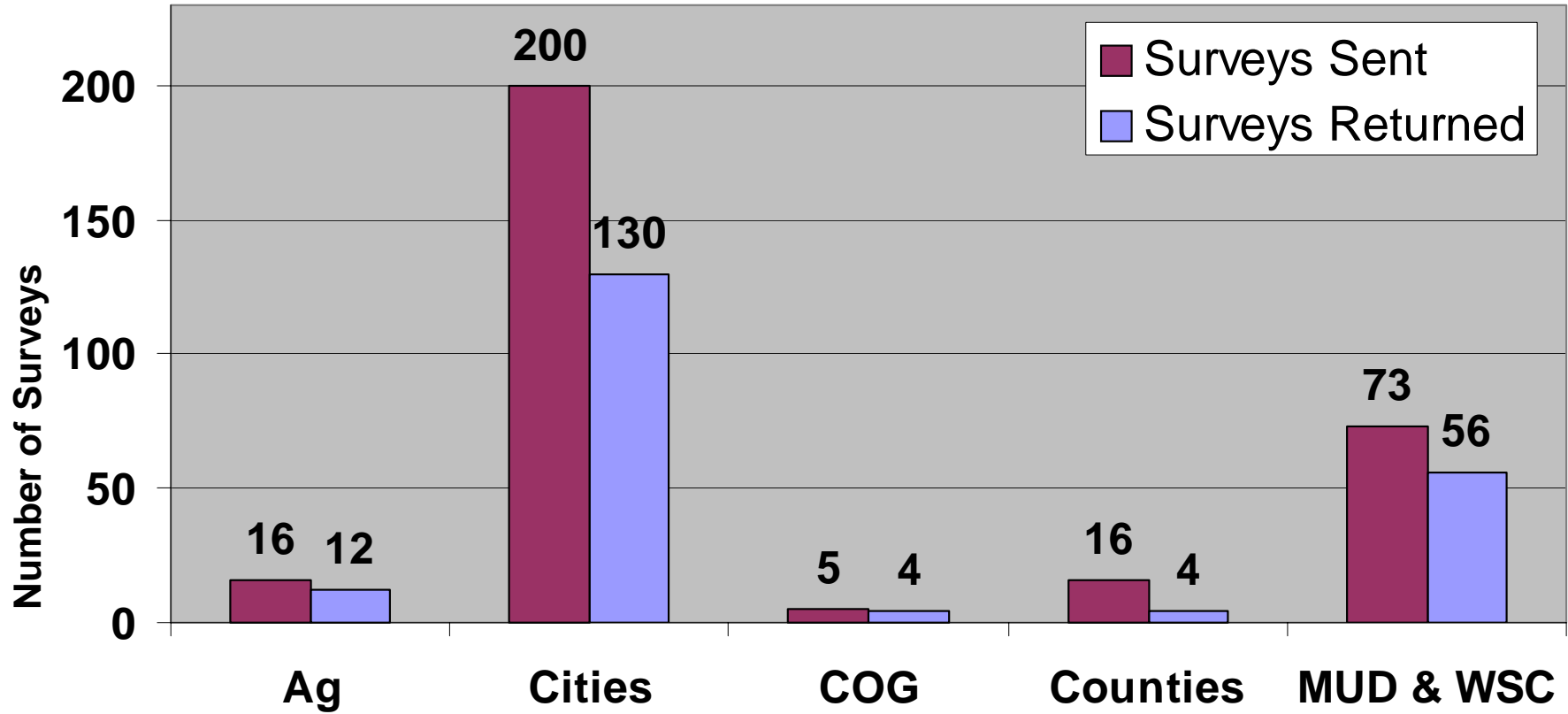
Status of Water Needs Projections

Region C Water Planning Group

Chronology of Events

- TWDB sent out water usage data on December 30, 2002
- 310 surveys sent out to Region C WUGs on February 4, 2003
- Survey response due on February 28, 2003
- Two rounds of follow-up calls made during month of March

Region C Water Use Survey Response Statistics



Region C Water Use Survey Responses

- 310 Entity Surveys Mailed Out
- 66% Responded to Survey
 - 65% Agreed with TWDB Projections
 - 17% Commented TWDB Projections Low
 - 3% Commented TWDB Projections High
 - 14% No Comment

Consultant's Initial Comments on Water Use Data

- Methodology behind TWDB water use data
 - Used 2000 as the base year for municipal use
 - Applied a plumbing fixture reduction in each decade after the base year
- Methodology does not fit all Region C Water User Groups

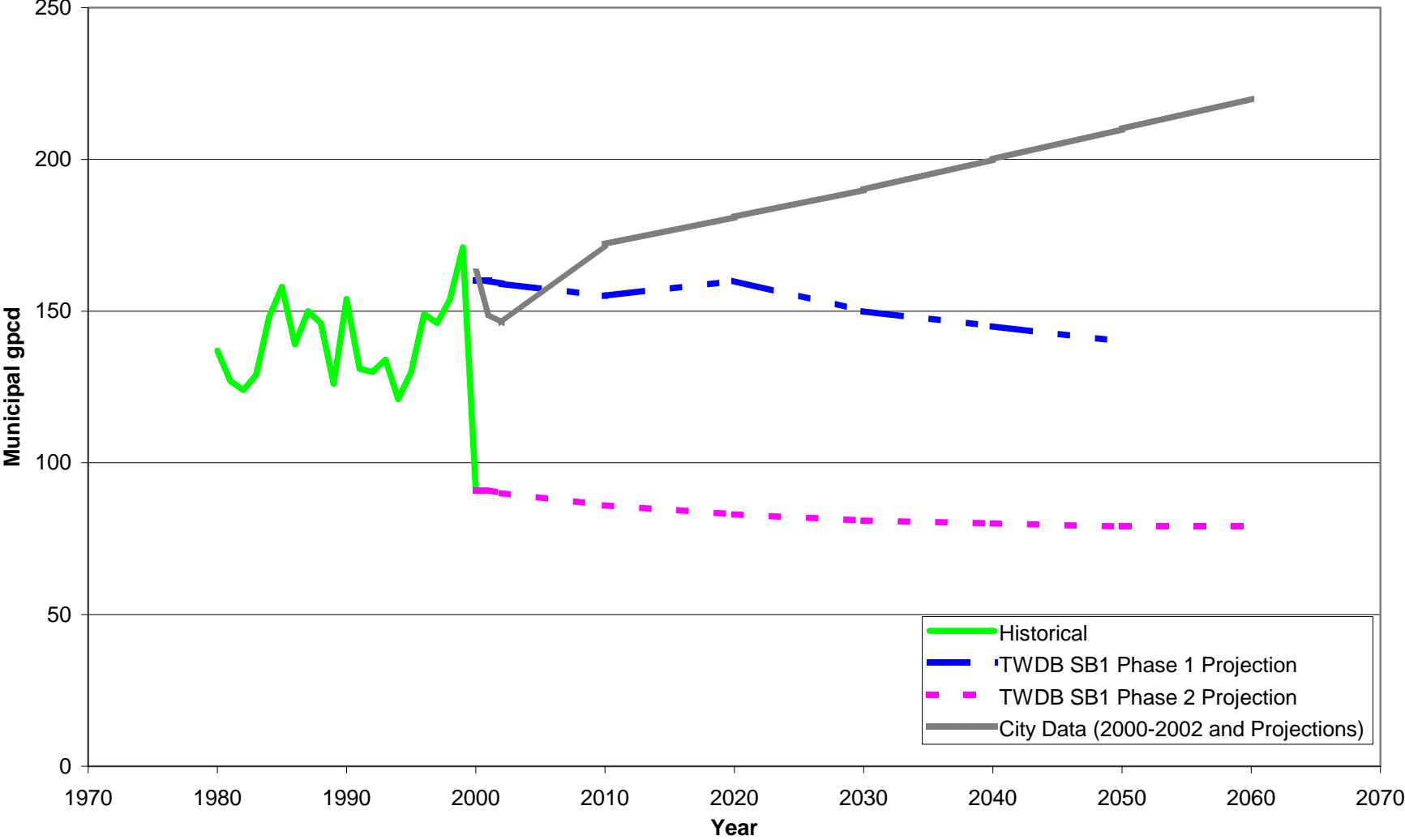
Examples of Differences Between TWDB Projections and Region C Conditions

- Data error (1998, 1999, 2000)
- Year 2000 not highest historical GPCD
- Increasing water usage trend
- No historical data available
- Minimum water use
- City survey data inconsistent
- Increasing per capita with future rapid growth

Water Use Comparison Graphs

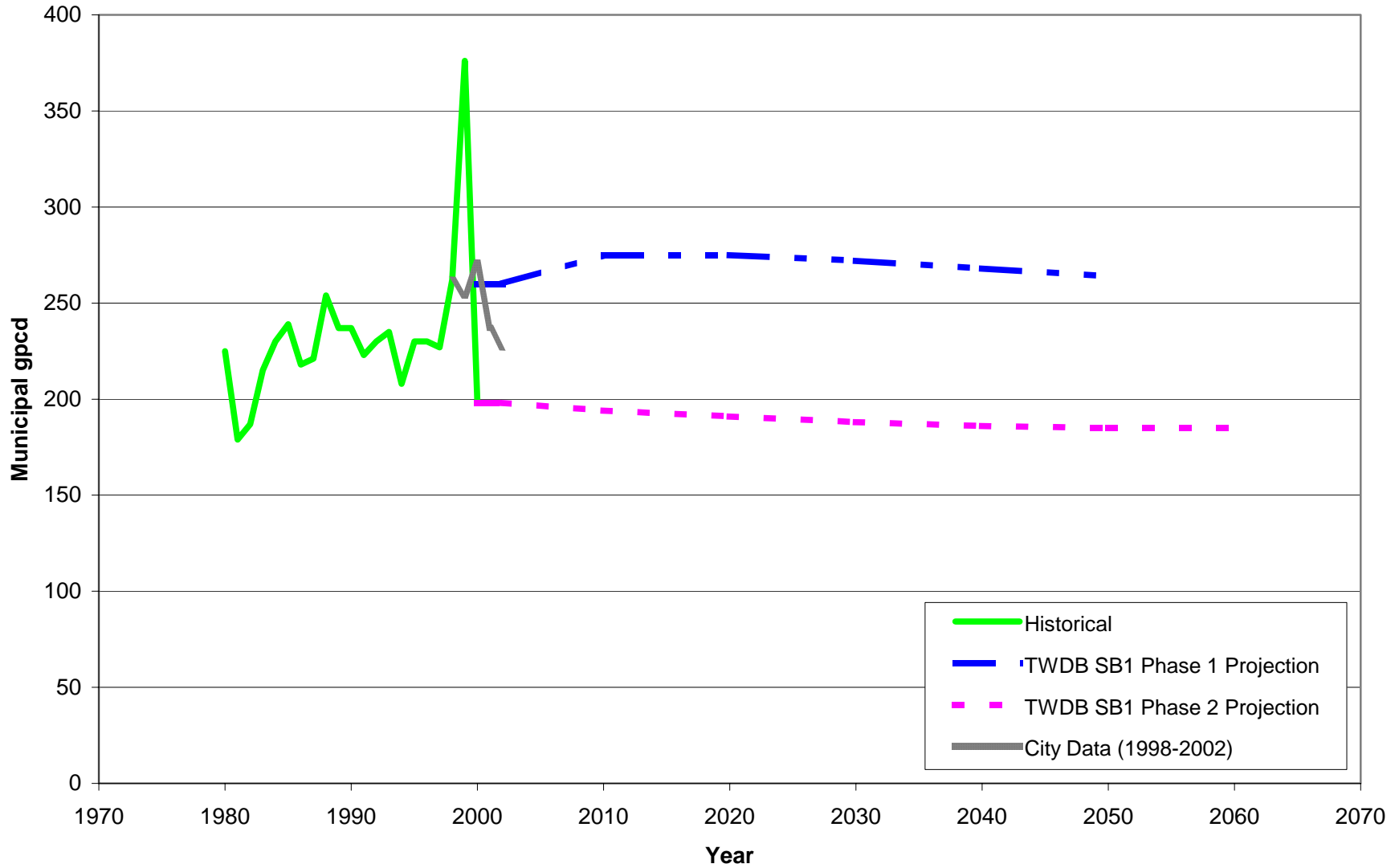
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Grand Prairie



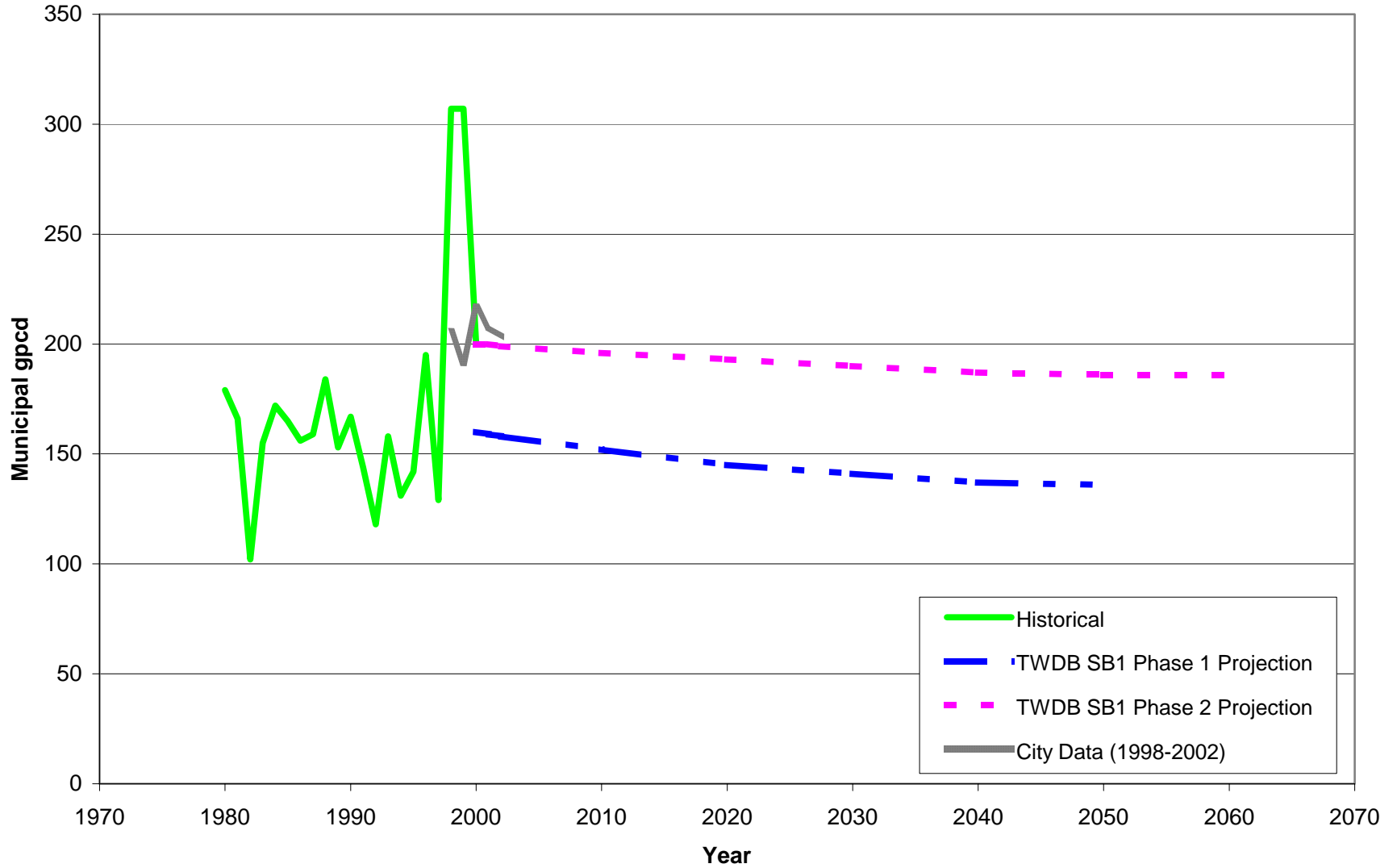
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Dallas



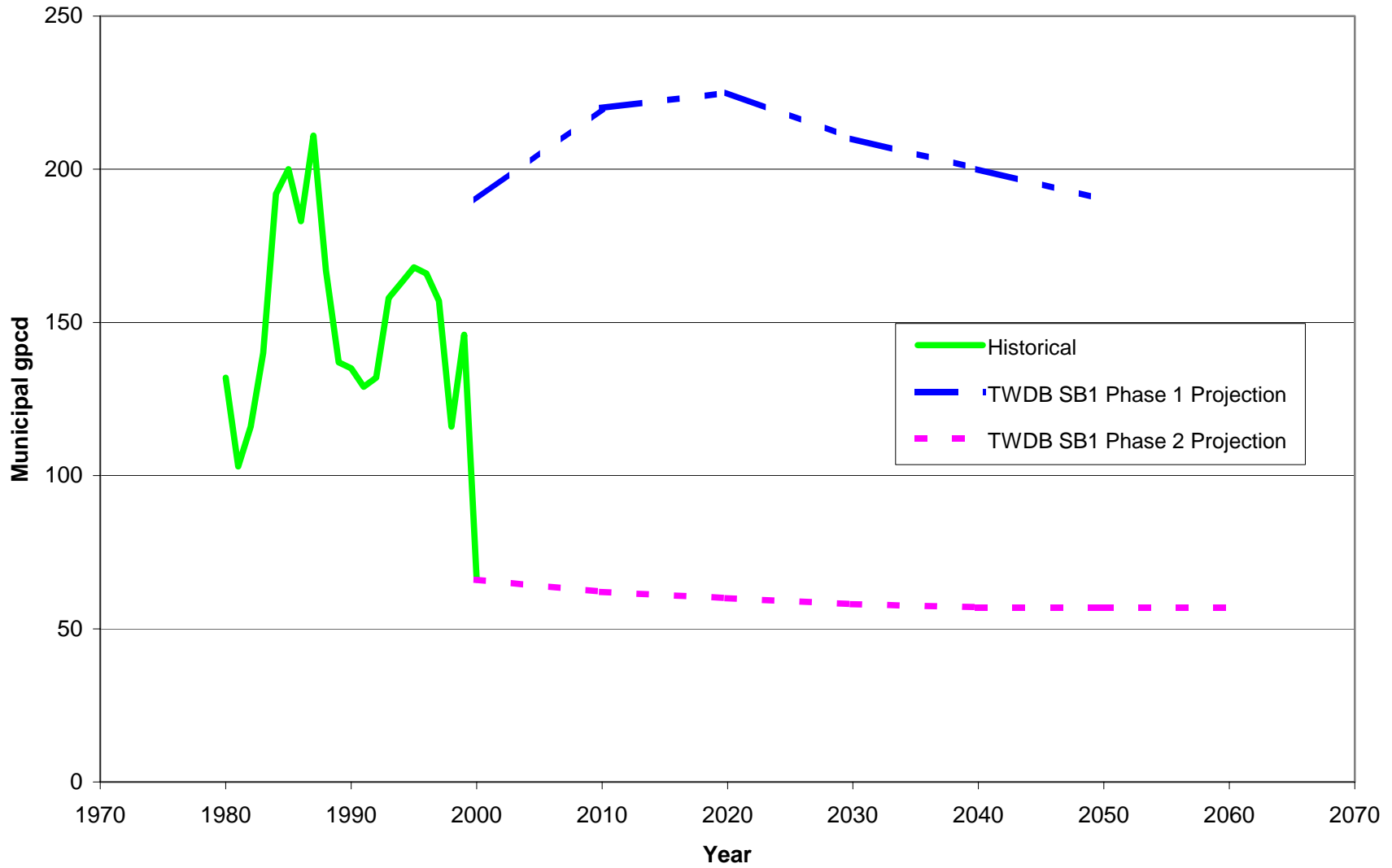
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Denison



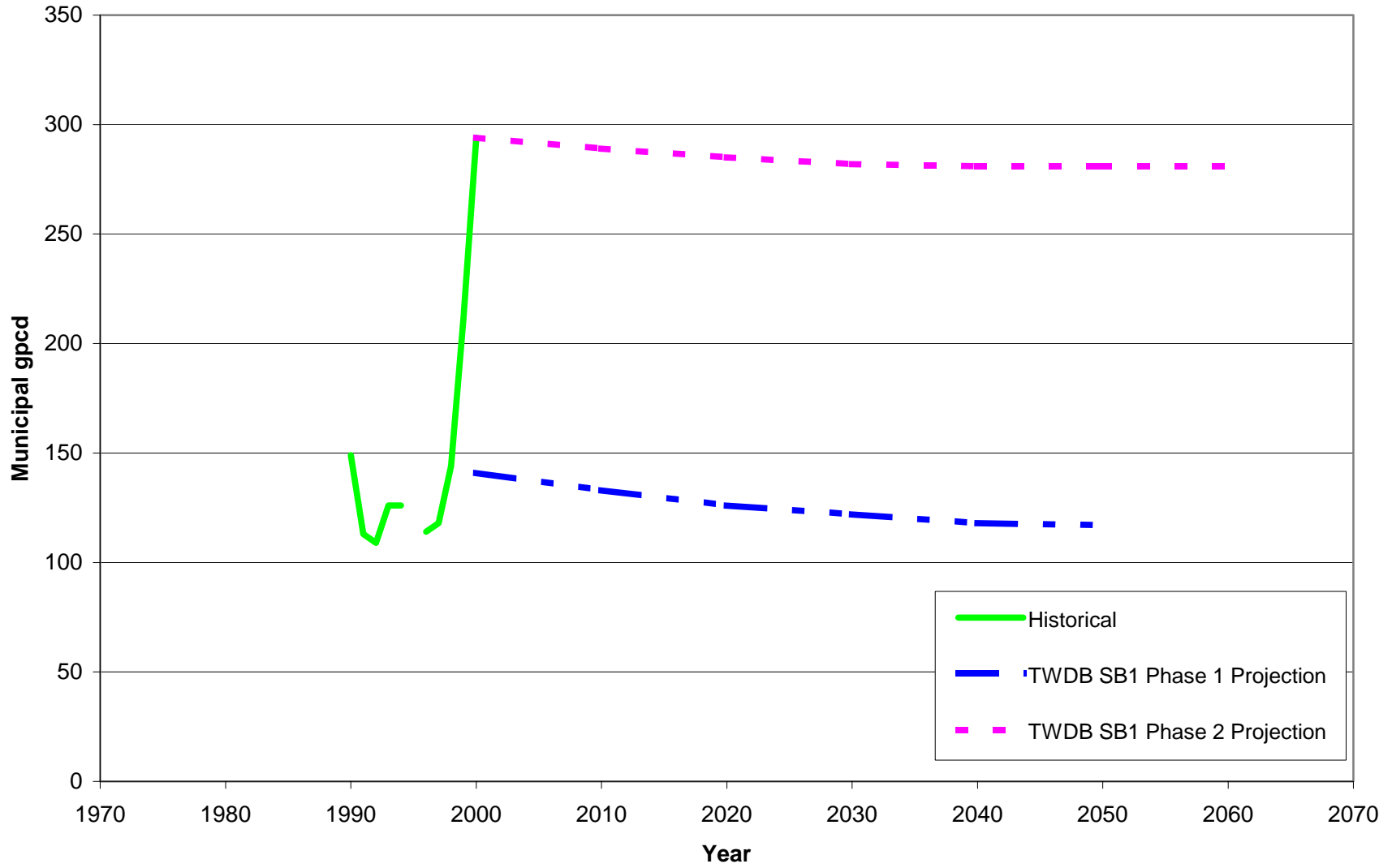
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Flower Mound



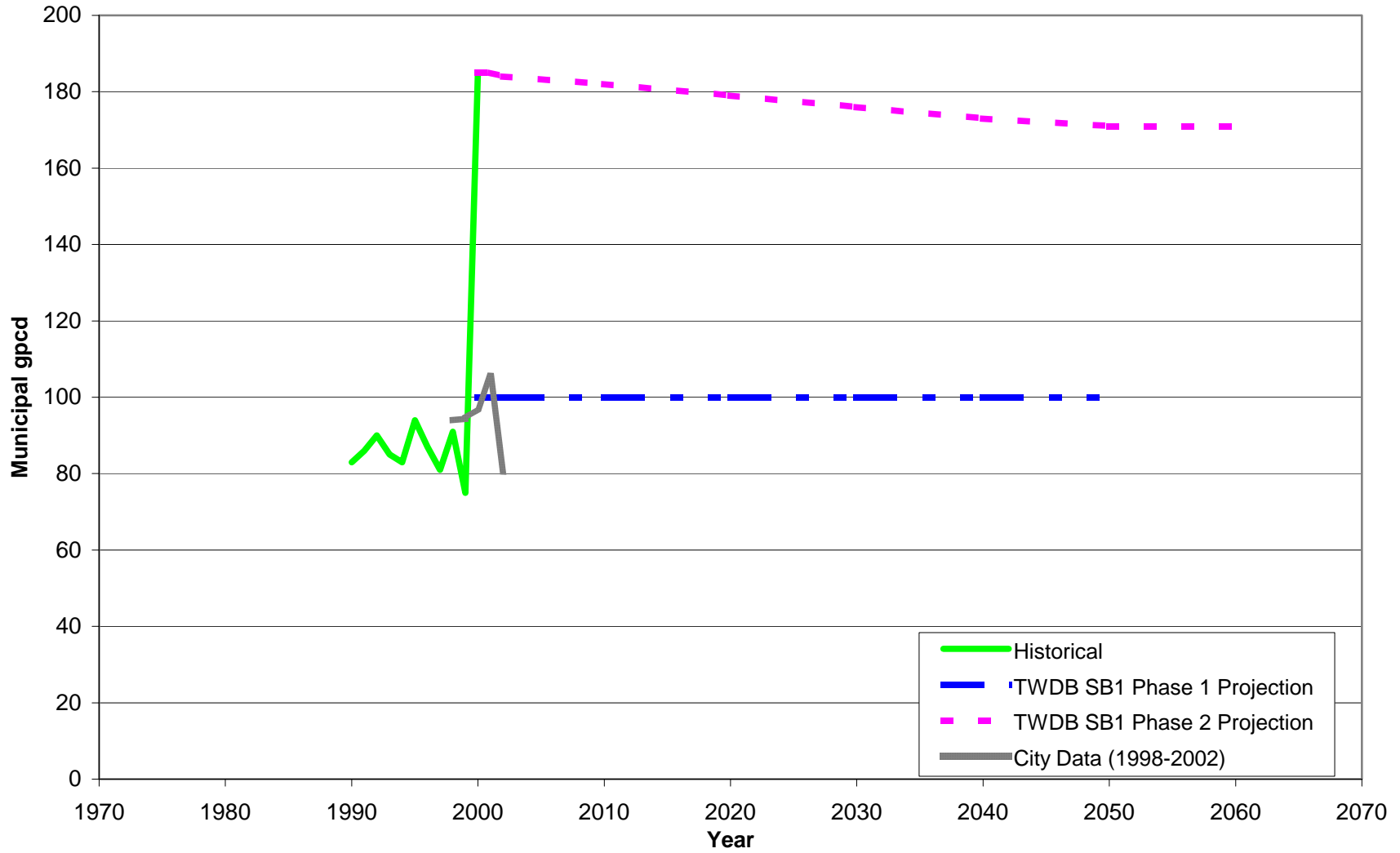
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New Hope



Data Error

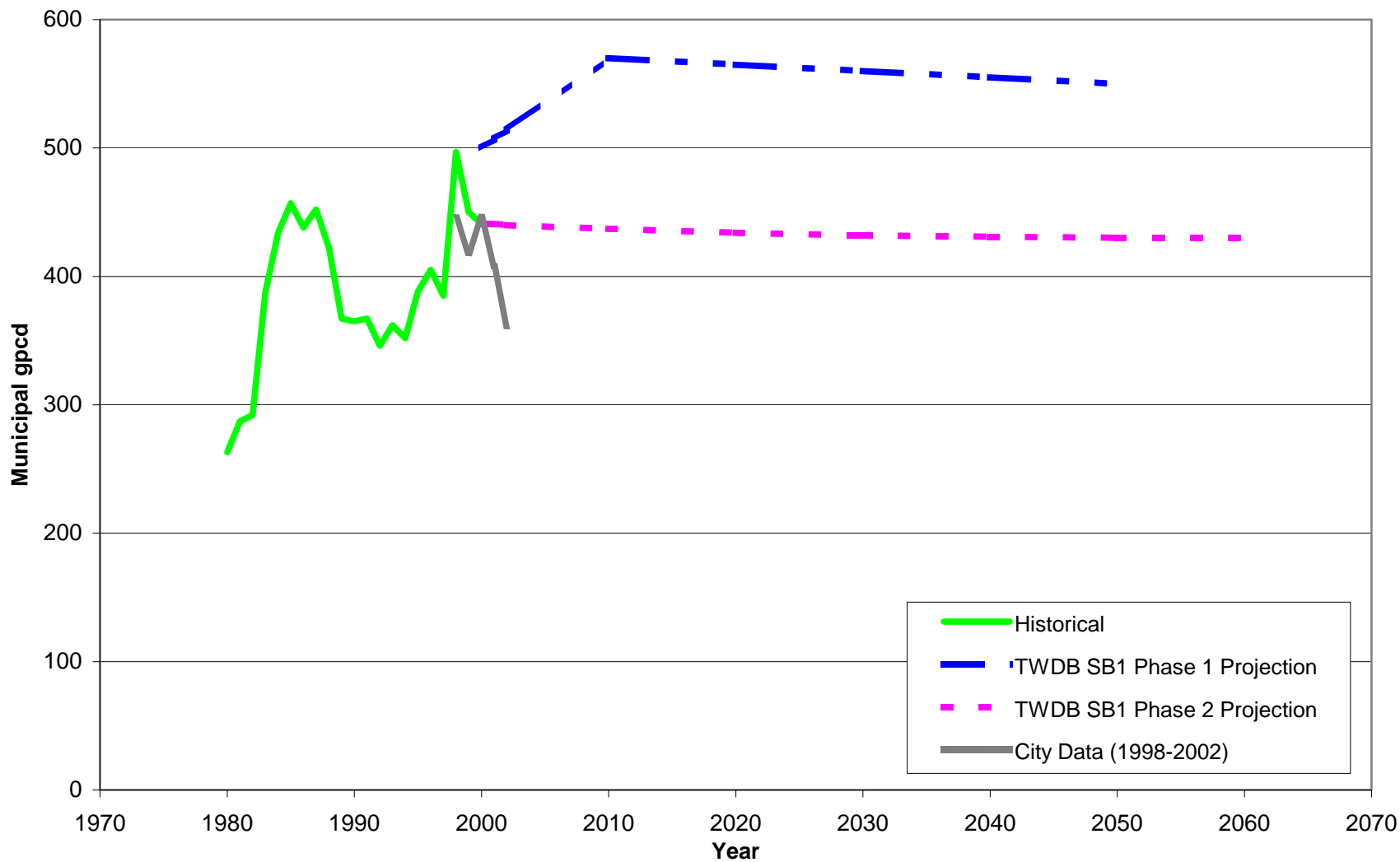
Kerens



Data Error

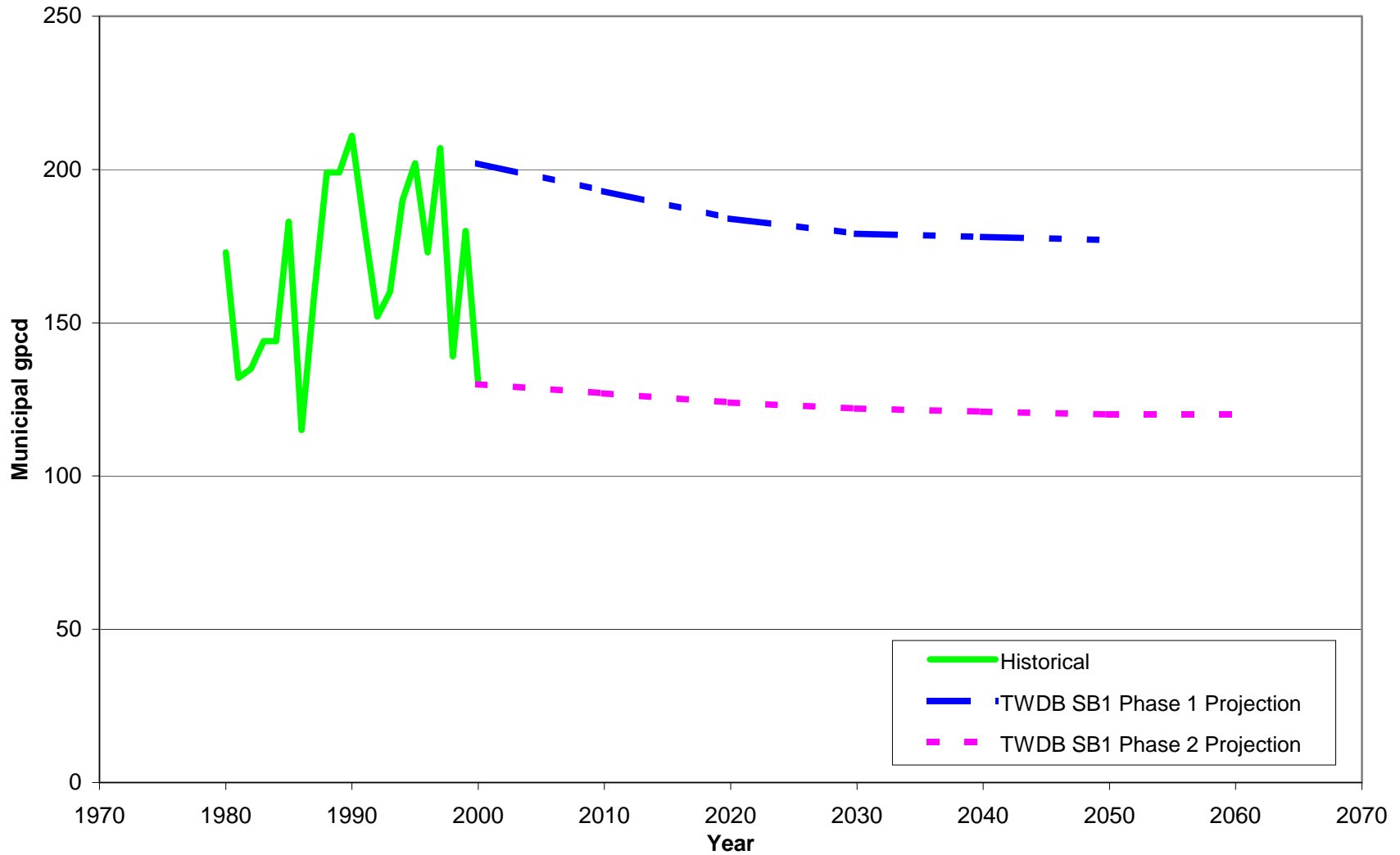
Water Use Comparison Graphs
Year 2000 Not Highest
Historical GPCD

Addison



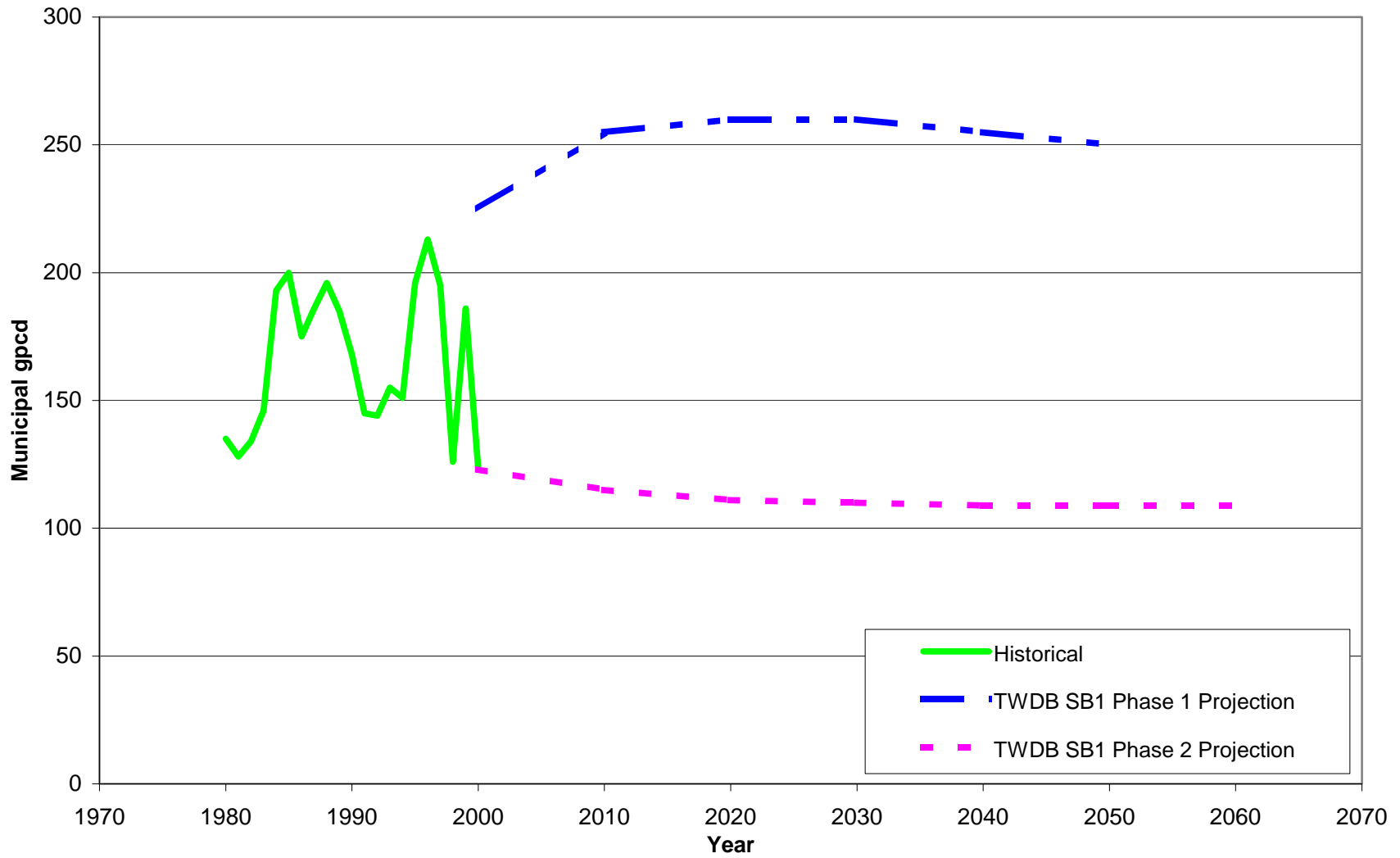
Year 2000 not highest historical GPCD

Bonham



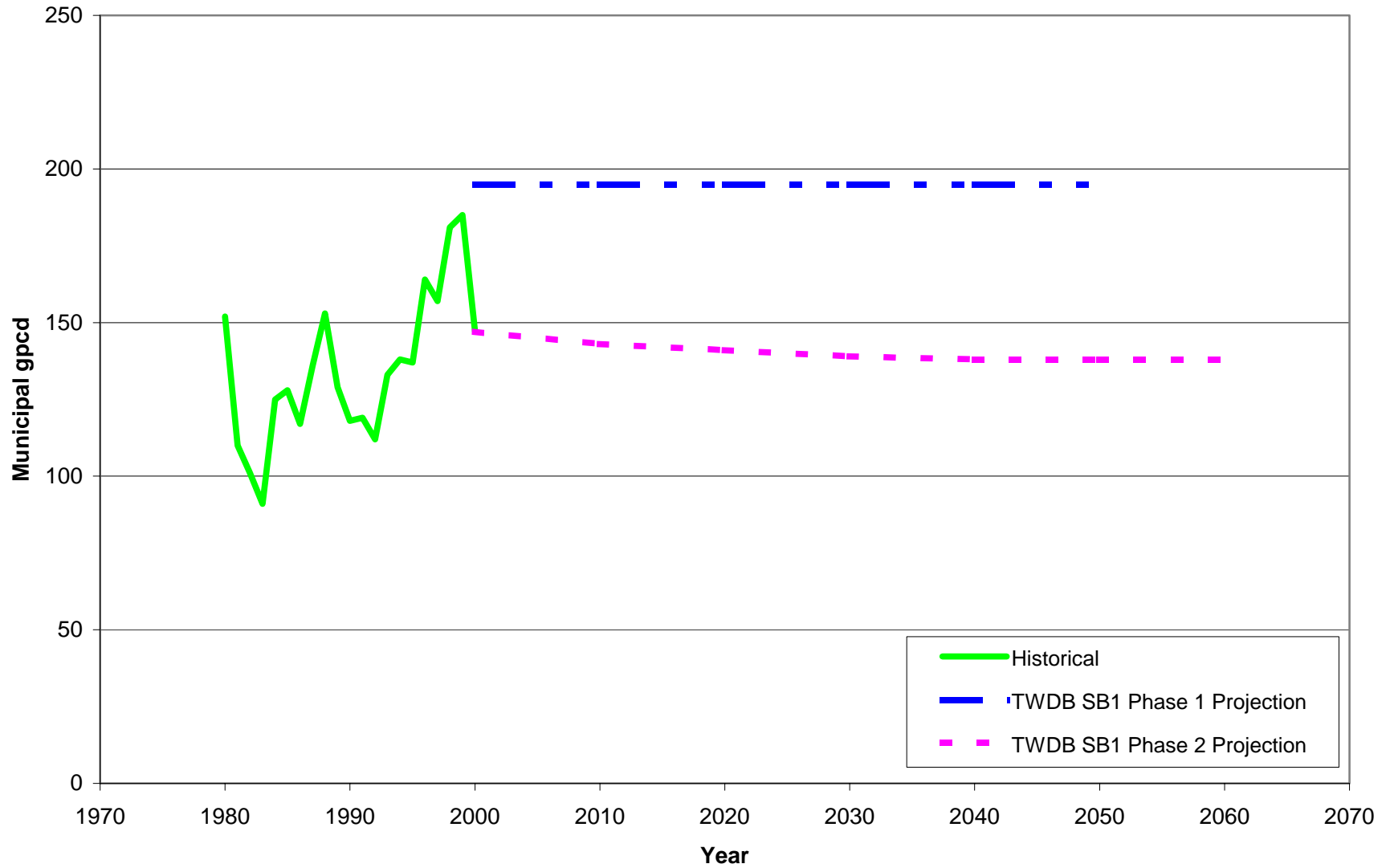
Year 2000 not highest historical GPCD

Hutchins



Year 2000 not highest historical GPCD

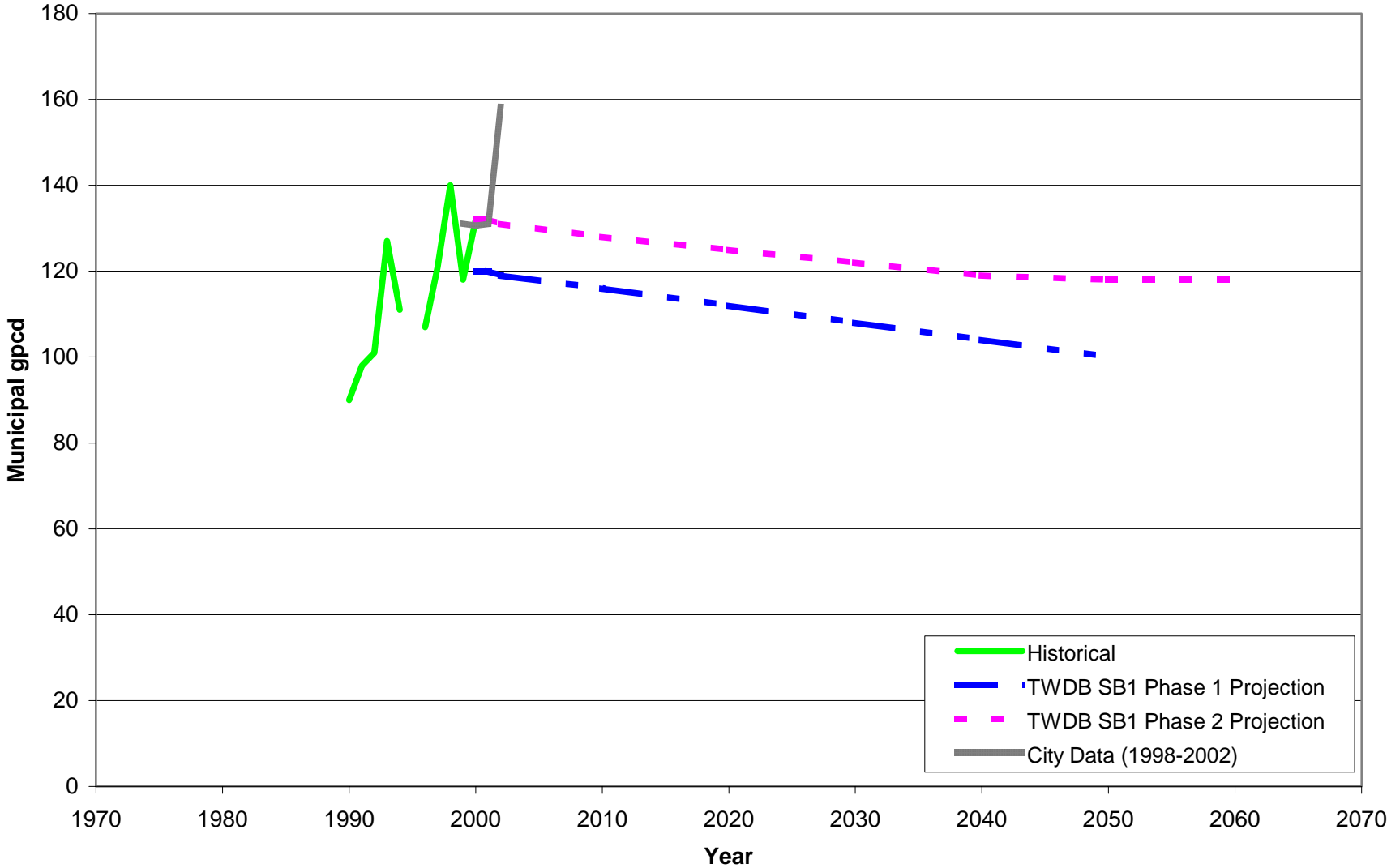
Mansfield



Year 2000 not highest historical GPCD

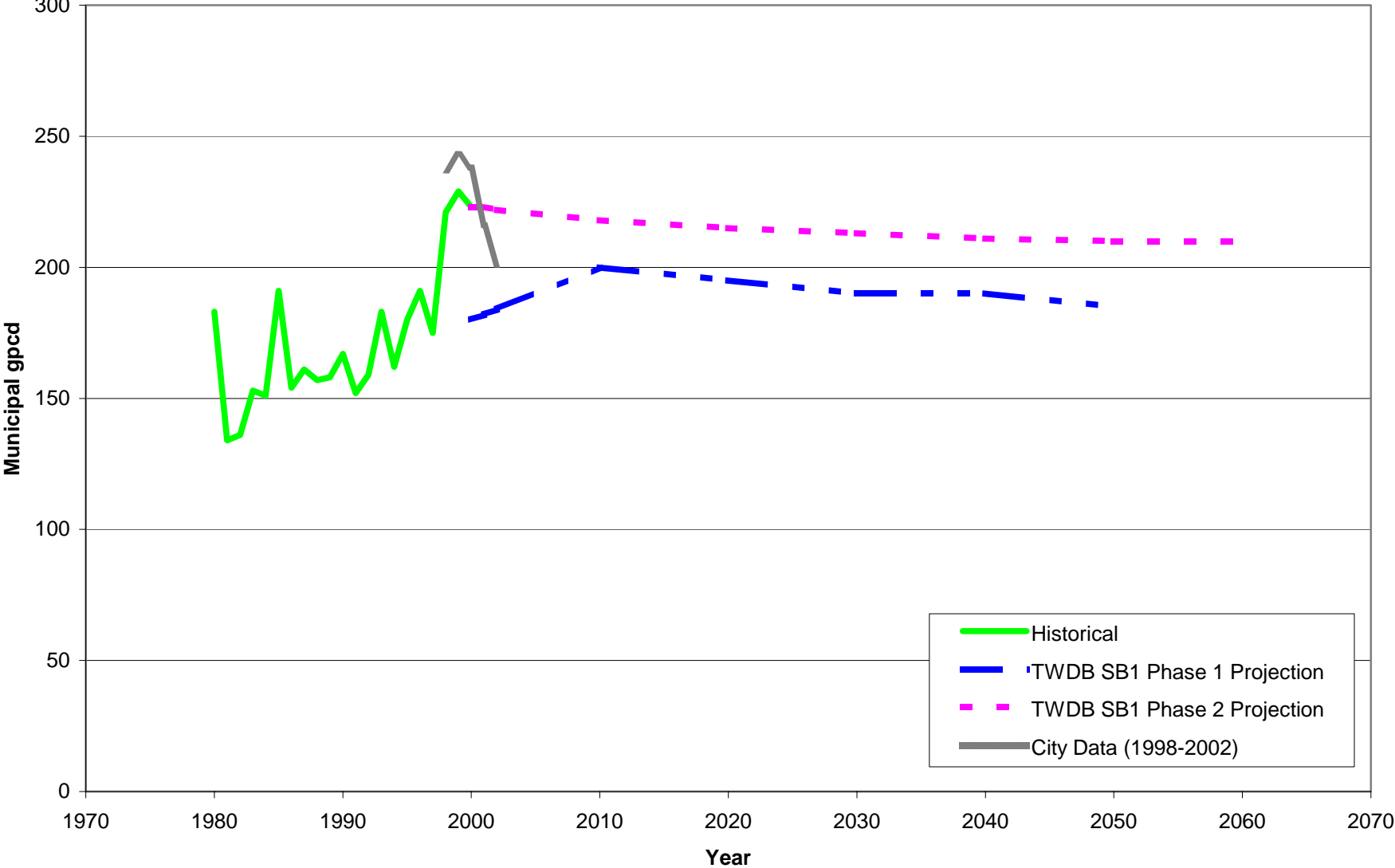
Water Use Comparison Graphs
Increasing Water Usage
Trend

Eustace



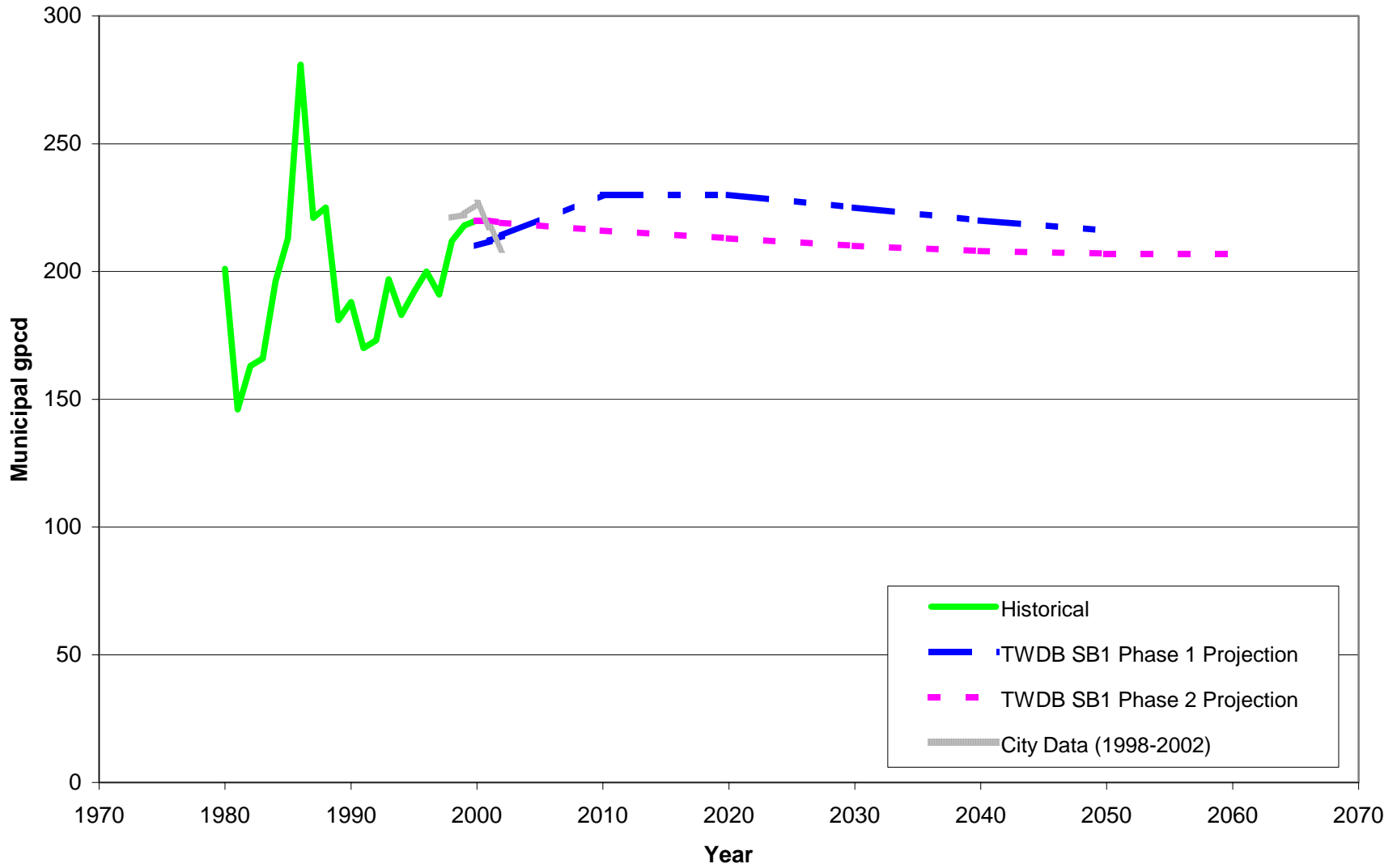
Increasing Water Usage Trend

Grapevine



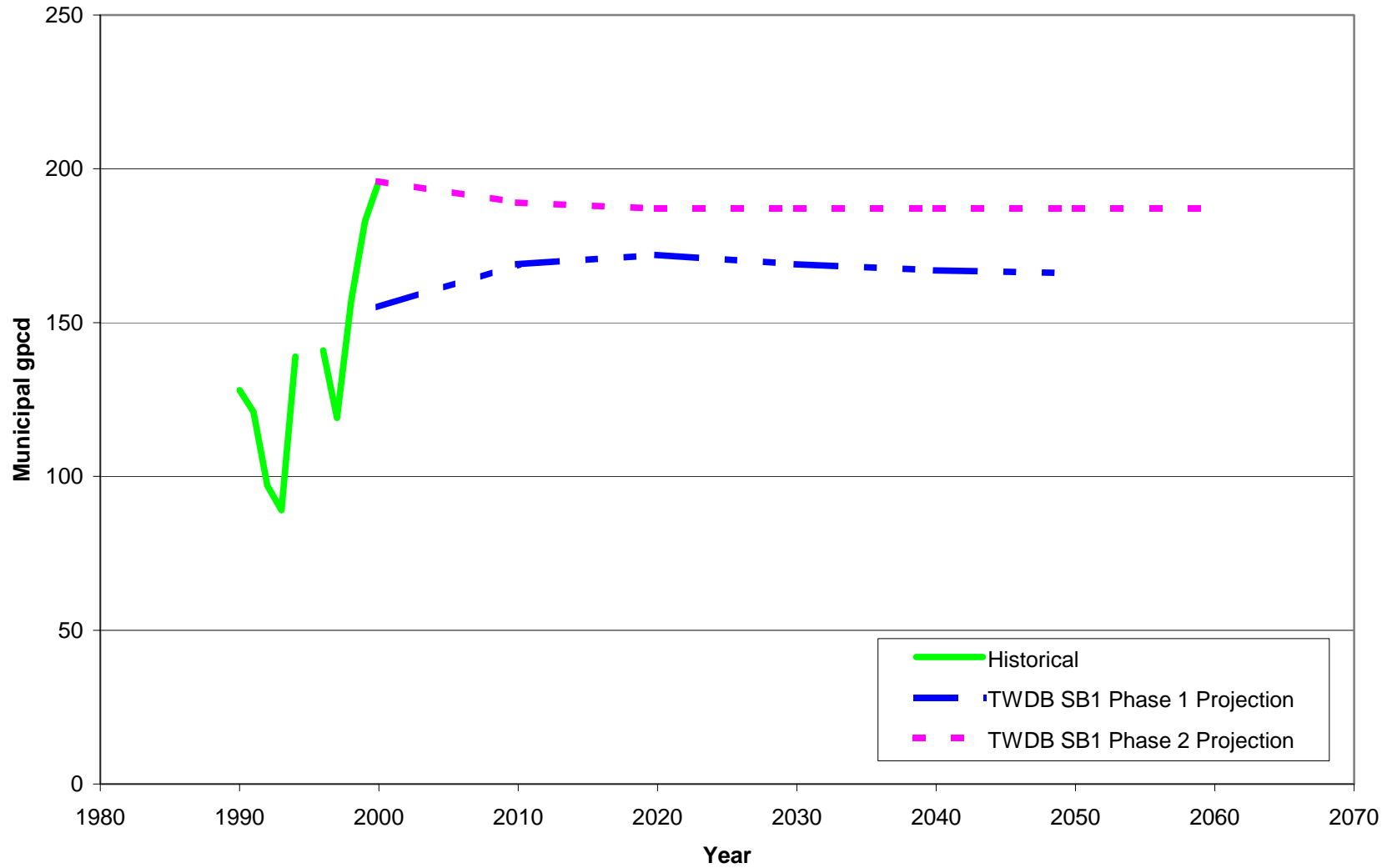
Increasing Water Usage Trend

Irving



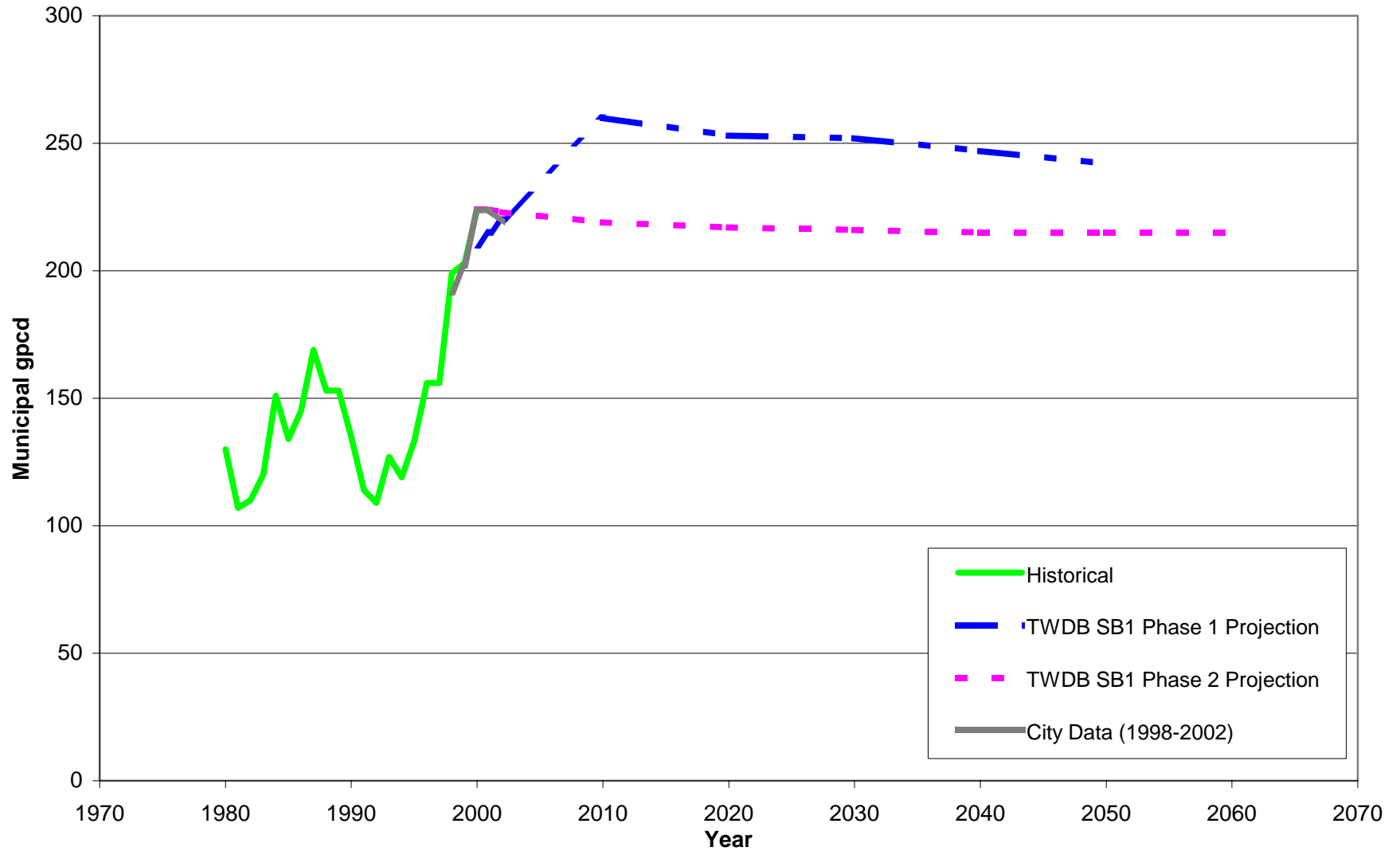
Increasing Water Usage Trend

Prosper



Increasing Water Usage Trend

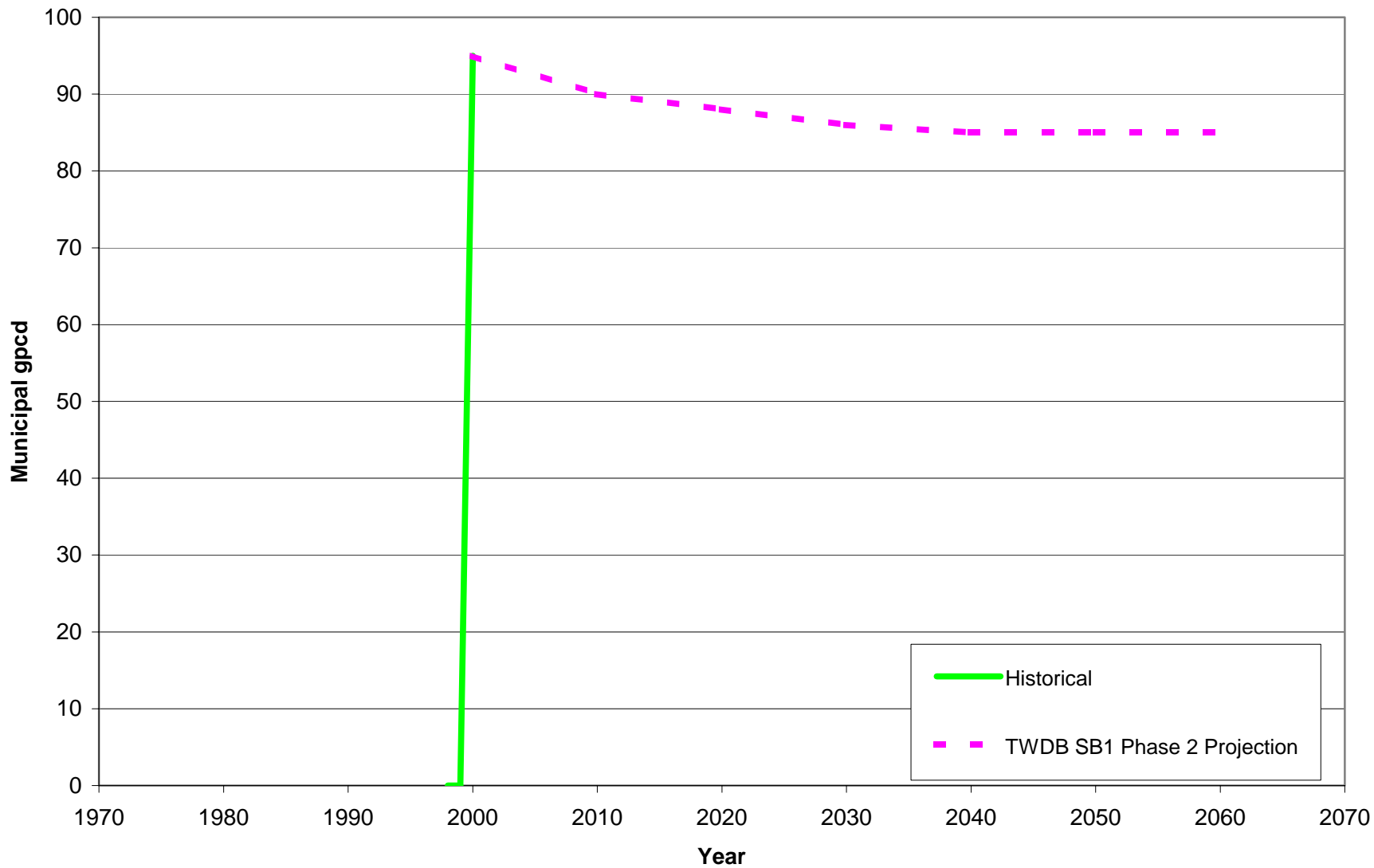
Allen



Increasing Water Usage Trend

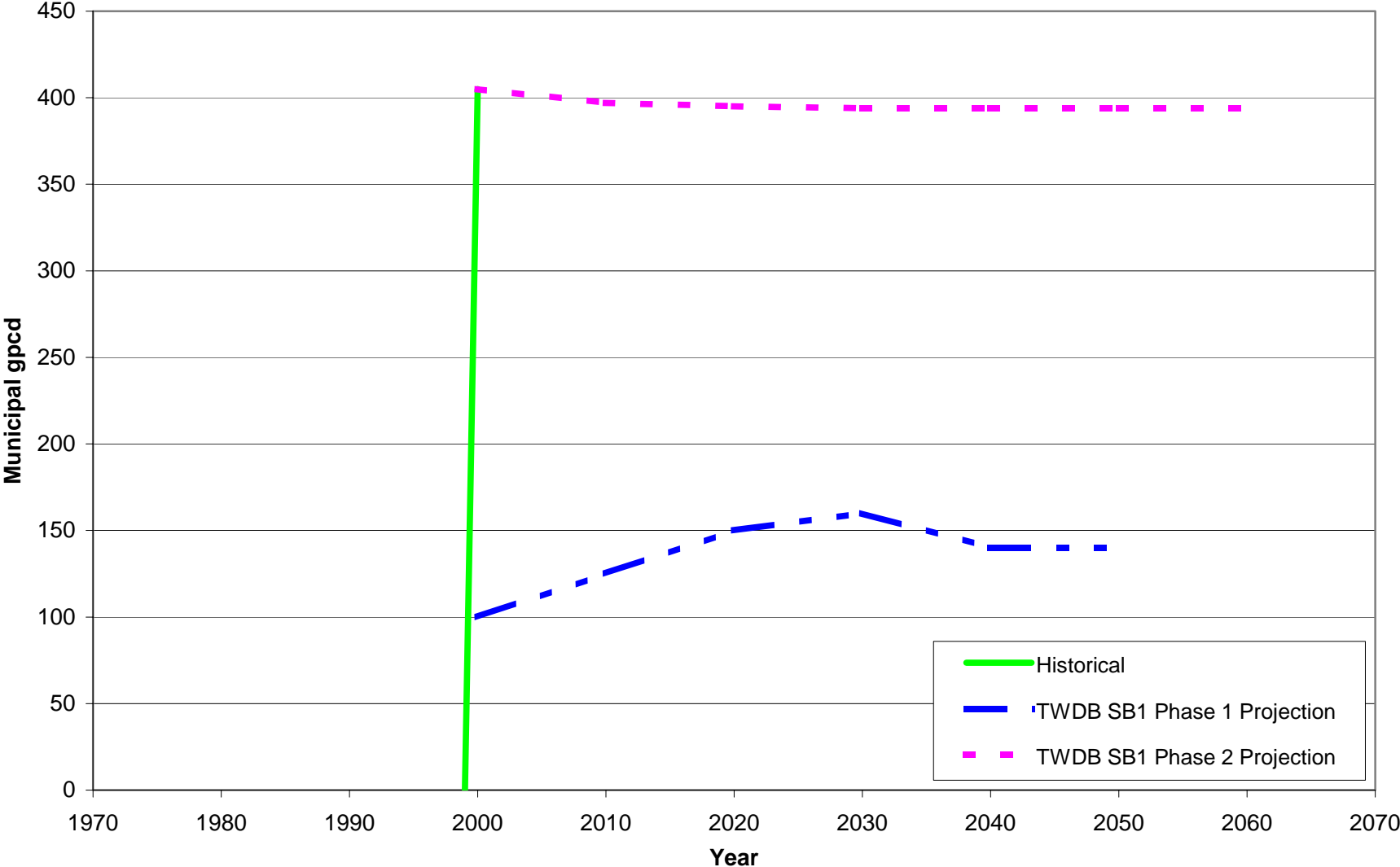
Water Use Comparison Graphs
No Historical Data Available

Bardwell



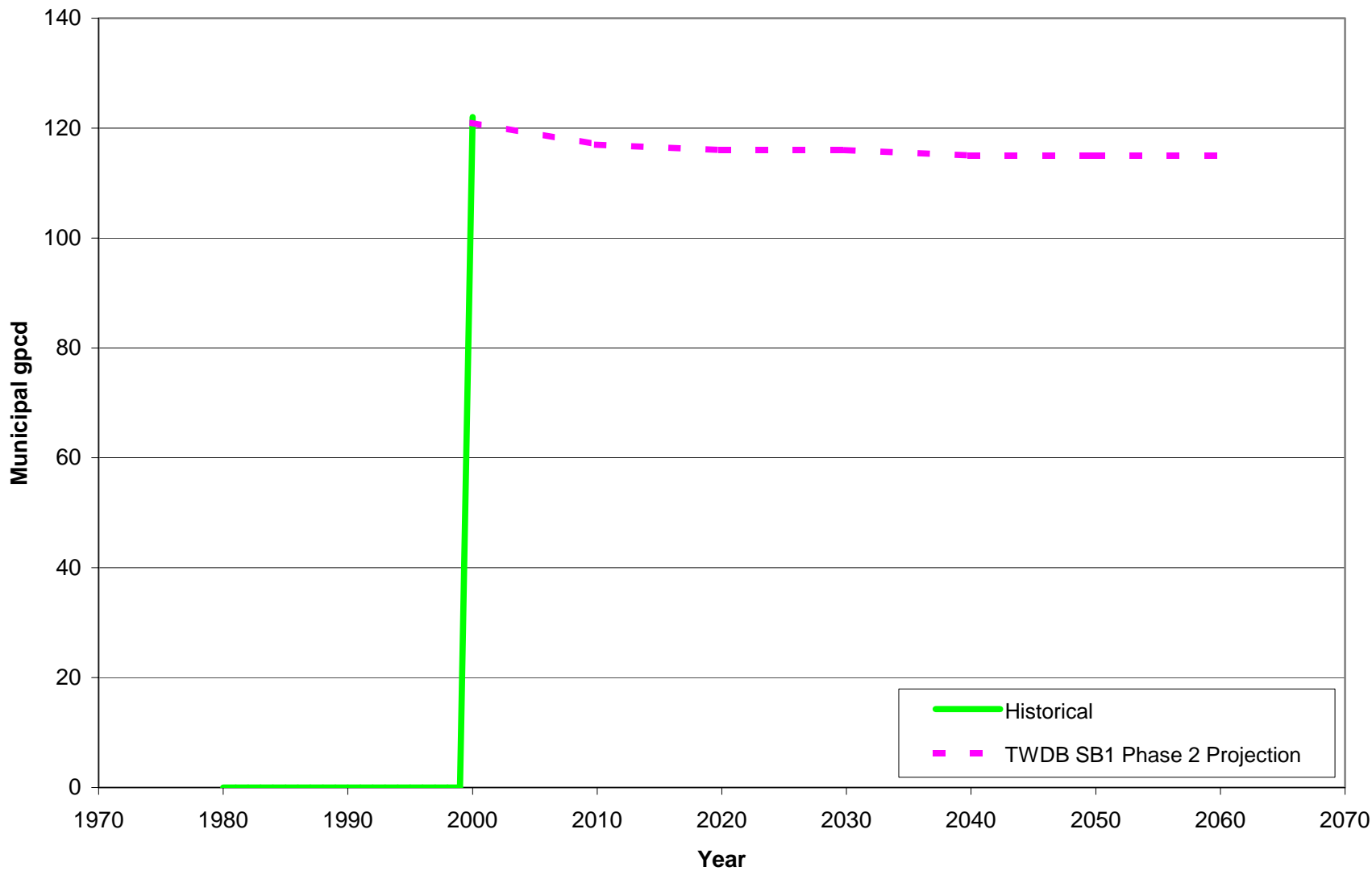
No Historical TWDB Data

Cross Roads



No Historical TWDB Data

Hackberry

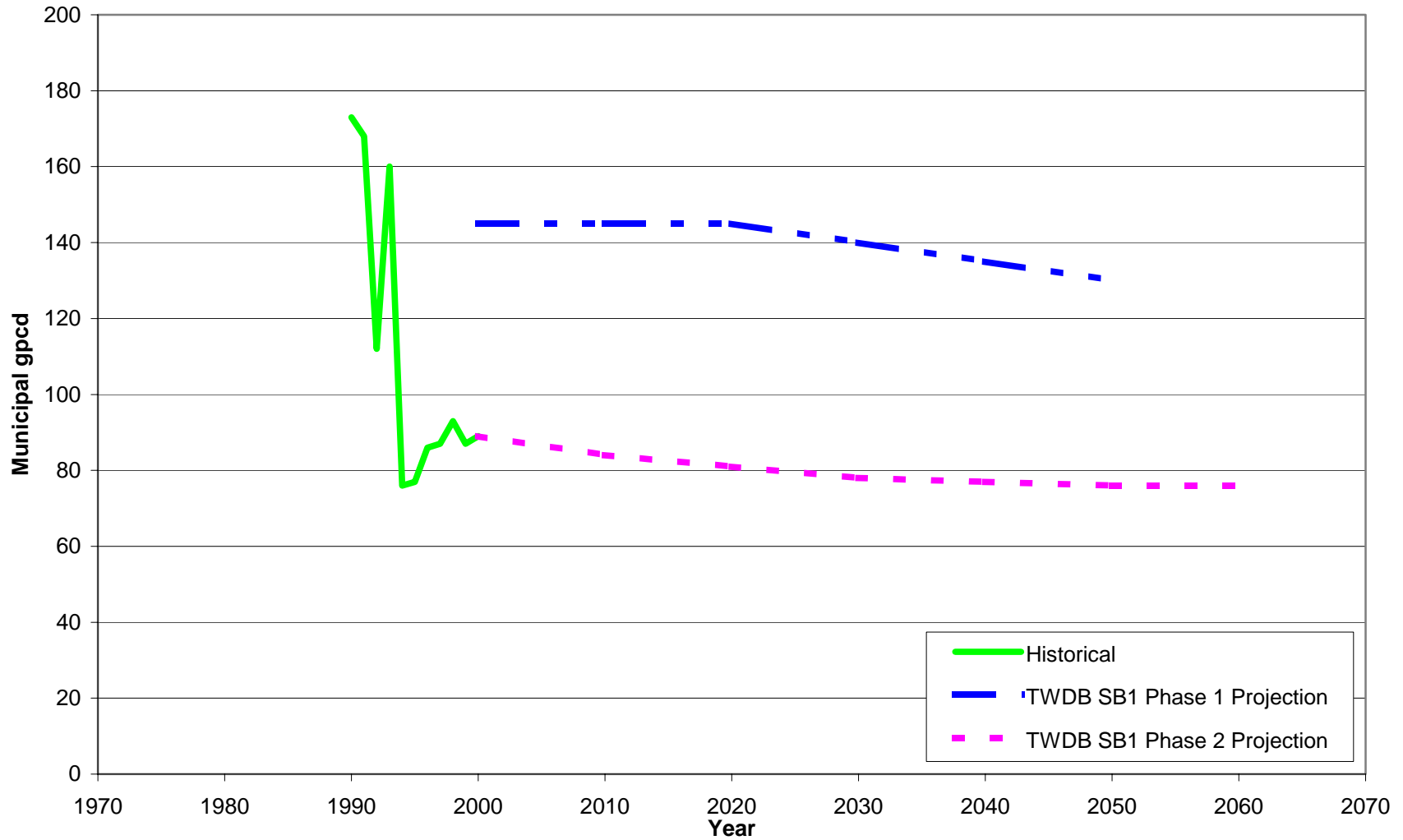


No Historical TWDB Data

Water Use Comparison Graphs

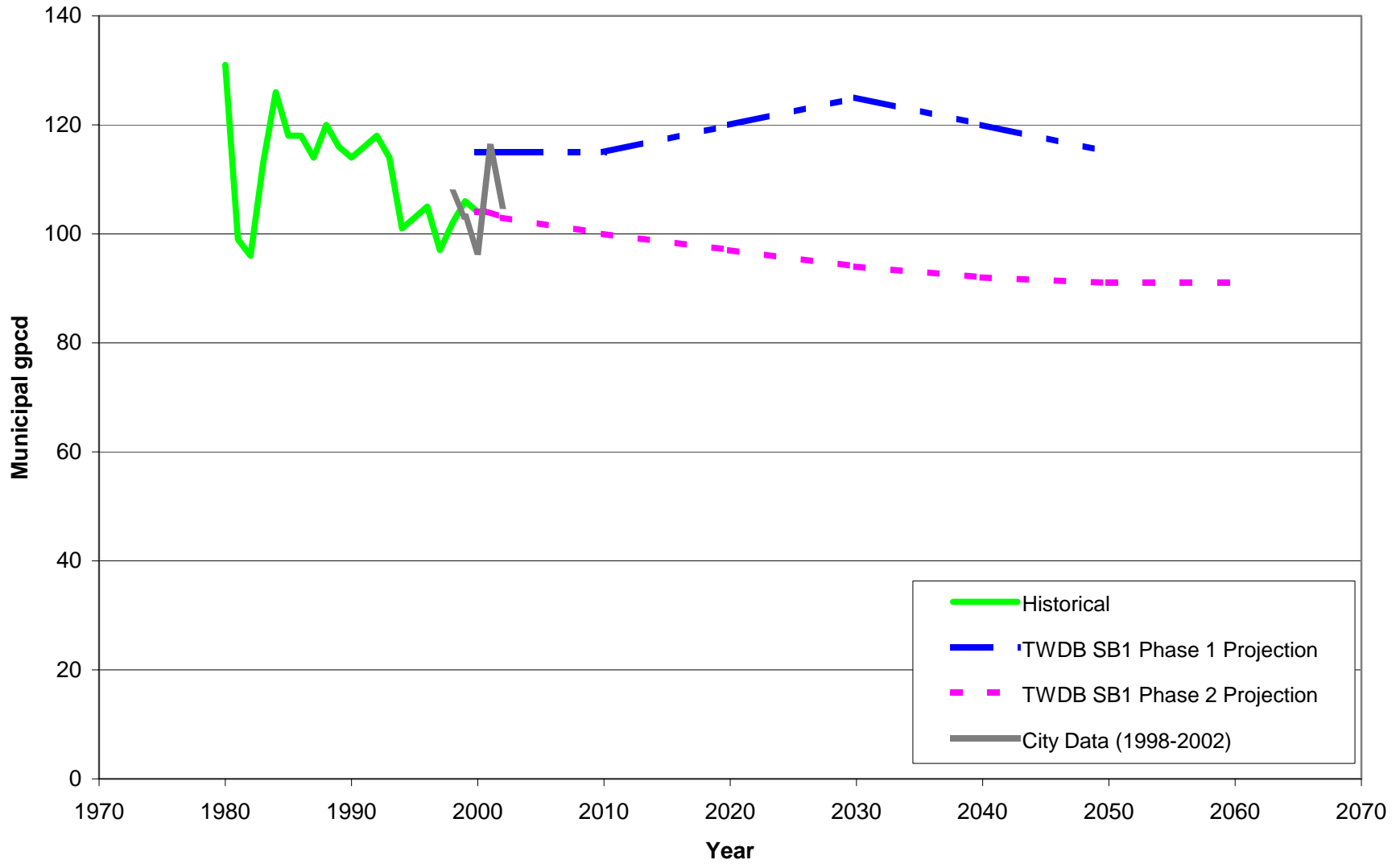
Minimum Water Use

Combine



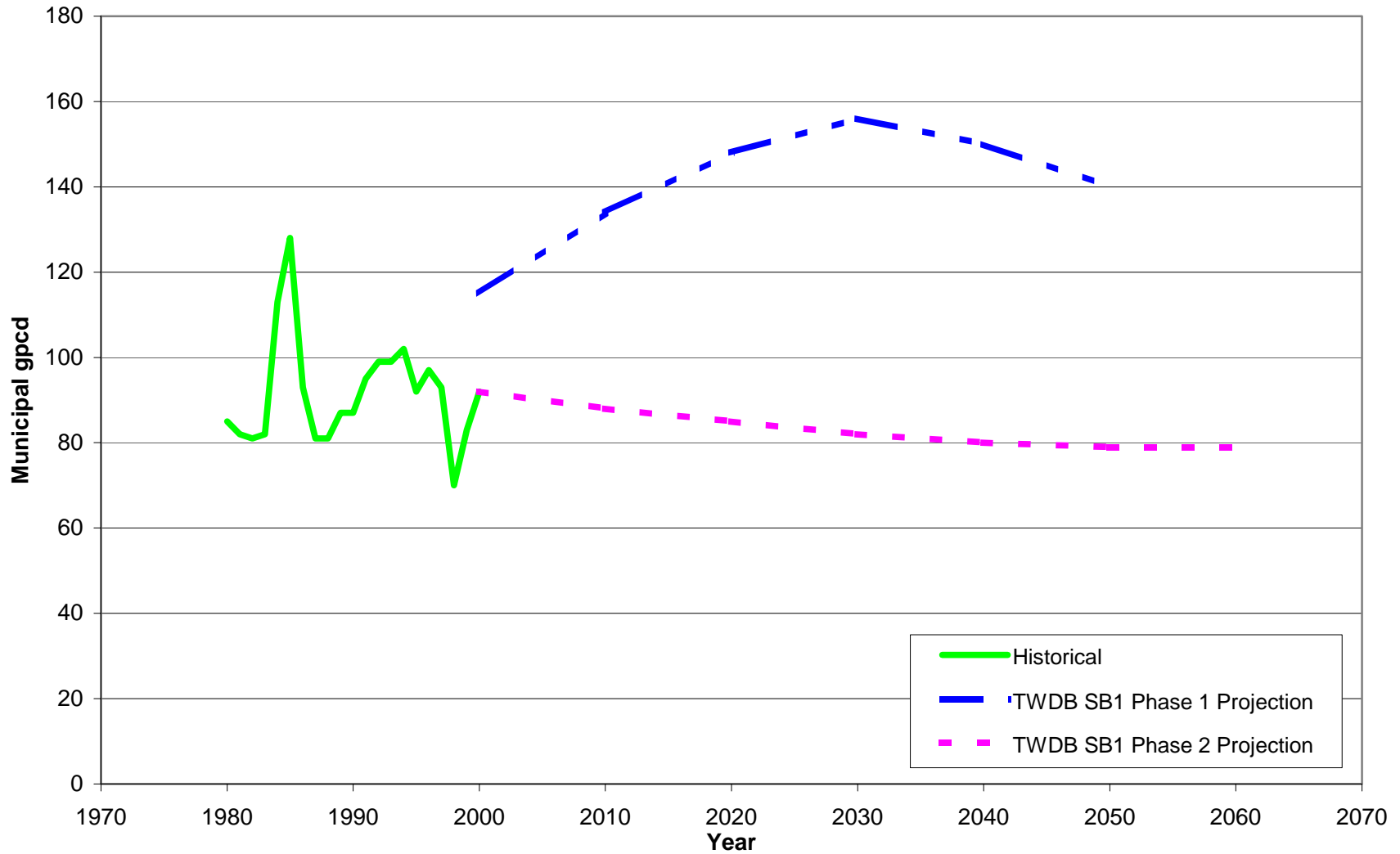
Minimum 110 GPCD

Forest Hill



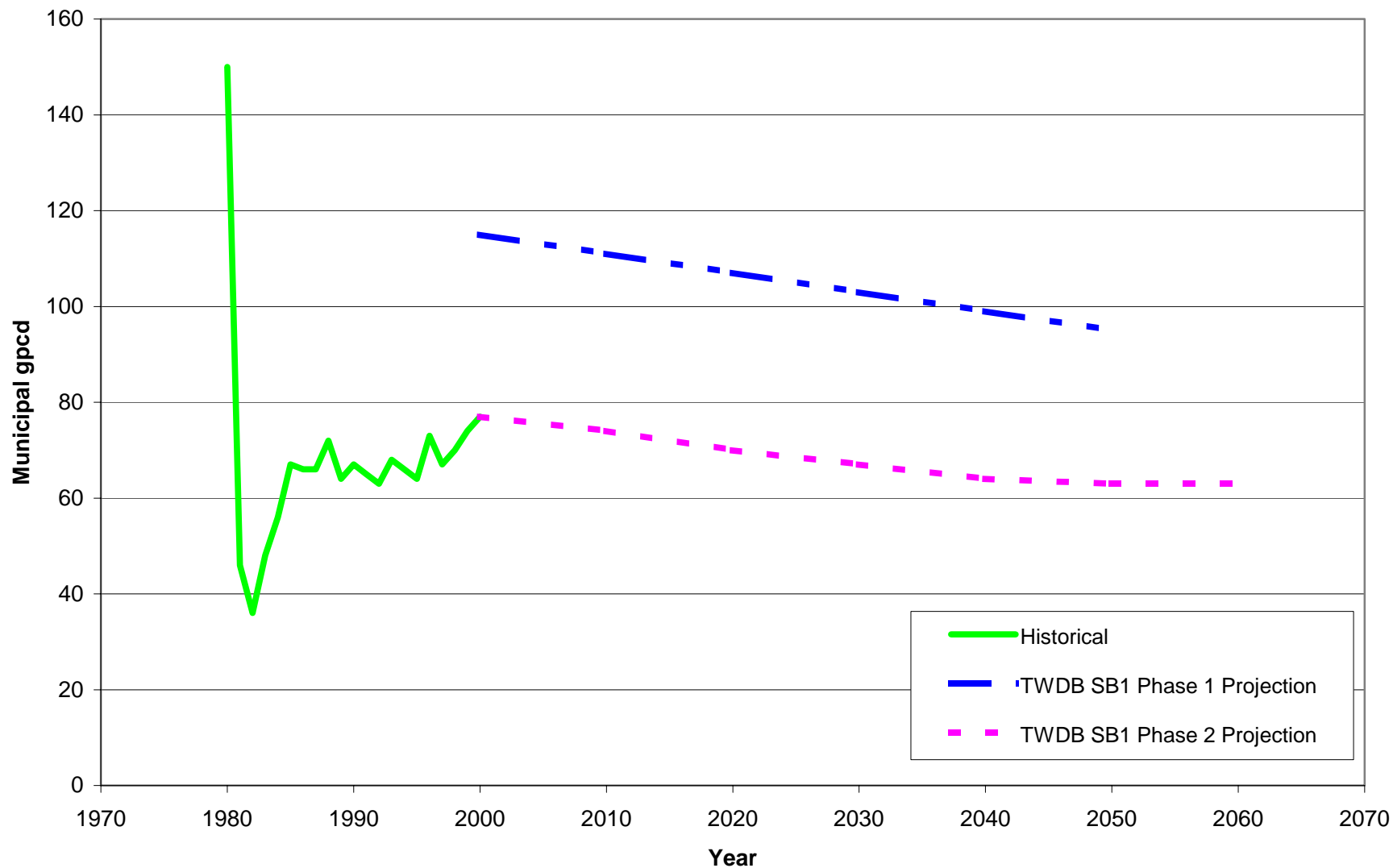
Minimum 110 GPCD

Italy



Minimum 110 GPCD

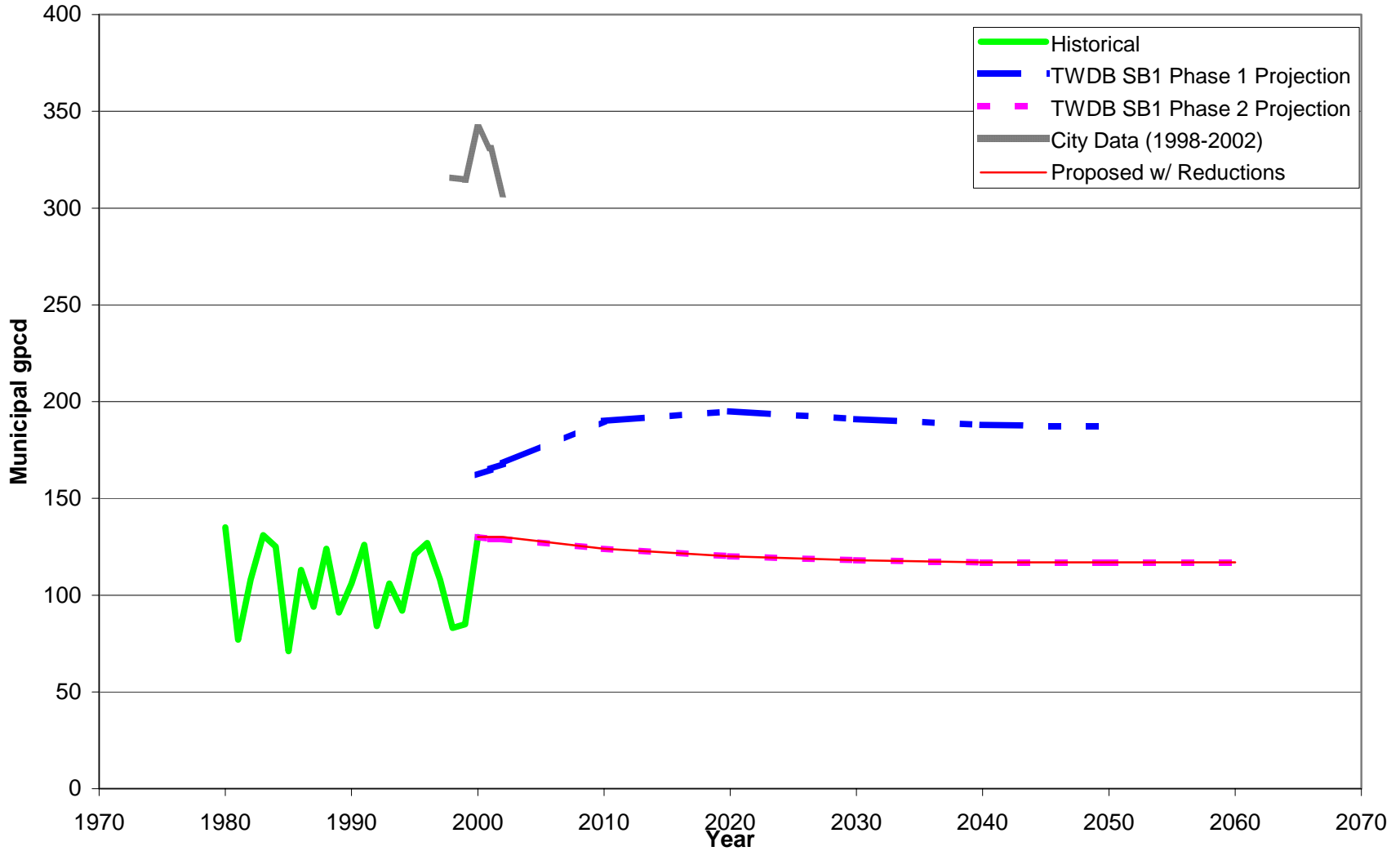
Westworth Village



Minimum 110 GPCD

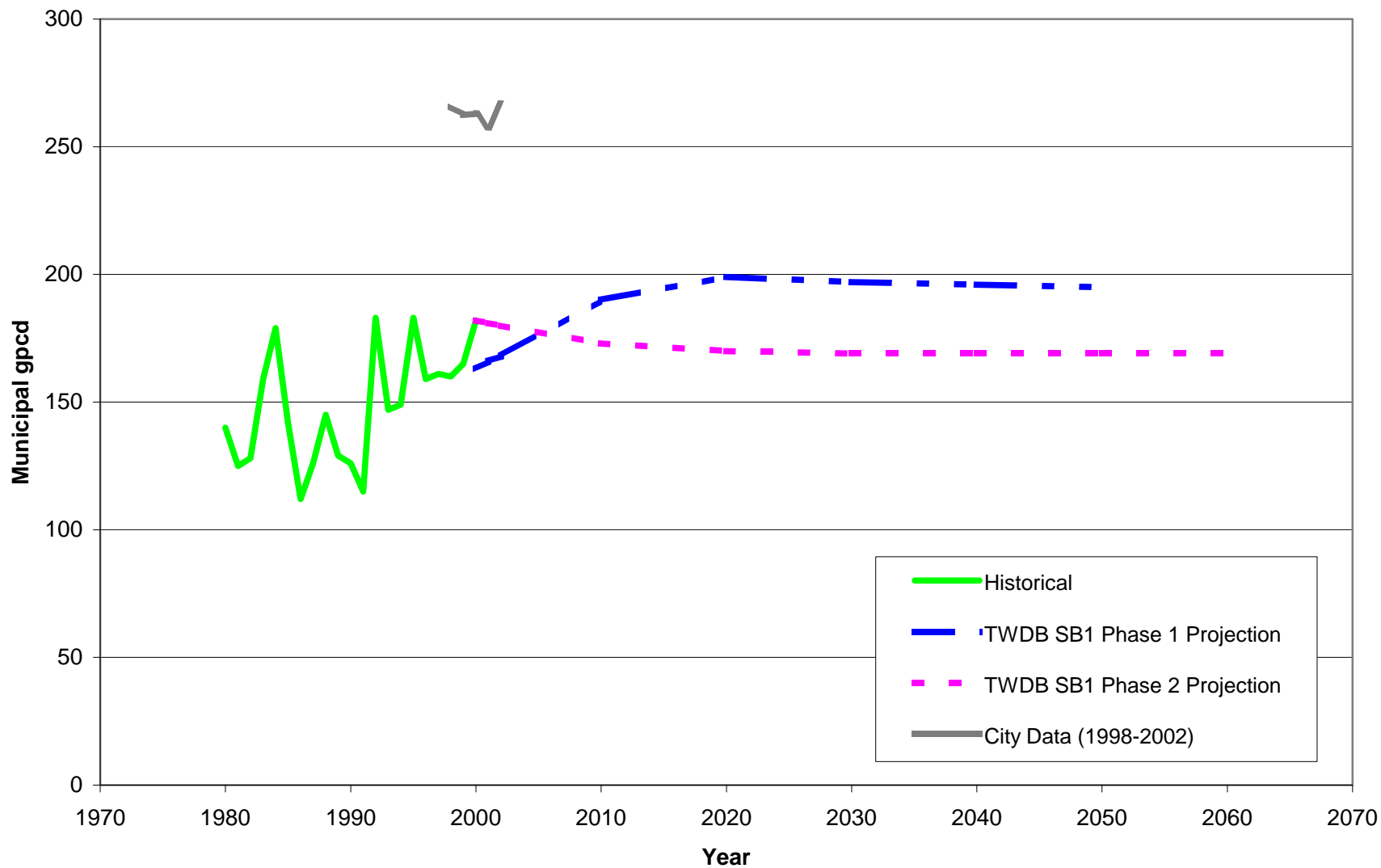
Water Use Comparison Graphs
City Survey Data Inconsistent

Forney



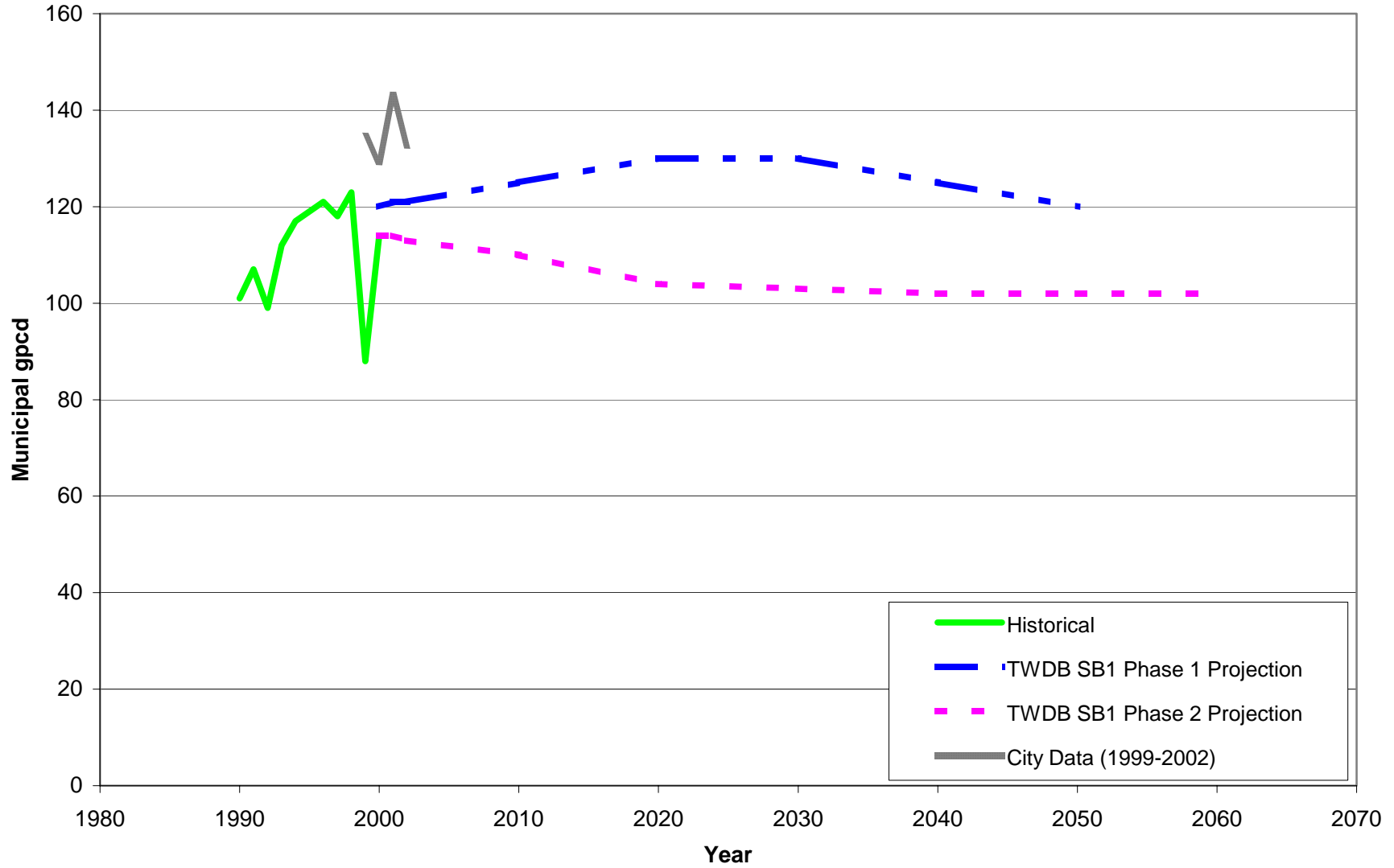
City Survey Data Inconsistent

Royse City



City Survey Data Inconsistent

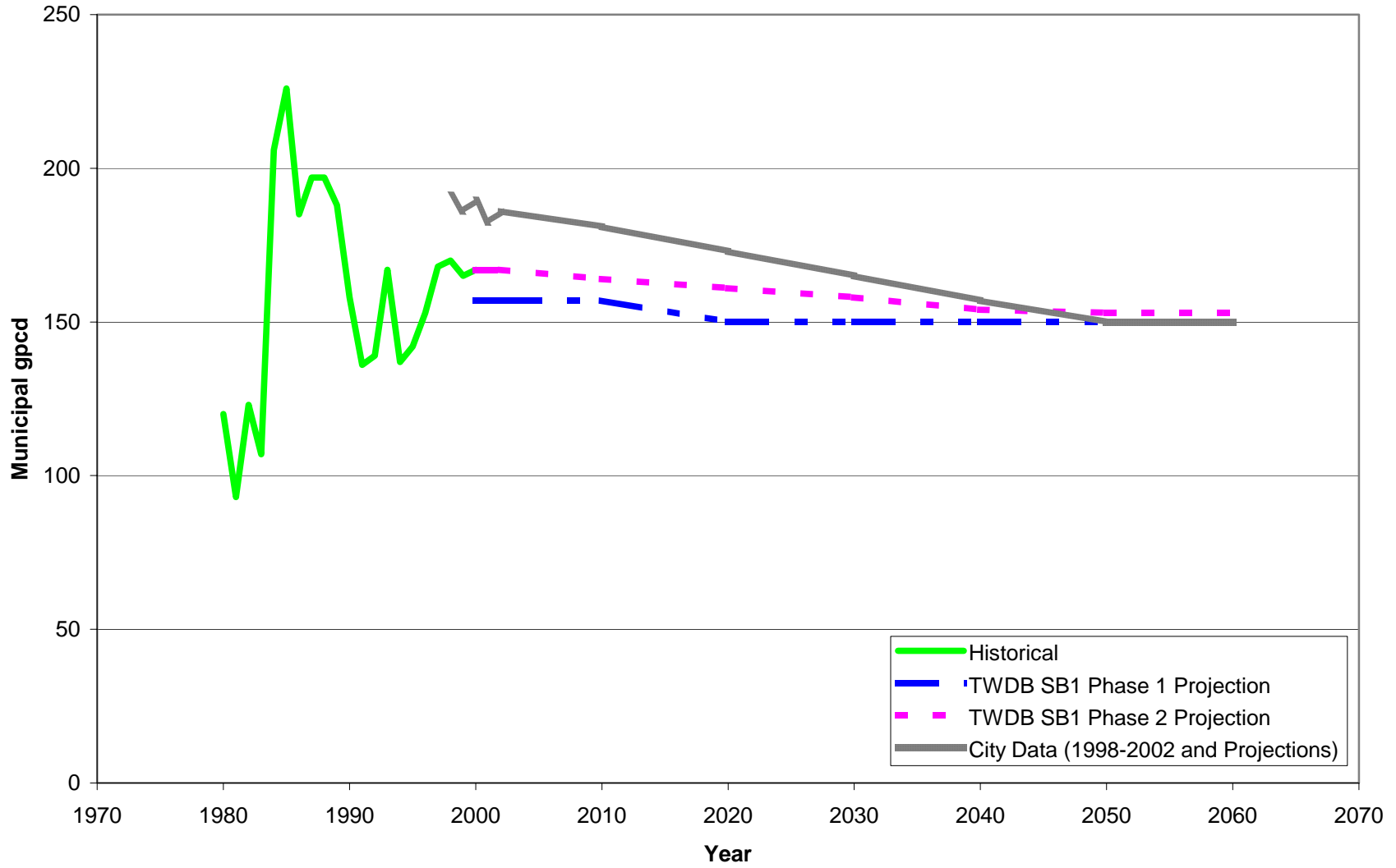
Blue Ridge



City Survey Data Inconsistent

Water Use Comparison Graphs
Recommend City Projections

Athens



City Projections

What Next

- Obtain TWDB Water Use Data
 - Compare to City Use Data Obtained From Survey
 - Resolve Discrepancies
 - Confirm or Resolve Data Errors
- Prepare Recommendations For Region C Comments to Water Use Projections

Requested Amendments for Athens MWA & GTUA

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Requests for Amendments

- Athens Municipal Water Authority (MWA)
 - Seeking new water management strategy for reuse project not included in the 2001 *Region C Water Plan*
 - Seeking a second new water management strategy to potentially buy TXU's Forest Grove Reservoir or purchase water from them

Requests for Amendments

- Greater Texoma Utility Authority (GTUA)
 - Seeking new water management strategy to include Anna as a participant in a pipeline extending from Sherman to Van Alstyne, Melissa, Howe and Anna. Anna was not shown to get surface water in the 2001 *Region C Water Plan*

Requests for Amendments

- The entities are seeking TCEQ permits and/or TWDB funding and have been told that their requested projects are not consistent with the 2001 *Region C Water Plan*

Procedure to Amend Plan

- Post notice of a public hearing 30 days in advance of the meeting with a detailed explanation of the amendment(s) – the specific language in the amendment
- Host a public hearing and take public comments at that meeting
- RWPG may vote at the end of the public meeting or allow time for written comments to be submitted before voting

Procedure to Amend Plan

- Date for amendment hearing?
- See handout for details about the amendment process

Wholesale Water Providers

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Wholesale Water Providers

- See handout listing wholesale water providers for Region C
- Submitted to TWDB on March 1, 2003
- Additional wholesale water providers may be added as we move through the planning process

Water Supply Schematic

Region C Water Planning Group

Potential Water Management Strategies

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Water Conservation Practices

- Recommended in 2001 *Region C Water Plan*
 - No specific projects were recommended.
- Other alternatives in 2001 *Region C Water Plan*
 - None listed
- New possibilities
 - Single-family toilet retrofit
 - Single-family showerheads and aerators
 - Single-family clothes washer rebate
 - Single-family irrigation audit for high users
 - Single-family rainwater harvesting
 - Single-family rain barrels

Water Conservation Practices

- New possibilities (continued)
 - Multi-family toilet retrofit
 - Multi-family showerheads and aerators
 - Multi-family clothes washer rebate
 - Multifamily irrigation audit
 - Multifamily rainwater harvesting
 - Commercial toilet retrofit
 - Coin-operated clothes washer rebate
 - Irrigation audit
 - Commercial general rebate
 - Commercial rainwater harvesting

Drought Management Measures

- Recommended in 2001 *Region C Water Plan*
 - Not used as a supply
- Other alternatives in 2001 *Region C Water Plan*
 - None listed

Reuse of Wastewater

- Recommended in 2001 *Region C Water Plan*

SB1 Phase 1 Recommendations (Greater than 10,000 AF/Y)	Amount of Water in 2050 (Acre-Feet per Year)
TRWD indirect reuse from Trinity River (Cedar Creek/Richland-Chambers)	115,500
DWU indirect reuse (Lake Ray Hubbard)	68,300
TRA indirect reuse from effluent (Joe Pool Lake, Dallas County Other).	28,000
TRA direct reuse from effluent (Ellis County, Ellis County Steam Electric).	20,000
TRA indirect reuse from effluent (Grapevine Lake, Dallas County Other).	16,000
City of Garland direct reuse	15,694
UTRWD indirect reuse of Lake Chapman	13,900

Reuse of Wastewater

- Other alternatives in 2001 *Region C Water Plan*
 - City of Irving reuse
- New possibilities
 - City of Grapevine reuse from Park Cities MUD
 - May see revised approaches & projects
 - City of Athens reuse

Expand Existing Supplies System Operations

- Recommended in 2001 *Region C Water Plan*
 - Dallas Water Utilities
- Other alternatives in 2001 *Region C Water Plan*
 - None listed

Expand Existing Supplies Connecting Existing Sources

- Recommended in 2001 *Region C Water Plan*

<i>SBI Phase 1 Recommendation</i>	<i>Amount of Water in 2050 (AF/Y)</i>
DWU Lake Fork connection	120,000
TRWD Cedar Creek/Richland-Chambers pipeline expansion	110,000
DWU Lake Palestine connection	109,600
Oklahoma water connection (TRWD & NTMWD)	62,000
City of Irving pipeline to Lake Chapman	48,800
Fannin County Water Supply Project	24,155
DWU additional temporary overdraft	22,000
Freestone County proposed power plant - Richland-Chambers Reservoir	15,715

Expand Existing Supplies Connecting Existing Sources

<i>SBI Phase 1 Recommendation</i>	<i>Amount of Water in 2050 (AF/Y)</i>
TRA Ellis County water supply project	13,098
Wise County proposed power plants - Lake Bridgeport	11,200
UTRWD pipeline to Lake Chapman	10,900
DWU extend Elm Fork term permit	10,000
NTMWD additional Lake Texoma	10,000

Expand Existing Supplies

Connecting Existing Sources

- Other alternatives in 2001 *Region C Water Plan*
 - Connect City of Corsicana to Cedar Creek/Richland-Chambers Reservoir
 - City of Irving – Oklahoma water
 - NTMWD substantial additional Lake Texoma water
 - TXU Forest Grove supply in Cedar Creek
 - Uncommitted Lake Texoma supply
 - Carrizo-Wilcox in Freestone & Navarro Counties
 - Mineral Wells supply in Lake Mineral Wells
 - Duncanville, Cedar Hill & Grand Prairie in Joe Pool Lake

Expand Existing Supplies Connecting Existing Sources

- New possibilities
 - Mesa Water's Ogallala aquifer project
 - Pipeline to Toledo Bend Reservoir
 - GTUA pipeline for Howe, Melissa, Anna & Van Alstyne

Reallocation of Reservoir Storage

- Recommended in 2001 *Region C Water Plan*
 - No specific projects mentioned
- Other alternatives in 2001 *Region C Water Plan*
 - Lake Texoma – hydropower use to municipal use
- New possibilities
 - Lake Wright Patman

Voluntary Redistribution of Water Sources

- Recommended in 2001 *Region C Water Plan*
 - No specific projects mentioned
- Other alternatives in 2001 *Region C Water Plan*
 - None listed
- New possibilities
 - Athens purchase from Forest Grove

Voluntary Subordination of Existing Water Rights

- Recommended in 2001 *Region C Water Plan*
 - Not used as a supply
- Other alternatives in 2001 *Region C Water Plan*
 - None listed

Yield Enhancement

- Recommended in 2001 *Region C Water Plan*
 - DWU system operation
- Other alternatives in 2001 *Region C Water Plan*
 - None listed

Improvement of Water Quality

- Recommended in 2001 *Region C Water Plan*
 - No specific projects mentioned
- Other alternatives in 2001 *Region C Water Plan*
 - None listed

New Supply Development

- Recommended in 2001 *Region C Water Plan*
 - Lower Bois d'Arc Creek Lake (NTMWD)
 - Marvin Nichols I Reservoir
 - Muenster Lake

New Supply Development

- Other alternatives studied in 2001 *Region C Water Plan*
 - Lake Tehuacana (TRWD)
 - Upper Bois d'Arc Creek (Fannin County)
 - Ralph Hall Reservoir (Fannin County)
 - Marvin Nichols II Reservoir
 - George Parkhouse I Reservoir
 - George Parkhouse II Reservoir
 - Upper Red Oak
 - Lower Red Oak
 - Boyd
 - Italy
 - Tennessee Colony
 - Ringgold
 - Big Pine
 - Pecan Bayou Little Cypress
 - Upper Little Cypress
 - Black Cypress
 - Marshall
 - Waters Bluff
 - Carl Estes
 - Big Sandy
 - Carthage
 - South Bend
 - Bédias
 - Ponta
 - Eastex
 - Weches
 - Rockland

Brush Control

- Recommended in 2001 *Region C Water Plan*
 - No specific projects mentioned
- Other alternatives in 2001 *Region C Water Plan*
 - None listed

Precipitation Enhancement

- Recommended in 2001 *Region C Water Plan*
 - No specific projects mentioned
- Other alternatives in 2001 *Region C Water Plan*
 - None listed

Desalination

- Recommended in 2001 *Region C Water Plan*
 - No specific projects mentioned
- Other alternatives in 2001 *Region C Water Plan*
 - Lake Texoma desalination
 - Red River desalination

Water Rights Cancellation

- Recommended in 2001 *Region C Water Plan*
 - Not a recommended strategy
- Other alternatives in 2001 *Region C Water Plan*
 - None listed

Aquifer Storage and Recovery

- Recommended in 2001 *Region C Water Plan*
 - No specific projects mentioned
- Other alternatives in 2001 *Region C Water Plan*
 - TRWD aquifer storage and recovery project

Interbasin Transfer

- Recommended in 2001 *Region C Water Plan*
 - Lake Texoma
 - Oklahoma water
 - Marvin Nichols I
 - Lower Bois d'Arc Creek

Interbasin Transfer

- Other alternatives in 2001 *Region C Water Plan*
 - Upper Bois d'Arc Creek
 - Ralph Hall Reservoir
- New possibilities
 - Wright Patman
 - Toledo Bend

Other Measures

Renewal of Contracts

- Recommended in 2001 *Region C Water Plan*
 - Renewal of existing contracts upon expiration

Other Measures

Temporary Overdrafting

- Recommended in 2001 *Region C Water Plan*
 - Temporary overdrafting of groundwater and surface water supplies

Other Measures

Groundwater Management Districts

- Recommended in 2001 *Region C Water Plan*
 - No specific districts were recommended

Other Measures

Assumed Reallocation of Groundwater

- Recommended in 2001 *Region C Water Plan*
 - Gradual decrease in groundwater use assumes that those groundwater supplies will become available to other water suppliers

Other Measures

Wellhead Management

- Recommended in 2001 *Region C Water Plan*
 - Potential tool to protect groundwater quality

Neighborhood Study Work Plan (Water Conservation), Desalination & Reuse

Region C Water Planning Group

Conservation

- Conservation scope of work calls for analysis of water conservation on a neighborhood scale
- Conceptual approach

Neighborhood Study

Scope of Work

- Analyze the effectiveness of particular water conservation strategies with available water use data for a five-year period in up to six neighborhood areas.
- Choose the neighborhood areas so as to isolate the impact of particular water conservation strategies.

Neighborhood Study Approach

- Goals
 - Quantify impacts of low-flow plumbing fixtures and water audits
 - Quantify indoor and outdoor water use

Neighborhood Study Approach

- Factors to consider when choosing neighborhoods and water use data
 - Population density
 - Housing age
 - Lot size
 - Income
 - Climatic conditions

Selection of Neighborhoods

- Population density
 - Many suburban areas have had elevated per capita water use
 - Target
 - Average population density
 - Medium density (suburban) neighborhoods
 - 1,500 – 2,500 people per square mile

Selection of Neighborhoods

- Housing age
 - Correlated with presence of low-flow plumbing fixtures
 - Target
 - Percentage of pre-1992 housing units
 - Older housing (>90 percent)
 - Newer housing (<30 percent)

Selection of Neighborhoods

- Lot size
 - Correlated with outdoor water use
 - Target
 - Average lot size
 - Larger (>0.50 acre)
 - Smaller (<0.25 acre)

Selection of Neighborhoods

- Income
 - Correlated with water use
 - Target
 - Median annual household income
 - High (>\$100,000 per year)
 - Medium (<\$20,000-\$60,000 per year)

Selection of Neighborhoods

- Climatic conditions
 - Annual rainfall, summer rainfall, and annual cooling degree days
 - 1998-2002
 - Range of rainfall conditions, annual and summer
 - Near or above average cooling degree days

Selection of Neighborhoods

- Select up to six neighborhoods with a mix of characteristics
 - Use Census data for screening (Census block groups)
 - Discuss potential neighborhoods with water suppliers to assess unusual water use characteristics, water conservation methods in place, and data availability
- Obtain water use data from water suppliers

Data Analysis

- Quantify indoor and outdoor water use
- Identify correlations between variables (population density, housing age, lot size, income, and climatic conditions) and:
 - Indoor and outdoor water use
 - Water conservation methods
 - Low-flow plumbing fixtures
 - Water audits

Results

- Document results for use in selecting and prioritizing conservation water management strategies

Neighborhood Study Work Plan

- Approval to move forward?

Reuse and Desalination Supplies

- Almost finished identifying available reuse supplies (see handout)
 - 11 Districts, Authorities, and WSCs
 - 28 Cities
 - 3 Corporations
- Compiled survey information on planned reuse supplies
- Almost finished identifying available desalination supplies

RCWPG – Public Participation Topics

Region C Water Planning Group

Public Participation Update

- New RCWPG leadership press release
- Spanish Language press kits
- Calendar listing for RCWPG meeting
- Q1 Newsletter

Q2 Newsletter Topics

- Potential water management strategies for Region C
- “Neighborhood Study Work Plan”
- Update on overall status of water planning project
- Water conservation tips
- Next meeting information
- Updates regarding water issues in the news

RCWPG – Newspaper Articles

Region C Water Planning Group

Summary of Speaker Comments

1-27-03 RCWPG Meeting

Overall Status and Next Steps

Region C Water Planning Group