

# MATERIAL SAFETY DATA SHEET

PAGE:	1 of 5
REVISION DATE:	06/02/2005
PRINT DATE:	01/16/2006

## 1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

**Product name :** FLO POLYMER CV4120B

**Company :** SNF INC  
PO BOX 250  
Riceboro, GA 31324

**Telephone number :** 912-884-3366 **Fax :** 912-884-5031

**Product Use :** Process aid for industrial applications.

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

**Identification of the preparation :** Cationic water-soluble polymer

Components		CAS-No	Weight %
Polydiallyldimethylammonium chloride (PolyDADMAC)	R52/53	26062-79-3	> 85

## 3. HAZARDS IDENTIFICATION

Aqueous solutions or powders that become wet render surfaces extremely slippery.

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

## 4. FIRST AID MEASURES

**Inhalation :** No hazards which require special first aid measures.

**Skin contact :** No hazards which require special first aid measures. Wash with water and soap as a precaution. In case of persistent skin irritation, consult a physician.

**Eye contact :** Rinse thoroughly with plenty of water, also under the eyelids. In case of persistent eye irritation, consult a physician.

**Ingestion :** No hazards which require special first aid measures. The product is not considered toxic based on studies on laboratory animals.

## 5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media :** water, water spray, foam, carbon dioxide (CO<sub>2</sub>), dry powder

**Fire extinguishing agents to avoid :** None.

**Special fire-fighting precautions :** Aqueous solutions or powders that become wet render surfaces extremely slippery.

**Special protective equipment for firefighters :** No special protective equipment required..

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions :** No special precautions required.

**Environmental precautions :** Do not contaminate water.

**Methods for cleaning up :** Do not flush with water. Clean up promptly by scoop or vacuum. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

## 7. HANDLING AND STORAGE

**Handling :** Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Wash hands before breaks and at the end of workday.

**Storage :** Keep in a dry, cool place (0 - 35°C).

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering measures to reduce exposure:** Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dusts.

### Personal protection equipment

- **Respiratory protection :** Dust safety masks are recommended where concentration of total dust is more than 10 mg/m<sup>3</sup>.
- **Hand protection :** Rubber gloves.
- **Eye protection :** Safety glasses with side-shields. Do not wear contact lenses.
- **Skin and body protection :** Chemical resistant apron or protective suit if splashing or repeated contact with solution is likely.

**Hygiene measures :** Wash hands before breaks and at the end of workday. Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Form :** granular solid

**Colour :** white

**Odour :** slight

**pH :** 2.5 - 4.5 @ 5g/l for product series. See Technical Bulletin for specific value.

<b>Melting point (°C) :</b>	Not applicable.
<b>Flash point (°C) :</b>	Not applicable.
<b>Autoignition temperature (°C) :</b>	Not applicable.
<b>Vapour pressure (mm Hg) :</b>	Not applicable.
<b>Bulk density :</b>	See Technical Bulletin.
<b>Water solubility :</b>	See Technical Bulletin.
<b>Viscosity (mPa.s) :</b>	See Technical Bulletin.

## 10. STABILITY AND REACTIVITY

<b>Stability :</b>	Product is stable, no hazardous polymerization will occur.
<b>Materials to avoid :</b>	Oxidizing agents may cause exothermic reactions.
<b>Hazardous decomposition products :</b>	Thermal decomposition may produce : hydrogen chloride gas, nitrogen oxides (NOx), carbon oxides.

## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

<b>- Oral :</b>	Based on studies on similar products, this material is not expected to be toxic.
<b>- Dermal :</b>	Based on studies on similar products, this material is not expected to be toxic.
<b>- Inhalation :</b>	Based on studies on similar products, this material is not expected to be toxic.

### Irritation

<b>- Skin :</b>	By analogy with similar products, this product is not expected to be irritating.
<b>- Eyes :</b>	By analogy with similar products tested according to the Draize technique this material should produce no corneal or iridial effects and only slight transitory conjunctival effects similar to those which all granular materials have on conjunctivae.
<b>Sensitization :</b>	By analogy with similar products, this product is not expected to be sensitizing.
<b>Chronic toxicity :</b>	By analogy with similar products, this product is not expected to demonstrate chronic toxic effects.

## 12. ECOLOGICAL INFORMATION

### Acute aquatic toxicity

<b>- Fish :</b>	LC50/ <i>Danio rerio</i> /96 hours > 10 mg/L (OECD 203) (Based on results obtained from tests on analogous products.)
<b>- Daphnids :</b>	EC50/ <i>Daphnia magna</i> /48 hours > 10 mg/L (OECD 202) (Based on results obtained from tests on analogous products.)

- **Algae :** Algal inhibition tests are not appropriate. The flocculating characteristics of the product interfere directly in the test medium preventing homogenous distribution which invalidates the test.
- **Hydrolysis:** Does not hydrolyse.
- **Biodegradation:** Not readily biodegradable.
- **LogP<sub>ow</sub> :** 0
- **Bioaccumulation :** Does not bioaccumulate.

**Other ecological information**

The effects of this product on aquatic organisms are rapidly and significantly mitigated by the presence of dissolved organic carbon in the aquatic environment.

**13. DISPOSAL CONSIDERATIONS**

**Waste from residues / unused products :** In accordance with local and national regulations.

**Contaminated packaging :** Rinse empty containers with water and use the rinse water to prepare the working solution. Can be landfilled or incinerated, when in compliance with local regulations.

**14. TRANSPORT INFORMATION**

**Remarks :** Not classified as dangerous in the meaning of transport regulations.

**15. REGULATORY INFORMATION**

The product is classified and labelled in accordance with EC directives or respective national laws.

**R -phrase(s) :** R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**S -phrase(s) :** S61 -Avoid release to the environment. Refer to special instructions/Safety data sheets.

**Inventory status :**

**EINECS (Europe) :** Existing polymer according to the definition in the 7<sup>th</sup> Amendment to Directive 67/548/EEC. All starting materials and additives are listed in EINECS.

**TSCA (USA) :** Complies with all applicable rules or orders under TSCA.

## 16. OTHER INFORMATION

### **Further information :**

This MSDS was prepared in accordance with the following:

Council Directive 92/32/EEC of 30 April 1992 amending for the seventh time Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and all subsequent adaptations to technical progress

Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations

Commission Directive 2001/58/EC of 27 July 2001 amending for the second time Directive 91/155/EEC defining and laying down the detailed arrangements for the system of specific information relating to dangerous preparations in implementation of Article 14 of European Parliament and Council Directive 1999/45/EC and relating to dangerous substances in implementation of Article 27 of Council Directive 67/548/EEC (safety data sheets)

ISO 11014-1: Material Safety Data Sheet for Chemical Products.

**Person to contact :** Regulatory Affairs

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text.

# MATERIAL SAFETY DATA SHEET

PAGE:	1 of 5
REVISION DATE:	06/02/2005
PRINT DATE:	07/25/2005

## 1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

### FLO POLYMER AE 4500

**Supplier :**

**SNF INC**

PO Box 250

Riceboro, Georgia 31323

Tel : 912-884-3366 Fax : 912-884-5031

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

**Identification of the preparation :**

Anionic water-soluble polymer

## 3. HAZARDS IDENTIFICATION

*Aqueous solutions or powders that become wet render surfaces extremely slippery*

## 4. FIRST AID MEASURES

**Inhalation :** Move to fresh air.

**Skin contact :** Wash with water and soap as a precaution. In case of persistent skin irritation, consult a physician

**Eye contact :** Rinse thoroughly with plenty of water, also under the eyelids. In case of persistent eye irritation, consult a physician.

**Ingestion :** The product is not considered toxic based on studies on laboratory animals

## 5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media :** Water, water spray, foam, carbon dioxide (CO2), dry powder

**Special fire-fighting precautions :** Aqueous solutions or powders that become wet render surfaces extremely slippery

**Protective equipment for firefighters :** No special protective equipment required.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions :** No special precautions required.

**Environmental precautions :** Do not contaminate water.

**Methods for cleaning up :** Do not flush with water. Clean up promptly by sweeping or vacuum. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

## 7. HANDLING AND STORAGE

**Handling :** Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Wash hands before breaks and at the end of workday.

**Storage :** Keep in a dry, cool place (0-35°C).

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering controls :** Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dusts

### Personal protection equipment

- **Respiratory protection :** Dust safety masks are recommended where concentration of total dust is more than 10 mg/m<sup>3</sup>
  - **Hand protection :** Rubber gloves.
  - **Eye protection :** Safety glasses with side-shields. Do not wear contact lenses.
  - **Skin protection :** Chemical resistant apron or protective suit if splashing or contact with solution is likely.
- Hygiene measures :** Wash hands before breaks and at the end of workday. Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Form :** granular solid

**Color :** white

**Odor :** none

**pH :** 4-9 @ 5 g/l

**Melting point (°C) :** Not applicable

**Flash point (°C) :** Not applicable

**Autoignition temperature (°C) :** Not applicable

**Vapour pressure (mm Hg) :** Not applicable

**Bulk density :** See Technical Bulletin

**Water solubility :** See Technical Bulletin

**Viscosity (mPa s) :** See Technical Bulletin

## 10. STABILITY AND REACTIVITY

- Stability :** Product is stable. No hazardous polymerization will occur.
- Conditions to avoid :** Oxidizing agents may cause exothermic reactions
- Hazardous decomposition products :** Thermal decomposition may produce: nitrogen oxides (NO<sub>x</sub>), carbon oxides

## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

- **Oral :** LD50/oral/rat > 5000 mg/kg
- **Dermal :** The results of testing on rabbits showed this material to be non-toxic even at high dose levels.
- **Inhalation :** The product is not expected to be toxic by inhalation.

### Irritation

- **Skin :** The results of testing on rabbits showed this material to be non-irritating to the skin.
- **Eyes :** Testing conducted according to the Draize technique showed the material produces no corneal or iridial effects and only slight transitory conjunctival effects similar to those which all granular materials have on conjunctivae.

**Sensitization :** The results of testing on guinea pigs showed this material to be non-sensitizing.

**Chronic toxicity :** A two-year feeding study on rats did not reveal adverse health effects. A two-year feeding study on dogs did not reveal adverse health effects.

## 12. ECOLOGICAL INFORMATION

- **Fish** LC50/Danio rerio/96 hr > 100 mg/L (OECD 203) (Based on results obtained from tests of analogous products.)
  - **Algae :** IC50/Scenedesmus subspicatus/72hr > 100 mg/L (OECD 201) (Based on results obtained from tests of analogous products.)
  - **Daphnia :** EC50 /Daphnia magna/48 hr > 100 mg/L (OECD 202) (Based on results obtained from tests of analogous products.)
- Bioaccumulation :** Does not bioaccumulate.
- Persistence / degradability :** Not readily biodegradable.

## 13. DISPOSAL CONSIDERATIONS



**Waste from residues / unused products :**

In accordance with federal, state and local regulations.

**Contaminated packaging :**

Rinse empty containers with water and use the rinse water to prepare the working solution. Can be landfilled or incinerated, when in compliance with local regulations.

**14. TRANSPORT INFORMATION**

Not regulated by DOT.

**15. REGULATORY INFORMATION**

All components of this product are on the TSCA and DSL inventories

**RCRA status :**

Not a hazardous waste.

**Hazardous waste number :**

Not applicable

**Reportable quantity (40 CFR 302) :**

Not applicable

**Threshold planning quantity (40 CFR 355)**

Not applicable

**California Proposition 65 information :**

The following statement is made in order to comply with the CA Safe Drinking Water and Toxic Enforcement Act of 1986: This product contains a chemical known to the State of California to cause cancer: residual acrylamide.

HMIS & NFPA Ratings	HMIS	NFPA
Health :	1	1
Flammability :	1	1
Reactivity :	0	0

**16. OTHER INFORMATION****Person to contact :**

Regulatory Affairs Manager

## FLO POLYMER AE 4500

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# APPENDIX C

## APPENDIX C COARSE AND FINE PK GEOTECHNICAL TEST RESULTS

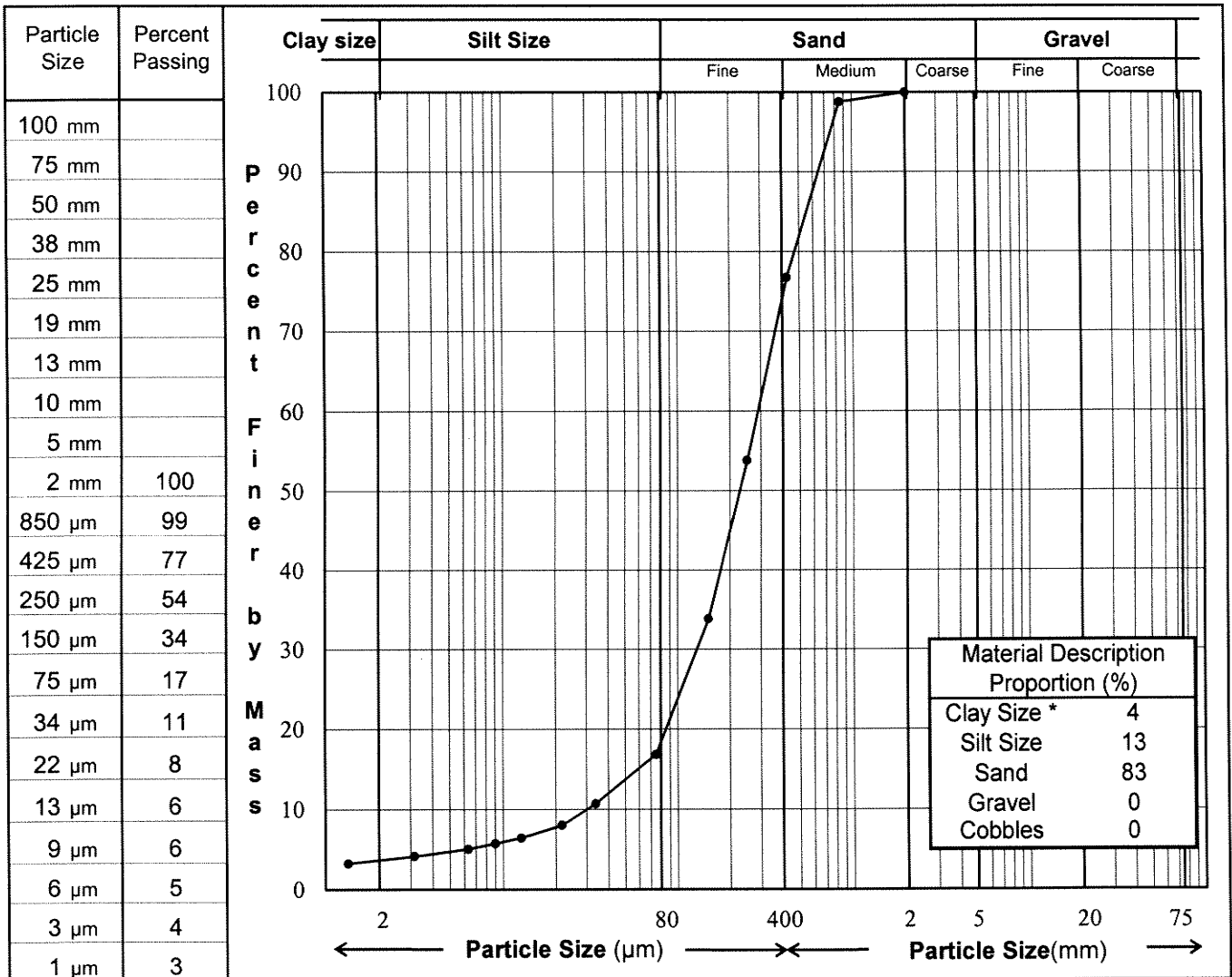
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# PARTICLE SIZE ANALYSIS (Hydrometer) TEST REPORT

ASTM D422

Project: Water Lic. Renewal-Jericho Mine  
 Client: Shear Minerals Ltd.  
 Project No.: E14101118  
 Location:  
 Description \*\*: SAND, some silt, trace clay.

Sample No.: PDK 1 (6321.1)  
 Borehole/ TP:  
 Depth:  
 Date Tested 10-Jun-11 By: KTP



**Remarks:** \* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

\*\* The description is behaviour based & subject to EBA description protocols.

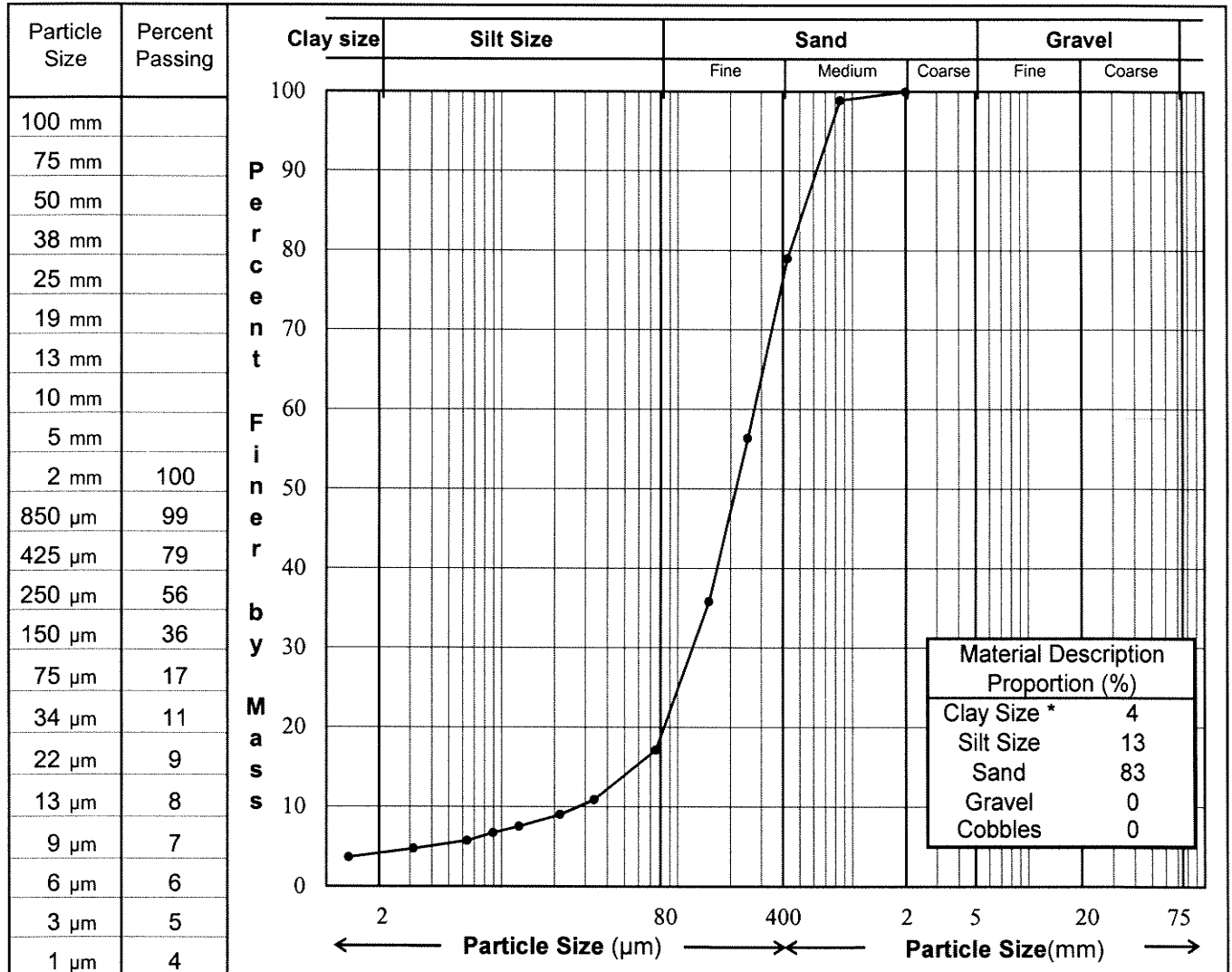
Reviewed By: \_\_\_\_\_ P.Eng.

# PARTICLE SIZE ANALYSIS (Hydrometer) TEST REPORT

ASTM D422

Project: Water Lic. Renewal-Jericho Mine  
 Client: Shear Minerals Ltd.  
 Project No.: E14101118  
 Location:  
 Description \*\*: SAND, some silt, trace clay.

Sample No.: PDK 2 (6321.2)  
 Borehole/ TP:  
 Depth:  
 Date Tested 10-Jun-11 By: KTP



**Remarks:** \* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

\*\* The description is behaviour based & subject to EBA description protocols.

Reviewed By: \_\_\_\_\_ P.Eng.

# ATTERBERG LIMITS TEST FORM

ASTM D4318

Project: Water Lic. Renewal - Jericho Mine

Sample Number: FPK 10

Project Number: E14101118

Borehole Number: \_\_\_\_\_

Sample Description: \_\_\_\_\_

Source: \_\_\_\_\_

Date Sampled: \_\_\_\_\_

Sampled By: \_\_\_\_\_

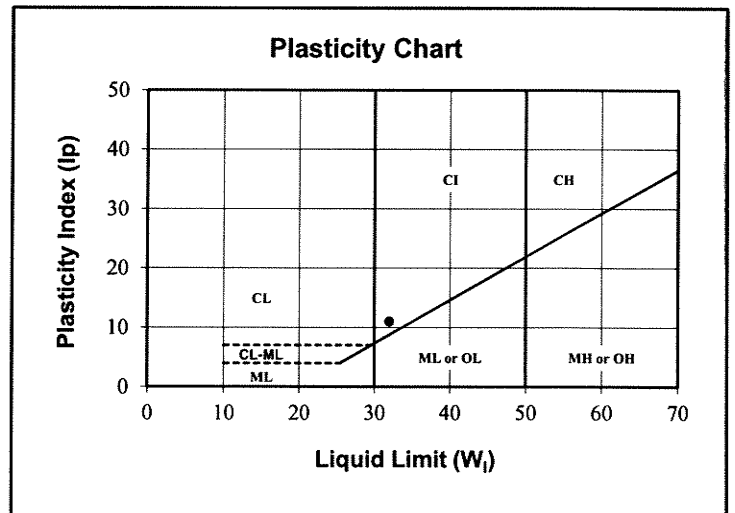
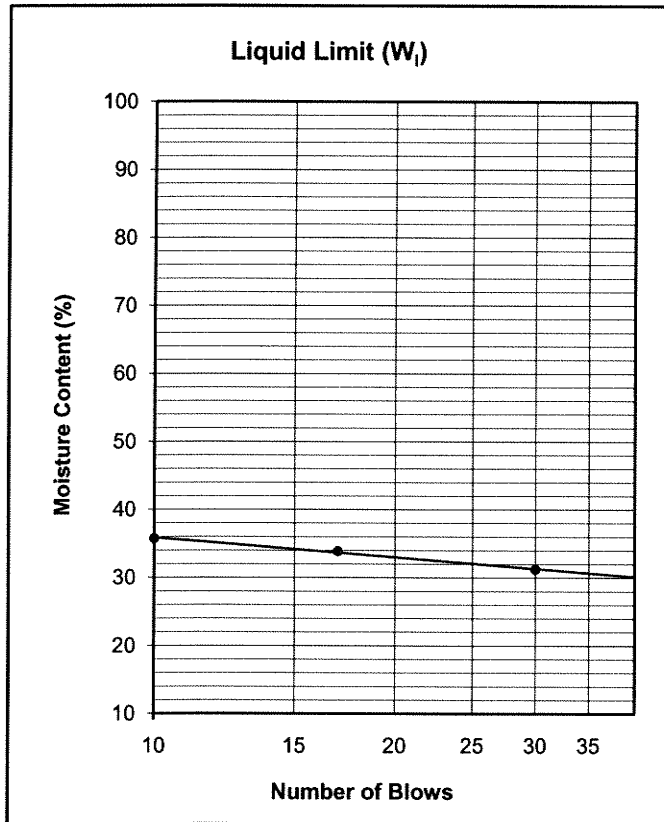
Date Tested: 23-Jun-11

Tested By: \_\_\_\_\_

KTP

Plastic Limit Test			Natural Moisture
Trial Number	1	2	
Tare Number	a	b	
Mass Wet Soil + Tare	11.70	11.77	
Mass Dry Soil + Tare	10.29	10.34	
Mass of Tare	3.53	3.45	
Mass of Water	1.41	1.43	
Mass of Dry Soil	6.76	6.89	
Moisture Content (%)	20.9	20.8	

Liquid Limit Test			
Trial Number	1	2	3
No. of Blows	30	17	10
Tare Number	c	d	e
Mass Wet Soil + Tare	41.12	41.83	39.40
Mass Dry Soil + Tare	32.23	32.26	30.02
Mass of Tare	3.75	4.01	3.76
Mass of Water	8.89	9.57	9.38
Mass of Dry Soil	28.48	28.25	26.26
Moisture Content (%)	31.2	33.9	35.7



Natural Moisture (%)

Liquid Limit (%)

Plastic Limit (%)

**PLASTICITY INDEX**

Soil Plasticity:

Mod.USCS Symbol:

32

21

11

Medium

CI

Remarks: \_\_\_\_\_

This Form is for Internal use only, see Report

reviewed by: \_\_\_\_\_



A TETRA TECH COMPANY