Water Quality Assessment Following Release of Raw Sewage from the City of Winnipeg, September 2002

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Outline

- Describe water quality and biological monitoring
- Overview of results
- Concluding comments

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Background

- Overflow began late afternoon, September 16, 2002 and continued until early afternoon, September 19, 2002
- Overflow discharge rate was approximately 2.4 m^3/s
- Monitoring began early morning, September 17, 2002 and continued until September 23, 2002

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Background (continued)

- Flow rate in Red River ranged from approximately 185 m^3/s to 154 m^3/s during the overflow period (2 to 3 times higher than normal)
- Raw sewage was diluted between 65 and 77 times or comprised between 1 % and 1.5 % of the Red River flow

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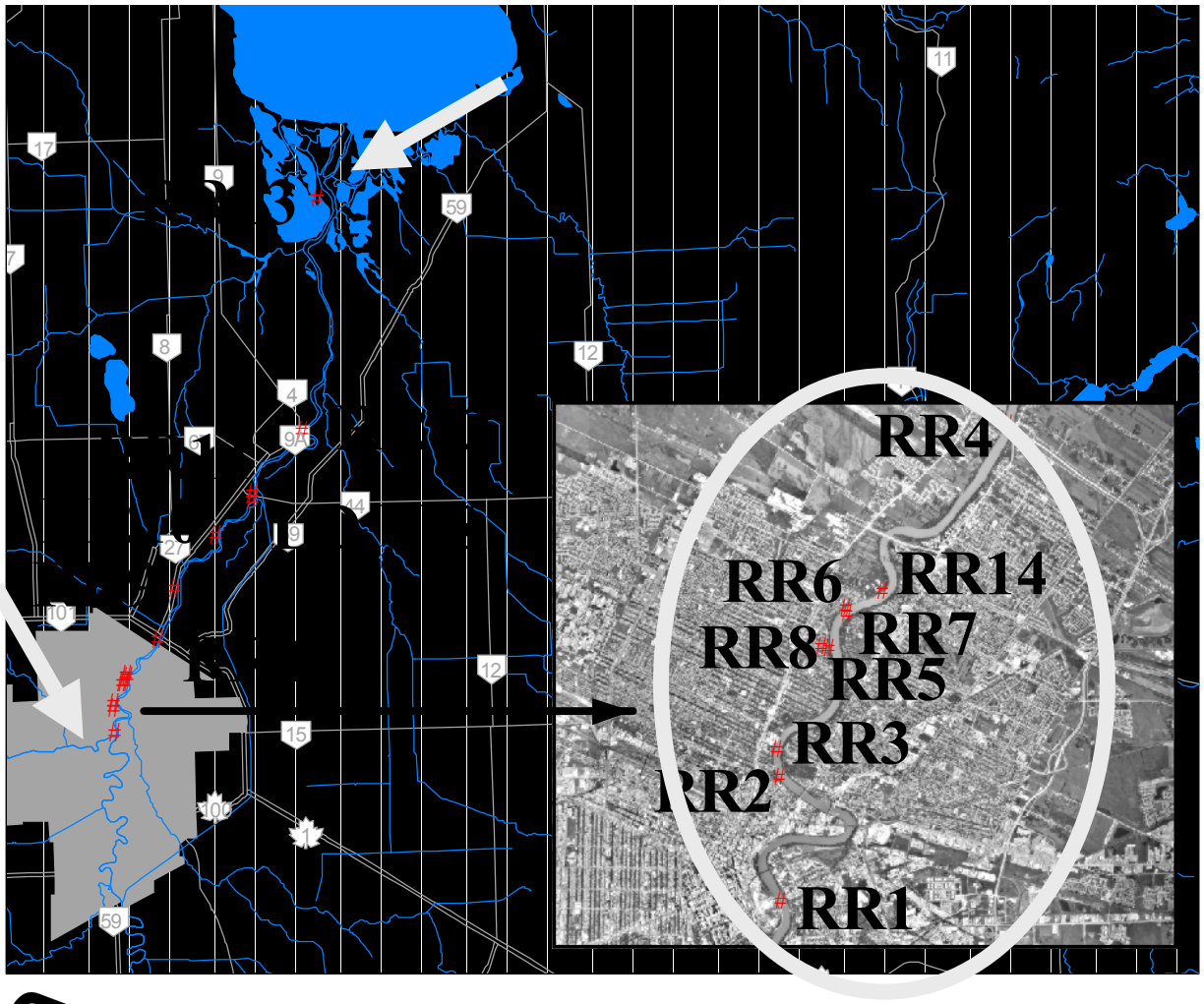
Background (continued)

- Travel time to Lake Winnipeg was between 3 and 4 days
- Raw sewage would have reached Lake Winnipeg by September 20, 2002

Water Quality and Biological Monitoring



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Jefferson Avenue Outfall

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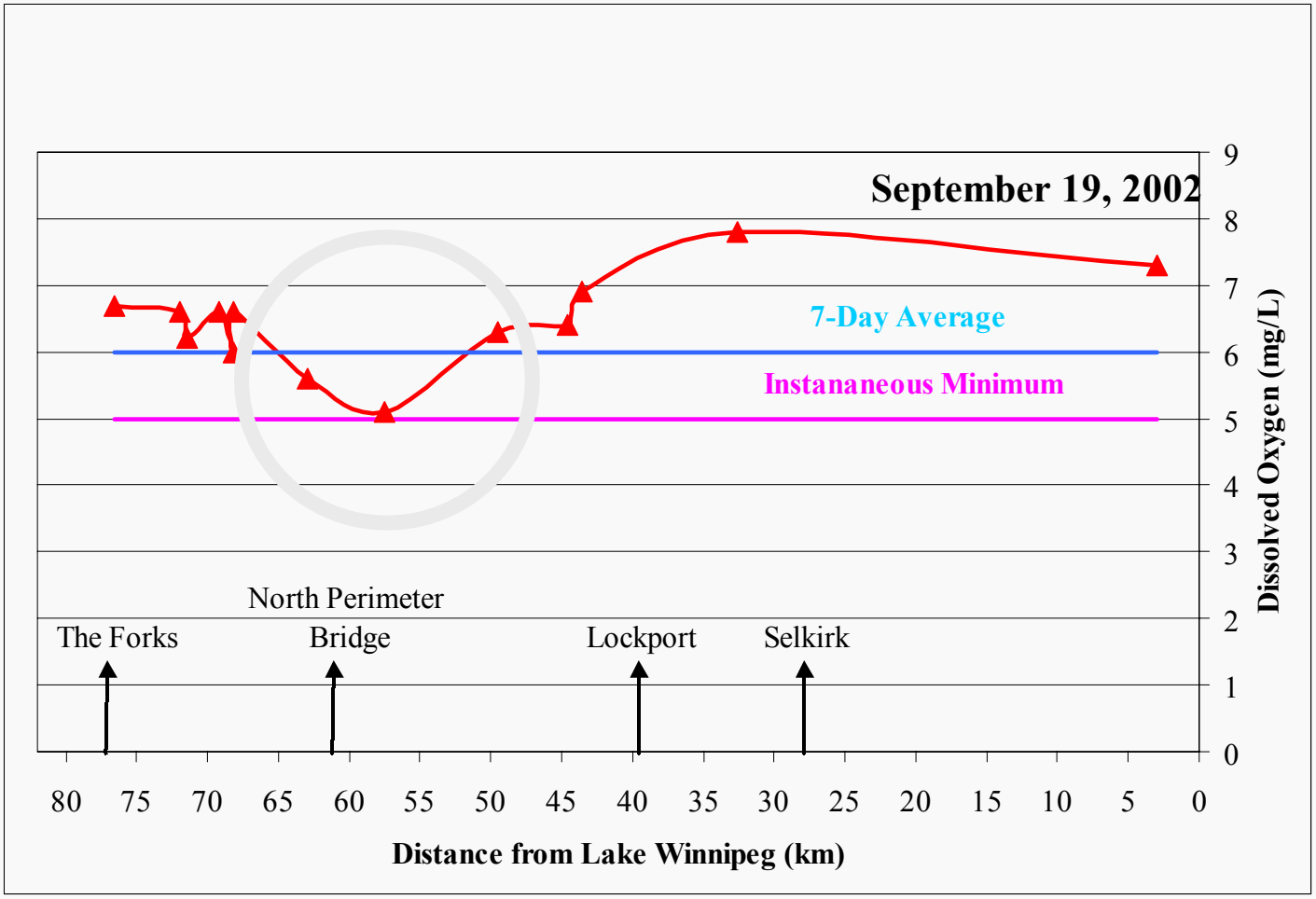
Dissolved Oxygen



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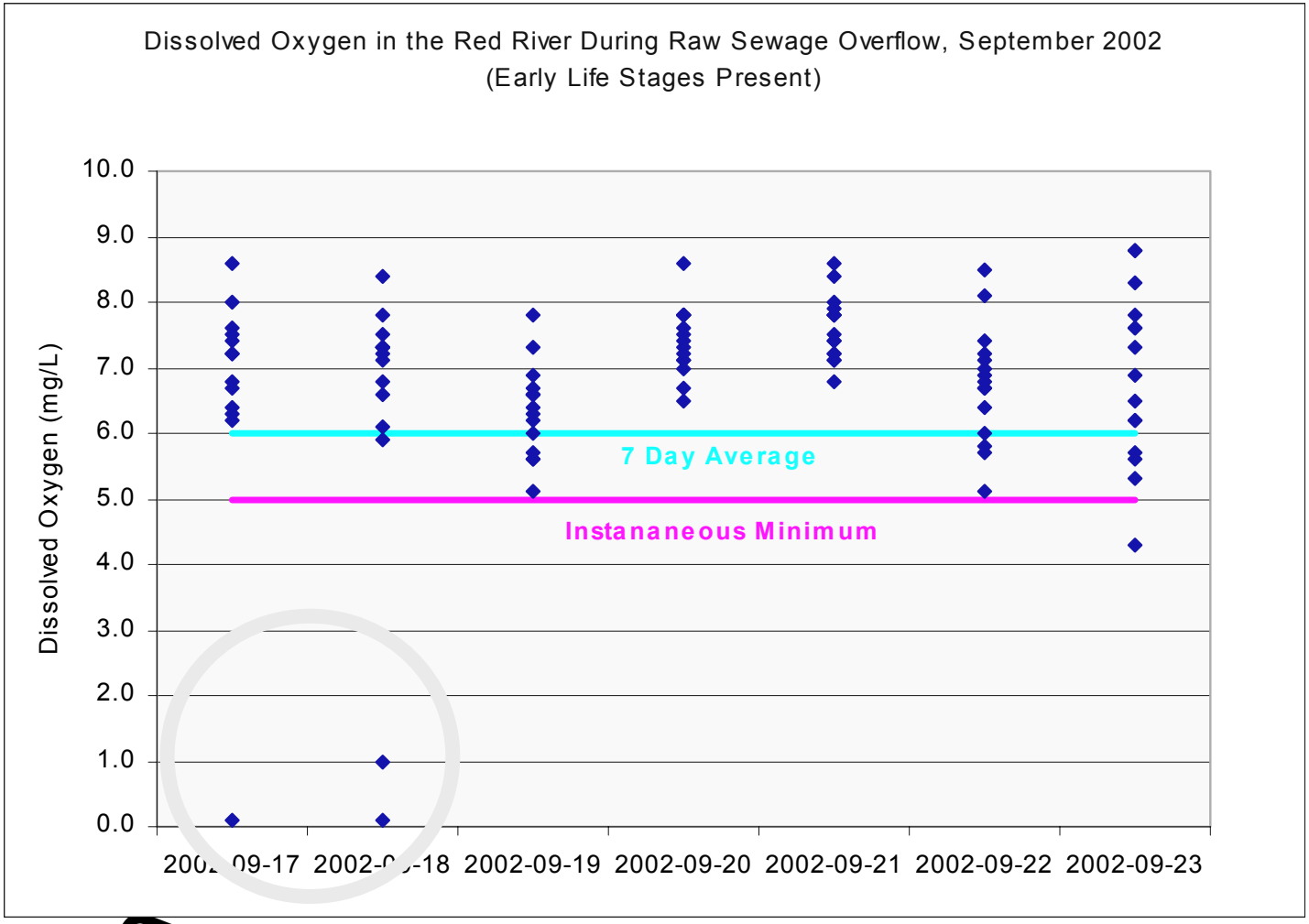
Dissolved Oxygen (continued)



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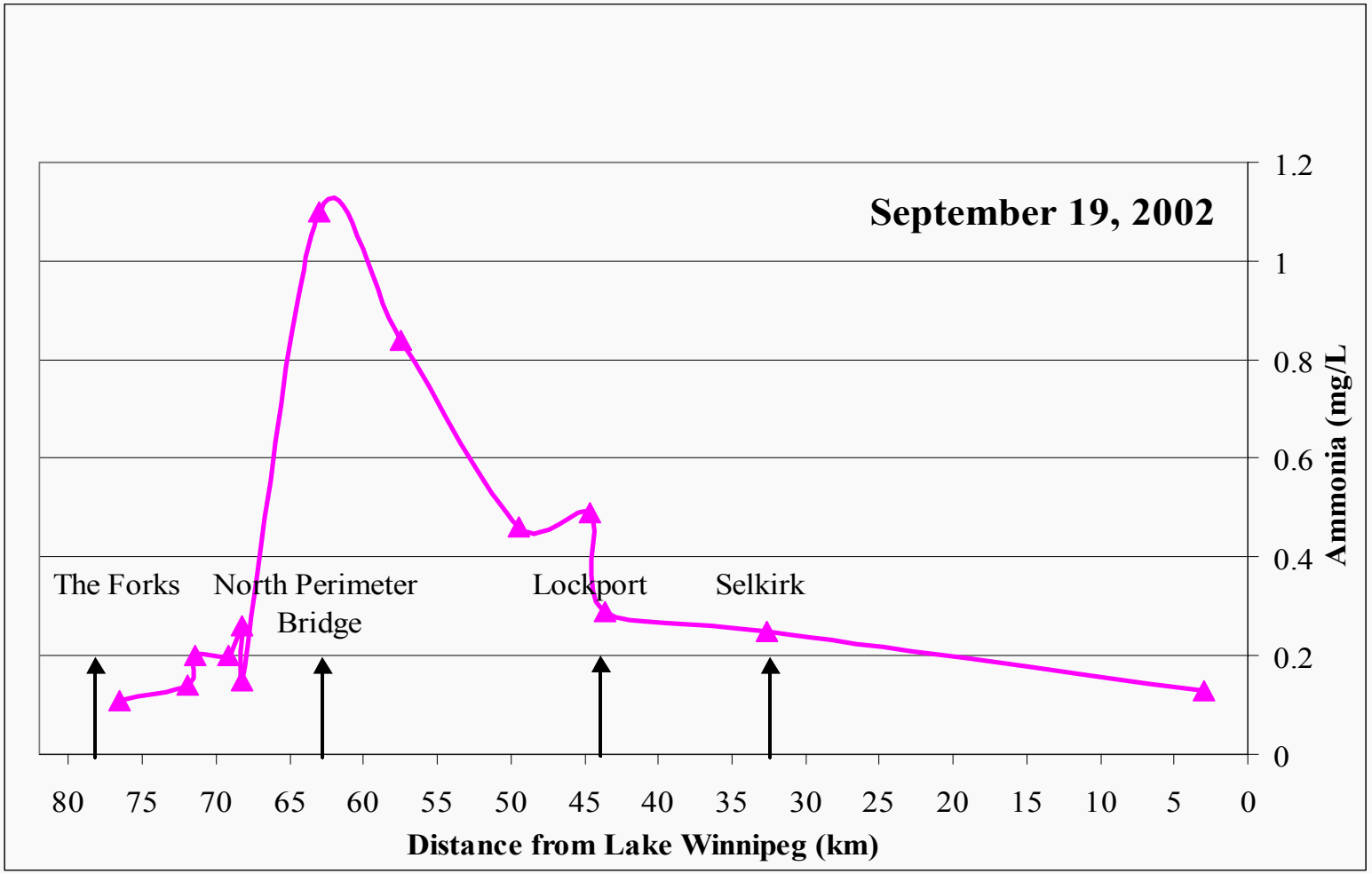
Ammonia



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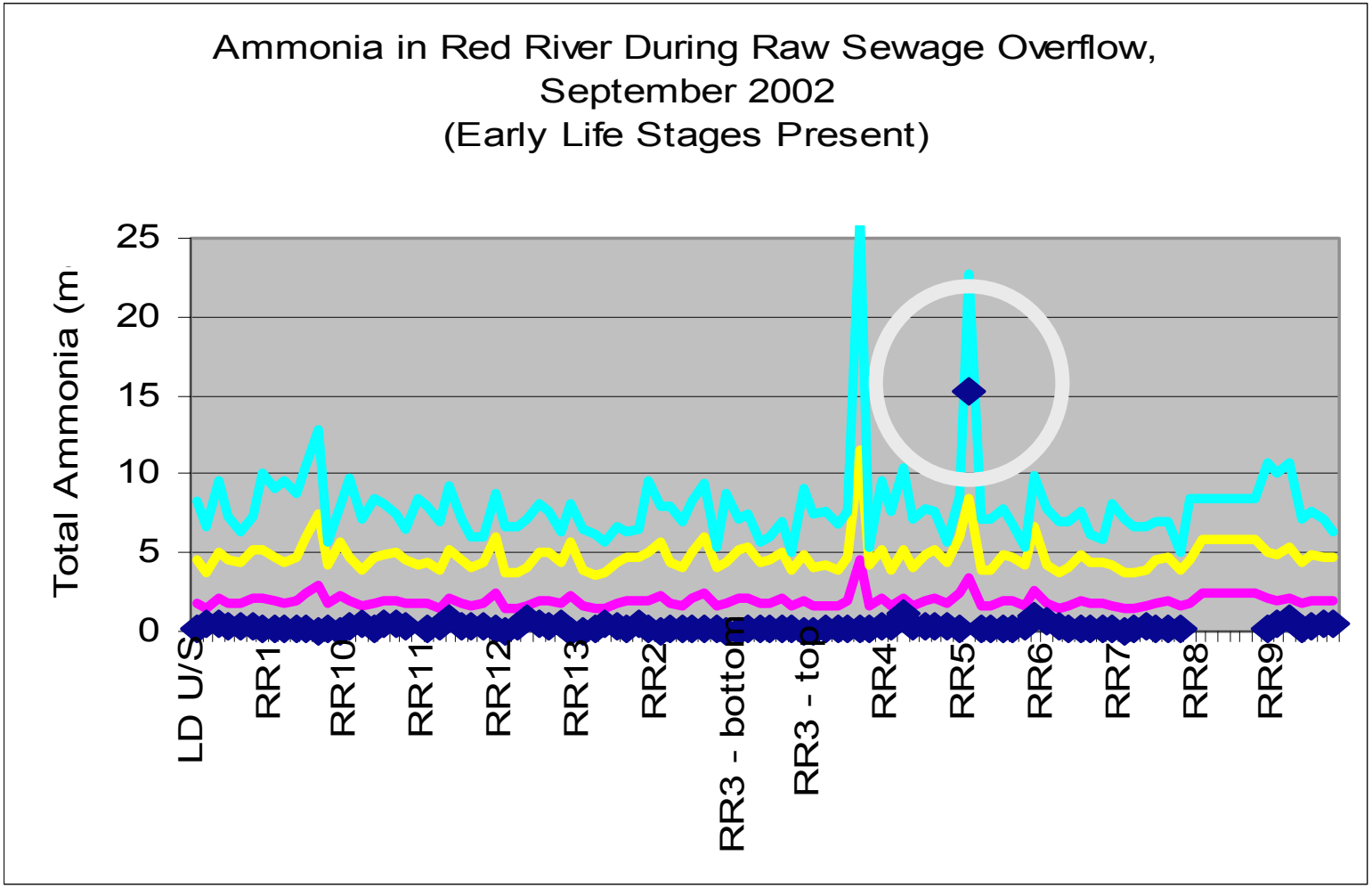
Ammonia (continued)



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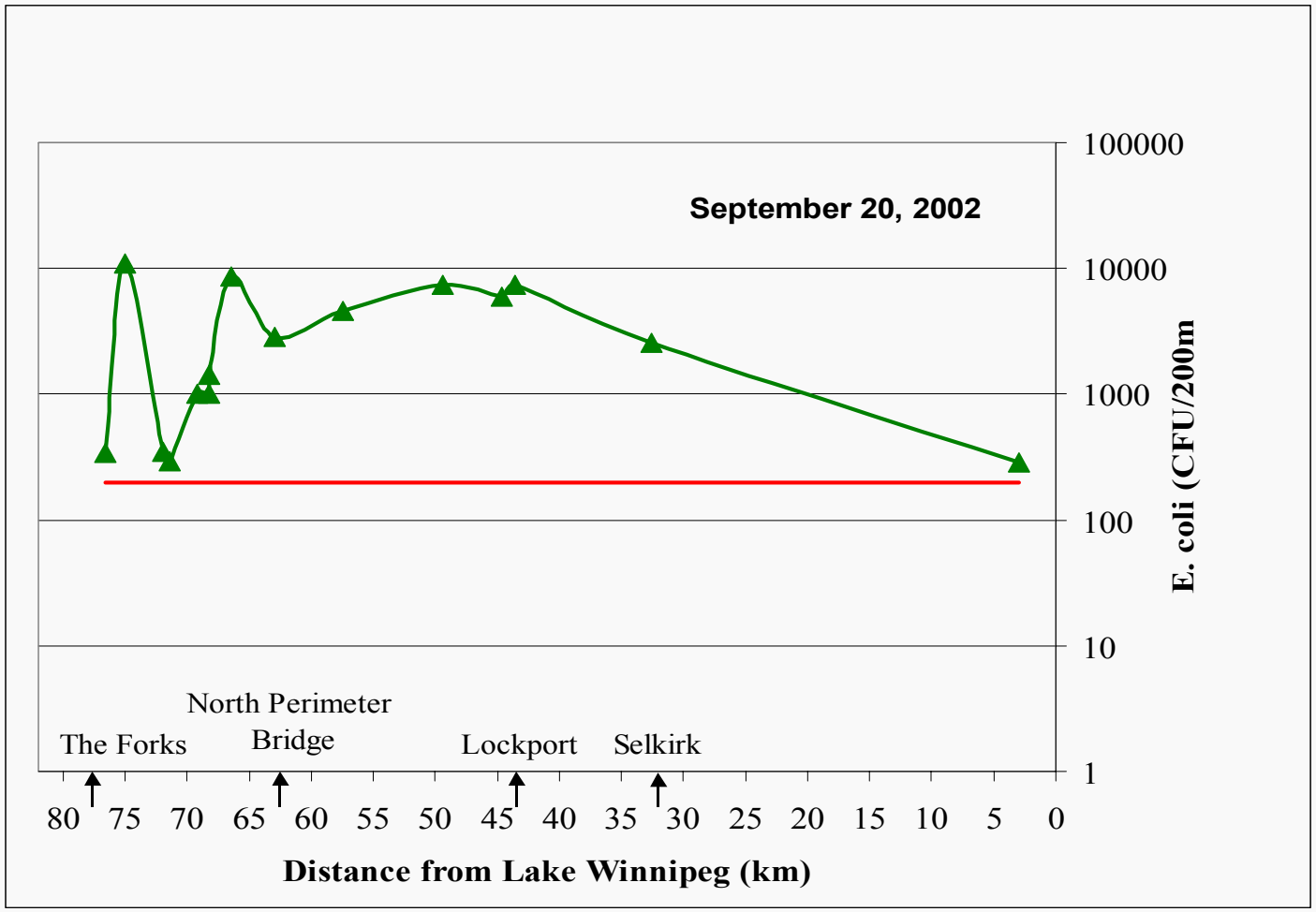
Fecal Coliform



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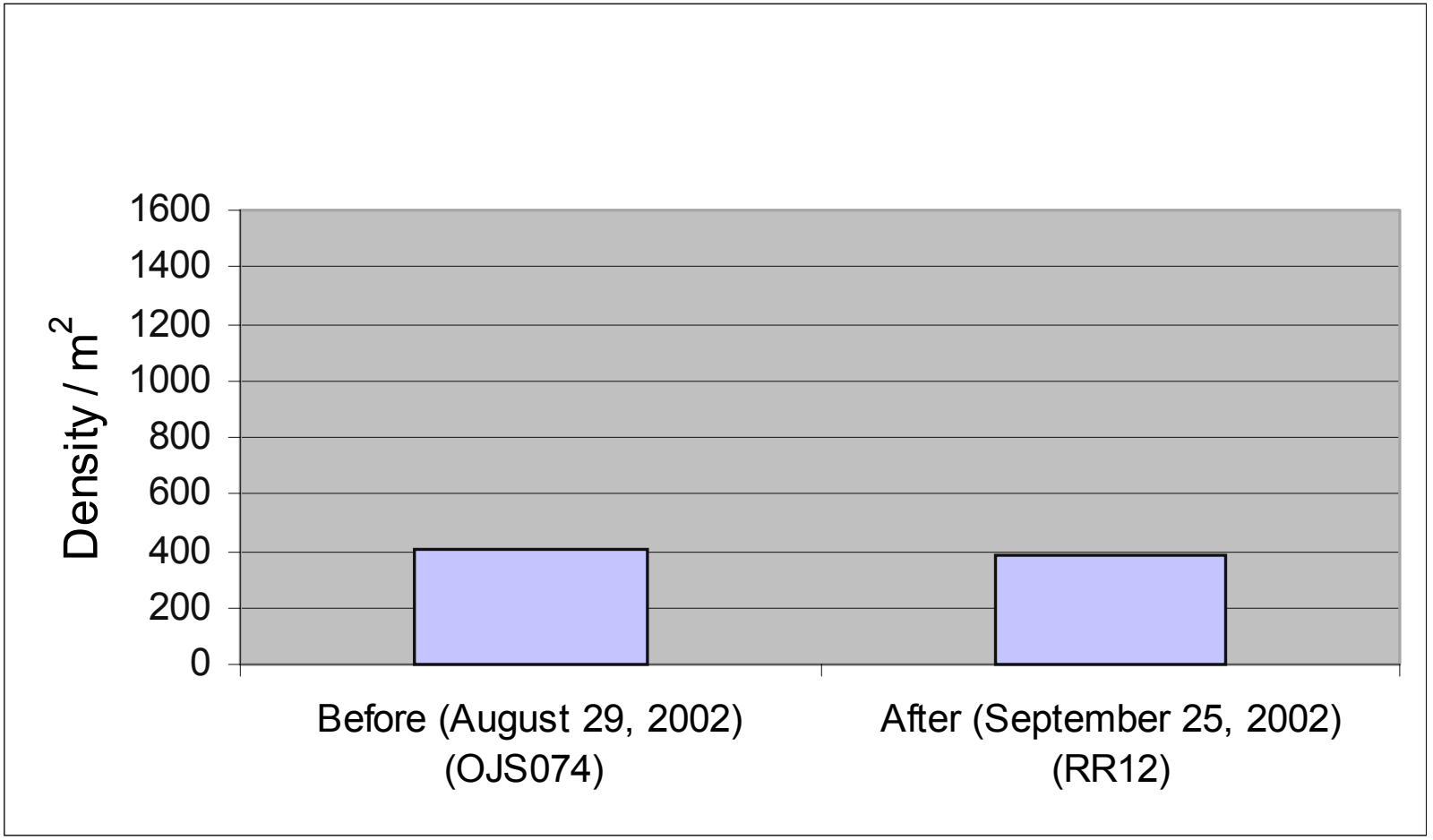
Aquatic Invertebrates



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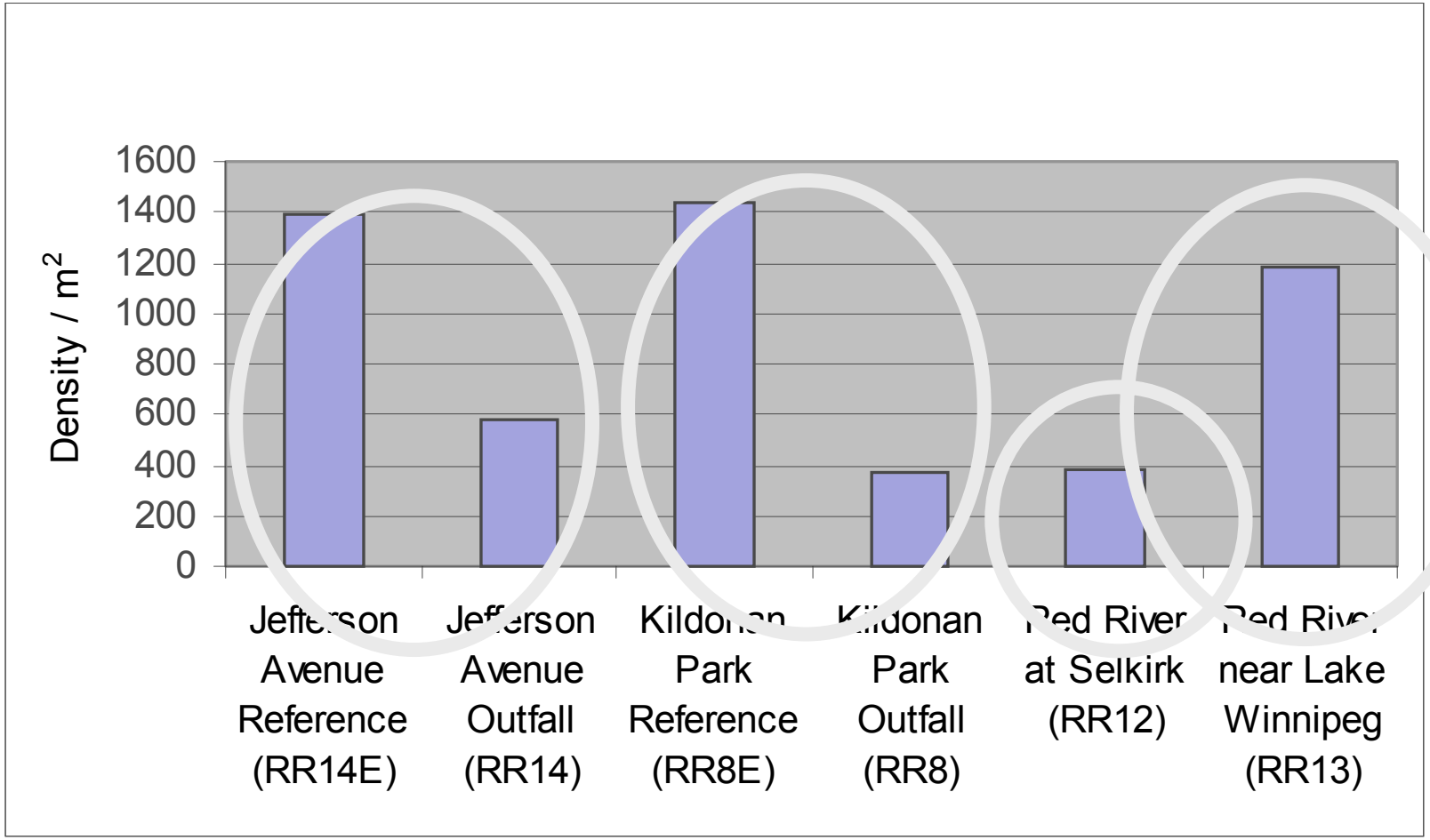
Aquatic Invertebrates (continued)



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Concluding Comments

- While impacts were detected, concluded that direct, short-term acute toxicity to aquatic life should not have occurred
- Chronic or long-term toxicity to aquatic life should not have occurred because of the short duration of the event

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Concluding Comments (continued)

- The macroinvertebrate biological community remained unchanged in the Red River near Selkirk
- Uncertain about whether differences within the effluent plume and adjacent, unaffected areas were due to overflow or to normal within-stream variability

Concluding Comments (continued)

- Bacteria densities were elevated above the normally high levels routinely observed downstream of Winnipeg
- Bacteria levels normally exceed the Manitoba Water Quality Standards, Objectives, and Guidelines in this reach

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Concluding Comments (continued)

- At the site nearest Lake Winnipeg, bacterial densities exceeded the MWQSOG only on September 20, 2002
- Should a similar event occur under more typical, lower Red River flows or for a longer duration, significant impacts could be expected

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Thank You

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