

## **Contents**

<b>Chapter 1</b>	<b>An Overview .....</b>	<b>1</b>
<b>Chapter 2</b>	<b>Government Oversight of the Delivery of Drinking Water: Introduction .....</b>	<b>33</b>
<b>Chapter 3</b>	<b>A Multi-Barrier Approach to Drinking Water Safety .....</b>	<b>71</b>
<b>Chapter 4</b>	<b>The Protection of Drinking Water Sources .....</b>	<b>81</b>
<b>Chapter 5</b>	<b>Drinking Water Quality Standards .....</b>	<b>147</b>
<b>Chapter 6</b>	<b>Drinking Water Treatment Technologies .....</b>	<b>183</b>
<b>Chapter 7</b>	<b>Drinking Water Distribution Systems ....</b>	<b>233</b>
<b>Chapter 8</b>	<b>Monitoring and Measurement .....</b>	<b>247</b>
<b>Chapter 9</b>	<b>The Role of Laboratories .....</b>	<b>263</b>
<b>Chapter 10</b>	<b>The Role of Municipal Governments.....</b>	<b>275</b>
<b>Chapter 11</b>	<b>The Management of Municipal Water Systems .....</b>	<b>333</b>
<b>Chapter 12</b>	<b>The Certification and Training of Operators .....</b>	<b>377</b>
<b>Chapter 13</b>	<b>The Provincial Government Role in Overseeing Drinking Water Systems .....</b>	<b>393</b>
<b>Chapter 14</b>	<b>Small Drinking Water Systems.....</b>	<b>471</b>
<b>Chapter 15</b>	<b>First Nations .....</b>	<b>485</b>

**Chapter 16 The Process of Part 2 of the Inquiry..... 499**

**Appendix A An Interjurisdictional Comparison of  
Water Quality Standards ..... 519**

**List of Abbreviations..... 541**

**Index ..... 547**

## **Chapter 1 An Overview**

1.1	Introduction .....	2
1.2	Executive Summary .....	3
1.2.1	Source Protection .....	3
1.2.2	Standards and Technology .....	3
1.2.3	Municipal Water Providers .....	4
1.2.4	Provincial Oversight .....	4
1.2.5	Special Cases .....	4
1.3	General Principles .....	5
1.4	Specific Recommendations .....	8
1.4.1	Source Protection (Chapter 4) .....	8
1.4.2	Standards and Technology (Chapters 5 to 9) .....	10
1.4.3	Municipal Water Providers (Chapters 10 to 12) .....	11
1.4.4	Provincial Oversight (Chapter 13) .....	13
1.4.5	Special Cases (Chapters 14 and 15) .....	15
1.4.5.1	Small Water Systems .....	15
1.4.5.2	First Nations Water Systems .....	17
1.5	The Balance of This Report .....	17
1.6	Summary .....	18
1.7	List of Part 2 Recommendations .....	18

## **Chapter 2 Government Oversight of the Delivery of Drinking Water: Introduction**

2.1	Overview .....	35
2.2	The Constitutional Responsibility for Drinking Water .....	35
2.2.1	Drinking Water as a Constitutional Subject Matter .....	36
2.2.2	Provincial Jurisdiction .....	37
2.2.3	Potentially Conflicting Federal Jurisdiction .....	38
2.2.4	Indians and Lands Reserved for Indians .....	40
2.3	Overview of the Current Provincial Approach .....	41
2.3.1	Ministries with Responsibilities Relevant to the Safety of Drinking Water and Relevant Legislation .....	41
2.3.1.1	The Ministry of the Environment .....	41
2.3.1.2	The Ministry of Natural Resources .....	49

2.3.1.3	The Ministry of Health and Long-Term Care .....	50
2.3.1.4	The Ministry of Agriculture, Food and Rural Affairs .....	51
2.3.1.5	The Ministry of Municipal Affairs and Housing .....	52
2.3.2	Agencies with Responsibilities Relevant to the Safety of Drinking Water .....	55
2.3.2.1	The Ontario Clean Water Agency .....	55
2.3.2.2	The Ontario SuperBuild Corporation .....	55
2.3.2.3	The Ontario Municipal Board .....	56
2.3.2.4	The Normal Farm Practices Protection Board .....	56
2.3.2.5	The Environmental Commissioner .....	56
2.3.2.6	The Environmental Review Tribunal .....	57
2.3.2.7	Conservation Authorities .....	57
2.3.3	Authorization Processes for Safe Drinking Water .....	57
2.3.3.1	Permits to Take Water .....	58
2.3.3.2	Certificates of Approval .....	58
2.3.4	Compliance and Enforcement Processes .....	59
2.3.4.1	Monitoring .....	59
2.3.4.2	Voluntary Monitoring .....	59
2.3.4.3	Inspection, Investigation, and Enforcement ....	60
2.4	<b>The Gibbons Report .....</b>	<b>61</b>
2.4.1	Overview of the Gibbons Report .....	61
2.4.1.1	Review of Current Practice .....	61
2.4.1.2	Recommendations Made in the Gibbons Report .....	63
2.4.1.3	Comments .....	67

## **Chapter 3 A Multi-Barrier Approach to Drinking Water Safety**

3.1	Multiple Barriers in Drinking Water Supply .....	72
3.2	The Goal: Safe Drinking Water .....	74
3.3	Risk Management .....	75

<b>3.4</b>	<b>The Precautionary Principle .....</b>	<b>76</b>
<b>3.5</b>	<b>Outbreaks of Water-borne Disease .....</b>	<b>78</b>

## **Chapter 4 The Protection of Drinking Water Sources**

<b>4.1</b>	<b>Overview .....</b>	<b>83</b>
<b>4.2</b>	<b>The Hydrological Cycle in Ontario .....</b>	<b>83</b>
4.2.1	Introduction .....	83
4.2.2	Water Availability and Use in Ontario .....	84
4.2.2.1	Consumptive Use Compared with Non-consumptive Use.....	85
4.2.3	Water and Climate Change .....	86
4.2.4	Conclusion .....	88
<b>4.3</b>	<b>Drinking Water Source Protection.....</b>	<b>89</b>
4.3.1	Overview .....	89
4.3.2	Source Protection Plans .....	92
4.3.3	The Role of the Ministry of the Environment.....	96
4.3.4	Conservation Authorities .....	98
4.3.5	Watershed-based Source Protection Plans .....	103
4.3.5.1	The Framework.....	103
4.3.5.2	Components of Plans .....	104
4.3.5.3	Groundwater Management .....	106
4.3.6	Participation of Affected Groups and the Public .....	107
4.3.7	The Ministry of the Environment's Provision of Information and Technical Assistance to Conservation Authorities ....	110
4.3.8	The Approval of Watershed-based Source Protection Plans .....	110
4.3.9	The Implementation of the Plans.....	112
4.3.10	The Review of the Plans .....	115
4.3.11	Appeals .....	115
4.3.12	Funding Watershed Management .....	116
4.3.13	Public Reporting.....	117
4.3.14	Education .....	118
4.3.15	Legislative Review .....	118
4.3.16	The Value of Water .....	119
4.3.17	The Enforcement of Environmental Laws and Regulations .....	120

<b>4.4</b>	<b>Specific Threats .....</b>	<b>121</b>
4.4.1	Introduction .....	121
4.4.2	Human Waste .....	121
4.4.3	Septic Systems .....	123
4.4.4	Biosolids and Septage .....	124
4.4.5	Agriculture .....	127
4.4.5.1	Introduction .....	127
4.4.5.2	Farmers' Commitment to the Environment ..	129
4.4.5.3	Ministry of the Environment Lead .....	130
4.4.5.4	Regulatory Floor .....	132
4.4.5.5	Regulatory Review .....	133
4.4.5.6	Farm Water Protection Plans .....	139
4.4.5.7	Planning .....	140
4.4.5.8	Education .....	143
4.4.5.9	Economic Incentives .....	144
4.4.6	Other Industries .....	145

## **Chapter 5      Drinking Water Quality Standards**

<b>5.1</b>	<b>Introduction .....</b>	<b>148</b>
<b>5.2</b>	<b>Setting Drinking Water Quality Standards in Canada ..</b>	<b>149</b>
5.2.1	The Federal–Provincial Subcommittee on Drinking Water .....	151
<b>5.3</b>	<b>Where the Canadian <i>Guidelines</i> Apply .....</b>	<b>155</b>
<b>5.4</b>	<b>The Province's Responsibility to Implement Standards .....</b>	<b>156</b>
5.4.1	Ontario Can Initiate as Well as React .....	158
<b>5.5</b>	<b>Contaminants and Current Standards .....</b>	<b>158</b>
5.5.1	Standards for Acute (Microbial) Risk .....	159
5.5.1.1	Endemic versus Epidemic Levels of Exposure .....	159
5.5.1.2	Viruses .....	160
5.5.1.3	Bacteria .....	161
5.5.1.4	Parasites .....	163
5.5.2	Standards for Chronic Risks .....	165
5.5.2.1	Chemical Hazards .....	166
5.5.2.2	Disinfection By-products .....	170
5.5.2.3	Radiological Hazards .....	171

5.5.3	Operational Standards .....	172
5.5.4	Aesthetic Standards .....	172
5.5.5	Problems in Setting Standards .....	173
<b>5.6</b>	<b>Emerging Issues.....</b>	<b>174</b>
5.6.1	New Pathogens .....	174
5.6.2	Chemicals .....	175
5.6.2.1	Pesticides and Herbicides .....	175
5.6.2.2	Industrial Chemicals .....	176
5.6.2.3	Endocrine-Disrupting Substances .....	177
<b>5.7</b>	<b>Standards Setting in Some Other Countries.....</b>	<b>179</b>
5.7.1	United States .....	179
5.7.2	England and Wales .....	181
5.7.3	Australia.....	182

## **Chapter 6      Drinking Water Treatment Technologies**

<b>6.1</b>	<b>Introduction .....</b>	<b>184</b>
<b>6.2</b>	<b>The Importance of Source .....</b>	<b>185</b>
6.2.1	Groundwater under the Direct Influence of Surface Water .....	186
<b>6.3</b>	<b>Water Treatment Processes .....</b>	<b>189</b>
6.3.1	Conventional Processes .....	190
6.3.2	Disinfection By-products .....	198
6.3.3	Innovative Disinfection Technologies .....	200
6.3.4	Meeting Other Treatment Objectives .....	207
6.3.5	Choosing an Optimal Treatment Strategy .....	208
<b>6.4</b>	<b>Water Recycling.....</b>	<b>209</b>
<b>6.5</b>	<b>Wastewater Treatment.....</b>	<b>210</b>
<b>6.6</b>	<b>Emerging Water Treatment Technologies .....</b>	<b>215</b>
6.6.1	The Role of the Ministry of the Environment in Technology Development and Evaluation .....	217
<b>6.7</b>	<b>Ontario Regulation 459/00 .....</b>	<b>221</b>
6.7.1	The Application of Ontario Regulation 459/00 .....	222
6.7.2	Minimum Level of Treatment and Chlorination Requirements .....	224

6.7.3	Sampling and Analysis Requirements .....	225
6.7.3.1	Maximum Acceptable Concentrations .....	226
6.7.3.2	Indicators of Adverse Water Quality .....	227
6.7.3.3	Notification Requirements .....	227
6.7.4	Corrective Action .....	228
6.7.4.1	New Requirements under Ontario Regulation 459/00 .....	229
6.7.5	Issues Raised in the Part 1 Report of This Inquiry .....	230

## **Chapter 7 Drinking Water Distribution Systems**

7.1	Introduction .....	234
7.2	The High-Quality Distribution System .....	234
7.3	Threats to System Integrity .....	236
7.3.1	Pipe Age .....	236
7.3.2	Materials .....	237
7.3.3	System Design .....	239
7.3.4	Storage .....	241
7.3.5	Corrosion .....	241
7.3.6	Scale .....	242
7.3.7	Sedimentation .....	242
7.3.8	Biological Growth .....	242
7.3.9	Bulk Water Reactions .....	244
7.4	Good Practices in System Operation .....	245

## **Chapter 8 Monitoring and Measurement**

8.1	Introduction .....	248
8.2	Timeliness .....	248
8.2.1	Real-time Measurement .....	249
8.2.2	Lagging or Trailing Measures .....	251
8.2.2.1	Microbial Parameters .....	251
8.2.2.2	Chronic Threats .....	253
8.3	Sampling .....	253
8.4	SCADA Systems .....	259



<b>8.5</b>	<b>An Improved Data Collection and Management System .....</b>	<b>261</b>
8.5.1	Operational and Regulatory Data Management .....	261
8.5.2	Consumer Reporting .....	261
<b>8.6</b>	<b>Reporting to the Ministry of the Environment .....</b>	<b>262</b>

## **Chapter 9 The Role of Laboratories**

<b>9.1</b>	<b>Overview .....</b>	<b>264</b>
<b>9.2</b>	<b>Water Testing Laboratories in Ontario .....</b>	<b>264</b>
9.2.1	The Current Regulation of Laboratories .....	265
<b>9.3</b>	<b>Accreditation .....</b>	<b>266</b>
<b>9.4</b>	<b>The Role of the Regulator .....</b>	<b>268</b>
9.4.1	Laboratory Reporting Requirements .....	270
<b>9.5</b>	<b>Improvements to the Accreditation Program .....</b>	<b>270</b>
<b>9.6</b>	<b>The Role of Provincial Laboratories .....</b>	<b>271</b>
9.6.1	Ministry of the Environment Laboratory Services Branch .....	271
9.6.2	Ministry of Health and Long-Term Care Laboratories ...	272
<b>9.7</b>	<b>Miscellaneous Submissions .....</b>	<b>273</b>

## **Chapter 10 The Role of Municipal Governments**

<b>10.1</b>	<b>Introduction .....</b>	<b>277</b>
<b>10.2</b>	<b>The Role of Municipal Governments .....</b>	<b>277</b>
10.2.1	Overview .....	277
10.2.2	Municipal Responsibility for Water Systems .....	278
10.2.2.1	Provincial Approval of Municipal Water Systems .....	280
10.2.3	Municipal Reviews of Water Systems .....	281
10.2.4	Survey of Options .....	284
10.2.4.1	Municipal Operating Agency .....	284
10.2.4.2	Regionalization .....	289
10.2.4.3	External Operating Agency .....	294
10.2.5	Standard of Care .....	296
10.2.6	The Role of the Provincial Government .....	298

<b>10.3</b>	<b>Financial Issues .....</b>	<b>298</b>
10.3.1	Overview .....	298
10.3.2	The Proposed <i>Sustainable Water and Sewage Systems Act</i> .....	299
10.3.3	The Requirement for a Financial Plan .....	300
10.3.3.1	Full-Cost Accounting .....	300
10.3.3.2	Full-Cost Recovery .....	302
10.3.4	The Definition of Full Cost .....	303
10.3.4.1	Operating Costs .....	304
10.3.4.2	Capital Costs .....	305
10.3.4.3	Environmental Costs .....	306
10.3.5	Sustainable Asset Management .....	306
10.3.5.1	The Extent of Future Capital Costs .....	308
10.3.5.2	Accounting Methods .....	310
10.3.6	The Role of the Provincial Government .....	310
10.3.7	Paying for Future Costs .....	311
10.3.7.1	Municipal Responsibility for Future Costs ....	312
10.3.7.2	Household Affordability .....	312
10.3.7.3	Future Capital Costs .....	313
10.3.7.4	The Role of Provincial Subsidies .....	315
10.3.8	Methods of Cost Recovery .....	316
10.3.8.1	Full-Cost Pricing and Metering .....	317
<b>10.4</b>	<b>Public-Private Issues .....</b>	<b>317</b>
10.4.1	The Public-Private Dimension .....	318
10.4.2	Comments Regarding Private Operation .....	320
10.4.3	Comments Regarding Private Ownership .....	323
10.4.4	Implications for Safety .....	324
10.4.5	The Decision to Engage a Private Operating Agency .....	325
10.4.5.1	The Importance of the Operating Agreement .....	326
10.4.5.2	Municipal Accountability and Transparency ..	327
10.4.6	The Ontario Clean Water Agency .....	328
10.4.6.1	Submissions Regarding OCWA .....	329
10.4.6.2	OCWA's Future Role .....	331

## **Chapter 11 The Management of Municipal Water Systems**

<b>11.1</b>	<b>Introduction .....</b>	<b>335</b>
11.1.1	Drinking Water Quality Management .....	336
11.1.2	Applying the Quality Management Approach .....	337
11.1.2.1	The Requirement for Accreditation .....	338
11.1.2.2	The Requirement for an Operational Plan ....	339
<b>11.2</b>	<b>Models of Drinking Water Quality Management .....</b>	<b>340</b>
11.2.1	General Models .....	340
11.2.1.1	ISO Standards .....	340
11.2.1.2	The HACCP System .....	341
11.2.2	Water Industry-Specific Models .....	341
11.2.2.1	American Water Works Association Programs .....	342
11.2.2.2	The Australian Framework for Management of Drinking Water Quality .....	343
11.2.2.3	Guidelines for Drinking-Water Quality Management for New Zealand .....	344
11.2.2.4	Conclusion .....	346
<b>11.3</b>	<b>Accreditation .....</b>	<b>346</b>
11.3.1	The Requirement for Accreditation .....	346
11.3.2	Independent Audits .....	347
11.3.3	The Development of a Drinking Water Quality Management Standard .....	348
11.3.4	The Role of the Water Industry .....	350
11.3.5	Peer Review .....	351
11.3.6	The Role of the Ministry of the Environment .....	352
11.3.7	Timeline for Implementation .....	353
<b>11.4</b>	<b>Operational Planning .....</b>	<b>355</b>
11.4.1	The Requirement for an Operational Plan .....	355
11.4.2	The Process of Operational Planning .....	357
11.4.3	The Relationship to Certificates of Approval .....	358
11.4.4	The Relationship to Engineering Reviews .....	359
11.4.5	The Role of the Ministry of the Environment .....	359
11.4.6	Timeline for Implementation .....	361
<b>11.5</b>	<b>Other Considerations .....</b>	<b>362</b>
11.5.1	Relationship to Municipal Governance Reviews .....	362

11.5.2	Application to Municipal Water Systems .....	362
11.5.3	Confidentiality Concerns .....	363
11.5.4	Relationship to Benchmarking .....	363
<b>11.6</b>	<b>Emergency Response Planning .....</b>	<b>365</b>
11.6.1	Defining Emergencies for Water Providers .....	365
11.6.2	Steps in Water Emergency Planning .....	366
11.6.2.1	Hazard Identification and Summary .....	367
11.6.2.2	Vulnerability Assessment .....	367
11.6.2.3	Mitigation Actions .....	368
11.6.2.4	Developing an Emergency Plan .....	369
11.6.2.5	Emergency Response, Recovery, and Training .....	370
11.6.3	Roles in Drinking Water Emergencies .....	370
11.6.3.1	Ministry of the Environment and Emergency Measures Ontario .....	370
11.6.3.2	Municipal Water Providers .....	371
11.6.3.3	Medical Officers of Health .....	371
11.6.3.4	Public Information and Risk Communication .....	374

## **Chapter 12 The Certification and Training of Operators**

12.1	Overview .....	378
12.2	Mandatory Certification .....	378
12.3	Grandparented Operators .....	382
12.4	New Operators .....	385
12.5	The Training of Certified Operators .....	386
12.6	The Training of Operators in Small and Remote Communities .....	388
12.7	Training Materials .....	389
12.8	Providing Quality Training Courses on Diverse Subjects .....	389

## **Chapter 13 The Provincial Government Role in Overseeing Drinking Water Systems**

<b>13.1</b>	<b>Overview .....</b>	<b>395</b>
<b>13.2</b>	<b>Government Policy .....</b>	<b>397</b>
13.2.1	Current Practice .....	397
13.2.2	Recommendations and Comments .....	399
13.2.2.1	Comprehensive “Source to Tap” Drinking Water Policy .....	399
13.2.2.2	The Leadership Role of the Ministry of the Environment .....	400
13.2.2.3	The Role of Other Ministries .....	402
<b>13.3</b>	<b>Required Legislative Changes .....</b>	<b>403</b>
13.3.1	Current Practice .....	403
13.3.2	Recommendations and Comments .....	405
13.3.2.1	<i>Safe Drinking Water Act</i> .....	405
13.3.2.2	Amendments to the <i>Environmental Protection Act</i> .....	410
13.3.2.3	Agriculture .....	411
13.3.2.4	Asset Management .....	411
<b>13.4</b>	<b>Government Structure .....</b>	<b>412</b>
13.4.1	Current Practice .....	412
13.4.2	Recommendations and Comments .....	414
13.4.2.1	Drinking Water Branch .....	414
13.4.2.2	Watershed Management Branch .....	416
<b>13.5</b>	<b>Operations .....</b>	<b>418</b>
13.5.1	Approvals .....	419
13.5.1.1	Current Practice .....	419
13.5.1.2	Recommendations and Comments .....	422
13.5.2	Inspections .....	423
13.5.2.1	Current Regime .....	424
13.5.2.2	Recommendations and Comments .....	428
13.5.3	Voluntary versus Mandatory Abatement .....	438
13.5.3.1	Current Regime .....	439
13.5.3.2	Recommendations and Comments .....	443
13.5.4	Investigation and Enforcement .....	445
13.5.4.1	Current Regime .....	445
13.5.4.2	Recommendations and Comments .....	448

13.5.5	Regulation of Accredited Bodies .....	454
<b>13.6</b>	<b>The Role of Other Ministries .....</b>	<b>455</b>
13.6.1	The Ministry of Health and Long-Term Care .....	456
13.6.1.1	Recommendations and Comments .....	459
13.6.2	The Ontario Ministry of Agriculture, Food and Rural Affairs .....	463
13.6.3	Other Ministries .....	463
<b>13.7</b>	<b>Resource Management .....</b>	<b>464</b>
13.7.1	Financial Resources .....	464
13.7.1.1	Recomendations and Comments .....	465
13.7.2	Human Resource Management .....	466
13.7.2.1	Recommendations and Comments .....	467
13.7.3	Data Management .....	467
13.7.3.1	Recommendations and Comments .....	468
<b>13.8</b>	<b>Transparency and Public Access to Information .....</b>	<b>469</b>
13.8.1	Recommendations and Comments .....	470

## **Chapter 14 Small Drinking Water Systems**

14.1	Introduction .....	472
14.2	Systems Regulated by Ontario Regulation 459/00 .....	472
14.3	Variances from Ontario Regulation 459/00 .....	473
14.4	Other Systems Serving the Public .....	477
14.5	Private Systems .....	478
14.6	Technology .....	480
14.6.1	Technology for Small Communal Systems .....	480
14.6.2	Technology for Small Private Systems .....	482
14.6.3	Waste Treatment Techniques for Small Systems .....	483

## **Chapter 15 First Nations**

15.1	Aboriginal Ontario .....	486
15.2	First Nations: The Mandate of This Inquiry .....	487
15.2.1	The Federal Role .....	489
15.2.2	Ontario's Views .....	491

15.2.3	First Nations' Views on Government Roles .....	492
<b>15.3</b>	<b>Issues and Recommendations .....</b>	<b>493</b>
15.3.1	Planning .....	494
15.3.2	Standards .....	494
15.3.3	Ensuring Safety .....	495
15.3.4	Training .....	496
15.3.5	Testing, Inspection, and Enforcement .....	497

## **Chapter 16 The Process of Part 2 of the Inquiry**

<b>16.1</b>	<b>Introduction .....</b>	<b>500</b>
<b>16.2</b>	<b>Principles .....</b>	<b>500</b>
16.2.1	Thoroughness .....	500
16.2.2	Expedition .....	501
16.2.3	Openness .....	501
16.2.4	Fairness .....	502
16.2.5	Proximity to the Issue of Drinking Water Safety .....	502
<b>16.3</b>	<b>The Internet.....</b>	<b>502</b>
<b>16.4</b>	<b>The Research Advisory Panel.....</b>	<b>503</b>
<b>16.5</b>	<b>Key Rulings.....</b>	<b>505</b>
16.5.1	Standing .....	505
16.5.2	Funding for Parties with Standing.....	506
16.5.3	Parties Granted Standing in Part 2 .....	507
<b>16.6</b>	<b>Research .....</b>	<b>509</b>
16.6.1	The Commissioned Papers.....	509
16.6.2	Other Staff Research .....	510
16.6.3	The Expert Tour .....	510
<b>16.7</b>	<b>Submissions from the Parties with Standing .....</b>	<b>511</b>
<b>16.8</b>	<b>Public Submissions.....</b>	<b>511</b>
<b>16.9</b>	<b>Consultations.....</b>	<b>512</b>
16.9.1	Town Hall Meetings .....	512
16.9.2	Expert Meetings.....	513
16.9.3	Public Hearings .....	513
<b>16.10</b>	<b>Expert Advice .....</b>	<b>514</b>

16.11 Budget .....	514
16.12 Appreciation .....	514

## **Appendix A An Interjurisdictional Comparison of Water Quality Standards**

Table A.1 Chemical/Physical Standards and Objectives .....	520
Table A.2 Microbiological Standards – Health Related .....	534
Table A.3 Radionuclide Standards – Health Related .....	536
Table A.4 Chemical/Physical Objectives – Not Health Related .....	537