



RDMS DocID 00100112

November 12, 2002
File No. 42505

USEPA
Office of Site Remediation and Restoration
1 Congress Street
Suite 1100
Boston, MA 02114-2023

RCRA RECORDS CENTER
FACILITY Donham Craft
ID# CTD 66145000
FILE NO. R-13
OTHER _____



Re: Donham Craft, Inc.
Naugatuck, Connecticut

Attention: Mr. Juan Perez

27 Naek Road
Vernon
Connecticut 06066-3965
860-875-7655
FAX 860-872-2416
<http://www.gza.net>

Dear Mr. Perez:

Enclosed, please find the completed Documentation Of Environmental Indicators Determination form for RCRIS Code (CA750), Migration of Contaminated Groundwater Under Control, for the Donham Craft, Inc. facility in Naugatuck, Connecticut (Site). GZA GeoEnvironmental, Inc. (GZA) has completed this form on behalf of Donham Craft, Inc. as part of their voluntary RCRA Corrective Action initiative towards their goal of achieving Site stabilization. As a result of completing this form, a final determination of YE (yes) status code was determined with regard to the Migration of Contaminated Groundwater Under Control, RCRIS Code (CA750) for the Site. This determination was based on the results of historic groundwater monitoring at the Site as well as recent sampling efforts completed both on-Site and off-Site by Donham Craft. The relevant documentation used to arrive at this determination is included with this submittal.

Please contact the undersigned at (860) 875-7655 if you have any questions or comments regarding the completed Environmental Indicator Determination form or attached documentation.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Christopher J. Frey
Project Manager

Thomas F. Stark
Principal

cc: David Niven – Donham Craft, Inc.
Enclosure

GZA GEOENVIRONMENTAL, INC.
ENGINEERS AND SCIENTISTS
 27 Naek Road
 Vernon, Connecticut 06066
 860-875-7655
 860-872-2416 (Fax)

RCRA RECORDS R
 FILED BY Donham Craft
 I.D. NO. CTD001450006
 FILE NO. R13
 OTHER _____

TO: U.S. Environmental Protection Agency
New England - Region I
Office Of Site Remediation and Restoration
1 Congress Street Suite 1100 (HBT)
Boston, MA 02114-2023

Date:	11/13/02	Job No.	42799
Attention:	Mr. Juan Perez		
Re:	Donham Craft, Inc.		
	Naugatuck, CT		

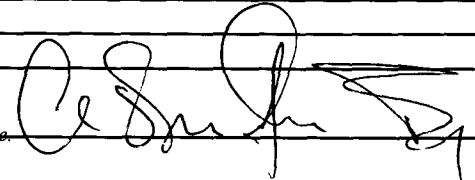
WE ARE SENDING YOU Attached Under Separate Cover via _____ the following items:
 Shop Drawings Prints Plans Samples Specifications
 Copy of Letter Change Order Bound Report

Copies	Date	No.	Description
1	Nov-02		EPA Environmental Indicators CA 750 Form
			Donham Craft, Inc.
			East Waterbury Road
			Naugatuck, Connecticut

THESE ARE TRANSMITTED as checked below:

For approval Approved as submitted Resubmit _____ copies for approval
 For your use Approved as noted Submit _____ copies for distribution
 As requested Returned for corrections Return _____ corrected prints
 For review and comment _____
 FOR BIDS DUE _____ 19 _____ PRINTS RETURNED AFTER LOAN TO US

REMARKS

COPY TO J. Bradshaw - Donham Craft, Inc. SIGNED: 
If enclosures are not as noted, kindly notify us at once.

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Donham Craft, Inc.
Facility Address: East Waterbury Road, Naugatuck, CT
Facility EPA ID #: CTD 00145006

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

If yes - check here and continue with #2 below.
 If no - re-evaluate existing data, or
 if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future. _

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

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2. Is groundwater known or reasonably suspected to be "contaminated"¹ above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

 X If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

 If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

 If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Groundwater monitoring has been conducted regularly at the subject site since July 1984 as part of the CT DEP/EPA-approved closure of two former metal wastewater treatment surface impoundments and a drying lagoon. A Site locus for the property is provided as Figure 1 and a site plan showing the facility property, the surface impoundments and other AOCs is presented as Figure 2, attached. Groundwater at the site is currently monitored under a Groundwater Monitoring Quality Assessment Plan submitted in February 1987 and revised June 15 and September 12, 1988. Revisions to the program were approved by the CT DEP in May 1989.

Under the approved program, groundwater is currently monitored on a semi-annual basis (June and December) at four upgradient wells (GZ-1, GZ-8, GZ-9 and GZ-12) and eight downgradient wells (GZ-2, GZ-3A, GZ-4, GZ-4A, GZ-7B, GZ-10, GZ-11 and OW-1). Monitoring well locations are shown on Figure 2. Monitoring well construction details for the RCRA monitoring wells installed at the property are summarized in Table 1. A historic summary of groundwater sampling parameters and frequency monitoring is presented in Table 2. A summary of historic groundwater standard exceedances reported at the site from July 1984 to December 2001 is presented in Table 3.

Cadmium has routinely exceeded the State Groundwater Protection Criteria (GPC) and Federal MCL in samples from upgradient monitoring well GZ-9 and occasionally in samples from upgradient monitoring wells GZ-1, GZ-8 and GZ-13. Cadmium has been reported above state and federal standards once in downgradient wells GZ-2 (October 1984), GZ-5 (January 1986), GZ-7 (June 1998) and GZ-7B (June 2001). The last reported exceedance at GZ-7B in June 2002 is thought to be an erroneous result as resampling of that well in July 2001 reported cadmium below detection limits. In general cadmium concentrations in groundwater at the site do not exhibit significant trends over time, except in GZ-9 where concentrations have appeared to decrease since 1988.

Chromium has occasionally been reported above state GWPC and federal MCLs in upgradient well GZ-1 and downgradient wells GZ-2, -3, -5 and -9 (i.e., January 1986: GZ-1, -2, -5; August 1986: GZ-3, -5 and June 1992: GZ-9). Chromium was also reported above State and Federal drinking water standards at GZ-7B in June and December 2001. However, chromium was reported below detection limits in both cases when resampled again (in July and January 2001, respectively) and are therefore believed to be the result of laboratory error and not representative of in-situ groundwater conditions.

Lead, also not historically reported above drinking water standards at the site, was anomalously reported above the GWPC and MCL at GZ-7B in June 2001 and GZ-1 and GZ-2 in December 2001. Groundwater was resampled in both wells due to the anomalous report of lead and chromium (see above) and other parameters. Lead was reported as below detection limits in all the re-samples.

In January 2001 Donham Craft had begun using a new, more local laboratory (ACT Laboratories, Middlefield, CT) after their previous laboratory ceased operations. The anomalous analyses experienced over the year 2001 correspond with the use of this new lab. Due to the anomalous and unreproducible results in lead and cadmium (and other indicator parameters not mentioned here), Donham Craft has contracted with Envirite Analytical Services of Watertown, Connecticut for all future analytical services.

In addition to the RCRA monitoring program, Donham Craft has also installed monitoring wells and sampled groundwater at the facility as part of Donham Craft, Inc.'s Voluntary Corrective Action Initiative. The well installation and sampling was completed in accordance with the April 1998 "Statement of Work, Stabilization Demonstration/Project Operations Program" (as amended May 25, 2000) and was completed as part of their evaluation of the on-going facility-wide groundwater quality assessment. The program included the installation of shallow overburden wells GZ-14 (located downgradient of AOC 8 - Dry Chemical Storage Barn) and GZ-15 (upgradient to the facility building) and the inclusion of former shallow observation well OW-1 and bedrock water supply well SW-A (both downgradient of the facility production building) into the VCA program in September of 2000. The installation of shallow groundwater monitoring wells GZ-16 (shallow overburden), GZ-17 (bedrock) and GZ-18 (shallow overburden) along the facility's southern property boundary was subsequently completed in the Summer of 2001.

Concentrations of chromium (at 0.52 mg/L) and cyanide (at 0.75 mg/L) were reported above the State GWPC and Federal MCL in shallow overburden well OW-1 (located downgradient of the facility operations building) when sampled on December 7, 2000. The above results prompted the sampling of five residential wells on East Waterbury Road south and downgradient of the Donham Craft facility on January 29, 2001 and the installation of wells GZ-16, -17 and -18 (located along the facility's southern boundary, between the facility building and the residences) and sampling of wells in December 2001. The laboratory analyses indicate concentrations of total chromium and cyanide (as well as lead and nickel) were below detection limits in all five residential well samples and below State and federal drinking water standards in the samples from wells GZ-16, -17 and -18. The above results did not indicate a plume of dissolved metals in groundwater extended from the area of OW-1 to the property boundary. The above investigations and our findings were summarized in letters previously submitted to EPA dated August 17, 2001 and January 31, 2002. Copies of the above letters and their attachments are provided in Appendix A and B, respectively

Iron, manganese and sodium have been reported above secondary (aesthetic) MCLs in upgradient and downgradient wells (most commonly in wells GZ-2, GZ-3A, GZ-5A and GZ-7B). Concentrations of these constituents have shown a downward trend since inclusion into the RCRA monitoring program in 1987.

Footnotes:

¹"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

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Environmental Indicator (EI) RCRIS code (CA750)
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3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"² as defined by the monitoring locations designated at the time of this determination)?

- X If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"²).
- If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"²) - skip to #8 and enter "NO" status code, after providing an explanation.
- If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Since 1984 all contaminant constituents in groundwater at the site have demonstrated either a downward trend in concentration or have stabilized within a fixed range of normal variability since closure of the lagoons and drying bed in 1984. Cadmium has decreased in concentration through time and has stabilized at concentrations close to, but above, MCLs in upgradient wells GZ-1 and GZ-9 and (with the exception of the anomalous results GZ-7B as reported previously) is below detection limits in downgradient wells. Cadmium was reported above drinking water standards on one occasion (June 2001) at GZ-7B. Again as stated previously, subsequent resampling of that well indicated cadmium to be below detection limits. Based on the resample result, the exceedance is thought to result from laboratory error.

Chromium has consistently been reported below state and federal protective standards at all wells over the last 10 years, with the exception of the one time exceedance of the GWPC and MCL at GZ-7B in June 2001. Subsequent resampling of the well in June 2001 showed chromium to be below method detection limits. Based on the resampling, the above exceedance is considered as an erroneous result.

Lead has also stabilized below state and federal protective limits. As stated in the previous section, lead was reported above the MCL in upgradient well GZ-1 and downgradient GZ-7B and GZ-2 in 2001. Resampling both later wells reported lead in groundwater below detection limits.

Nickel, chloride and sulfate have stabilized below protective limits. Iron, manganese and sodium show a continued downward trend in concentration but are still present above state and federal aesthetic standards.

A historical summary of groundwater monitoring analytical results from June 1984 to December 2001 and Graphical plots of groundwater monitoring analytical data with time are presented in Appendix C.

² "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

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5. Is the discharge of "contaminated" groundwater into surface water likely to be "insignificant" (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

 X If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

 If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

 If unknown - enter "IN" status code in #8.

Rationale and Reference(s): Concentrations of contaminant constituents have generally been reported below Connecticut Surface Water Protection Criteria (SWPC). In addition, all concentrations have been significant less than 10 times their appropriate groundwater level (GWPC) in wells at the downgradient property line.

Cadmium was reported above the state SWPC (of 6 ug/L) in downgradient well GZ-7 in June 1992 and GZ-7B in December 2001. Resampling of groundwater at GZ-7B in December 2001 showed cadmium to be below detection limits.

Lead was reported above the state SWPC (13 ug/L) in well GZ-7B in June 2001 and GZ-2 in December 2001. Resampling of both those wells subsequently showed lead as below detection limits. GZ-5 also was reported to contain lead above the SWPC in December 1999.

Fulling Mill Brook is a Class A surface water body but is not used as a drinking water supply. No conditions are known at the site which might cause an unacceptable risk to the surface water or ecology of that water body.

³ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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Environmental Indicator (EI) RCRIS code (CA750)
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6. Can the discharge of “contaminated” groundwater into surface water be shown to be “currently acceptable” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁴)?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment “levels,” as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of “contaminated” groundwater can not be shown to be “currently acceptable”) - skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter “IN” status code.

Rationale and Reference(s): _____

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

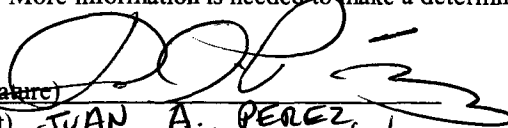
Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
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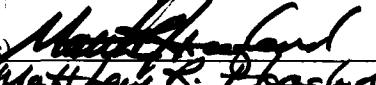
8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

X YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Donham Craft, Inc. facility, EPA ID # CTD 00145006 , located at East Waterbury Road, Naugatuck, CT . Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

NO - Unacceptable migration of contaminated groundwater is observed or expected.

IN - More information is needed to make a determination.

Completed by (signature)  Date 8/5/2003
(print) JUAN A. PEREZ
(title) Environmental Scientist

Supervisor (signature)  Date 9/25/03
(print) Matthew R. Phaglund
(title) Section Chief
(EPA Region or State) Reg. I

Locations where References may be found:

RFM Desk file for facility
 EPA Region I Record Center
 CT DEP - Hartford

Contact telephone and e-mail numbers

(name) _____
(phone #) _____
(e-mail) _____

TABLES

TABLE 1
SUMMARY OF MONITORING WELL COMPLETION DETAILS

Donham Craft, Inc.
Naugatuck, Connecticut

MONITORING WELL	MEASURING POINT (Ms. Pt.)	Ms. Pt. ELEVATION (ft-MSL)	WELL LOCATION TO REGULATED UNIT	ELEVATION TOP OF TILL/ TOP OF ROCK (ft-MSL)	TOTAL BORING DEPTH (ft.)	SCREEN OR OPEN CORE DEPTH (1) (geologic & materials) (ft.)	SCREEN(S) OR OPEN CORE (OC) ELEVATION (ft-MSL)	WATER ELEVATION 12/4/2001 (ft.)	TOP OF WATER STRATA	COMPLETION DATE
GZ-1	Top of PVC	538.5	Upgradient	< 515/UNK	21.5	9.8-19.8 (sand)	S: 528.7-518.7	523.3	Brown fine to coarse Sand, little Gravel	4/24/1984
GZ-2	Top of PVC	498.4	Sidegradient/ Downgradient	495.4/472.9	33.7	25.2-33.7 (rock)	OC: 473.1-464.6	480.0	Till	4/23/1984
GZ-3 (abandoned 6/92)	Top of PVC	495.8	Downgradient	494.6/489.3	15	9-14.0 (rock)	OC: 486.8-481.8	-	(Till)	4/25/1984
GZ-3A	Top of PVC	496.2	Downgradient	494.3/484	19	14-19 (rock)	S: 482.2-477.2	492.0	Till	6/12/1992
GZ-4	Top of PVC	528.1	Sidegradient/ Downgradient	518.8/503.3	30.1	19.7-29.7 (weathered rock)	S: 508.3-498.3	510.7	Till	4/26/1984
GZ-5 (abandoned 6/92)	Top of PVC	498.3	Downgradient	495.7/480.5	23	20.8-23.0 (rock)	OC: 477.5-475.3	-	(Till)	6/26/1984
GZ-5A	Top of PVC	498.7	Downgradient	496.0/482.1	24.5	19.3-24.3 (rock)	S: 479.3-474.3	483.0	Till	6/15/1992
GZ-6 (abandoned 9/00)	Top of PVC	499.1	Downgradient	496.0/486.8	20.5	21.5-17.5 (rock)	S: 481.6-477.6	-	Sand/Till	4/13/1987
GZ-7 (abandoned 6/92)	Top of PVC	499.1	Downgradient	496.6/<480.6	16	10-15 (till)	S: 489.1/484.1	-	(Till)	4/14/1987
GZ-7A (abandoned 9/00)	Top of PVC	500.0	Downgradient	496.0/482.1	14.5	4.5-14.5 (till)	S: 495.5-485.5	-	Till	6/15/1992
GZ-7B	Top of PVC	499.1	Downgradient	<487.1/UNK	12	2-12 (till)	S: 497.1-487.1	486.8	Sand/Till	9/20/2000
GZ-8	Top of PVC	537.2	Upgradient	516.8/504.8	42	34-41 (rock)	OC: 503.2-496.2	518.4	Sand	4/15/1987
GZ-9	Top of PVC	537.5	Upgradient	516.8/(+/-)505	25	20-25 (till)	S: 517.4-512.4	518.8	Sand	4/15/1987
GZ-10	Top of PVC	523.6	Sidegradient	506.9/490.9	36	31-36 (rock)	S: 492.3-487.3	495.8	Till	4/16/1987
GZ-11	Top of PVC	522.3	Sidegradient	506.9/(+/-)491	20	15-20 (till)	S: 507.3-502.3	506.8	Sand/Till	4/17/1987
GZ-12	Top of PVC	542.2	Upgradient	< 522/UNK	19	13-18 (till)	S: 529.9-524.9	527.1	Sand	7/788
OW-1	Top of PVC	519.4	Sidegradient	506/<496	26	15.5-25.5 (till)	S: 507.3-497.3	499.1	Till	7/7/1988

(1) All monitoring wells are 2-inches in diameter
UNK = Unknown

TABLE 2
SAMPLING PARAMETERS AND FREQUENCY

Donham Craft
Naugatuck, Connecticut

DATE	7/84	10/84	1/85	4/85	9/85	1/86	4/86	8/86	2/87	4/87	9/87	12/87	4/88	6/88	9/88	12/88	3/89	6/89	9/89	12/89	6/90	12/90
Indicator Parameters																						
pH	X	X	X	--	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Specific Conductance	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TOC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TOX	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Groundwater Quality Parameters																						
Calcium	--	--	--	--	--	--	--	--	--	X	X	--	--	--	X	X	X	X	X	X	X	X
Chloride	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sodium	--	--	--	--	--	--	--	--	--	X	X	--	--	--	X	X	X	X	X	X	X	X
Sulfate	--	--	--	--	--	--	--	--	--	X	X	--	--	--	X	X	X	X	X	X	X	X
Total Hardness	X	X	X	X	X	X	X	X	X	X	X	X	X	X	--	--	--	--	--	--	--	--
TDS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	--	--	--	--	--	--	--	--
Phenols	--	--	--	--	--	--	--	--	--	X	X	--	--	--	X	--	--	--	--	--	--	X
Arsenic	--	--	--	--	--	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
Copper	X	X	X	X	--	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
Iron	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Manganese	--	--	--	--	--	--	--	--	--	X	X	--	--	--	X	X	X	X	X	X	X	X
Mercury	--	--	--	--	--	--	--	--	--	X	X	--	--	--	X	--	--	--	--	--	--	X
Nickel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
Tin	X	X	X	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gold	X	X	X	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	X	X	X	X	--	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
Total Cyanide	X	X	X	X	--	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
Free Cyanide	X	X	X	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Drinking Water Parameters																						
Cadmium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hexavalent Chromium	X	X	X	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Chromium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lead	X	X	X	X	--	--	--	--	--	X	X	--	--	--	X	X	X	X	X	X	X	X
Silver	X	X	X	X	--	--	--	--	--	X	X	--	--	--	X	--	--	--	--	--	--	X
HALOGENATED VOCs	--	--	--	--	X	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
NON-HALOGENATED VOCs	--	--	--	--	--	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
AROMATIC VOCs	--	--	--	--	X	--	--	--	--	X	X	--	--	--	--	--	--	--	--	--	--	--
WATER LEVEL MEASURED	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Notes:

- Sampling locations for the period 7/84 through 1/86 included GZ-1, GZ-2 and GZ-5.
- Sampling locations for the period 4/86 through 2/87 and 12/87 through 6/88 included GZ-1, GZ-2, GZ-3 and GZ-5.
- Sampling locations for the period 4/87 and 9/87 included GZ-1, GZ-2, GZ-3, GZ-4, GZ-6, GZ-7, GZ-8, GZ-9, GZ-10 and GZ-11.
- Sampling locations for the period 9/88 through 12/91 included GZ-1, GZ-2, GZ-3, GZ-5, GZ-7, GZ-9, GZ-10 and GZ-12.
- Sampling locations for the 6/92 sampling round included GZ-1, GZ-2, GZ-3, GZ-3A, GZ-5, GZ-5A, GZ-7, GZ-7A, GZ-9, GZ-10 and GZ-12.
- Sampling locations for the 12/92, 6/93 and 12/93 sampling rounds included GZ-1, GZ-2, GZ-3A, GZ-5A, GZ-7A, GZ-9, GZ-10 and GZ-12. Subsequently, GZ-10 was not sampled in the 6/94, 12/94, 6/95, or 12/95 sampling rounds.

TABLE 2
SAMPLING PARAMETERS AND FREQUENCY

Donham Craft
Naugatuck, Connecticut

DATE	6/91	12/91	6/92	12/92	6/93	12/93	6/94	12/94	6/95	12/95	6/96	12/96	6/97	12/97	6/98	12/98	6/99	12/99	6/00	12/00	6/01	12/01
Indicator Parameters																						
pH	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Specific Conductance	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TOC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TOX	X	X	X	X	X	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Groundwater Quality Parameters																						
Calcium	X	X	X	X	X	X	X	X	X	X	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sodium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sulfate	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Hardness	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TDS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols	--	X	--	X	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Manganese	--	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mercury	--	X	--	X	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	--	X	--	--	--	--	--	--	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gold	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Cyanide	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Free Cyanide	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Drinking Water Parameters																						
Cadmium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hexavalent Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Chromium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lead	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Silver	--	X	--	X	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HALOGENATED VOCs	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
NON-HALOGENATED VOCs	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
AROMATIC VOCs	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WATER LEVEL MEASURED	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Notes:

- Sampling locations for the period 7/84 through 1/86 included GZ-1, GZ-2 and GZ-5.
- Sampling locations for the period 4/86 through 2/87 and 12/87 through 6/88 included GZ-1, GZ-2, GZ-3 and GZ-5.
- Sampling locations for the period 4/87 and 9/87 included GZ-1, GZ-2, GZ-3, GZ-4, GZ-6, GZ-7, GZ-8, GZ-9, GZ-10 and GZ-11.
- Sampling locations for the period 9/88 through 12/91 included GZ-1, GZ-2, GZ-3, GZ-5, GZ-7, GZ-9, GZ-10 and GZ-12.
- Sampling locations for the 6/92 sampling round included GZ-1, GZ-2, GZ-3, GZ-3A, GZ-5, GZ-5A, GZ-7, GZ-7A, GZ-9, GZ-10 and GZ-12.
- Sampling locations for the 12/92, 6/93 and 12/93 sampling rounds included GZ-1, GZ-2, GZ-3A, GZ-5A, GZ-7A, GZ-9, GZ-10 and GZ-12. Subsequently, GZ-10 was not sampled in the 6/94, 12/94, 6/95, or 12/95 sampling rounds.

TABLE 3
SUMMARY
SITE STANDARD EXCEEDANCES⁽⁷⁾
Donham Craft
Naugatuck, Connecticut

DATE	ANALYTE					
	Cadmium	Chromium (Total)	Iron	Manganese	Sodium	Lead
Jul-84	--	--	GZ-5	NA (8)	NA	--
Oct-84	GZ-2	--	--	NA	NA	--
Jan-85	--	--	GZ-5	NA	NA	--
Apr-85	--	--	GZ-1, 2	NA	NA	--
Sep-85	--	--	--	NA	NA	--
Jan-86	GZ-5	GZ-1, 2, 5	GZ-5	NA	NA	--
Apr-86	--	--	GZ-3, 5	NA	NA	--
Aug-86	--	GZ-3, 5	GZ-3, 5	NA	NA	--
Feb-87	--	--	--	NA	NA	--
Apr-87	(6)	(6)	(6)	(6)	GZ-2, 3, 5, 6, 7, 8, 11	--
Sep-87	GZ-8, 9	--	GZ-4, 5, 8, 10	GZ-3, 6, 8, 10, 11	GZ, 2, 3, 4, 5, 6	--
Dec-87	--	--	--	NA	NA	--
Apr-88	--	--	--	NA	NA	--
Jun-88	--	--	--	NA	NA	--
Sep-88	GZ-9	--	GZ-5, 10	GZ-3, 10	GZ-5	--
Dec-88	GZ-9	--	GZ-3, 7, 12	GZ-3, 10	GZ-2, 3, 5, 7	--
Mar-89	GZ-9	--	GZ-3, 7, 12	GZ-3	GZ-2, 3, 5, 7	--
Jun-89	GZ-9	--	GZ-1, 2, 5, 10	GZ-3, 10	GZ-2, 3, 5, 7	--
Sep-89	GZ-9	--	GZ-5, 10	GZ-1, 3, 10	GZ-2, 3, 5, 7	--
Dec-89	GZ-9	--	GZ-1, 7, 10	GZ-3	GZ-2, 3, 5, 7	--
Jun-90	GZ-9	--	GZ-7, 10, 12, 13	GZ-3	GZ-2, 3, 5, 7	--
Dec-90	GZ-9	--	GZ-3, 10	GZ-3, 10	GZ-2, 5, 7	--
Jun-91	GZ-1, 9	--	--	GZ-3	GZ-2, 3, 5, 7	--
Dec-91	GZ-1, 9	--	--	GZ-1, 3	GZ-3, 5, 7	--
Jun-92	GZ-7, 9	GZ-9	GZ-7	GZ-1, 3A, 7, 12	GZ-2, 3, 3A, 5, 5A, 7, 7A	--
Dec-92	GZ-9	--	--	GZ-1, 3A, 7A	GZ-2, 5A, 7A	--
Jun-93	GZ-9	--	--	GZ-3A, 10	GZ-5A, 7A	--
Dec-93	GZ-9	--	--	GZ-1, 3A	--	--
Jun-94	GZ-9	--	--	GZ-3A	GZ-2, 3A, 5A, 7A	--
Dec-94	GZ-9	--	GZ-2, 5A, 7A, 12	GZ-1, 3A, 7A	GZ-2, 3A, 5A, 7A	--
Jun-95	GZ-9	--	--	GZ-1, 3A	GZ-2, 3A, 5A, 7A	--
Dec-95	GZ-9	--	--	GZ-3A	GZ-5A, 7A	--
Jun-96	GZ-9	--	--	GZ-3A	GZ-5A, 7A	--
Dec-96	GZ-9	--	GZ-5A	GZ-3A	GZ-2, GZ-5A	--
Jun-97	GZ-9	--	--	GZ-3A	--	--
Dec-97	GZ-1, 9	--	GZ-7A	GZ-3A	GZ-2, 3A, 5A, 7A	--
Jun-98	--	--	--	GZ-3A	GZ-5A	--
Dec-98	--	--	GZ-2, 14 (7A DUP)	GZ-3A	GZ-2, 5A	--
Jun-99	--	--	GZ-7A	GZ-3A	GZ-5A	--
Dec-99	GZ-1, 9, 13 (9DUP)	--	--	GZ-3A	GZ-2, 3A, 5A	--
Jun-00	GZ-9, GZ-9DUP	--	--	GZ-3A	GZ-5A	--
Dec-00	--	--	GZ-7B	GZ-3A	GZ-5A	--
Jun-01	GZ-7B*	GZ-7B*	GZ-7B	GZ-3A, GZ-7B	--	GZ-7B*
Dec-01	--	GZ-7B**	--	GZ-3A	GZ-5A	GZ-1, GZ-2**
STANDARD	ANALYTE					
	Cadmium	Chromium (Total)	Iron	Manganese	Sodium	Lead
EPA MCL (1)	0.01/0.005 (2)	0.05/0.10 (2)	--	0.05 (4)	--	0.015
DEP GPC (5)	0.005	0.05	--	--	--	--
Action Level (3)	0.005	0.05	0.30 (4)	0.05 (4)	28 (4)	--

- Notes:**
1. Maximum contaminant levels (MCLs) for inorganic chemicals established under the Safe Drinking Water Act of 1974.
 2. MCL changed in April, 1991 as follows: cadmium from 0.01 to 0.005 mg/l; chromium from 0.05 to 0.10. Results since 4/91 were compared to the new MCL.
 3. Connecticut Department of Health Action Level (AL) for Potable Supplies.
 4. Secondary (Aesthetic) MCLs or Advisory Level (Iron, Manganese, Sodium, TDS).
 5. The Connecticut Department of Environmental Protection has established Groundwater Protection Criteria as shown (adopted January, 1996).
 6. Metals data for 4/87 was considered suspect due to quality control concerns. See Phase II Assessment Study for details.
 7. Listed locations indicate samples from the particular locations which reportedly exceeded one or more of listed MCLs, Connecticut Health Code, or Connecticut Action Levels.
 8. NA - Not Analyzed.
- * Well was resampled on July 13, 01 and parameter was reported below detection limits.
 ** Well was resampled on January 8, 2001 and constituent was reported below detection limits.