

CHANGES TO UPPER THAMES RIVER PROPOSED ASSESSMENT REPORT
REVISIONS TO ADDRESS MOE EARLY NOTIFICATIONS LETTER

No.	Guideline from MOE early notifications letter	Description of Change Made	Section/Appendix Changed
1a	Include the Tier 2 drought scenarios assessments (2 and 10-year) and quantification of uncertainty for each of the Tier 2 subwatersheds within the AR.	The AR is revised to include the drought scenario output from the most recent version of the Tier 2 water budget report. No additional subwatersheds moved forward to a Tier 3 water budget as a result of drought analysis. The quantification of uncertainty for each of the Tier 2 subwatersheds is now provided in the AR	Drought scenarios described in Section 3.4, 3.3.5 (peer review text), Section 3.4.1, Section 3.6 (Table 3-8), Section 9: Table 9-1. Section Summary 3: data gaps text. Section Summary 9: Table 1
1b	Indicate that planned work for a local tier 2 risk assessment has not taken place for this AR version since significant drinking water threats will be verified when the source protection plan is being developed. Relevant references include statements on page 7-16, 7-40, and 9-3.	The AR is revised to indicate that the tier 2 (site specific) risk assessment, to confirm significant threats, would be conducted while developing source protection plans (2012) if needed.	Section 7.1.5, Section 7.3, Section 9: Table 9-1, Section Summary 7: data gaps, Section Summary 9: Table 1, All system summaries
1c	Apply the correct methodology to enumerate threats related to ASM generation and storage. These calculations should be done using parcel specific information. Two different methods were described in the report; one in the introductory section and one in the section that discusses the specific threat. Please clarify what method was used in the actual enumeration of threats and document this in the AR.	The methodology in Section 7.1.1 is revised to better clarify the methods followed in enumerating threats related to 'the storage of agricultural storage material' and 'the use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard'. In determining chemical threats related to 'the use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard', the livestock density calculation is performed on an individual farm parcel rather than the whole of a vulnerable area. This did not result in any changes to maps. It did not result in any additional significant threats.	Section 7.1.1 (subsections 'Mapping of Impervious Area, Managed Lands and Livestock Density', 'Livestock Density', 'Chemical Threats Related to the Use of Land for Livestock Grazing, Pasturing or Outdoor Confinement Area or Farm-Animal Yard', and 'Chemical Threats Related to Agricultural Source Material Storage').

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2a	<p>A table that shows all Permit To Take Water (PTTW) water takings, their proposed use, maximum permitted amount and actual taking with relevant Tier 2 information. Although this information can be referenced to in the AR, the Water Budget Technical Reports are not provided on the SPC website for public access. While the AR Checklist notes that AR Table 3-1 Groundwater use in the UTRSPA should contain the required Tier 2 WB information, a table footnote states the information is only from Tier 1 WB data.</p>	<p>This information is included as an appendix in the Tier 2 water budget report, and also in the Tier 1, for surface water permits. These are referenced in the amended AR. The Tier 1 and Tier 2 water budget reports will be made available to the public. Table 3-1 was recreated using Tier 2 data.</p>	<p>Section 3.2.5; Table 3-1, Appendix 12 (list of references)</p>
2b	<p>A table that presents all the updated water demand values for the Tier 2 Water Budget evaluation for the groundwater component. Although the AR Table 3-3 Water Budget Summary was taken from Tier 1 work because Tier 2 analysis was only completed for groundwater systems, it is still a legislative requirement to summarize the Tier 2 Water Budget values for the groundwater.</p>	<p>The water demand values were tabulated from the Tier 2 Integrated Calibration Report and included in the amended AR. Two new tables, 3-3a and 3-3b, describe water budget summaries for T1 and T2 respectively</p>	<p>Section 3.6: Table 3-3a, Table 3-3b</p>

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2c	<p>A rationale for the change made in mapping for Map 4-2-1 Significant Groundwater Recharge Areas between the draft proposed AR and the proposed AR. This should include an explanation on how Technical Rule 46 was applied for this change.</p>	<p>Rule 46 allows professional judgment in determining and defining SGRA areas. The mapping was revised, as allowed under this rule, to remove areas which some water budget peer review members felt were groundwater discharge rather than recharge areas in river valley/flood plain areas. The exercise of overlaying the groundwater vulnerability onto the SGRAs creates “overlay artifacts” or “sliver polygons”. This occurs where the boundary of a contiguous groundwater vulnerability area falls close to the boundary of the SGRA. Since the datasets do not perfectly align to each other, the slight gaps and overlaps between the boundaries create small, uniquely valued polygons. In some cases, these polygons will be assigned a Vulnerability Score of 6 (i.e. potential for Low Threats) but have areas less than 1 square meter in size. This should be considered in policy development and/or implementation for these areas.</p>	<p>Section 3.5, Section 4.5 as well as section summaries</p>
3	<p>Given the areas used for Tier 1 and Tier 2 are different, having one table that combines different areas and tiers reduces the clarity of the AR. It would help clarify the AR by separating Tables 3-6 Groundwater potential for stress (Average Annual Conditions) and 3-7 Groundwater potential for stress (Maximum Monthly Conditions) for Tier 1 and Tier 2 results, clearly indicating what boundaries were used for each table.</p>	<p>Tables 3-6 and 3-7 were separated into 3-6a, 3-6b, 3-7a and 3-7b, where 'a' suffix denotes Tier 1 results, 'b' suffix, Tier 2. Results are still only presented for the most advanced analysis (i. e. subwatersheds which moved to Tier 2 do not have the Tier 1 stress assessments included, but rather a reference is made to the Tier 1 water budget report).</p>	<p>Section 3.4: Tables 3-6a, 3-6b, 3-7a, 3-7b.</p>

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4	<p>The statement in section 7.1.4 on page 7-15, “According to Rule 131, activities in vulnerable areas that contribute to drinking water quality issues are deemed significant drinking water threats regardless of assigned vulnerability scores”, can be misleading to the reader. It will help clarify the Technical Rules by indicating that this statement only applies to issues in WHPA and IPZ vulnerable areas for systems in the Terms of Reference (ToR). It may also be helpful to indicate that issues are considered moderate drinking water threats when they are linked to a system not identified in the ToR or are located in a HVA/SGRA area.</p>	<p>These clarifications are provided in the AR: According to Rules 114, 115, 131 and 141, activities or conditions that contribute to drinking water quality issues (known to be partially or wholly due to anthropogenic sources), are deemed significant drinking water threats regardless of assigned vulnerability scores. This applies to intake protection zones and wellhead protection areas only, for drinking water systems identified in the Source Protection Area Terms of Reference. Further, issues in HVAs or SGRAs or those linked to a system not identified in the Terms of Reference may lead to the identification of moderate drinking water threats (not significant threats). Systems not identified in the Terms of Reference may be those included in the source protection planning process through municipal council resolution or by the Minister (MOE).</p>	<p>Section 7.1.4, Section 5.2. Appendix 2: Section Summary 5: Impact of Identifying an Issue, Section Summary 7: Threats Arising from Issues.</p>

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AMENDMENTS/UPDATES/OTHER**

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1	Perth WHPAs sewer threat analysis	Additional analysis was done to identify chemical and pathogen type threats from sewer lines, related to 'the establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage', for the Perth, Town of St. Marys and City of Stratford well systems. These types of threats were identified in the WHPA-As of the Mitchell, St. Marys, Shakespeare and Stratford systems and is now reflected in the amended AR. This has resulted in an increase in the number of locations of significant threats. This item is now removed from data gaps sections.	Section 7: Table 7-1, Section 7.2.2: Table 7-7, Section 7.2.19: Table 7-27, Section 7.2.21: Table 7-29, Section 7.2.22: Table 7-30, Section 7.2.24: Table 7-32, Section 7.4. Section 9: Table 9-1. Section Summary 7: Table 3 and data gaps section, Section Summary 9: Table 1. Mitchell, St. Marys, Shakespeare, Stratford System Summaries: Table 2. Appendix 12 (list of references)
2	Issues analysis update: Thamesford issue nitrate to be removed	Nitrate was previously identified in the proposed AR as an issue in the raw (untreated) water of the Thamesford water wells. From the March 2011 Oxford County issues report update for the Thamesford system, nitrate levels in the wells have been decreasing, and since the fall of 2009, they have been consistently below the half MAC (Maximum Acceptable Concentration, for drinking water). The MAC is 10 mg/L for nitrate. It was recommended by Oxford County to remove nitrates as an issue for Thamesford, and this is now reflected in the amended AR.	Section 5.4: Table 5-5, Section 5.5: Table 5-6, Section 5.6: Table 5-7, Thamesford System Summary: Table 1, Section Summary 5: Table 1, Appendix 9 (flagged parameters), Appendix 12 (list of references).

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3	Pasture and outdoor confinement area threats analysis	Additional analysis was done to identify threats related to 'the use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard'. Findings: (1) A field visit was made to a property (that spans the Dorchester WHPA-A and WHPA-B) that was already identified in the proposed AR as a significant threat (related to farm activities). The field visit confirmed that the property is not an animal farm. It is now removed from the count of significant threats for this well system, and the list of threats is revised accordingly. (2) Chemical type threats related to this activity are now identified in the rural Woodstock WHPA-B and Ingersoll WHPA-A (one property in each system's WHPA). One property each were identified at the St. Pauls WHPA-A (chemical and pathogen) and St. Marys WHPA-B (pathogen). For these four systems, the properties on which the activities occur were previously identified to have other significant threats occurring.	(1) Section 7: Table 7-1, Table 7-5, Table 7-10. Dorchester System Summary: Table 2. (2) Section 7: Table 7-1, Table 7-19, Table 7-26, Table 7-30 and Table 7-31. Woodstock System Summary: Table 3, Ingersoll, St. Pauls and St. Marys System Summaries: Table 2. Section Summary 7: Table 3. Appendix 12 (list of references).
4	WHPA-E delineation and vulnerability assessment for Dorchester, Fanshawe, Thamesford, Woodstock rural and St. Marys GUDI systems	As per the Dillon Consulting Ltd March 2011 and April 2011 reports, and the UTRCA April 2011 report, WHPA-Es were delineated and assessed for the Dorchester, Fanshawe, Thamesford, Woodstock and St. Marys well supply systems. The systems did not meet Technical Rule 50 (2) and (3) and therefore WHPA-Fs were not delineated. The Kilworth-Komoka wells were decommissioned in October 2010. As well, the MOE directed that the workplans for WHPA-E and WHPA-F for the Highgate system not be included in the Lower Thames Valley AR as information available at this time indicates that the system does not meet the test in Technical Rule 49 (3). Therefore the Kilworth-Komoka and Highgate well systems were removed from the list of GUDI studies in the current ARs. Risk assessment has not been completed and needs to be identified as a data gap.	Section 4.3.1: Table 4-1, Section 4.3.4: text, Section 4.3.5: text and Table 4-4a, Section 4.3.6. New WHPA-E Maps 4-1-2a, 4-1-4a, 4-1-16a, 4-1-17a and 4-1-21a. Section 7.4, Section 9: Table 9-1. Dorchester, City of London, Thamesford and St. Marys System Summaries: all figures (except Hyde Park), text on WHPA, vulnerability assessment, peer review, and data gaps. Section Summary 4: text in sections on WHPA, Table 1, and data gaps. Section Summary 7: data gaps. Section Summary 9: Table 1. Appendix 1, Appendix 12, Appendix 13, List of Maps

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5	Update AR to include information on the new well in the Dorchester system (Well 3PW-8).	The new Dorchester well 3PW-8 was put into service late summer 2010. The count of wells for the Dorchester system is updated. Pumping rate information (max. annual, avg annual, avg monthly), well screen depths, and source (GUDI) are provided in the current AR. Limited raw water quality data is collected, but for the other municipal wells of the same system, no drinking water quality issues were detected. Note: the planned Oxford wells at Mount Elgin ('Bond' well) and Woodstock ('Graydon' well) are yet to be put into service.	Section 4.3.4, 4.3.5, Section 5: Table 5-6, Dorchester system summary: system overview, issues text and data gaps, Appendix 9
6	Vulnerability score changes due to modified AVI and SWAT scores and other minor adjustments for Oxford well systems WHPA.	The Aquifer Vulnerability Index (AVI) for most Oxford wells (except Ingersoll and Woodstock, which were assessed using SWAT) were modified to reflect the classification thresholds as specified by the Technical Rules. The previous high vulnerability AVI threshold was increased from 24 to 'less than 30', and the medium vulnerability AVI threshold corresponds to 'greater than or equal to 30 and less than or equal to 80'. The other minor adjustments made to the SWAT and AVI vulnerability mapping included filling minor gaps or misalignments, smoothing areas between different vulnerability categories and removing suspect erroneous well records. There are minor changes in mapping and no changes to vulnerability scoring except for the Ingersoll WHPA-C. In this WHPA, the vulnerability scores were previously 2, 4 and 6; they are now 2 and 6 only. Updated vulnerability and risk assessment identified an additional property as a significant threat and a significant threat letter was sent to the landowner. The count of significant threat locations for the Ingersoll WHPA-B is now updated to be a total of 41 (previously 40).	Section 4.3.1: Table 4-1, Section 4: Table 4-4, Section 7: Table 7-6. applicable System Summaries figures, Oxford system maps in Appendix 1, Section 7: Table 7-19. Section summary 7: Table 3, and Ingersoll System Summary Table 2

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7	Remove Kilworth-Komoka and from the UTR AR	The Kilworth-Komoka wells were decommissioned in October 2010 (information from Municipality of Middlesex Centre). They are therefore removed from the amended AR.	Throughout sections 4, 5, 7 and 9
8	Remove the work plan for sampling programs to identify issues. Remove work plans for issues where it has not been determined that the source of the issues is partially or fully anthropogenic. Remove the work plans to identify issue related threats and delineate issue contributing areas.	This comment was received from MOE for both the LTV and SCR proposed ARs. The same change is therefore implemented in the UTR AR. Table 5-7 will be moved from Section 5.6 (Work Plan) to Section 5.7 (Data Gaps) to indicate that the source of some of the identified issues is a data gap and how to fill that data gap. Text in Section 5-7 will be added to describe this data gap. Work plans to identify threats related to issues are removed but further clarification is provided: If more information becomes available to the SPC to identify the sources of the issues, and the issues contributing area and activities must be determined, they will be included in a subsequent AR.	Section 5.6: Table 5-7, Section 5.7, Section 7.4, Section 9: Table 9-1. Section Summary 5: data gaps text, Section Summary 7: data gaps text, Section Summary 9: Table 1
9	Minor editorial	Minor editorial changes to be made throughout the AR to reflect that the current AR is the 'Amended Proposed', pagination, spellings, etc.	Throughout the AR