

# Proposed Changes to Maitland Valley Source Protection Plan (SPP) and Assessment Report (AR) pre s34 of CWA – Jan. 2024

## Key Updates:

1. Revisions to Century Heights WHPA to include new well # 3
2. Revisions to Lucknow WHPA to reflect increase in Permit to Take Water (PTTW)
3. Update SPP preface to include Section 34 amendment; revised Map; Century Heights map and Lucknow map
4. Update Preface and Chapter 4 of AR and relevant vulnerable area maps
5. NO policy changes

**Note: SPP and AR versions that were revised for the ‘Section 36’ update are used for this ‘Section 34’ update. The ‘Section 36’ amendment was submitted to MECP in March 2023, and is NOT yet approved, at time of ‘Section 34’ pre-consultation (Jan 2024)**

## A. Maitland Valley Source Protection Plan (SPP)

Proposed updated text in red font

Section and/or page number	Proposed text
Preface	<p><b><u>CWA Section 34 Amendment:</u></b></p> <p><u>Changes to two drinking water systems in the Maitland Valley SPA:</u></p> <p><u>1. Revision to the Century Heights wellhead protection area (WHPA) to include new well #3 in the community of Saltford, Township of Ashfield-Colborne-Wawanosh</u></p> <p><u>2. Revision to the Lucknow wellhead protection area (WHPA) as a result of increased Permit to Take Water (PTTW) for the Lucknow drinking water system in the Township of Huron-Kinloss.</u></p>
2.2; page 18	In the Ausable Bayfield Maitland Valley Source Protection Region there are <del>26</del> <u>25</u> municipal groundwater well systems as well as two Lake Huron intakes.
2.2; page 19	<p>* Please be advised that the Carriage Lane and Harbour Lights well systems were taken out of service by the Municipality of Bluewater, and were therefore removed from the <u>Ausable Bayfield</u> Plan in 2016. The Varna well system was added to the Plan in 2018, as it has been designated as a municipal drinking water system. Zurich <del>will be was</del> removed <u>in 2023</u> once it connect<u>ed</u> to the Lake Huron Primary Water Supply System and <del>the wells are</del> decommissioned <u>the wells</u>.</p> <p>** The Ripley well system is located in the Saugeen SPA. The Ripley WHPA was re-delineated in 2017 and the WHPA-C now extends into the Maitland</p>

	SPA. <a href="#">The Lucknow WHPAs was updated in 2024.</a>  *** Blyth added a new well in 2016. The revised Blyth WHPA is included in the MV Plan. <a href="#">Century Heights WHPA was revised in 2024 to include new Well # 3.</a>
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**2. Revised Schedules (maps)**

Schedule Name	Former Name	Municipality	Map Title
Key Map	Key Map	All Municipalities in the MV SPA	Wellhead Protection Areas and Intake Protection Zone
ACW-Cent	MV-ACW-2	Ashfield-Colborne-Wawanosh	Century Heights
HK-Luck	MV-HK-1	Huron-Kinloss	Lucknow

**B. Maitland Valley Assessment Report (AR)**

**1. AR Preface – proposed new text:**

**Version 5: Assessment Report, amended TBD**

The Assessment Report and Source Protection Plan was amended in 2024 under Section 34 of the *Clean Water Act, 2006* to include the following changes to municipal water supply systems:

- Re-delineation of Century Heights Wellhead Protection Area to include new Well #3 servicing the community of Saltford
- Revision of the Lucknow Wellhead Protection Areas to reflect an increase to the Permit to Take Water for the Lucknow drinking water system

The amendment was prepared using the 2021 Technical Rules. Sections of the Assessment Report that were not updated as part of this amendment may refer to earlier versions of the Technical Rules.

**2. AR Chapter 4**

Section	Proposed Revisions
4.2 Methods for Delineating Vulnerable Areas Page 4-13	<a href="#">The WHPAs will be updated as needed to reflect changes to municipal water supply systems, such as new or altered wells. Amendments are noted in the preface of the Assessment Report</a>
4.5.1.2.2 Century Heights	<a href="#">Note that the WHPA was revised in 2024 to include an additional well (#3) serving the community of Saltford. B.M. Ross prepared the Municipal Class Environmental Assessment (MCEA) for the drinking water system expansion.</a>

The MCEA includes a description of the study area, technical review of the water supply system, plus source water protection impacts (BMRoss, 2023). An updated, local-scale groundwater model was developed by Matrix Solutions Inc., based on local and regional characterization work previously completed in 2010 by Waterloo Numerical Modelling Corp, plus current MECP data sets. Vulnerability scoring was based on existing groundwater vulnerability mapping. An uncertainty analysis was conducted in accordance with the Technical Rules; uncertainty ranking for the wellhead protection areas and vulnerability scores was 'low' (Matrix, Nov 2023).

The following is a description of the Century Heights well system\*.

- Location: Century Heights and Maitlandview Subdivisions, ~~400 m east of the Maitland River~~
- SPA: Wells and WHPA are in the MV SPA
- Year constructed: Well 1: 1979; Well 2: 2003; Well #3: 2022
- Depth: Well #1: ~~68.8-66~~ m, Well #2: 66 m; Well #3: 76 m
- Users Served: 14585 connections (2023), expanding to over 200 in future
- Design Capacity: 328 m<sup>3</sup>/day (3.8 litres/sec) maximum day flows to service future growth is 1,084 m<sup>3</sup>/day
- Permitted Rate: 328 m<sup>3</sup>/day
- Average Usage: never exceeded 186 m<sup>3</sup>/day (2.2 litres/sec)
- Modelled Pumping Rate: Wells 1 and 2: 35 m<sup>3</sup>/day each; Well 3: 147 m<sup>3</sup>/day (2023\*)
- Treatment: Chlorination; UV for Wells 1&2

\*Matrix Solutions Inc., Nov 2023 (file #35869-527) and BMRoss Ltd, 2024 (File # 21285, MCEA for Century Heights)

**Maps 4.ACW.WHPA-IPZ and 4.Cent** show the WHPA zones A to D, largely agricultural land and forest, extending northeast of the well sites toward Lucknow Line. As Wells 1 and 2 are located close together, their WHPA is combined. The WHPA for Well 3 is separate, located south of Wells 1 and 2. ~~to in long, tapered shape about 9.75 km eastward across the Sharpe's Creek and as far as the Maitland River at the boundary of Central Huron.~~ Land use is primarily residential, agricultural and wooded areas. A vulnerability score of 10 applies only to WHPA-A, the 100 m radius around the wells. WHPA-B, WHPA-C, and WHPA-D all have a vulnerability score of 6 or less. Since Century Heights Wells 1 and 2 isare considered a GUDI wells (groundwater under the direct influence of surface water) a 2 hour time of travel zone is required. This zone is called WHPA-E and has a vulnerability score of 7.2. Well #3 is not considered to be GUDI (BMRoss, 2023)

Table 4.9  
Century  
Heights WHPA:  
Enumeration  
of Potential  
Significant  
Threats

type. The threats were based on the circumstances in the 2021 Technical Rules, previous threat assessment work and potential activities as determined from aerial photography and zoning designations; numbers are subject to change. No other local circumstances were identified.

**Map 4.Cent** shows the WHPA and vulnerability scores. It can be used with Table 4.6 to identify the areas where chemical, pathogen, and DNAPL threats can be significant, moderate, or low.

**Table 4.9 Century Heights WHPA: Enumeration of Potential Significant Threats**

Threat Type (numbered per <i>Clean Water Act, 2006</i> )	Chemicals	Pathogens	DNAPL
1. Waste Disposal Site	0		
2. Sewage System		4420	
12. Application of Road Salt	0		
13. Storage of Road Salt	0		
14. Storage of Snow	0		
15. Fuel Handling/Storage	0		
16. Dense Non-Aqueous Phase Liquid Storage			0
<b>Total:</b>	<b>0</b>	<b>4420</b>	<b>0</b>

Certain types of activities on residential sites that are incidental in nature and may be significant threats are not enumerated. These activities include storage of DNAPLs, storage of road salt and application of road salt, on residential properties.

4.5.6.2.2  
Lucknow  
Page 4-64

**4.5.6.2.2 Lucknow**

Note that the Lucknow WHPA was revised in 2024 to reflect an application to increase the pumping rates to accommodate future development. Given the proposed increase to pumping rates at Well 5, the WHPAs and associated vulnerability scores were re-modeled to update the capture zones to reflect the long-term projected pumping rates. The modeling work was completed by Matrix Solutions Inc. (Matrix, July 2023). The original groundwater flow model developed for the Township of Huron-Kinloss (Waterloo Hydrogeologic Inc., 2003) was updated to re-delineate WHPAs for the two existing water supply wells, based on the increased Permit to Take Water (PTTW). Vulnerability scoring was based on existing groundwater vulnerability mapping. An uncertainty analysis was conducted in accordance with the Technical Rules; uncertainty ranking for the wellhead protection areas and vulnerability scores was 'low' (Matrix, 2023).

The following is a description of the Lucknow well system (updated in 2024 per municipal reports and Matrix, July 2023 WHPA report):

- Location: Well #4: 533 Hamilton St., Well #5: 399 Bob St.
- SPA: Well and WHPA are in the MV SPA
- Year constructed: Well #4: 1957, Well #5: 1967
- Depth: Well #4: 54.8 m, Well #5: 58.8 m
- Users Served: 1100 670 connections
- Design-Maximum Daily Supply Capacity: 3404.16 m<sup>3</sup>/day (39.4 litres/sec) 2,000 m<sup>3</sup>/day (beginning Oct 2022)
- ~~Permitted Rate: Well #4: 820 m<sup>3</sup>/day, Well #5: 3274.56 m<sup>3</sup>/day~~
- Average Usage: 4: 43-100 m<sup>3</sup>/day; 5: 517-562 m<sup>3</sup>/day (2001-20062014-2016) \*
- Modelled rate: 4: 48-100 m<sup>3</sup>/day; 5: 637-700 m<sup>3</sup>/day \*
- Treatment: Chlorination
- \* CRA, 2007Matrix, Jul 2023

**Maps 4.HK.WHPA and 4.Luck** show that the WHPAs extends ~~south~~-eastward from the wells ~~to include about 7.7 km~~ along the south Huron-Kinloss border and into ACW. The re-defined WHPAs for wells 4 and 5 are separate.

The WHPA for Lucknow Well 4, located near the intersection of Havelock and Rose Streets, extends northeast of the well site then continues eastward. WHPA-A is primarily residential; vulnerability score is 10. WHPA-B includes residential, municipal properties plus open space and forest; vulnerability scores are 8 and 10. WHPA-C and D are largely composed of agricultural land, forested areas, and wetlands; vulnerability scores are 8 and 6, respectively.

The WHPA for Lucknow Well 5 extends southeast of the well site on South Delhi Street. The WHPAs of Well 5 are significantly larger than that of Well 4, due to increased pumping rate from this well. WHPA-A includes the residential, institutional and municipal land uses. WHPA-B, C, and D extend into ACW and encompass largely agricultural, forested and wetland areas. Portions of WHPA-B have a high vulnerability score of 10, with remainder scoring 8 and 6. WHPA-C has vulnerability scores of 8, 6 and 4, and WHPA-D has vulnerability scores of 6, 4 and 2.

**Update threat numbers**

**Table 4.42 Lucknow WHPA: Enumeration of Potential Significant Threats**

Threat Type (numbered per <i>Clean Water Act, 2006</i> )	Significant Instances		
	Chemicals	Pathogens	DNAPL
1. Waste Disposal Site	0		
2. Sewage System	1	46	
3. Agricultural Source Material Application		91	
4. Agricultural Source Material Storage		0	
6. Non-Agricultural Source Material Application			
7. Non-Agricultural Source Material Handling/Storage			
8. Commercial Fertilizer Application	42		
9. Commercial Fertilizer Handling/Storage			
10. Pesticide Application	42		
11. Pesticide Handling/Storage			
12. Application of Road Salt	2		
13. Storage of Road Salt	2		
14. Storage of Snow	20		
15. Fuel Handling/Storage	9		
16. Dense Non-Aqueous Phase Liquid Handling/Storage			0
21. Grazing/Pasturing Livestock	23	23	
<b>Total:</b>	<b>2021</b>	<b>610</b>	<b>0</b>

Certain types of activities on residential sites that are incidental in nature and may be significant threats are not enumerated. These activities include storage of DNAPLs, storage of road salt and application of road salt, on residential properties.

Table 4.90  
All\* WHPAs:  
Enumeration  
of Potential  
Significant  
Threats

In 2024, the threat numbers were adjusted to reflect changes to the Century Heights and Lucknow systems. The numbers are subject to change as threat activities are confirmed.

**Table 4.90 All\* WHPAs: Enumeration of Potential Significant Threats**

Threat Type (numbered per <i>Clean Water Act, 2006</i> )	Significant Instances		
	Chemicals	Pathogens	DNAPL
1. Waste Disposal Site	7	0	
2. Sewage System	6	<del>158</del> 169	
3. Agricultural Source Material Application	3	<del>34</del>	
4. Agricultural Source Material Storage	0	<del>10</del>	
6. Non- Agricultural Source Material Application	0	0	
7. Non- Agricultural Source Material Handling/Storage	0	0	
8. Commercial Fertilizer Application	<del>34</del>		
9. Commercial Fertilizer Handling/Storage	1		
10. Pesticide Application	<del>67</del>		
11. Pesticide Handling/Storage	0		
12. Application of Road Salt	53		
13. Storage of Road Salt	40		
14. Storage of Snow	<del>4745</del>		
15. Fuel Handling/Storage	36		
16. Dense Non-Aqueous Phase Liquid Handling/Storage			53

Threat Type (numbered per <i>Clean Water Act, 2006</i> )	Significant Instances		
	Chemicals	Pathogens	DNAPL
<del>17. Organic solvent handling and storage</del>	<del>0</del>		
<del>18. The management of runoff that contains chemicals used in the de-icing of aircraft.</del>	<del>0</del>		
<del>19. Water Takings</del>	<del>0</del>		
<del>20. An activity that reduces the recharge of an aquifer.</del>	<del>0</del>		
21. Grazing/Pasturing Livestock	<del>45</del>	5	
<del>22. Liquid hydrocarbon pipeline</del>	<del>0</del>		
<b>Total:</b>	<del>206207</del>	<del>467179</del>	<b>53</b>

\*Atwood, Auburn, Belgrave, Benmiller, Blyth, Brussels, Century Heights, Clifford, Clinton, Dungannon, Gowanstown, Harriston, Huron Sands, Kelly, Listowel (Wells 4, 5, 6), McClinchey, Molesworth, Palmerston, Wingham, Lucknow, Seaforth, Whitechurch

References

Added Century Heights and Lucknow technical reports prepared by Matrix Solutions Inc.  
Also EA for CHt by BM Ross

### 3. List of revised AR maps:

4.ACW.IS	Ashfield Colborne Wawanosh - Total Impervious Surface within Vulnerable Areas
4.ACW.ML	Ashfield Colborne Wawanosh - Managed Lands within Vulnerable Areas
4.ACW.LD	Ashfield Colborne Wawanosh - Livestock Density
4.ACW.WHPA	Ashfield Colborne Wawanosh - Wellhead Protection Areas
4.HK.IS	Huron-Kinloss - Total Impervious Surface within Vulnerable Areas
4.HK.ML	Huron-Kinloss - Managed Lands within Vulnerable Areas
4.HK.LD	Huron-Kinloss - Livestock Density
4.HK.WHPA	Huron-Kinloss - Wellhead Protection Areas
4.Cent	Century Heights System - Wellhead Protection Area and Vulnerability
4.Luck	Lucknow System - Wellhead Protection Area and Vulnerability
	<b>Revised WHPAs also appear on these maps – minor change</b>
4.CH.IS	Central Huron - Total Impervious Surface within Vulnerable Areas
4.CH.ML	Central Huron - Managed Lands within Vulnerable Areas
4.CH.LD	Central Huron - Livestock Density
4.CH.WHPA	Central Huron - Wellhead Protection Areas
4.Benm	Benmiller System - Wellhead Protection Area and Vulnerability
4.GD.IS	Goderich - Total Impervious Surface within Vulnerable Areas
4.GD.ML	Goderich - Managed Lands within Vulnerable Areas
4.GD.LD	Goderich - Livestock Density