

**February 12, 2016**

**2015 Mitchell Annual Drinking Water System Report Summary:**

In accordance with Ontario Regulation 170/03 of the Safe Drinking Water Act an annual report must be completed by February 28<sup>th</sup> for the previous operating year.

The Mitchell Drinking Water System is the primary water supply for the residents of the town of Mitchell located in the Municipality of West Perth. The system is designated as a class 2 distribution and supply subsystem and qualifies as a large municipal residential system.

Large monetary expenses incurred in 2015 would include the downtown underground water infrastructure replacement program, Herbert Street water infrastructure extension and commencement of the elevated storage tank construction.

During the 2015 operation period there were three adverse water quality incidents reported to the Ministry of the Environment and Climate Change and Perth District Health Unit. The August 06, 2015 event was at the Mitchell District Arena resulting in a boil water advisory for the facility until resampling was completed. The December 2<sup>nd</sup> and 4<sup>th</sup> incidents were in respect to the Herbert St. water main extension project and did not pose a significant threat to the public because the mains being tested were isolated from the drinking water system. Each of these events were brought to the attention of the Environmental Services Committee during regular meetings.

All microbiological sampling requirements under schedules 10,11 or 12 of Regulation 170/03 for the 2015 operational year were met.

All operational testing requirements under schedules 7, 8 or 9 of Regulation 170/03 for the 2015 operational year were met.

There was no need for additional testing or sampling to be carried out in accordance with or/as a requirement of an approval, order or legal instrument.

The summary of inorganic and organic parameters tested during the reporting period for the reservoir / distribution centers and identified as points of entry to the distribution system, indicate exceedances in both sodium and fluoride. This is a direct result of naturally occurring elevated mineral levels in Mitchell's ground water supply. A notice is placed on the water bill to make residents aware of the presence of elevated fluoride in the drinking water every spring as directed by the Perth District Health Unit. Sodium is identified as the only parameter to exceed half of the standard prescribed in schedule 2 of the Ontario Drinking Water Quality Standard.

The summary of lead testing results identifies lead sampling was conducted during the 2015 operating period during both the winter and summer periods, actual testing for lead specifically is required only every three years while alkalinity testing is required on an annual basis. Lead results were well within acceptable levels.

Non-compliance with legislations, Regulations, Approvals & Orders is being added as an addendum. The draft Drinking Water System Inspection Report for 2015 was issued after the due date for completion of the annual report and identifies the following as the only non-compliance issue.

***The following instance(s) of non-compliance were also noted during the inspection:***

*During the physical inspection, an assessment was conducted to determine whether the facility and equipment appear to be generally well maintained and in a fit state of repair. A visual examination of unit process equipment indicated that regular routine maintenance was typically being conducted in a timely manner.*

*However, during the log review and documentation provided indicates that numerous failures of the primary disinfection equipment (MIOX) located at Treated Well 4. The numerous malfunctions have led to plant shutdowns and isolation from the distribution system.*

*During these periods, the operator has taken corrective actions by re-establishing primary disinfection by circulating the partially treated water to waste, until the level of primary disinfection is restored prior the returning the system active service.*

*Also during the plant physical inspection, it was observed that the MIOX treatment facility was found to have excessive hypochlorite leaks; corrosion of pumps, valves, and piping and appurtenances etc.*

Environmental services staff have already initiated corrective actions to address the inspectors identified deficiencies, the leaking MIOX system will be repaired, and parts had been ordered prior to the issuance of the inspection report. There are also concerns with the reservoir hatches at the St George St. distribution center, these will be assessed and repaired during the proposed 2016 reservoir cleaning program.

The system capability assessment charts for the wells at the end of the report relate to allowable capacities or water taking limits identified in the permit to take water issued to the Municipality by the Ministry of the Environment and Climate Change. The permit sets water taking volumes and water taking rates. Average and maximum flow volumes and rates are recorded for each month. Column 1 is the corresponding month, column 2 is the monthly average daily flow volume (total cubic meter volume pumped during the month divided by the number of days of the month) and column 3 is the maximum flow volume in cubic meters recorded on any single day during the month the percentages on the bottom of column 3 identify how much of the available capacity was actually utilized. Column 4 is a comparison of the instantaneous flow rate versus the limit imposed by the permit to take water.

The treatment center capability assessment charts indicate the actual percentage used in comparison the total available system capacity.

Total water consumption for 2015 was 691,218.26 M<sup>3</sup>.

## 2015 ANNUAL REPORT FOR MITCHELL DRINKING WATER SYSTEM

### Part 1 – ANNUAL REPORT (as required by O. Reg. 170/03, Section 11)

<b>Drinking-Water System Number:</b>	210000577
<b>Drinking-Water System Name:</b>	Mitchell Drinking Water System
<b>Drinking-Water System Owner:</b>	Municipality of West Perth
<b>Drinking-Water System Category:</b>	Large Municipal Residential
<b>Period being reported:</b>	Operating year 2015

Complete if your Category is Large Municipal Residential or Small Municipal Residential	Complete for all other Categories	
Does your Drinking-Water System serve more than <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 10,000 people?	Number of Designated Facilities served:	N/A
Is your annual report available to the public at no charge on a web site on the Internet? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Did you provide a copy of your annual report to all Designated Facilities you serve? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection. Municipal Office, Mitchell Public Library and Municipality of West Perth Website	Number of Designated Facilities served:	N/A
	Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? <input type="checkbox"/> Yes <input type="checkbox"/> No	

#### List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
N/A	

#### Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

N/A
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**Indicate how you notified system users that your annual report is available, and is free of charge.**

<input checked="" type="checkbox"/> Public access/notice via the web	<input checked="" type="checkbox"/> Public access/notice via Government Office	<input type="checkbox"/> Public access/notice via a newspaper
<input checked="" type="checkbox"/> Public access/notice via Public Request	<input checked="" type="checkbox"/> Public access/notice via a Public Library	<input type="checkbox"/> Public access/notice via Other Method _____

**Describe your Drinking Water System**

Mitchell currently obtains its water supply from 4 bedrock wells. There are two treatment facilities; Treatment 123 and Treatment 4. Treatment 123 obtains disinfection through 2 chlorine dosing pumps, 1 used as primary and the other as backup. Disinfection at Treatment 4 (T4) is provided by injecting a mixed-oxidant solution (primarily comprised of "Chlorine compounds") into the pumped well water, before it enters the distribution system. The mixed oxidant solution is generated using on-site equipment that was installed at Treatment 4 in 2007. This oxidant solution is added to disinfect the pumped well water and to maintain the chlorine residual in the distribution network. In addition to the disinfection process, a sodium silicate food grade chemical is injected into the pumped well water to sequester dissolved iron (i.e., to help prevent oxidation of iron and other dissolved metals that are naturally present in the water, as this can lead to "red" water appearance and staining of household fixtures and laundry, an aesthetic problem). Sodium silicate is approved for use in drinking water.

Treated water from Wells # 1, 2, 3 discharge chlorinated water into a baffled 138m<sup>3</sup> concrete ground-level reservoir which flows into a 190m<sup>3</sup> concrete ground level reservoir located at 132 St. George St. which is identified as Treatment 123.

Treated water is drawn from that reservoir, using high-lift pumps, and discharged into the distribution system.

Treated water from Well # 4 discharges into baffled 250 m<sup>3</sup> reservoir located at 50 Arthur St. and is identified as Treatment 4. Treated water is drawn from the reservoir using a high lift pump and discharged into the system.

Treatment 123 or Treatment 4 both operate as independent systems. Either system can be in the lead mode with the other system as a backup or in second mode to handle high peak demand.

The 3520m<sup>3</sup> elevated storage facility (standpipe) provides system water storage and sustains pressure in the distribution system. A booster pump located at the base of the standpipe, is used during emergency situations (e.g., fires), when the standpipe liquid level drops below that needed to sustain desired system flows and pressures under such circumstances.

The Mitchell water works currently services a population of approximately 4,000.

**List all water treatment chemicals used over this reporting period**

Mixed Oxidant solution produced onsite (NSF)  
Liquid Chlorine 12% - NSF  
Sodium Silicate - NSF

**Please provide a brief description and a breakdown of monetary expenses incurred**

Ontario Rd. underground infrastructure replaced between St George and St David St.  
New water main installed on east end Herbert St. between Arthur St. and East St.  
Construction began of new elevated storage tank located on Clark St.

**Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre**

Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
Aug 06, 2015	NDOGN	NDOGN	Resample	Aug 8, 2015
Dec 2, 2015	Total Coliform	1CFU/100ml	Resample	Dec 10, 2015
Dec 4, 2015	Total Coliform	29CFU/100ml	Resample	Dec 10, 2015

**Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period**

	Number of Samples	Range of E. Coli Results (min #) - (max #)	Range of Total Coliform Results (min #) - (max #)	Number of HPC Samples	Range of HPC Results (min #) - (max #)
Raw Well #1	52	0	0	N/A	N/A
Raw Well #2	52	0	0	N/A	N/A
Raw Well #3	52	0	0	N/A	N/A
Raw Well #4	52	0	0	N/A	N/A
POE #123	52	0	0	52	0-18
POE #4	53	0	0	52	0-1
Distribution	211	0	1-29	51	0-160

<b>Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report</b>			
	<b>Number of Grab Samples</b>	<b>Range of Results (min #) – (max #)</b>	<b>Units</b>
<b>Turbidity Raw Well #1</b>	<b>12</b>	<b>0.08-0.40</b>	<b>NTU</b>
<b>Turbidity Raw Well #2</b>	<b>12</b>	<b>0.01-0.49</b>	<b>NTU</b>
<b>Turbidity Raw Well #3</b>	<b>12</b>	<b>0.09-0.45</b>	<b>NTU</b>
<b>Turbidity Raw Well #4</b>	<b>12</b>	<b>0.11-0.40</b>	<b>NTU</b>
<b>Chlorine-POE 123 Continuous Monitoring</b>	<b>8760</b>	<b>0.00 – 2.14</b>	<b>mg/L</b>
<b>Chlorine-POE 4 Continuous Monitoring</b>	<b>8760</b>	<b>0.00 – 2.17</b>	<b>mg/L</b>
<b>Fluoride</b>	<b>N/A</b>	<b>N/A</b>	<b>mg/L</b>

<b>Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument</b>				
<b>Date of legal instrument issued</b>	<b>Parameter</b>	<b>Date Sampled</b>	<b>Result</b>	<b>Unit of Measure</b>
<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

## Treatment 123 (Reservoir and Distribution Center)

Summary of Inorganic parameters tested during this reporting period or the most recent sample results				
Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	Apr 27, 2015	ND	µg/L	No
Arsenic	Apr 27, 2015	3.3	µg/L	No
Barium	Apr 27, 2015	61	µg/L	No
Boron	Apr 27, 2015	100	µg/L	No
Cadmium	Apr 27, 2015	ND	µg/L	No
Chromium	Apr 27, 2015	ND	µg/L	No
Lead-see results below				
Mercury	Apr 27, 2015	ND	µg/L	No
Selenium	Apr 27, 2015	ND	µg/L	No
Sodium	Apr 27, 2015	41	mg/L	Yes
Uranium	Apr 27, 2015	ND	µg/L	No
Fluoride	Apr 27, 2015	1.9	mg/L	Yes
Nitrite	Jan. 19 2015	ND	µg/L	No
Nitrate	Jan. 19 2015	ND	µg/L	No
Nitrite	April 7 2015	ND	µg/L	No
Nitrate	April 7 2015	ND	µg/L	No
Nitrite	July 13 2015	ND	µg/L	No
Nitrate	July 13 2015	ND	µg/L	No
Nitrite	October 7 2015	ND	µg/L	No
Nitrate	October 7 2015	ND	µg/L	No

ND = Not detected



## Treatment 4 (Reservoir and Distribution Center)

Summary of Inorganic parameters tested during this reporting period or the most recent sample results				
Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	Dec. 02 2013	ND	µg/L	No
Arsenic	Dec. 02 2013	1.7	µg/L	No
Barium	Dec. 02 2013	57	µg/L	No
Boron	Dec. 02 2013	120	µg/L	No
Cadmium	Dec. 02 2013	ND	µg/L	No
Chromium	Dec. 02 2013	ND	µg/L	No
Lead-see results below				
Mercury	Dec 02, 2013	ND	µg/L	No
Selenium	Dec 02, 2013	ND	µg/L	No
Sodium	Dec 02, 2013	49	mg/L	Yes
Uranium	Dec 02, 2013	0.2	µg/L	No
Fluoride	Dec 08, 2014	1.9	mg/L	Yes
Nitrite	Jan. 19 2015	ND	µg/L	No
Nitrate	Jan. 19 2015	ND	µg/L	No
Nitrite	April 7 2015	ND	µg/L	No
Nitrate	April 7 2015	ND	µg/L	No
Nitrite	July 13 2015	ND	µg/L	No
Nitrate	July 13 2015	ND	µg/L	No
Nitrite	October 7 2015	ND	µg/L	No
Nitrate	October 7 2015	ND	µg/L	No

N/D = Not detected

## Lead Testing Results

### Summary of Lead Results during this reporting period (Winter: Dec. 15/13-April 15/14; Summer: June 15-Oct. 15/14)

Sampling Period	Location	Distribution System mg/L Lead	Distribution System mg/L Alkalinity	Any Adverse Water Quality Incidents?
Jan 19, 2015	Well #3 SS	ND	210	N
Jan 19, 2015	WWTP Hydrant	0.68	220	N
Jan 19, 2015	Hydrant#167	ND	210	N
Jul 6, 2015	Well #3 SS	ND	210	N
Jul 6, 2015	WWTP Hydrant	ND	210	N
Jul 6, 2015	Hydrant #167	0.52	200	N

ND: Non-detect

## Point of Entry 123

### Summary of Organic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Apr. 27 2015	ND	µg/L	No
Aldicarb	Apr. 27 2015	ND	µg/L	No
Aldrin + Dieldrin	Apr. 27 2015	ND	µg/L	No
Atrazine + N-dealkylated metabolites	Apr. 27 2015	ND	µg/L	No
Azinphos-methyl	Apr. 27 2015	ND	µg/L	No
Bendiocarb	Apr. 27 2015	ND	µg/L	No
Benzene	Apr. 27 2015	ND	µg/L	No
Benzo(a)pyrene	Apr. 27 2015	ND	µg/L	No
Bromoxynil	Apr. 27 2015	ND	µg/L	No
Carbaryl	Apr. 27 2015	ND	µg/L	No
Carbofuran	Apr. 27 2015	ND	µg/L	No
Carbon Tetrachloride	Apr. 27 2015	ND	µg/L	No
Chlordane (Total)	Apr. 27 2015	ND	µg/L	No

**Summary of Organic parameters tested during this reporting period or the most recent sample results**

Chlorpyrifos	Apr. 27 2015	ND	µg/L	No
Cyanazine	Apr. 27 2015	ND	µg/L	No
Diazinon	Apr. 27 2015	ND	µg/L	No
Dicamba	Apr. 27 2015	ND	µg/L	No
1,2-Dichlorobenzene	Apr. 27 2015	ND	µg/L	No
1,4-Dichlorobenzene	Apr. 27 2015	ND	µg/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Apr. 27 2015	ND	µg/L	No
1,2-Dichloroethane	Apr. 27 2015	ND	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	Apr. 27 2015	ND	µg/L	No
Dichloromethane	Apr. 27 2015	ND	µg/L	No
2-4 Dichlorophenol	Apr. 27 2015	ND	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Apr. 27 2015	ND	µg/L	No
Diclofop-methyl	Apr. 27 2015	ND	µg/L	No
Dimethoate	Apr. 27 2015	ND	µg/L	No
Dinoseb	Apr. 27 2015	ND	µg/L	No
Diquat	Apr. 27 2015	ND	µg/L	No
Diuron	Apr. 27 2015	ND	µg/L	No
Glyphosate	Apr. 27 2015	ND	µg/L	No
Heptachlor + Heptachlor Epoxide	Apr. 27 2015	ND	µg/L	No
Lindane (Total)	Apr. 27 2015	ND	µg/L	No
Malathion	Apr. 27 2015	ND	µg/L	No
Methoxychlor	Apr. 27 2015	ND	µg/L	No
Metolachlor	Apr. 27 2015	ND	µg/L	No
Metribuzin	Apr. 27 2015	ND	µg/L	No
Monochlorobenzene	Apr. 27 2015	ND	µg/L	No
Paraquat	Apr. 27 2015	ND	µg/L	No
Parathion	Apr. 27 2015	ND	µg/L	No
Pentachlorophenol	Apr. 27 2015	ND	µg/L	No
Phorate	Apr. 27 2015	ND	µg/L	No
Picloram	Apr. 27 2015	ND	µg/L	No
Polychlorinated Biphenyls(PCB)	Apr. 27 2015	ND	µg/L	No
Prometryne	Apr. 27 2015	ND	µg/L	No
Simazine	Apr. 27 2015	ND	µg/L	No

**Summary of Organic parameters tested during this reporting period or the most recent sample results**

THM (NOTE: show latest annual average)	Q1-Q4 2015	25.4	µg/L	No
Temephos	Apr. 27 2015	ND	µg/L	No
Terbufos	Apr. 27 2015	ND	µg/L	No
Tetrachloroethylene	Apr. 27 2015	ND	µg/L	No
2,3,4,6-Tetrachlorophenol	Apr. 27 2015	ND	µg/L	No
Triallate	Apr. 27 2015	ND	µg/L	No
Trichloroethylene	Apr. 27 2015	ND	µg/L	No
2,4,6-Trichlorophenol	Apr. 27 2015	ND	µg/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Apr. 27 2015	ND	µg/L	No
Trifluralin	Apr. 27 2015	ND	µg/L	No
Vinyl Chloride	Apr. 27 2015	ND	µg/L	No

ND= non-detect

## Point of Entry 4

**Summary of Organic parameters tested during this reporting period or the most recent sample results**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Dec. 02 2013	ND	µg/L	No
Aldicarb	Dec. 02 2013	ND	µg/L	No
Aldrin + Dieldrin	Dec. 02 2013	ND	µg/L	No
Atrazine + N-dealkylated metabolites	Dec. 02 2013	ND	µg/L	No
Azinphos-methyl	Dec. 02 2013	ND	µg/L	No
Bendiocarb	Dec. 02 2013	ND	µg/L	No
Benzene	Dec. 02 2013	ND	µg/L	No
Benzo(a)pyrene	Dec. 02 2013	ND	µg/L	No
Bromoxynil	Dec. 02 2013	ND	µg/L	No
Carbaryl	Dec. 02 2013	ND	µg/L	No
Carbofuran	Dec. 02 2013	ND	µg/L	No
Carbon Tetrachloride	Dec. 02 2013	ND	µg/L	No

**Summary of Organic parameters tested during this reporting period or the most recent sample results**

Chlordane (Total)	Dec. 02 2013	ND	µg/L	No
Chlorpyrifos	Dec. 02 2013	ND	µg/L	No
Cyanazine	Dec. 02 2013	ND	µg/L	No
Diazinon	Dec. 02 2013	ND	µg/L	No
Dicamba	Dec. 02 2013	ND	µg/L	No
1,2-Dichlorobenzene	Dec. 02 2013	ND	µg/L	No
1,4-Dichlorobenzene	Dec. 02 2013	ND	µg/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Dec. 02 2013	ND	µg/L	No
1,2-Dichloroethane	Dec. 02 2013	ND	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	Dec. 02 2013	ND	µg/L	No
Dichloromethane	Dec. 02 2013	ND	µg/L	No
2,4-Dichlorophenol	Dec. 02 2013	ND	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Dec. 02 2013	ND	µg/L	No
Diclofop-methyl	Dec. 02 2013	ND	µg/L	No
Dimethoate	Dec. 02 2013	ND	µg/L	No
Dinoseb	Dec. 02 2013	ND	µg/L	No
Diquat	Dec. 02 2013	ND	µg/L	No
Diuron	Dec. 02 2013	ND	µg/L	No
Glyphosate	Dec. 02 2013	ND	µg/L	No
Heptachlor + Heptachlor Epoxide	Dec. 02 2013	ND	µg/L	No
Lindane (Total)	Dec. 02 2013	ND	µg/L	No
Malathion	Dec. 02 2013	ND	µg/L	No
Methoxychlor	Dec. 02 2013	ND	µg/L	No
Metolachlor	Dec. 02 2013	ND	µg/L	No
Metribuzin	Dec. 02 2013	ND	µg/L	No
Monochlorobenzene	Dec. 02 2013	ND	µg/L	No
Paraquat	Dec. 02 2013	ND	µg/L	No
Parathion	Dec. 02 2013	ND	µg/L	No
Pentachlorophenol	Dec. 02 2013	ND	µg/L	No
Phorate	Dec. 02 2013	ND	µg/L	No
Picloram	Dec. 02 2013	ND	µg/L	No
Polychlorinated Biphenyls(PCB)	Dec. 02 2013	ND	µg/L	No
Prometryne	Dec. 02 2013	ND	µg/L	No
Simazine	Dec. 02 2013	ND	µg/L	No

**Summary of Organic parameters tested during this reporting period or the most recent sample results**

THM (NOTE: show latest annual average)	Q1-Q4 2015	25.4	µg/L	No
Temephos	Dec. 02 2013	ND	µg/L	No
Terbufos	Dec. 02 2013	ND	µg/L	No
Tetrachloroethylene	Dec. 02 2013	ND	µg/L	No
2,3,4,6-Tetrachlorophenol	Dec. 02 2013	ND	µg/L	No
Triallate	Dec. 02 2013	ND	µg/L	No
Trichloroethylene	Dec. 02 2013	ND	µg/L	No
2,4,6-Trichlorophenol	Dec. 02 2013	ND	µg/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Dec. 02 2013	ND	µg/L	No
Trifluralin	Dec. 02 2013	ND	µg/L	No
Vinyl Chloride	Dec. 02 2013	ND	µg/L	No

**List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.**

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria
Sodium (T123)	Apr 27, 2015	41	mg/L	20

**Part 2 – SUMMARY REPORT (as required by O. Reg. 170/03, Schedule 22)**

**Non-Compliance with Legislations, Regulations, Approvals & Orders**

During this period, the Facility was operated in full compliance with the Act, the regulations and the Facility's approval, save and except for the following:

**- The following instance(s) of non-compliance were also noted during the inspection:**

***Addendum to original report.***

During the physical inspection, an assessment was conducted to determine whether the facility and equipment appear to be generally well maintained and in a fit state of repair. A visual examination of unit process equipment indicated that regular routine maintenance was typically being conducted in a timely manner.

However, during the log review and documentation provided indicates that numerous failures of the primary disinfection equipment (MIOX) located at Treated Well 4. The

numerous malfunctions have led to plant shutdowns and isolation from the distribution system.

During these periods, the operator has taken corrective actions by re-establishing primary disinfection by circulating the partially treated water to waste, until the level of primary disinfection is restored prior the returning the system active service.

Also during the plant physical inspection, it was observed that the MIOX treatment facility was found to have excessive hypochlorite leaks; corrosion of pumps, valves, and piping and appurtenances etc.

**Action(s) Required:**

The Owner shall forthwith assess all essential system components of the Mitchell Drinking Water System to address ongoing issues related to maintenance, operational requirements and the prevention of system contamination. The assessment shall identify deficiencies in the protection of the facility's components.

A table top review of all preventative maintenance recommendations as provided by the equipment manufacturers should also be conducted.

Additionally, the Owner shall ensure that all aspects of the drinking water system such as: spare critical instrumentation equipment, chemical pumps, controllers, electrical system components, ventilation systems, screens, roofs, doors, drainage systems, air/vacuum relief chambers; surge facilities etc. are managed, maintained and operated to comply with all applicable regulations.

Documentation regarding a summary of the findings and actions to be taken shall be forwarded to the author of this report by May 31, 2016.

The Owner shall ensure all identified deficiencies in the system are upgraded, repaired or replaced by  
July 31, 2016.

Well #1

<b>System Capability Assessment</b>			
Comparison of Flow Rates (raw flow; m <sup>3</sup> ):			
<b>Month</b>	<b>Average Daily Flow Volume</b>	<b>Maximum Daily Flow Volume</b>	<b>*Max flow (L/min)Flow Rate</b>
January	0.45	4.99	1551.60
February	0.54	4.01	1557.00
March	40.87	161.00	1543.80
April	33.67	187.00	1247.40
May	7.48	41.99	1218.60
June	4.47	40.00	1205.40
July	3.32	36.01	1200.60
August	3.90	45.01	1191.60
September	2.33	21.00	1206.00
October	40.61	219.01	1197.60
November	0.30	7.01	1164.60
December	34.97	318.01	1215.00
<b>*MAXIMUM</b>	<b>N/A</b>	<b>318.01</b>	<b>1557.00</b>
<b>AVERAGE</b>	<b>14.41</b>	<b>90.42</b>	<b>1291.60</b>
<b>PTTW</b>	<b>N/A</b>	<b>2617.92</b>	<b>1818</b>
<b>% of PTTW MAX</b>	-	<b>12.15%</b>	<b>85.64%</b>
<b>% of PTTW AVG</b>	-	<b>3.45%</b>	<b>71.06%</b>

Column 1: The corresponding month.

Column 2: The monthly average daily flow volume (total cubic meter volume pumped during the month divided by the number of days of the month).

Column 3: The maximum flow volume in cubic meters recorded on any single day during the month.

Percentages on the bottom of column 3 identify how much of the available capacity was actually utilized.

Column 4: A comparison of the instantaneous flow rate versus the limit imposed by the permit to take water.

Notes: All max flow data is taken from L/s data from the SCADA system and converted to L/min to coincide with the PTTW.



Well #2

<b>System Capability Assessment</b>			
Comparison of Flow Rates (raw flow; m <sup>3</sup> ):			
<b>Month</b>	<b>Average Daily Flow Volume</b>	<b>Maximum Daily Flow Volume</b>	<b>*Max flow (L/min) Flow Rate</b>
January	0.00	0.00	0.00
February	0.00	0.00	0.00
March	0.00	0.00	0.00
April	0.70	15.01	1827.60
May	2.10	40.98	1845.00
June	1.93	36.00	1839.60
July	1.26	20.99	1869.00
August	2.16	26.01	1867.80
September	0.60	6.00	1864.20
October	0.00	0.00	0.00
November	0.30	7.01	1965.00
December	0.64	8.00	1956.60
<b>*MAXIMUM</b>	<b>N/A</b>	<b>40.98</b>	<b>1965.0</b>
<b>AVERAGE</b>	<b>0.81</b>	<b>13.33</b>	<b>1252.9</b>
<b>PTTW</b>	<b>N/A</b>	<b>3024</b>	<b>2100</b>
<b>% of PTTW MAX</b>	-	<b>1.36%</b>	<b>93.57%</b>
<b>% of PTTW AVG</b>	-	<b>0.44%</b>	<b>59.66%</b>

Column 1: The corresponding month.

Column 2: The monthly average daily flow volume (total cubic meter volume pumped during the month divided by the number of days of the month).

Column 3: The maximum flow volume in cubic meters recorded on any single day during the month.

Percentages on the bottom of column 3 identify how much of the available capacity was actually utilized.

Column 4: A comparison of the instantaneous flow rate versus the limit imposed by the permit to take water.

Notes: All max flow data is taken from L/s data from the SCADA system and converted to L/min to coincide with the PTTW.

Well #3

<b>System Capability Assessment</b>			
Comparison of Flow Rates (raw flow; m <sup>3</sup> ):			
<b>Month</b>	<b>Average Daily Flow Volume</b>	<b>Maximum Daily Flow Volume</b>	<b>*Max flow (L/min) Flow Rate</b>
January	986.90	2109.04	2818.80
February	916.61	2249.04	2813.40
March	726.61	2965.99	2820.60
April	937.37	2174.98	2817.60
May	1178.90	2610.02	2828.40
June	943.87	2445.98	2856.60
July	1083.26	2460.97	2814.60
August	1030.77	2449.97	2814.00
September	989.47	2400.00	2806.80
October	1039.55	2440.03	2816.40
November	1093.63	2033.99	2809.20
December	1257.39	2077.02	2814.00
<b>*MAXIMUM</b>	<b>N/A</b>	<b>2965.99</b>	<b>2856.60</b>
<b>AVERAGE</b>	<b>1015.36</b>	<b>2368.09</b>	<b>2819.20</b>
<b>PTTW</b>	<b>N/A</b>	<b>3900.0</b>	<b>2880.0</b>
<b>% of PTTW MAX</b>	-	<b>76.05%</b>	<b>99.19%</b>
<b>% of PTTW AVG</b>	-	<b>60.72%</b>	<b>97.89%</b>

Column 1: The corresponding month.

Column 2: The monthly average daily flow volume (total cubic meter volume pumped during the month divided by the number of days of the month).

Column 3: The maximum flow volume in cubic meters recorded on any single day during the month.

Percentages on the bottom of column 3 identify how much of the available capacity was actually utilized.

Column 4: A comparison of the instantaneous flow rate versus the limit imposed by the permit to take water.

Notes: All max flow data is taken from L/s data from the SCADA system and converted to L/min to coincide with the PTTW.

Well #4

<b>System Capability Assessment</b>			
Comparison of Flow Rates (raw flow; m <sup>3</sup> ):			
<b>Month</b>	<b>Average Daily Flow Volume</b>	<b>Maximum Daily Flow Volume</b>	<b>*Max flow (L/min) Flow Rate</b>
January	845.55	2184.00	4774.20
February	877.12	2086.00	4377.00
March	1066.61	2030.00	4180.20
April	914.63	2075.00	4188.60
May	1041.06	2608.00	5128.80
June	1084.60	2342.00	5150.40
July	961.39	2369.00	4240.20
August	872.81	2223.00	4289.40
September	980.00	2345.00	4217.40
October	956.00	2877.00	4198.20
November	721.10	2092.00	5114.40
December	459.97	2069.00	4182.60
<b>*MAXIMUM</b>	<b>N/A</b>	<b>2877.00</b>	<b>5150.40</b>
<b>AVERAGE</b>	<b>898.40</b>	<b>2275.00</b>	<b>4503.45</b>
<b>PTTW</b>	<b>N/A</b>	<b>8640</b>	<b>6000</b>
<b>% of PTTW MAX</b>	-	<b>33.30%</b>	<b>85.84%</b>
<b>% of PTTW AVG</b>	-	<b>36.33%</b>	<b>75.06%</b>

Column 1: The corresponding month.

Column 2: The monthly average daily flow volume (total cubic meter volume pumped during the month divided by the number of days of the month).

Column 3: The maximum flow volume in cubic meters recorded on any single day during the month.

Percentages on the bottom of column 3 identify how much of the available capacity was actually utilized.

Column 4: A comparison of the instantaneous flow rate versus the limit imposed by the permit to take water.

Notes: All max flow data is taken from L/s data from the SCADA system and converted to L/min to coincide with the PTTW.

Treatment 123

<b>System Capability Assessment</b>		
Comparison of Flow Rates (total treated flow; m <sup>3</sup> /d):		
<b>Month</b>	<b>Average Flow</b>	<b>Maximum Daily Flow</b>
January	957.18	2037.25
February	886.46	2161.49
March	747.29	2154.65
April	941.06	2184.40
May	1147.56	2533.78
June	919.56	2387.59
July	1050.66	2397.36
August	1003.18	2380.67
September	961.38	2375.79
October	1050.40	2449.29
November	1088.60	2023.04
December	1258.63	1980.56
<b>*AVERAGE</b>	<b>1001.00</b>	<b>N/A</b>
<b>MAXIMUM</b>	<b>N/A</b>	<b>2533.78</b>
<b>SYSTEM CAPACITY</b>	<b>8640</b>	<b>8640</b>
<b>% CAPACITY</b>	<b>11.59%</b>	<b>29.33%</b>

Treatment 4

<b>System Capability Assessment</b>		
Comparison of Flow Rates (total treated flow; m <sup>3</sup> /d):		
<b>Month</b>	<b>Average Flow</b>	<b>Maximum Flow</b>
January	839.16	2178.00
February	870.71	2053.00
March	1058.81	2013.00
April	908.20	2092.00
May	1033.10	2624.00
June	1077.67	2295.00
July	952.58	2358.00
August	865.94	2222.00
September	973.63	2362.00
October	948.45	2825.00
November	716.40	2076.00
December	457.10	2030.00
<b>*AVERAGE</b>	<b>891.81</b>	<b>N/A</b>
<b>MAXIMUM</b>	<b>N/A</b>	<b>2825.00</b>
<b>SYSTEM CAPACITY</b>	<b>8640</b>	<b>8640</b>
<b>% CAPACITY</b>	<b>10.32%</b>	<b>32.70%</b>