George Fellner

From: George Fellner
Sent: Monday, September 16, 2019 3:22 PM
To: 'Peter Callan'
Cc: Melissa S. Harris; Jonathan Ramsay; wjordansr@gmail.com; Billy Bowe; dutchassociates@sbcglobal.net; Mark Degnan
Subject: RE: Saint Clements Marina - Fishing Pier
Attachments: St Clements Marina-Geothermal Data.pdf; St. Clements Marina-Geothermal Contracts-Data.pdf

Hi All,

Regarding the geothermal issues, I have reviewed the documents provided by Jonathan:

- King Energy Associates Contact, September 20, 2013
- Mechanical Permit Application by King Energy Associates, August 30, 2013
- Mechanical Permit from Town of East Hampton, September 12, 2013
- Connecticut Wells Inc. Contract, September 5, 2013
- State of Connecticut Dept. of Consumer Protection Well Drilling Permit, September 6, 2013

I have also spoken with Scot Rogers of King Energy and he helped me to identify the manufacturer/supplier for the propylene glycol. I have reviewed the following documents as part of my further research:

- Hercules Specifications for Cryo-tek: Antifreeze for heating and cooling systems Spec Sheet #S00041, April 2011
- Hercules Safety Data Sheet for Hercules Cryotek-100 AL for Propylene Glycol 57-55-6, April 22, 2015
- Material Safety Data Sheet # 40, Hercules Cryotek -100 & -100/Al

Based upon my dialogue with Scot Rogers and my review of all documents, I have prepared the following outline for the purpose of my presentation at the upcoming continued Public Hearing:

1. Three vertical closed-loop wells, each one drilled to 680' deep, were installed sometime after September 6, 2013. This existing well system serving the ground source heat pump heating/cooling system had been designed for the previous building. They were installed beyond the 200' Public Water Supply Protective Sanitary Easement, and thus comply with regulations.

2. The new proposed building will incorporate these existing wells and will most likely require a few additional wells in order to accommodate the size and usage of the new building, as to be designed by the Mechanical Engineer.

3. The piping within the wells consists of 1 ½" PE 3408 high density 160 psi polyethylene with heat fusion connections. The 6" bore holes are filled for the full length, top to bottom, with bentonite based, thermally enhanced grout. In effect, the surrounding grout helps to protect the piping within the bore hole.

4. All drilling, looping, and piping is required to be completed by an International Ground Source Heat Pump Association (IGSHPA) certified installer. All piping goes through proper pressure testing, as required.

5. According to Scot Rogers, he is not aware of any projects that resulted in leaks from a vertical closed-loop well system.

6. The polyethylene piping within the closed-loop wells is filled with propylene glycol.

7. As per King Energy, the propylene glycol product used is Cryo-tek - 100. The specifications are very detailed, as outlined for proper usage.

8. Propylene glycol is a compound which is Generally Recognized As Safe (GRAS) by the U.S. Food and Drug Administration and is also approved by FDA for certain uses as an indirect food additive.

9. As per the Hercules Safety Data Sheet for Hercules Cryotek-100 AL for Propylene Glycol 57-55-6, this product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA; has no known adverse effect on human health; and is not classified as environmentally hazardous.

10. As per the Material Safety Data Sheet # 40, Hercules Cryotek -100 & -100/Al, this product is not classified as hazardous in accordance with OSHA 1910.1200. In terms of health hazards, it has very low single dose oral toxicity, and essentially has no effect on eye and skin.

I have attached the associated PDF documents for your reference.

Please let me know if you have any questions.

Thanks,
George

George Fellner, AIA, LEED AP
Principal

FELLNER ARCHITECTS

382 Town Street, P.O. Box 115
East Haddam, Connecticut 06423
ph 860-873-8230
gfellner@fellnerarch.com
www.fellnerarchitects.com

KING ENERGY ASSOCIATES

514 TRUMBULL HIGHWAY LEBANON, CONN. 06249
860-642-6780

Specialists in Geothermal Heat Pumps

Proposal to:	Roncalli Institute Inc. 1931 Portland-Cobalt Tpke P.O.Box 427 Portland, Ct. 06480
Work to be performed at:	St Clemens Marina 49 Oakum Dock Rd. East Hampton, Ct.
Date:	September 20, 2013

DESCIPTION OF WORK:
Design and install geothermal heating/cooling system to be retrofitted to the marina complex listed above. System to include, both material and labor as listed:

Equipment:
Two Hydron Module HWT060 five ton water to water geothermal heat pumps or equal.
One Hydron Module HXT 048 four ton water to air geothermal heat pump or equal.
Two Hydron Module MPH060 five ton air handlers.
Two Hydron Module AHM101L ten kw aux heaters.
Three space guard 2210 media air cleaners
Three Honeywell 3 heat/2 cool thermostats or equal
8 Grundfos model 2699F 230v circulators or equal
The above equipment to be provided, delivered, installed and tested by KEA. High voltage electrical hook-up and low voltage rough-in by electrical contractor. Low voltage connections by KEA.

Ductwork:
Provide and install duct system of sheet steel or vinyl flex. Duct insulation to service pavilion area and finished utility area. Duct system for unfinished utility area excluded. Ventilation air provided by operable windows.

Ground Source:
KEA requires the system be connected to a vertical closed loop consisting of 3 wells @680' deep, per proposal from Connecticut Wells. All piping to be of 1 ½" PE 3408 high density 160 psi polyethylene. All connections to be heat fusion. Interior loop piping by KEA. The proposal as listed is for closed loop applications. All exterior excavation work remains outside of this proposal. All exterior piping is excluded in the proposal but is included in the Connecticut Wells proposal. Flush and purge with 20% propylene glycol, including materials, by Connecicut Wells. Pump selection by KEA.

Domestic Hot Water Heater:
Excluded

Commissioning:
Upon completion, each unit will be tested by KEA to verify system operation to manufacturer's specification. Verification in place measurements to include source water pressure drop, air flow static pressures, temperature rise/fall on both loop and air side, evaporating and condensing refrigerant pressure and voltage/amp measurements.

Warranty:
Manufacturers warranty is 5 years, material and labor, and an additional lifetime warranty on the compressor and refrigerant piping, materials only.

Town Oversight:

Mechanical permit fee is included. If required by building office, professional design services are outside of this contract.

General Terms:

KEA will maintain liability and completed operations insurance. Rubbish generated by KEA will be collected to a common area and disposed of by KEA. All payments are due upon the completion of the associated work. Proposal is void if not accepted within 90 days of authorization.

COST OF INSTALLATION	$58,100.00
PAYMENT SCHEDULE:	
DEPOSIT:	$ 5,000.00
COMPLETION OF PAVILLION DUCT ROUGH-IN:	$14,000.00
COMPLETION OF UTILITY DUCT ROUGH-IN:	$ 5,000.00
DELIVERY OF HWT 060s:	$18,000.00
DELIVERY OF HXT 048:	$ 7,000.00
SYSTEM START-UP:	$ 4,100.00
COMPLETION:	$ 5,000.00

AUTHORIZED BY: _____ Date: 9-20-2013

ACCEPTED BY _____ Date: Sept 26-13

ACCEPTED BY _____ Date: _____

East Hampton
Connecticut

Town of East Hampton
20 East High Street
East Hampton, CT 06424
Phone: (860) 267-9601

MECHANICAL PERMIT

PERMIT#: M-13-0130

ISSUE DATE: 09/12/2013

LOCATION: 49 OAKUM DOCK RD

OWNER: Roncalli Institute

Other Permits (If Applicable) :
Building -
Electrical - Required
Plumbing - Required

DESCRIPTION OF WORK: 2 5 ton and 1 4 ton Geothermal Electric Air Conditioner Units, 2 2000cfm and 1 1600 cfm Air Handlers

ZONE: R-2

Fee type	Valuation	Amount	Payment date	Payment Type	Check #	Full name
Mechanical Fee	58100.00	750.00	09/12/2013	Check	371	King Energy Associates LLC

VALIDATION _____

CONTRACTOR'S NAME: King Energy Associates LLC LICENSE # : SHM.0002813-SM1
CONTRACTOR'S ADDRESS: 514 Trumbull Highway, Lebanon, CT 06249
EDITION OF CODE: 2005 CTSBC

* PLEASE CONTACT THE PERMIT CLERK, WITH YOUR PERMIT NUMBER, TO SCHEDULE AN INSPECTION.

APPLICANT CERTIFIES THAT ALL INFORMATION GIVEN IS CORRECT AND THAT ALL PERTINENT MECHANICAL CODES WILL BE COMPLIED WITH IN PERFORMING THE WORK FOR WHICH THIS PERMIT IS ISSUED.

See attached
Signature of Contractor/Owner or their Authorized Representative Making Application

Daphne C Leland
Signature of Permit Clerk

APPLICANT'S COPY

Required Inspections

Rough Mechanical
Final

Mechanical Permit Application: Permit No._____ DATE: 8/30/2013

CONTRACTOR'S LICENSE NO. SM1 #288

LOCATION: 49 OAKUM DOCK RD

OWNER: RONCALI INSTITUTE

OWNER ADDRESS IF DIFFERENT FROM LOCATION: _____

OWNER PHONE NUMBER: _____

KIND OF BUILDING: CLASS - S USED AS: _____

TO BE COMPLETED ABOUT: _____ VALUE OF MATERIALS: $58,100.

(Circle One)	NEW	ALTERATION	REPAIR	ADDITION

OIL ☐ GAS ☐ LPG ☐ ECT. ☒ → GEOTHERMAL

TYPE OF EQUIPMENT			NUMBER	
Air Conditioner Units			H.P. Ea.	2 @ 5 tons & 1 @ 4 TONS
Refrigeration Units			H.P. Ea.	
Boilers			HP Ea.	
Forced Air Systems			B.T.U.	M Ea.
Furnace			B.T.U.	M Ea.
Stove Insert	WOOD ☐	PELLET ☐	MAKE:	RATING:
Stove Freestanding	WOOD ☐	PELLET ☐	MAKE:	RATING:
Air Handling		C.F.M.	2 @ 2000 cfm & 1 @ 1600 CFM	
Gas Piping				
Range	COM. ☐	DOM. ☐		
Range Hood	COM. ☐	DOM. ☐		
Generator			H.P. (kw)	
Storage Tank			Size	
Other:				

CONTRACTOR'S NAME:	KING ENERGY ASSOCIATES LLC
STREET ADDRESS:	54 TRUMBULL HWY
CITY/STATE/ZIP:	LEBANON CT. 06249
PHONE NO:	860-642-6780 / 860-465-3527

READY FOR INSPECTION ON _____ OR WILL CONTACT PERMIT CLERK LATER _____

SIGNATURE OF OWNER, CONTRACTOR OR AUTHORIZED REPRESENTATIVE MAKING APPLICATION: _____

FEE: $150 PERMIT NO._____

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 09/26/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Pauline R Spingola	
Urbanetti Insurance Agency LLC 621 East Middle Tpke PO Box 1438 Manchester, CT 06045	PHONE (A/C, No, Ext): (860)649-0016	FAX (A/C, No): (860)646-5823
	E-MAIL ADDRESS: pspingola@urbanettiinsurance.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Hartford Fire Ins. Company	29424
INSURED	INSURER B : Hartford Fire Ins. Company	11000
KING ENERGY ASSOCIATES, LLC 514 TRUMBULL HWY LEBANON, CT 06249	INSURER C : Hartford Fire Ins. Company	10046
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES CERTIFICATE NUMBER: 00007754-169477 REVISION NUMBER: 2

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY			02SBAKQ4711	09/01/2013	09/01/2014	EACH OCCURRENCE	$ 1,000,000
	X COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 300,000
	CLAIMS-MADE X OCCUR						MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 1,000,000
							GENERAL AGGREGATE	$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER						PRODUCTS - COMP/OP AGG	$ 2,000,000
	X POLICY PRO-JECT LOC							$
B	AUTOMOBILE LIABILITY			02UECRO7444	11/19/2013	11/19/2014	COMBINED SINGLE LIMIT (Ea accident)	$ 500,000
	ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS X SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$
	DED RETENTION $							$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N			02WECLC7026	11/20/2013	11/20/2014	X WC STATU-TORY LIMITS OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N/A (Mandatory in NH)						E.L. EACH ACCIDENT	$ 100,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 100,000
							E.L. DISEASE - POLICY LIMIT	$ 500,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Job: Marina HVAC

CERTIFICATE HOLDER

Roncalli Institute, Inc.
Fax: 860-342-5627
49 Oakum Dock Road
EAST HAMPTON, CT 06424

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Pauline R. Spingola

(PRS)

Connecticut Wells Inc.
BETHLEHEM, CT
1-800-344-7989

September 5, 2013

Roncalli Institute Inc. (Non Profit)
49 Oakum Dock Road
Portland, CT 06480

The following is a contract for the well field for a geothermal system at 1931 Portland-Cobalt Road in Portland.

SECTION ONE: DRILLING

1. Drill and install 20 feet of 6 inch casing in each well.
2. Continue 3 bores to a total depth of 680 feet each. Total Drilling.... 2,040 feet.
3. Install 680 feet of 1 1/2" geo loop in each bore.
4. Grout borehole from bottom to top using bentonite based, thermally enhanced grout.
5. Install and maintain silt fence during drilling operations.

SECTION TWO: TIE-IN

1. Install 90° heat fusion elbows at each end of loop.
2. Construct all connections between wells as required by design.
3. Core foundation and continue lines through foundation wall.
4. Seal foundation using "link" type mechanical seals.
5 Terminate lines no more than two feet inside foundation.
6. Initiate and maintain pressure test.
7. Fill, flush and purge. Exterior piping.

All work described in Section One and Two includes all materials and labor required. All drilling, looping, and piping to be done by or under the supervision of an IGSHPA certified installer and pipe fuser.

EXCAVATION:

Trench for underground piping. Includes trenching and compacted backfill. Sand bedding and cover. Clean area of drill rig.

Not Included:

Ledge or rock removal over ½ yard, unsuitable soils.

SECTION THREE: EXCLUSIONS

1. If more than 20' of casing is needed in each well, the charge is $16.00/ft.
2. Glycol, filling and purging by others.
3. All interior plumbing and piping by others.
4. Glycol, filling and purging service available at additional charge.
5. CT Wells is not an engineering or a design firm, therefore, is not responsible for the design and/or performance of the system.
6. CT Wells is not liable for any damage to lawns, trees, driveways, septic systems, surface or subsurface drains and/or piping, unmarked underground utilities, etc. incurred by its equipment while ingressing/egressing or performing said work.
7. Penetrating foundation walls other than concrete or cement block by others.
8. Quote is good for 30 days.

TOTAL.....$32,640.00
EXCAVATION.....$1,800.00
FILL, FLUSH, PURGE...$2,500.00

PAYMENT TERMS

20% Down Payment before work begins.
70% Due after drilling/loop installation is complete. Tie in portion will be scheduled upon payment.
10% Due upon completion of tie in.

Respectfully submitted:

9/26/13

Rob Loftus
CT Wells Inc.

READ AND AGREED:

Sept 26 13

Authorized Representative
Roncalli Institute Inc.

CPR-8 Rev. 7/95

PERMIT NUMBER
255463

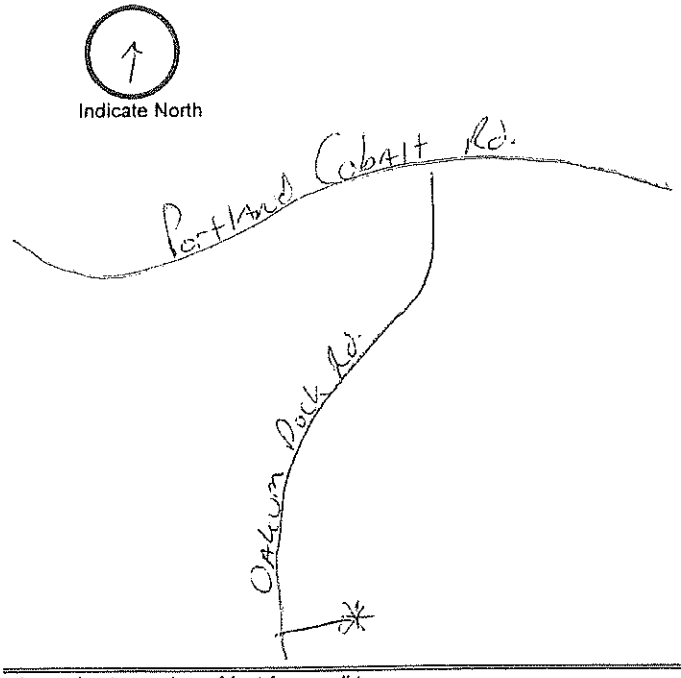
STATE OF CONNECTICUT
DEPARTMENT OF CONSUMER PROTECTION
REAL ESTATE & PROFESSIONAL TRADES DIVISION
WELL DRILLING PERMIT
165 Capitol Avenue, Hartford, Connecticut 06106

LOCATION OF WELL (Town) Portland (Street) 49 Oakum Dock Rd. (Lot Number)			DATE 9/6/13
OWNER OF WELL	☐ INDIVIDUAL	☐ BUILDER	☒ OTHER (Specify)
OWNER'S ADDRESS	Saint Clemens INC.		
PROPOSED USE OF WELL	☐ DOMESTIC ☐ BUSINESS ESTABLISHMENT ☐ FARM ☐ TEST WELL ☐ PUBLIC SUPPLY ☐ INDUSTRIAL ☐ AIR CONDITIONING ☒ OTHER (Specify) See Thermal		Est. No. of People being served. Ø

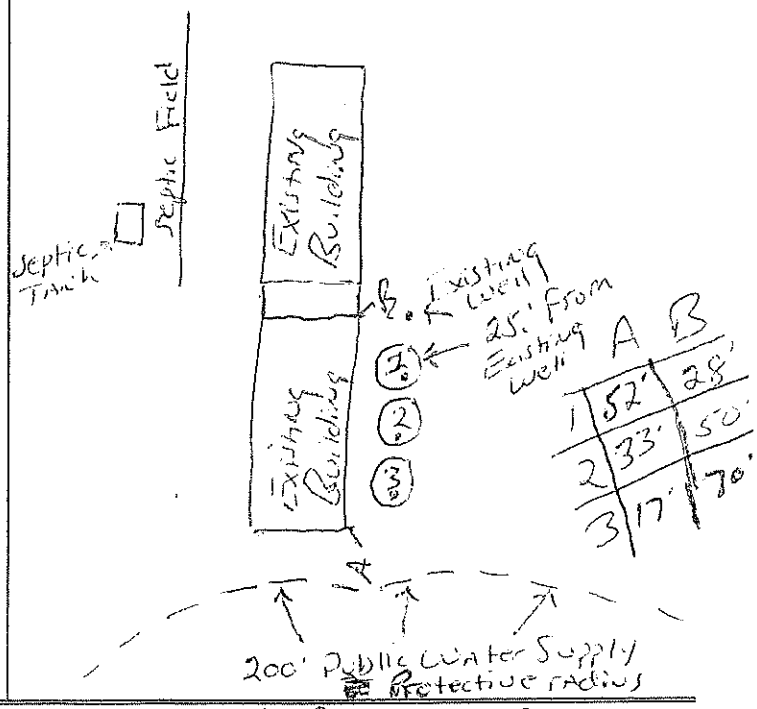
SKETCH OF WELL LOCATION

Locate well with respect to at least two roads, showing distance from intersection and front of lot

location of lot to at least two roads



Well location on to and to house (if present)

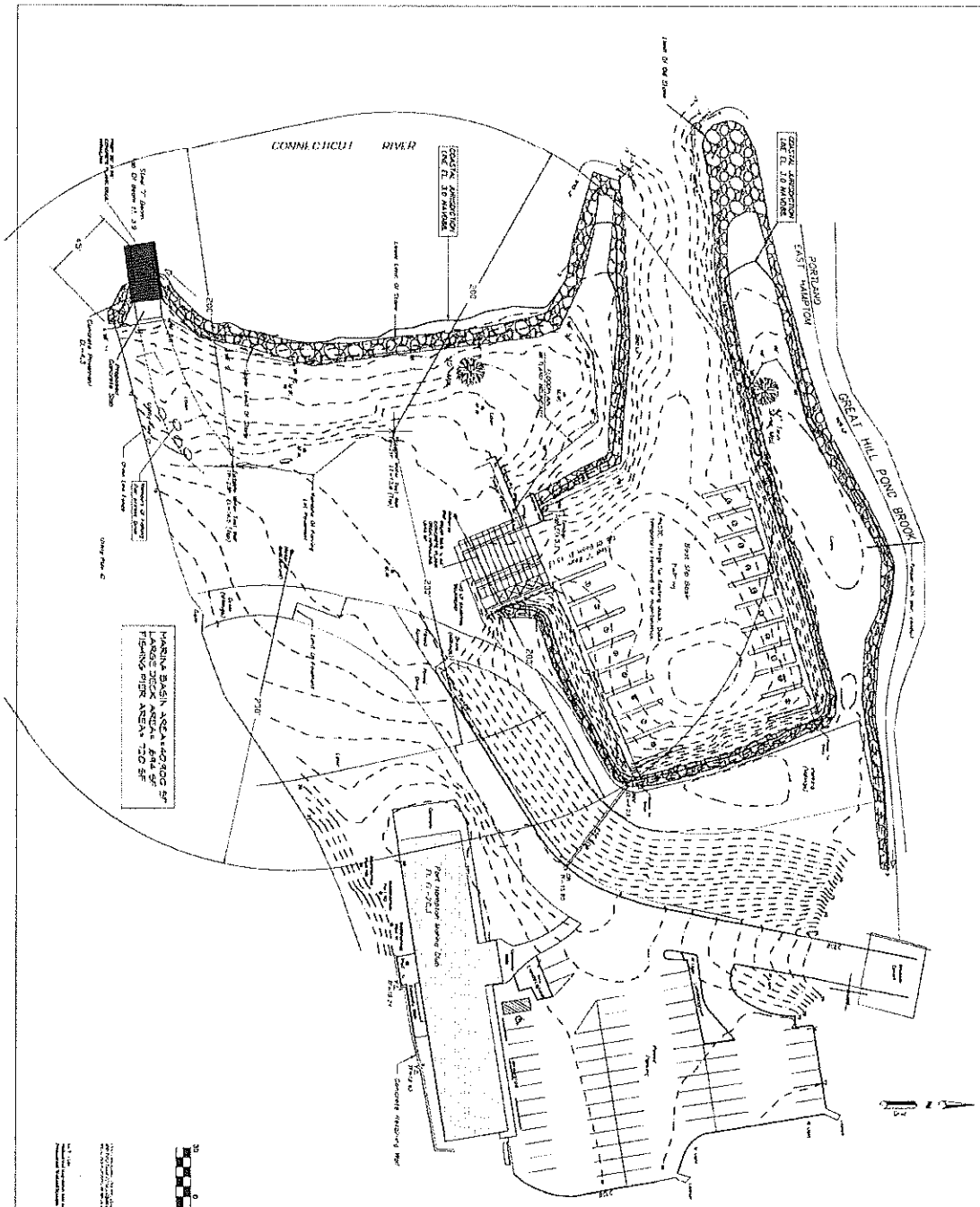


Approximate number of feet from well to nearest source of possible contamination: 75' to septic field in front of Building

The undersigned is aware that upon completion of the well, a "Well Completion Report" containing construction details and information required under Section 25-131 of the 1969 Supplement to the General Statutes must be sent to the owner, the Department of Consumer Protection and the Water Resources Commission on the form provided by the agency. This permit is not valid until all information is filled in and it has been counter-signed by the Director of Health or his agent.

APPLICANT (Signature) Thomas Gallow	APPLICANT'S ADDRESS 49 Hard Hill Rd. N. Bethlehem CT 06751 Ct Wells 203 592 0496	REGISTRATION NO. 4
☒ APPROVED ☐ REJECTED	BY (Town Health Officer or Agent)	DATE 9/25/13

REMARKS 9/16/13 Offering WP14-018 #1105 CK# 36814
(3) 650' Closed Loop Geothermal
LOCATE WELLS ON MAP PER LETTER ITEM WP14 9/25/13-TK



CHRISTOPHER G. JELLEY, P.E. CONSULTING ENGINEERS
3 Deane Road
Meriden, Ct. 06451
860-346-7557

ATTACHMENT B
PORT HAMPTON MARINA CLUB
49 OAKUM DOCK ROAD
EAST HAMPTON, CT.

SD-1

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 9/25/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER DiMatteo Insurance Brokers, LLC P.O. Box 270971 West Hartford CT 06127-0971	CONTACT NAME: Trina Souppa PHONE (A/C, No, Ext): (800) 964-9928 FAX (A/C, No): (860) 218-9964 E-MAIL ADDRESS: trina@dinsb.com
INSURED Connecticut Wells/Geothermal Services, Inc 49 Hard Hill Road N. Bethlehem CT 06751	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A: Hartford Insurance Company of — 37478 INSURER B: Hartford Casualty Insurance — 29424 INSURER C: Commerce and Industry — 19410 INSURER D: INSURER E: INSURER F:

COVERAGES CERTIFICATE NUMBER: CL136300498 REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR X Contractual Liability GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY X PRO-JECT LOC	X		04 UUN OJ3103	6/1/2013	6/1/2014	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 300,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS HIRED AUTOS SCHEDULED AUTOS NON-OWNED AUTOS			04UUNOJ3103	6/1/2013	6/1/2014	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) Underinsured motorist	$ 1,000,000 $ $ $ $ 1,000,000
B	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DED X RETENTION $ 10,000			04 RHO OJ3105	6/1/2013	6/1/2014	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000 $
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N N If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		66455172	6/1/2013	6/1/2014	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
Roncalli Institute, Inc. is named as additional insured with respect to operations performed by the named insured and where required by contract.

CERTIFICATE HOLDER

Roncalli Institute, Inc. (Non Profit)
49 Oakum Dock Road
East Hampton, CT 06424

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Angelo DiMatteo/TRINA

RONCALLI INSTITUTE, INC.
1931 PORTLAND - COBALT RD
P.O. BOX 427
PORTLAND, CT. 06480

DATE	INVOICE	AMOUNT

537

51-7028
2111

PAY Seven Thousand Four Hundred and 00/100 — DOLLARS

DATE	TO THE ORDER OF	GROSS AMOUNT OTHER	GROSS AMOUNT ACCTS. PAYABLE	DISCOUNT	CHECK AMOUNT
9-26-13	Connecticut Wells Inc	7400 00			7400 00

LIBERTY BANK
MIDDLETOWN, CT 06457

AUTHORIZED SIGNATURE

⑈000537⑈ ⑆211170282⑆ 402 03182 2⑈

Spec Sheet #S00041
April 2011

cryo-tek™

ANTI-FREEZE for heating and cooling systems

DESCRIPTION

A blend of virgin (not recycled) propylene glycol and high purity Triple Protection additives, formulated for use in closed loop hydronic heating and cooling systems. **Cryo-tek** can also be used in radiant tube heating systems, most solar heating systems and geothermal loops. Hercules' exclusive Triple Protection formula stabilizes pH to prevent acid corrosion, chelates hard water minerals and inhibits the formation of scale and sediment. These components work together to keep the system clean and operating efficiently by eliminating system deposits, improving heat transfer and minimizing wear to moving parts and seals. **Cryo-tek** is compatible with PEX and elastomeric radiant tubing, commonly used materials for seals and bushings and provides corrosion protection for cast iron, steel, copper, brass and solder. **Cryo-tek** has not been tested for use in systems containing CPVC plastic. Standard **cryo-tek** products should not be used in systems containing aluminum. **Cryo-tek -100/AL** is available for aluminum systems. **Cryo-tek** should not be used in systems with galvanized piping as the zinc coating will be dissolved. **Cryo-tek** is a 94-98% efficient heat transfer solution in most application dilutions. It has a lower freeze point and higher boiling point than water and is non-flammable, odorless, non -toxic, nonirritating and compatible with Hercules boiler stop leaks and heating system cleaner products.

Cryo-tek is available in 3 formulations:

Cryo-tek Original

Contains virgin (not recycled) propylene glycol with Triple Protection corrosion inhibitor, pre -mixed ready to use formulation. Can be added directly into system undiluted or diluted as required. Certified Performance: Freeze Protection Down to -22°F / -30°C, Pumpable Down to -27°F / -33°C, and Burst Protection Down to -80°F / -62°C. **Cryo-tek Original** can be further diluted with water for less severe conditions.(see Table II, page 3)

Cryo-tek -100

Contains virgin (not recycled) propylene glycol with Triple Protection corrosion inhibitor, pre -mixed ready to use formulation. Certified Performance: Freeze Protection Down to -70°F / -57°C, Pumpable Down to -80°F / -62°C, and Burst Protection Down to -100°F / -73°C. **Cryo-tek -100** can be diluted with water for less severe conditions. (see Table II, page 3)

Cryo-tek AG

A concentrated virgin (not recyled) propylene glycol with Triple Protection corrosion inhibitor, which can be diluted with water to desired protection levels. (see Table II, page 3)

Test Kits and Accessories

Freeze protection levels and corrosion protection levels should be checked annually. Use **Hercules Refractometer** (35290) and **pH Meter** (35272) or, **cryo-tek Test Kit** (35271). Add additional **cryo-tek** product if freeze protection is inadequate. Add **cryo-tek Inhibitor** (35276) if pH is below 8.5. (see Maintenance, page 4)

* Please check with equipment manufacturer of system to determine compatibility with this product.
**Minimum flow protection levels are estimated and are dependent on system and equipment.

HERCULES®

specifications

Cryo-tek™

cryo-tek™

ANTI-FREEZE for heating and cooling systems

SIZES AND PACKING

STOCK NO.	SIZE	PACK	WT/CASE
cyro-tec Original			
35253	1 gal.	6	53.2 lbs
35260	5 gal.	1	46.5 lbs
35267	55 gal.	1	518.0 lbs
cyro-tec –100			
35281	1 gal.	6	54.0 lbs
35284	5 gal.	1	46.9 lbs
35286	30 gal.	1	286.0 lbs
35287	55 gal.	1	521.0 lbs

STOCK NO.	SIZE	PACK	WT/CASE
cyro-tec AG			
35282	1 gal.	6	54.0 lbs
35285	5 gal.	1	46.9 lbs
35288	30 gal.	1	286.0 lbs
35289	55 gal.	1	521.0 lbs
Inhibitor			
35276	8 oz.	24	17.8 lbs

STOCK NO.	PACK	WT/CASE
ALSO AVAILABLE		
35271 test kit	6-10 pk	0.3 lbs
35290 Refractometer	1	0.25 lbs
35272 pH meter	1	0.3 lbs
35279 Protection Tags		24

Tags Free / Available upon request

APPROVALS AND LISTINGS

The virgin propylene glycol used in **cryo-tek** is "GRAS" (Generally Recognized As Safe) for incidental contact with food.

SPECIFIC USES

Use any **cryo-tek** Anti-Freeze in hydronic closed loop heating and cooling systems, solar heating systems, and general plumbing systems that require freeze protection. Operating Temperature Range for Closed System: Up to 250°F

SPECIFIC APPLICATIONS*

Add any **cryo-tek** product to protect pipes from freezing and bursting. Also prevents freeze-ups in chiller systems, recreational vehicles, seasonal homes, mobile homes, trailers, boats, sprinkler systems, and industrial use.

PHYSICAL PROPERTIES

	cryo-tek Original	**cryo-tek -100**	**cryo-tek AG**
pH	8.5 - 9.0	9.0 - 9.5	9.5 - 10.0
Density lb/gal. 60°F - 65°F	8.7 lb./ gallon	8.78 lb./ gallon	8.78 lb./ gallon
Specific Gravity 60°F - 65°F	1.04	1.054	1.054
Specific Heat BTU/lb°F @ 160° F	.908	.843	.681
Boiling Point:	220°F / 104°C	230°F / 110°C	370°F / 188°C
Appearance and color:	Blue liquid. Odorless.	Red liquid. Odorless.	Blue liquid. Odorless.

WARNINGS OR CAUTIONS

- Read all cautions and directions carefully before using this product.
- Not for use in steam systems.
- Not for use with CPVC pipe and fittings.
- Use **Hercules boiler liquid** or **base hit**TM **II** to stop leaks on system containing **cryo-tek** products.
- Use **Hercules boiler & heating system cleaner** or **sizzle®** to clean system prior to using **cryo-tek** (see installations instructions).
- Do not use in internal combustion engines as a coolant.
- Do not use in water softeners. Disconnect all water softeners from system or provide back flow protection to prevent contamination
- of brine or resin bed.
- **Cryo-tek** Products are not recommended: **1.** For use in systems containing galvanized components. **2.** For open solar systems and systems where operating stagnation temperatures are regularly over 300°F / 150°C. **3.** For systems with concentrating solar collectors or evacuated tube solar collectors. **4.** In systems containing aluminum.
  (Please check with equipment manufacturer of system to determine compatibility with this product).

CAUTION REGARDING COMPETITIVE PRODUCTS:
Hercules cryo-tek products are formulated using virgin propylene glycol and high purity Triple Protection Additives for assurance of materials compatibility and non-toxicity characteristics. Dilution or mixing of **cryo-tek** products with other manufacturers' products may compromise these critical requirements and is not recommended.

DIRECTIONS FOR USE

1. CLEAN THE SYSTEM - It is recommended that any system, whether new or existing, be thoroughly cleaned prior to being charged with **cryo-tek** products. Any system contaminated with dirt and other materials reduces efficiency and wears the system prematurely. New systems need to be free of flux, solder residue, grease and any foreign particles. Most boiler manufacturers recommend cleaning new systems with a solution of Tri-Sodium Phosphate (TSP), or **Hercules boiler and heating system cleaner** (Follow instructions on container). Existing systems need to be flushed and cleaned to eliminate any build-up of rust, scale, lime and other non-organic matter. These systems should be cleaned with an inhibited hydrochloric acid such as **Hercules sizzle (except aluminum systems, check with boiler manufacturer)**. All systems should be checked for leaks prior to installation of any **cryo-tek** product.

* For special applications which may not be covered on this or other Hercules literature, please contact Hercules Technical Services Department by phone at 1-800-221-9330 or send a fax to 1-800-333-3456.

2. MEASURE THE TOTAL CAPACITY OF THE SYSTEM using one of the following methods:

DIRECT METHOD

A. Fill system completely, making sure all components of system are full.

B. Shut system down, let pressure drop to a safe level.

C. Drain out fluid into suitable container and record the number of gallons removed. This is TOTAL SYSTEM FLUID CAPACITY.

ESTIMATION METHOD

A. Determine system pipe sizes and amount of linear footage for each size. Using Table I, calculate the volume of the system piping.

B. Add this number to the gallon capacity of the boiler or equipment in the system to determine the TOTAL SYSTEM FLUID CAPACITY.

TABLE I (Note: 1 US Gallon = 3.785 Liters)

Description	Pipe Diameter Nominal Size	3/8"	1/2"	5/8"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Standard Steel Pipe	US Gallons of Fluid per 100 ft. pipe	1.0	1.6	-	2.8	4.5	7.8	10.6	17.5	24.9	38.5
Type "L" Copper Tubing	US Gallons of Fluid per 100 ft. pipe	0.76	1.22	1.81	2.52	4.30	6.55	9.27	16.12	24.86	35.48

3. SELECT DESIRED TEMPERATURE COVERAGE

Using Table II determine protection level desired and match it to the appropriate **cryo-tek** product concentration.

TABLE II

Cryo-tek Original

	MIXING RATIO		PROTECTIONS		
% Concentration of cryo-tek Original	Parts of cryo-tek Original	Parts of Water	Freeze Protection Down to	Pumpable☆ Down to	Burst Protection Down to
100%	Undiluted	-	-22°F / -30°C	-27°F / -33°C	-80°F / -62°C
90%	9	1	-17°F / -27°C	-22°F / -30°C	-60°F / -51°C
80%	4	1	-5°F / -21°C	-10°F / -23°C	-50°F / -46°C
67%	2	1	+2°F / -17°C	-2°F / -19°C	-20°F / -29°C

Cryo-tek -100

	MIXING RATIO		PROTECTIONS		
% Concentration of cryo-tek -100	Parts of cryo-tek -100	Parts of Water	Freeze Protection Down to	Pumpable☆ Down to	Burst Protection Down to
100%	undiluted	-	-70°F / -57°C	-80°F / -62°C	-100°F / -73°C
75%	3	1	-21°F / -30°C	-33°F / -36°C	-60°F / -51°C
60%	3	2	0°F / -18°C	-10°F / -23°C	-40°F / -40°C
50%	1	1	+10°F / -12°C	+5°F / -15°C	-20°F / -29°C

Cryo-tek AG

	MIXING RATIO		PROTECTIONS		
% Concentration of cryo-tek AG	Parts of cryo-tek AG	Parts of Water	Freeze Protection Down to	Pumpable☆ Down to	Burst Protection Down to
70%	7	3	-70°F / -57°C	-80°F / -62°C	-100°F / -73°C
50%	1	1	-29°F / -34°C	-47°F / -44°C	-80°F / -62°C
40%	4	6	-8°F / -22°C	-30°F / -34°C	-60°F / -51°C
35%	3.5	6.5	+2°F / -17°C	-20°F / -29°C	-50°F / -46°C
30%	3	7	+11°F / -11°C	-15°F / -26°C	-20°F / -29°C

☆Pumpable down to protection levels are estimated and are dependent on system and equipment. Attempting to circulate fluid below freeze point may overload and/or cause pump failure.

4. DETERMINE AMOUNT OF CRYO-TEK PRODUCT REQUIRED IN SYSTEM

Determine the amount of **cryo-tek** product needed in system by multiplying total system capacity in gallons by the concentration factor of **cryo-tek** product (first column in each chart above).

Total System Capacity (gal) X Concentration Factor of cryo-tek Product (%) = Amount of cryo-tek Product to be used (gal)

5. CHARGING THE SYSTEM

System should be completely empty with burner and pump shut off. All internal valves, including zone valves, should be open. THE ENTIRE SYSTEM SHOULD BE OPEN TO PREVENT ANY AREA OF IT FROM BEING ISOLATED. First, add the computed amount of **cryo-tek** product, second add water if necessary. The system can be filled using one of the following two alternatives. The main objective is to fill the system with little or no air trapped in it.

A. After providing for an air exit, pump solution into boiler through the boiler drain valve using a small pump.

B. Pour solution through a removed air vent at the HIGHEST point in the system.

6. PURGE THE AIR IN SYSTEM

Since air (which includes oxygen) trapped in a system not only results in inefficiencies in the operation of the system (wasted energy and excessive noise), it can also cause corrosion. To prevent this, the system, once filled, needs to be purged of all air.

7. TEST THE SYSTEM

Once installed and fully operational, use **Hercules Refractometer** with **Refractometer Reading Adjustment Chart** and **pH Meter** or **Cryo-tek Test Strips** to test fluid to assure proper freeze and corrosion protection. **Note:** An automotive coolant tester will not work with **cryo-tek** or other propylene glycol anti-freeze mixtures.

8. MAINTENANCE

Systems with **cryo-tek** products installed should be tested annually for product concentration and inhibitor levels using **Hercules Refractometer** with **Refractometer Reading Adjustment Chart** and **pH Meter** or **cryo-tek Test Strips**. If **cryo-tek** product concentration levels are low, add **cryo-tek** product using the following formula:

$$\text{TOTAL SYSTEM CAPACITY (gal) X } \frac{\text{(\% cryo-tek - \% cryo-tek in system)}}{\text{(\% cryo-tek used - \% cryo-tek in system)}} = \text{Number of gallons of cryo-tek product to be added.}$$

If the corrosion inhibitor tests low, add one 8 oz. container of **cryo-tek Inhibitor** for every 20 gallons of fluid capacity of the system. If the total system capacity is less than 20 gallons, add one 8 oz. container of **cryo-tek Inhibitor**. If after inhibitor addition and thorough system mixing the corrosion inhibitor still tests low, add another 8 oz. container of **cryo-tek Inhibitor** for every 20 gallons of system capacity. If after this addition the inhibitor still tests low, the system should be drained, cleaned, and recharged with fresh **cryo-tek**.

ADDITIONAL APPLICATIONS

FOR TOILETS: Drain tank and bowl then add 1 quart or more of undiluted **cryo-tek Original** to each toilet bowl to prevent freeze-up.

FOR BOATS AND TRAILERS: For boats and trailers with pressurized hot water systems, see TABLE III. For these systems, disconnect water tank and join inlet and outlet to form a bypass. Drain water tank thoroughly and add **cryo-tek Original** (diluted to desired freeze protection, see Table III) to displace possible water pockets.

TABLE III (Boats and Trailers)

Size of Boat/Trailer	Add Cryo-tek Original to capacity of water tank
Under 18 ft.	2-3 gal.
18 ft. - 23 ft.	3-4 gal.
23 ft. and over	4-5 gal.

MATERIAL SAFETY INFORMATION

FOR MORE INFORMATION ON THIS PRODUCT,
REQUEST MATERIAL SAFETY DATA SHEET (MSDS) #41 cryo-tek Original,
(MSDS) #40 cryo-tek -100,
(MSDS) #42 cryo-tek AG.

For Delivery by Fax	Call 1-800-942-4636
Internet	See MSDS section of www.herchem.com
Mail	Contact Hercules at address below or any Hercules representative

HMIS Hazard Warning 0-0-0-A.

INGREDIENTS	CAS#
PROPYLENE GLYCOL NJ-T.S.R. #31348300 5018P, 5002P	57-55-6

*For special applications which may not be covered on this or other Hercules literature, please contact Hercules Technical Services Department by phone 1-800-221-9330, or fax 1-800-333-3456, or visit our technical database web-site at www.herchem.com.

Hercules Chemical Company, Inc.
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ISO 9001: 2008 Certified

AN EMPLOYEE OWNERSHIP CORPORATION

SAFETY DATA SHEET

1. Identification

Product identifier Hercules Cyrotek-100 AL

Other means of identification

Product code 7313E

Synonyms Part Numbers: 35283, 35291

Recommended use Engineered Heat Transfer Fluid for Aluminum boilers

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company Name HCC Holdings, Inc. an Oatey Affiliate

Address 4700 West 160th Street
Cleveland, OH 44135

Telephone 216-267-7100

E-mail info@oatey.com

Transport Emergency Chemtrec 1-800-424-9300 (Outside the US 1-703-527-3887)

Emergency First Aid 1-877-740-5015

Contact person MSDS Coordinator

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement The mixture does not meet the criteria for classification.

Precautionary statement

Prevention Observe good industrial hygiene practices.

Response Wash hands after handling.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Propylene glycol	57-55-6	55-65
Water	7732-18-5	45-55
NJTSR #31348300 5065P	N/A	1-5

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.

Skin contact Rinse skin with water/shower. Get medical attention if irritation develops and persists.

Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Use water spray to reduce vapors or divert vapor cloud drift. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Avoid prolonged exposure. Use care in handling/storage.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value	Form
Propylene glycol (CAS 57-55-6)	TWA	10 mg/m3	Aerosol.

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) 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.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.

Other	Wear suitable protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Orange or Green.
Odor	Odorless.
Odor threshold	Not available.
pH	7 - 8.5
Melting point/freezing point	Not available.
Initial boiling point and boiling range	212 °F (100 °C)
Flash point	> 212.0 °F (> 100.0 °C)
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	1.05
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	8 cP
Other information	
VOC (Weight %)	60.6 % by weight

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity

Components	Species	Test Results
Propylene glycol (CAS 57-55-6)		
Acute		
Oral		
LD50	Rat	30 g/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.
Further information	This product has no known adverse effect on human health.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components		Species	Test Results
Propylene glycol (CAS 57-55-6)			
Aquatic			
Crustacea	LC50	Ceriodaphnia dubia	18340 mg/l, 48 hours
Fish	LC50	Pimephales promelas	46500 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

Propylene glycol (CAS 57-55-6) -0.92

Mobility in soil No data available.

Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

15. Regulatory information

US federal regulations

This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - No Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical	No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)	Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Not regulated.

US. New Jersey Worker and Community Right-to-Know Act

Propylene glycol (CAS 57-55-6)

US. Pennsylvania Worker and Community Right-to-Know Law

Propylene glycol (CAS 57-55-6)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 22-April-2015

Revision date -

Version # 01

HMIS® ratings Health: 0
Flammability: 0
Physical hazard: 0

NFPA ratings

Disclaimer HCC Holdings Inc. an Oatey Affiliate cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

FACTS Faxed FAST! SM

OSHA-Required Health And Safety Information!

This Material Safety Data Sheet (MSDS) was requested moments ago from Hercules Automated Fax Information System. Please forward it immediately to the person in charge of MSDS's, or retain it at the machine until claimed.

Section 1

MATERIAL SAFETY DATA SHEET # 40

Hercules Cryotek ™ -100 & -100/Al

HERCULES® MATERIAL SAFETY INFORMATION SERVICE

Date Prepared: 6/29/1990 **Last Reviewed:** 4/17/2012

Meets OSHA 29 CFR 1910.1200

Hercules Chemical Company Inc.
111 South Street
Passaic NJ 07055
Phone (800) 221-9330
Fax (800) 333-3456

Section 2 - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s), CAS Numbers)	OSHA PEL	ACGIH TLV	Other Limits	Upper Bound Limit If SARA Reportable
This product is not classified as hazardous in accordance with OSHA 1910.1200				

HMIS Hazard Rating: Health: 0 Flammability: 0 Reactivity: 0 Personal Protection: A

Section 3 - Physical/Chemical Characteristics

Boiling Point (°F):	Specific Gravity (H2O = 1):	Vapor Density (Air = 1):	Vapor Pressure (mm Hg):
230°	1.04	2.62	At 20° C 0.22

Melting Point (° F)	Evaporation Rate: (Butyl Acetate = 1)	Solubility in Water:
N/A		Soluble

Appearance And Color: Pink or Orange liquid **Odor:** Odorless

Section 4 - Fire And Explosion Hazard Data

Flash Point:	Flammable Limits:	LEL:	UEL:
N/A	None		

Extinguishing Media: Water fog, alcohol foam, dry chemical.

Special Firefighting Procedures:
None

Unusual Fire And Explosion Hazards:
None

Continued on Next Page

Section 5 - Reactivity Data

Stability: Stable **Conditions To Avoid:** None

Incompatability (Materials To Avoid): Oxidizing materials.

Hazardous Decomposition: None

Hazardous Polymerization: Will Not Occur

Section 6 - Health Hazard Data

Routes of Entry: **Inhalation** N/A **Skin** N/A **Ingestion** N/A

Health Hazards:

Very low single dose oral toxicity; eye and skin essentially no effect.

Carcinogenicity: **NTP** NO **IARC** NO **OSHA Regulated** NO

Signs And Symptoms of Exposure:

None

Medical Conditions Generally Aggravated By Exposure:

None

Emergency And First Aid Procedures:

EYE AND SKIN CONTACT: Like with all foreign material, flushing and washing with water is good safety and hygienic practice. INGESTION: Low in toxicity; induce vomiting if large amounts are ingested.

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Section 7 - Precautions For Safe Handling And Use:

Steps To Be Taken In Case Material Is Released Or Spilled:

Cover with absorbent material; let soak and sweep up.

Waste Disposal Method:

Incinerate or bury (landfill) away from water supplies in accordance with local regulations.

Precautions To Be Taken In Handling And Storing:

None

Other Precautions:

None

Section 8 - Control Measures:

Respiratory Protection:

None required.

Ventilation:	**Local Exhaust**	Adequate	**Special**	N/A
	Mechanical	N/A	**Other**	N/A

Gloves: None required.

Eye Protection: If possibility of splashing, use safety goggles.

Other Protective Clothing: None

Work/Hygienic Practices Wash thoroughly after handling.
