THIRD FIVE-YEAR REVIEW REPORT

FACET ENTERPRISES, INC. SUPERFUND SITE
CHEMUNG COUNTY, NEW YORK

Prepared by

U.S. Environmental Protection Agency
Region 2
New York, N.Y.

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Emergency and Remedial Response Division

Date

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List of Abbreviations

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	Contaminant of Concern
EPA	United States Environmental Protection Agency
FS	Feasibility Study
GPM	Gallons Per Minute
MCLs	Maximum Contaminant Levels
NAPL	Non-Aqueous Phase Liquid
NPL	National Priorities List
NYSDOH	New York State Department of Health
NYSDEC	New York State Department of Environmental Conservation
NYCRR	New York Code of Rules and Regulations
O&M	Operation and Maintenance
OU	Operable Unit
OWS	Oil/Water Separator
PCB	Polychlorinated Biphenyl
PPM	Parts Per Million
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SVOC	Semi-volatile Organic Compound
TCE	Trichloroethylene
TDS	Total Dissolved Solids
TSCA	Toxic Substances Control Act
SES	Sevenson Environmental Services
VOC	Volatile Organic Compound
WQR	Water Quality Regulations

Executive Summary

The Facet Enterprises, Inc. Superfund site is located in Elmira Heights, Chemung County, New York. The remedy for the site includes: the excavation of contaminated soils and sediments; the construction of a ground water pump and treat system; the construction of an on-site landfill; and the implementation of institutional controls. The trigger for this third five-year review was the previous five-year review signed on September 28, 2007.

Based upon reviews of the 1992 Record of Decision (ROD), operation and maintenance reports, a site visit conducted by U.S. Environmental Protection Agency (EPA) personnel on September 27, 2011, it has been determined that ground water data at the site requires further evaluation to ensure that the site-related contamination is effectively captured and treated by the existing remedy. Evaluation of the vapor intrusion exposure pathway at additional residences needs to be conducted. Therefore, a protectiveness determination for this site cannot be made until the noted additional information is obtained and evaluated.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Facet Enterprises, Inc.		
EPA ID: NYD 073675514		
Region: 2	**State:** NY	**City/County:** Town of Elmira Heights, Chemung County
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	**Has the Site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA **If "Other Federal Agency" was selected above, enter Agency name:** Click here to enter text.		
Author name (Federal or State Project Manager): Isabel Rodrigues		
Author affiliation: U.S.EPA		
Review period: 9/29/2007 – 09/15/2012		
Date of Site inspection: September 27, 2011		
Type of review: Statutory		
Review number: 3		
Triggering action date: 9/28/2007		
Due date *(five years after triggering action date)*: 9/28/2012		

Five-Year Review Summary Form (continued)

The table below is for the purpose of the summary form and associated data entry and does not replace the two tables required in Section VIII and IX by the FYR guidance. Instead, data entry in this section should match information in Section VII and IX of the FYR report.

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:
Click here to enter text.

Issues and Recommendations Identified in the Five-Year Review:

OU(s): 1	Issue Category: Remedy Performance			
	Issue: Vapor intrusion in residences near the site			
	Recommendation: Additional investigation necessary to identify any residences impacted by vapor intrusion associated with site-related contaminants.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
Yes	Yes	EPA	EPA	December 2015

OU(s): 1	Issue Category: Remedy Performance			
	Issue: Additional investigation necessary to identify any remaining source material on the property that may be impacting ground water.			
	Recommendation: Additional investigation necessary			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	December 2015

OU(s): 1	Issue Category: Remedy Performance			
	Issue: Additional investigation necessary to delineate the extent of ground water contamination downgradient of the existing pump and treat capture zone.			
	Recommendation: Additional investigation necessary			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	December 2015

Protectiveness Statement(s)

Include each individual OU protectiveness determination and statement. If you need to add more protectiveness determinations and statements for additional OUs, copy and paste the table below as many times as necessary to complete for each OU evaluated in the FYR report.

Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
OU-1	Short-term Protective	Click here to enter date.

Protectiveness Statement: A protectiveness determination of the remedy cannot be made at this time until further information is obtained and evaluated. Further information will be obtained by identifying any remaining source material that may be left on site and impacting ground water, delineating the extent of ground water contamination downgradient of the existing pump and treat capture zone, and completing the vapor intrusion investigation. It is expected that these actions will take approximately three years to complete, at which time a protectiveness determination will be made.

Sitewide Protectiveness Statement (if applicable)

For Sites that have achieved construction completion, enter a Sitewide protectiveness determination and statement.

Protectiveness Determination:	*Addendum Due Date (if applicable):*
Protectiveness Deferred	Click here to enter date.

Protectiveness Statement: A protectiveness determination of the remedy cannot be made at this time until further information is obtained and evaluated. Further information will be obtained by identifying any remaining source material that may be left on site and impacting ground water, delineating the extent of ground water contamination downgradient of the existing pump and treat capture zone and completing the vapor intrusion investigation. It is expected that these actions will take approximately three years to complete, at which time a protectiveness determination will be made.

I. INTRODUCTION

This third five-year review for the Facet Enterprises, Inc. Superfund site, located in Elmira Heights, Chemung County, New York was conducted by the (EPA) Remedial Project Manager (RPM) Isabel Rodrigues. The review was conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. 9601 *et seq*. and 40 CFR 300.430(f) (4) (ii) and in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of five-year reviews is to ensure that implemented remedies protect public health and the environment and that they function as intended by the site decision documents. This report will become part of the file for the Facet Enterprises site.

In accordance with the Section 1.3.3 of the five-year review guidance, this third five-year review is triggered by the signing date of the previous five-year review report. The five-year review is required by statute due to the fact that hazardous substances, pollutants or contaminants will remain at the site above levels that allow for unlimited use and unrestricted exposure. The second five-year review report was signed on September 28, 2007.

II. SITE CHRONOLOGY

Table 1 summarizes the site-related events.

III. BACKGROUND

Site Location

The site is located in the Village of Elmira Heights, Chemung County, New York. The Facet Enterprises, Inc. facility (the facility property) is bounded to the north by a municipal golf course, to the east by New York State Route 14, to the south by 18th Street, and to the west by residential properties. The Village of Elmira Heights is a mixture of residential, commercial and industrial development and wooded land. The closest residences are within 60 feet of the present manufacturing facility to the south and west.

Land and Resource Use

The site includes a 31-acre parcel of land, also referred to as the facility property, which was extensively used for various manufacturing purposes in the past. Currently, approximately one-half of the facility property is developed and being actively used. The facility property is zoned for commercial use and the surrounding area is zoned primarily for residential and commercial use. The facility property includes: an active manufacturing plant and the foundation and concrete slab of a former manufacturing plant; small production buildings, parking areas and a boiler house; and a small landfill. (See Figure 1)

Site Geology/Hydrogeology

The site lies along the western side of the Newtown Creek Valley, which consists of unconsolidated glacial deposits over bedrock. The unconsolidated deposits below the site consist mainly of glacial till in the western portion of the site grading to lake bed silts and clays with some fine sand in the eastern portion. Ground water in the shallow aquifer underlying the site generally flows southeast, similar to the regional flow direction.

History of Contamination

The facility was constructed in 1895 and was used by the Eclipse Bicycle Company for the manufacture of bicycles. In the early 1900's, the Eclipse Bicycle Company began manufacturing motorcycles and engine parts and changed its name to Eclipse Machine Company. During World Wars I and II, the Eclipse Machine Company manufactured military support parts, ammunition, airplane parts, and fuel pumps. In 1929, Bendix Aviation Corporation, later to become Bendix Corporation, acquired control of Eclipse Machine Company. Although the Eclipse name remained, Bendix controlled the company. From 1960 until 1975, Eclipse, as a division of Bendix, manufactured electric clutches and brakes. In 1974, Facet Enterprises, Inc. was organized as a result of an antitrust action between Bendix and the U.S. Federal Trade Commission in 1974. In 1989, Purolator Products Inc. (Purolator) became the corporate successor to Facet Enterprises, Inc.

Several investigations were conducted by EPA and the New York State Environmental Conservation (NYSDEC) beginning in 1979. In 1979, an initial facility inspection by NYSDEC resulted in the implementation of remedial measures which included excavation of surface water diversions, covering of past disposal areas with soil, and construction of a leachate collection system. A facility inspection was conducted by EPA in 1980, and additional sampling and investigation was conducted by EPA during March and June 1981. These investigations found that volatile organics, inorganic, pesticides, and polychlorinated biphenyl (PCB) compounds were present in surface soils, in soils and sediments in disposal areas, in surface water at the facility, and in the ground water.

Investigations divided the site into a number of study areas and extended beyond the property boundary into Mays Creek. Following is a summary of these areas, the past activities that occurred in each area, and a summary of the contamination identified in each are:

Area 1/Area 2 - Plating wastes, oil sludges, and grinding wastes were disposed of in this area between 1960 and 1971. Liquid wastes may have also been disposed in this area; lime was dumped here in an attempt to neutralize the waste prior to covering it with soil. Plating waste was thought to have been disposed of at Area 2 between 1960 and 1971. Attempts were apparently made to neutralize the waste prior to covering it with soil. A total of 27 samples from these areas were collected for chemical analyses from depths ranging from 1 to 12 feet below ground level. Soil collected from one boring in Area 2 had elevated levels of contaminants. The analytical results indicate the presence of cadmium (351 parts per million (ppm)), chromium (2410 ppm), and copper (1120 ppm). The maximum trichloroethene (TCE) concentration in soil was 110 parts per billion (ppb).

Area 3 - Plating waste, oil sludge, grinding waste and non-characterized liquids may have been disposed of at Area 3 between 1940 and 1965. After 1965, miscellaneous wastes (cinder blocks, metal grindings) were disposed of at Area 3 until 1980. During use, the area was periodically

covered and graded. Leachate outbreaks have been noted at the base of this disposal area. A total of 12 samples were collected for chemical analyses from this area at depths from 8 to 14 feet below ground surface. Elevated levels of chromium (2110 ppm), cadmium (72.3 ppm), and copper (270 ppm) were found in soil samples.

Area 4 - Oils and unknown liquid wastes were disposed of in this currently inactive lagoon between 1920 and 1971. Liquid from this area previously was discharged to the North Drainage Way via a swale which is now filled. In 1981, a soil sample collected from Area 4 contained PCBs at 320 ppm. A total of 13 samples from this area were collected for chemical analyses at depths ranging from 8 to 20.5 feet below ground surface. The soil borings in this area indicate a layer of fill approximately 8 feet thick saturated with oil product. Numerous volatiles and semi-volatiles were detected in Area 4 including toluene (210 ppb), PCB (Arochlor 1248 at 35 ppm).

Area 5 - Area 5 was previously used as a sludge disposal area containing wastewater treatment units and sand filter beds; metal hydroxide sludge was disposed of in Area 5 until 1965. After 1965, sludge was spread over the surface. The area has been filled and seeded. Sampling conducted by NYSDEC in 1981 detected the presence of cadmium and chromium in excess of 100,000 ppm and copper in excess of 10,000 ppm. Three samples out of the 21 samples collected at depths ranging from 8 to 20 feet below ground surface from Area 5 had elevated levels of chromium (13,000 ppm). TCE was detected in 14 soil samples in concentrations up to 240 ppb.

Area 6 - This area, constructed in the early 1970s, is a small pond originally designed to collect seepage and runoff from Areas 1 and 2. Chromic acid may have been treated near this area. Two surface soil samples collected from pond sediments had TCE in concentrations up to 130 ppb. Elevated levels of arsenic (588 ppm), cadmium (79 ppm), and chromium (1220 ppm) were also detected. Confirmatory sampling conducted during the Feasibility Study (FS), completed in order to determine the presence of Resource Conservation and Recovery Act (RCRA) hazardous waste, revealed that a sediment sample exhibited the characteristic for cadmium waste.

Area 7 - Ash from the production facilities was stored at Area 7 from the early 1940s to the mid 1950s. Three surface soil samples were collected from this area. PCB compounds were detected at concentrations ranging from 0.32 ppm to 5.3 ppm. Semi-volatile organics were detected in the one surface sediment sample at concentrations up to 22 ppm.

Area 8 - Sediments and oily soil have drained over time from a drain pipe from Area 4 into this area. Area 8 soils contained elevated concentrations of eighteen semi-volatile organic compounds at concentrations up to 69 ppm (benzo(b)fluoranthene). PCBs were detected at concentrations up to 11 ppm.

Area 9 - Ash from the production facilities was stored at Area 9 from the early 1940s to the mid 1950s. The one surface soil sample collected from Area 9 contained 1 ppm PCBs.

Area 10 - Heat treatment water, non-contact cooling water, and possibly oils were disposed of in this lagoon. The lagoon is no longer active but a surface water impoundment remains in this area. This area is thought to have once been a filter bed. Two sediment samples and one duplicate sample were collected from Area 10. PCBs were detected in sediments in concentrations up to 14 ppm. Cadmium (796 ppm), chromium (10,100 ppm), and copper (1,110 ppm) were detected in these surface sediment samples.

Plant 2 Yard - Grinding chips, machinery oil, and drummed waste were stored in this area from as early as 1940. The area has been graded and seeded. Soil sampling (24 samples including duplicate samples in soil boring samples collected from 0 - 8 feet below the ground surface.) conducted during the 1986 RI field work detected TCE in concentrations ranging from 3.4 ppb to 253 ppb. In addition the analyses revealed tetrachloroethylene (150 ppb), 1,1,1-trichloroethane (48.1 ppb), and 1,1 dichloroethane (8.58 ppb).

Oil/Water Separator - This area was used to segregate oil and particulates from runoff or treatment water at the facility. The oil/water separator is located at the southern boundary of the property. Twenty-two semi-volatile compounds (eight of which were in concentrations over 100,000 ppb) were detected in soil collected from near the oil/water separator. Soil samples contained slightly elevated levels of cadmium (41.4 ppm), copper (502 ppm), and zinc (675 ppm).

Dry Wells - Up to five dry wells used for the disposal of liquid wastes and/or water from the facility are present at the facility. The dry wells are being closed pursuant to a consent order with the NYSDEC. Sampling and analysis of dry well liquids, sludges, and sediment was conducted by Purolator as a part of a consent order with the NYSDEC. The sampling detected liquid with PCB concentrations up to 31 ppm. TCE was present in sludge material in concentrations up to 60 ppm. Lead was present in concentrations up to 5500 ppm, and chromium in concentrations of 450 ppm in dry well sludge. Benzene (1390 ppb), toluene (3050 ppb), chlorobenzene (9260 ppb), ethylbenzene (3330 ppb), p-xylene (3780 ppb), o-xylene (3780 ppb), and 1,3-dichlorobenzene (4940 ppb) were also detected in dry well sludges or liquids.

Unnamed Drainage Swale South of Facility (Also known as the Heights Drainage Swale) - Twenty-one soil and sediment samples were collected from 0 - 6 feet below ground surface from this area. Soil samples and boring data collected from the drainage way south of the Facet facility contained the semi-volatiles benzo(a)anthracene (11 ppm), benzo(a)pyrene (11 ppm), benzo(b)fluoranthene (30 ppm), benzo(k)fluoranthene (30 ppm), and ideno(1,2,3-cd)pyrene (6 ppm); PCB 1254 (6.8 ppm); and the inorganics arsenic (23 ppm) and chromium (3920 ppm).

North Drainage Way - Arsenic (320 ppm) was detected in the North Drainage Ditch in a surface sediment sample collected in July 1980.

Buried Drums - A magnetometry survey and interviews with employees indicated that buried drums were present at the facility. Based on the magnetometry survey results, Purolator Products Company, with oversight by EPA, removed 469 drums from Disposal Areas 1, 2, 3 and 4. In addition, at least 2,250 tons of contaminated soils were excavated, and approximately 30,000 gallons of contaminated water were collected for off-site treatment and disposal.

Surface Water Sampling - In addition to the Area 10 lagoon and the Area 6 pond, Mays Creek, an unnamed drainage way south of the Facet facility, and a drainage way which drains surface water from the northern portion of the facility have all received industrial waste from production activities by way of surface runoff and point source discharge. Seven surface water samples were collected from surface water bodies at the site. TCE was detected in the oil/water separator effluent at up to 26 ppb, and chloromethane was present at 24 ppb. TCE was detected in Mays Creek surface water at 11 ppb. Surface water samples collected from Area 10 contained elevated concentrations of cadmium (77.8 ppb), chromium (2190 ppb), and zinc (894 ppb).

Ground water - A total of 13 monitoring wells were installed at or near the facility in the unconsolidated sediments below the Site. The wells vary in depth from 12.5 feet to 49.2 feet below ground surface. Fourteen organics: n-butylbenzene (13 ppb), 1,1-dichloroethene (160 ppb), ethylbenzene (12 ppb), isopropylbenzene (8 ppb), 4-Isopropyltoluene (12 ppb), methylene chloride (69 ppb), n-propylbenzene (22 ppb), 1,1,1-trichloroethane (13 ppb), trichloroethene (190 ppb), trichlorofluoromethane (19 ppb), 1,2,4-trimethylbenzene (18 ppb), 1,3,5-trimethylbenzene (81 ppb), vinyl chloride (33 ppb, Spring 1991 sampling), and xylenes (14 ppb); and six inorganic contaminants: cadmium (55.8 ppb), chromium (1540 ppb), copper (1200 ppb), lead (146 ppb), mercury (5.6 ppb), zinc (1180 ppb) were detected in ground water at the facility at concentrations in excess of State and Federal standards for potable drinking water sources. In addition, the concentrations of antimony (45.8 ppb), beryllium (4.2 ppb), and nickel (602 ppb) exceeded either NYSDEC guidance values or EPA proposed Maximum Contaminant Levels (MCLs), the latter of which were promulgated under the Federal Safe Drinking Water Act. The ground water contamination flows in the direction consistent with the regional ground water flow direction. The facility contamination contributes to the contamination within the Newtown Creek Aquifer which is classified by EPA as a Class IIa aquifer.

Floating Product - EPA detected a layer of pure product floating on top of the water table (approximately 20 feet below the ground surface) at monitoring well D-5 located on the facility property.

Initial Response

As mentioned previously, in 1979, an initial inspection of the site conducted by the NYSDEC resulted in the implementation of remedial measures which included excavation of surface water diversions, covering of past disposal areas with soil, and construction of a leachate collection system as mentioned above.

The site was placed on the National Priorities List (NPL) on September 1, 1983.

In 1983, a preliminary hydrogeologic investigation was conducted at the facility by Purolator under an EPA Administrative Order pursuant to the Resource Conservation and Recovery Act (RCRA). The investigation concluded that TCE contamination in the ground water exceeded state and federal standards.

Basis for Taking Action

EPA conducted a baseline risk assessment to evaluate the potential risks to human health and the environment associated with the Facet Enterprises site in its current state. The Risk Assessment focused on contaminants in the soil, sediment, surface water, ground water and air which are likely to pose significant risks to human health and the environment. The baseline risk assessment evaluated the health effects which could result from exposure to contamination as a result of ingestion of ground water, inhalation of ground water contaminants during showering, ingestion of sediments in the drainage swale south of the facility, incidental ingestion of sediments while wading in the North Drainage way, ingestion of on-site soils, ingestion of sediments in Mays Creek, and incidental ingestion of sediments in Areas 6 and 10 lagoons. Both current and future land use at the facility was considered to be industrial with exposure scenarios for on-site workers and trespassers. For Mays Creek and the unnamed drainage way south of the facility, exposure to small children and adults was considered because these areas are generally

more accessible to the public. A total of 12 exposure pathways were evaluated under possible on site current and future land-use conditions.

The risk assessment indicated that noncarcinogenic effects may occur from the exposure to contaminated ground water. The noncarcinogenic risk was attributable to several compounds including vinyl chloride, cis-1,2 dichloroethylene, TCE, antimony, arsenic, cadmium, chromium, mercury, and nickel. Furthermore, the risk assessment concluded that the hazard index (HI) for noncarcinogenic effects from ingestion of sediment in the unnamed drainage swale exceeded one (HI = 3.5) for reasonable maximum exposure for children. The noncarcinogenic risk was attributable to several compounds including chromium.

Cancer risks estimated for exposure to site contaminants were within acceptable levels.

In addition, MCLs are currently exceeded for several hazardous substances in ground water. Although the risks posed by the soils are within EPA's acceptable risk criteria, contamination in the soils, if not addressed, will likely continue to contribute to further contamination of the ground water at the site.

IV. REMEDIAL ACTIONS

Remedy Selection

On September 4, 1992, EPA issued a Record of Decision which addressed contaminated soil, sediment and ground water.

The remedial action objectives of the remedy are:

- Prevent human contact with contaminated soils, sediments and ground water;
- Mitigate the migration of contaminants from soils and sediments to ground water; and
- Restoration of ground water to drinking water standards

The selected remedy includes:

- Excavation of contaminated soils and sediments from the Disposal Areas as identified in the Risk Assessment and in those areas where soils and sediment pose a risk to ground water quality,
- Disposal of Toxic Substances Control Act (TSCA) waste (PCBs > 50 ppm) in a secure TSCA double-lined landfill facility (estimated at approximately 1,275 cubic yards),
- Stabilization of RCRA waste to prevent leaching of metals and subsequent disposal in a secure RCRA-permitted facility (approximate volume 2,124 cubic yards),
- Disposal of non-RCRA wastes in an industrial waste landfill (approximate volume 120 cubic yards),
- Strategic placement of pumping wells to extract the contaminated ground water from the aquifer,
- Storage of extracted ground water in a central collection tank for subsequent treatment in an above-ground system,

- Treatment of the contaminated ground water to meet Federal and State standards for surface water discharge. Treated ground water would then be either discharged as effluent to the facility non-contact cooling system, or to a surface water discharge,
- Recommendation that local institutional controls, in the form of local zoning ordinances, be implemented in an attempt to control any future site use that could create an exposure pathway to subsurface soils,
- Recommendation that institutional controls be provided/maintained to restrict access to those portions of the aquifer which remain contaminated above cleanup levels, and
- Implementation of a long-term monitoring program to track the migration and concentrations of the contaminants of concern.

Remedy Implementation

A Consent Decree covering the remedial design (RD) and performance of the selected remedy was lodged on June 17, 1993. Purolator's contractor, Environmental Resources Management (ERM), prepared the remedial design plans and specifications, which EPA approved on May 1, 1996. On August 5, 1996, EPA approved Sevenson Environmental Services (SES) as the remedial action contractor for construction activities. Construction activities were conducted in two phases from August 1996 through June 2000.

Following on-site mobilization on August 5, 1996, Phase I construction activities began. Phase I of the remedial action (RA), conducted from August 5, 1996 through August 21, 1997, included:

- Excavation and off-site disposal of contaminated soils in Areas 1, 4,7 and 8;
- Backfilling these areas with clean fill/topsoil and restoration of these areas;
- Consolidation of soil in Area 5;
- Consolidation of sediments from Area 6 with consolidated soils in area 5 and construction of a RCRA cap in Area 5;
- Excavation and dewatering sediments from Area 10, the North Drainage Ditch, the Unnamed Drainage Ditch, and May's Creek;
- Installation of 12 pumping wells to extract ground water; construction of the ground water treatment plant; and,
- Installation of units to pump and remove the floating product at the wells.

Phase II included the excavation and backfill of the Oil/Water Separator area. Phase II started on April 3, 2000 and was completed on June 6, 2000.

The total amount of contaminated material excavated and disposed off-site was 16,130 cubic yards (CY); 13,725 CY of contaminated soil and 2,405 CY of contaminated sediment. The total volume of soil and sediment that was excavated and placed beneath the cap was 2,400 CY. The total volume of contaminated waste material was significantly greater that the volume estimated in the ROD which was 9,580 CY. The quantities of material disposed off-site are as follows: 17,681 tons to CWM-Model City, New York, 2,070 tons to EQ-Belleville, MI, and 3,790 tons to Seneca Meadows, NY (Subtitle D).

The analytical results of post-excavation soil samples collected from the excavated areas indicated that the remediation of all excavated areas has reduced contamination of site soils to below cleanup levels required in the ROD. The construction of the remedy is described in the Remedial Action Report, dated December 1995, and approved by EPA in May 1996. The

Operation and Maintenance (O&M) manual, dated February 2000, was approved by EPA in September 2000.

The ground water recovery and treatment system consisted of 12 ground water recovery wells (identified on Figure 1 as WRW-1 to WRW-12) and two air strippers. All treated ground water is discharged to May's Creek, a New York State Class C surface water. Construction of the ground water remediation system was completed in August 1997. Following discovery of trace product material in well WRW-1, the well was taken off-line since the ground water recovery system was not designed to treat ground water with product material. Ground water sampling results for recovery well WRW-1 typically revealed only low-level concentrations of TCE. Ongoing activities at the site which include long-term ground water monitoring as well as operation and maintenance (O&M) are described below.

Operation, Maintenance, and Long-Term Monitoring

An O&M program is part of the remedy for the site and includes:

- Ground Water Monitoring Wells;
- Ground Water Recovery System;
- Ground Water Treatment System;
- Floating Product Recovery System;
- Geomembrane Cap; and
- Site Soil Management.

Ground Water Monitoring

In order to evaluate ground water movement on the property and assess the area of influence of the recovery wells (WRW-2 through WRW- 12), water levels measurements are collected from the recovery and monitoring wells. Ground water elevations for each monitoring period are used to construct ground water contour maps. Based on this information, particularly the water levels in D-13, MW-15, and WRW-7, the direction of the ground water flow at the site has been found to be generally towards the southeast, which is consistent with the regional flow direction and towards the recovery wells. The configuration of the water table surface indicates flow is directed toward the recovery wells in the southeast corner of the site and suggests that site ground water is being contained during pumping operations.

Floating Product Recovery System

A belt system or pump skimmer was intended to be used to capture floating product at several locations. However, with the limited amount of oil interface within the oil interface well locations (0.01-.26 feet), the system was not functional at this product thickness. A bailer method was utilized instead but over the years, the recovery of floating product has been sporadic with barely enough product present to recover.

Institutional Controls Implementation

The ROD included recommendations for limiting future use of the site and the ground water through deed restrictions. Deed restrictions are in place to ensure that the remedial measures taken at this site will not be disturbed and the property will not be used for purposes

incompatible with the completed remedial action. Deed restrictions were registered with the Chemung County Clerk on March 16, 2001. A Soil Management Plan was developed to properly manage soil that may be excavated during future work activities on the site. The deed restrictions and the soil management plan meet the requirements for institutional controls identified in the decision documents.

Institutional controls for the site include continued reliance on existing Chemung County sanitary code regulations that require residences and business to hook up to public water supplies (Chemung County Sanitary Code Article VI, Section 1). Application of these regulations should minimize the exposure to contaminated drinking water.

V. PROGRESS SINCE THE LAST FIVE -YEAR REVIEW

The second five-year review for this site was signed on September 28. 2007. The review identified that the vapor intrusion pathway was not evaluated at the time of the ROD and was not yet completed. As a result, a protectiveness determination for the site could not be made until this exposure pathway was further evaluated.

EPA began a vapor intrusion investigation at the site in October 2007 by conducting sub-slab and indoor air VOC sampling. As a result of this ongoing investigation, 162 properties have been sampled to date, resulting in the installation of 43 abatement systems between 2008 and 2010. Subsequent testing of these 43 residences was conducted, confirming that the sub-slabs are under negative vacuum and, as a result, have been determined to be functioning effectively. An evaluation of site-related ground water data is ongoing to determine whether additional vapor intrusion sampling may be warranted.

In order to more fully understand the extent of the vapor contamination attributable to the release to the environment, an off-property ground water investigation was initiated in the summer of 2012. This investigation included the installation of temporary ground water sampling points on public rights-of-way to the south and east of the Facet property. In addition, a survey was performed in the area to identify any additional existing permanent ground water monitoring wells not associated with this site. As a result of this survey, ground water samples were collected and analyzed for VOCs from six downgradient ground water monitoring wells not associated with this site. The results of this ground water sampling event were not available for this five-year review. A review of the results will identify any additional home or other structures that require vapor intrusion investigations will be identified.

Between September and October 2011, the Potentially Responsible Party (PRP) conducted an on-site field investigation to identify potential source areas in the area near the ground water treatment building and surrounding the former underground storage tank. The findings of this investigation are documented in a report entitled "Limited On-site Source Investigation Report," dated April 2012. The review of this report has not been completed.

Since the last five-year review, operation and maintenance of the ground water extraction and treatment system continues. Periodic ground water sampling to evaluate the effectiveness of the extraction and treatment is conducted. This sampling program includes the collection of ground water elevations, ground water samples from monitoring wells as well as the recovery wells for the extraction system and sampling of the ground water treatment system effluent. The second five-year review also contained a recommendation that the monitoring well network be updated.

As a result, the PRP modified the sampling program in 2011 to include additional ground water monitoring wells.

Periodic inspections and maintenance of the cap in Area 5 have also been conducted to ensure the integrity of the cap.

VI. FIVE-YEAR REVIEW PROCESS

Administrative Components

The five-year review team consisted of: Isabel Rodrigues (Remedial Project Manager), Pietro Mannino (Western New York Remediation Section Chief), Dr. Marian Olsen (Human Health Risk Assessor), Charles Nace (Ecological Risk Assessor), Michael Scorca (Hydrogeologist), Michael Basile (Community Involvement Coordinator), and Eric Hausamann (NYSDEC Project Manager).

Community Involvement

On December 24, 2011, the EPA community involvement coordinator (CIC) for the site, Michael Basile, published a notice in the Elmira Star Gazette newspaper. The notice indicated that EPA was conducting a five-year review to ensure that the remedies implemented at the site remain protective of public health and the environment and are functioning as designed. It also indicated that once the five-year review document is completed, it will be made available in the local site repository. The local site repository is available at Town of Horseheads Town Hall, Town Clerks Office, 150 Wygant Road, Horseheads, New York 14845 and at the U.S. EPA Records center at 290 Broadway, New York, N.Y. In addition, the notice included the RPM's mailing address and telephone number in the event the public had any comments or questions. No comments were received.

Document Review

This five-year review consisted of a review of relevant documents including O&M records and monitoring data. See Table 2

Data Review

Ground Water

Ground water monitoring continues to indicate that ground water flow on the property is generally towards the southeast and is in the direction of the existing recovery wells. The configuration of the water table surface indicates flow is directed toward the recovery wells in the southeast corner of the site and suggests that ground water is being contained during pumping operations. The ROD established federal drinking water standard MCLs and NYSDEC Water Quality Regulations (WQR) as the cleanup levels for contaminants of concern (COCs) in ground water.

Ground water samples from 11 recovery wells and total of 12 monitoring wells (three off-property and nine on-property) are collected on an annual basis and sampled for VOCs and metals. For the last five years, the ground water analytical results detected VOCs including TCE, vinyl chloride, cis-1,2-dichloroethene and metals including chromium, lead and nickel.

Total VOCs were evaluated over time at monitoring and recovery wells. Recovery wells WRW-7 and WRW-8 (Figure 2) in the southeast corner of the site have historically had the highest total VOC concentrations (as high as 2,100 µg/l) during the past five-years. As a result, between September and October 2011, the PRP conducted an on-site field investigation to identify potential source areas in the area near the ground water treatment building and surrounding the former underground storage tank. The findings of this investigation are documented in a report entitled "Limited On-site Source Investigation Report," dated April 2012. The review of this report has not been completed. Total VOC concentrations in monitoring wells MW-15 and D-13 (Figure 3), which are the nearest downgradient wells to the southeast of the recovery wells, have had much lower concentrations and have generally declined since 1997. These two data points support the indication from the hydraulic (water level) data that the ground water pumping system is containing the source-area contamination.

Total VOCs in recovery wells along the eastern boundary of the property (WRW-9, WRW-10, WRW-11, WRW-12 - see Figure 4) have declined since 1997, but some individual contaminants still exceed the federal MCL and/or the NYSDEC WQR. Monitoring wells along the eastern boundary (MW-14U, MW-14L, D8 – see Figure 5) have generally shown declining VOC levels since 1998.

Total VOC concentrations in recovery wells along the southern boundary of the property (WRW-3, WRW-4, WRW-5, WRW-6 - see Figure 6) exceed the federal MCL and/or the NYSDEC WQR and have generally had fairly stable concentration trends, but with noteable overall internal variability within the dataset. Downgradient monitoring wells to the south of the property (MW-16U, MW-16L, D-7 - see Figure 7) have declined slightly since 1998.

Monitoring wells MW-18U and MW-18L, which are on the property but upgradient of the highest VOC concentrations, have also exhibited declining VOC trends.

Chromium, lead, and nickel are also sampled as part of the O&M plan. These data are being reviewed and will be evaluated.

System Influent

The ground water treatment system influent water samples are collected on a quarterly basis and analyzed for VOCs. Since 2006, TCE concentrations were detected ranging from 35 µg/l to 410 µg/l. Vinyl chloride was detected at concentrations ranging from less than 2 to 14 µg/l.

System Effluent

The ground water treatment system effluent is sampled and analyzed monthly for VOCs, selected metals, PCBs Aroclor 1248 and 1254, total cyanide, total hardness (as CaCO3), total dissolved solids (TDS), total suspended solids (TSS), and PH. In general, the treated effluent is within the discharge limits of the equivalent SPDES permit and VOC concentrations are not detectable.

Site Inspection

The site was inspected by the RPM on September 27, 2011. The RPM was accompanied by Reeve Howland, Project Manager for Purolator Motor Components. During the inspection, the RPM did not observe any problems or deviations from the normal ongoing operation and

maintenance activities at the site. The landfill cap appeared fully vegetated with no bare spots and no evidence of erosion. The fence around the cap and the site is in good repair; the storm drainage system and the rip rap around May's Creek are in good repair; the monitoring wells installed around the perimeter of the site are intact; and there was no evidence that any trespassing or vandalism has occurred at the site.

Interviews

No interviews were conducted for this review.

VII. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

No. The remedy is not functioning as intended by the decision documents. Although performance evaluation data indicate that the extraction system captures contaminated ground water and maintains inward ground water flow gradients toward the eleven extraction wells, ground water sampling conducted by NYSDEC in the vicinity of the facility property has revealed elevated concentrations of site-related contamination above drinking water standards. Results of recent sampling activities conducted by EPA, NYSDEC and the PRP should be reviewed to ensure that the ground water capture system is working as intended. Effluent discharges limits have not been exceeded.

The operation and maintenance programs appear to be keeping treatment plant equipment, wells, piping, and fencing in good working condition. The integrity of the cap is well maintained; the cap is fully vegetated with no signs of erosion.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

There have been no changes in the physical conditions of the site over the past five years that would change the protectiveness of the remedy. Soil and ground water use at the site are not expected to change during the next five years, the period of time considered in this review.

The remedial action objectives included preventing human contact with contaminated soils, sediments and ground water; mitigate the migration of contaminants from soils and sediments to ground water; and restoration of ground water to drinking water standards. These objectives are still valid. However, it is recommended that the groundwater restoration objective be applied to the entire plume (both on-ite and downgradient) as well.

The ROD called for restricting access to those portions of the aquifer that remain contaminated above cleanup levels. Although the ground water is classified as a potable water source, a municipal water supply provides town residents with drinking water. Therefore, this exposure pathway is not complete as the residents do not have direct contact with the ground water. The ROD also required ICs to ensure that property use remains industrial. This land use is still valid.

The ROD established the federal MCLs and NYSDEC WQR as the cleanup criteria for the ground water COCs. The COCs below exceeded their respective MCL and WQR at the maximum detected concentration on the on-property.

- Vinyl chloride was found at a maximum concentration of 15.1 µg/l, exceeding the MCL and WQR of 2 µg/l in well MW-16L. The cleanup goal for VC remains protective.
- Cis-1,2 dichloroethene was found at a maximum concentration of 128 µg/l, exceeding the MCL and WQR at concentrations of 70 and 5 µg/l, respectively, in well 14L. The cleanup goals of 70 µg/l and 5 µg/l remain protective.
- TCE was found at a maximum concentration of 115 µg/l, exceeding the MCL and WQR of 5 µg/l in well MW-14L); although the toxicity values for TCE have changed since the last five-year review, the cleanup goal of 5 µg/l remains protective.

Total chromium applied as a dissolved form was found at a maximum concentration of 0.31 milligrams per liter (mg/l), exceeding the WQR of 0.050 mg/l in well MW-18U.

- Chromium has not been speciated at the site, so it is unknown if hexavalent chromium is present. However, the WQR of 0.050 mg/l is at the upperbound of the risk range indicating the cleanup goal would be protective even if all of the chromium is present in the hexavalent form.

- Nickel, a COC was found at a maximum concentration of 0.42 mg/l, below the WQR of 0.100 mg/l; the cleanup goal remains protective. The toxicity value for nickel (as soluble salts) is currently under review; once it is final, the cleanup goal will be reevaluated to ensure it remains protective.

- The cleanup goal for lead has not changed since the time of the remedy, and it remains protective.

EPA is conducting further sampling to evaluate potential vapor intrusion pathways. The initial sampling was performed in January 2007 of the sub-slab vapors and data indicated the need for further investigation. Subsequent indoor air sampling was conducted and EPA installed vapor mitigation systems in 43 homes. The vapor investigation was expanded to include additional homes and is ongoing. In addition, in the future, in the event that buildings are constructed on the property, vapor intrusion should be evaluated.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Yes. Vapor intrusion into indoor air is being evaluated and needs further evaluation to determine if it is a concern to public health.

Sampling conducted downgradient of the facility by NYSDEC, as part of an area-wide dry cleaner initiative, revealed elevated levels of site-related contamination.

Persistently elevated levels of VOCs have been detected in two recovery wells for the ground water pump and treat system. The PRP has initiated a source investigation to identify potential remaining sources of contamination at the facility.

VIII. ISSUES, RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Issue	Recommendation	Implementing Party	Oversight Party	Affects Current Protect.	Affects Future Protect.	Milestone Date
Vapor intrusion evaluation at residences not complete	Continue vapor intrusion evaluation	EPA	EPA	Y	Y	December 2015
Potential source areas on the facility property impacting ground water	Review PRP's April 2012 Draft Report and implement follow-up actions; as necessary	PRP	EPA	N	Y	December 2015
Exceedances of ground water MCLs downgradient of pump and treat capture zone	Review ground water data collected in the summer of 2012 by ERT and develop follow-up actions. Update the monitoring well network based on the on- and off-property investigations. Likely to include off- property wells.	EPA	EPA	Y	Y	December 2015
Ground water sampling	Sample results should have individual VOCs rather than Total VOCs	PRP	EPA	N	N	January 2013

IX. PROTECTIVENESS STATEMENT

A protectiveness determination of the remedy cannot be made at this time until additional information is obtained and evaluated. Further information will be obtained by identifying any remaining source material that may be left on-site and impacting ground water, delineating the extent of ground water contamination downgradient of the existing pump and treat capture zone, and completing the vapor intrusion investigation. It is expected that these actions will take approximately three years to complete, at which time a protectiveness determination will be made.

X. NEXT REVIEW

Since hazardous substances, pollutants or contaminants remain at the Facet Enterprises site, the next five-year review should be completed within five years of the signature date of this review.

Table 1- Chronology of Site Events

Event	Date
Final Listing on National Priorities List	09/08/1983
Administrative Order on Consent	05/22/1986
Remedial Investigation/Feasibility Study completed (PRP)	09/04/1992
Record of Decision (ROD)	09/04/1992
Consent Decree	06/17/1993
Remedial Design Approved	05/14/1996
Phase I Remedial Action Begins	08/06/1996
Approach for Additional Floating Product Investigation - Phase II	09/17/1996
Phase I Substantial Completion	08/21/1997
Phase II Remedial Action Begins	04/03/2000
Construction Completion	06/30/2000
Remedial Action Report	09/22/2000
First Five-Year Review Report	11/09/2001
Second Five-Year Review Report	09/28/2007

Table 2- Documents, Data, and Information Reviewed in Completing the Five-Year Review

Record of Decision, 1992
Remedial Action Report, 2000
Annual Long-Term and Operation, Maintenance Reports and Monitoring Reports for 2001 to 2011
EPA guidance for conducting five-year reviews and other guidance and regulations to determine if any new applicable or relevant and appropriate requirements relating to the protectiveness of the remedy have been developed since EPA issued the ROD
Five-year review reports from 2001 and 2007
NYSDEC Site Characterization Report: Region 8 Dry Cleaners, July 2007

Figure 1 – Site Map

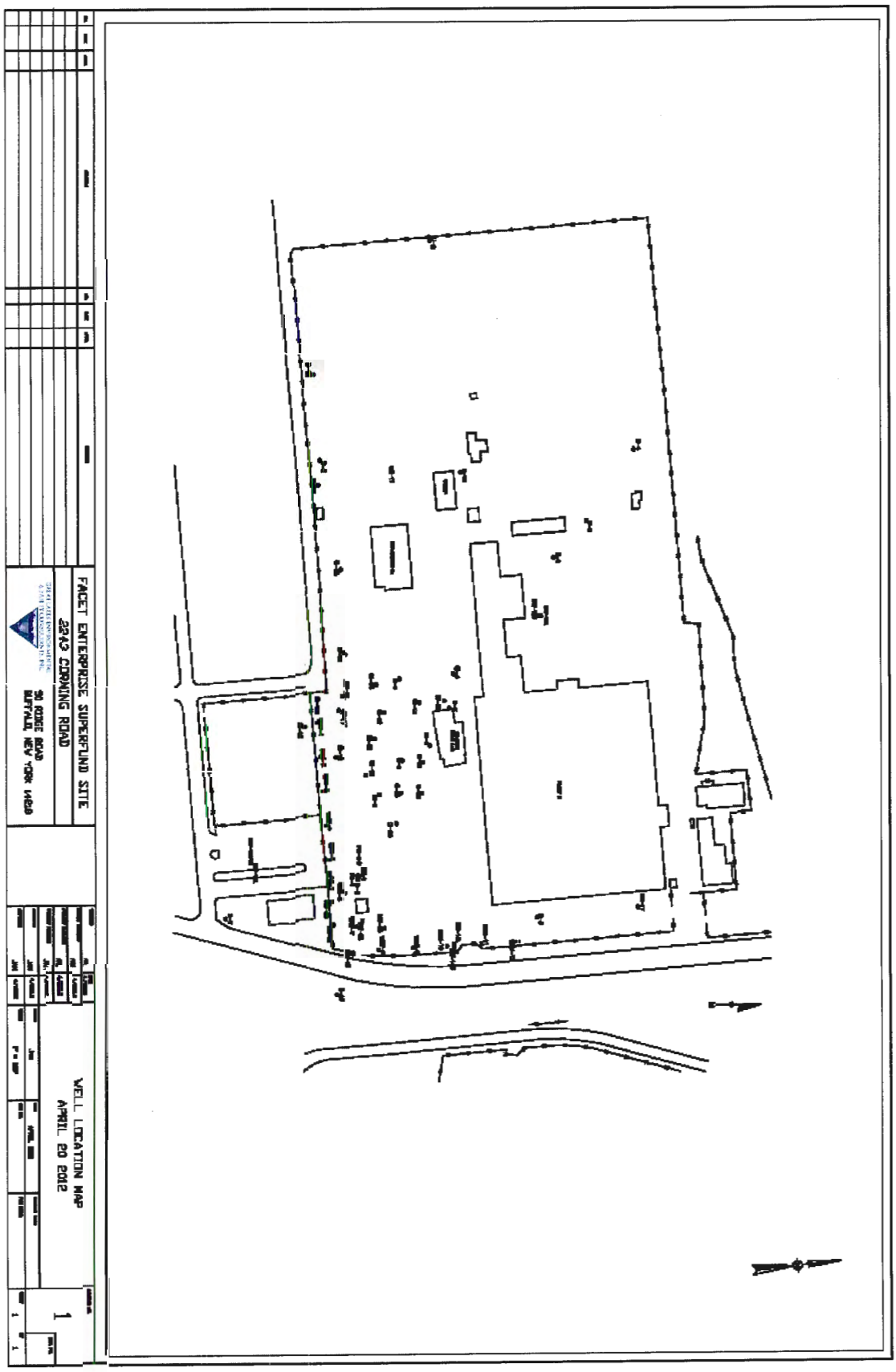

Figure 2 – Recovery Wells in the Southeast Corner of Facet Enterprises Property

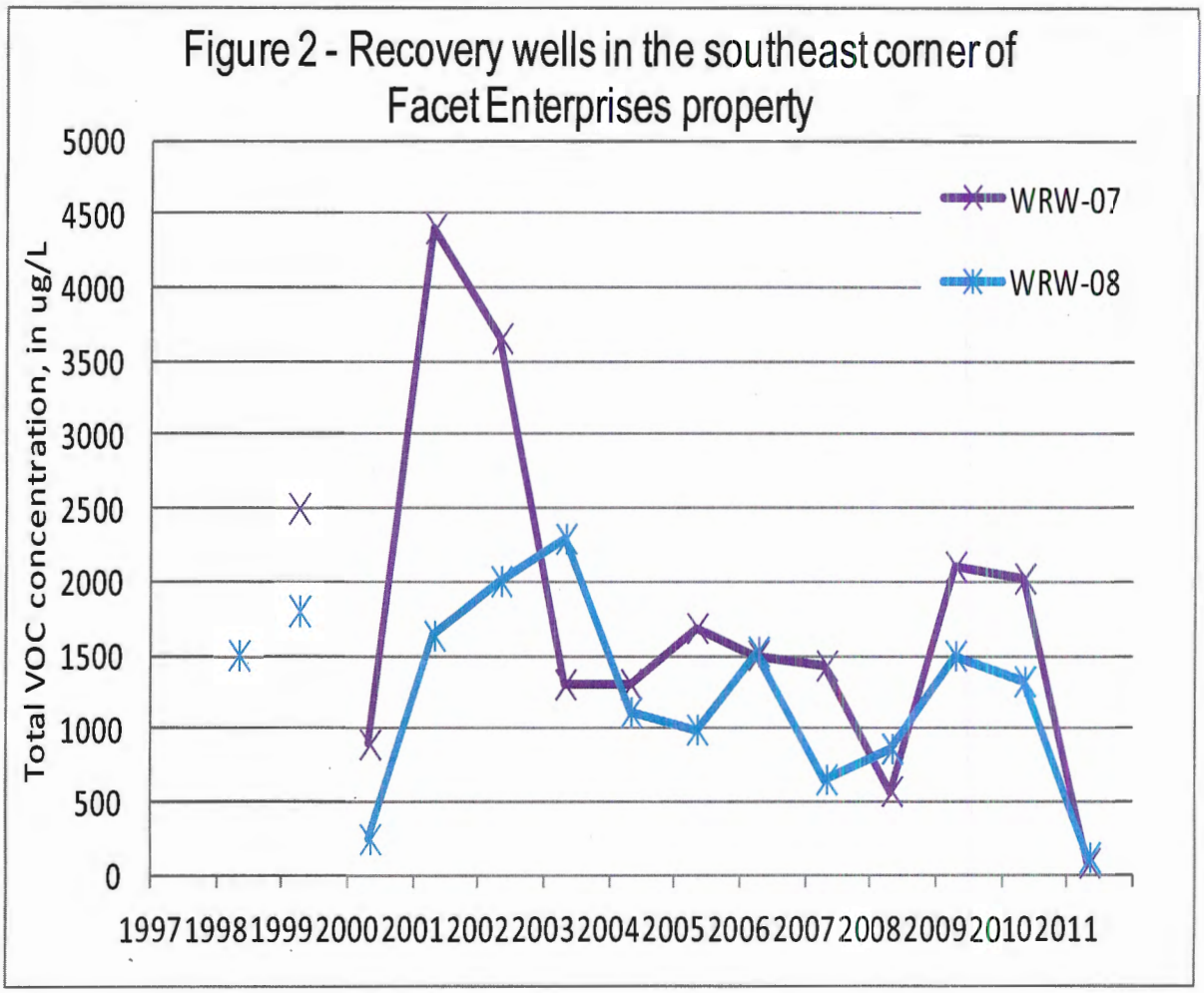

Figure 3 – Downgradient Monitoring Wells at the Southeast Corner of Facet Enterprises Property

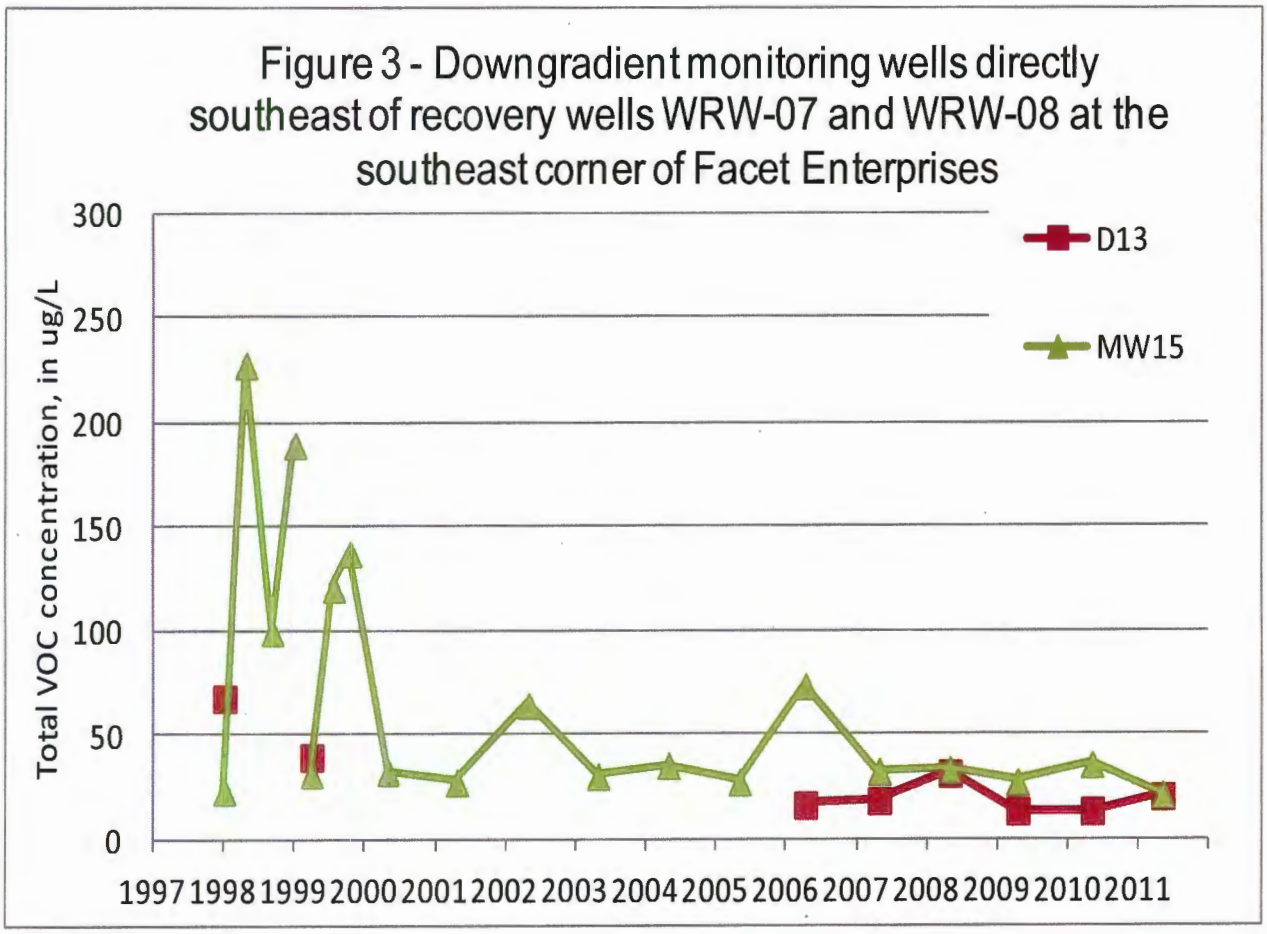

Figure 4 – Recovery Wells along Eastern Boundary of Facet Enterprises Property

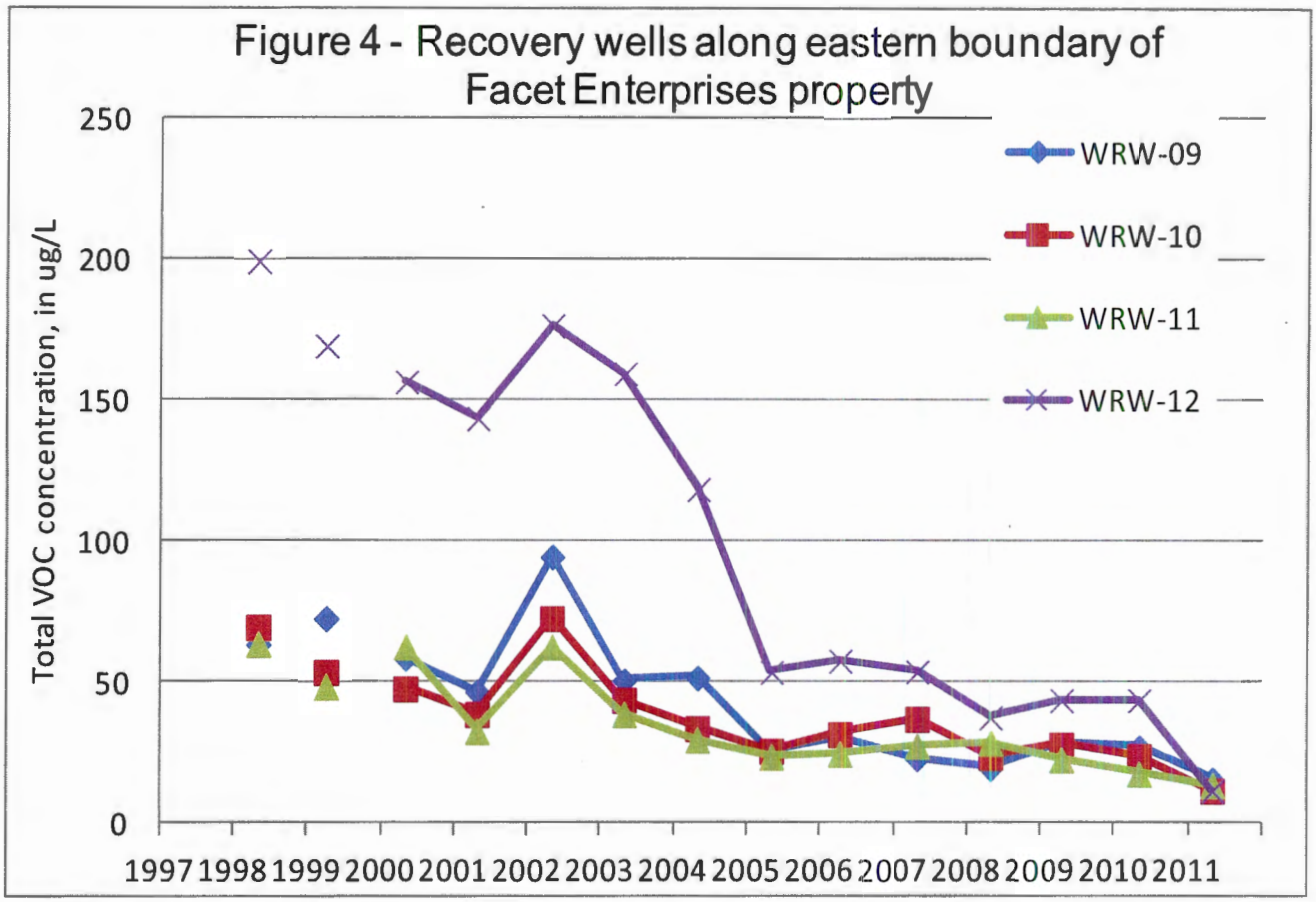

Figure 5- Monitoring Wells along Eastern Boundary of Facet Enterprises Property

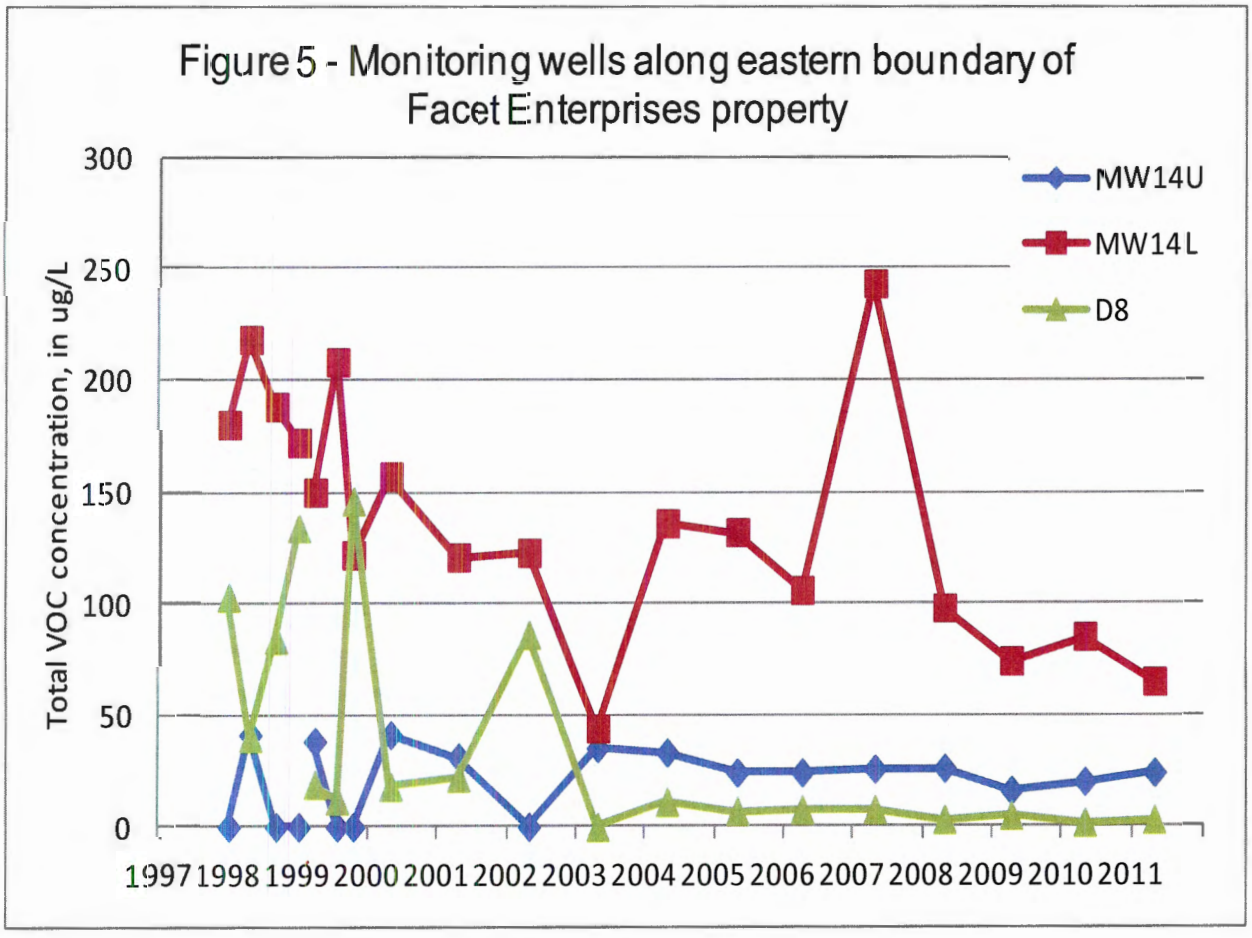

Figure 6 – Recovery Wells along Southern Boundary of Facet Enterprises Property

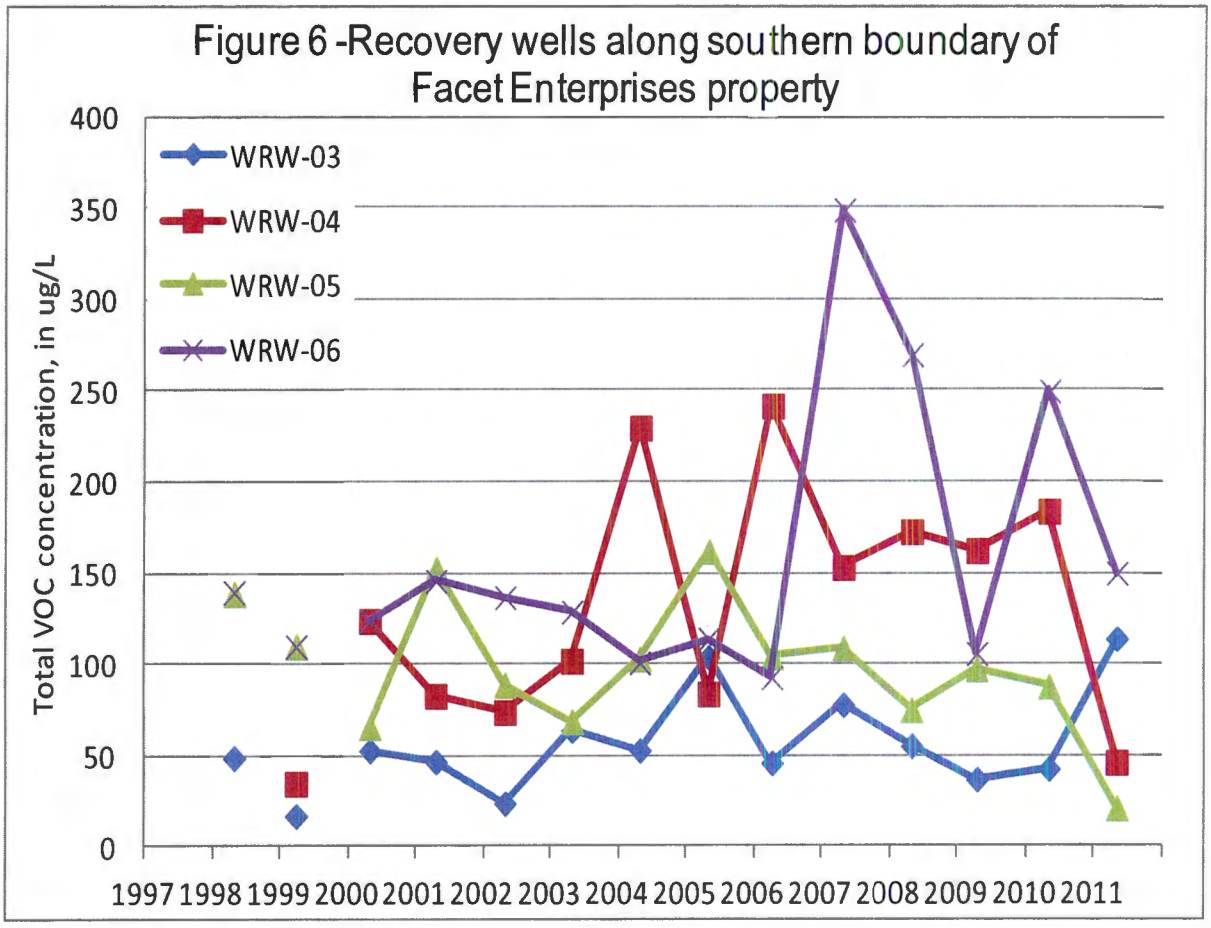

Figure 7 – Downgradient Monitoring Wells to the South of facet Enterprises Property

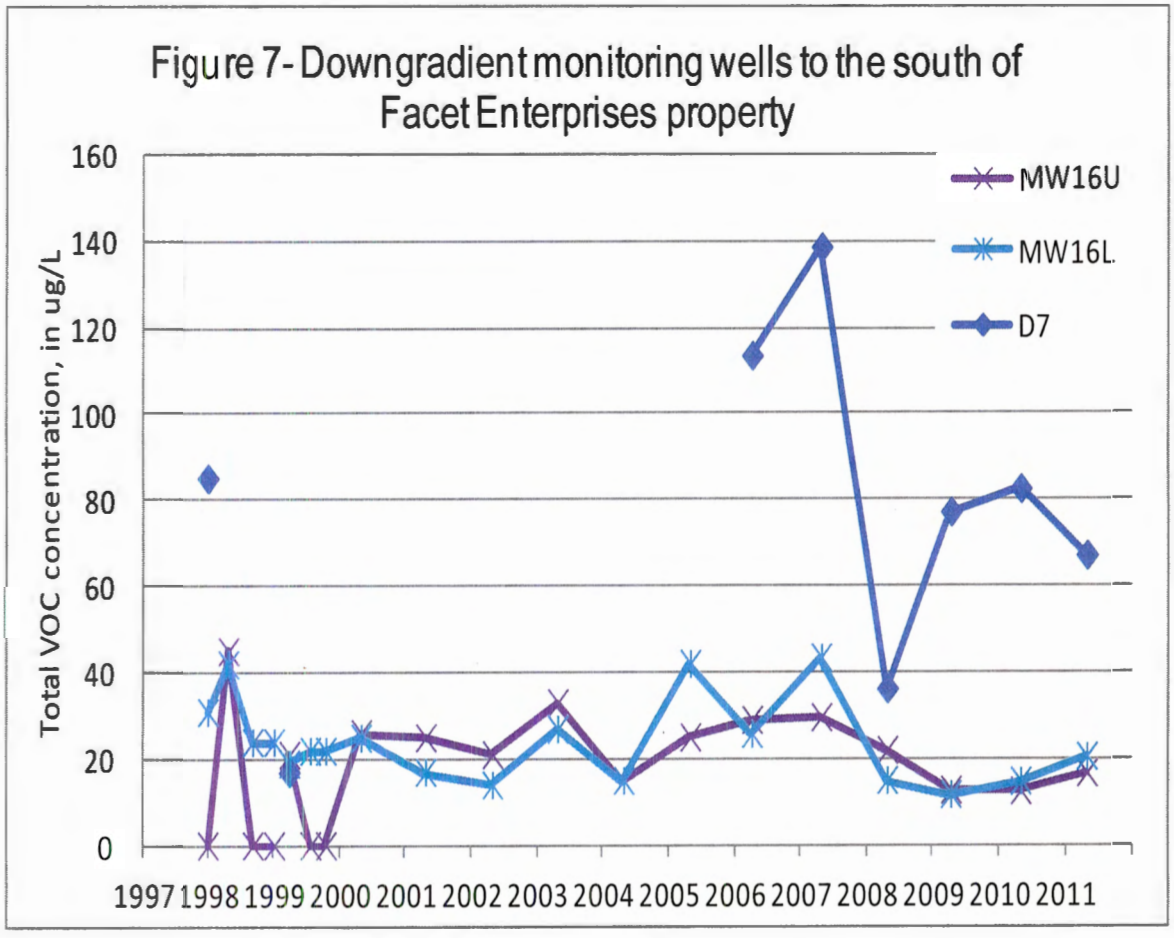

Figure 8 – Upgradient Wells MW18U and MW18L on Facet Enterprises Property