

# Welcome to your CDP Water Security Questionnaire 2022

## W0. Introduction

### W0.1

#### **(W0.1) Give a general description of and introduction to your organization.**

##### **Our Focus**

Founded in 1994, Vermilion is a publicly traded, widely held, international energy producer headquartered in Calgary, Canada. We seek to create value through the acquisition, exploration, development and optimization of producing properties in North America, Europe and Australia, regions noted for their stable, well-developed fiscal and regulatory policies related to energy exploration and development.

##### **Our Purpose**

At the core of our business is our purpose: To responsibly produce essential energy while delivering long-term value to our people, shareholders, customers, partners and communities. We believe that providing energy to the many people and businesses around the world that rely on it to meet their daily needs and sustain their quality of life is both a great privilege and a great responsibility.

##### **Our Priorities**

We prioritize health and safety, the environment, and profitability, in that order. Nothing is more important to us than the safety of the public and those who work with us, and the protection of our natural surroundings. Our energy transition strategy focuses on reducing environmental impacts of traditional oil and natural gas production while developing renewable energy projects closely related to our core competencies.

##### **Our Operations**

We focus on the exploitation of light oil and liquids-rich natural gas conventional and unconventional resource plays in North America and the exploration and development of conventional natural gas and oil opportunities in Europe and Australia.

##### **Our Strategic Plan**

Our plan includes six Matters of Importance, with strategic objectives that guide us to 2030: Extraordinary People & Culture; Health, Safety & Environment; Financial Discipline; Robust & Profitable Portfolio; Business & Operational Excellence; & Integrated Sustainability. We are a conventional producer in Europe and Australia, not employing hydraulic fracturing in our operated European assets. In North America, we use hydraulic fracturing of horizontal wells to develop some of our oil & gas reservoirs, complying with a stringent regulatory regime.

One of Vermilion’s defining strengths is our belief that sharing our success is essential to being a success. We have embedded this philosophy in our purpose to ensure that our key stakeholders – shareholders, employees, communities, governments, partners & suppliers – benefit from our achievements. This approach, based on the concepts of inclusive & sustainable growth, frames our business strategy & guides our role in the energy transition. Our energy transition plan rests on three strategic activities: focusing on efficient and responsible production of oil and natural gas; implementing technically and economically feasible options for emission reduction; and exploring new and evolving technologies and processes to identify synergistic fits for our business in both traditional and renewable energy production. This includes our geothermal projects in France, research into biogas, geothermal and hydrogen potential in Netherlands, and hydrogen potential in France and Ireland.

Because traditional fuels, particularly natural gas, will be required to support the energy transition, providing energy security, accessibility and affordability, we believe that citizens, governments & investors should turn to best-in-class oil & gas operators. In particular, natural gas has a role to play by replacing high-carbon fuels such as coal for electricity generation, which will become increasingly important as the number of electric vehicles increases. In 2021, our natural gas production in Canada alone would have enabled a third party to avoid 8,600 kT of CO2e compared to utilizing power generated by a coal-fired power plant.

In our operating regions of North America, Europe & Australia, we comply with some of the world’s most stringent health, safety, environmental & human rights regulations. We voluntarily report to international frameworks such as GRI & CDP. Environmental responsibility is only a part of our sustainability focus. Inclusive growth, which we see as ensuring that everyone has an opportunity for economic advancement, is fundamental to community wellbeing & long-term democratic stability. We are therefore committed to ensuring that we produce energy in a socially responsible manner, respecting worker rights & community engagement. This broad focus on sustainability (environmental, economic & social) is why we have integrated our sustainability strategy with the UN’s Global Goals for Sustainable Development (SDGs). The SDGs provide a common focus & language for the planet, stating a clear vision for our collective future. We recognize that our capabilities in health and safety, environmental stewardship, long-term economic growth generation, & creation of shareholder value provide us with opportunities and the responsibility to move the SDGs forward.

## W-OG0.1a

**(W-OG0.1a) Which business divisions in the oil & gas sector apply to your organization?**

Upstream

## W0.2

**(W0.2) State the start and end date of the year for which you are reporting data.**

	Start date	End date
Reporting year	January 1, 2021	December 31, 2021

## W0.3

**(W0.3) Select the countries/areas in which you operate.**

Australia  
Canada  
Croatia  
France  
Germany  
Hungary  
Ireland  
Netherlands  
Slovakia  
United States of America

## W0.4

**(W0.4) Select the currency used for all financial information disclosed throughout your response.**

CAD

## W0.5

**(W0.5) Select the option that best describes the reporting boundary for companies, entities, or groups for which water impacts on your business are being reported.**

Companies, entities or groups over which operational control is exercised

## W0.6

**(W0.6) Within this boundary, are there any geographies, facilities, water aspects, or other exclusions from your disclosure?**

No

## W0.7

**(W0.7) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?**

Indicate whether you are able to provide a unique identifier for your organization.	Provide your unique identifier
Yes, a Ticker symbol	VET (TSE and NYSE)

## W1. Current state

### W1.1

**(W1.1) Rate the importance (current and future) of water quality and water quantity to the success of your business.**

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Important	Neutral	<p>Reflecting our activities as an upstream oil &amp; gas company, water is accessed within all of Vermilion's operational areas for various uses: e.g. dust control, drilling, well completion (fracturing - North America only), voidage replacement, enhanced oil recovery, etc. In all areas, water use is highly regulated and 100% of water volumes withdrawn (including purchased) and discharged are tracked and reported.</p> <p>The majority of our 2021 water withdrawals (85%) were produced water associated with conventional oil production, primarily within the Canada, France and Australia Business Units (CBU, FBU, ABU). Strict compliance with regulatory requirements related to water use is mandatory across all business units. Through proactive water management, we are able to secure water for future activities, while reducing potential risk and impact.</p> <p>We prefer to use brackish rather than freshwater in our operations; however, the use of freshwater is a practical necessity in some locations. The availability of freshwater, both now and in the future, is therefore important to our operational activities. While freshwater alternatives are available now and are expected to continue to be available based on government licensing of water supplies in our regions, there would be an economic and potentially environmental (transport) impact should we need to seek sources other than our current options.</p> <p>For indirect use in our value chain - for example,</p>

			<p>our upstream suppliers (e.g. office contractors and supplies) and downstream customers (e.g. midstream pipeline operators) - these operations are not as dependent on sources of freshwater, so we consider its importance to be neutral, with a lack of availability unlikely to materially impact their ability to provide services or contracts to us. (Note that we have included the activities of contractors in areas such as drilling and completions in our direct use category, as they more accurately reflect activities under our direct control).</p>
<p>Sufficient amounts of recycled, brackish and/or produced water available for use</p>	<p>Important</p>	<p>Neutral</p>	<p>Reflecting our activities as an upstream oil &amp; gas company, water is accessed within all of Vermilion's operational areas for various uses: e.g. dust control, drilling, well completion (fracturing - North America only), voidage replacement, enhanced oil recovery, etc. In all areas, water use is highly regulated and 100% of water volumes withdrawn (including purchased) and discharged are tracked and reported.</p> <p>The majority of our 2021 water withdrawals (85%) were produced water associated with conventional oil production, primarily within the Canada, France and Australia Business Units (CBU, FBU, ABU). Strict compliance with regulatory requirements related to water use is mandatory across all business units. Through proactive water management, we are able to secure water for future activities, while reducing potential risk and impact.</p> <p>We prefer to use brackish rather than freshwater in our operations; however, the use of freshwater is a practical necessity in some locations. The availability of freshwater, both now and in the future, is therefore important to our operational activities. While freshwater alternatives are available now and are expected to continue to be available based on government licensing of water supplies in our regions, there would be an economic and potentially environmental (transport) impact should we need to seek sources other than our current options.</p>

			<p>For indirect use in our value chain - for example, our upstream suppliers (e.g. office contractors and supplies) and downstream customers (e.g. midstream pipeline operators) - these operations are not as dependent on sources of freshwater, so we consider its importance to be neutral, with a lack of availability unlikely to materially impact their ability to provide services or contracts to us. (Note that we have included the activities of contractors in areas such as drilling and completions in our direct use category, as they more accurately reflect activities under our direct control).</p>
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## W1.2

**(W1.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?**

	% of sites/facilities/operations	Please explain
Water withdrawals – total volumes	100%	<p>Water is accessed within all of Vermilion’s operational areas for various uses (dust control, drilling, well completion (fracturing - North America only), voidage replacement, enhanced oil recovery, etc.). In all areas, water use is highly regulated and 100% of water volumes withdrawn and discharged are tracked for internal and external accounting, management and reporting purposes. The majority of our 2021 water withdrawals (56,016 / 65,605 = 85%) were produced water associated with conventional oil production, primarily within the CBU, FBU and ABU.</p> <p>Adherence to regulatory requirements and industry best practices related to water use is monitored across all BUs. All water volumes regardless of source are measured at the point of withdrawal and discharge (including deep well disposal) using a combination of meters and volumetric calculations. The data is tracked and analyzed to support regulatory reporting and internal governance and sustainability initiatives.</p>

<p>Water withdrawals – volumes by source</p>	<p>100%</p>	<p>Water is accessed within all of Vermilion’s operational areas for various uses (dust control, drilling, well completion (fracturing - North America only), voidage replacement, enhanced oil recovery, etc.). In all areas, water use is highly regulated and 100% of water volumes withdrawn and discharged are tracked for internal and external accounting, management and reporting purposes. The majority of our 2021 water withdrawals (56,016 / 65,605 = 85%) were produced water associated with conventional oil production, primarily within the CBU, FBU and ABU.</p> <p>Adherence to regulatory requirements and industry best practices related to water use is monitored across all BUs. All water volumes regardless of source are measured at the point of withdrawal and discharge (including deep well disposal) using a combination of meters and volumetric calculations. The data is tracked and analyzed to support regulatory reporting and internal governance and sustainability initiatives.</p>
<p>Produced water associated with your oil &amp; gas sector activities - total volumes [only oil and gas sector]</p>	<p>100%</p>	<p>Organizationally, the majority of Vermilion’s 2021 water withdrawals (56,016 / 65,605 = 85%) were produced water associated with conventional oil production, most of which occurs within the CBU (Saskatchewan and Alberta), FBU and ABU. The tracking and reporting of produced water withdrawals and discharges (re injection) is a regulatory requirement and is undertaken in accordance with defined accounting practices. Produced water withdrawal volumes are generally determined using metering systems and/or accounting calculations associated with capturing hydrocarbon production volumes. The withdrawal data is collected in our production accounting systems which facilitate the associated regulatory reporting as well as financial accounting processes.</p>
<p>Water withdrawals quality</p>	<p>76-99</p>	<p>Approximately 98% (64,575 / 65,605 = 98.4%) of Vermilion’s 2021 water withdrawals were assessed for water quality parameters.</p>

		<p>Produced water is assessed to determine compatibility and treatment requirements with respect to future re-injection and to assess corrosivity in the context of asset integrity and management programs (e.g. pipelines). Freshwater used for drilling purposes (e.g., drilling fluid systems) is also assessed to ensure compatibility with the drilling formations and to determine additive requirements.</p> <p>Depending on the circumstances, the water quality assessment may include routine chemistry parameters (pH, conductivity, major cations/anions, etc.), total and/or dissolved metals, hydrogen sulphide, and biological parameters iron reducing and acid producing bacteria. The majority of the analyses are completed at accredited laboratories. Some parameters (e.g. temperature) may also be monitored in the field.</p>
<p>Water discharges – total volumes</p>	<p>100%</p>	<p>As an organization, the majority of Vermilion’s 2021 water withdrawals (56,016/65,605 = 85%) were produced water associated with conventional oil production. The majority of this volume (46,005/65,605 = 70%) was reinjected into the oil producing formations for voidage replacement or disposed via deep well injection. Lifecycle tracking of produced water is a regulatory and corporate obligation with defined accounting and reporting requirements.</p> <p>In Vermilion’s offshore Australian operations, discharge occurs to seawater in accordance with a government authorization that mandates water quality and quantity, as well as monitoring and reporting requirements. This volume (representing 18,912/65.605 = 29% of our 2021 discharge) was metered as part of the discharge process. The remaining approximately 1% of our 2021 water discharge was to third-party facilities, and was metered or quantified using volumetric accounting calculations.</p>



<p>Water discharges – volumes by destination</p>	<p>100%</p>	<p>As an organization, the majority of Vermilion’s 2021 water withdrawals (56,016/65,605 = 85%) were produced water associated with conventional oil production. The majority of this volume (46,005/65,605 = 70%) was reinjected into the oil producing formations for voidage replacement or disposed via deep well injection. Lifecycle tracking of produced water is a regulatory and corporate obligation with defined accounting and reporting requirements.</p> <p>In Vermilion’s offshore Australian operations, discharge occurs to seawater in accordance with a government authorization that mandates water quality and quantity, as well as monitoring and reporting requirements. This volume (representing 18,912/65.605 = 29% of our 2021 discharge) was metered as part of the discharge process. The remaining approximately 1% of our 2021 water discharge was to third-party facilities, and was metered or quantified using volumetric accounting calculations.</p>
<p>Water discharges – volumes by treatment method</p>	<p>100%</p>	<p>As an organization, the majority of Vermilion’s 2021 water withdrawals (~85%) were produced water associated with conventional oil production. The majority of this volume (~70%) was reinjected into the oil producing formations for voidage replacement or disposed via deep well injection, with primary treatment.</p> <p>In Vermilion’s offshore Australian operations, discharge occurs to seawater in accordance with a government authorization that mandates water quality and quantity, as well as monitoring and reporting requirements. This volume (29% of our 2021 discharge) was metered as part of the discharge process. Approximately 98% of this volume is cooling water that is discharged without treatment. The remaining approximately 2% receives primary treatment prior to discharge.</p>

		<p>The remaining approximately 1% of our 2021 water discharge was to third-party facilities without prior treatment, and was metered or quantified using volumetric accounting calculations.</p>
<p>Water discharge quality – by standard effluent parameters</p>	76-99	<p>Approximately 98% (64,575 / 65,605 = 98.4%) of Vermilion’s 2021 water withdrawals were monitored for water quality prior to discharge as the chemical composition and compatibility of the water must be determined for environmental and operational purposes (e.g., reinjection, hydraulic fracturing, drilling fluid systems). Some parameters (e.g. temperature) may be measured continuously while other parameters are analyzed at accredited laboratories (e.g., routine chemistry, metals, biological parameters, H2S, etc.).</p> <p>In Vermilion’s offshore Australian operations, discharge to seawater (~29% of our total 2021 water discharge) occurs in accordance with a government authorization that defines water quality, monitoring and reporting requirements. A detailed impact assessment of various components (e.g. residual hydrocarbons, radionuclides, etc.) on the marine environment is part of the regulatory approval process.</p>
<p>Water discharge quality – temperature</p>	76-99	<p>Approximately 98% of Vermilion’s 2021 water withdrawals were monitored for water quality prior to discharge as the chemical composition and compatibility of the water must be determined for operational purposes. Some parameters (e.g. temperature) may be measured continuously while others are analyzed at accredited laboratories (e.g., routine chemistry, metals, biological parameters, H2S, etc.).</p> <p>Water temperature is generally not a key operating parameter in the context of deep well injection. In Vermilion’s offshore Australian operations, discharge to seawater (~29% of our 2021 water discharge) occurs in accordance with a government authorization that defines water quality monitoring and</p>

		reporting requirements. Vermilion meets the assessment criteria for temperature set in the Environmental Health and Safety Guidelines for Offshore Oil and Gas Development (IFC, 2007) of a temperature increase of no more than 3°C within 100 m of the discharge point.
Water consumption – total volume	100%	As described previously, lifecycle tracking of water withdrawals and discharges is undertaken within all operational areas in accordance with regulatory requirements and industry best practices. Annual water consumption is calculated by subtracting water discharge volumes from water withdrawal volumes, both of which are monitored and measured as per previous answers. As a conventional oil and gas producer, Vermilion's operations do not typically involve the consumption of water (ie. water withdrawals and discharges are generally in balance). Accordingly, in 2021 Vermilion's net water consumption was zero.
Water recycled/reused	Less than 1%	At this time, water recycling/reuse is not a material component of Vermilion's operations but may become more relevant in the future as opportunities for water use reduction and conservation continue to be evaluated as an organizational priority.
The provision of fully-functioning, safely managed WASH services to all workers	100%	Across the operational areas, Vermilion provides WASH services to ensure that the quality and quantity of water provided meets the safety standards for all workers and the communities where we operate. All drinking water associated with Vermilion's operations is either supplied via municipal sources or from private suppliers.

## W1.2b

**(W1.2b) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, and how do these volumes compare to the previous reporting year?**

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
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<p>Total withdrawals</p>	<p>65,605.1</p>	<p>About the same</p>	<p>In all operational jurisdictions, water use reporting is a regulatory requirement and 100% of water volumes withdrawn, produced, and purchased are measured, monitored, and tracked internally. All water volumes regardless of source are tracked accordingly, e.g., using meters at extraction points or by volumetric calculations for trucked water. The total volume of Vermilion’s water withdrawal is an aggregate of volumes tracked (i.e., measured or calculated) across all the operational jurisdictions.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our total 2021 withdrawal represents an approximately <math>[(65,605 - 67,202)/67,202 = 2.4\%]</math> decrease in relation to the 2020 withdrawal volume. Consistent with prior reporting, it is expected that water volumes in this category will fluctuate from year to year based on activity and production levels.</p>
<p>Total discharges</p>	<p>65,605.1</p>	<p>About the same</p>	<p>As an organization, the majority of Vermilion’s 2021 water withdrawals (85%) were produced water associated with conventional oil production. The majority of this volume <math>(46,005/65,605 = 70\%</math> of the total discharge) was reinjected into the oil producing formations for voidage replacement, or disposed via deep well injection. Lifecycle tracking of produced water is a regulatory obligation with defined accounting and reporting requirements.</p> <p>In Vermilion’s offshore Australian operations, discharge to seawater occurs in accordance</p>

			<p>with a government authorization that defines water quality, monitoring and reporting requirements. This volume (~29% of our total total water discharge) was metered as part of the discharge process. The remaining approximately 1% of 2021 water discharge was to third-party facilities or deep well disposal and is metered or quantified using volumetric calculations. The total volume of Vermilion's water discharges is an aggregate of volumes tracked (i.e., measured or calculated) across all of our operational jurisdictions.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our total 2021 discharge represents an approximately <math>[(65,605 - 67,202)/67,202] = 2.4\%</math> decrease in relation to the 2020 volume. Consistent with prior reporting, it is expected that water volumes in this category will fluctuate from year to year based on activity and production levels.</p>
Total consumption	0	About the same	<p>Lifecycle tracking of water withdrawals and discharges is undertaken within all operational areas in accordance with regulatory requirements and industry best practices. Annual water consumption is calculated by subtracting water discharge volumes from water withdrawal volumes, both of which are monitored and measured as per previous answers. As a conventional oil and gas producer, Vermilion's operations do not typically involve the consumption of water (i.e. water withdrawals and discharges are generally in</p>

			balance). Accordingly, Vermilion’s net water consumption in 2021 was zero.
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## W-OG1.2c

**(W-OG1.2c) In your oil & gas sector operations, what are the total volumes of water withdrawn, discharged, and consumed – by business division – and what are the trends compared to the previous reporting year?**

	Volume (megaliters/year)	Comparison with previous reporting year %	Please explain
Total withdrawals - upstream	65,605.1	About the same	<p>In all operational jurisdictions, water use reporting is a regulatory requirement and 100% of water volumes withdrawn, produced, and purchased are measured, monitored, and tracked internally. All water volumes regardless of source are tracked accordingly, e.g., using meters at extraction points or by volumetric calculations for trucked water. The total volume of Vermilion’s water withdrawal is an aggregate of volumes tracked (i.e., measured or calculated) across all the operational jurisdictions.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our total 2021 upstream withdrawal represents an approximately <math>[(65,605 - 67,202)/67,202 = 2.4\%]</math> decrease in relation to the 2020 withdrawal volume. Consistent with prior reporting, it is expected that water volumes in this category will fluctuate from year to year based on activity and production levels.</p>

<p>Total discharges – upstream</p>	<p>65,605.1</p>	<p>About the same</p>	<p>As an organization, the majority of Vermilion’s water withdrawals (85%) are produced water associated with conventional oil production. The majority of this volume (46,005/65,605 = 70% of our total discharge) is reinjected into the oil producing formations for voidage replacement, or disposed via deep well injection. Lifecycle tracking of produced water is a regulatory obligation with defined accounting and reporting requirements.</p> <p>In Vermilion’s offshore Australian operations, discharge to seawater occurs in accordance with a government authorization that defines water quality, monitoring and reporting requirements. This volume (~29% of our total water discharge) is metered as part of the discharge process. The remaining approximately 1% of Vermilion’s total water discharge is to third-party facilities and is metered or quantified using volumetric calculations. The total volume of Vermilion’s water discharges is an aggregate of volumes tracked (i.e., measured or calculated) across all the operational jurisdictions.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our total 2021 upstream discharge represents an approximately <math>[(65,605 - 67,202)/67,202] = 2.4\%</math> decrease in relation to the 2020 discharge volume. Consistent with prior reporting, it is expected that water volumes in</p>
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			this category will fluctuate from year to year based on activity and production levels.
Total consumption – upstream	0	About the same	Lifecycle tracking of water withdrawals and discharges is undertaken within all operational areas in accordance with regulatory requirements and industry best practices. Annual water consumption is calculated by subtracting water discharge volumes from water withdrawal volumes, both of which are monitored and measured as per previous answers. As a conventional oil and gas producer, Vermilion's operations do not typically involve the consumption of water (i.e. water withdrawals and discharges are generally in balance). Accordingly, Vermilion's net water consumption in 2021 was zero.

## W1.2d

**(W1.2d) Indicate whether water is withdrawn from areas with water stress and provide the proportion.**

	Withdrawals are from areas with water stress	Identification tool	Please explain
Row 1	No	Other, please specify Vermilion considers several factors when evaluating water stress, including: regulatory consultation, regional risk or stress-based allocation requirements, and landowner engagement in relation to current water use practices and water availability.	As an organization, Vermilion recognizes that water is a shared resource and that our activities have implication beyond our direct operations. We also recognize that in general, our water privileges fall secondary to primary human and ecological needs, particularly in circumstances of water scarcity.  Although freshwater use represents a relatively small percentage of our annual water withdrawal, water stewardship is a core element of our sustainability program and has been identified by our Executive Board as one of four pillars in our sustainability strategy. Initiatives related to the identification of water-related risk and consequence, and related opportunities for the advancement of organizational or region-specific water management



			<p>initiatives, is a prioritized objective within all business units. Several factors are considered when evaluating water stress within our operating areas, both in terms of water availability and the risk our operations may present to sensitive or region-critical water resources. In general, regulatory oversight of water use in all of our operated areas is well developed with water allocation or diversion licensing requirements that consider other water users and the capacity of the resource (surface and groundwater) to support the intended withdrawals.</p> <p>Regulatory authorizations for groundwater withdrawals typically involve an assessment of aquifer yield as part of the licensing process. Longer-term (i.e. multi-year) diversion licenses typically include a requirement for ongoing aquifer monitoring to ensure that the withdrawal, or collective withdrawals of multiple users, is not adversely impacting the reservoir with time. Authorizations for surface water withdrawals typically set limits with respect to maximum allowable drawdown and include additional provisions (e.g. inlet screening, access requirements, etc.) to mitigate risk to aquatic organisms and habitat. Limits with respect to the permitted withdrawal volumes and recovery rate are typically stipulated in the withdrawal authorizations and are enforceable under regulation.</p> <p>In addition to working within the existing regulatory frameworks in our operating areas and engaging with local, field-level environmental and fisheries officers with respect to water use and availability, Vermilion's surface land and community relations groups also actively engage with other stakeholders with respect to water related matters. Landowner consultation is</p>
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			<p>an integral part of all drilling programs and includes dialogue with respect to current water uses and vulnerabilities. Where practical, and particularly in agricultural areas, landowners are often engaged in the provision of freshwater to limit risk and facilitate mutual benefit. Open attendance (“townhall”) events are also routinely hosted by Vermilion’s operations and community relations teams which provide a forum for stakeholder discussion and communication of water-related concerns.</p> <p>Vermilion’s field operations and joint-venture teams are also in regular communication with other industry operators, either through formal industry associations or ad hoc engagements, which allows for a direct sharing of water-related activities and concerns, as well as identification of collaborative opportunities. As part of our corporate risk evaluation process, which prioritizes water, we recognize that several publicly available water stress assessment tools, including the Water Resources Institute (WRI) Aqueduct tool and World Wildlife Fund (WWF) Water Risk Filter, would identify some of our operating areas as water stressed. However, based on our field-level observations and monitoring programs, regulatory communications, and interactions with other industrial, agricultural and domestic water users, none of our operating areas are at this time deemed to be under water stress in the context of our operations.</p> <p>Should our ongoing monitoring and stakeholder engagement activities indicate that an acute or chronic water stress condition is evolving in any of our operating areas, the risk presented to, and by, our operations would be further assessed and appropriate mitigative measures implemented. Depending on the</p>
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			area-specific circumstances, this could include sourcing (and hauling) water from outside of the water stressed area, switching to drilling fluid systems that do not require freshwater, implementation of additional risk management measures to monitor and safeguard vulnerable water resources (surface and groundwater) and, potentially, short or long-term suspension of operations within the water stressed areas.
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## W1.2h

**(W1.2h) Provide total water withdrawal data by source.**

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	124.4	Much higher	<p>Approximately 0.2% of our 2021 water withdrawal came from fresh surface water, primarily within the CBU. This is relevant because the water is used for well drilling and development, and is part of our efforts toward increased water efficiency and the protection water bodies.</p> <p>This is our third year compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the</p>

				<p>following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our 2021 fresh surface water withdrawal represents a <math>[(124.4 - 11.5)/11.5] = 982\%</math> increase in relation to the 2020 volume. The 2021 surface water withdrawal volume was offset by a reduction in the 2021 renewable groundwater volume.</p>
Brackish surface water/Seawater	Relevant	8,949	Higher	<p>Approximately 13.6% of our 2021 water withdrawal came from seawater as part of offshore operations in our Australia Business Unit. The majority of this water (98%) is cooling water that is utilized in a direct, flow-through system. The remainder of the water is used for domestic or maintenance purposes on the offshore platform.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the</p>

				<p>following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our 2021 seawater withdrawal represents a <math>[(8,949 - 7,398)/7,398] = 21\%</math> increase in relation to the 2020 withdrawal volume.</p>
Groundwater – renewable	Relevant	436.4	Much lower	<p>Approximately 0.7% of our total 2021 water withdrawal came from renewable groundwater sources. This is relevant because it is used operationally for well drilling, hydraulic fracturing (North America only) and enhanced oil recovery (waterflood), and is part of our efforts toward increased water efficiency and the protection of water bodies.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to</p>

				<p>25%; Much Higher/Lower &gt; 25%. Much Higher/Lower: &gt; 25%.</p> <p>Our 2021 renewable groundwater withdrawal represents a <math>[(436.4 - 691.5)/691.5] = 37\%</math> decrease in relation to the 2020 withdrawal volume.</p>
Groundwater – non-renewable	Relevant	50.5	Much lower	<p>Approximately 0.1% of our total 2021 withdrawal was non-renewable groundwater. This is relevant because it is generally used operationally for enhanced oil recovery or well completions (North America), and is part of our efforts toward increased water efficiency and the protection of water bodies.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our 2021 non-renewable groundwater withdrawal</p>

				<p>represents a <math>[(50.5 - 108.7)/50.5] = 54\%</math> decrease in relation to the 2020 withdrawal volume. The non-renewable groundwater volumes in both years were relatively small.</p>
Produced/Entrained water	Relevant	56,015.5	About the same	<p>Approximately 85% of our 2021 water withdrawal was produced water. The tracking and reporting of produced water withdrawals and discharges is a regulatory requirement &amp; is undertaken in accordance with defined accounting practices. The withdrawal data is collected in our production accounting systems which facilitate regulatory reporting as well as financial accounting processes.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our 2021 produced water</p>

				<p>withdrawal represents a <math>[(56,016-58,955)/58,955] = 5.0\%</math> decrease in relation to the 2020 volume.</p>
Third party sources	Relevant	29.3	Lower	<p>Approximately 0.04% of Vermilion's total 2021 water withdrawal came from public or private third party sources. These withdrawal volumes were typically used for domestic or wash water purposes, and are part of our efforts toward increased water efficiency and the protection of water bodies. The third party water volumes were generally metered or measured at source.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our 2021 third party water withdrawal represents a <math>[(29.3 - 38.5)/38.5] = 23.9\%</math></p>



				decrease in relation to the 2020 withdrawal volume.
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## W1.2i

**(W1.2i) Provide total water discharge data by destination.**

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water	Relevant	0	About the same	Discharge of water to fresh surface water bodies is generally prohibited in the regulatory jurisdictions in which we operate and is contrary to our standard organizational practices. Vermilion had no discharges to freshwater in 2021 and no such discharges are anticipated in the future. This relevant because it is part of our efforts toward water efficiency and protecting water bodies.
Brackish surface water/seawater	Relevant	18,912	About the same	<p>In Vermilion’s offshore Australian operations, discharge occurs to seawater in accordance with a government authorization that mandates water quality and quantity, as well as monitoring and reporting requirements. This volume (~29% of our total discharge) is metered as part of the discharge process.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes</p>

				<p>in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our 2021 seawater discharge represents a <math>[(18,912 - 17,386)/17,386] = 8.8\%</math> increase in relation to the 2020 discharge volume.</p>
Groundwater	Relevant	46,048	About the same	<p>Approximately 70% of Vermilion's total 2021 water discharge was reinjecting into deep, non- renewable, saline aquifers for voidage replacement to maintain formation pressure, or disposed via similar deep well injection. The re injection and disposal volumes are recorded and tracked for internal and external water accounting and reporting purposes.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes in the context of this question: About the Same &lt; 10%; Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our 2021 groundwater discharge represents a <math>[(46,048 - 49,024)/49,024] = 6.1\%</math> decrease in relation to the 2020 discharge volume.</p>

Third-party destinations	Relevant	643.1	Lower	<p>Approximately 0.98% of Vermilion’s 2021 water discharge volume was to third party waste water treatment and/or disposal facilities. This is relevant because it is part of our efforts toward increased water efficiency and the protection of water bodies.</p> <p>This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP and historical data, we have applied the following thresholds when evaluating year-over-year changes in the context of this question:                  About the Same &lt; 10%;                  Higher/Lower 10 to 25%; Much Higher/Lower &gt; 25%.</p> <p>Our 2021 third-party discharge represents a <math>[(643.1 - 792.3)/643.1] = 18.8\%</math> decrease in relation to the 2020 discharge volume.</p>
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## W1.2j

**(W1.2j) Within your direct operations, indicate the highest level(s) to which you treat your discharge.**

	Relevance of treatment level to discharge	Volume (megaliters/year)	Comparison of treated volume with previous reporting year	% of your sites/facilities/operations this volume applies to	Please explain
Tertiary treatment	Not relevant				

Secondary treatment	Not relevant				
Primary treatment only	Relevant	56,190.8	About the same	81-90	Our 2021 primary treatment volume represents an approximately $[(56,190.8 - 59,193)/59,193] = 5.1\%$ decrease in relation to the 2020 treatment volume.
Discharge to the natural environment without treatment	Relevant	8,769.2	Higher	11-20	Our 2021 discharge to the natural environment without treatment volume represents an approximately $[(8,769 - 7,217)/7,217] = 21.5\%$ increase in relation to the 2020 volume. The increased discharge was primarily associated with our offshore ABU operation.
Discharge to a third party without treatment	Relevant	645.1	Lower	1-10	Our 2021 discharge to a third party volume represents an approximately $[(645.1 - 792.3)/792.3] =$

					18.6% decrease in relation to the 2019 volume.
Other	Not relevant				

### W1.3

**(W1.3) Provide a figure for your organization’s total water withdrawal efficiency.**

	Revenue	Total water withdrawal volume (megaliters)	Total water withdrawal efficiency	Anticipated forward trend
Row 1	1,893,659	65,605	28.8645530066	Our water withdrawal efficiency has increased by approximately $(28.86 - 21.76)/21.76 = 32.7\%$ since we first began reporting to the CDP Water framework in 2019. Although directly influenced by market factors that are outside of our control (i.e. global commodity prices), we feel that our continued focus on responsible water management and our strategic development plans, which emphasize low water-intensity natural gas, will generate ongoing improvements in our withdrawal efficiency.

### W-OG1.3

**(W-OG1.3) Do you calculate water intensity for your activities associated with the oil & gas sector?**

Yes

### W-OG1.3a

**(W-OG1.3a) Provide water intensity information associated with your activities in the oil & gas sector.**

**Business division**

Upstream

**Water intensity value (m3)**

0.02

**Numerator: water aspect**

Freshwater withdrawals

**Denominator**

Barrel of oil equivalent

**Comparison with previous reporting year**

About the same

**Please explain**

As described previously, water stewardship is a core element of our sustainability program and has been identified by our Executive Board as one of four pillars in our sustainability strategy. As part of our corporate risk management process, water-related risks, including renewable (fresh) and non-renewable water dependencies, are analyzed on a district level to help mitigate risk exposure and identify opportunities for organizational or region-specific water management initiatives, which is a prioritized objective within all business units.

As an organization, freshwater (i.e. renewable groundwater, surface water and third-party potable sources) represented approximately 0.9% of our total 2021 withdrawal in (590.1/65,605 = 0.90%).

This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP data and historical data, Vermilion has applied the following thresholds when evaluating year-over-year changes in the context of this question:

- About the Same: < 10%
- Higher/Lower: 10 to 25%
- Much Higher/Lower: > 25%.

Our 2021 freshwater withdrawal intensity represents a  $[(0.016 - 0.018)/0.018] = 8.9\%$  decrease in relation to the 2020 value.

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**Business division**

Upstream

**Water intensity value (m3)**

1.78

**Numerator: water aspect**

Total water withdrawals

**Denominator**

Barrel of oil equivalent

## Comparison with previous reporting year

Higher

### Please explain

As described previously, water stewardship is a core element of our sustainability program and has been identified by our Executive Board as one of four pillars in our sustainability strategy. As part of our corporate risk management process, water-related risks, including renewable (fresh) and non-renewable water dependencies, are analyzed on a district level to help mitigate risk exposure and identify opportunities for organizational or region-specific water management initiatives, which is a prioritized objective within all business units. Approximately 85% of our total water withdrawal in 2021 was produced water (56,016/65,605 = 85%).

This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP data and historical data, Vermilion has applied the following thresholds when evaluating year-over-year changes in the context of this question:

- About the Same: < 10%
- Higher/Lower: 10 to 25%
- Much Higher/Lower: > 25%.

Our 2021 total withdrawal intensity represents a  $[(1.78 - 1.59)/1.78] = 11.8\%$  increase in relation to the 2020 value. The increased intensity is dominantly the result of an increase in produced water production, on a per BOE basis, within our offshore ABU operation.

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## Business division

Upstream

## Water intensity value (m3)

0

## Numerator: water aspect

Freshwater consumption

## Denominator

Barrel of oil equivalent

## Comparison with previous reporting year

About the same

### Please explain

Vermilion's freshwater consumption (withdrawals - discharges) was zero in 2021.

**Business division**

Upstream

**Water intensity value (m3)**

0

**Numerator: water aspect**

Total water consumption

**Denominator**

Barrel of oil equivalent

**Comparison with previous reporting year**

**Please explain**

Vermilion's total water consumption (withdrawals - discharges) was zero in 2021.

**W1.4**

**(W1.4) Do you engage with your value chain on water-related issues?**

Yes, our suppliers

Yes, our customers or other value chain partners

**W1.4a**

**(W1.4a) What proportion of suppliers do you request to report on their water use, risks and/or management information and what proportion of your procurement spend does this represent?**

**Row 1**

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**% of suppliers by number**

51-75

**% of total procurement spend**

51-75

**Rationale for this coverage**

This is an extension of our current approach to supplier engagement, which includes working with specific suppliers to improve water management and to better understand potential risks and opportunities. Supported by a third-party information management platform (ISNetworld) in our Canada and US Business Units, approximately 72% of our suppliers have been successfully engaged on providing water-related risk information. Sample questions include: does your company track water use in your operations; does your company have a program in place to conserve, reduce and reuse water in your operations; what volume of water was used, recycled and re-used by your company; and, do any operations take place in areas of drought?



This constitutes another step in greater direct supplier engagement on water-related issues, and focuses on areas where our water use may potentially increase through acquisition and development, and where our use of third-party supplier compliance systems enables us to leverage existing supplier questionnaires.

Our supplier engagement questionnaires will be updated annually and reviewed by our Operations, HSE and sustainability teams to identify opportunities for further engagement and improvement over time. We have expanded this external supplier engagement while working to establish internal and external benchmarks for water use and intensity, and to demonstrate our own performance via CDP Water Security submissions. We believe this is providing a solid foundation for data gathering from suppliers, and helps to guide the data and information requests that we make of them.

### **Impact of the engagement and measures of success**

The most important impact of our engagement on water is 100% compliance with water-related regulations in our operating areas, which has a direct impact on our company reputation, and on reducing the risks associated with water use and availability for Vermilion and for our stakeholders.

Based on the third-party supply chain questionnaire, we are able to further identify suppliers' level of water risk management and water management, and identify metrics such as the percentage of respondents responding to the water questions, the percentage reporting water data, and the percentage with water management plans in place. Based on where the supplier is operating and the level of criticality to our operations, this provides additional information to help support our 100% compliance with water-related regulations, and our sustainability strategy's focus on water efficiency and reduction.

In addition, Vermilion engages many of our suppliers and all of our contractors relating to safe and efficient completion of the approved scope of work. The current focus of this engagement is optimization of resources to reduce the impact and exposure, both from a health, safety and environment perspective, as well as water impact perspective.

Although still in the initial stages of implementation, an early measurement of success related to our engagement strategy is expected to be the quantification of a sustainability capital effectiveness ratio, which will aid in our internal assessment of the supplemental benefit of our capital investments. This will support our strategic objective of Integrated Sustainability, while providing a way for Vermilion to demonstrate to our investors and the public that our market outperformance is correlated to our strong sustainability focus and performance.

### **Comment**

## **W1.4b**

**(W1.4b) Provide details of any other water-related supplier engagement activity.**

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**Type of engagement**

Onboarding & compliance

**Details of engagement**

Requirement to adhere to our code of conduct regarding water stewardship and management

**% of suppliers by number**

76-100

**% of total procurement spend**

76-100

**Rationale for the coverage of your engagement**

As an organization, we require 100% of third-party contractors and sub-contractors to be HSE pre-qualified prior to commencing service work. This includes water-related issues, ranging from compliance with regulations to groundwater protection from spills. This helps ensure they have an HSE program in place that meets or exceeds our requirements. We also observe and interact with our vendors on an ongoing basis to ensure they are adhering to Vermilion's HSE practices, procedures and rules. This is essential to our governance strategy which not only prioritizes regulatory compliance, but also the safety and environmental protection of the communities in which we operate.

We engage with partners (vendors, consultants, peers, etc.) throughout our operating regions to ensure we are pursuing and/or developing industry best practices, and to identify opportunities to collaborate on innovative development solutions in relation to sustainability issues, including water. Vermilion's strategy currently allows for flexible engagement with an additional focus on engaging those organizations in our supply chain where the supplier has an understanding of sustainability and water management, and whose interest in water issues may impact business outcomes.

To support this, we hold mandatory monthly HSE meetings (virtually if needed) in every field district that all staff attend and senior management routinely participate in. On a quarterly basis, the HSE district meetings are replaced by HSE-focused town hall meetings that include our vendors.

With regard to our supply chain, our Corporate Contractor Selection and Management Standard and Guidance Document include specific activities to support HSE performance, including a pre-qualification questionnaire. In addition, we are currently conducting a global supply chain risk assessment, analyzing risks based on geography, industry and operations, including climate change policies. Annually, we are focusing on all suppliers with which we spent more than \$1 million, assessing whether they have public commitments to environmental protection, including climate change and water, in place, and the level of detail and external assurance.

### **Impact of the engagement and measures of success**

The most important impact of engagement and measure of success is 100% compliance with water-related regulations in our operating areas, which has a direct impact on our company reputation. A further impact of the supply chain risk assessment is the identification of suppliers without public commitments to climate change including water. We are reassessing those suppliers in 2022-23 to assess change and the potential for direct engagement to encourage public commitments. We continually engage key vendors on reduction of water use, among other areas. Measurements of success will eventually be the quantification of a sustainability capital effectiveness ratio to aid in our internal assessment of the supplemental benefit of our capital investments. This will support our strategic objective of Integrated Sustainability, while providing a way for Vermilion to demonstrate to our investors and the public that our market outperformance is correlated to our strong sustainability focus and performance.

### **Comment**

## **W1.4c**

### **(W1.4c) What is your organization's rationale and strategy for prioritizing engagements with customers or other partners in its value chain?**

Our customers include North American midstream and downstream refiners, Asia Pacific refining and lubricant businesses, European downstream refiners, and key aggregators and utilities. In some cases, we are mandated to use specific customers (e.g. GasTerra); for the rest, there is a transparent bid process. Our goals for engaging with our value chain is to ensure awareness of our commitment to ESG, including climate change and water, and encourage activities to reduce climate change and water impacts. Our Marketing department has established an ESG section in customer communications, including requests for proposal, tenders and bid documents. This establishes our commitment to ESG, including water, and requests entities include information about their commitment to ESG in bids. We use this to compare between bidders and raise awareness with these customers – successful bidders or not – about the growing criticality of ESG, including water.

Our measures of success include the number of potential customers that we communicate with on ESG commitments, including climate change and water security, as our input measure. We also track the number of potential customers that respond with their ESG info – our output measure. As the initiative further develops, we anticipate using outcome measures, such as number of successful bids where ESG commitments made a material difference and the potential for developing partnerships based on a mutual recognition of the importance of ESG, particularly climate change and water security, and tracking results from those partnerships.

Current impact is that 100% of new tenders/requests for proposals or bids, etc. for our crude oil and gas marketing in 2021 include our own ESG commitment and also request information on the potential customer's commitment. We track the bids that return with ESG, including climate and water, information (17.4% in 2021), and compare this to the companies' externally communicated ESG and climate information.

## W2. Business impacts

### W2.1

**(W2.1) Has your organization experienced any detrimental water-related impacts?**

No

### W2.2

**(W2.2) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?**

No

## W3. Procedures

### W-OG3.1

**(W-OG3.1) How does your organization identify and classify potential water pollutants associated with its activities in the oil & gas sector that may have a detrimental impact on water ecosystems or human health?**

Vermilion employs, or otherwise engages as required, subject matter specialists with knowledge in human health and ecological risk evaluation, groundwater assessment (including contaminant fate and transport processes), habitat assessment (aquatic and terrestrial), and occupational health & safety exposure monitoring and management. These specialists collectively drive the identification, classification and prioritization decisions at Vermilion with respect to potential environmental pollutants in water, soil and air.

In the context of our operating practices, potential pollutants of concern are identified with consideration to published resources, including risk-based environmental quality guidelines and product-specific safety data sheets (SDS), technical guidance provided by agencies such as Health Canada, Environmental Protection Agency (EPA) and the World Health Organization, and prior experience (direct and third-party) with similar contaminants in similar circumstances.

In general, the risk evaluation considers toxicity (human and ecological), potential for release, persistence in the environment, mobility, and product availability and frequency of use. On an application- or location-specific basis, site-specific considerations are also integrated, particularly in relation to relevant receptors and exposure pathways (e.g. aquatic toxicity concerns may not be a primary driver in circumstances where there are no nearby surface water bodies).

Within our value chain, our suppliers are expected to follow the same standards as we do internally, beginning with absolute adherence to all regulations in our operating areas regarding the use of potential water pollutants. We pre-qualify 100% of our contractors to our HSE

standard, ensuring that they have adequate systems in place to manage all areas, including water and potential pollutants.

### W-OG3.1a

**(W-OG3.1a) For each business division of your organization, describe how your organization minimizes the adverse impacts on water ecosystems or human health of potential water pollutants associated with your oil & gas sector activities.**

Potential water pollutant	Business division	Description of water pollutant and potential impacts	Management procedures	Please explain
Hydrocarbons	Upstream	Petroleum hydrocarbons (PHCs) are the principal output of upstream oil exploration and production activities and, as such, represent a primary contaminant of concern to our industry, both in free-liquid and dissolved phases. In addition to production fluids (i.e. crude oil and natural gas liquids), refined hydrocarbons are also widely used in the industry, examples of which include: vehicle and equipment fuels (e.g. drilling rigs, generators, etc.), oil based mud (OBM) systems, fracturing fluids, and various maintenance and cleaning products (e.g. lubricating oils, degreasing agents, etc.). Both production fluids and refined products commonly contain constituents of toxicological (or aesthetic) concern at	<p>Compliance with effluent quality standards</p> <p>Measures to prevent spillage, leaching and leakages</p> <p>Emergency preparedness</p> <p>Other, please specify</p> <p>Compliance with risk-based regulatory standards related to environmental assessment and remediation.</p>	<p>Vermilion’s approach involves multiple elements &amp; technical disciplines, including:</p> <ul style="list-style-type: none"> <li>• Application of a robust Process Safety Management System that includes asset integrity programs that involve technical experts in corrosion protection &amp; control &amp; sophisticated assessment &amp; monitoring technologies including intelligent pigging systems.</li> <li>• Product containment, storage &amp; transfer facilities specifically engineered to reduce the risk of release &amp; mitigate adverse effect (e.g. automated process monitoring &amp; shut-down systems, pressure relief &amp; backflow prevention devices, secondary containment facilities &amp; multi-walled storage tanks, etc.).</li> <li>• Groundwater &amp; surface water monitoring programs undertaken at higher-risk operating locations as a regulatory condition, or in</li> </ul>

		<p>concentrations and solubilities that represent a potential risk to groundwater and surface water bodies. Examples of such constituents include benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), and shorter-chain, higher solubility aliphatic hydrocarbons.</p>	<p>discretionary monitoring &amp; risk management programs.</p> <ul style="list-style-type: none"> <li>• Pre-construction assessments are routinely undertaken by environmental specialists to ensure sensitive or potentially at-risk aquatic environments are identified &amp; avoided.</li> <li>• Post construction, operator inspections typically completed daily at producing assets to identify potential problem scenarios.</li> <li>• Project specific environmental monitoring during sensitive field programs (e.g. directional boring beneath water bodies).</li> <li>• Area &amp; job specific spill preparedness &amp; response plans in all business units with mock ERP exercises involving spill response elements undertaken periodically in accordance with corporate and/or regulatory requirements.</li> </ul> <p>We also actively participate in industry &amp; governmental spill response organizations (e.g. OSRL, AMOSC, POLMAR, WCSS, SK Oil Spill Cooperative) &amp; maintain a standing service agreement with Wild Well Control (Houston/Aberdeen) for well blowout support. Pre-job &amp; daily hazard</p>
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				<p>assessments are a standard HSE requirement &amp; consider potential release scenarios &amp; release response requirements.</p> <p>When releases infrequently occur &amp; breach containment facilities, remedial response activities are undertaken in consultation with the relevant regulatory authorities with the objective of timely closure. In circumstances with timely closure is not practical (e.g. operating infrastructure limits access), risk management measures are implemented to safeguard area receptors &amp; monitored until full remediation can be achieved.</p> <p>Success is measured using leading &amp; lagging KPIs, including inspections conducted, exercises held, release (spill) numbers &amp; volumes &amp; process safety incidents reported to the organization monthly.</p>
<p>Other, please specify</p> <p>Salinity Parameters</p>	Upstream	<p>Salt (NaCl) is a common contaminant of concern associated with produced water, particularly in our Canadian Business Unit where chloride concentrations in produced water often exceed 150,000 ppm.</p>	<p>Measures to prevent spillage, leaching and leakages</p> <p>Emergency preparedness</p> <p>Other, please specify</p> <p>Compliance with risk-based</p>	<p>Vermilion's approach involves multiple elements &amp; technical disciplines, including:</p> <ul style="list-style-type: none"> <li>• Application of a robust Process Safety Management System that includes asset integrity programs that involve</li> </ul>

		<p>Although generally not a concern from a human health perspective, freshwater aquatic toxicity guidelines for chloride have been developed, as well as aesthetic guidelines for drinking water. Chloride is highly soluble and mobile and is not influenced by many of the natural attenuation processes that apply to hydrocarbon compounds (e.g. sorption, biodegradation, volatilization). Consequently, salt often represents the dominant contaminant of concern in circumstances where lateral groundwater transport to a surface waterbody or downward migration into a potable aquifer is of concern.</p>	<p>regulatory standards related to environmental assessment and remediation.</p>	<p>technical experts in corrosion protection &amp; control &amp; sophisticated assessment &amp; monitoring technologies including intelligent pigging systems.</p> <ul style="list-style-type: none"> <li>• Product containment, storage &amp; transfer facilities specifically engineered to reduce the risk of release &amp; mitigate adverse effect (e.g. automated process monitoring &amp; shut-down systems, pressure relief &amp; backflow prevention devices, secondary containment facilities, multi-walled storage tanks, etc.).</li> <li>• Groundwater &amp; surface water monitoring programs undertaken at higher-risk operating locations as a regulatory condition, or in discretionary monitoring &amp; risk management programs.</li> <li>• Pre-construction assessments undertaken by environmental specialists to ensure sensitive or potentially at-risk aquatic environments are identified &amp; avoided.</li> <li>• Post construction, operator inspections typically completed daily at producing assets to identify potential problem scenarios.</li> <li>• Project specific environmental monitoring during sensitive field programs (e.g. directional boring beneath water bodies).</li> </ul>
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			<ul style="list-style-type: none"> <li>• Area &amp; job specific spill preparedness &amp; response plans in all business units with mock ERP exercises involving spill response elements undertaken periodically in accordance with corporate and/or regulatory requirements.</li> </ul> <p>We also actively participate in industry &amp; governmental spill response organizations (e.g. OSRL, AMOSC, POLMAR, WCSS, SK Oil Spill Cooperative) &amp; maintain a standing service agreement with Wild Well Control (Houston/Aberdeen) for well blowout support. Pre-job &amp; daily hazard assessments are a standard HSE requirement &amp; consider potential release scenarios &amp; release response requirements.</p> <p>When releases infrequently occur &amp; breach containment facilities, remedial response activities are undertaken in consultation with the relevant regulatory authorities with the objective of timely closure. In circumstances with timely closure is not practical (e.g. operating infrastructure limits access), risk management measures are implemented to safeguard area</p>
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				<p>receptors &amp; monitored until full remediation can be achieved.</p> <p>Success is measured using leading &amp; lagging KPIs, including inspections conducted, exercises held, release (spill) numbers &amp; volumes &amp; tier 1&amp;2 process safety incidents reported to the organization monthly.</p>
<p>Other, please specify Metals</p>	<p>Upstream</p>	<p>Metals are a common contaminant of concern associated with upstream exploration and production activities. Certain metals (e.g. boron) are often present in production fluids at concentrations that may represent a potential human health or ecological risk. Historically, certain metals (e.g. barium, zinc, chromium) have also been a constituent of drilling mud additives and represent a potential concern with respect to drilling waste handling and disposal. Metals in operational equipment (e.g. mercury switches) represent another potential source of metals concern in the context of facility decommissioning and abandonment activities. Experience has also shown that elevated concentrations of salt (NaCl) in groundwater</p>	<p>Measures to prevent spillage, leaching and leakages</p> <p>Emergency preparedness</p> <p>Other, please specify</p> <p>Compliance with risk-based regulatory standards related to environmental assessment and remediation.</p>	<p>Vermilion's approach involves multiple elements &amp; technical disciplines, including:</p> <ul style="list-style-type: none"> <li>• Application of a robust Process Safety Management System that includes asset integrity programs that involve technical experts in corrosion protection &amp; control &amp; sophisticated assessment &amp; monitoring technologies including intelligent pigging systems.</li> <li>• Product containment, storage &amp; transfer facilities specifically engineered to reduce the risk of release &amp; mitigate adverse effect (e.g. automated process monitoring &amp; shut-down systems, pressure relief &amp; backflow prevention devices, secondary containment facilities &amp; multi-walled storage tanks, etc.).</li> <li>• Groundwater &amp; surface water monitoring programs undertaken at higher-risk operating locations as a</li> </ul>

		<p>can result in an associated increase in dissolved metals concentrations related to a shift in partitioning between sorbed and dissolved states.</p>	<p>regulatory condition, or in discretionary monitoring &amp; risk management programs.</p> <ul style="list-style-type: none"> <li>• Pre-construction assessments undertaken by environmental specialists to ensure sensitive or potentially at-risk aquatic environments are identified &amp; avoided.</li> <li>• Post construction, operator inspections typically completed daily at producing assets to identify potential problem scenarios.</li> <li>• Project specific environmental monitoring during sensitive field programs (e.g. directional boring beneath water bodies).</li> <li>• Area &amp; job specific spill preparedness &amp; response plans in all business units with mock ERP exercises involving spill response elements undertaken periodically in accordance with corporate and/or regulatory requirements.</li> </ul> <p>We also actively participate in industry &amp; governmental spill response organizations (e.g. OSRL, AMOSC, POLMAR, WCSS, SK Oil Spill Cooperative) &amp; maintain a standing service agreement with Wild Well Control (Houston/Aberdeen) for well blowout support. Pre-job &amp; daily hazard</p>
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				<p>assessments are a standard HSE requirement &amp; consider potential release scenarios &amp; release response requirements.</p> <p>When releases infrequently occur &amp; breach containment facilities, remedial response activities are undertaken in consultation with the relevant regulatory authorities with the objective of timely closure. In circumstances with timely closure is not practical (e.g. operating infrastructure limits access), risk management measures are implemented to safeguard area receptors &amp; monitored until full remediation can be achieved.</p> <p>Success is measured using leading &amp; lagging KPIs, including inspections conducted, exercises held, release (spill) numbers &amp; volumes &amp; tier 1&amp;2 process safety incidents reported to the organization monthly.</p>
Chemicals	Upstream	Numerous other commercially available chemical products are used in the upstream oil industry that have the potential to adversely impact groundwater or surface water quality if released. A few	Measures to prevent spillage, leaching and leakages Emergency preparedness Other, please specify	<p>Vermilion's approach involves multiple elements &amp; technical disciplines, including:</p> <ul style="list-style-type: none"> <li>• Application of a robust Process Safety Management System that includes asset integrity</li> </ul>

		<p>examples of such chemicals include ethylene and triethylene glycol used in natural gas refrigeration and dehydration process, methanol used for hydrate suppression, corrosion inhibitors used in asset integrity programs, and wax inhibitors or dispersants used in production maintenance applications. In addition to the pure products (e.g. glycols, methanol), the blended products also commonly contain organic and/or inorganic constituents of human health or ecological concern, and require due care in management and application.</p>	<p>Compliance with risk-based regulatory standards related to environmental assessment and remediation.</p>	<p>programs that involve technical experts in corrosion protection &amp; control &amp; sophisticated assessment &amp; monitoring technologies including intelligent pigging systems.</p> <ul style="list-style-type: none"> <li>• Product containment, storage &amp; transfer facilities specifically engineered to reduce the risk of release &amp; mitigate adverse effect (e.g. automated process monitoring &amp; shut-down systems, pressure relief &amp; backflow prevention devices, secondary containment facilities &amp; multi-walled storage tanks, etc.).</li> <li>• Groundwater &amp; surface water monitoring programs undertaken at higher-risk operating locations as a regulatory condition, or in discretionary monitoring &amp; risk management programs.</li> <li>• Pre-construction assessments undertaken by environmental specialists to ensure sensitive or potentially at-risk aquatic environments are identified &amp; avoided.</li> <li>• Post construction, operator inspections typically completed daily at producing assets to identify potential problem scenarios.</li> <li>• Project specific environmental monitoring during sensitive field programs (e.g. directional boring beneath water</li> </ul>
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			<p>bodies).</p> <ul style="list-style-type: none"> <li>• Area &amp; job specific spill preparedness &amp; response plans in all business units with mock ERP exercises involving spill response elements undertaken periodically in accordance with corporate and/or regulatory requirements.</li> </ul> <p>We also actively participate in industry &amp; governmental spill response organizations (e.g. OSRL, AMOSC, POLMAR, WCSS, SK Oil Spill Cooperative) &amp; maintain a standing service agreement with Wild Well Control (Houston/Aberdeen) for well blowout support. Pre-job &amp; daily hazard assessments are a standard HSE requirement &amp; consider potential release scenarios &amp; release response requirements.</p> <p>When releases infrequently occur &amp; breach containment facilities, remedial response activities are undertaken in consultation with the relevant regulatory authorities with the objective of timely closure. In circumstances with timely closure is not practical (e.g. operating infrastructure limits access), risk management measures are implemented</p>
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				<p>to safeguard area receptors &amp; monitored until full remediation can be achieved.</p> <p>Success is measured using leading &amp; lagging KPIs, including inspections conducted, exercises held, release (spill) numbers &amp; volumes &amp; tier 1&amp;2 process safety incidents reported to the organization monthly.</p>
<p>Other, please specify</p> <p>Naturally Occurring Radioactive Materials (NORM)</p>	Upstream	<p>Similar to many other upstream operators, naturally occurring radioactive material (NORM) has been identified as a potential contaminant of concern in relation to our oil and gas production operations. Although generally limited in magnitude and scope in the context of our operations, NORM is known to accumulate in scale, sludge and similar waste products and can result in contamination to process equipment (e.g. wellheads, vessels, pumps, etc.) and fluids, resulting in a potential human health risk.</p>	<p>Compliance with effluent quality standards</p> <p>Measures to prevent spillage, leaching and leakages</p> <p>Emergency preparedness</p> <p>Other, please specify</p> <p>Waste management in accordance with industry and regulatory requirements.</p>	<p>NORM surveys are undertaken as an operational requirement in areas where NORM may be, or is suspected to be, present (e.g. Australia) and as part of facility decommissioning and abandonment activities. NORM-containing waste material or equipment, where identified, is segregated and managed in accordance with regulatory requirements. Worker training programs are also in place organizationally to promote NORM awareness.</p>
Drilling fluids	Upstream	<p>Although considerable advancements have been made in recent years in relation to environmentally friendly drilling products, drilling mud and completions fluids still often contain</p>	<p>Measures to prevent spillage, leaching and leakages</p> <p>Emergency preparedness</p> <p>Other, please specify</p>	<p>Similar to prior sections, Vermilion's approach to managing and mitigating the risks presented by drilling fluids involves several elements, including:</p>

		<p>organic and/or inorganic constituents that may represent a potential risk to groundwater or surface water if released to the environment. Oil based mud systems, which typically use diesel or fuel oil as the continuous phase, and high salinity, water-based systems (e.g. KCl) are two higher risk examples that warrant heightened management practices. Drilling fluids used in hydraulic fracturing in Canada and the US may also contain chemicals of concern, including hydrocarbons, inorganics and biocides.</p>	<p>Waste management in accordance with industry and regulatory requirements.</p>	<ul style="list-style-type: none"> <li>• Product containment, storage and transfer facilities specifically engineered to minimize the risk of release and mitigate adverse effect.</li> <li>• Field-level monitoring to identify and correct potential problem scenarios (mechanical or operational) prior to a release occurring.</li> <li>• Pre-job and daily hazard assessments and emergency response planning that includes release response elements.</li> <li>• Lifecycle monitoring and tracking of environmental sensitive inventory.</li> <li>• Drilling waste management in accordance with regulatory requirements and industry best practices.</li> <li>• Third-party waste disposal solely at appropriately licensed and managed receiving facilities.</li> </ul> <p>As described previously, when releases occur and breach containment facilities, remedial response activities are undertaken in consultation with the relevant regulatory authorities with the objective of timely closure. In circumstances when timely closure is not practical (e.g. operating infrastructure limits access), risk management</p>
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				<p>measures are implemented to safeguard area receptors and monitored until full remediation can be achieved.</p> <p>Additionally, with respect to well completions, Vermilion publicly discloses all chemicals used in hydraulic fracturing through FracFocus in Canada and the US. In the US, our suppliers of frac fluids do not use any proprietary chemicals. In Canada, where some fluids are protected by trade secrets, they are disclosed in full to the regulatory authority, which assigns them a code that is then disclosed through FracFocus.</p> <p>Success is measured using leading &amp; lagging KPIs, including inspections conducted, exercises held, release (spill) numbers &amp; volumes &amp; tier 1&amp;2 process safety incidents reported to the organization monthly.</p>
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### W3.3

**(W3.3) Does your organization undertake a water-related risk assessment?**

Yes, water-related risks are assessed

### W3.3a

**(W3.3a) Select the options that best describe your procedures for identifying and assessing water-related risks.**

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**Value chain stage**

Direct operations

**Coverage**

Full

**Risk assessment procedure**

Water risks are assessed as part of an established enterprise risk management framework

**Frequency of assessment**

Annually

**How far into the future are risks considered?**

More than 6 years

**Type of tools and methods used**

Tools on the market  
Enterprise risk management  
Databases

**Tools and methods used**

WRI Aqueduct  
WWF Water Risk Filter  
COSO Enterprise Risk Management Framework  
Enterprise Risk Management  
Regional government databases  
Other, please specify  
Equitable Origin certification for our West Pembina sites in Alberta, Business Working Responsibly Mark in Ireland and AFNOR "CSR Committed" label in France

**Contextual issues considered**

Water availability at a basin/catchment level  
Water quality at a basin/catchment level  
Stakeholder conflicts concerning water resources at a basin/catchment level  
Implications of water on your key commodities/raw materials  
Water regulatory frameworks  
Status of ecosystems and habitats  
Access to fully-functioning, safely managed WASH services for all employees  
Other, please specify  
Corporate Risk Register & Risk Matrix identify, assess and monitors new & emerging water-related risks on an ongoing basis, updating the Register as needed but annually at minimum.

**Stakeholders considered**

Customers  
Employees  
Investors  
Local communities  
NGOs

Regulators  
Suppliers  
Water utilities at a local level  
Other water users at the basin/catchment level

### **Comment**

Vermilion uses our Enterprise Risk Management (ERM) System, with its Corporate Risk Register & Risk Matrix, to identify, assess & monitor new & emerging water related risks on an ongoing basis, updating the Register as needed but annually at minimum. We also use tools such as WRI Aqueduct and WWF Water Risk Filters to identify water stress areas as it relates to our operations and value chain partners and ensure that the information is fed into operational development strategies to protect water bodies and increase water efficiency. We also use relevant regional government databases whenever available to us.

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### **Value chain stage**

Supply chain

### **Coverage**

Partial

### **Risk assessment procedure**

Water risks are assessed in an environmental risk assessment

### **Frequency of assessment**

Annually

### **How far into the future are risks considered?**

More than 6 years

### **Type of tools and methods used**

Tools on the market

### **Tools and methods used**

Other, please specify

Through our third-party compliance system in Canada and US + Internal global supply chain risk assessment, analyzing risks including climate & water, based on geography, industry & operations, for suppliers with >\$1MM spend annually.

### **Contextual issues considered**

Water availability at a basin/catchment level  
Water quality at a basin/catchment level  
Implications of water on your key commodities/raw materials  
Water regulatory frameworks  
Status of ecosystems and habitats  
Access to fully-functioning, safely managed WASH services for all employees

### **Stakeholders considered**

Customers  
Employees  
Investors  
Local communities  
NGOs  
Regulators  
Suppliers  
Water utilities at a local level  
Other water users at the basin/catchment level

### **Comment**

We are conducting a global supply chain risk assessment, analyzing risks using publicly declared commitments to ESG issues, including climate and water, based on geography, industry and operations, for suppliers with > \$1MM spend annually. An impact of the supply chain risk assessment is the identification of suppliers without public commitments to climate change including water, which we then assess against the WRI Aqueduct tool for water stressed areas and water risk. We are reassessing those suppliers in 2022-23, to assess change and the potential for direct engagement with them to encourage public commitments.

Supported by a third-party information management platform (ISNetworld) in our Canada and US Business Units, approximately 72% of our suppliers have been successfully engaged on providing water-related risk information. Sample questions include: does your company track water use in your operations; does your company have a program in place to conserve, reduce and reuse water in your operations; what volume of water was used, recycled and re-used by your company; and, do any operations take place in areas of drought?

This constitutes another step in greater direct supplier engagement on water-related issues, and focuses on areas where our water use may potentially increase through acquisition and development, and where our use of third-party supplier compliance systems enables us to leverage existing supplier questionnaires.

Our supplier engagement questionnaires will be updated annually and reviewed by our Operations, HSE and sustainability teams to identify opportunities for further engagement and improvement over time. We have expanded this external supplier engagement while working to establish internal and external benchmarks for water use and intensity, and to demonstrate our own performance via CDP Water Security submissions. We believe this is providing a solid foundation for data gathering from suppliers, and helps to guide the data and information requests that we make of them.

## **W3.3b**

**(W3.3b) Describe your organization's process for identifying, assessing, and responding to water-related risks within your direct operations and other stages of your value chain.**

We assess water risk in 100% of our operations because water availability & quality are critical inputs for operations, including production, drilling & completions, & depend on regulatory licenses, which in turn depend on stakeholder relations & ecosystems. We are prioritizing North America for supply chain given the water intensity & potential for long-term issues, & selected a \$1MM threshold for the global analysis for practicality.

Our company key stakeholders are investors, staff, communities, governments & regulators, & partners (incl. customers) & suppliers, & are thus considered in risk id & assessment. Our operating areas use a multi-stakeholder model for managing water supplies, incl. licenses, so water utilities, NGOs & other users are also key.

Water-related risks are integrated into multi-disciplinary Company-wide risk identification, assessment, and management processes via our ERM system, based on the COSO framework. This provides an integrated approach to managing risk as it impacts strategy & performance, including Operational, Market & Financial, Credit, Organizational, Political, Regulatory Compliance, Strategic & Reputational, & Sustainability categories. Added tools such as WRI, WWF & govt databases assess water-stressed area potential & license issues. 3rd party reviews such as EO help demonstrate our performance.

### **Identifying & Assessing Risks**

Risk mgmt is the responsibility of the Board & Executive Committee based on a Top-Down, Bottom-Up approach to engage all staff. Top-Down begins with our Board & its committees with terms of reference including oversight for identification & management of specific allocations of risk type. This is translated into action by our Executive Committee, which reviews & manages the ERM process through implementation of associated policies & procedures. Our staff help develop systems, standards & procedures. Bottom-Up is how staff implement, maintain & improve risk management processes, applying the hazard-risk-mitigation process.

Risks are identified by key staff, e.g. Operations, Finance, Health, Safety and Environment, Economics, Government and Public Relations, and Sustainability teams at corporate, business unit & asset levels. These employees have significant experience, & use a wide array of inputs, including operational and facility assessments, technical and research reports, external stakeholder organizations, govt policy & regulation changes, industry initiatives, communities & landowners, and NGOs.

The results are incorporated into our Corporate Risk Register, which provides a consistent framework to ensure effective tracking & communication of our material risks. Using our Risk Matrix as a prioritization tool, Teams assess severity, likelihood, speed of onset, and vulnerability using scales from 1 to 5, in terms of human, environment, financial, regulatory, social license and cybersecurity impacts. Every risk case has also been assessed to determine where climate-related risk contributes. The results are provided annually at minimum to senior management, Executive Committee & the Board & its Committees as appropriate, who further assess the risks including interdependencies.

### **Managing Risks**

Based on the Corporate Risk Register and Matrix, our decision-making on risk management approach focuses on reducing the risk to a level as low as reasonably practicable, accepting the risk, or transferring it (e.g. insurance). Eg if direct mitigation is not possible (e.g. drought), we would adapt our business processes to reduce potential impact (e.g. finding alternative sources; transferring operations to other sites); (e.g. increasing risk of flood), protect against the risk (e.g. flood controls) while also insuring our operations. Financial impact is deemed substantive if it could cause a business loss of more than \$10 million CAD (unrisked and before mitigation/recovery). Substantive is defined further using thresholds:

Has persistent but reversible, long-term effects on habitat, ecological communities, land, air, or water. Escalations include irreversible effects, persistent reduction in sensitive ecosystem function, or effects beyond a regional or operations scale.

Requires a specific asset to be shut in for unknown duration during regulatory or legal proceedings. Escalations include the permanent withdrawal of authority to operate. Reputational damage is national or international, or stakeholder concerns lead to regional or more widespread interruption of operations.

At a minimum annually & more frequently when required (e.g. daily during cyclone season), we reassess water risk in relation to:

- Changes in temperature & precipitation extremes
- Sea level rise
- Tropical cyclones (hurricanes & typhoons)
- Water reporting obligations
- Uncertainty surrounding new regulation
- Legal
- Technology
- Reputation &
- Changing consumer behaviour

## W4. Risks and opportunities

### W4.1

**(W4.1) Have you identified any inherent water-related risks with the potential to have a substantive financial or strategic impact on your business?**

Yes, only within our direct operations

### W4.1a

**(W4.1a) How does your organization define substantive financial or strategic impact on your business?**

Our Enterprise Risk Management (ERM) system includes a corporate risk register in which we maintain records of all material risks to our business and our operations. Within the risk

register, in addition to descriptions of the background and context of the risk, we use a risk matrix approved by our Executive and Board of Directors to identify the potential magnitude of the financial or strategic impact of each identified risk on our business. The risk matrix is used to establish impact thresholds across a broad range of risk categories, including people, environment, business loss, reputation, regulatory, and security.

We define substantive financial or strategic impact as part of this risk matrix, to ensure that the risks with the highest potential impact are appropriately managed. This definition applies to both direct operations and supply chain. As per our matrix, financial impact is deemed substantive if it could cause a business loss of more than \$10 MM CAD (unrisked & before mitigation/recovery instruments) A strategic impact is defined as substantive beginning at the following levels, and including any escalations, if it:

- Has persistent but reversible, long term effects on habitat, ecological communities, land, air, or water. Escalations include irreversible effects on these elements, persistent reduction in sensitive ecosystem function, or effects beyond a regional or operations scale.
- Requires a specific asset to be shut in for unknown duration during regulatory or legal proceedings. Escalations include the permanent withdrawal of authority to operate.
- Has reputational damage nationally or internationally and where stakeholder concerns lead to regional or more widespread interruption of operations.

Potential impacts to our business are also assessed within the risk matrix and the corporate risk register in terms of likelihood in order to quantify (or qualify) risk exposure to the organization and determine order of priority in which these risks will be managed. Substantive impacts with a probability greater than one in one thousand (1/1000) or assessed as Possible require the implementation of additional safeguards to achieve ALARP (As Low As Reasonably Possible), or the formal approval from the VP level or Managing Director to temporarily maintain operations while solutions are being implemented. Other measures such as speed of onset and organizational vulnerability are risk qualifiers that are also used to help us with our risk ranking process to provide greater context for risk management. An example of potential substantive impact is the risk scenario that Vermilion would not be able to maintain its water withdrawal license from the Lasseube aquifer due to a change in regulations, generating a revenue loss of \$15.4MM with a likelihood of " about as likely as not" (see W4.2).

## W4.1b

**(W4.1b) What is the total number of facilities exposed to water risks with the potential to have a substantive financial or strategic impact on your business, and what proportion of your company-wide facilities does this represent?**

	Total number of facilities exposed to water risk	% company-wide facilities this represents	Comment
Row 1	2	1-25	Substantive, water-related risks have been identified in relation to our Canada and France

			business units, which represents 25% of our total business units (2/8 = 25%).
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## W4.1c

**(W4.1c) By river basin, what is the number and proportion of facilities exposed to water risks that could have a substantive financial or strategic impact on your business, and what is the potential business impact associated with those facilities?**

### Country/Area & River basin

Canada

Other, please specify

At this time, Vermilion's water accounting data is aggregated at the business unit level rather than river basin level. As such, all of the referenced water accounting metrics reflect business unit totals rather than river basin totals.

### Number of facilities exposed to water risk

1

### % company-wide facilities this represents

1-25

### % company's global oil & gas production volume that could be affected by these facilities

1-25

### % company's total global revenue that could be affected

31-40

### Comment

As an organization, Vermilion is comprised of eight Business Units, generally defined by operating country (Canada, United States, Australia, France, Netherlands, Germany, Ireland) or geographic region (Central Eastern Europe). In the context of this question, facilities correspond to Business Units. Consequently, one Business Unit (e.g. Canada) would represent  $1/8 = 12.5\%$  of company-wide facilities.

### Country/Area & River basin

France

Other, please specify

At this time, Vermilion's water accounting data is aggregated at the business unit level rather than river basin level. As such, all of the referenced water accounting metrics reflect business unit totals rather than river basin totals.

### Number of facilities exposed to water risk

1



**% company-wide facilities this represents**

1-25

**% company's global oil & gas production volume that could be affected by these facilities**

1-25

**% company's total global revenue that could be affected**

11-20

**Comment**

As an organization, Vermilion is comprised of eight Business Units, generally defined by operating country (Canada, United States, Australia, France, Netherlands, Germany, Ireland) or geographic region (Central Eastern Europe). In the context of this question, facilities are defined as Business Units. Consequently, one Business Unit (e.g. Canada) would represent  $1/8 = 12.5\%$  of company-wide facilities.

## W4.2

**(W4.2) Provide details of identified risks in your direct operations with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.**

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**Country/Area & River basin**

France

Other, please specify

At this time, Vermilion's water accounting data is aggregated at the business unit level rather than river basin level. As such, all of the referenced water accounting metrics reflect business unit totals rather than river basin totals.

**Type of risk & Primary risk driver**

Regulatory

Statutory water withdrawal limits/changes to water allocation

**Primary potential impact**

Reduction or disruption in production capacity

**Company-specific description**

Vermilion owns and operates the Champotran/Latorche and Chaunoy oil fields located in the department of Seine-et-Marne, France since 1999. Production comes from 34 wells drilled into the Chaunoy sandstone formation at a depth ranging from 1900 to 2500 m. Water is injected in 12 injection wells to support pressure of these reservoirs (also known as voidage replacement), and also to sweep or displace oil from the reservoir and push it towards producing wells. Water used to maintain reservoir pressure and increase oil recovery comes in priority from the water that is produced with the oil and separated in our surface facilities. The water is stored in tanks and pipelined

to injection wells. When there is insufficient volume of recycled water to maintain pressure in the reservoir, two additional sources of make-up water are used. Vermilion first uses saline water from well CHN 22 which produces saline water from a Triassic aquifer. Should a second source of water be required, water can be produced from the Champigny aquifer as authorized by prefectural decree n°09/DAIDD/M/017, July 17 2009 (ref. Appendix 2).

**Timeframe**

More than 6 years

**Magnitude of potential impact**

Medium

**Likelihood**

Unlikely

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

10,000,000

**Potential financial impact figure - minimum (currency)**

**Potential financial impact figure - maximum (currency)**

**Explanation of financial impact**

In the event that Vermilion is no longer be able to maintain its water withdrawal license from the Calcaires de Champigny aquifer due to a change in regulations, an alternative water source would have to be identified and tested to replace the current volume of make-up water used to maintain reservoir pressure in the Chaunoy, Champotran/Latorche oil fields. It is estimated that 5 wells at a cost of \$2.0MMM/well would need to be drilled, equipped and tied-in to produce the new source water wells to existing facilities in replacement of volumes previously extracted from the Champigny aquifer (5 x \$2MM = \$10MM).

**Primary response to risk**

Comply with local regulatory requirements

**Description of response**

Vermilion is fully committed to operating responsibly in all of our jurisdictions, and as such meeting regulatory requirements and industry standards. This commitment makes both Current Regulation and Emerging Regulation material to our operations. On an ongoing basis in every BU our technical teams assess our current operations and planned development activities to ensure that we operate within our commitment to responsible operations. We also engage external regulatory experts to ensure that our staff is up to date on current regulation, as well as upcoming changes to regulations

impacting our operation. In addition, the Public and Government Relations staff in our business units provide important monitoring of the interpretation of current regulations, which can be subject to change by the courts and government departments. In this risk case, the steps that Vermilion would follow as part of regulatory approval process would include: Regulatory request sent to the Prefecture with Environment impact assessment (including a specific regional hydrogeological survey and study); consultation with the public, with water and health agencies, and with local health and safety committee.

### **Cost of response**

200,000

### **Explanation of cost of response**

The cost of response to this change of regulation is estimated at \$200K (1 FTE) and corresponds to time spent by internal resources to manage this work. Functions involved in this type of project include regulatory advisor, public-government relationship coordinator, communication, operations and technical services.

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### **Country/Area & River basin**

France

Other, please specify

At this time, Vermilion's water accounting data is aggregated at the business unit level rather than river basin level. As such, all of the referenced water accounting metrics reflect business unit totals rather than river basin totals.

### **Type of risk & Primary risk driver**

Regulatory

Statutory water withdrawal limits/changes to water allocation

### **Primary potential impact**

Reduction or disruption in production capacity

### **Company-specific description**

Vermilion owns and operates the Vic Bilh oil field located in the department of Pyrénées-Atlantiques, France since 2012. Production comes from wells drilled into the Barrémien et Mano dolomite formations at a depth ranging from 2200 to 2500 m. Water is injected in 3 injection wells to support pressure of this reservoir (also known as voidage replacement), and also to sweep or displace oil from the reservoir and push it towards 30 producing wells. Water used to maintain reservoir pressure and increase oil recovery comes in priority from the water that is produced with the oil and separated in our surface facilities. The water is stored in tanks and pipelined to injection wells. When there is insufficient volume of recycled water to maintain pressure in the reservoir, additional make-up water is used. Vermilion is authorized to produce saline water from 3 source water wells from the Lasseube aquifer as per prefectural decree n° MI NES/2019/001, January 25 2019.

### **Timeframe**

More than 6 years

**Magnitude of potential impact**

High

**Likelihood**

About as likely as not

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

15,400,000

**Potential financial impact figure - minimum (currency)**

**Potential financial impact figure - maximum (currency)**

**Explanation of financial impact**

In the event that Vermilion is no longer able to maintain its water withdrawal license from the Lasseube aquifer due to a change in regulations and the fact that there is no other known source of saline water that is available and economic to produce, Vermilion will most likely stop reinjecting make-up water in its Vic Bilh oil field. The lack of voidage replacement will cause the reservoir pressure to deplete over time and reduce the ultimate oil recovery of this reservoir. Reduction in water injection will also reduce sweeping efficiency of the waterflooding scheme and negatively impact ultimate oil recovery of the reservoir. Based on historical reservoir performance and modelling, the loss of make-up water reinjection would reduce the ultimate oil recovery of the Vic Bilh field by an average of 55 boe/d over the remaining 15 years of operations remaining for this field. The financial impact in lost revenue is estimated at \$15.4MM (55 boe/d x 365d/yr x 15yrs x \$51/boe netback).

**Primary response to risk**

Comply with local regulatory requirements

**Description of response**

Vermilion is fully committed to operating responsibly in all of our jurisdictions, and as such meeting regulatory requirements and industry standards. This commitment makes both Current Regulation and Emerging Regulation material to our operations. On an ongoing basis in every BU our technical teams assess our current operations and planned development activities to ensure that we operate within our commitment to responsible operations. We also engage external regulatory experts to ensure that our staff is up to date on current regulation, as well as upcoming changes to regulations impacting our operation. In addition, the Public and Government Relations staff in our business units provide important monitoring of the interpretation of current regulations, which can be subject to change by the courts and government departments.

**Cost of response**

200,000

### **Explanation of cost of response**

The cost of response to this change of regulation is estimated at \$200K (1 FTE) and corresponds to time spent by internal resources to manage this work. Functions involved in this type of project include regulatory advisor, public-government relationship coordinator, communication operations and technical services.

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### **Country/Area & River basin**

France

Other, please specify

At this time, Vermilion's water accounting data is aggregated at the business unit level rather than river basin level. As such, all of the referenced water accounting metrics reflect business unit totals rather than river basin totals.

### **Type of risk & Primary risk driver**

Regulatory

Statutory water withdrawal limits/changes to water allocation

### **Primary potential impact**

Reduction or disruption in production capacity

### **Company-specific description**

Vermilion owns and operates five Neocomian oil fields from the Neocomian sandstone formation (multi-layer reservoirs) in the department of Loiret, France since 2012. In this region, the Neocomian aquifer (same layer than oil bearing reservoir) is at a depth of 550 -600 m is classified as a strategic resource for fresh water supply. No industrial use is allowed and every well must be authorized under very stringent +-conditions. Water is injected in 19 injection wells to support pressure of these reservoirs (also known as voidage replacement), and also to sweep or displace oil from the reservoir and push it towards 81 producing wells. Water used to maintain reservoir pressure and increase oil recovery comes from the water that is produced with the oil and separated in our surface facilities. The water is stored in tanks and pipelined to injection wells.

### **Timeframe**

More than 6 years

### **Magnitude of potential impact**

Medium

### **Likelihood**

Unlikely

### **Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

### **Potential financial impact figure (currency)**

12,100,000

**Potential financial impact figure - minimum (currency)**

**Potential financial impact figure - maximum (currency)**

**Explanation of financial impact**

In the event that Vermilion temporarily (3 years) loses its permit to operate its Neocomian oil fields due to a change in regulations regarding the protection of the Neocomian aquifer (even though our reservoir are disconnected from regional fresh water aquifers) , Vermilion will be required to shut in its operations prematurely and leave recoverable oil reserves still remaining in the reservoir. Based on historical reservoir performance and modelling, the financial impact in lost revenue is estimated at \$12.1MM (238,000 bbl of reserves not recovered at \$51/bbl netback).

**Primary response to risk**

Comply with local regulatory requirements

**Description of response**

Vermilion is fully committed to operating responsibly in all of our jurisdictions, and as such meeting regulatory requirements and industry standards. This commitment makes both Current Regulation and Emerging Regulation material to our operations. On an ongoing basis in every BU our technical teams assess our current operations and planned development activities to ensure that we operate within our commitment to responsible operations. We also engage external regulatory experts to ensure that our staff is up to date on current regulation, as well as upcoming changes to regulations impacting our operation. In addition, the Public and Government Relations staff in our business units provide important monitoring of the interpretation of current regulations, which can be subject to change by the courts and government departments.

**Cost of response**

200,000

**Explanation of cost of response**

The cost of response to this change of regulation is estimated at \$200K (1 FTE) and corresponds to time spent by internal resources to manage this work. Functions involved in this type of project include regulatory advisor, public-government relationship coordinator, communication, operations and technical services.

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**Country/Area & River basin**

Canada

Other, please specify

At this time, Vermilion's water accounting data is aggregated at the business unit level rather than river basin level. As such, all of the referenced water accounting metrics reflect business unit totals rather than river basin totals.

**Type of risk & Primary risk driver**

Regulatory

Statutory water withdrawal limits/changes to water allocation

**Primary potential impact**

Increased operating costs

**Company-specific description**

Due to economic, operational (i.e. outcome) and fluid handling requirements, Vermilion currently uses freshwater based, crosslinked gel (CG) fluid systems in its hydraulic fracturing operations in Canadian (Saskatchewan and Alberta). This risk case recognizes the possibility that future regulatory and/or social pressure, or water availability concerns, may limit or prohibit the use of freshwater in this application, either temporarily or over a longer-term.

Although more strategic than financial at current drilling levels, as a responsible energy producer we have identified this risk as substantive because of its links to reputation, social license to operate and current and future regulations, all of which will impact our ability to not only operate in our areas, but also to grow.

**Timeframe**

More than 6 years

**Magnitude of potential impact**

Medium

**Likelihood**

Unlikely

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

7,400,000

**Potential financial impact figure - minimum (currency)**

**Potential financial impact figure - maximum (currency)**

**Explanation of financial impact**

In recognition of this risk, Vermilion has evaluated the technical feasibility and cost implications of switching from the freshwater fluid system to a saltwater based, High Viscosity Friction Reducer (HFVR) system. In relation to our Alberta operations, while technically feasible, the evaluation identified increased operational costs in relation to fluid storage and handling (e.g. increased fluid requirements, bigger tanks, increased hauling, etc.), on-lease transfer equipment (including maintenance), and increased waste management and disposal. The total cost differential associated with these activities is estimated to be approximately \$105k/well. Direct, third-party fracturing costs

(i.e. materials, consulting services, etc.) are estimated to be an additional \$20k per well.

Due to different geologic conditions, the feasibility assessment determined that the completion technologies applied in Saskatchewan can likely modified to handle saltwater without a similar change in frac fluid system. The incremental cost associated with shifting from freshwater to saltwater in Saskatchewan is estimated to be approximately \$30k/well.

With consideration of the current asset base, the potential financial impact of the risk is based on a 40 well per year drilling program in Alberta and 80 well per year drilling program in Saskatchewan (40 x \$125k + 80 x \$30k = \$7.4MM).

**Primary response to risk**

Comply with local regulatory requirements

**Description of response**

Should future circumstances limit access to freshwater for fracturing purposes, the drilling program in the affected area(s) would be reassessed and, with consideration to the scope and anticipated duration of the expected restriction, an appropriate decision would be made with respect to modifying the drilling program to maintain regulatory compliance. This may include prioritizing drilling activities in other areas where freshwater availability is not a concern and/or shifting to a saltwater frac fluid system.

**Cost of response**

100,000

**Explanation of cost of response**

The cost differential associated with shifting from freshwater to saltwater based fracturing fluids forms the basis of the potential impact figure. At current drilling levels, the increased engineering, coordination and management costs associated with the change is estimated to be approximately 0.5 FTE = \$100k (\$200k x 0.5 = \$100k) per annum.

**W4.2c**

**(W4.2c) Why does your organization not consider itself exposed to water risks in its value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact?**

	Primary reason	Please explain
Row 1	Risks exist, but no substantive impact anticipated	The suppliers with the greatest water risk exposure have been included as part of our direct operations, as we have direct control over these activities. These suppliers work directly with us, managed by us, in our drilling and production activities, and we thus have direct control over them. Other suppliers, such as those providing personnel or administration supplies, have far lower exposure to water risks.



## W4.3

### **(W4.3) Have you identified any water-related opportunities with the potential to have a substantive financial or strategic impact on your business?**

Yes, we have identified opportunities, and some/all are being realized

## W4.3a

### **(W4.3a) Provide details of opportunities currently being realized that could have a substantive financial or strategic impact on your business.**

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#### **Type of opportunity**

Efficiency

#### **Primary water-related opportunity**

Improved water efficiency in operations

#### **Company-specific description & strategy to realize opportunity**

Environmental stewardship of water resources includes two key focus areas for Vermilion: protection of water bodies, including oceans, lakes and rivers; and increasing our water efficiency. We support this using key performance indicators on water use in the Performance Metrics section of our Sustainability Report and, beginning in 2020, in our CDP Water Security questionnaire submission. This includes water withdrawal by source, and percentage and volume of water recycled and reused. We are committed to careful stewardship of the planet's resources, including water. We do not currently operate in areas that are considered water stressed; however, our capital and operating procedures recognize the critical importance of this resource. As a result, we emphasize:

- The efficient use of all water,
- The prioritization of non-potable water over potable water,
- The consideration of our communities and their concerns, and
- The protection of vulnerable ecosystems.

Operationally and environmentally, we continue to work hard to establish the most efficient and sustainable ways of sourcing and reusing this critical resource. As the single largest component used in hydraulic fracturing operations, water is essential to developing many types of oil and gas reservoirs, particularly in North America. In Vermilion's operations, our use of hydraulic fracturing in some semi-conventional clastic reservoirs is significantly less frac intensive than shale development, requiring much lower volumes of water. Approximately one-quarter of the water we pump during a Canadian frac, for example, returns immediately during flowback operations. We then employ fracture fluid technology that lets us re-use this flowback water on subsequent wells. We are also assessing where we can adjust completion schedules to optimize water use, and recycle flowback water to reduce overall make-up water requirements.

Finally, we are also looking at the potential of using produced water (non-potable water produced with oil and gas) from our operations to replace other water sources. To support water efficiency, all business units assessed water risks and opportunities in 2019-2021, and will be identifying potential opportunities for increased water efficiency in 2022-2023.

**Estimated timeframe for realization**

1 to 3 years

**Magnitude of potential financial impact**

Low

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact**

Efficiency in water use will reduce water that needs to be either (a) purchased or (b) produced, transported and disposed of, all of which will lead to cost efficiencies.

---

**Type of opportunity**

Products and services

**Primary water-related opportunity**

Sales of new products/services

**Company-specific description & strategy to realize opportunity**

We are assessing circular economy approaches to our operations, particularly with respect to the use of produced water, including geothermal energy, metals extraction such as lithium, & distillation to create usable or potable water rather than disposal. The most advanced opportunity is the development of community-based geothermal applications in our France business, using the heat from our produced water to heat an industrial-sized tomato greenhouse operation. Today, this ongoing operation has catalyzed an entire agricultural sector, and we have expanded the concept to heating a residential neighbourhood and, in 2021, a spirulina (microalgae) agricultural operation and a college. In Parentis, our commitment to provide heat free-of-charge and free of carbon emissions for 25 years has made the greenhouse operation profitable to build and operate, which in turn has enabled our partners to expand, and has attracted other business to the area. Our similar geothermal community-building project specifically

target economic inclusivity in the form of social housing: 30% of residences are reserved for those with lower incomes.

In the Netherlands and France, we are continuing to research the potential to convert depleted gas wells to geothermal assets, which could supply energy to community and economic assets such as eco-neighbourhoods and agriculture centres, and to use our land base for partnerships with renewable energy suppliers. An example of the development of low emission goods/services is our France-based industry partnership with Avenia to expand the use of geothermal energy production in oil production, & a geothermal association in Germany. We also partnered with the Green Deal partnership in the Netherlands to investigate the potential for ultra-deep geothermal development appropriate to industrial power and heat requirements. This consortium of industry, research and government partners is continuing on, although our regional partnership identified that the local potential was not strong enough. This does, however, demonstrate our commitment to reusing and indeed repurposing our sources of water to support the community.

While we are providing our geothermal energy in France as part of our strong community relations program there, we are using the projects as pilots to assess the potential to develop similar projects in other regions that would produce revenue.

**Estimated timeframe for realization**

More than 6 years

**Magnitude of potential financial impact**

Low-medium

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact**

The financial impact of our current projects is difficult to quantify, as it is a contributor to positive community relations, and the resulting social license to operate. However, we believe our work in this area has potential for revenue through the sales of new products and services, along with potential cost savings from the reduction of produced water transportation and disposal. The exploration of these revenue and cost impacts is at too early a stage to identify the full scale of the financial impact.

## W5. Facility-level water accounting

### W5.1

(W5.1) For each facility referenced in W4.1c, provide coordinates, water accounting data, and a comparison with the previous reporting year.

---

**Facility reference number**

Facility 1

**Facility name (optional)**

Canada Business Unit

**Country/Area & River basin**

Canada

Other, please specify

At this time, Vermilion's water accounting data is aggregated at the business unit level rather than river basin level. As such, all of the referenced water accounting metrics reflect business unit totals rather than river basin totals.

**Latitude**

51.0447

**Longitude**

114.0719

**Located in area with water stress**

No

**Oil & gas sector business division**

Upstream

**Total water withdrawals at this facility (megaliters/year)**

31,637.5

**Comparison of total withdrawals with previous reporting year**

About the same

**Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes**

124.4

**Withdrawals from brackish surface water/seawater**

0

**Withdrawals from groundwater - renewable**

22.3

**Withdrawals from groundwater - non-renewable**

0

**Withdrawals from produced/entrained water**

31,483.7

**Withdrawals from third party sources**

7.1

**Total water discharges at this facility (megaliters/year)**

31,637.5

**Comparison of total discharges with previous reporting year**

About the same

**Discharges to fresh surface water**

0

**Discharges to brackish surface water/seawater**

0

**Discharges to groundwater**

31,453

**Discharges to third party destinations**

184.5

**Total water consumption at this facility (megaliters/year)**

0

**Comparison of total consumption with previous reporting year**

About the same

**Please explain**

This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP data and historical data, Vermilion has applied the following thresholds when evaluating year-over-year changes in the context of this question:

- About the Same: < 10%
- Higher/Lower: 10 to 25%
- Much Higher/Lower: > 25%.

As a conventional oil and gas producer, Vermilion's operations do not typically involve the consumption of water (i.e. water withdrawals and discharges are generally in balance). Accordingly, in 2021 net water consumption was zero.

**Facility reference number**

Facility 2

**Facility name (optional)**

France Business Unit

**Country/Area & River basin**

France

Other, please specify

At this time, Vermilion's water accounting data is aggregated at the business unit level rather than river basin level. As such, all of the referenced water accounting metrics reflect business unit totals rather than river basin totals.

**Latitude**

44.3526

**Longitude**

1.073

**Located in area with water stress**

No

**Oil & gas sector business division**

Upstream

**Total water withdrawals at this facility (megaliters/year)**

13,708.8

**Comparison of total withdrawals with previous reporting year**

About the same

**Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes**

0

**Withdrawals from brackish surface water/seawater**

0

**Withdrawals from groundwater - renewable**

414

**Withdrawals from groundwater - non-renewable**

0

**Withdrawals from produced/entrained water**

13,289.1

**Withdrawals from third party sources**

5.7

**Total water discharges at this facility (megaliters/year)**

13,708.8

**Comparison of total discharges with previous reporting year**

About the same

**Discharges to fresh surface water**

0

**Discharges to brackish surface water/seawater**

0

**Discharges to groundwater**

13,289.1

**Discharges to third party destinations**

419.7

**Total water consumption at this facility (megaliters/year)**

0

**Comparison of total consumption with previous reporting year**

About the same

**Please explain**

This is our third year of compiling data under the CDP framework. Water-related measurements, monitoring and reporting have been undertaken by Vermilion historically in other contexts (e.g. regulatory and/or sustainability reporting). With consideration to the more recent CDP data and historical data, Vermilion has applied the following thresholds when evaluating year-over-year changes in the context of this question:

- About the Same: < 10%
- Higher/Lower: 10 to 25%
- Much Higher/Lower: > 25%.

As a conventional oil and gas producer, Vermilion's operations do not typically involve the consumption of water (i.e. water withdrawals and discharges are generally in balance). Accordingly, in 2021 net water consumption was zero.

## W5.1a

**(W5.1a) For the facilities referenced in W5.1, what proportion of water accounting data has been third party verified?**

**Water withdrawals – total volumes**

---

**% verified**

Not verified

**Please explain**

### **Water withdrawals – volume by source**

---

**% verified**

Not verified

**Please explain**

### **Water withdrawals – quality by standard water quality parameters**

---

**% verified**

Not verified

**Please explain**

### **Water discharges – total volumes**

---

**% verified**

Not verified

**Please explain**

### **Water discharges – volume by destination**

---

**% verified**

Not verified

**Please explain**

### **Water discharges – volume by final treatment level**

---

**% verified**

Not verified

**Please explain**

### **Water discharges – quality by standard water quality parameters**

---

**% verified**

Not verified

**Please explain**

### **Water consumption – total volume**

---

**% verified**



Not verified

**Please explain**

## W6. Governance

### W6.1

**(W6.1) Does your organization have a water policy?**

Yes, we have a documented water policy that is publicly available

### W6.1a

**(W6.1a) Select the options that best describe the scope and content of your water policy.**

	Scope	Content	Please explain
Row 1	Company-wide	Description of business impact on water Commitments beyond regulatory compliance Commitment to water-related innovation Commitment to water stewardship and/or collective action Acknowledgement of the human right to water and sanitation	Policy/position statement on water <input type="checkbox"/> We recognize water as a basic human right, and as a vital resource that is shared among many stakeholders in our communities <input type="checkbox"/> We are committed to protecting both the supply and the quality of water sources in our areas of operation, by: – Proactively preventing harm and supporting healthy surface and groundwater bodies – Reducing potable and freshwater usage to the lowest level practicable – Taking a lifecycle and circular economy approach to water, exploring opportunities to reuse and recycle products such as produced water <input type="checkbox"/> As part of this commitment, in 2021 -23 we are building on our existing water data reporting to benchmark our performance against our peers, and assess potential for next steps, including reductions

### W6.2

**(W6.2) Is there board level oversight of water-related issues within your organization?**

Yes

### W6.2a

**(W6.2a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for water-related issues.**

Position of individual	Please explain
Board-level committee	<p>Sustainability is 1 of 6 strategic objectives in our long-range business plan. As such, the Board has responsibility for oversight of Vermilion’s sustainability performance, with Board committees providing additional expertise.</p> <p>Comprised of 5 independent directors, the Board’s Sustainability Committee (SC) provides targeted oversight of &amp; advice for our approach, including: Sustainability Policy &amp; long-range strategic plan; performance &amp; progress on sustainability goals; id &amp; mgmt of sustainability risks and opportunities; impact of sustainability &amp; climate issues, including water, on business strategy, budgets &amp; risk management; &amp; communication of sustainability policies &amp; performance. At least quarterly, the SC reviews management’s sustainability performance reports, which include ESG &amp; climate risks, opportunities, activities &amp; performance; environmental &amp; social trends; &amp; strategic community investment activities.</p> <p>The SC Chair reports to the Board on the SC’s work, including the Company’s performance &amp; progress. Most members of the full Board attended SC meetings in 2021, &amp; the Board also reviewed ESG thought leadership papers such as oversight frameworks, decarbonization pathways &amp; managing the energy transition, from experts eg McKinsey, State Street &amp; Kimmeridge Energy. The Board also oversees sustainability strategy &amp; performance via the HSE Committee (environment &amp; safety, risk management), Audit Committee (risk management), &amp; GHR Committee (governance &amp; people).</p> <p>The Board &amp; SC use this info to ensure integration of sustainability &amp; climate risks &amp; opportunities, including water, into major decisions, such as long-range planning, budget and capital allocation, and mergers, acquisitions and divestments. In 2021 the Board reviewed the 10-year sustainability strategy for managing risks and opportunities identified under each strategy pillar of carbon, conservation (including water) and community.</p>

## W6.2b

**(W6.2b) Provide further details on the board’s oversight of water-related issues.**

	Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain
Row 1	Scheduled - all meetings	Monitoring implementation and performance	The Board’s primary responsibility is to foster the long-term success of Vermilion for all stakeholders, consistent with the Board’s responsibility to the shareholders to maximize shareholder value. The Board is also responsible to ensure management

		<p>Overseeing acquisitions and divestiture</p> <p>Overseeing major capital expenditures</p> <p>Reviewing and guiding annual budgets</p> <p>Reviewing and guiding business plans</p> <p>Reviewing and guiding major plans of action</p> <p>Reviewing and guiding risk management policies</p> <p>Reviewing and guiding strategy</p> <p>Reviewing and guiding corporate responsibility strategy</p> <p>Setting performance objectives</p>	<p>identifies the principal risks of Vermilion's business and implements the appropriate systems to manage risks identified.</p> <p>In climate-related work in 2021, the Board:</p> <ul style="list-style-type: none"> <li>• Ensured there is a strategic planning process in place, and reviewed, discussed and approved the strategy and monitored its implementation.</li> <li>• Reviewed and evaluated our business and risk management reports.</li> <li>• Reviewed the 10-year sustainability strategy for managing risks and opportunities identified through the Company's energy transition scenario analysis, encompassing key commitments under each strategy pillar of carbon, conservation (incl water), &amp; community.</li> <li>• Reviewed sustainability-related risks and opportunities, and their integration into our ERM system.</li> <li>• Reviewed Vermilion's sustainability performance relative to peers based on key ESG rating agency scores.</li> </ul> <p>In addition, the Sustainability Committee:</p> <ul style="list-style-type: none"> <li>• Assessed Vermilion's progress against its long-range strategic plan for sustainability, including approving the 10-year strategy for managing risks and opportunities identified through the Company's energy transition scenario analysis, encompassing key commitments under each strategy pillar of carbon, conservation (incl water) &amp; community.</li> <li>• Monitored Vermilion's performance via internal reporting and results from third-party ESG rating agencies</li> <li>• Analyzed Vermilion's sustainability-related risks, correlated to those identified as material by the TCFD and SASB, along with emerging issues, and investor and financial sector ESG trending, and approved the related management approach.</li> <li>• Examined the carbon emissions profile of the Company, along with global carbon pricing regulatory changes, emissions intensity benchmarking, and peer comparisons, to ensure related risks and opportunities are identified and realized.</li> <li>• Approved the Company's emission reduction</li> </ul>
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			<p>targets, including the long-term aspirational goal of Net-Zero by 2050 for Scope 1 and 2 emissions, and the short-term target to reduce Scope 1 intensity by 15% - 20% by 2025.</p> <ul style="list-style-type: none"> <li>• Reviewed the Company’s total freshwater use and intensity, and peer comparisons, and established a baseline for further analysis of risks and opportunities for improvement.</li> <li>• Reviewed with management the Company’s sustainability-related projects at the corporate and BU level, and their contributions to the overall strategy, including: <ul style="list-style-type: none"> <li>- Existing and innovative technology;</li> <li>- The execution of a significant business unit Biodiversity Action Plan; and</li> <li>- Vermilion’s certifications under third-party agencies such as Equitable Origin.</li> </ul> </li> <li>• Reviewed for relevancy and transparency Company position statements on key issues including the energy transition, water use, advocacy and community relations.</li> </ul>
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## W6.2d

**(W6.2d) Does your organization have at least one board member with competence on water-related issues?**

	Board member(s) have competence on water-related issues	Criteria used to assess competence of board member(s) on water-related issues
Row 1	Yes	<p>Vermilion maintains a skills matrix to evaluate the skill set of the Board based on individual Director self-assessments, including with respect to sustainability skills and experience. The results are then evaluated for individual Directors and for the Board as a whole. The skills matrix helps us identify gaps in skills and is used when we search for new Directors. The GHR Committee reviewed the completed skills matrix and evaluations and is satisfied that the Board has the appropriate experience and skills to ensure the Board is performing well. The Board completed a discussion on the results with the objective of continuously improving Board effectiveness.</p> <p>Skills matrix: Our Board members have significant relevant experience in all facets of our business. All Board members are skilled in all of the areas within our matrix, which were updated to reflect additional sustainability-specific areas, including climate-related issues. The matrix illustrates the skill set of our Board based on:</p>

		<p>- senior executive experience in the area from a function, role and knowledge perspective and/or significant operational experience; and</p> <p>- some familiarity and specific experience.</p> <p>All board members have senior executive experience in the Sustainability (ESG) criteria of:</p> <p>Management or executive experience with, or knowledge of, risks and opportunities related to a broad range of environment impacts, including climate-related issues such as emissions reduction, regulatory frameworks and renewable energy, and social impacts such as human rights, labour rights, community development and investment, and overall stakeholder engagement and communications.</p> <p>We also assess continuing education, which in 2021 included our directors taking courses or workshops on the Net Zero Transition, CCUS, climate change, ecosystems, environmental management, ESG, ESG strategy, energy transition and sustainability financing, purpose &amp; profit and operationalizing ESG., many of which encompassed water-related issues</p>
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### W6.3

**(W6.3) Provide the highest management-level position(s) or committee(s) with responsibility for water-related issues (do not include the names of individuals).**

**Name of the position(s) and/or committee(s)**

Other C-Suite Officer, please specify  
Executive Chair

**Responsibility**

Assessing future trends in water demand  
Assessing water-related risks and opportunities  
Managing water-related risks and opportunities

**Frequency of reporting to the board on water-related issues**

More frequently than quarterly

**Please explain**

Organizational responsibility for sustainability & climate-related issues, including water, flows from the Board & its Sustainability Committee throughout the Company via our Executive Committee, comprised of the Executive Chair, President, Chief Financial Officer, VP Business Development, VP International & HSE, VP North America, & VP European Operations. Our Executive Committee as a group replaces the position of CEO, & is responsible to review & approve key financial, operational & strategic decisions. The Committee reports to the Board more frequently than quarterly & is responsible through its reporting lines for assessing, monitoring & managing climate

issues including water use, regulatory changes, & weather impacts, etc. As part of the Executive Committee, the Chair has oversight of risks & opportunities pertaining to water such as current & emerging regulations, emerging technology, legal, market, company reputation & exposure to extreme weather events (e.g. drought).

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**Name of the position(s) and/or committee(s)**

President

**Responsibility**

Assessing future trends in water demand  
Assessing water-related risks and opportunities  
Managing water-related risks and opportunities

**Frequency of reporting to the board on water-related issues**

More frequently than quarterly

**Please explain**

Organizational responsibility for sustainability & climate-related issues, including water, flows from the Board & its Sustainability Committee throughout the Company via our Executive Committee, comprised of the Executive Chair, President, Chief Financial Officer, VP Business Development, VP International & HSE, VP North America, & VP European Operations. Our Executive Committee as a group replaces the position of CEO, & is responsible to review & approve key financial, operational & strategic decisions. The Committee reports to the Board more frequently than quarterly & is responsible through its reporting lines for assessing, monitoring & managing climate issues including water use, regulatory changes, & weather impacts, etc. As part of the Executive Committee, the President has oversight of risks & opportunities pertaining to water such as current & emerging regulations, emerging technology, legal, market, company reputation & exposure to extreme weather events (e.g. drought).

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**Name of the position(s) and/or committee(s)**

Chief Financial Officer (CFO)

**Responsibility**

Assessing future trends in water demand  
Assessing water-related risks and opportunities  
Managing water-related risks and opportunities

**Frequency of reporting to the board on water-related issues**

More frequently than quarterly

**Please explain**

Organizational responsibility for sustainability & climate-related issues, including water, flows from the Board via our Executive Committee, comprised of the Executive Chair, President, Chief Financial Officer, VP Business Development, VP International & HSE,

VP North America, & VP European Operations. Our Executive Committee replaces the position of CEO, & is responsible to review & approve key financial, operational & strategic decisions. The Committee reports to the Board more frequently than 1/4ly & is responsible through its reporting lines for assessing, monitoring & managing climate issues including water use, regulatory changes, weather impacts, etc. As part of the Committee, the CFO has oversight of risks & opportunities pertaining to water such as current & emerging regulations, emerging technology, legal, market, company reputation & exposure to extreme weather events (e.g. drought) & of the integration of sustainability risks into our Enterprise Risk Management framework.

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**Name of the position(s) and/or committee(s)**

Chief Operating Officer (COO)

**Responsibility**

Assessing future trends in water demand  
Assessing water-related risks and opportunities  
Managing water-related risks and opportunities

**Frequency of reporting to the board on water-related issues**

More frequently than quarterly

**Please explain**

Our VP North America and our VP International & HSE together replace the position of Chief Operation Officer and lead the operationalization of sustainability. They are both members of the Executive Committee, and thus have oversight of risks & opportunities pertaining to water with respect to current & emerging regulations, emerging technology, legal, market, company reputation & exposure to extreme weather events (e.g. drought). Both VPs attend the Sustainability and HSE Board Committee meetings. These committees meet at least three times per year, in addition to a full Board strategy meeting & quarterly Board meetings.

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**Name of the position(s) and/or committee(s)**

Other, please specify  
Vice President, Sustainability

**Responsibility**

Assessing future trends in water demand  
Assessing water-related risks and opportunities  
Managing water-related risks and opportunities

**Frequency of reporting to the board on water-related issues**

More frequently than quarterly

**Please explain**

The VP Sustainability is a corporate function that reports to the President & is responsible for assessing & managing Sustainability (including water) risks & opportunities as part of developing & implementing sustainability strategy. This function leads a team that provides a Centre of Excellence approach, advising the business on all aspects of sustainability & reporting at least quarterly to the Board. The VP Sustainability focuses on integrating sustainability throughout our business, including identifying & managing associated risks & opportunities, particularly climate-related including water. The VP Sustainability briefs the Board's Sustainability Committee, which meets at least three times a year, in addition to a full Board strategy meeting &, as required, quarterly Board meetings.

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**Name of the position(s) and/or committee(s)**

Business unit manager

**Responsibility**

Assessing future trends in water demand  
Assessing water-related risks and opportunities  
Managing water-related risks and opportunities

**Frequency of reporting to the board on water-related issues**

More frequently than quarterly

**Please explain**

Organizational responsibility for sustainability & climate-related risks & opportunities, including those related to water, flows from the Board to our Executive Chair & our President, & throughout the Company via our Executive Committee. Our business unit managers have responsibility for assessing & managing sustainability (including water) risks & opportunities in their regions, and they present to the Board on sustainability strategy, projects & progress in rotation, generally at least one per Sustainability Committee meeting. Each of our business units has also identified a Sustainability Lead, to support sustainability-related work. This work is aided by risk identification & management by BU public & government relations staff focusing on our external stakeholders.

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**Name of the position(s) and/or committee(s)**

Other, please specify  
Manager, Corporate HSE

**Responsibility**

Assessing future trends in water demand  
Assessing water-related risks and opportunities  
Managing water-related risks and opportunities

**Frequency of reporting to the board on water-related issues**

More frequently than quarterly



**Please explain**

The Manager Corporate HSE is a corporate function that reports to the VP International & HSE, & is responsible for assessing & managing health safety & environmental (including water) risks & opportunities within Vermilion's operations. This function works closely with the corporate sustainability function, focused on integrating sustainability throughout our business, including identifying & managing associated risks & opportunities, particularly climate-related and including water-related, including risk of releases into water bodies, and freshwater use intensity. The Manager, Corporate HSE briefs the Board's HSE committee, which meets at least three times a year, in addition to a full Board strategy meeting &, as required, quarterly Board meetings.

**W6.4**

**(W6.4) Do you provide incentives to C-suite employees or board members for the management of water-related issues?**

	Provide incentives for management of water-related issues	Comment
Row 1	Yes	Our compensation approach is one program for all to incentivize staff at every level to work toward our strategic objectives, including climate-related issues. Compensation program elements include base salary & short & long-term incentives, which we believe strengthens our organizational alignment with shareholder expectations. Our objectives are: - ensuring our operations worldwide are sustainable under a range of commodity price environments & when changes occur in our workforce; - aligning compensation programs with our strategy to ensure prudent risk taking; - allowing us to attract & retain high-calibre employees that are important to our success - rewarding all employees & executives when their performance & the Company's performance is top quartile. We measure Company performance annually using our balanced scorecards, which include water-related measures such as releases (bonus) & ESG rating agency scores, including water management (long-term incentive plan)

**W6.4a**

**(W6.4a) What incentives are provided to C-suite employees or board members for the management of water-related issues (do not include the names of individuals)?**

	Role(s) entitled to incentive	Performance indicator	Please explain
Monetary reward	Corporate executive team	Reduction of water withdrawals	Employee & executive compensation is tied directly to performance targets, including those related to sustainability and climate, through our corporate performance scorecards. Achievements within the

		<p>Reduction in consumption volumes</p> <p>Improvements in efficiency - direct operations</p> <p>Improvements in efficiency - supply chain</p> <p>Improvements in efficiency - product-use</p> <p>Improvements in waste water quality - direct operations</p> <p>Improvements in waste water quality - supply chain</p> <p>Improvements in waste water quality - product-use</p> <p>Implementation of employee awareness campaign or training program</p> <p>Supply chain engagement</p> <p>Increased access to workplace WASH</p> <p>Implementation of water-related community project</p>	<p>short-term incentive plan (STIP or bonus) &amp; long-term incentive plan (LTIP) scorecards also help determine STIP &amp; LTIP budgets overall.</p> <p>The 2021 corporate performance scorecards included both standard industry metrics &amp; internal measures of performance which were compared to management plans approved by the Board. Our STIP scorecard (past year performance) includes a 10% weighting on HSE Performance, including water-related goals such as HSE inspections, compliance / regulatory inspections, and spills.</p> <p>We believe there is a direct link between sustainability performance, including climate performance &amp; overall business performance, &amp; we expect sustainability performance to be a very significant factor in the long-term viability of our economic model. Our 2021 LTIP corporate performance scorecard includes a sustainability-specific measure to illustrate to our organization the importance of this measure &amp; to incentivize all staff to focus on sustainability performance in their daily work. We measure our performance relative to our peer group in 3 third-party sustainability rankings: CDP Climate, S&amp;P Global and Sustainalytics, the latter 2 of which include water scores. This holds a 10% weighting &amp; applies to all employees &amp; executives.</p>
Non-monetary reward	Corporate executive team	<p>Reduction of water withdrawals</p> <p>Reduction in consumption volumes</p> <p>Improvements in efficiency - direct operations</p>	<p>Recognition is provided to groups &amp; individual employees &amp; executives by managers, the executive committee &amp;/or Board based on performance &amp; project-specific successes. Our Extraordinary Effort recognition program also provides small monetary rewards when staff have contributed significantly to project success, including environmental/energy efficiency projects &amp; the rollout of a future-forward assessment of business strategy in France.</p>

		<p>Improvements in efficiency - supply chain</p> <p>Improvements in efficiency - product-use</p> <p>Improvements in waste water quality - direct operations</p> <p>Improvements in waste water quality - supply chain</p> <p>Improvements in waste water quality - product-use</p> <p>Implementation of employee awareness campaign or training program</p> <p>Supply chain engagement</p> <p>Increased access to workplace WASH</p> <p>Implementation of water-related community project</p>	
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## W6.5

**(W6.5) Do you engage in activities that could either directly or indirectly influence public policy on water through any of the following?**

Yes, direct engagement with policy makers

Yes, trade associations

Yes, funding research organizations

## W6.5a

**(W6.5a) What processes do you have in place to ensure that all of your direct and indirect activities seeking to influence policy are consistent with your water policy/water commitments?**

Staff in our Sustainability, HSE, Communications, Community Investment & Investor Relations (IR) groups ensure that corporate guidance & direction relating to health, safety, environment & sustainability, including water, is passed effectively & consistently to the Business Units (BUs) & external parties. This responsibility extends to our BUs to ensure their activities &

engagement support our sustainability strategy, including water. Our VP Sustainability regularly engages with BU leaders, VP Europe & our Public & Government Relations teams to ensure multi-directional communication on sustainability, including expectations & shared best practices, & consistency of external messaging. All external messaging is approved via our Disclosure Committee (President, CFO & VP IR). We are aware that trade & industry associations may represent their membership by advocating for government policy & regulations. We monitor this to ensure it fairly represents our position & the goals of the Paris agreement; if there are discrepancies between their position and ours, we engage with them to understand and influence the issue. We consider withdrawal of membership only if no improvement proves likely. To support this, we annually review all memberships to assess alignment, & provide our Executive Committee & Board Sustainability Cttee with a summary, including misalignment & recommendations, including on water.

## W6.6

**(W6.6) Did your organization include information about its response to water-related risks in its most recent mainstream financial report?**

Yes (you may attach the report - this is optional)

 2021 Vermilion Annual Report.pdf

## W7. Business strategy

### W7.1

**(W7.1) Are water-related issues integrated into any aspects of your long-term strategic business plan, and if so how?**

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	5-10	<p>Based on the results of our scenario analysis in 2019 and 2020, we reassessed and revitalized our business strategy. This included establishing Integrated Sustainability as 1 of 6 strategic objectives, with clear priorities set within the three areas of Carbon, Conservation (including Water, Abandonment &amp; Reclamation, &amp; Biodiversity) &amp; Community.</p> <p>Within the Water objective, we established long-term tangible objectives to 2030, along with short-to mid-term commitments that included creating a low-carbon transition plan. We recognize water as a basic human right, and as a vital resource that is shared among many stakeholders in our communities, and we are committed</p>

			<p>to protecting both the supply and the quality of water sources in our areas of operation, by:</p> <ul style="list-style-type: none"> <li>– Proactively preventing harm and supporting healthy surface and groundwater bodies,</li> <li>– Reducing potable and freshwater usage to the lowest level practical</li> <li>– Taking a lifecycle and circular economy approach to water, exploring opportunities to reuse and recycle products such as produced water.</li> </ul> <p>As part of this commitment, in 2021-23 we are building on our existing water data reporting to benchmark our performance against our peers, and assess potential for next steps, including reductions. Assessment of water issues, including water availability &amp; pollution risk, is built into this planning through our enterprise risk management system.</p>
<p>Strategy for achieving long-term objectives</p>	<p>Yes, water-related issues are integrated</p>	<p>5-10</p>	<p>Based on our Enterprise Risk Management system, our long-range sustainability-specific planning &amp; business need, water-related issue mitigations are prioritized &amp; completed that allow us to support healthy communities as well as augment our strong shareholder value &amp; return. This includes:</p> <ul style="list-style-type: none"> <li>• Water availability;</li> <li>• Water reporting &amp; protection regulation changes by governments &amp; regulators;</li> <li>• Water protection measures;</li> <li>• Reputational issues related to water protection &amp; use;</li> <li>• Opportunities to view water, including produced water, from a circular economy perspective.</li> </ul> <p>The results annually feed back into our risk/opportunity management process to ensure Vermilion has a sound data foundation to support responsible decisions in our operating areas. Detailed analysis of these risks, including potential impact, financial implications, management methods &amp; cost of management, support our business strategy related to managing water. Example: taking a circular economy approach, we have expanded our geothermal-from-produced-water projects in France from 2 to 4 in 2021, providing heat to a spirulina (algae) production facility and a college. 1 of 4 of these projects is now creating revenue. This aligns with both water issues (using produced water rather than externally sourced water to maintain reservoir</p>

			pressure) and energy issues (providing renewable energy option to our communities).
Financial planning	Yes, water-related issues are integrated	11-15	Our strategic long range business plan focuses on the economic impacts of production & commodity pricing levels. Assessment of water issues, including water availability & pollution risk, is built into this planning through our enterprise risk management system. Overall, we prioritize risk & opportunities based on the materiality, probability & potential impact to our operations; impact to the environment plus financial & strategic implications of identified climate change, including water-related, risks & potential project opportunities are also built into the ERM process. This includes identifying the financial impacts of water-related issues, such as water availability at each site, increased regulation in water protection zones such as more detailed environmental impact assessments, & potential clean-up costs if spills into water bodies occurred. Financial implications support prioritization & the resulting projects approved for development. We have identified cases related to water that either have or could impact operating expenditures: financial impact associated with regulation & taxation & impact from physical risks, including changes in temperature extremes, changes in precipitation, frequency & intensity of cyclones/storms, & rising sea levels. Example: we are participating in & funding a Rigs to Reef study with University of Western Australia, which could lead to recognition of undersea infrastructure as valuable ocean ecosystems while reducing ARO liabilities.

## W7.2

**(W7.2) What is the trend in your organization’s water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?**

Row 1

**Water-related CAPEX (+/- % change)**

-16.5

**Anticipated forward trend for CAPEX (+/- % change)**

15

**Water-related OPEX (+/- % change)**

-8.5

**Anticipated forward trend for OPEX (+/- % change)**

10

**Please explain**

The year-over-year spends are based on a cursory evaluation of maintenance Capex and Opex accounts and represent approximate values. Recent Capex and Opex expenditures have been influenced by global market conditions, particularly in relation to the Covid-19 pandemic. With consideration to current conditions, water related Capex and Opex budgets are expected to increase in 2022 by approximately 15% and 10%, respectively. Should global demand and related commodity prices increase (or decrease) in the near future, both Capex and Opex budgets would be reassessed.

**W7.3**

**(W7.3) Does your organization use scenario analysis to inform its business strategy?**

	Use of scenario analysis	Comment
Row 1	Yes	In 2019/20, we also expanded our scenario analysis process. The Board of Directors, executive team & senior management participated in a robust scenario analysis, examining two scenarios from the World Economic Forum that bring together the work of experts from the International Energy Agency to Carbon Tracker. These scenarios compare a Gradual & Rapid transition to low carbon, with the latter meeting the aims of the Paris Agreement to limit global temperature increases to 1.5°C to 2 °C. We assessed key factors impacting the speed of the energy transition, including the influence of new energy technologies, the potential speed of adoption of these technologies, anticipated changes in policy & regulation & their rate of change, & emerging market pathways. The analysis extended to the risks & opportunities related to these climate-related factors, including water issues, impacts on the company’s future in the medium to long term (2050+), & strategies for Company resilience.

**W7.3a**

**(W7.3a) Provide details of the scenario analysis, what water-related outcomes were identified, and how they have influenced your organization’s business strategy.**

Type of scenario analysis used	Parameters, assumptions, analytical choices	Description of possible water-related outcomes	Influence on business strategy
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<p>Row 1</p>	<p>Water-related Climate-related</p>	<p>World Economic Forum White Paper on the Speed of the Energy Transition: Rapid or Gradual Change compares the two transition scenarios for our energy future, setting out two clearly different narratives. The Gradual narrative is that the energy world of tomorrow will look roughly the same as that of today implying that the global energy system has an inertia incompatible with the Paris Agreement. Gradual scenarios include those from Exxon, OPEC, the World Energy Council and the Energy Information Administration as well as the IEA New Policies Scenario (NPS) and the BP Evolving Transition Scenario (ETS). These scenarios imply that the energy world of tomorrow will look roughly the same as that of today. Fossil fuel demand will rise for the foreseeable future and, when it does start to decline, the decline will be gradual. Regrettably, this means that the goals of the Paris Agreement will become unachievable. The Rapid narrative is that current and new clean energy technologies are rapidly supplying all the growth in energy demand and together with new policies will reshape markets, business models and patterns of consumption leading to a peak in fossil fuel demand in the course of the</p>	<p>We have identified several water-related risks associated with climate change, including tropical cyclones, rising sea levels, changes in temperature extremes &amp; changes in precipitation extremes, which could result in outcomes such as lack of water availability for our operations, flooding, drought or storm damage. Flooding could result in limited access to locations and poses a risk to our corporate headquarters (mitigated since flooding occurred 2013). Alternatively, drought could impact the availability of surface and/or groundwater, which Vermilion, in part, relies on for drilling and completion activities, and could negatively impact forecasted growth by increasing timelines and capital costs to bring new infrastructure onto production. This could also increase the likelihood of wildfires. In the Netherlands, we have assessed the potential risk associated with rising sea levels. This could impact our operations due to flooding, transportation difficulties, supply chain interruptions &amp; the salinization of groundwater. The</p>	<p>Mitigate - Strategy - As weather-related incidents are out of Vermilion's control, we take all measures possible to ensure effective emergency response to extreme weather events, to ensure the protection of the health and safety of our workers, contractors and the public, the protection of the environment and limitation of financial impact of the event. - In the case of a longer term extreme precipitation event or drought, Vermilion would implement water management programs to reduce our reliance on fresh water sources to limit the potential impact on operations. - In the event of a wildfire, we would eliminate water diversion and/or shut-in production to protect the health and safety of our workers, and the community. - We invest &gt;\$0.5MM in emergency response training annually.  Mitigate – Strategy: Our robust asset integrity program maintains our facilities to appropriate design specifications (e.g. at Wandoo, to CAT</p>
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	<p>2020s. Rapid scenarios include normative scenarios, such as the IEA Sustainable Development Scenario (SDS), the International Renewable Energy Agency (IRENA) REMap, the Intergovernmental Panel on Climate Change (IPCC) less than two-degree models, the BP Rapid Transition Scenario, the International Institute for Applied Systems Analysis (IIASA) Low Energy Demand Scenario and the Shell Sky Scenario, as well as the primary scenarios of organizations such as Bloomberg New Energy Finance (BloombergNEF) DNV GL, McKinsey and the Energy Transitions Commission. As a rule, these scenarios seek to achieve the goals of the Paris Agreement and imply that the energy sector is about to be disrupted. They forecast rapid growth in solar and wind electricity, the gradual electrification of transport, industry and heat, greater efficiency, policy action to tax fossil fuel users for their environmental externalities, and the development of new technologies like green hydrogen. They imply that demand for fossil fuels will soon peak and then enter a long period of decline. The focus is on four main points of difference: what matters for the energy transition; the importance of</p>	<p>financial implications of a one-time event (e.g. wildfire, cyclone, flooding) are assessed on a case-specific basis, and are estimated to be greater than \$10MM. Examples include potential for physical damage to our assets (\$129MM – Wandoo B platform &amp; \$21MM – Garijp plant), loss of production capacity (\$105MM – Wandoo field, \$54MM - Garijp field) &amp; environmental clean-up (\$8MM– Garijp field). Note that all costs are before mitigation (i.e. Insurance).</p>	<p>5 hurricane force). Via our Emergency Response Plan and business continuity plans, we also have detailed protocols for monitoring, preparing for, and responding to severe weather events. Transfer: We purchase insurance as a mitigative measure to reduce the financial impact associated with damage to our assets due to severe weather events. Accept: We track evolving weather trends, such as cyclone season in Australia, wildfire seasons in Canada and the United States, and winter snowpack levels in Alberta.</p>
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		electricity; the importance of solar and wind; and the importance of distinguishing between the fossil fuels.		
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## W7.4

### (W7.4) Does your company use an internal price on water?

#### Row 1

#### Does your company use an internal price on water?

No, but we are currently exploring water valuation practices

#### Please explain

As part of the integrated sustainability objective within our business strategy, in 2021 we are building on our existing water data reporting to benchmark our performance against our peers, and assess potential for next steps, including reductions. This includes an assessment of natural capital accounting to identify its potential to support water valuation.

## W7.5

### (W7.5) Do you classify any of your current products and/or services as low water impact?

	Products and/or services classified as low water impact	Primary reason for not classifying any of your current products and/or services as low water impact	Please explain
Row 1	No, but we plan to address this within the next two years	Other, please specify	As part of our overarching governance objectives, Vermilion is currently undertaking a systematic evaluation of the freshwater withdrawal intensity of our operations. This evaluation is intended to identify opportunities for improved water management practice, and will serve to further benchmark our performance in relation to peer companies in similar operating areas. Although not initially contemplated as a driver for the study, it is expected that the study findings may also identify areas (or regions) where we currently possess, or could develop, a strategic advantage in terms of low freshwater intensity production. The study has a target completion date of Q4 2023.

## W8. Targets

### W8.1

**(W8.1) Describe your approach to setting and monitoring water-related targets and/or goals.**

	Levels for targets and/or goals	Monitoring at corporate level	Approach to setting and monitoring targets and/or goals
Row 1	Activity level specific targets and/or goals Country level targets and/or goals Basin specific targets and/or goals	Goals are monitored at the corporate level	<p><b>Activity Level Specific Targets and/or Goals:</b> In 2019-2020, all Business Units updated their risk assessments related to water availability &amp; the protection of water, including groundwater &amp; water bodies. Based on sustainability strategy development over the next 3 years, we will assess the scope &amp; practicality of business-wide water targets . Previously, the importance of water efficiency has been managed at the Business Unit level, with goals being set on a project basis &amp; monitored by local leadership &amp; Corporate HSE, including for supplier engagement.</p> <p><b>Basin Specific Targets and/or Goals:</b> In 2020, our France Business Unit set a goal to improve water use monitoring on a monthly basis to support regulatory compliance with water withdrawal limits. A spreadsheet approach was developed, with automatic calculations based on water use data in every basin, to clearly identify areas where regulatory compliance could be at issue, to enable proactive water reduction activities.</p> <p><b>Country Level Targets and/or Goals:</b> At our Corrib facility in Ireland, our 2014-2020 Biodiversity Action Plan included water-related goals such as the construction of wetland ponds on the pipeline wayleave and at the gas terminal, small stream risk surveys, marine mammal monitoring and marine invasive species monitoring. These goals have been achieved, including the construction of 25 wetland ponds. This Plan has been renewed for 2021-2026, with additional goals for monitoring marine mammals, managing freshwater invasive plant species, and managing ponds and wetland areas to maintain biodiversity.</p>

## W8.1b

**(W8.1b) Provide details of your water goal(s) that are monitored at the corporate level and the progress made.**

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### Goal

Engagement with suppliers to help them improve water stewardship

### Level

Business activity

### Motivation

Cost savings

### Description of goal

We currently recover approximately one-third of the water used in fracturing our Cardium & condensate-rich Mannville gas wells in Alberta. We are also working to optimize, through technology, the removal of contaminants from the water. We are further striving to refine logistics for the transport of water between wells & locations in order to reduce the resulting cost, energy consumption & greenhouse gas emissions currently associated with trucking water to disposal or treatment facilities. One of the key challenges is developing technology that will support the re-use of flowback fluids. In 2013, we successfully piloted a filtration system that allowed us to save nearly 5 million litres of water in six months. This successfully reduced our hauling of fluid for disposal, decreased our impact on infrastructure & the environment, & reduced our requirements for make-up water to support our fracturing operations. This is important to the company not only for operational and cost efficiency, but to help mitigate future water availability risks; while we have identified that this is not an immediate risk, we recognize that water basins are vulnerable to climate change.

### Baseline year

2012

### Start year

2012

### End year

2030

### Progress

While this technology is not applicable to all of the wells we drill, it is available to us for those within the range of its use, and we continue to assess other opportunities for water reduction.

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### Goal

Engaging with local community

**Level**

Business

**Motivation**

Recommended sector best practice

**Description of goal**

In January 2012, the environmental approval process changed in Australia, requiring operators in the region to demonstrate their oil spill response capability to a significantly higher level than previously required. Vermilion was one of the first companies to develop an Oil Spill Contingency Plan subject to the new regulation. As we undertook this process, it became clear that Australia lacked the oiled wildlife response capability necessary to effectively manage the impact of a large oil spill on wildlife. Vermilion therefore stepped forward, setting a goal to take an industry-leading role in developing an emergency response plan suitable for such an impact. We funded the equipment to support the plan, which required the construction of a rapid response unit from DwyerTech in New Zealand. This Oiled Wildlife Container is a first response centre that would receive, assess & treat oiled wildlife. It has its own power & wash facilities to allow the animals to be cleaned & dried in a temperature-controlled facility. Staffed by three to six trained personnel, it would handle up to 50 small animals per day.

**Baseline year**

2012

**Start year**

2013

**End year**

2030

**Progress**

To enable all-industry access, we subsequently donated this equipment to the Australian Marine Oil Spill Centre, which is funded by the Australia Upstream & Downstream Industry group that includes Vermilion. This is currently the only oiled wildlife response unit available in Western Australia. Further, we created a register of trained wildlife responders, & commissioned Massey University in New Zealand, recognized leaders in the field of Oiled Wildlife Response, to conduct focused training for personnel assuming first strike & supervisory roles in the event of a spill & subsequent wildlife exposure. To ensure the resources needed to support our response plan, Vermilion has entered into agreements with several organizations to provide "at call" capacity for logistics personnel, scientists, veterinarians, equipment & reptile handling specialists. While we hope there is never a reason to use this equipment, we are proud to have meaningfully increased the spill response capabilities of industry in our operating area.

**Goal**

Watershed remediation and habitat restoration, ecosystem preservation

**Level**

Country level

**Motivation**

Increase freshwater availability for users/natural environment within the basin

**Description of goal**

Biodiversity management is important to our operations in Ireland, as we operate offshore and onshore in areas of natural significance. We therefore established a 2014-2020 Biodiversity Action Plan not only to support regulatory permits but also to assure our communities of our commitment to and progress on protecting these areas. The plan included Objective 6 to apply best practice stewardship to manage lands within the development's landholding and lease for biodiversity and ecosystem services, and to establish and implement a Land Management Plan – this including water-related goals such to consider the construction of ponds or other wetland areas on the pipeline wayleave and at the gas terminal, and to manage water courses and their margins to benefit biodiversity, along with conducting small stream risk surveys, marine mammal monitoring and marine invasive species monitoring. With the completion of the first plan timeline, we established a second plan covering 2021-2026, with objective 3.12 to manage ponds or other wetland areas to maintain habitat & species diversity, 3.16 to manage water courses and their margins to benefit biological diversity, 5.4 to remain vigilant against invasive aquatic species.

**Baseline year**

2014

**Start year**

2014

**End year**

2026

**Progress**

Our 2014-2020 Biodiversity Action Plan included specific water-related goals such as the construction of wetland ponds on the pipeline wayleave and at the gas terminal, small stream risk surveys, marine mammal monitoring and marine invasive species monitoring. These goals have been achieved, including the construction of 25 wetland ponds, marine mammal monitoring including cetaceans, and invasive species management. Species monitoring data has been shared with conservation organizations to build the database in this area. This Plan has now been renewed for 2021-2026, with additional goals that build on the success of the first plan, for monitoring marine mammals, managing freshwater invasive plant species, and managing ponds and wetland areas to maintain biodiversity.

**Goal**

Other, please specify

Improve water use data management to support regulatory and reduction purposes

**Level**

Country level

**Motivation**

Risk mitigation

**Description of goal**

In 2020, our France Business Unit set a goal to improve water use monitoring on a monthly basis to support regulatory compliance with water withdrawal limits. A spreadsheet approach was developed, with automatic calculations based on water use data in every basin, to clearly identify areas where regulatory compliance could be at issue, to enable proactive water reduction activities.

**Baseline year**

2020

**Start year**

2020

**End year**

2021

**Progress**

The water management tool is now in place, and is being used on an ongoing basis to track water usage at every site within our basins. This provides early warnings for water withdrawals that may be larger than expected, which in turn offers an opportunity for water reduction decisions to ensure we remain within our expected water use parameters.

## W9. Verification

### W9.1

**(W9.1) Do you verify any other water information reported in your CDP disclosure (not already covered by W5.1a)?**

No, but we are actively considering verifying within the next two years

## W10. Sign off

### W-FI

**(W-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.**

### W10.1

**(W10.1) Provide details for the person that has signed off (approved) your CDP water response.**

	Job title	Corresponding job category
Row 1	Vice President International and HSE (as per our Information Circular, this job is the Chief Operating Officer role, shared with the Vice President North America.	Chief Operating Officer (COO)

### W10.2

**(W10.2) Please indicate whether your organization agrees for CDP to transfer your publicly disclosed data on your impact and risk response strategies to the CEO Water Mandate's Water Action Hub [applies only to W2.1a (response to impacts), W4.2 and W4.2a (response to risks)].**

No

## SW. Supply chain module

### SW0.1

**(SW0.1) What is your organization's annual revenue for the reporting period?**

	Annual revenue
Row 1	2,040,730,000

### SW1.1

**(SW1.1) Could any of your facilities reported in W5.1 have an impact on a requesting CDP supply chain member?**

Yes, CDP supply chain members buy goods or services from facilities listed in W5.1



## SW1.1a

**(SW1.1a) Indicate which of the facilities referenced in W5.1 could impact a requesting CDP supply chain member.**

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**Facility reference number**

Facility 1

**Facility name**

Canada Business Unit

**Requesting member**

NRG Energy Inc

**Description of potential impact on member**

Natural gas sales to a subsidiary of requesting member (Direct Energy).

**Comment**

## SW1.2

**(SW1.2) Are you able to provide geolocation data for your facilities?**

	Are you able to provide geolocation data for your facilities?	Comment
Row 1	No, this is confidential data	

## SW2.1

**(SW2.1) Please propose any mutually beneficial water-related projects you could collaborate on with specific CDP supply chain members.**

## SW2.2

**(SW2.2) Have any water projects been implemented due to CDP supply chain member engagement?**

No

## SW3.1

**(SW3.1) Provide any available water intensity values for your organization's products or services.**

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**Product name**

Conventional crude oil, natural gas and natural gas liquids

**Water intensity value**

0.02

**Numerator: Water aspect**

Other, please specify

Freshwater Withdrawal in m3

**Denominator**

Operated Throughput in BOE

**Comment**

## Submit your response

**In which language are you submitting your response?**

Latin American Spanish

**Please confirm how your response should be handled by CDP**

	<b>I understand that my response will be shared with all requesting stakeholders</b>	<b>Response permission</b>
Please select your submission options	Yes	Public

**Please confirm below**

I have read and accept the applicable Terms