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# **Site contamination: Guideline for assessment of underground storage systems**

## **Submission responses**

**September 2019**

## Consultation feedback

Section no	Section title	Consultation feedback	Action taken
–	<b>General</b>	The guideline effectively describes the need to assess integrity tests and reconciliation records (for example). These may be available for active services stations but are rarely available for old, abandoned USS. The guideline should acknowledge and allow for this.	Further words provided in regards to the assessing information where available.
		<p>USS investigations can be improved significantly (including mitigating safety risks) through relevant lines of evidence which may include: anecdotal (owner/occupant), tank manufacturers specifications (esp. dimensions &amp; instillation), geophysics (conducted by a qualified practitioner, as distinct from a service locator) &amp; accurate sampling (within backfill sands to the base of tankpit + 200 mm, with hand auger if required).</p> <p>Provide practical guidance regarding determination of tank dimensions/orientation, tank pit dimensions to determine optimal sampling locations: <a href="https://www.epa.gov/ust/accelerated-site-assessment-tools-underground-storage-tank-sites-guide-regulators">https://www.epa.gov/ust/accelerated-site-assessment-tools-underground-storage-tank-sites-guide-regulators</a>. Assign internal EPA staff to research and make available historic tank manufacturing details (eg Gilbarco). Fill and dip point specs can assist identification of tank dimensions and orientation.</p>	Noted and considered. No amendments made.
		Septic tanks meet the definition of a USS and therefore assessment and removal of a septic tank must comply with this guideline. Is it possible to include commentary on the applicability of this guideline to septic tanks?	Septic and water tanks not included as part of this guideline. The following words added in section 1.2 when defining what USS includes 'with the exception of the storage of water or septic tanks'.
<b>2.2</b>	<b>PSI</b>	The guideline provides an extensive wish list of information to assess an USS during a PSI but in reality this information is	The following words were added: 'It is noted that this is not an exhaustive list of information relevant to USS sites, with all relevant

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		<p>only available for sites where the USS are active (ie service stations). There are many sites where the USS is abandoned and condition unknown. The language used in this section could be interpreted as the EPA's expectations of a PSI where an USS is present. If this is the case, these expectations of a PSI are unrealistic.</p> <p>Be clear that this is information that should be sought but may not be immediately available.</p>	<p>information to be considered, investigated and presented, where available, as part of the PSI. Where information is not readily available this should be considered and discussed in the development of the CSM.'</p>
<b>2.2 and 2.3</b>	<b>PSI and CSM</b>	<p>While there is often little documentation available on abandoned USS, a great deal of information can be gained through accessing the USS through the dip point to get a better understanding of contents and volume. This is not mentioned in the guideline.</p>	<p>The listed information is not exhausted, however gathering the information listed may require access to the USS to determine current volumes, size, etc where this information is not readily available. However it is not considered appropriate for the EPA to recommend the site assessor access dip points due to the potential WHS issues and training needs.</p>
<b>2.3</b>	<b>CSM</b>	<p>The GAR provides sufficient information regarding the need for a CSM. There is no need to repeat it in this guideline unless there is more detail/specifics regarding USS.</p> <p>Remove this section or make it more specific to USS.</p>	<p>Noted, removed majority of content and left reference to GAR and ASC NEPM.</p>
<b>2.4</b>	<b>COI</b>	<p>The list of CoC is longer than the typical analyte suite the industry uses for assessing UPSS. I might help the user to identify the CoC EPA expects to see analysed for the standard service station site.</p>	<p>The EPA does not expect that all sites are analysed for this list of COI. This is a list that may be associated with USS, with the assessor to determine the main COI during the PSI stage, which will vary depending on the PCAs undertaken at the site.</p>
<b>2.5</b>	<b>DSI</b>	<p>The guideline discusses the need to target soil investigation bores to pipework, fill points and tank bodies and in particular as close to tank bodies as possible. The need to map the location of the infrastructure and use of a service locator is also noted.</p>	<p>Consolidated the safety message for location of all underground services prior to commencing intrusive works. The survey by a professional service locator is recommended, the use of location technologies such as GPR should be determined by the service locator and developed WHS plan for the works.</p>

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		Given the risks associated with drilling through pipework and tank bodies, the importance of this should be more heavily emphasised. Further, the guideline should be more explicit on the use of a service locator; specifically ground penetrating radar should be used to map locations of below ground infrastructure.	
2.7	Soil assessment	Table 1. Suggest removing the specified minimum depth beneath former infrastructure and requiring investigation and sampling to be guided by field screening and observations during investigation at these locations (as for other areas). There is potential for impacts to extend to greater depths than the current suggested minimum investigation depths in these areas specified in the table.	The 3 m depth is a recommended minimum depth, however this portion of the table further qualifies that depths should be guided by olfactory/visual and field indicators. It is expected that the site assessor would investigate greater than 3 m if field observations indicated site contamination extended to greater depths.  No amendments made.
		Para 5 identifies that an accurate site layout plan must be obtained. An accurate plan cannot always be obtained, particularly for abandoned USTs. Recommend rewording to a 'should obtain' or 'must try to obtain'.	The words "where available" have been added for circumstances where a site layout plan cannot be obtained. It is expected that all effort is made to obtain such a plan if it exists.
		Table 1 – USS row, assessment should be 1 per each side (could be read as 4 per side). USS, validation should be 1–2 base and 1 per each wall.	Amended to reflect one sample per side and base, with further samples required based on size of the wall or base area.
2.8.1	Groundwater monitoring well installation	First paragraph. Suggest amending the text 'watering bearing unit' to 'water bearing unit'.	Corrected.
		Fourth paragraph. Suggest reconsidering the text in relation to monitoring wells located to allow for delineation of source zones. There are other more appropriate approaches for identifying and delineating source zones such as the site characterisation methods as noted in section 2.7 (which	Wording amended.

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		<p>include 'traditional soil borings, but also other more innovative characterisation approaches'. Suggest amending the text to read something like: 'A staged comprehensive groundwater investigation should ensure sufficient monitoring wells have been installed to assess upgradient groundwater conditions, assess concentrations within and immediately downgradient of the source area(s), and define the lateral and vertical extent of the contaminant plumes arising from each confirmed source zone in each aquifer on and off site.'</p>	
		<p>Suggest the fifth paragraph and the three following dot points discussing aspects for consideration in the initial groundwater assessment could be removed without losing the overall message in this section. After reading this several times I don't believe they add anything to the overall message which is adequately covered in the first four paragraphs anyway.</p>	<p>Noted and considered. Paragraph and dot points retained.</p>
		<p>6th paragraph and Table 2. The way these paragraphs read is confusing the investigations as a whole with the eventual network of monitoring bores that should be established. It seems to be suggesting a reliance on monitoring bores for all facets of the investigation rather than the currently recommended approach that involves using a variety of investigation tools to inform where the monitoring bores might ultimately be installed. For example, the first row of Table 2 is recommending installing monitoring bores adjacent to and directly downgradient of potential USS contamination sources. There may well be other more cost-effective approaches to assess the various potential source areas without actually installing a monitoring bore, which would then allow for the monitoring bores to only be installed within and down gradient of confirmed source/s (as opposed to wasting time and</p>	<p>It is expected that consultants utilise available assessment techniques to inform the appropriate location of monitoring wells. This paragraph and table provide a recommended initial groundwater assessment protocol. However an alternate assessment approach, number and location of monitoring wells should be guided by the CSM and appropriate detailed and justified in the SAQP.</p> <p>Slight amendments made to Table 1 to reflect groundwater assessment of known or suspected source areas.</p>

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		<p>resources on installing bores in suspected source areas where they might ultimately not be required if they are ultimately found to not be source areas for groundwater impacts). If there must be a table – then suggest it is made consistent with the suggested wording for the fourth paragraph (ie minimum monitoring bore network should include a background bore, and then for each confirmed source, installing a minimum of one bore within and immediately down gradient of each source, and then delineation bores down gradient and cross gradient sufficient to delineate the dissolved plume arising from each confirmed source). It might be worth considering putting in a footnote to indicate this would be a minimum requirement, and that the actual network might need to consider other factors such as the extent of the source/s, the need for data along transects for mass flux assessment, and aquifers other than the upper portion of the saturated zone (if the chemicals of interest are not limited to LNAPLs). Revising section 2.8.1 in this way would make it more consistent with the text in the first 3 paragraphs at the start of section 8.</p>	