New River Pollution from Mexico

Progress Report

California Regional Water Quality Control Board- Colorado River Basin

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California
Arizona
Palm Desert
Salton Sea
Colorado River
New River
Pacific Ocean
San Diego
U.S.
Mexico
Calexico
Mexicali
Tijuana
Gulf of California

Salton Sea Watershed

Priority watershed

- Over 8,000 sq. miles
- Watershed impaired
- NPS greatest TTWQ
- Transboundary issues
- Important habitat
- Migratory birds, pupfish
- Closed basin

New River 101

- It's more like a "drain" than a "river"
- Originates in Mexicali Valley, Mexico
- Crosses into USA at Calexico
  - Flow at Border ~ 150,000 ACFY
  - Travels ~ 60 river miles to Outlet of Salton Sea
  - Total flow at Salton Sea ~ 450,000 ACFY
- Sources of Flows
  - Urban, agricultural, & Indust. Discharges
- Main Water Quality Issues
  - Pathogens, Nutrients, Pesticides, Trash

New River BUs

Designated Beneficial Uses of Water
▪ Water Contact Recreation (REC I)
▪ Water Non-Contact Recreation (REC II)
▪ Freshwater Replenishment (FRSH)
▪ Industrial Service Supply (IND)
▪ Warm Freshwater Habitat (WARM)
▪ Wildlife Habitat (WILD)
▪ Preservation of Rare, Threatened, or Endangered Species (RARE)

Socio-economic Setting

- Mexicali
  - Approximately 1,000,000 people
    - High density metropolitan area
    - Questionable land use practices (residential mixed with industrial, public schools adjacent to dumps and industry, etc.)
  - Industrial and agricultural-based economy
    - Approximately 190 maquiladoras
    - Other major industries (Bimbo, Maseca, Coca Cola, Kenworth, paper mill, glass factories, flour mills, etc.)
    - Approximately 500,000 ag acres of which 175,000 drain into New River
  - Avg. family income less than $8,000 a year

Pollution from Mexicali

- Municipal sewage
- Industrial wastes
- Solid wastes
- Ag, stormwater, urban runoffs

The 50s through 70s

Pollution

- Close aligned to pollution growth
- Main problem municipal raw sewage
  - No sewage treatment facilities
  - Septic tanks wastes also discharged into River
- 1961 Mexico promises treatment w/in 3 yrs

First Treatment Facilities

- Oxidation lagoons completed in 1973
  - Eliminated ~60% of raw sewage from river
- Mexico promises additional facilities
  - To be “completed by 1975”
- Dumping of septic tank wastes continues
- NPS problems magnify

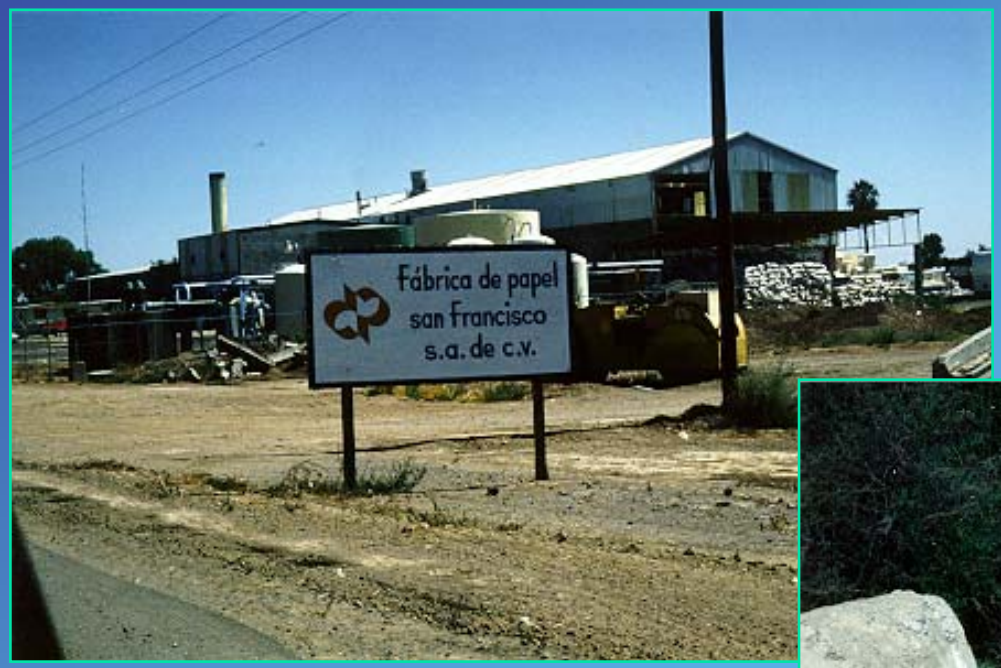
Late 80s early 90s

Raw sewage spills, bypasses

Treatment Lagoons Problems

- Undisinfected
- High in nutrients
- High TSS

Industrial wastes



Livestock Waste

Trash Dumping

New River at Calexico (pre 2007)

Total (Avg) = 150-200 cfs	
Municipal WWTFs Flow	20 %
Direct Industrial	7.5 %
Agricultural discharges	65 %
Other	3.5 %
About ~ 20 MGD of raw sewage	

Pollution Problem (pre-2007)

Constituents of Concern	
Fecal, E. Coli	> 1,000,000
Dissolved Oxygen	< 1.0 mg/L
Nutrients (PO4)	40% of Load to Salton Sea
VOCs	Some detected
Trash	> 150 cu yds/year
Pesticides	Detected

Avg Flow ~120 MGD

Cleanup Strategy

(Pollution from Mexico)

State Control/cleanup Strategy

- Binational Cooperation at all levels of government
  - Technical and financial assistance
  - Binational monitoring and surveillance
- Feds responsible for allowing pollution
  - Ongoing representations about problem
  - TMDLs for border pollutants
    - Adopted TMDLs for Pathogens and Silt
    - TMDL for Dissolved Oxygen (5/2010)
  - Political pressure

Binational Technical Committee

BTC Role

- Conducts “observation tours” in Mexicali
  - Identify and discuss problems
- Identifies solutions to problems
  - Oversee development and implementation of Binational sanitation projects
- Shares/exchanges information
- Conducts binational water quality monitoring

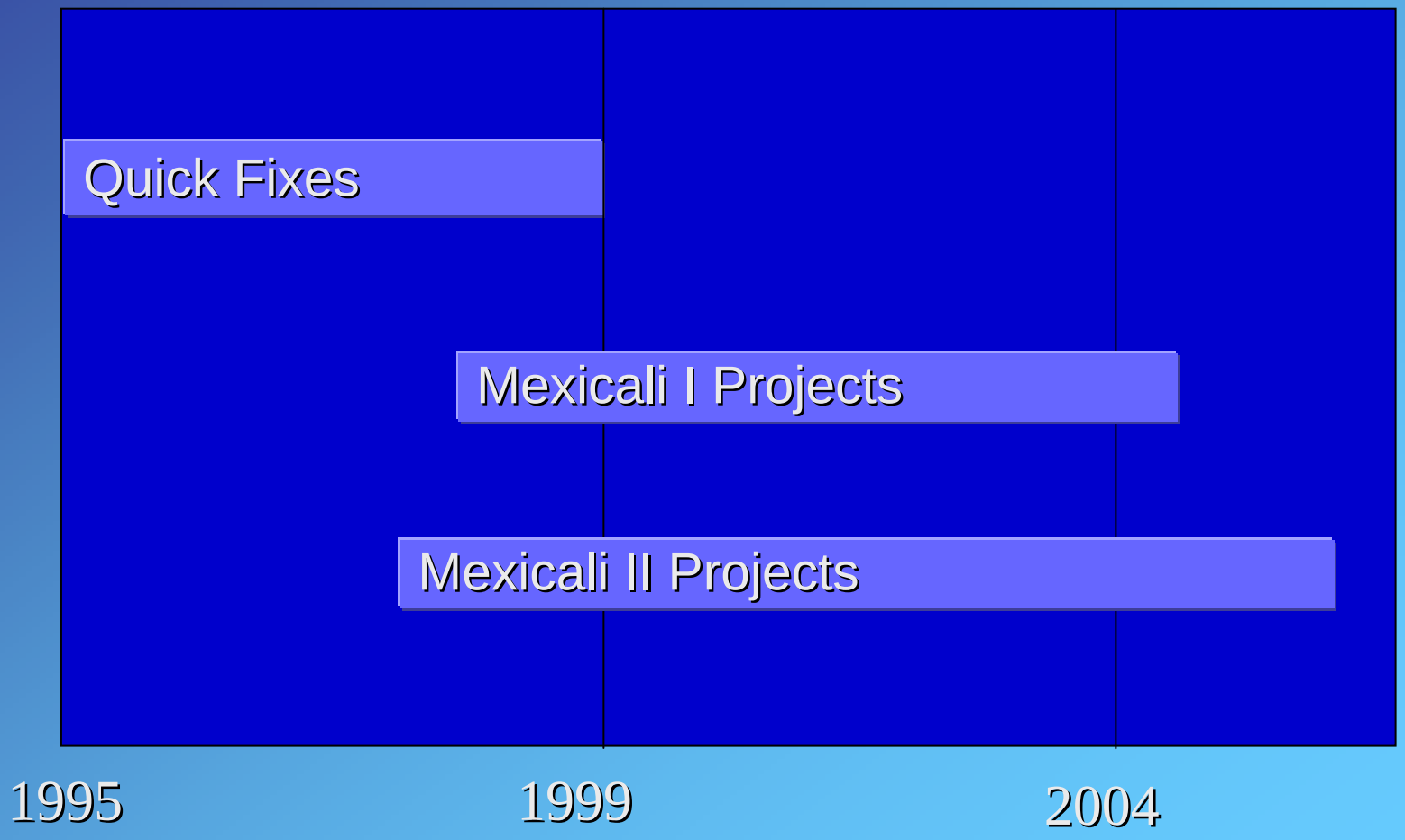
The Plan (Treaty Minute 294)

- Quick Fixes
  - 11 Emergency repairs — $7.5 M
- Mexicali I Projects
  - Sewer main rehabilitation (~20 miles)
  - Telemetry equipment
  - Expected completion by 2004

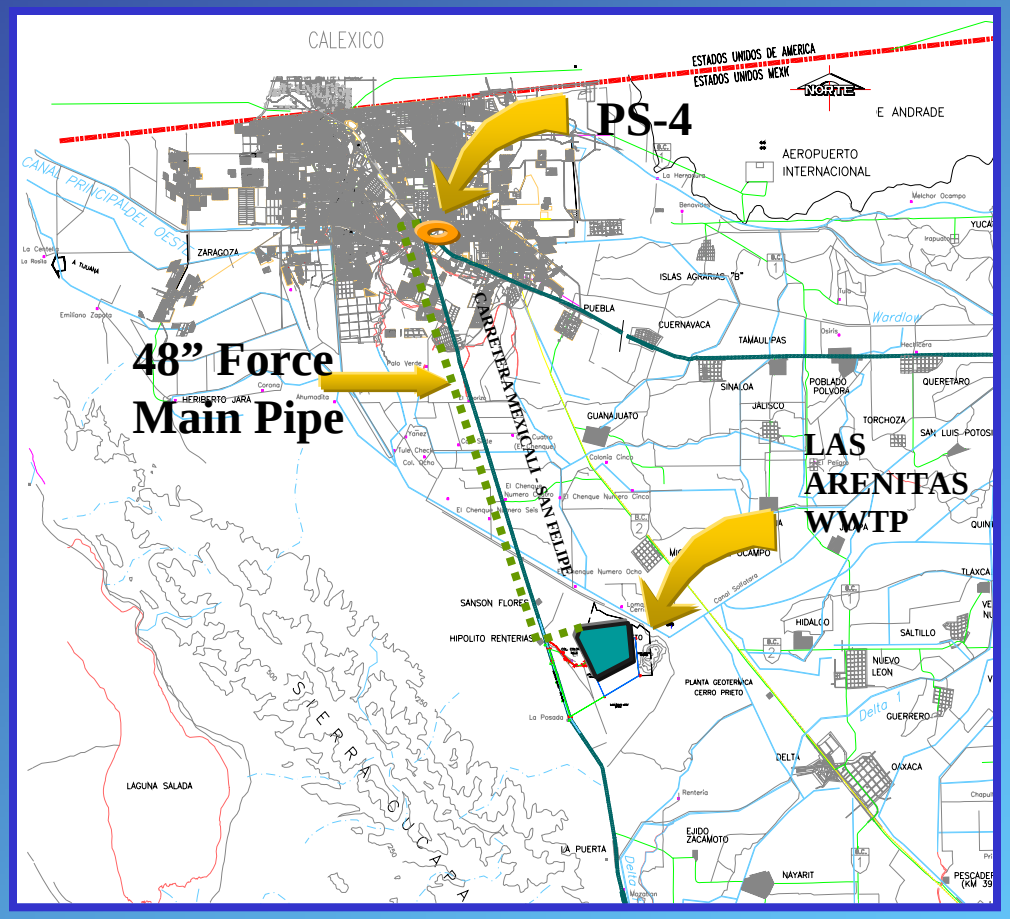
  $51 M
- Mexicali II Projects
  - New 20-mgd pumping plant
  - New 20-mgd force main
  - New 20-mgd treatment plant

  $26 M

Projects in Mexicali



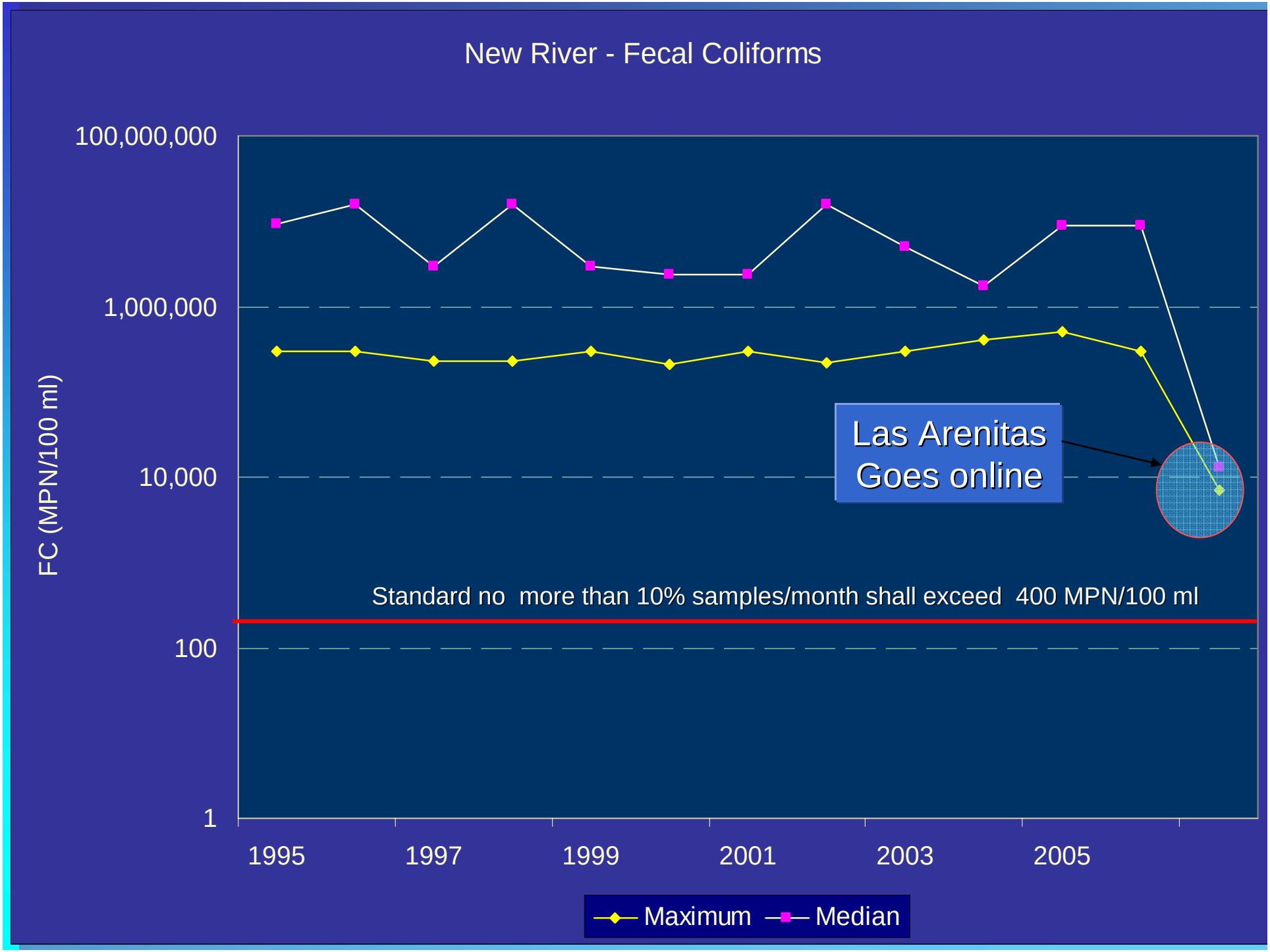
Mexicali II Project

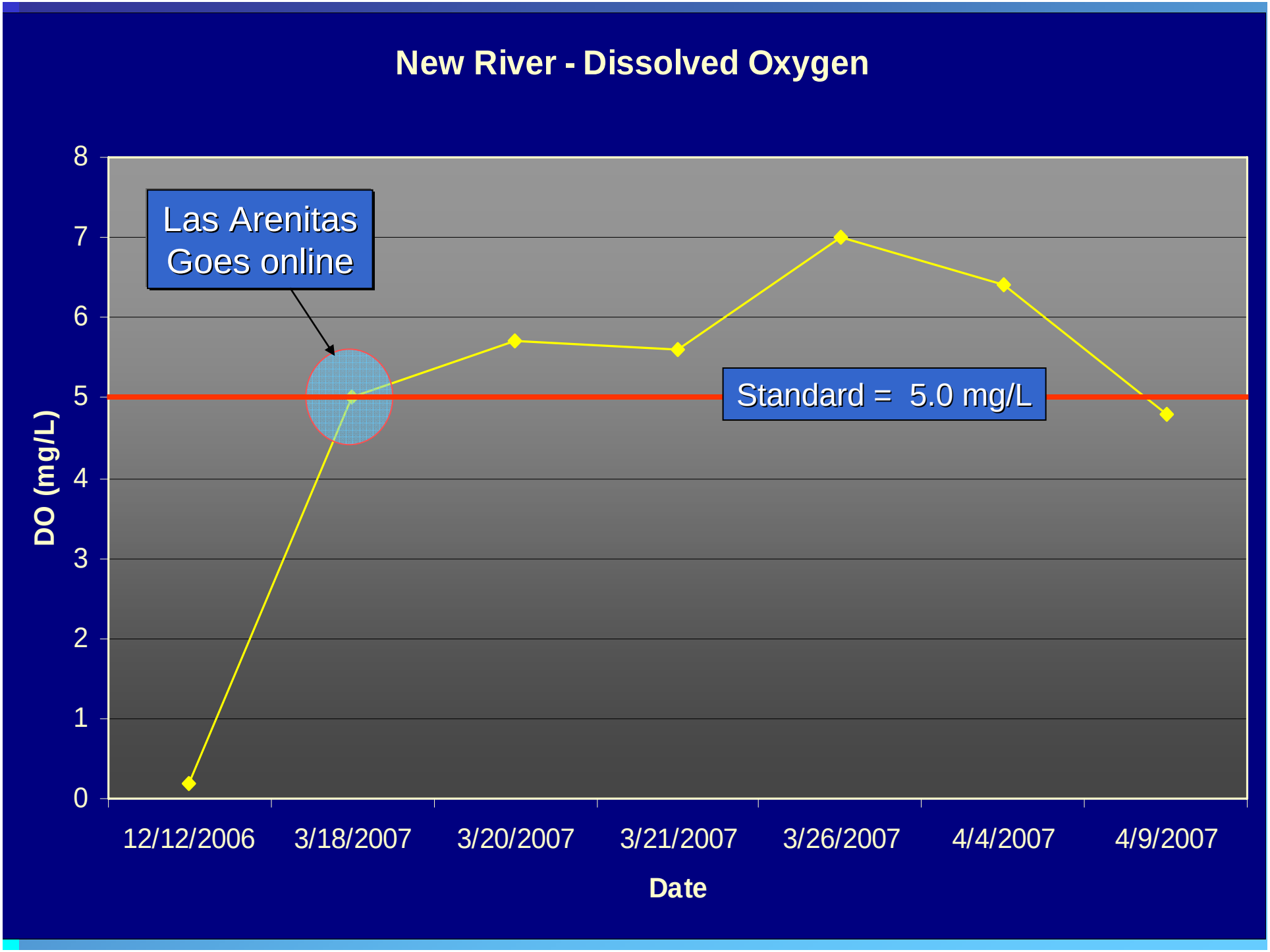


Cost Estimate	Millions of USD
Installation of force main pipe - Phase 1 (9 Km)	1.1
Purchase and install force main pipe – Phase 2 (17 km)	10.0
Upgrade Pump Station 4	3.0
Las Arenitas WWTP	11.8
	$ 25.9

New 20-mgd WWTF

USGS Calexico Station


New River - Fecal Coliforms
100,000,000
1,000,000
10,000
100
1
FC (MPN/100 ml)
1995
1997
1999
2001
2003
2005
Las Arenitas
Goes online
Standard no more than 10% samples/month shall exceed 400 MPN/100 ml
Maximum
Median

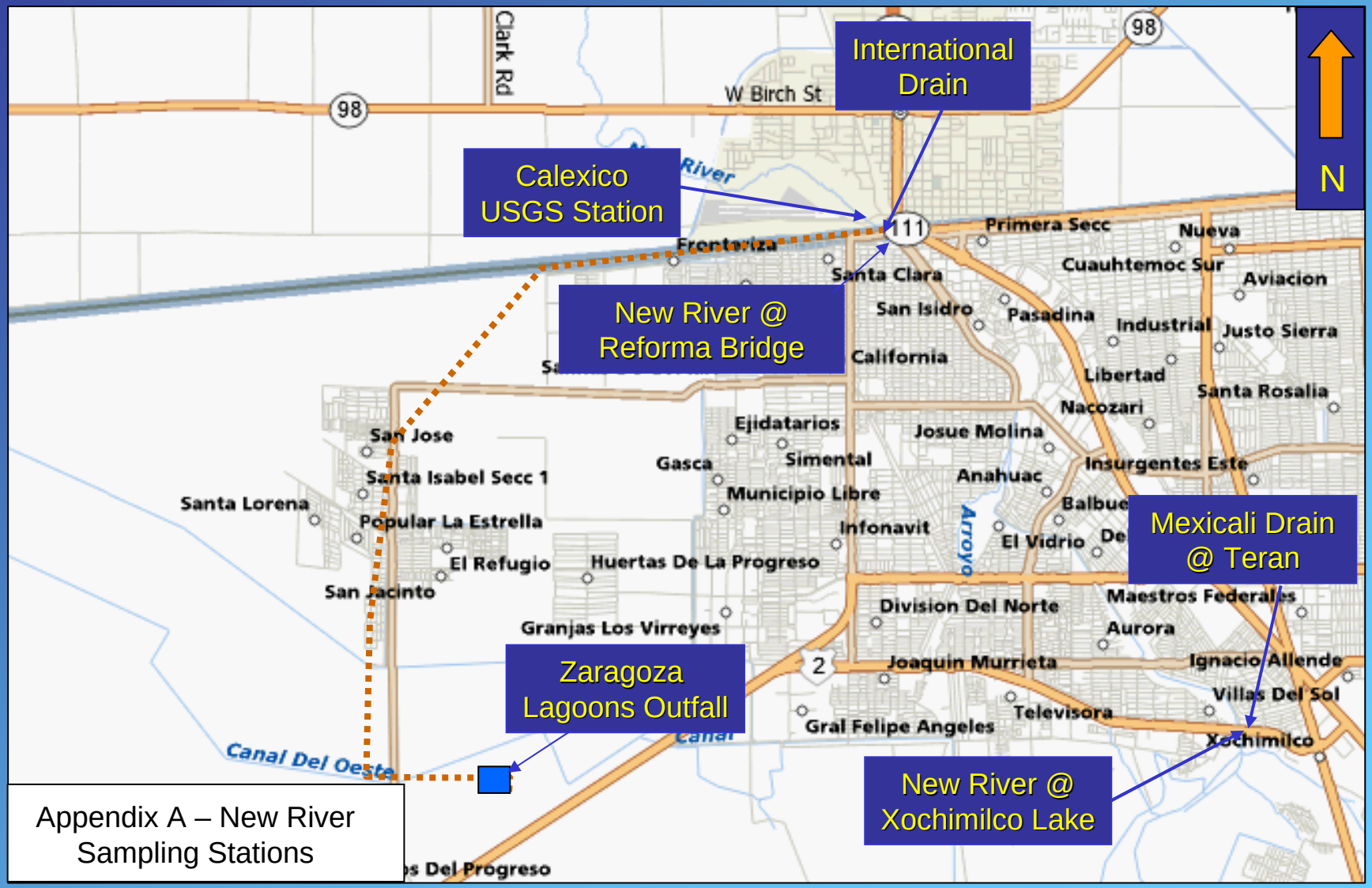

New River - Dissolved Oxygen
Las Arenitas Goes online
Standard = 5.0 mg/L
DO (mg/L)
8
7
6
5
4
3
2
1
0
12/12/2006
3/18/2007
3/20/2007
3/21/2007
3/26/2007
4/4/2007
4/9/2007
Date

Analysis at the Border (post-2007)

Issue	Pre Binational Projects	Post Binational Projects
Fecal, E. Coli	> 1,000,000	~ 100 – 60,000
Dissolved Oxygen	< 1.0 mg/L	~ 5.0 mg/L
Nutrients (PO4)	40% of Load to Salton Sea	20% of Load to Salton Sea
VOCs	Some detected	Non-detect
Trash	> 150 cu yds/year	> 150 cu yds/year
Pesticides	Detected	Still a problem

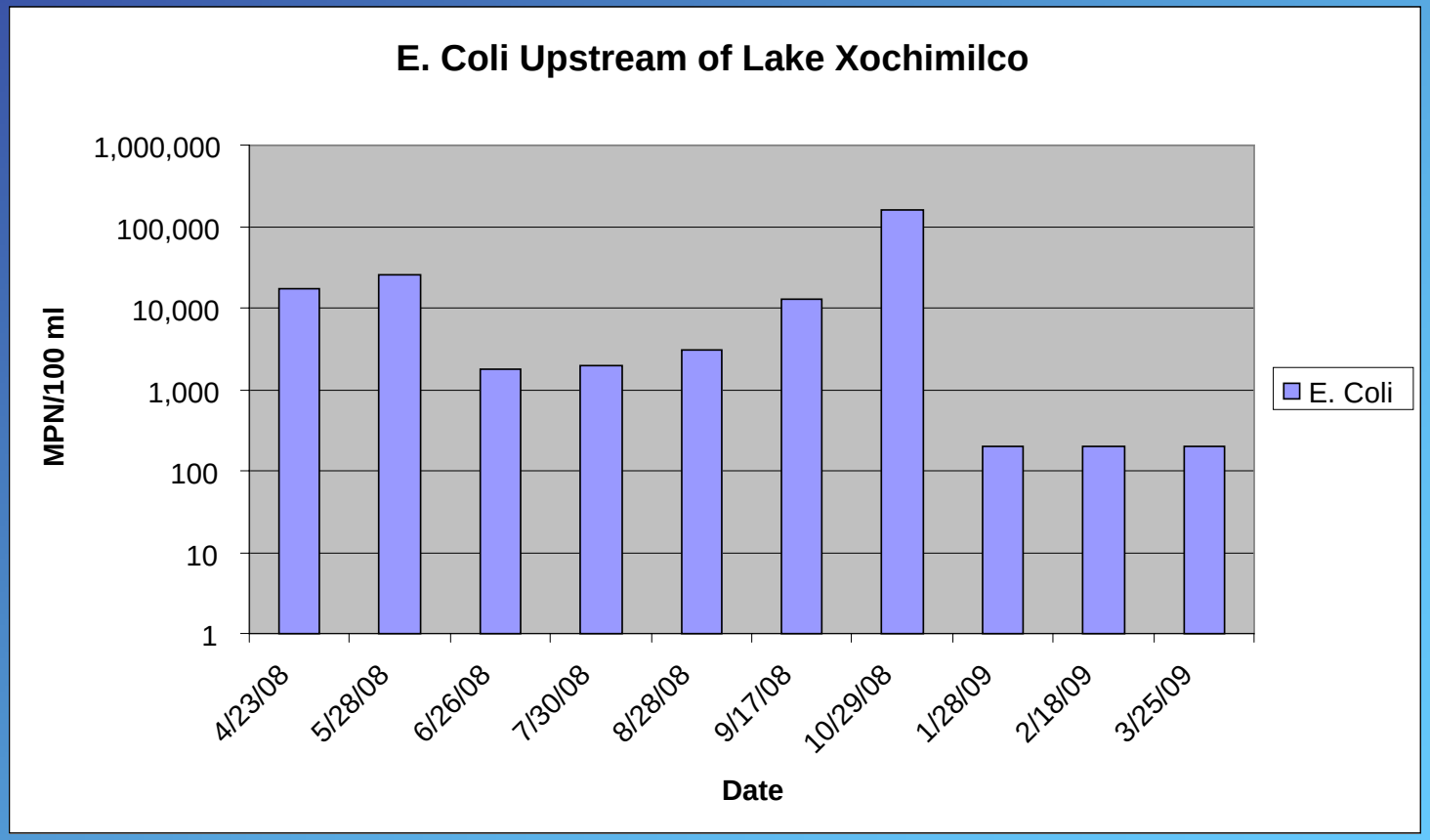
Avg Flow ~ 80-100 MGD

Binational Monitoring Program

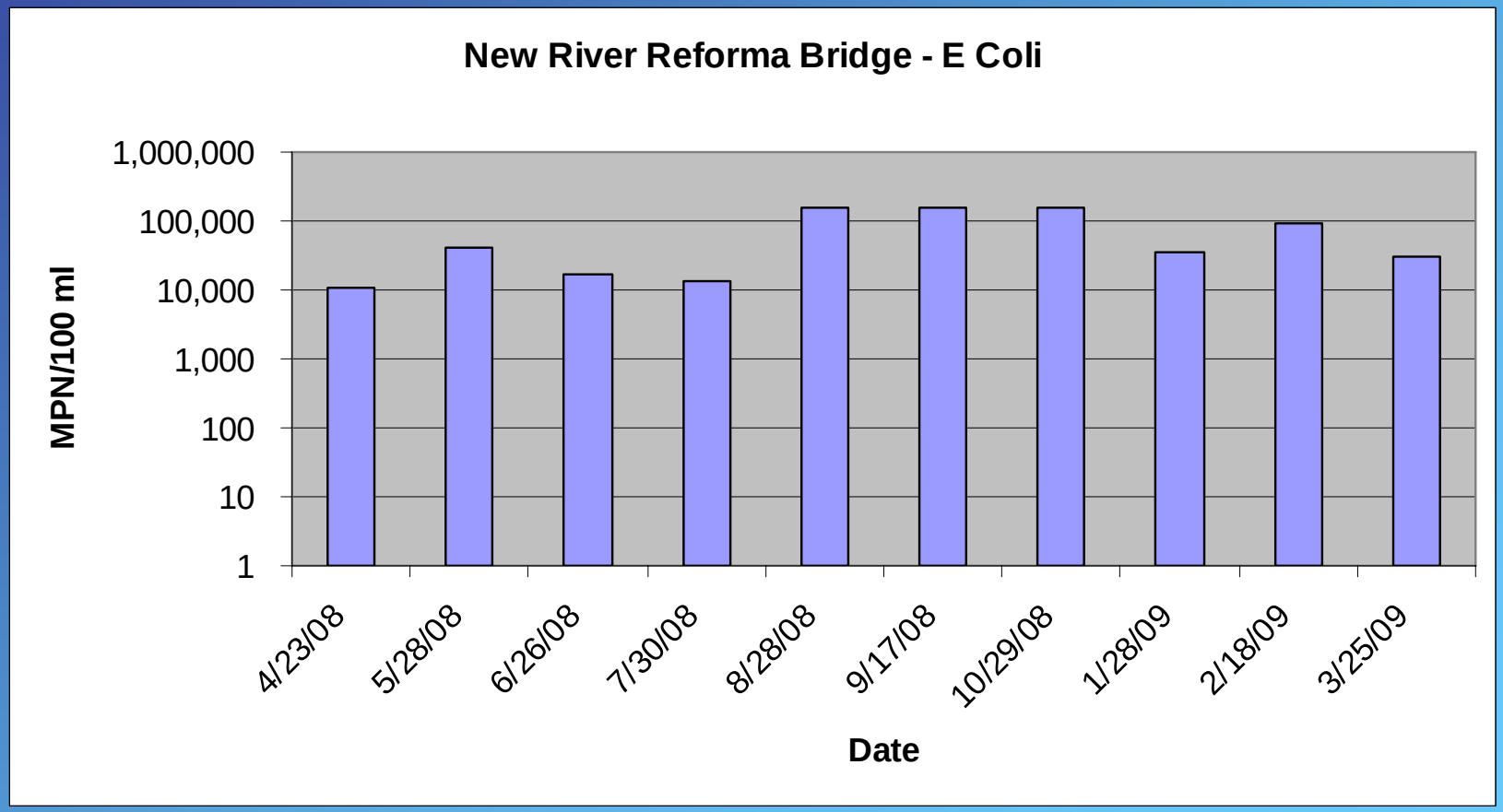


Appendix A – New River Sampling Stations

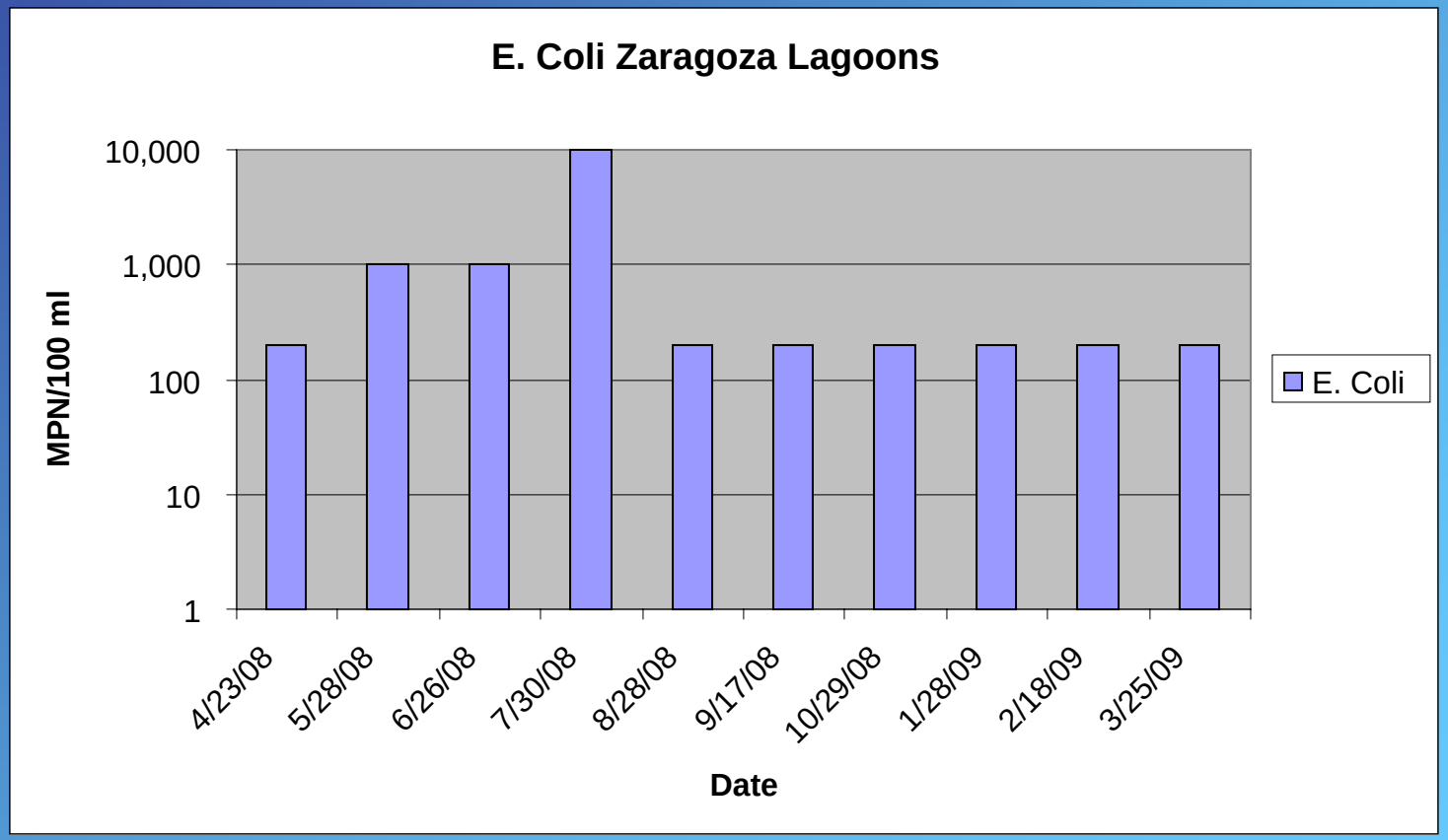
New River Upstream of LX



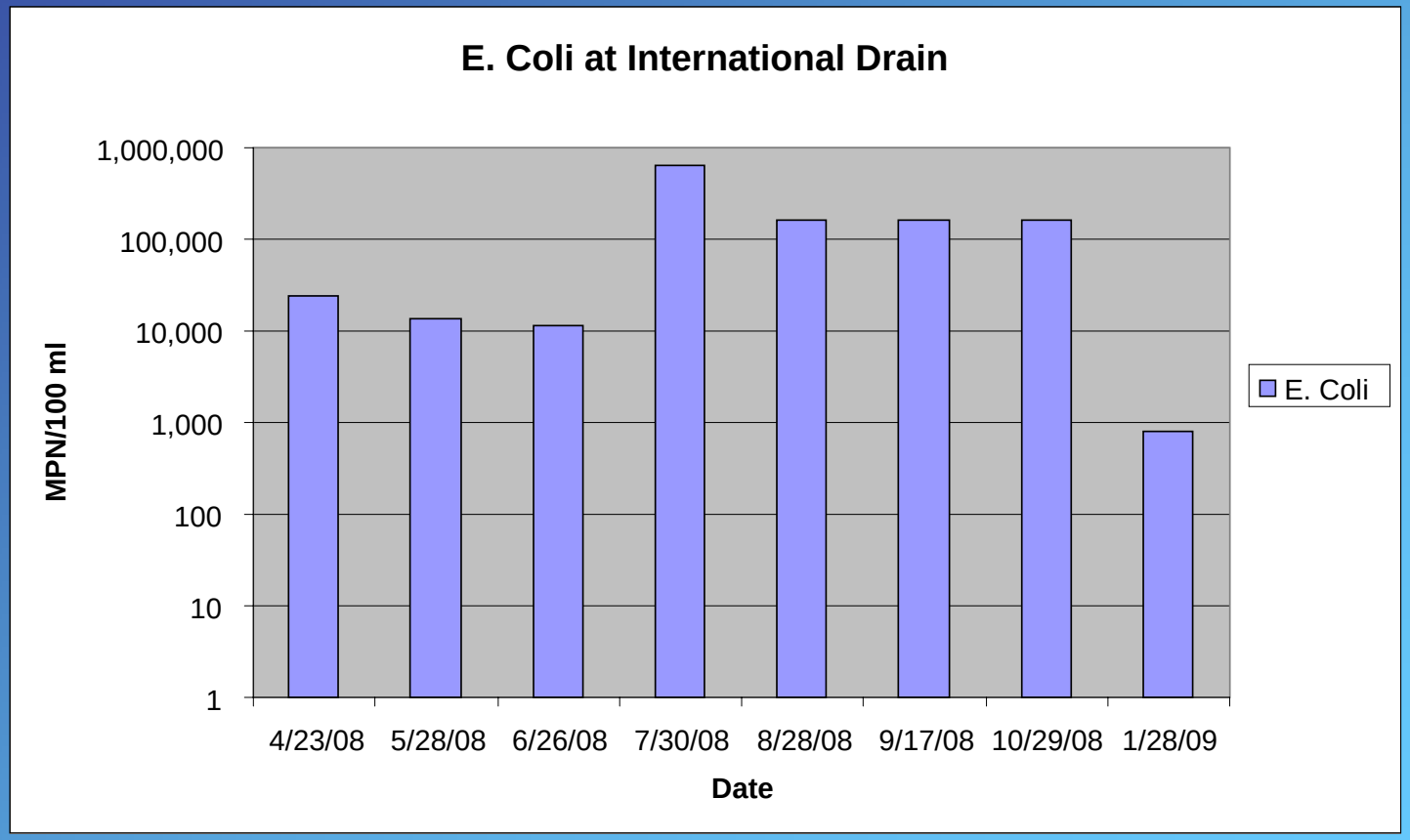
New River at Reforma Bridge



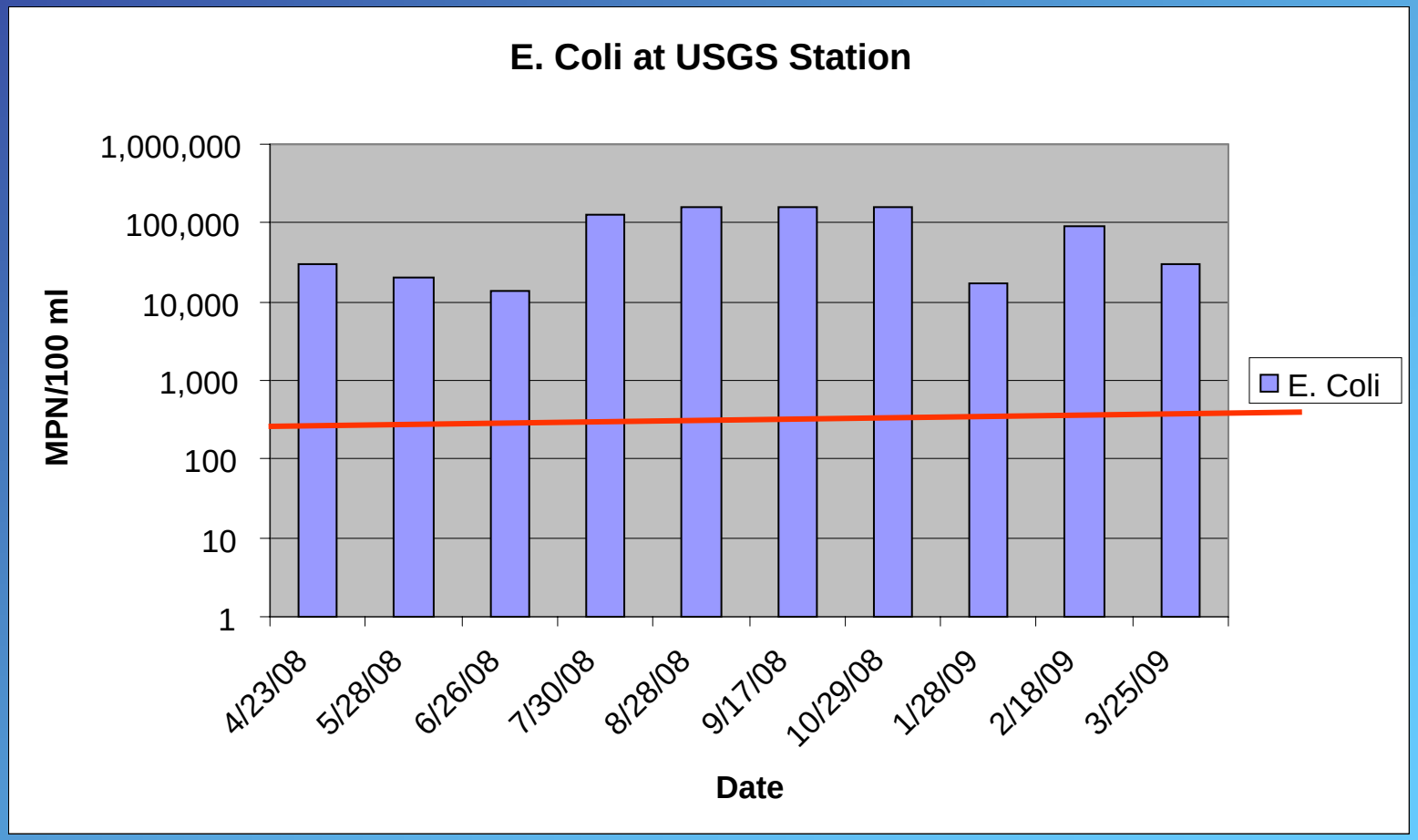
Zaragoza Lagoons (Old WWTF)



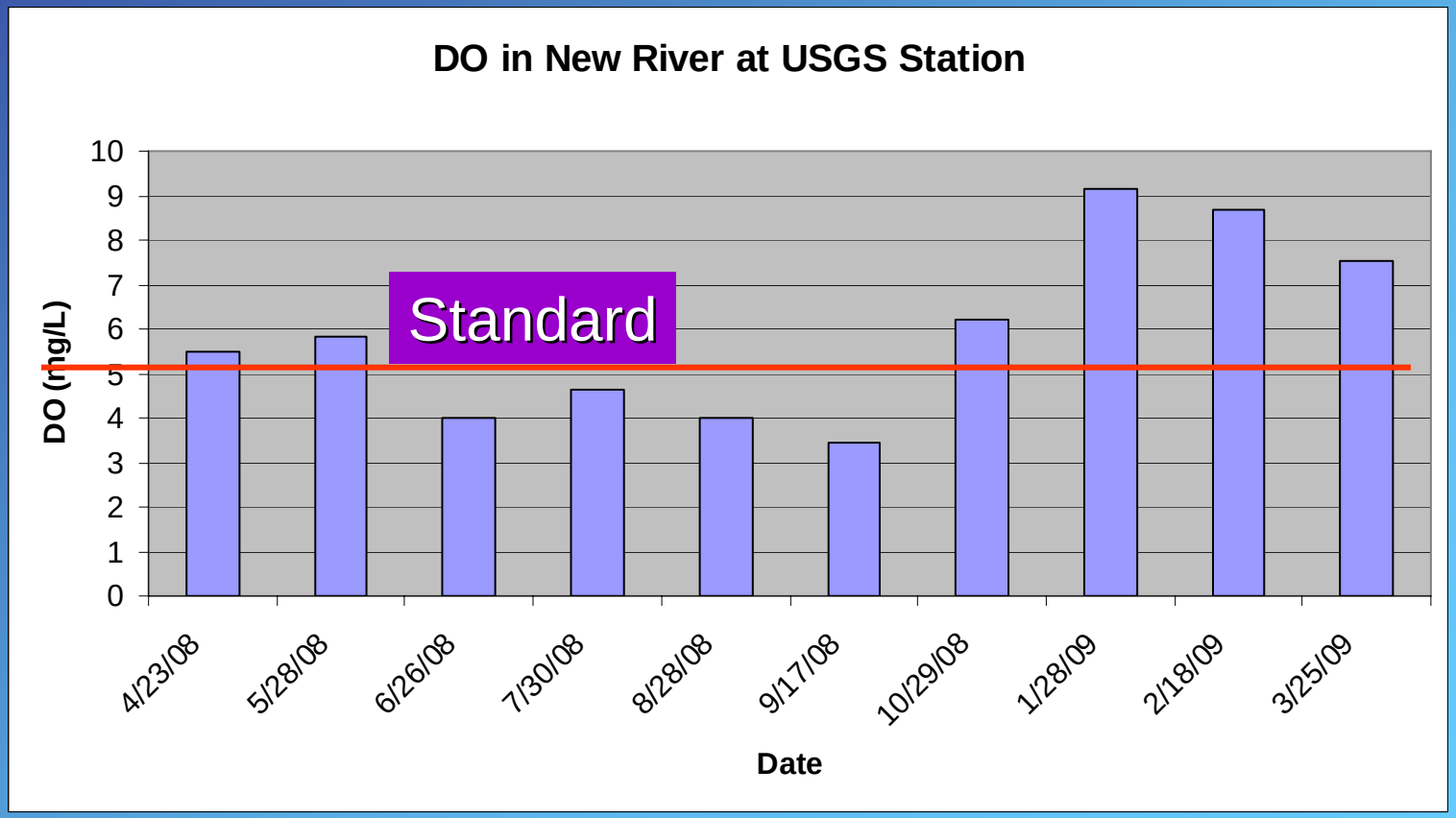
International Drain



New River in Calexico



DO in New River in Calexico



What Do Recent Data tell Us?

Illegal Discharges

Mexicali I Treatment Lagoons

- Undisinfected
- High in nutrients
- High TSS

Observations/conclusions

- Certain slugs persist
  - Need to track/identify slug sources
- Bacteria remains a serious problem
  - Trash
  - Industrial discharges
  - Undisinfected discharges
  - NPS sources (e.g., pesticides)

Observations (cont'd)

- Trash remains a significant problem
  - Adds bacteria and other pollutants
  - Dumping of toxicants a concern
- Industrial discharges must be addressed
  - Slaughterhouse discharges
  - Dairies/CAFOs
- NPS must be addressed

Water Quality Improvements

- Significant reduction of pollution:
  - Nutrients
  - TSS
  - Pathogens
  - VOCs
  - Objectionable odors
- Significant increase in DO, clarity

Remaining Water Quality Concerns

- CWA 303(d) Impairments
  - Dissolved Oxygen, Trash, Pathogens
  - Organochlorinated Pesticides
    - DDT, Chlorpyrifos, Diazinon, Dieldrin, Toxaphene, DDD, DDE, Hexachlorobenzene
  - Nutrients, Selenium, PCBs, Mercury
  - Toxicity

Recent Developments

- AB 1079 Signed into law in 2009
  - Directs State to prepare cleanup Plan
    - Develop and Implement Project
      - Focus New River pollution in Calexico area
    - Identify parties with responsibility for cleanup
      - Litigation an option
    - Identify sources of funding
  - CalEPA Secretary coordinating state cleanup efforts
    - Forming TAC
- Funds available
  - $800k in state funds allocated to assist with planning effort
  - $3.2M Fed funds for planning and actual work
  - $10-$20M from Army Corps of Engineers

Questions?

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