



Air Quality Management in Prince George

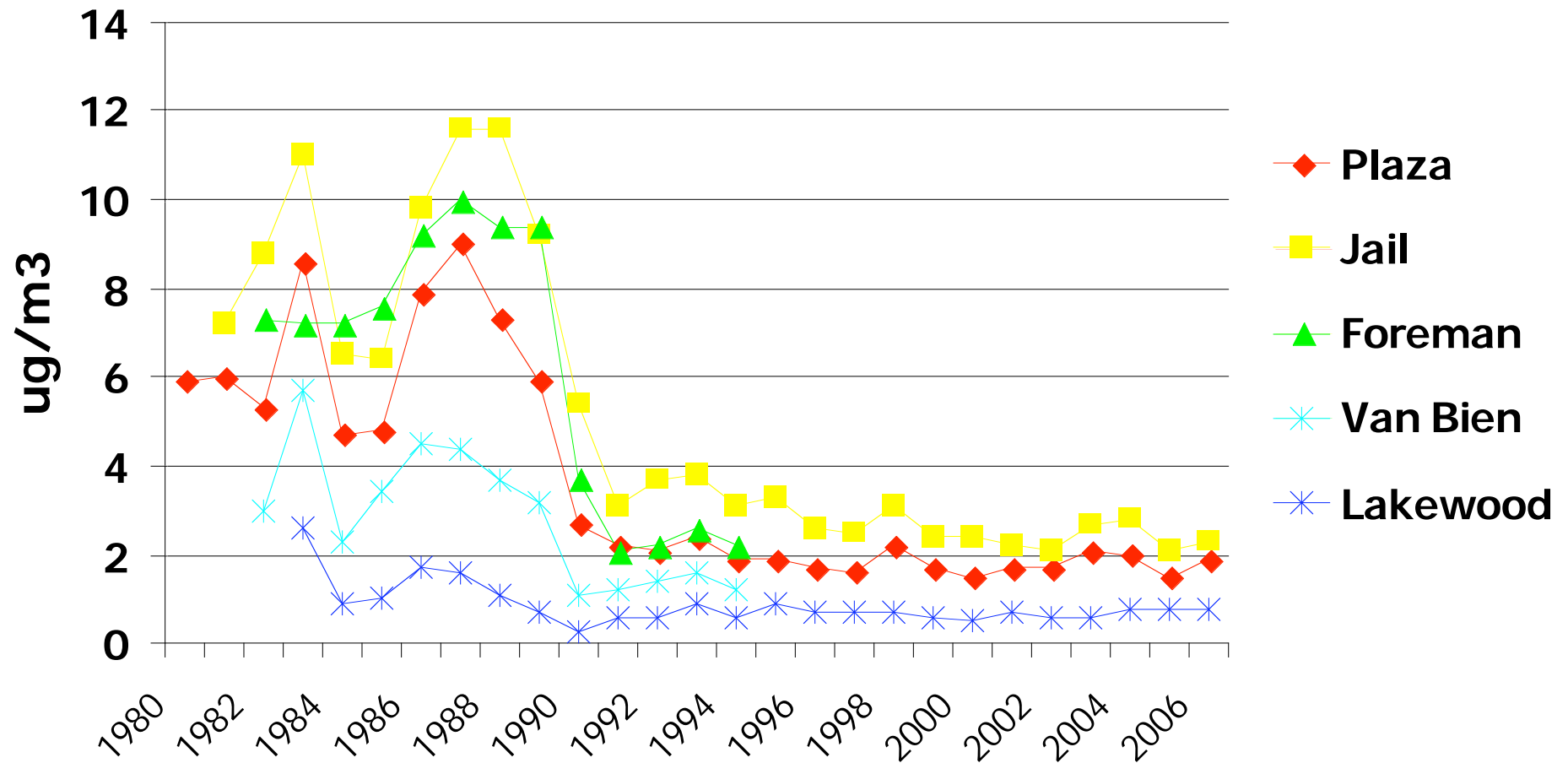


March 15, 2007

The '80s - Total Reduced Sulfur (TRS)

- TRS was the main Air Quality concern in the 1980s
- \$23 million spent on odorous gas incineration and boiler upgrades – no results
- ISC model run by PGAATC in 1988/89
- Unidentified low level source was found
- Condensate strippers installed at pulpmills
- Northwood, Intercon, PG Pulp total cost \$12.4 million
- Results . . .

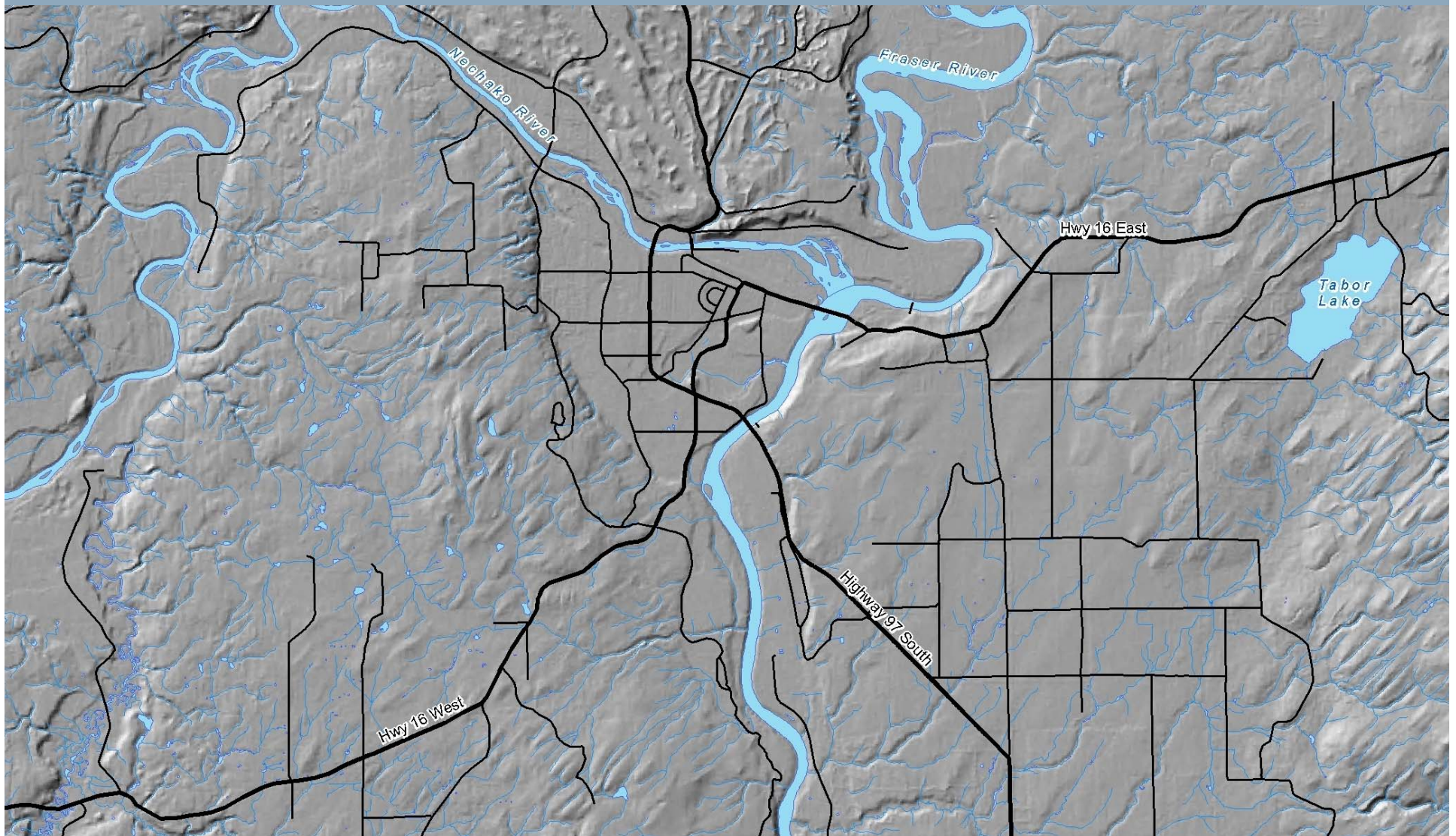
Annual Average Ambient TRS



The '90s Air Quality Focus on Particulate

- Beehive burners
- Precipitators, low odor boiler, etc.
- Chip handling systems
- Road dust and winter sand

1992 - Location of Burners Operating in Prince George



1990s - Prince George Burners Shut Down

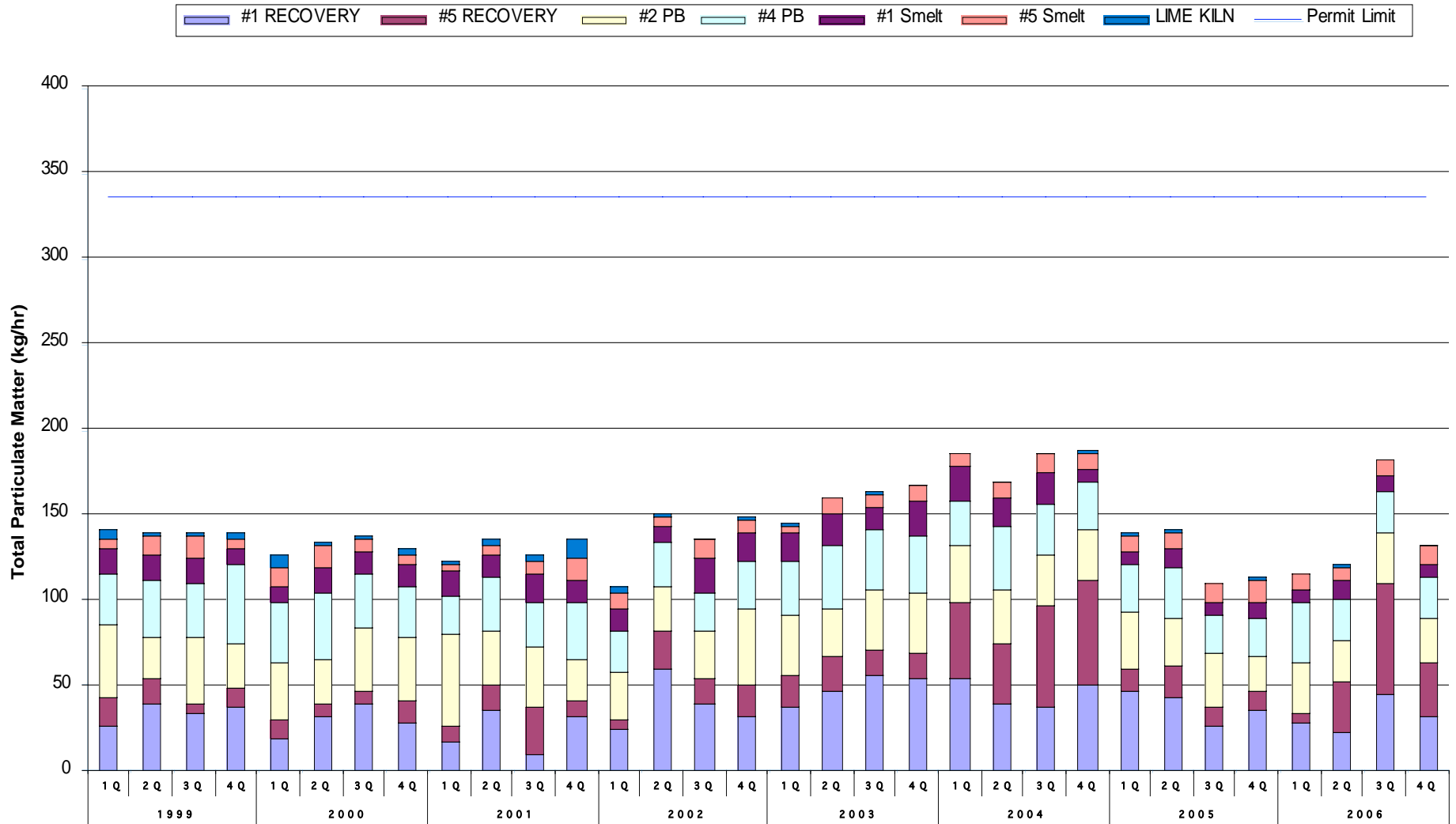
- May 1992 - North Central Plywoods
- November 1993 - Dollar Saver Lumber and Lakeland Mills
- March 1995 - The Pas
- June 1995 - Westhill Lumber
- November 1996 - PG Wood and Carrier Planer
- December 1996 - Stella Jones
- March 1999 - Netherlands Overseas Mill
- October 1999 - Carrier Sawmill Burner
- December 2000 - Rustad

1990s - Other Emissions Reductions - Canfor PG

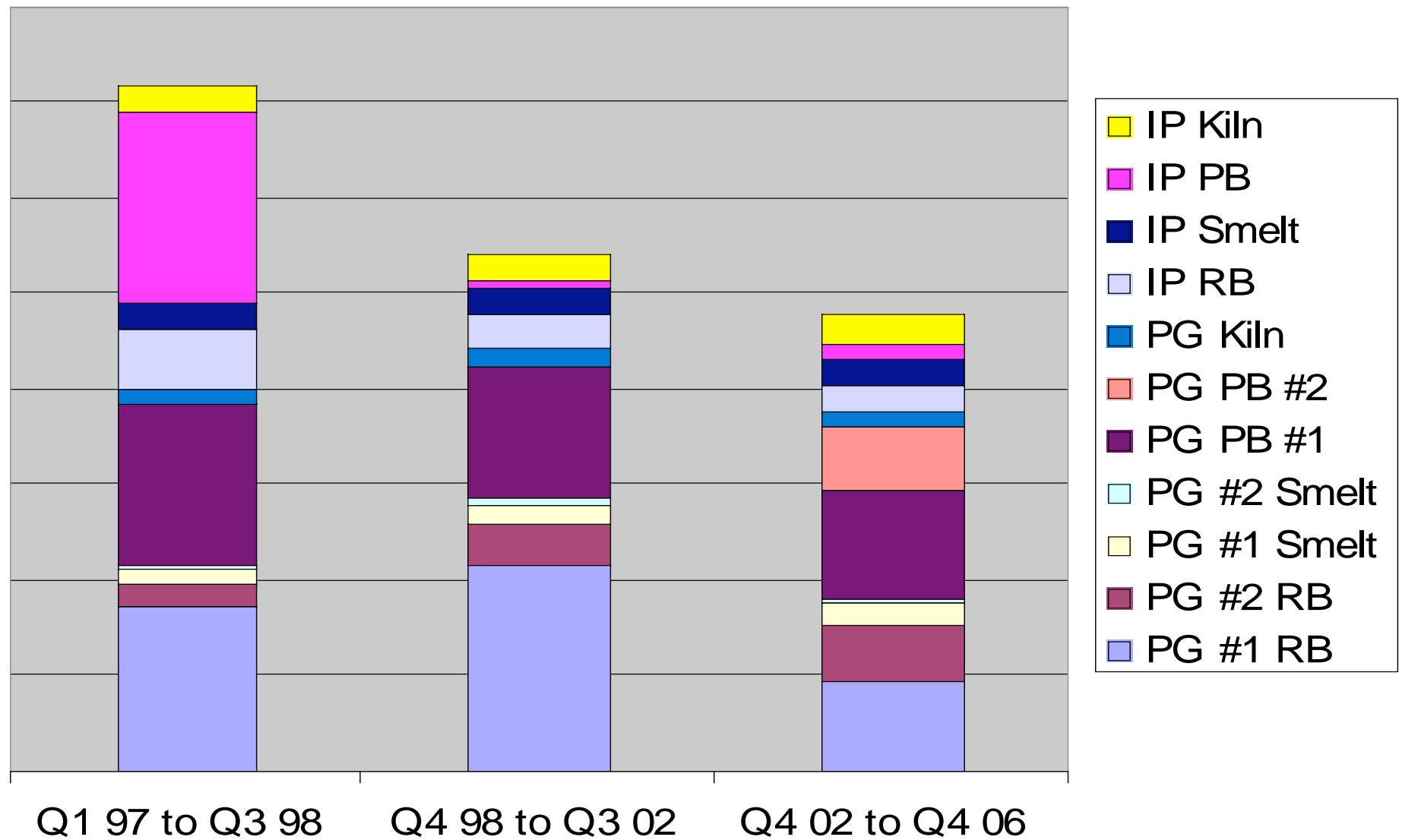
- 1993 Low odor recovery boiler at Intercon with new precipitator
\$50 million *
- 1994 Third precipitator chamber on Northwood #1 recovery boiler
\$10.3 million
- 1996 North Central Plywoods precipitator
\$1.8 million
- 1998 New precipitator on Intercon power boiler
\$7 million
- 2000 Cogeneration at Intercon
\$7.5 million *

** These projects had benefits other than reduced emissions*

Particulate from Northwood



Total PM from PG Pulp & Paper and Intercon Pulp



1990s - Chip Handling Systems

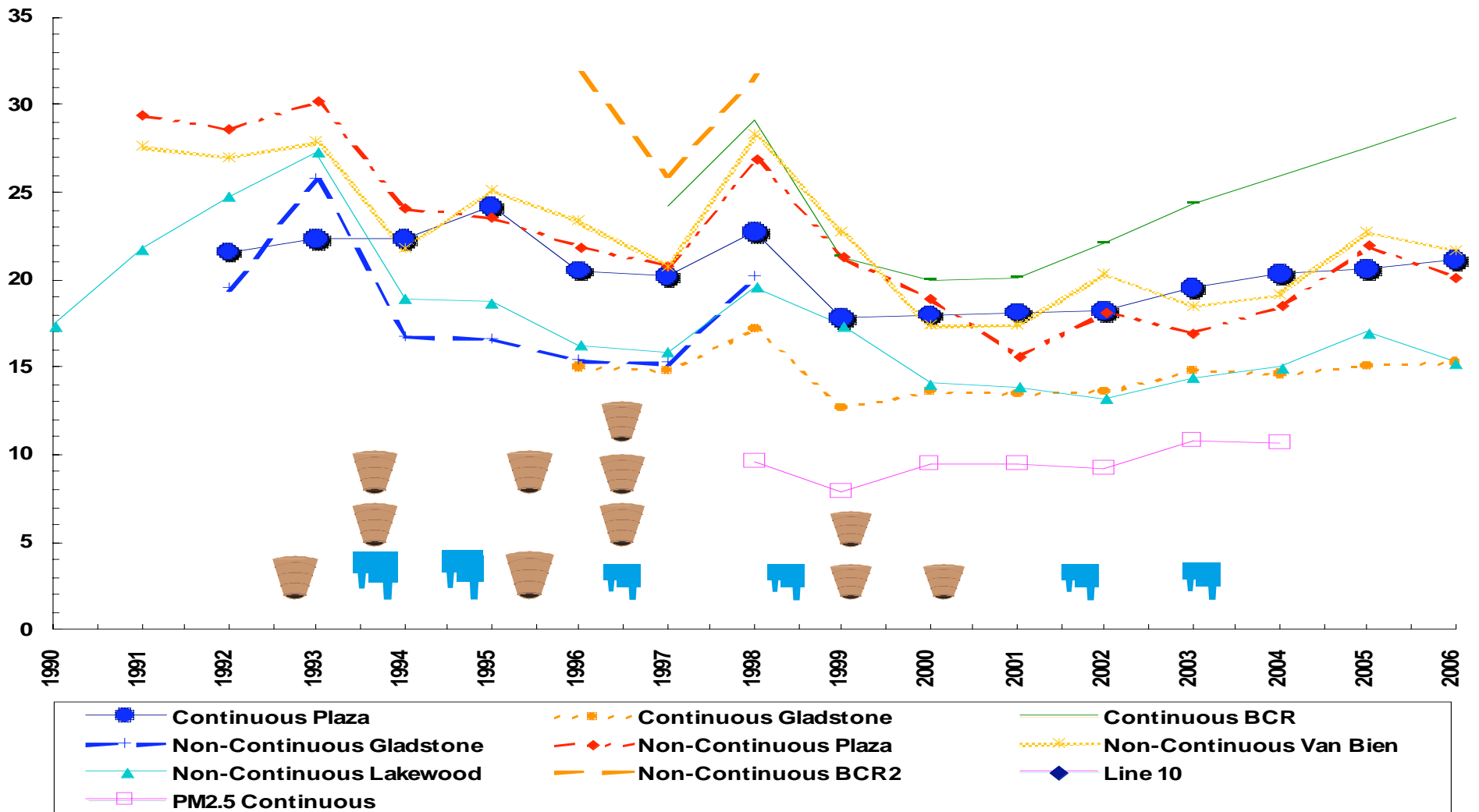
- 1999 PG Sawmill chip and hog conversion from blowpipe to conveyor
- 1999 New truck dumper and chip conveying system at Intercon
- 2000 New rail car dumper and chip conveying system at PG Pulp

Road Dust and Winter Sand

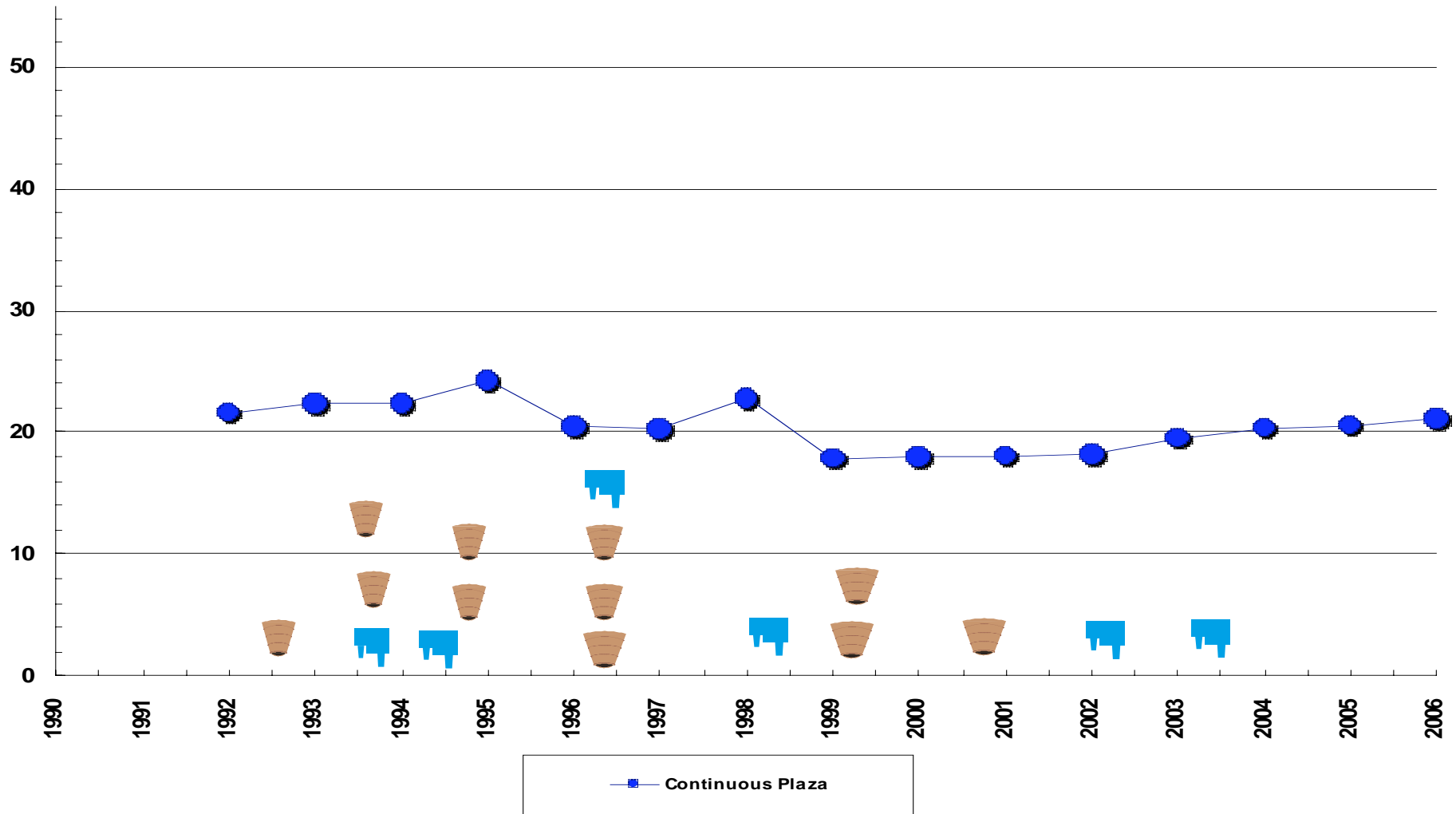
- Work done by City . . .
 - Large aggregate for traction
 - Improved street sweeping
 - Clean Air Bylaw
- Need to identify the next best options for taming this unwieldy source



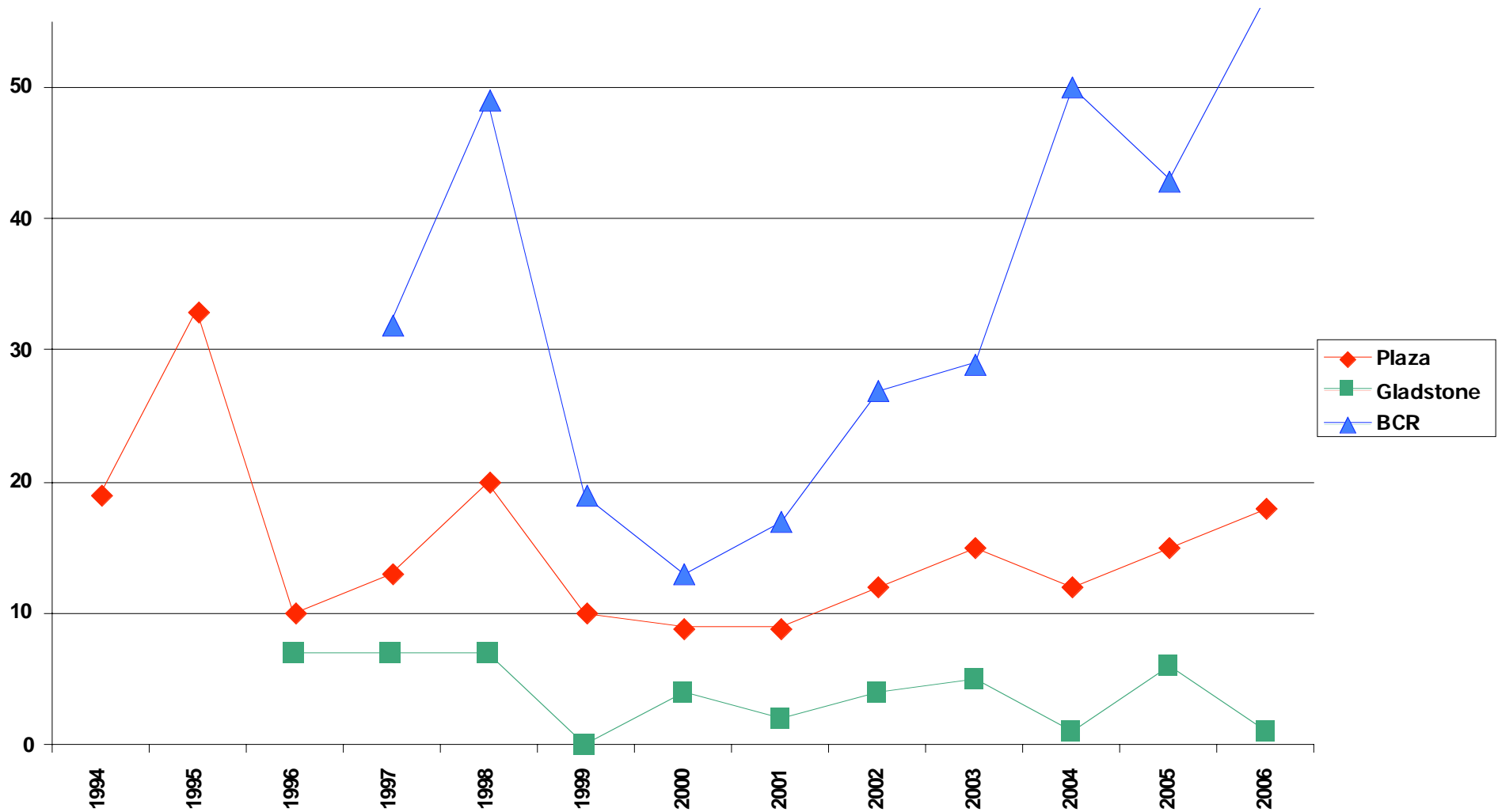
Trends in Annual Average PM in Prince George



Trends in Annual Average PM10 at Plaza 400



Exceedences = No. days $>50\mu\text{g}/\text{m}^3$



Airshed Modeling

- Circa 1996 - Northwood Pulpmill ISC Model
- May 1998 – Ministry of Environment modeled Northwood sources
- Similar conclusions - most effective/efficient results from low level, low velocity emissions
- Model limitations
- Calpuff Model recommended

Calpuff Modeling Study 98/99

- Two Objectives:
 - Relative impact of the Northwood Pulpmill sources
 - Relative impact of Northwood Pulpmill versus other airshed sources
- Deliverables:
 - Ability to predict effectiveness of projects
- Findings:
 - Improve knowledge of area sources and remodel

The 00s - Where Are We?

- Further improvements at 3 pulp mills . . .
 - Northwood boilers – optimizing boiler operations and ash handling
 - Intercon kiln scrubber upgraded
 - Prince George Cogen – PM, TRS, GHG
- What we thought were the big hits are complete
 - Beehive burners are all gone
 - Several major projects (precipitators, boiler rebuilds)
 - Wood handling systems improved
- PM10 and 2.5 levels have not come down as we had hoped (annual monitoring cost ~\$120,000)
- Positives - Modeling, UNBC Studies, AQ Committees, Research Plan

The Research Plan.

- Update and refine emissions inventory
- Run community airshed models to evaluate significance of sources
- Develop priority list of management actions based on predicted benefit
- Go to work on the most effective/efficient items –
Note: *Canfor is fully committed to this approach and to the work that will be identified*
- Measure our success

What We've Learned . . .

- Science ahead of planning
- Low level sources
- Airshed approach
- Actions based on predicted benefit to air quality
- Accurate information to citizens