DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: **AGFA Corporation**
Facility Address: **Route 25A and Randall Road, Shoreham, NY**
Facility EPA ID #: **NYD002044139**

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

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?

   __X__ 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

The AGFA site, also known as the Peerless Photo site, is located on approximately 16.2 acres in the Village of Shoreham, Suffolk County. The site is bounded to the south by NYS Route 25A, to the west by Randall Road, to the north by a Long Island Power Authority (LIPA) right-of-way (containing high-voltage lines) and residential properties, and to the east by Tesla Street and residential properties. The site is located in a predominantly residential area. (Figure 1)

The site was originally developed in 1903 when Nikola Tesla constructed a building that served as a residence and a laboratory. Mr. Tesla also constructed a radio tower on the site which was demolished in 1917 - 1918. The octagonal base of the tower formed a pit. The foundation of the former radio tower is called the Tesla Tower Base. The structure was the base of a tall tower that once existed on the property, and is approximately 90 ft in diameter. The New York State Office of Parks Recreation and Historic Preservation has concluded that the Tesla Laboratory building and the Tesla Tower Base met the criteria for inclusion in the New York State and National Register of Historic Places. (Figure 2)

Peerless Photo Products Inc. began operations at the site in 1939. In 1969, Agfa-Gaevert, Inc. purchased Peerless Photo Products. From 1939 to 1979, Peerless Photo Products disposed of untreated process water into 800 foot long by 25 foot wide recharge basins, referred as the North Recharge Basins. The process water contained the metals such as silver, cadmium, lead and other compounds. In 1979, an industrial wastewater treatment plant was constructed and a State Pollution Discharge Elimination System (SPDES) permit was issued to discharge treated effluent into the North Recharge Basins. The process water discharges ceased in 1987 as manufacturing activities at the site were discontinued. Chemical processing equipment at the plant was then either cleaned or removed from the site.

The Tesla Tower Base may have been used until 1973 for the disposal of unknown materials. The area inside the foundation walls is now level and vegetated.

The site is currently vacant. The entire site is enclosed by a 6-ft high chain-link fence. Agfa contractors visit the site several times per week for maintenance purposes. Current land use of the site is industrial, although both residential and nonresidential use is possible in the future.

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 known or reasonably suspected to be "contaminated."

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

Rationale:

A comprehensive site investigation was conducted by Agfa Corporation under the NYSDEC oversight between September 30, 1993 and June 2003. The investigation included the sampling of surface and sub-surface soils, and groundwater. The soils in several areas of the site were found to be contaminated with metals, most notably cadmium and silver. Groundwater samples were collected on eight occasions from on-site and off-site monitoring wells between 1994 and 2002.

The highest concentration of cadmium was reported at MW-6 (Tesla Tower Base) at a concentration of 269 ppb (August 1994). Cadmium was also detected at MW-2 (located downgradient and off-site) at approximately 135 ppb (August 1994) above the NYSDEC Ambient Water Quality Standards and Guidance Values for cadmium of 5 ppb. The extent to which cadmium was consistently present in groundwater at concentrations exceeding the applicable standards was restricted to monitoring wells located in the southern, upgradient portion of the site, and terminating at a location hydraulically down gradient of off-site monitoring well MW-2 but upgradient of off-site monitoring well MW-7S. (Figure 3)

Contaminant	Concentration Range in Soil	Concentration Range in Groundwater
Cadmium	ND to 435	ND to 0.269
Chromium	ND to10.8	ND to .072
Mercury	ND to 2.41	ND to .00019
Silver	ND to 11,000	NS to .003

Concentrations given in parts per million (ppm)

References:

Record of Decision, Peerless Photo Products Site # 1-52-031, NYSDEC June 30, 2004

[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).

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:

The trends observed in groundwater quality in site monitoring wells demonstrate the conditions are improving naturally. As of 2004, cadmium levels had remained stable or declined significantly in all monitoring wells from the initial sampling performed in August 1994 through December 2002. In November 2002, cadmium was detected at 7.87 ppb in MW-6, 79.8 in MW-2 and 2.02 ppb in MW-7S. The cadmium is limited to the upper portion of the aquifer. Data from well couplets demonstrated that cadmium concentrations in all deeper wells achieve the NYSDEC Ambient Water Quality Standards and Guidance Values. Silver was reported at concentrations below or only slightly above method detection limits in several monitoring wells, but has not been reported above method detection limits since 2001. The Briarcliff Road wellfield is located approximately 1,400 feet northwest from the Tesla Tower Base. A summary of 10 years of water quality data from the wellfield showed that the site-related contaminants were not detected at the public supply wells. This wellfield was closed and grouted by the Suffolk County Water Authority and is currently inactive.

References:

Record of Decision, Peerless Photo Products Site # 1-52-031, NYSDEC June 30, 2004

[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.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

____ If yes - continue after identifying potentially affected surface water bodies.

__X__ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

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

Rationale:

References:

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] 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)?

___ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] 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 judgement/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 concentration[3] 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 concentrations[3] 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.

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

Rationale:

References:

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 implemented[4])?

___ 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.

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[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.

Rationale:

References:

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

   __X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

   _____ If no - enter "NO" status code in #8.

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

Rationale:

The 2004 record of decision for this site selected monitoring with institutional controls as the remedy for groundwater. The 2008 Site Management Plan calls for semi-annual monitoring of wells from upgradient, within the contaminant plume and down gradient. As stated in the ROD, the purpose of this monitoring is to evaluate the effectiveness of the on-site remedy and to verify that the off-site plume does not adversely affect public health or the environment.

8. Check the appropriate RCRAInfo 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 AGFA Corporation, Route 25A and Randall Road, Shoreham, NY, EPA ID NYD002044139. 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: _____ Date: 3-31-2010
A. Paul Patel, P.E.
Environmental Engineer 2

Supervisor: _____ Date: 3-31-2010
Daniel J Evans, P.E.
Environmental Engineer 3

Director: _____ Date: 3-31-2010
Robert J. Phaneuf, P.E. - Acting Director
Bureau of Hazardous Waste and Radiation Management
Division of Solid and Hazardous Materials

Locations where References may be found:

New York State Department of Environmental Conservation, Central Office
Division of Solid and Hazardous Materials
625 Broadway 9th Floor
Albany, New York 12233-7252

Contact, telephone number and e-mail:

A. Paul Patel
(518) 402-8594
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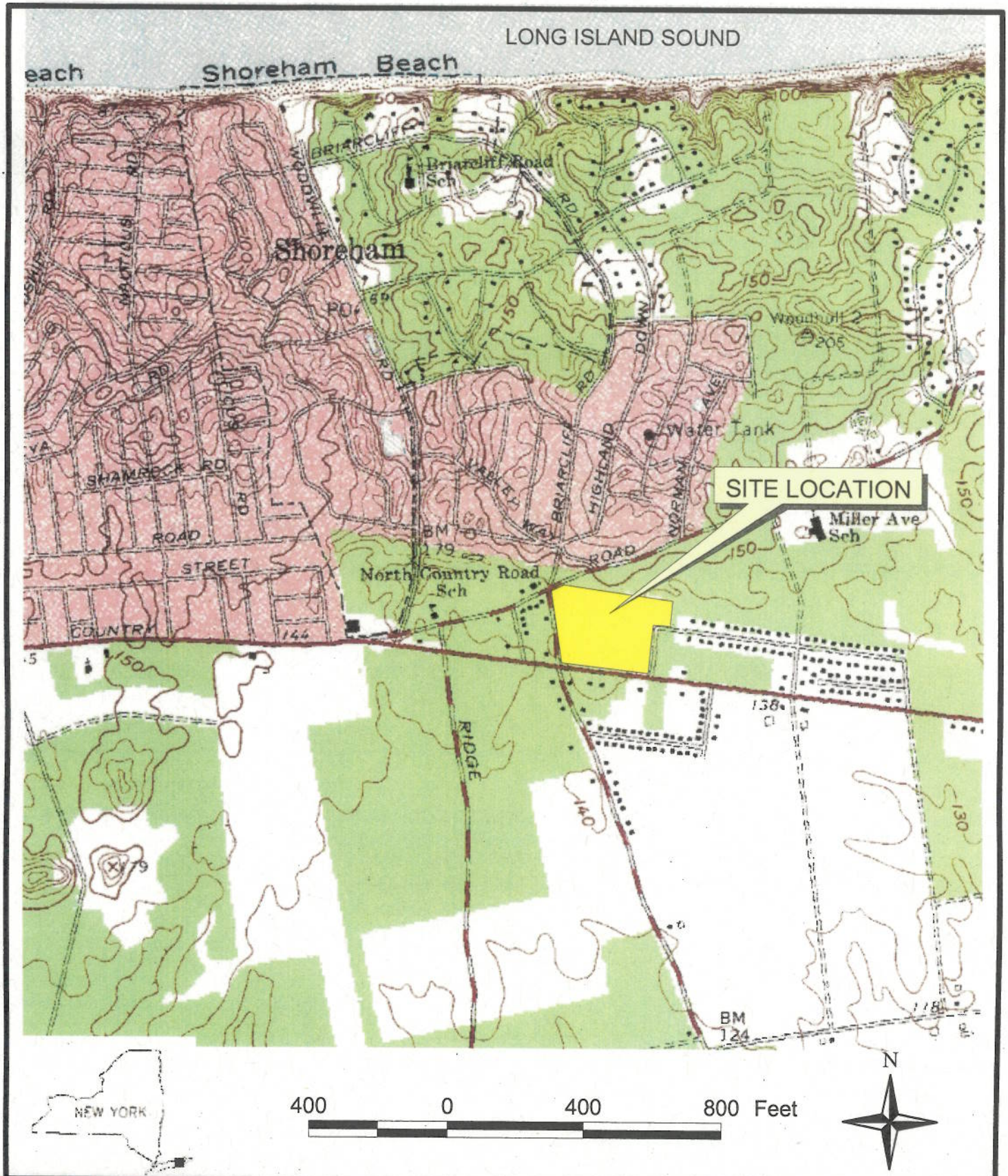
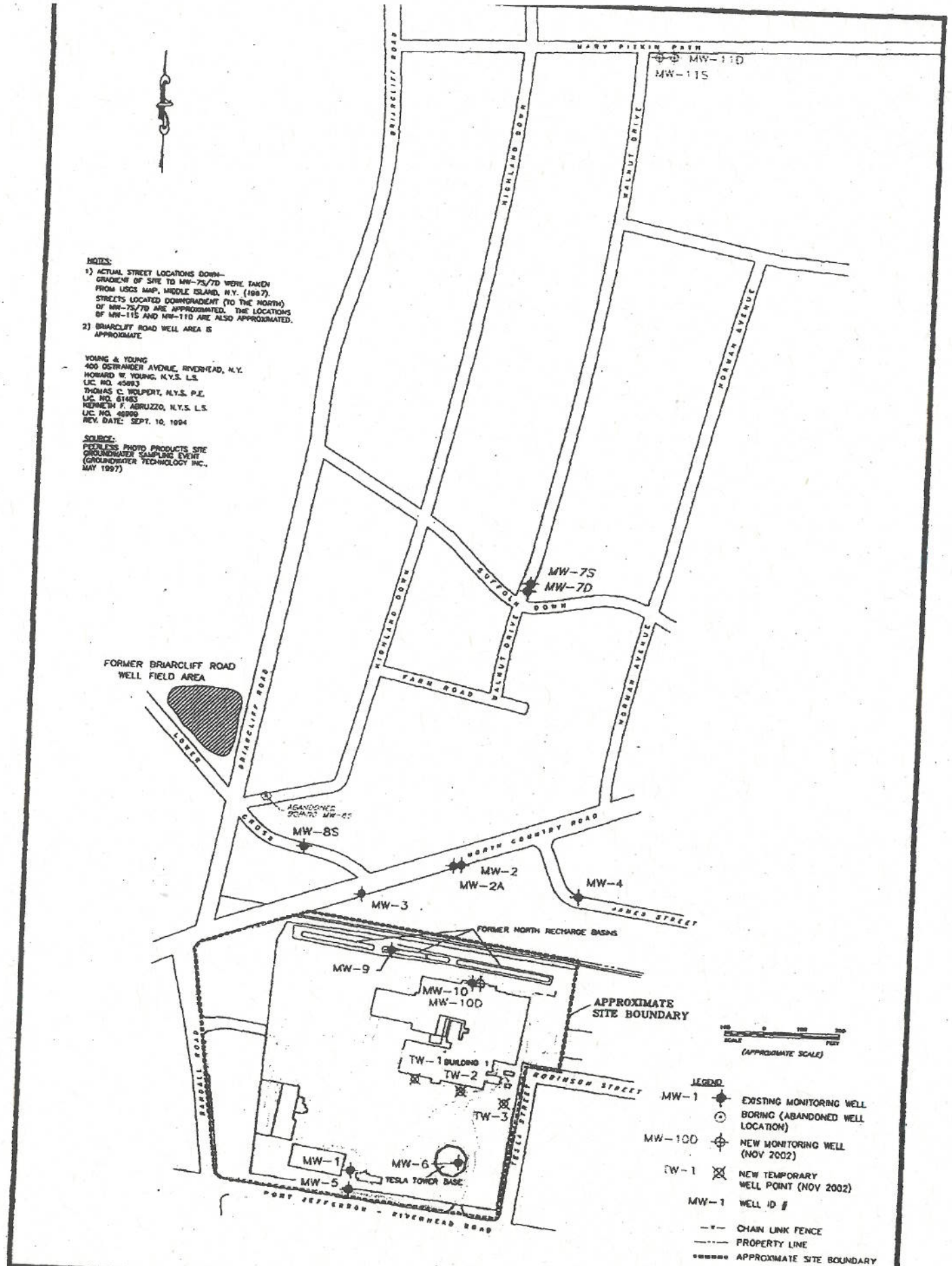
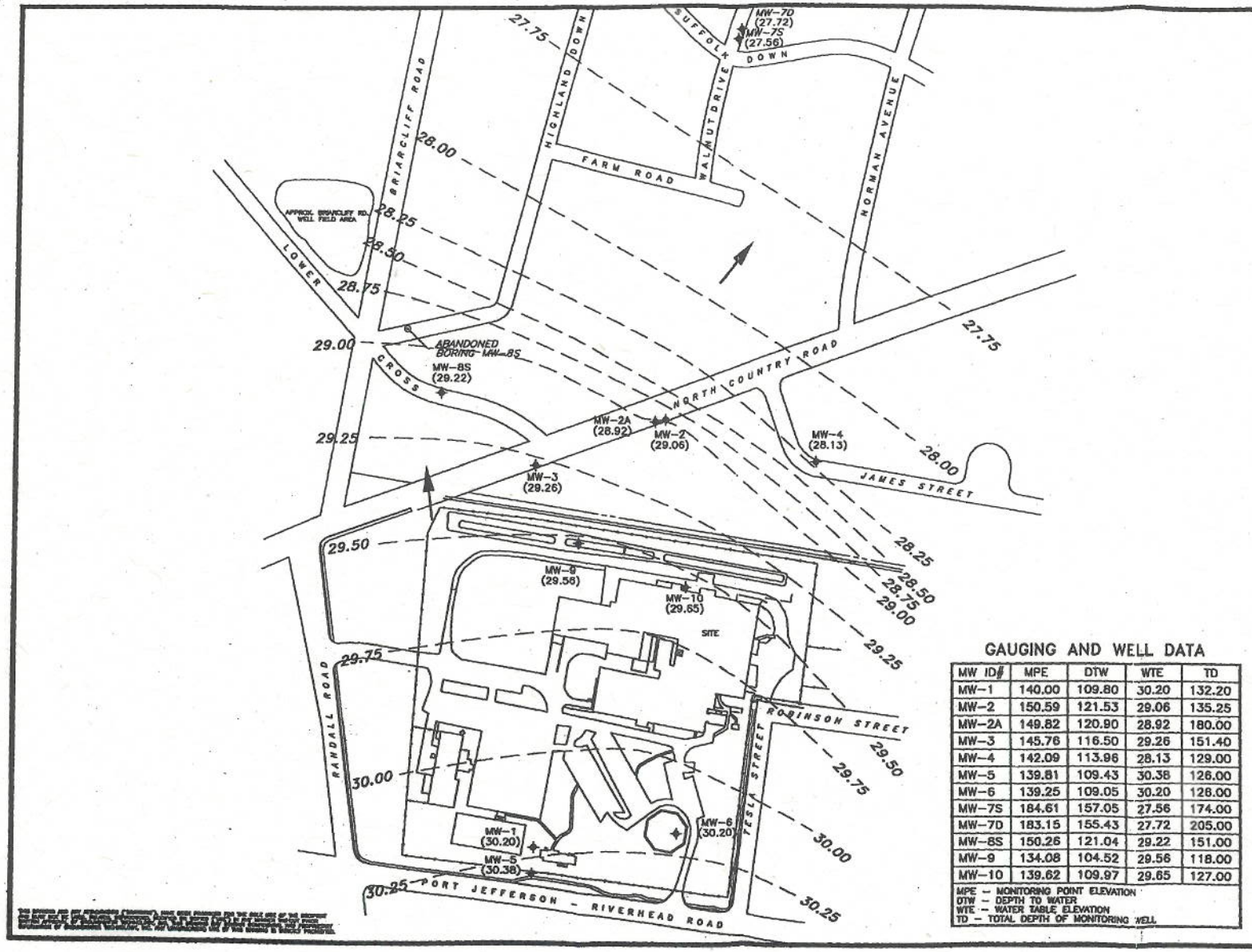


EA Engineering, P.C.	PEERLESS PHOTO PRODUCTS SITE SHOREHAM, NEW YORK			FIGURE 1 SITE LOCATION MAP			
PROJECT MGR: CK	DESIGNED BY: DC	CREATED BY: DC	CHECKED BY: CK	SCALE: AS SHOWN	DATE: 20 NOV 2002	PROJECT NO: 1371220	FILE NO: I:\AGFA\ AGFA.APR



EA ENGINEERING, P.C.	PEERLESS PHOTO PRODUCTS SITE SHOREHAM, NEW YORK	DETAILED SITE MAP	DATE: 8 OCT 2003	DRAWN BY: TB	PROJECT NO.: 13712.20	FIGURE 2
			SCALE: AS SHOWN	PROJECT MGR.: CK	FILE NAME: FIG1.DWG	



GAUGING AND WELL DATA

MW ID#	MPE	DTW	WTE	TD
MW-1	140.00	109.80	30.20	132.20
MW-2	150.59	121.53	29.06	135.25
MW-2A	149.82	120.90	28.92	180.00
MW-3	145.76	116.50	29.26	151.40
MW-4	142.09	113.96	28.13	129.00
MW-5	139.81	109.43	30.38	126.00
MW-6	139.25	109.05	30.20	126.00
MW-7S	184.61	157.05	27.56	174.00
MW-7D	183.15	155.43	27.72	205.00
MW-8S	150.26	121.04	29.22	151.00
MW-9	134.08	104.52	29.56	118.00
MW-10	139.62	109.97	29.65	127.00

MPE -- MONITORING POINT ELEVATION
DTW -- DEPTH TO WATER
WTE -- WATER TABLE ELEVATION
TD -- TOTAL DEPTH OF MONITORING WELL

NO.	DATE	BY	REVISION

LEGEND
- EXISTING MONITORING WELL
- BORING (ABANDONED WELL LOCATION)
- -x- CHAIN LINK FENCE
- PROPERTY LINE
- EQUIPOTENTIAL LINE
- INFERRED DIRECTION OF GROUNDWATER FLOW

MW-1 WELL ID #
(29.56) WATER TABLE ELEVATION IN FEET

AVERAGE GRADIENT = 0.18% NORTHEAST

N

100 0 100 200
SCALE FEET
(APPROXIMATE SCALE)

SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	

Figure 3

GT ENGINEERING
1245 KINGS ROAD
SCHENECTADY, NY 12303
(518) 370-5631

PEERLESS PHOTO PRODUCTS SITE
SITE ID# 1-52-031

AGFA DIVISION OF BAYER CORP.
RANDALL ROAD @ ROUTE 25A
SHOREHAM, NEW YORK
PHASE 2 REMEDIAL INVESTIGATION

GROUNDWATER CONTOUR MAP
28 MAY 1997

DESIGNED BY:	DETAILED BY:	CHECKED BY:
JLB	DEO	

DRAWING DATE:	ACAD FILE:
7/18/97	GWMAY97

PROJECT NO.:	CONTRACT:
01110-0673	

DRAWING: REVISION: