Safety Data Sheet

Section 1: Identification

Product Name: Produced Water (Sweet)

Recommended Use: None

Manufacturer: Validus Energy II
1530 16th St Mall,
Denver, CO 80202
(833) 907-1848 (general)
1-877-615-7787 (emergency)

Emergency Telephone Number: ChemTrec: (800) 424-9300 (North America)

Section 2: Hazard Identification

Classification:

- Germ Cell Mutagenicity 1B
- Carcinogenicity 1A

Label Elements: **DANGER**

Hazard Statements:

- May cause cancer.

Precautionary Statements:

Prevention

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Wash thoroughly after handling.
- Wear protective gloves/protective clothing/eye protection/face protection.

Response

- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- If skin irritation occurs: Get medical advice/attention.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.
- IF exposed or concerned: Get medical advice/attention.

Storage/Disposal

- Store locked up.
- Dispose of content and/or container in accordance with local, state, and/or federal regulations.

Other information:

NFPA 704 Hazard Class
Health: 1
Flammability: 1
Instability: 0

(0-Minimum, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

HMIS Hazard Rating

Health	**1**
Flammability	**1**
Physical Hazard	**0**

(0-Minimum, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Section 3: Composition/Information on Ingredients

Component	CAS Number	Concentration
Water (Process)	7732-18-5	>99%
Crude Oil	8002-05-9	<1%
Sodium Chloride	7647-14-5	<1%
Benzene	71-43-2	<0.1%

All concentrations are percent by weight unless ingredient is gas. Gas concentrations are in percent by volume.

Synonyms: Crude Oil Separated Water, Salt Water Brine, Produced Brine

Section 4: First-Aid Measures

Inhalation: Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

Skin: In case of contact with substance, immediately flush skin with running water for at least 20 minutes.

Eye: In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

Ingestion: If swallowed, rinse mouth with water (only if the person is conscious) Give plenty of water to drink. Do NOT induce vomiting. Get medical attention immediately.

Most Important Symptoms and Effects, both Acute and Delayed: Refer to Section 11 - Toxicological Information.

Notes to Physician:	All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5: Fire-Fighting Measures

Suitable Extinguishing Media:	LARGE FIRE: Water spray, fog or regular foam. SMALL FIRES: Dry chemical, CO_2, water spray or regular foam.
Unsuitable Extinguishing Media:	No data available.
Unusual Fire and Explosion Hazards:	Some may burn but none ignite readily.
Hazardous Combustion Products:	No data available.
Advice for Firefighters:	Move containers from fire area if you can do it without risk. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible. Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.

Section 6: Accidental Release Measures

Personal Precautions:	Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact.
Emergency Procedures:	Keep unauthorized personnel away. Stay upwind.
Environmental Precautions:	Avoid run off to waterways and sewers.
Methods for Containment and Clean-up:	Stop leak if you can do it without risk. SMALL SPILLS: Take up with sand or other non-combustible absorbent material and place into containers for later disposal. LARGE SPILLS: Dike far ahead of liquid spill for later disposal.

Section 7: Handling and Storage

Precautions for Safe Handling:	Use good safety and industrial hygiene practices. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

Conditions for Safe Storage: Keep container tightly closed.

Section 8: Exposure Controls/Personal Protection

Component	ACGIH	NIOSH	OSHA	Other
Crude Oil	TWA: 5 mg/m^3 for Oil Mists	Ceiling (15 min): 1800 mg/m^3 TWA: 350 mg/m^3		
Benzene	STEL: 2.5 ppm TWA: 0.5 ppm	STEL: 1 ppm TWA: 0.1 ppm	Ceiling (Z-2 PEL): 25 ppm STEL: 5 ppm TWA (Z-2 PEL): 10 ppm TWA: 1 ppm	

Engineering Measures/Controls: Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Respiratory Protection: In case of insufficient ventilation, wear suitable respiratory equipment.

Eye/Face Protection: Wear safety goggles.

Skin/Body Protection: Wear appropriate gloves.

Environmental Exposure Controls: Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

Section 9: Physical and Chemical Properties

Physical Form:	Liquid
Appearance:	Clear liquid with a faint, hydrocarbon-like odor
Color:	Clear
Odor:	Faint, hydrocarbon-like
Odor Threshold:	No data available
Boiling Point:	212°F (100°C)
Melting Point:	No data available
Decomposition Temperature:	No data available
pH:	5.5-7.0
Specific Gravity (water=1):	1.01
Bulk Density	1.03 g/cm^3
Water Solubility:	Miscible
Viscosity:	No data available
Explosive Properties:	Product does not present an explosion hazard
Oxidizing Properties:	No data available
Vapor Pressure:	23 hPa
Vapor Density (air=1):	No data available
Evaporation Rate (water=1):	No data available
Flash Point (TCC):	No data available
UEL:	No data available
LEL:	No data available
Autoignition:	Product is not self-igniting
Flammability (solid, gas):	No data available
Octanol/Water Partition Coefficient:	No data available

Section 10: Stability and Reactivity

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical Stability: Stable.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: No data available.

Incompatible Materials: Reacts with strong acids and oxidizing agents.

Hazardous Decomposition Products: Sulphur oxides (SOx).

Section 11: Toxicological Information

Components	CAS Number	Acute Toxicity
Crude Oil (<1%)	8002-05-9	Ingestion/Oral-Rat LD50: >4300 mg/kg Skin-Rabbit LD50: >2000 mg/kg
Sodium Chloride (<1%)	7783-06-4	Ingestion/Oral-Rat LD50: 3000 mg/kg
Benzene (<0.1%)	71-43-2	Ingestion/Oral-Rat LD50: 930 mg/kg Ingestion/Oral-Rat LD50: 1 mL/kg Inhalation-Mouse LC50: 9980 ppm Inhalation- Rat LC50: 6.5 mL/kg/4H

Potential Health Effects

Inhalation: Under normal conditions of use, no health effects are expected.

Skin: Under normal conditions of use, no health effects are expected.

Eye: Under normal conditions of use, no health effects are expected.

Ingestion: Under normal conditions of use, no health effects are expected.

Chronic (Delayed): No data available.

Mutagenic Effects: Not expected to cause heritable genetic effects.

Carcinogenic Effects: This material does contain a component that may cause cancer, however based on regulatory criteria this material is not classified as a carcinogen.

Carcinogenic Effects				
	CAS	OSHA	IARC	NTP
Benzene	71-43-2	Specifically Regulated Carcinogen	Group 1-Carcinogenic	Known Human Carcinogen

Reproductive Effects: Not expected to cause reproductive toxicity.

Section 12: Ecological Information

Toxicity: Material data lacking.

Persistence and Degradability: Material data lacking.

Bioaccumulative Potential: Material data lacking.

Mobility in Soil: Material data lacking.

Other Adverse Effects: No studies have been found.

Section 13: Disposal Considerations

Product Waste: Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging Waste: Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14: Transport Information

	UN Number	UN Proper Shipping Name	Transport Hazard Class(es)	Packing Group
DOT	NDA	Not Regulated	NDA	NDA
TDG	NDA	Not Regulated	NDA	NDA
IMO/IMDG	NDA	Not Regulated	NDA	NDA
IATA/ICAO	NDA	Not Regulated	NDA	NDA

Special Precautions for User: None specified.

Transport in bulk according to Annex II Of MARPOL 73/78 and the IBC Code: No data available.

Section 15: Regulatory Information

CERCLA/SARA – Section 311/312 (Title III Hazard Categories)

Acute Health: No
Chronic Health: Yes
Fire Hazard: No
Pressure Hazard: No
Reactive Hazard: No

CERCLA/SARA – Section 313 and 40 CFR 372

This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

Component	De minimis
Benzene	0.1%

California Proposition 65

Warning: This material may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the warning requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Component	Type of Toxicity
Benzene	Cancer Developmental Toxicant Male Reproductive Toxicant

International Hazard Classification

Canada:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by Regulations.

WHMIS Hazard Class:

D2B

National Chemical Inventories

Component	CAS Number	TSCA
Crude Oil	8002-05-9	Yes
Sodium Chloride	7647-14-5	Yes
Benzene	71-43-2	Yes

Section 16: Other Information

Preparation Date: 14Dec2018

Other Information: Version 1

Disclaimer/Statement of Liability: The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor makes no warranties, expressed or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose or course of performance or usage of trade. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.

Key to abbreviations

NDA = No data available
LD = Lethal Dose
TC = Toxic Concentration
D = Toxic Dose
ACGIH = American Conference of Governmental Industrial Hygiene
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
STEL = Short Term Exposure Limits are based on 15-minute exposures
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposure