

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

**RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)**

Current Human Exposures Under Control

Facility Name: Century Brass Products, Inc. (Retained Parcel)
Facility Address: Silver Street, Waterbury, Connecticut
Facility EPA ID #: CTD060008307

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, 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 #6 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 "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "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 "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

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).

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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>			<u>NO</u>
Air (indoors)	—	—	—				
Soil (surface, e.g., <2 ft)	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>YES</u>	<u>NO</u>	<u>NO</u>
Surface Water					—		
Sediment	<u>NO</u>	<u>NO</u>			<u>YES</u>	<u>NO</u>	<u>NO</u>
Soil (subsurface e.g., >2 ft)				<u>NO</u>			<u>NO</u>
Air (outdoors)	—	—	—	—	—		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated”) as identified in #2 above.
2. enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“___”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- _____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- X If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.
- _____ If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code

Rationale and Reference(s): See Attachment 2

³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Century Brass Products Inc. Retained facility, EPA ID # CTD060008307, located at Silver St., Waterbury, CT under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by (signature) David Ringquist Date 09/28/05
(print) David Ringquist
(title) Sanitary Engineer 3

Supervisor (signature) _____ Date 09/28/05
(print) Diane Duva
(title) Supervising Sanitary Analyst
(EPA Region or State) Connecticut

Locations where References may be found:

Connecticut Department of Environmental Protection, 79 Elm St., Hartford
Connecticut 06106

Contact telephone and e-mail numbers

(name) David Ringquist
(phone #) 860-424-3573
(e-mail) david.ringquist@po.state.ct.us

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

Attachment 1

Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “contaminated”¹ above appropriately protective risk-based “levels?”

Groundwater

Groundwater at the site is contaminated as shown by various monitoring wells at the site. See the attached Drawing 3 showing the location of the groundwater monitoring wells and the results of the monitoring. From a report completed by Loureiro Engineering Associates, Inc.: “Groundwater collected from the Site as part of this subsurface investigation was evaluated for the presence of VOCs, SVOCs, PCBs, [Connecticut’s Extractable Total Petroleum Hydrocarbons] (CT ETPH), cyanide, and various metals. Concentrations of several VOCs including PCE, TCE, 11DCA, cDCE, and VC, and several metals were reported in groundwater collected from the areas of the Site at concentrations indicative of one or more release(s) resulting from historical site activities such as the former dry cleaning operation/exterior drum storage area and metal hydroxide sludge landfill. The presence in groundwater of chlorinated hydrocarbons that may be degradation products of PCE (e.g. vinyl chloride, TCE), particularly in the vicinity of the metal hydroxide sludge area, indicates that natural degradation of chlorinated VOCs may be occurring in groundwater at the Site; however, such degradation may be occurring to a lesser degree on the northernmost portion of the Site. With the exception of copper and zinc, the concentrations of metals reported in groundwater do not exceed respective SWPC; however, the elevated concentrations of various metals (including copper and zinc) suggest that site groundwater has been impacted by one or more releases at the Site.....In several instances, the concentrations of zinc and to a lesser degree, PCE and copper, exceed respective SWPC”.

Air (indoors)

There are no buildings on the site, nor are there any within approximately 500 feet of the property boundary. This media is therefore not applicable to the site.

Soil (surface, e.g., <2 ft)

Soil at the site is contaminated as shown by recent analysis of soil samples at the site. See the attached Drawing 2 showing the location of the soil samples and the analytical results. From a report completed by Loureiro Engineering Associates, Inc.:

“Soil samples collected from the Site as part of the subsurface investigation were evaluated for the presence of VOCs, SVOCs, PCBs, CT ETPH, cyanide, and various metals, depending on proximity to certain potential or confirmed release areas,..... Generally, shallow soil at the Site was found to contain elevated concentrations of several metals, particularly copper, lead, and zinc; SVOCs; and VOCs. The presence of these contaminants in shallow soil support the CSM developed for the Site, in that historical operations including metal working, exterior storage of waste materials in drums, and dry cleaning operations, have resulted in an impact to underlying soil. Further, the presence of elevated SVOCs and metals at the Site correlates to the presence of relatively shallow deposits of fill materials including coal, ash, and slag. The concentrations of these constituents of concern exceed one or more of the [Connecticut Remediation Standard Regulations] (RSR) default, numeric criteria for soil (RDEC, IDEC, and GB PMC)”.

RDEC = Residential Direct Exposure Criteria

IDEC = Industrial/Commercial Direct Exposure Criteria

GB PMC = Pollutant Mobility Criteria for areas where the groundwater is classified as “GB”, i.e. not suitable for drinking without treatment.

Surface Water

The Mad River, bisecting the site, was tested by LEA and the results are presented as Attachment 7. These results show that the surface water is not contaminated above human health standards.

Sediment

Sediment in the Mad River is contaminated as shown by recent analysis of sediment samples. See the attached Drawing 2 showing the location of the samples and the analytical results. From a report completed by Loureiro Engineering Associates, Inc.:

“As part of the subsurface investigation completed at the Site, six sediment samples were collected from portions of the Mad River that transect the Site. Based on the presence of two select metals (copper and zinc) at elevated concentrations, it appears that groundwater discharging to surface water and potentially historical discharges from a former on-site tail race may have resulted in an impact to sediment quality in the river.”

Subsurf. Soil (e.g., >2 ft)

Soil at the site is contaminated as shown by recent analysis of soil samples at the site. See the attached Drawing 2 showing the location of the soil samples and the analytical results.

The following six paragraphs are from the Loureiro Engineering Associates, Inc. report:

“Subsurface soil samples were compared against the default, numeric direct exposure criteria (RDEC and IDEC), and pollutant mobility criteria for a GB groundwater classification area (GB PMC), as tabulated in the RSRs.

Direct Exposure Criteria

Metals were detected at concentrations exceeding the tabulated RDEC and IDEC criteria at two locations at the Site. Specifically, concentrations of arsenic and lead exceeded the RDEC and IDEC at one or more of the following locations: MW-012 (arsenic) and SB-011 (arsenic and lead).

CT ETPH were detected at concentrations exceeding the RDEC in borings MW-010 and MW-012. These two locations are located on the northern portion of the Site. Boring MW-010 is located within the Building 5 Former Drum Storage Area. Boring MW-012 is located within an area identified as a former head race, east of Building 5 at the Site.

SVOCs were detected at concentrations above the RDEC and IDEC at one location at the Site. Concentrations of the following SVOCs exceeded the noted default, numeric criteria tabulated in the RSRs: benzo(a)anthracene (RDEC and IDEC), benzo(b)fluoranthene (RDEC and IDEC), benzo(a)pyrene (RDEC and IDEC), indeno(1,2,3-c,d)pyrene (RDEC).

The compound PCE was detected at concentrations above the RDEC in locations SB-007 and SB-008. Both of these locations are located in the Building 5 Former Drum Storage Area.

Pollutant Mobility Criteria

SVOCs were detected at concentrations above the GB PMC at only one location at the Site, MW-010. Specifically, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, carbazole, and chrysene, exceeded their respective criteria as tabulated in the RSRs. Boring MW-010 is located within the Building 5 Former Drum Storage Area. VOCs were detected at concentrations exceeding the GB PMC in two locations. Specifically, PCE and TCE were both detected at a concentration exceeding the GB PMC in boring SB-007. PCE was also detected at a concentration exceeding the GB PMC in boring SB-008. Both of these sampling locations are located within the Building 5 Former Drum Storage Area.”

Air (outdoors)

There are no on-going processes or sources of soil contamination at the site that would produce significant air emissions. Although ambient air was not monitored, CTDEP made the judgment that it is not reasonably suspected to be contaminated above appropriately protective risk-based levels.

Attachment 2

Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Groundwater

There are no pathways between contaminated groundwater and any of the possible receptors under current conditions. The site is located in Waterbury where city water is provided to the residential properties adjacent to the site, therefore groundwater is not used as a drinking water source. In addition, contaminants in the groundwater that originate at the site are unlikely to migrate offsite since the groundwater discharges to the Mad River, as discussed in the Loureiro report: *“Based on an evaluation of groundwater elevation data, groundwater along the eastern portion of the Site appears to discharge to the Mad River, which transects the Site from south to north. Based on the near proximity of certain well locations to the Mad River and the interpreted groundwater flow direction, it appears that groundwater data collected as part of this subsurface investigation is representative of groundwater discharging into the Mad River.”* (See Drawing 3, groundwater contour map).

Soil (surface, e.g., <2 ft), Surface Water, Sediment

Because this is an abandoned site that has a poorly maintained perimeter fence and no trespassing signs, the only potential human receptors under current conditions are trespassers.

Soil (subsurface e.g., >2 ft)

There are no pathways between contaminated subsoil and the intermittent trespasser, the only potential human receptor. These people are unlikely to excavate soil that would result in an exposure to contaminants in soil greater than two feet deep. In fact, in the past 15 years since the site has been abandoned, there has been no observed evidence of this activity at the site.

Attachment 3

Can the **exposures** from any of the complete pathways identified in #3 (of the checklist) be reasonably expected to be “**significant**”⁴ (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

Soil (surface, e.g., <2 ft), Surface Water, Sediment

Because this is an abandoned site, the only potential human receptors under current conditions are trespassers. Exposures from complete pathways between contaminated surface soil, surface water (Mad River), sediment (Mad River) and trespassers are not reasonably expected to be significant due to the very low exposure frequency resulting from:

- The limited exposure time. Trespassers are generally on foot or bicycle. They pass through the site and spend very little time at the site. Motorcycles and all-terrain vehicles have been observed at the site. This appears to occur infrequently as there are no worn trails, a common characteristic of high-use areas;
- The local law enforcement agency makes an effort to keep people out of the site;
- There are a limited number of areas at the site (as shown on Drawing 2) that are contaminated to levels that exceed risk-based criteria.
- It is unlikely that trespassers would use the Mad River for swimming or fishing. These activities have never been observed or reported during the 15 years the CTDEP has been overseeing this site. The Mad River at this location is not an attractive location for either of these uses.
- The site has a perimeter fence and warning signs that, while not in perfect condition, are able to keep people from trespassing to some degree.

Attachment 4

Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within “existing area of contaminated groundwater” as defined by the monitoring locations designated at the time of this determination)?

Based on the data presented on Drawing 3 (attached) of the Loureiro report, we can conclude that contaminated groundwater is expected to remain within the existing area of contaminated groundwater because the groundwater discharges to the Mad River. This conclusion is supported by: 1) the groundwater contours on the eastern side of the Mad River, 2) comparison of VOC concentrations on the eastern side of the river to the western side, and 3) the elevated level of metals found in the Mad River sediments.

The groundwater contours, as shown on Drawing 3 of the Loureiro report (attached), show that the flow is toward the west and northwest, i.e. toward the river. The Loureiro report states: “Groundwater elevations for the Site (on the eastern side of the Mad River) exhibit a decreasing trend from southeast to northwest, indicating an overall flow direction of shallow groundwater towards the northwest and the Mad River. Based on an evaluation of the topographic and geologic maps, as well as the thickness and distribution of the unconsolidated deposits in the vicinity of the Site, it is possible that groundwater from deeper zones in the overburden aquifer beneath the Site migrates beneath the Mad River without directly discharging to the river in the immediate vicinity of the Site. However, the bedrock high located west and north of the Site would limit migration of overburden groundwater in that direction, and it is more likely that deeper groundwater from the Site follows the general trend of the Mad River Valley to the north.”

The VOC concentrations at monitoring well D3 (eastern side of river) show elevated levels of vinyl chloride, perchloroethylene, and trichloroethylene. These same constituents are all non-detect at well MW-11D, located on the opposite side and down stream of the river. Both wells are screened at similar depths.

The sediment contains elevated levels of lead and copper. This could be the result of either surface water run-off or the discharge of contaminated groundwater into the Mad River, or both.

Attachment 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)?

The discharge of contaminated groundwater into surface water is insignificant, based on a recent analysis of surface water samples that show no exceedances of the human or ecological risk-based standards. The surface water data can be found at Attachment 7. The surface water sample locations can be found on Drawing 1, attached.

Attachment 6
Bibliography

Loureiro Engineering Associates, Inc., 2005, Subsurface Investigation Report,
Former Centruy Brass Products, Waterbury, Connecticut

Attachment 7
Surface Water Analytical Data

	Sample Date	9/19/2005	9/19/2005	9/19/2005	9/19/2005
	Sample Time	10:15	11:15	13:50	14:25
	Laboratory	Spec	Spec	Spec	Spec
	Lab. Number	SA34453-10	SA34453-12	SA34453-14	SA34453-16
Date Metals Analyzed	Units	9/23/2005	9/23/2005	9/23/2005	9/23/2005
Arsenic	mg/l	<0.004	<0.004	<0.004	<0.004
Barium	mg/l	0.0227	0.0192	0.0185	0.0183
Cadmium	mg/l	<0.0012	<0.0012	<0.0012	<0.0012
Chromium, Total	mg/l	<0.0025	<0.0025	<0.0025	<0.0025
Copper	mg/l	0.0025	<0.0025	0.0028	0.0044
Lead	mg/l	<0.0038	<0.0038	<0.0038	<0.0038
Mercury	mg/l	<0.0002	<0.0002	<0.0002	<0.0002
Nickel	mg/l	<0.0025	<0.0025	<0.0025	0.0051
Selenium	mg/l	<0.0075	<0.0075	<0.0075	<0.0075
Silver	mg/l	<0.005	<0.005	<0.005	<0.005
Zinc	mg/l	<0.04	<0.04	0.0427	<0.04
Date VOCs Analyzed	Units	9/22/2005	9/22/2005	9/22/2005	9/22/2005
cis-1,2-dichloroethylene	ug/l	ND	ND	ND	5.5
Naphthalene	ug/l	ND	ND	ND	1.2
Tetrachloroethylene	ug/l	ND	ND	ND	4.8

Location	
SW-001	Upstream of site, at confluence of unnamed brook and Mad River.
SW-002	90' West of location MW-003.
SW-003	75' Northwest of location MW-007.
SW-004	Furthest downstream, collected beneath Silver St Express overpass.

EW-1	7/19/2005
Constituent	
As	2.21
Ba (unfiltered)	0.0726
Cd (unfiltered)	0.0182
Cu (unfiltered)	0.0118
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	6.4
TCE	12.7
TBTOC	9.1
Depth of Boring	-9.09
Depth of Groundwater	-9.09

MW-005	7/19/2005
Constituent	
As	1.20 - 12.20
Ba (unfiltered)	0.001
Cd (unfiltered)	0.0034
Cu (unfiltered)	0.0278
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	12.30
TCE	13.19
TBTOC	11.71
Depth of Boring	-11.71
Depth of Groundwater	-11.71

MW-009	7/18/2005
Constituent	
As	6.00 - 19.00
Ba (unfiltered)	0.0078
Cd (unfiltered)	0.0683
Cu (unfiltered)	ND
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	11.2
TCE	7.8
TBTOC	52.2
Depth of Boring	14.00
Depth of Groundwater	-11.71

MW-013	7/19/2005
Constituent	
As	11.00 - 20.0
Ba	0.0225
Cd	0.0031
Cu	0.0136
Zn	0.0377
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	20.00
TCE	16.60
TBTOC	6300005
Depth of Boring	14.00
Depth of Groundwater	-11.71

MW-010	7/18/2005
Constituent	
As	4.00 - 14.00
Ba	0.0057
Cd	0.0039
Cu	0.0157
Zn	0.0769
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	14.00
TCE	12.77
TBTOC	6300005
Depth of Boring	14.00
Depth of Groundwater	-12.77

MW-012	7/18/2005
Constituent	
As	2.00 - 12.00
Ba	0.0054
Cd	0.0167
Cu	0.05
Zn	0.243
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	12.00
TCE	9.10
TBTOC	6300005
Depth of Boring	12.00
Depth of Groundwater	-9.10

MW-004	7/18/2005
Constituent	
As	13.00 - 22.0
Ba (unfiltered)	0.0025
Cd (unfiltered)	0.0039
Cu (unfiltered)	0.0037
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	1.6
TCE	2.6
TBTOC	6300005
Depth of Boring	24.00
Depth of Groundwater	-17.41

MW-007	7/18/2005
Constituent	
As	13.00 - 22.0
Ba (unfiltered)	0.0025
Cd (unfiltered)	0.0039
Cu (unfiltered)	0.0037
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	1.6
TCE	2.6
TBTOC	6300005
Depth of Boring	24.00
Depth of Groundwater	-17.41

MW-008	7/18/2005
Constituent	
As	13.00 - 22.0
Ba (unfiltered)	0.0025
Cd (unfiltered)	0.0039
Cu (unfiltered)	0.0037
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	1.6
TCE	2.6
TBTOC	6300005
Depth of Boring	24.00
Depth of Groundwater	-17.41

MW-011	7/18/2005
Constituent	
As	13.00 - 22.0
Ba (unfiltered)	0.0025
Cd (unfiltered)	0.0039
Cu (unfiltered)	0.0037
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	1.6
TCE	2.6
TBTOC	6300005
Depth of Boring	24.00
Depth of Groundwater	-17.41

MW-001	7/18/2005
Constituent	
As	13.00 - 22.0
Ba (unfiltered)	0.0025
Cd (unfiltered)	0.0039
Cu (unfiltered)	0.0037
PHYSIC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
CS-C36, NOS	ND
Jet Fuel #4, #5	ND
Oil, Other	ND
CT EIPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
TCDE	1.6
TCE	2.6
TBTOC	6300005
Depth of Boring	24.00
Depth of Groundwater	-17.41

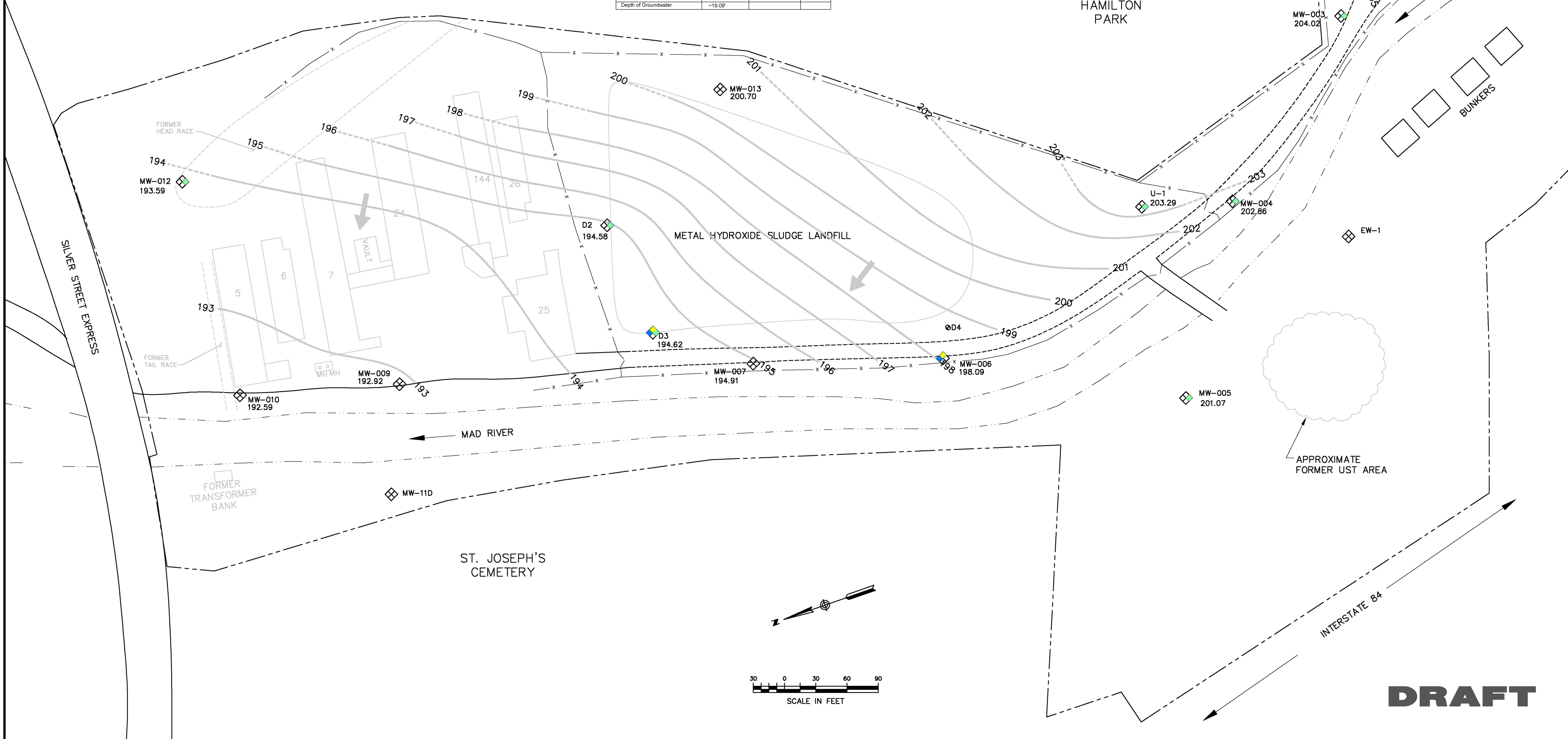
Groundwater Elevations - Subsurface Investigation
Century Brass, Hamilton Avenue, Waterbury, Connecticut - 18HW501.001
July 18, 2005

Monitoring Well ID	Reference Elevation - Top of Road Box (Feet - NGVDa)	Reference Elevation - Top of PVC Casing (Feet - NGVDa)	Well Construction	Screened Interval (feet)	Measured Depth to Water (Feet)	Well Depth (Feet)	Water Level Elevation (Feet - NGVDa)
MW-001	220.25316	219.96133	0.5" PVC	5 to 15	8.22	15.25	211.74
MW-002	219.34983	219.07346	0.5" PVC	3.5 to 13.5	8.02	13.00	211.05
MW-003	219.15540	217.90357	0.5" PVC	9 to 18	13.86	20.41	204.02
MW-004	215.75604	215.55750	0.5" PVC	11 to 20	12.70	21.47	202.86
MW-005	211.25823	210.81179	0.5" PVC	3.16 to 12.16	9.74	13.79	201.07
MW-006	212.53560	212.08792	0.5" PVC	11 to 21	14.00	22.81	198.09
MW-007	210.42703	210.21833	0.5" PVC	13 to 22	15.31	23.82	194.91
EW-1	212.43250	212.07905	Unknown	Unknown	NM	NM	---
MW-009	202.39728	202.18246	0.5" PVC	6 to 15	9.26	17.00	192.92
MW-010	202.27731	201.95504	1.5" PVC	4 to 14	9.37	17.75	192.59
MW-011	201.61656	201.40536	0.5" PVC	19 to 28	NM	NM	---
MW-012	200.73310	200.68864	1.5" PVC	2 to 12	7.10	14.40	193.59
MW-013	214.99471	214.78949	0.5" PVC	11 to 20	14.09	21.79	200.70
U-1	214.09737	213.98210	2" PVC	6 to 16	10.69	17.75	203.29
D-2	212.96427	212.80780	2" PVC	5.5 to 15.5	18.23	26.38	194.58
D-3	213.95294	213.82914	2" PVC	8 to 18	19.21	30.00	194.62
D-4	213.93838	213.42810	2" PVC	7 to 17	dry	13.60	---

a NGVD - National Geodetic Vertical Datum of 1929.
b Depths in feet below ground surface.
NM = Not Measured

LEGEND

- MANHOLE
- MONITORING WELL
- FORMER BUILDING OUTLINE (APPROXIMATE)
- EDGE OF PAVED ROAD
- EDGE OF GRAVEL ROAD
- FENCE
- PROPERTY LINE (APPROXIMATE)
- WATERCOURSE (APPROXIMATE)
- GROUNDWATER CONTOUR (DASHED IS INFERRED)
- GROUNDWATER FLOW DIRECTION



DATA BLOCK LEGEND

LOCATION IDENTIFIER	SAMPLE DATE	SCREENED INTERVAL
CA-80	06/19/2002	
Constituent	19.50 - 10.3	
METALS	0.0115	
Cd	0.0066	
Pb	0.466	
Zn	1.87	
VOCs	0.6 L	
TCDE	3.3	
TCE	103.50	
Depth of Boring	~ 11.64	
Depth to Groundwater		

DEPTH AS MEASURED ON SAMPLE DATE

- NOTES:**
- THE RESPECTIVE UNITS FOR GROUNDWATER IN WHICH QUANTIFIABLE CONCENTRATIONS ARE DETECTED ARE AS FOLLOWS: VOCs, SVOCs - MICROGRAMS PER LITER (ug/L); TPH AND METALS - MILLIGRAMS PER LITER (mg/L)
 - VOCs CATEGORY REFERS TO COMPOUNDS DETECTED USING EPA METHOD 8260.
 - GROUNDWATER CONTOURS GENERATED FROM DEPTH MEASUREMENTS TAKEN ON JULY 18, 2005
- GENERAL NOTES:**
- IN THE CASE OF A DUPLICATE SAMPLE AND CONSTITUENT DETECTS OR NON-DETECTS (ND), THEY ARE SEPARATED BY A SEMICOLON WITHIN THE SAMPLING INTERVAL WHERE THE DUPLICATION OCCURS.
 - ONLY DETECTED METALS (FILTERED OR UNFILTERED) ARE SHOWN ON THE DATA BLOCKS.
 - YELLOW HIGHLIGHTED AREA INDICATES EXCEEDANCE OF MARCH 2003 PROPOSED REVISION TO RSRs FOR RESIDENTIAL VOLATILIZATION CRITERIA.

LEGEND

- MONITORING WELL (MW)
- SAMPLE W/ DETECT BUT NO EXCEEDANCES
- SAMPLE ANALYZED BUT NO DETECTS

GROUNDWATER EXCEEDANCES

- INDUSTRIAL / COMMERCIAL VOLATILIZATION CRITERIA (I/CV)
- RESIDENTIAL VOLATILIZATION CRITERIA (RVC)
- SURFACE WATER PROTECTION CRITERIA (SWPC)
- GROUNDWATER PROTECTION CRITERIA (GWPC)

CONSTITUENT ABBREVIATIONS

METALS	MISC.
As	ARSENIC
Ba	BARIUM
Cd	CADMIUM
Cr	CHROMIUM (TOTAL)
Cu	COPPER
Pb	LEAD
Hg	MERCURY
Ni	NICKEL
Sr	SELENIUM
Ti	TITANIUM
Zn	ZINC
TPH	TOTAL PETROLEUM HYDROCARBONS
PHYSIC	POLYCHLORINATED BIPHENYLS
PHYSIC	PHYSICAL ANALYSES

CONSTITUENT CONCENTRATION QUALIFIERS

- ND NONE DETECTED; LESS THAN DETECTION LIMIT
- J ESTIMATED VALUE: COMPOUND PRESENT AT A CONCENTRATION BELOW THE METHOD DETECTION LIMIT
- L ESTIMATED VALUE: % DIFFERENCE OF DAILY CALIBRATION STANDARDS OUTSIDE CONTROL LIMITS
- L ESTIMATED VALUE: CONSTITUENT DETECTED ABOVE THE METHOD DETECTION LIMIT, BUT BELOW THE QUANTIFICATION LIMIT.
- H ESTIMATED VALUE: CONSTITUENT DETECTED ABOVE THE CALIBRATION RANGE. B CONSTITUENT DETECTED IN THE BLANK.

DESCRIPTION OF REVISION

REV.	DATE	DESCRIPTION
1	09/06/05	ISSUE FOR PERMIT
2	09/06/05	REVISED

SCALE
SHOW 18HW501.001
SCALE 1" = 100'

DATE
A.C.L. 09/06/05
K.M.C. 09/06/05

SUBSURFACE INVESTIGATION - FORMER CENTURY BRASS PRODUCTS SITE, WATERBURY, CT

GROUNDWATER SAMPLING LOCATIONS & GROUNDWATER CONTOUR MAP

LEA An Employee Owned Company
100 Northwest Drive • Plainville, Connecticut 06062

DRAWING
NO. 1 OF SHEETS 1

DRAFT

