

Team	Broad focus	Specific focus	Lab	Where	Frequency	Comments
GroundTruth	Aquatic Ecosystem Toxicity	4 Trophic Levels	BioTox	PCD, SW04, SW07, SW10, SW16, SW21, SW23, SW27	Monthly	Assess the toxicity of the water and its impacts on different trophic levels within the aquatic ecosystem. Also to assess how this toxicity changes as water moves downstream, as well as the impacts of the TDs on toxicity.
GroundTruth	Surface Water Chemistry	Targeted Signature Compounds + Organics	Suitable laboratories	PCD, SW04, SW07, SW10, SW16, SW21, SW23, SW27, scavenger wells	Monthly	Key inorganic substances and compounds likely to have arisen from the warehouse that pose toxic threats to aquatic ecosystems. Additionally, organic substances of concern have also been identified. These will be monitored to assess their concentrations over time, allowing for the threats to the system to be monitored. Sampling at the selected points allows for the change in concentrations of substances to be monitored as the water moves downstream.
				SW13, SW15	Quarterly	
				Ad hoc sites	As required	
Geomeasure	Surface Water Chemistry	Full suite organic and inorganics (VOCs, SVOCs, pesticides)	Suitable laboratories	PCD, SW05, SW07, SW08, SW11, SW14, SW18, SW25 and SW26	Monthly	
GroundTruth	Drinking Water Standards	SANS241	Talbot	SW21, SW23 and SW27	Monthly	Key sites where people may potentially access water for use will be monitored to assess the risk they pose to human health.

GroundTruth	Biomonitoring	SASS5 and/or Benthic diatoms, fish (when appropriate)	in-field and NWU	<p>Diatoms: SW04, SW07, SW16, SW21, SW23, SW27</p> <p>SASS5: SW04, SW13, SW16, SW23, SW24, SW27</p>	<p>Monthly</p> <p>Quarterly</p>	Key sites to assess the impacts the spill has had on aquatic algae, macroinvertebrates and vertebrates, as well as to monitor the recovery of these taxa. Additionally, sites are also selected to assess whether sources/events external to the spill may be impacting the system
	In-situ monitoring	DO, pH, Conductivity	in-field	SW04, SW07, SW10, SW16, SW21, SW23, SW27	Monthly	Assessment of in-situ water quality to monitor the system, and it's recovery, as well as allow for rapid response to any issues that may arise
GroundTruth	Sediment	Ostracod screening	BioTox	SS02, SS04, SS08, SS11	Monthly	Assessment of key sites to allow for toxicity (i.e. how much of the toxicants in the water have been adsorped by the sediment) of the sediment to be assessed and the potential impact of this on ostracods to be assessed. Selection of sites allows for the change in toxicity as one moves downstream to be assessed.
Geomeasure	Sediment	Full suite organic and inorganics (VOCs, SVOCs and pesticides)	Suitable laboratories	SS01, SS02, SS03, SS04, SS08, SS21, SS22, SS23 and SS24.	Monthly	Selection of sites and scanning of key organic and inorganic substances allows for the threat posed to aquatic ecosystems by the chemicals adsorped by the sediments to be assessed. Monitoring of this at these sites allows for spatial and temporal changes in concentration to be monitored. Some of these soil samples are collected to determine the effectiveness of remediation/clean-up efforts and to indicate if further remediation/clean up efforts are required.

Geomeasure	Soil	Full suite organic and inorganics (VOCs, SVOCs, and pesticides)	Suitable laboratories	Sites where remediation/clean-up efforts have been made.	Monthly	Soil samples collected to determine the effectiveness of remediation/clean-up efforts and to indicate if further remediation/clean up efforts are required.
Geomeasure	Groundwater	Full suite organic and inorganics (VOCs, SVOCs, pesticides)	Suitable laboratories	MW1 (A and B), MW2 (A and B), MW3 (A and B), MW4 (A and B), MW5 (A and B), MW6 (A and B), MW7 (A and B), MW8 (A and B) MW9 (A and B) MW10 (A and B) MW11 (A and B) MW12 (A and B) MW13 (A and B) MW14 (A and B) MW15 (A and B) MW16 (A and B) MW17 (A and B) MW18 (A and B) MBH1D MBH2D	Quarterly	Monitoring of the groundwater wells is required to identify and delineate any product plumes which may have been introduced during the initial 'flush event' and subsequently infiltrated into the underlying aquifers from the entrapped product within the soil.
Marine and Estuarine Research (MER)	Estuarine, Coastal and Marine habitats	Aquatic, sediment and biological components	Suitable laboratories	uMhlanga Estuary (Lower, middle and upper reaches as well as selected sites in consultation with the coastal cohort)	In consultation with the Estuarine, Coastal and Marine Cohort	To assess the toxicity of the affected environments To develop a baseline of impacted area that will inform ongoing and future remediation

				<p>Beaches (Umgeni to Salt Rock).</p> <p>The geographical extent may extend further if other incidences suspected to be related to this event need investigation.</p>		
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Team	Broad focus	Specific focus	Lab	Where	Frequency	
GroundTruth	Aquatic Ecosystem Toxicity	4 Trophic Levels	BioTox	SW00, SW06, SW07, SW09, SW12, SW 15, SW16, SW21, SW25, SW26 and SW27 Add PCD, SW04, SW10 and SW23.	Monthly	Assess the toxicity of the water and it's impacts on different trophic levels within the aquatic ecosystem. Also to assess how this toxicity changes as water moves downstream, as well as the impacts of the TDs on toxicity. Sites have been revised based on the findings of the past sampling.
GroundTruth/Geomeasure	Surface Water Chemistry	Targeted Signature Compounds + Organics	Talbot UIS Organic Laboratory, Bureau Veritas Suitable laboratories	SW00, SW07, SW13, SW15, SW16, SW21, SW23, SW27; Add PCD, SW10, scavenger wells, manholes. SW13, SW15 Geomeasure sampling sites PCD, SW05, SW07, SW08, SW11, SW14, SW18, SW25 and SW26	Monthly Quarterly Monthly	Key inorganic substances and compounds likely to have arisen from the warehouse that pose toxic threats to aquatic ecosystems. Additionally, organic substances of concern have also been identified. These will be monitored to assess their concentrations over time, allowing for the threats to the system to be monitored. Sampling at the selected points allows for the change in concentrations of substances to be monitored as the water moves downstream. Sites have been revised based on the findings of the past sampling.
		SANS241	Talbot	SW21, SW23 SW25 and SW27	Monthly	Key sites where people may potentially access water for use will be monitored to assess the risk they pose to human health. Sites have been revised based on the findings of the past sampling. A control site has been added.

GroundTruth	Biomonitoring	SASS5 and/or Benthic diatoms, fish	in-field and NWU	<p>Diatoms: SW04, SW07, SW16, SW21, SW23, SW27</p> <p>SASS5: SW04, SW13, SW16, SW23, SW24, SW27</p> <p>SW00, SW01, SW02, SW04, SW07, SW13, SW15, SW16, SW21, SW23, SW24, SW25, SW26, SW27</p>	<p>Monthly</p> <p>Quarterly</p>	<p>Key sites to assess the impacts the spill has had on aquatic algae, macroinvertebrates and vertebrates, as well as to monitor the recovery of these taxa. Additionally, sites are also selected to assess whether sources/events external to the spill may be impacting the system</p> <p>Fish sampling has not yet been undertaken</p>
	In-situ monitoring	DO, pH, Clarity, Conductivity	in-field	SW04, SW07, SW10, SW16, SW21, SW23, SW27	Weekly	Assessment of in-situ water quality to monitor the system, and it's recovery, as well as allow for rapid response to any issues that may arise
GroundTruth/Geomeasure	Sediment	Ostracod screening	BioTox	SS02, SS04, SS07, SS08, SS11	Monthly	Assessment of key sites to allow for toxicity (i.e. how much of the toxicants in the water have been adsorped by the sediment) of the sediment to be assessed and the potential impact of this on ostracods to be assessed. Selection of sites allows for the change in toxicity as one moves downstream to be assessed.

		Full suite organic and inorganics (VOCs, SVOCs, herbicides, fungicides and insecticides pesticides)	UIS and Bureau Veritas Suitable laboratories	SS02, SS04, SS07, SS08, SS11 SS01, SS03, SS21, SS22, SS23 and SS24.	Monthly	Selection of sites and scanning of key organic and inorganic substances allows for the threat posed to aquatic ecosystems by the chemicals adsorbed by the sediments to be assessed. Monitoring of this at these sites allows for spatial and temporal changes in concentration to be monitored.
GroundTruth	In channel clean-up	Targeted Signature Compounds	Talbot, V&M	Selected sites in cleaning zones	Twice Weekly until completed	Whilst stream cleaning is being undertaken on the impacted tributary, water and sediment samples will be collected before and after cleaning to assess the efficacy of the cleaning at reducing concentrations OF toxic substances in the water to be assessed, and treatment approaches adapted accordingly. No longer in effect
	In-situ liming treatment	pH>11 check	in-field	Upstream and Downstream at all TDs	Daily	pH will be monitored daily both upstream and downstream of TDs in order to ensure pH is being raised to a high enough level to effectively assist in reducing toxicity. No longer in effect

Geomeasure	Groundwater	Full suite organic and inorganics (VOCs, SVOCs, herbicides, fungicides and insecticides pesticides)	UIS and Bureau Veritas Suitable laboratories	MW1 (A and B), MW2 (A and B), MW3 (A and B), MW4 (A and B), MW5 (A and B), MW6 (A and B), MW7 (A and B), MW8 (A and B) NB MW2B (deep) was destroyed and will have to be redrilled.	Monthly Quarterly	Monthly Quarterly monitoring of the groundwater wells is required to identify and delineate any product plumes which may have been introduced during the initial 'flush event' and subsequently infiltrated into the underlying aquifers from the entrapped product within the soil. Additionally, Monthly Quarterly monitoring is required to ensure no seepage is occurring from the pollution containment dam. The sampling frequency was changed from monthly to quarterly as decreases in organic impacts in the groundwater were being observed. Only minor impacts were being observed, therefore motivating only quarterly groundwater sampling.
Geomeasure Marine and Estuarine Research (MER)	Soil Estuarine, Coastal and Marine habitats	Full suite organic and inorganics (VOCs, SVOCs, herbicides, fungicides and insecticides pesticides) • Aquatic, sediment and biological components	UIS and Bureau Veritas Suitable laboratories • Talbot • Element • V&M • CSIR • MER • (other labs as applicable) Suitable laboratories	Sites where remediation/clean-up efforts have been made. • uMhlanga Estuary (Lower, middle and upper reaches as well as selected sites in consultation with the coastal cohort)	Monthly In consultation with the Estuarine, Coastal and Marine Cohort	Soil samples collected to determine the effectiveness of remediation/clean-up efforts and to indicate if further remediation/clean up efforts are required. • To assess the toxicity of the affected environments • To develop a baseline of impacted area that will inform ongoing and future remediation

			<ul style="list-style-type: none">• Beaches (Umgeni to Salt Rock).• The geographical extent may extend further if other incidences suspected to be related to this event need investigation.	
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