

**FOURTH FIVE-YEAR REVIEW REPORT FOR
DEL NORTE PESTICIDE STORAGE AREA SUPERFUND SITE
DEL NORTE COUNTY, CALIFORNIA**



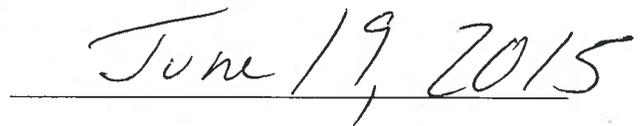
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Executive Summary

This is the fourth Five-Year Review (FYR) for the Del Norte County Pesticide Storage Area Superfund Site (Site) located in Crescent City, Del Norte County, California. The purpose of this FYR is to review information to determine if the remedy is and will continue to be protective of human health and the environment. The triggering action for this Five-Year Review (FYR) was the signing of the previous FYR on June 14, 2010.

The Site, located approximately one mile northwest of Crescent City, California, is less than one acre in size and consists of two parcels. The only contaminant of concern (COC) that remains onsite is 1,2-dichloropropane (1,2-DCP).

On September 30, 1985, the Environmental Protection Agency (EPA) selected the following remedy for the Site in order to protect long-term human health and the environment from contaminants in the soil and groundwater:

- Excavation and removal of contaminated soils
- Extraction and treatment of contaminated groundwater
- Treatment and disposal of groundwater contaminated by chromium
- Groundwater monitoring

A total of 1150 containers, 440 contaminated barrels, and 290 cubic yards of contaminated soil were removed from the site. A pump and treat system was designed, constructed, and operated for seven years.

On August 29, 2000, the Record of Decision (ROD) was amended to provide for:

- Containment of the groundwater plume through natural attenuation and continued monitoring through semiannual groundwater sampling of selected wells
- Identification of a new Applicable or Relevant and Appropriate Requirements (ARAR) for 1,2-DCP (referred to as the Maximum Contaminant Level (MCL) for 1,2-DCP)
- A Technical Impracticability (TI) waiver for the ARAR for 1,2-DCP
- Institutional Controls to prevent exposure to contaminated groundwater

The review of Site data, documents, ARARs, risk assumptions and the results of the site inspection indicates that the remedy is functioning as intended by the ROD, as modified by the ROD amendment. Previously, contaminated soil has been removed to levels that allow unlimited use and unlimited unrestricted exposure (UU/UE). In addition, the only two remaining wells with 1,2-DCP detections are below MCLs and have a statistically downward trend.

The Remedial Action Objectives (RAOs) from the decision documents have been achieved. In addition, based on the trends and concentrations in the groundwater, the Site should have no restrictions on use or access.

Although the remedy selected is containment, natural attenuation at the Site is happening faster than the plume migrates, so groundwater restoration is actually being achieved. There are two wells remaining on-site that have consistently detected 1,2-DCP over the past five years. Both wells have been below the Site's 1,2-DCP cleanup level of 10 µg/L for five years. One of the wells has been below the 1,2-DCP MCL for the same period, while the other has been below the MCL for four of the last five sampling events. Both of these wells show a linear downward trend which suggests that 1,2-DCP concentrations will remain below the cleanup level. This recent attainment of RAOs and protectiveness status can be confirmed by a limited future sampling. EPA will document that the site has achieved UU/UE status upon receipt of confirmatory groundwater monitoring data. The Technical Impracticability provision of the 2002 ROD Amendment will be addressed through an appropriate Decision Document once the confirmation is received and formal documentation of UU/UE status is complete.

The State of California, DTSC manages and enforces the institutional controls including monitoring. EPA will inform the State when EPA determines that the site is available for unrestricted use.

The remedy at the Del Norte County Pesticide Storage Area Superfund Site is protective of human health and the environment.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Del Norte County Pesticide Storage Area Superfund Site		
EPA ID: CAD000626176		
Region: 9	State: CA	City/County: Crescent City / Del Norte
SITE STATUS		
NPL Status: Deleted		
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): Kevin Mayer		
Author affiliation: USEPA		
Review period: 9/05/2014 – 5/28/2015		
Date of site inspection: 10/08/2014		
Type of review: Statutory		
Review number: 4		
Triggering action date: 6/14/2010		
Due date (five years after triggering action date): 6/14/2015		
Sitewide Protectiveness Statement (if applicable)		
<i>Protectiveness Determination:</i> Protective		<i>Addendum Due Date (if applicable):</i> Click here to enter date.
<i>Protectiveness Statement:</i> The remedy at the Del Norte County Pesticide Storage Area Superfund Site is protective of human health and the environment.		

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List of Abbreviations

1,2-DCP	1,2-dichloropropane
2,4-D	2,4-dichlorophenoxyacetic acid
µg/L	micrograms per liter
AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
AROD	Record of Decision Amendment
CCR	Code of California Regulations
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
DHS	Cal. Department of Health Services, currently Department of Public Health
DTSC	California Department of Toxic Substances Control
EPA	Environmental Protection Agency
ERCS	Emergency Response Contract Services
ESD	Explanation of Significant Differences
gpm	gallons per minute
IC	Institutional Control
IRIS	Integrated Risk Information System
MCL	Maximum Contaminant Level
MW	Monitoring well
N/A	Not Applicable
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NCRWQCB	North Coast Regional Water Quality Control Board
NPL	National Priorities List
O&M	Operations and Maintenance
OU	Operable Unit
P&T	Pump and Treat
PCOR	Preliminary Closeout Report
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
RSL	Regional Screening Level
SARA	Superfund Amendments and Reauthorization Act of 1986
RPM	Remedial Project Manager
SL	Screening Level
SSC	State Superfund Contract
TI	Technical Impracticability

Fourth Five-Year Review Report

for

Del Norte Pesticide Storage Area Superfund Site

1. Introduction

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. The methods, findings, and conclusions of FYRs are documented in FYR reports. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA 121 states:

“If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.”

EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

“If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action.”

The U.S. Army Corps of Engineers (USACE), Seattle District, conducted the FYR and prepared this report for the remedy implemented at the Del Norte County Pesticide Storage Area Superfund Site (Site) in Crescent City, Del Norte County, California. EPA is the lead agency for developing and implementing the remedy for the Site.

This is the fourth FYR for the Site. The triggering action for this statutory review is the previous FYR signed on June 14, 2010. The FYR is required because the remedy selected allowed for hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

2. Site Chronology

Table 1 lists the important events and dates for the Site.

Table 1. Chronology of Site Events

Event	Date
Operation of the Del Norte County Pesticide Storage Area	1970-1981
Initial discovery of problem by North Coast Regional Water Quality Control Board (NCRWQCB)	8/13/1981
EPA inspection revealed Resource Conservation and Recovery Act (RCRA) violations	9/25/1981
Cleanup and Abatement Order No. 81.213 issued by NCRWQCB	10/1981
California Department of Health Services (DHS, currently Department of Public Health) collected on-site soil samples	12/1981
1,150 containers removed from Site	1/1982
440 contaminated barrels shipped to licensed recycler	4/1982
NPL listing	9/21/1984
Remedial Investigation/Feasibility Study complete	5/1985
Record of Decision (ROD) signature	9/30/1985
290 cubic yards of contaminated soil removed	8/1987
Remedial design complete	4/20/1988
EPA determines on-site chromium is naturally occurring	1985-1987
US Army Corps of Engineers contracted to design Pump and Treat (P&T) system	5/1989
Explanation of Significant Differences (ESD) for presence of natural chromium	9/21/1989
P&T system construction began	10/25/1989
P&T system completed and operational	4/1990
California Department of Toxic Substances Control (DTSC) assumed cost for 50% of remedial action (RA) under State Superfund Contract (SSC)	4/23/1990
Preliminary Closeout Report (PCOR)/construction completion	6/18/1992
P&T system shut down – contaminant concentrations stabilized	10/1997
Administrative Order on Consent (AOC) for cost recovery	5/11/1998
ROD amendment signature	8/29/2000
First FYR completed	9/26/2000
Consent Decree (CD) entered by court	3/06/2002
Final close-out report	7/19/2002
Deleted from NPL	9/18/2002
Covenant to restrict use of property recorded with county	7/31/2002
Second FYR completed	9/08/2005
Corrected covenant to restrict use of property recorded with county	3/20/2007
Third FYR completed	06/04/2010

3. Background

3.1. Physical Characteristics

The Site, located approximately one mile northwest of Crescent City, California, consists of less than one acre of land and was contaminated with a variety of herbicides, pesticides, and other compounds. The

only remaining contaminant of concern is the pesticide 1,2-dichloropropane (1,2-DCP). The Site is located in a rural area immediately south of McNamara Airfield, the airport that serves Del Norte County (see Figure 1). The Site lies within the 20-acre Jack McNamara property, which includes Assessor parcel #110-010-22 and parcel #120-020-36

The areas surrounding the Site are rural, and include farms and residential areas. The Site is not located in or near any major population centers or environmentally sensitive areas.

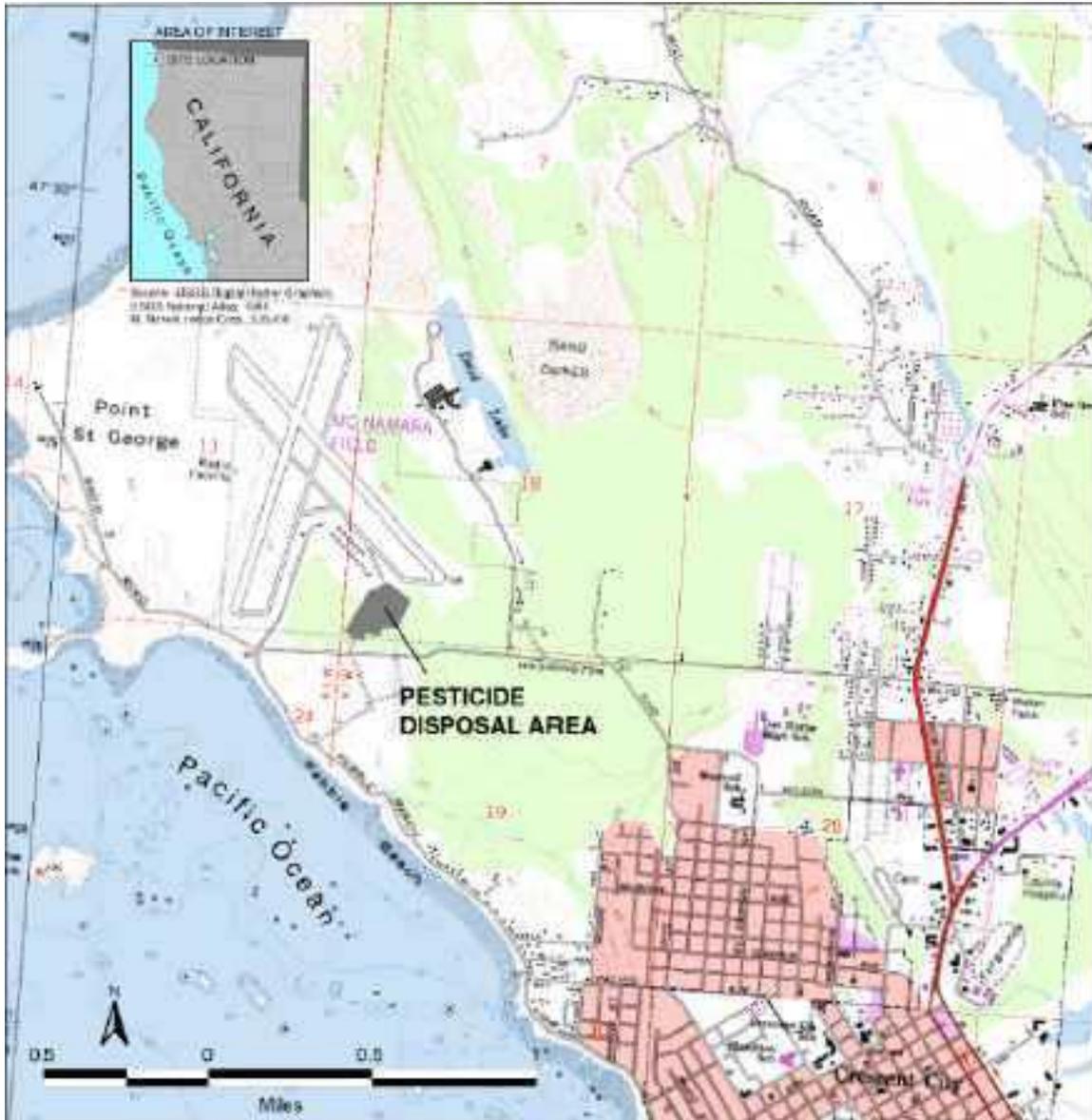


Figure 1. Area Map for the Del Norte County Pesticide Storage Area Superfund Site

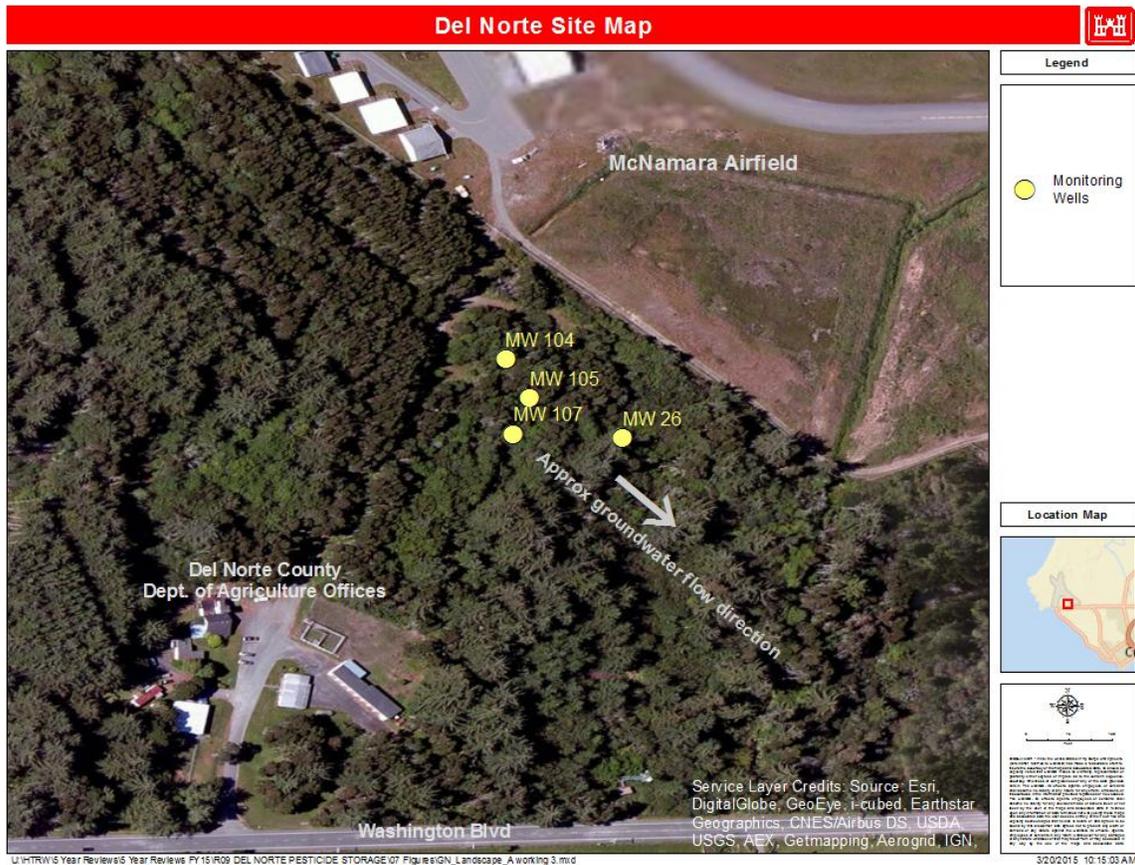


Figure 2. Detailed Map of the Del Norte County Pesticide Storage Area Superfund Site

3.2. Hydrology

Del Norte County is the northern- and western-most county in California. The Site lies on a marine terrace shelf on the edge of the Pacific Ocean (see Figure 1). The marine terrace represents a relatively flat zone that once lay below sea level near the shore, approximately 1.5-mile-wide parallel to the Pacific coastline. The terrace is bound to the east by the Coast Range. The aquifer beneath the site lies in the Quaternary-aged Battery Formation. The Battery Formation consists of moderately well-sorted fine sands, silts, and clays with generally moderate groundwater permeability. The ROD states that the water within the Battery Formation is considered a Class II groundwater under EPA’s Groundwater Protection Strategy. A Class II groundwater classification indicates that the groundwater is a current or potential source of drinking water or other beneficial uses. Groundwater in the area is being used for agricultural and domestic purposes. Water supply wells in the Battery Formation are capable of producing reasonable quantities of water of acceptable quality for domestic purposes. The nearest domestic water supply wells are located approximately 0.25 mile east of the Site. No known agricultural wells are in the immediate vicinity of the Site.

The elevation of the Site is approximately 50 feet above mean sea level. Groundwater in the area is relatively shallow and varies seasonally from 2 to 10 feet below ground surface (bgs). The thickness of the uppermost aquifer is approximately 30 feet in the vicinity of the Site. Groundwater flow is consistently to the southeast in the immediate vicinity of both the Site and the contaminant plume (Figure 2). Within a mile down-gradient of the Site, the gradient changes to the south, toward the ocean. The gradient is moderately steep, dropping approximately 10 feet in 1000 linear feet. Hydraulic conductivities of the aquifer have been calculated to be approximately 10^{-3} centimeters/second with an average linear pore fluid velocity of approximately 9.5 feet/year. The recharge areas for the aquifer are likely the Coast Range to the east, direct percolation through on-site soils, and a small lake to the northeast of the Site.

The average annual rainfall in the area is approximately 79 inches. Surface water drainage in the vicinity of the Site is through a series of drainage channels and ephemeral streams that drain to the southeast and south to the ocean. Most channels are dry during the summer months.

3.3. Land and Resource Use

Since its closure in 1981, the Site has been fenced, locked, and posted with a public notice stating that hazardous substances may be present. The Site is surrounded by approximately 480 acres of county-owned property, predominantly used as a public airport. The county property is bounded to the north by State-owned land intended for use as a natural and recreational area, by Washington Boulevard and farmland to the south, by Riverside Drive and residences to the east, and by the Pacific Ocean to the west. The Del Norte County Agriculture Department office and related facilities are located within the Site.

The General Plan and Zoning Maps for the Del Norte property indicate that part of the property is zoned for manufacturing and industrial use and the remainder is zoned for resource conservation.

Del Norte County had considered expansion of the county airport and airport-related facilities, but this development has been postponed indefinitely, and there are currently no planned changes for the Site. Present land uses of the Site and surrounding area are expected to continue for the foreseeable future.

3.4. History of Contamination

Upon approval by the North Coast Regional Water Quality Control Board (NCRWQCB), Del Norte County operated the Del Norte County Pesticide Storage Area from 1970-1981. The Storage Area was designated by the NCRWQCB as a Class II-2 disposal site, and it was intended to serve as a county-wide collection point for interim or emergency storage of pesticide containers generated by local agricultural and forestry-related industries. All containers to be stored at the Site were required to be triple-rinsed and punctured prior to arrival at the facility.

In the fall of 1981, the NCRWQCB and California Department of Health Services (DHS) discovered soil and groundwater contamination. The contamination was likely caused by rinsing pesticide containers on-site and then disposing of the residues and rinsates in a bermed, unlined sump area. NCRWQCB and DHS investigations conducted from 1981-1983 determined that the soil and groundwater had been contaminated with a variety of herbicides, pesticides, and volatile and semi-volatile organic compounds.

Del Norte County's inability to fund further investigations triggered the process of listing the Del Norte County Pesticide Storage Area on the National Priorities List (NPL) in the fall of 1983, and the Site was listed on September 21, 1984.

3.5. Initial Response

Pre-ROD activities at the Site included the following:

- Operation of the Site until late 1981.
- Issuance of a Cleanup and Abatement Order in October 1981.
- Removal of 1,150 containers from the Site by Del Norte County in January 1982 and disposal of the containers at the Crescent City Landfill.
- Shipping of the 440 remaining unrinsed drums in April 1982 to a licensed recycler, the Rose Cooperaage Company, in Montebello, California.

3.6. Basis for Taking Action

The primary COCs for the Site were 1,2-DCP and 2,4-dichlorophenoxyacetic acid (2,4-D). The presence of these contaminants in soil and groundwater provided the basis for taking action under CERCLA. 1,2-DCP and 2,4-D were considered human carcinogens. Ingestion of these COCs at levels above the relevant drinking water criteria has been found to potentially impair the functions of the liver, kidneys, adrenal glands, bladder, and the gastrointestinal and respiratory tracts, and has been linked to an increased cancer risk. The primary threat to human health was posed by ingestion of contaminated soil or groundwater.

Soil contamination was detected to a depth of 15 feet but contained to an on-site area of 15 feet by 20 feet. At the time, the groundwater contaminant plume was estimated to extend approximately 170 feet to the southeast of the Site along the axis of groundwater movement. Use of the contaminated aquifer as a water supply would have resulted in a significant health risk.

4. Remedial Actions

4.1. *Remedy Selection*

The ROD for the Site was signed on September 30, 1985. Remedial Action Objectives (RAOs) were established based on data collected during the Remedial Investigation to aid in the development and screening of remedial alternatives that were considered for the ROD.

The general RAOs identified in the 1985 ROD were:

- To minimize off-site contamination caused by migration of contaminated groundwater, and
- To minimize exposure to contaminated soil.

These RAOs were further defined in the 1985 ROD as:

- Prevention of nearby well contamination,
- Restoration of contaminated on-site ground water to the maximum contaminant levels (MCLs) of 100 µg/L for 2,4-D and 50 µg/L for chromium, and to the health-based level of 10 µg/L for 1,2-DCP, and
- Clean-up of on-site soils to unrestricted use levels (residential levels).

These RAOs resulted in the selection of a remedy with the following major components:

- Excavation and off-site disposal of contaminated soils,
- Extraction and treatment of groundwater through carbon adsorption and coagulation/filtration treatments,
- Disposal of treated groundwater to the Crescent City Waste Water Treatment Plant, and
- Groundwater monitoring.

Investigations regarding the chromium levels in subsurface materials at the Site were performed between 1985 and 1989. Those investigations indicated that the chromium levels were naturally high due to the presence of chromium ore in the bedrock in the area, and resulted in the September 21, 1989, Explanation of Significant Differences (ESD). The ESD stated, “Under Section 104 (a)(3)(A) of CERCLA as amended by SARA, response to a release or threat of a release of a naturally occurring substance from a location where it is naturally found is not permitted.” Because of this explanation in the ESD, it was determined that chromium did not require remediation through removal.

The ESD also documented and justified the change in the groundwater treatment method selected in the 1985 ROD from carbon adsorption and coagulation/filtration to air sparging. Air sparging had been considered in the original ROD as a remedial alternative but was not chosen due to its ineffective removal of 2,4-D and chromium.

In a ROD Amendment (AROD) signed on August 29, 2000, EPA concluded that the remedial objective of restoring the contaminated groundwater to the MCL for 1,2-DCP would not be met because no technology exists that is capable of reaching drinking water quality standards under the conditions found at the Site.

The RAOs included in the 2000 AROD were:

- Containment of contaminated groundwater, and
- Prevention of the groundwater's use as drinking water as long as contaminant concentrations remain above drinking water quality standards.

These RAOs resulted in a revised remedy with the following major components:

- Containment of the groundwater plume through natural attenuation,
- Semi-annual groundwater monitoring,
- Identification of a new Applicable or Relevant and Appropriate Requirement (ARAR) for 1,2-DCP (equivalent to the MCL of 5 µg/L),
- A Technical Impracticability (TI) waiver of the newly identified ARAR for groundwater within the existing contaminated area where 1,2 DCP exceeded 5 µg/L, and
- Institutional controls (ICs) to prevent exposure to contaminated groundwater.

4.2. *Remedy Implementation*

In December 1987, EPA performed the first post-ROD remedial action at the Site. Approximately 290 cubic yards of soil contaminated with 1,2-DCP and 2,4-D were excavated and disposed of at an off-site, licensed hazardous waste disposal facility. This remedial action completed the soil remedy for the Site.

Groundwater monitoring indicated that the extent and concentrations of 2,4-D and 1,2-DCP in groundwater were decreasing significantly. Between 1985 and 1989, after source removal but before installation of the pump and treatment system, the concentrations of 2,4-D in monitoring wells at the Site decreased to less than 2 µg/L, well below the 100 µg/L cleanup level established in the ROD. The levels of 1,2-DCP also decreased in the same time period from approximately 2,000 µg/L to 600 µg/L, but the concentrations remained above the 10 µg/L cleanup level established in the ROD. These reductions were likely the result of the source removal and biodegradation and/or volatilization of the contaminants in the groundwater.

A pump and treatment system was installed in 1990 and began extracting groundwater from one extraction well at the rate of 15 gallons per minute (gpm). The treatment system operated continuously from April 1990 to December 1994. In addition to the extraction well, thirteen monitoring wells were used to evaluate the remedy with respect to contaminant levels and groundwater movement (Figure 2). During that period it was observed that 1,2-DCP concentrations in the groundwater monitoring wells located within the plume had reached asymptotic levels between approximately 15 and 40 µg/L. The Site achieved construction completion status when the Preliminary Closeout Report was signed on June 18, 1992; however, in 1994, EPA installed an air sparging system to determine if injection of air into the aquifer would enhance contaminant removal. Additional sparge points were added in 1995. No measurable changes in the levels of 1,2-DCP in groundwater resulted.

In 1994, EPA also began a program of turning off the groundwater treatment system for extended periods of time to determine what effect it would have on contaminant concentrations. The system was turned off for approximately six months in 1995, and then restarted. It was turned off again for six months in 1996. No concentration differences were detected on either occasion. The system has been turned off since

October 1997 and semi-annual groundwater monitoring reports show that contaminant concentrations continue to decline slowly, at the same rate as when the treatment system was operating. This trend and subsequent further investigation of plume behavior led the EPA to finalize an AROD on August 29, 2000, with the identification of a new ARAR for 1,2-DCP (equivalent to the newly established MCL of 5 µg/L) and a Technical Impracticability (TI) waiver of this ARAR. A covenant to restrict use of property (a land use covenant), which incorporates the ICs necessary to prevent exposure to contaminated groundwater in this area, was recorded for parcel #120-020-36 on July 31, 2002. On March 20, 2007, a corrected covenant to restrict use of property was recorded that included restrictions on both parcels #120-020-36 and #110-010-22. Ongoing components of the remedy now include containment of the plume through natural attenuation, semi-annual groundwater monitoring, and ICs. The *Twenty-second Semi-annual Groundwater Monitoring Report* was submitted to EPA on October 24, 2014.

4.3. Operation and Maintenance (O&M)

Operations and Maintenance (O&M) of the treatment system is no longer performed because the treatment system has been turned off since October 1997.

The remedy currently includes containment, monitoring, land use restrictions, and a TI waiver of the remediation goal. The 2000 AROD and the 2002 Consent Decree (CD) require two years of semi-annual sampling for four specific monitoring wells, with an option to switch to an annual monitoring schedule if data demonstrates that the plume remains stable and concentrations continue to decline. The monitoring program includes two wells within the known extent of contamination based on the previous characterization effort (monitoring wells MW-104 and MW-105) and two wells immediately down-gradient and lateral to the plume (MW-26 and MW-107). Twenty-two groundwater monitoring reports have been prepared since 2002, including the most recent report dated October 2014. The sampling has been consistent with the previous sampling plan approved under the O&M and Sampling Manual prepared in February 1991.

Del Norte County spends approximately \$4,000 per year on sampling and laboratory fees and Site oversight.

5. Progress since the Last Five-Year Review

5.1. Previous Five-Year Review Protectiveness Statement and Issues

The protectiveness statement from the third FYR in 2010 for the Site stated the following:

“The remedy at the Del Norte Pesticide Storage Area currently protects human health and the environment because there is no current exposure to the contamination that remains at the Site. A Land Use Covenant to Restrict Use of Property was recorded for both parcels of the single Operable Unit in 2007, and a title search confirmed that this institutional control is in place and effective to ensure long-term protectiveness.”

The monitoring data confirm that the RAO of containment of the groundwater plume continues to be met. The current array of monitoring wells provides adequate assurance of no significant contaminant migration.

The plume has been stable since the groundwater treatment system was shut down in October 1997. Statistical analyses of the monitoring results since 1997 shows that the concentration of 1,2-DCP exceeds the MCL of 5 µg/l in only one monitoring well and has remained stable over the last few years after declining gradually. This MCL is an ARAR that was identified and waived as a Remedial Action Objective (RAO) in the 2000 ROD Amendment.

Ecological risks from the contaminated ground water are considered insignificant due to no complete exposure pathway to ecological receptors.”

The 2010 FYR included no issues or recommendations.

5.2. Work Completed at the Site during this Five-Year Review Period

The Site was delisted from the NPL on September 18, 2002. The only work that has been done on-site since then has been groundwater monitoring.

6. Five-Year Review Process

6.1. Administrative Components

EPA Region 9 initiated the fourth FYR in September 2014 and scheduled its completion for June 2015. The FYR review team was led by Kevin Mayer, EPA Remedial Project Manager (RPM), and supported by Miriam Gilmer (USACE Project Manager), David Sullivan (USACE geologist), Jacob Williams (USACE Engineering Intern), and Chip Gribble (California DTSC). On September 12, 2014, EPA held a scoping call with the review team to discuss the Site and items of interest related to the protectiveness of the remedy currently in place.

6.2. Document Review

This FYR included a review of relevant, site-related documents including the AROD, remedial action reports, and recent monitoring data. A complete list of the documents reviewed can be found in Appendix A.

ARARs Review

Section 121(d)(2)(A) of CERCLA specifies that Superfund remedial actions (RAs) must meet any federal standards, requirements, criteria, or limitations that are determined to be legally ARARs. Applicable or Relevant and Appropriate Requirements are those standards, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, RA, location, or other circumstance at a CERCLA site.

The only COC present and monitored during the period of this FYR at the Site is 1,2-DCP. The AROD waived the MCL for 1,2-DCP which has an MCL of 5 µg/L. The MCL has not changed during the period of this FYR.

Table 2 lists the chemical-specific ARARs that were identified in 1985 ROD and the 2000 AROD for groundwater at this Site, and which were reviewed for this FYR.

There have been no revisions to laws and regulations that affect the protectiveness of the remedy.

Table 2. Applicable or Relevant and Appropriate Requirements Evaluation

Requirement	Citation	Document	Description	Effect on Protectiveness
Porter-Cologne Water Quality Control Act (California Water Code Sections 13140-13147, 13172, 13260, 13262, 13267, 13304.)	Title 27, CCR, Section 20410, Title 23, CCR, Section 2550.6	1985 ROD	Applies to groundwater remediation and monitoring of sites. Groundwater will be remediated and monitored according to Title 27/Title 23 regulations.	There have been no changes since the last FYR.

Requirement	Citation	Document	Description	Effect on Protectiveness
Title 22 CCR	Section 64444	1985 ROD	State MCL for 1,2-DCP	There have been no changes since the last FYR.
Safe Drinking Water Act (40 U.S.C. 300et seq.)	National Primary Drinking Water Regulations (40 CFR Part 141)	1985 ROD	Chemical-specific drinking water standards; MCLs have been promulgated under the Safe Drinking Water Act.	There have been no changes since the last FYR.

Human Health Risk Assessment Review

The 1985 remedial investigation (RI) identified the health risk at the Site as use of contaminated on-site groundwater as a water supply. The exposure pathways included ingestion, inhalation, and dermal exposure. There have been no changes to the assessed health risk or the exposure pathways since the third FYR.

Vapor Intrusion: EPA’s understanding of contaminant migration from soil gas and/or groundwater into buildings has evolved over the past few years, leading to the conclusion that vapor intrusion might pose a greater risk to human health than was assumed when the ROD and AROD were prepared. The potential for vapor intrusion is evaluated following a “multiple lines of evidence” approach consistent with EPA’s April 2013 *External Review Draft – Final Guidance for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Sources to Indoor Air*.

The potential for vapor intrusion was not discussed in the 1985 ROD or the 2000 AROD for the Site.

There are no existing or planned buildings within, or in close proximity to, the remaining plume footprint. The Vapor Intrusion Regional Screening Level in groundwater for 1,2-DCP is 2.4 µg/L which corresponds to an excess cancer risk of 10⁻⁶. EPA considers an excess cancer risk range between 10⁻⁴ and 10⁻⁶ as protective, which correspond to groundwater concentrations of 1,2 DCP of 240 µg/L and 2.4 µg/L. The current cleanup goal of 10 µg/ L for 1,2 DCP is near the lower end of this range, and remaining actual concentrations of 1,2-DCP at the Site are even lower. Therefore, vapor intrusion is not considered a risk at the Site.

Toxicity values:

EPA’s Integrated Risk Information System (IRIS) has a program to update toxicity values used by the Agency in risk assessment when newer scientific information becomes available. Regional soil and groundwater concentration results are compared to EPA’s Regional Screening Levels (RSLs) as a first step in determining whether response actions may be needed to address potential human health exposures. The RSLs are chemical-specific concentrations for individual contaminants that correspond to an excess cancer risk level of 1x10⁻⁶ (or a Hazard Quotient of 1 for non-carcinogens), and they have been developed for a variety of exposures scenarios (e.g. residential, commercial/industrial). Regional Screening Levels are not de facto cleanup standards for a Superfund site, but they do provide a good indication of whether actions may be needed.

At the time the ROD was issued, there were two other contaminants of concern besides 1,2-DCP. Those were chromium and 2,4-D. Both chromium and 2,4-D are no longer Site COCs and are no longer monitored. 1,2-DCP is the only contaminant that is still being evaluated. The ROD selected a cleanup level for 1,2-DCP of 10 µg/L. The AROD identified that the MCL is 5 µg/L for 1,2-DCP, but waived the requirement for the Site remedy to achieve the MCL and maintained the 10 µg/L cleanup level.

Table 3. Summary of RSLs for Cancer/Non-cancer Residential Soil and Groundwater as of November 2014 for COCs at the Site

Contaminant of Concern	Cancer (10 ⁻⁶ excess cancer)		Non -cancer		1,2-DCP Cleanup goal (µg/L)
	Residential Soil Screening Level (SL) (µg/kg)	Tap Water SL (µg/L)	Residential Soil SL Child (µg/kg)	Tap Water SL (µg/L)	
1,2- DCP	1,000	0.44	16,000	8.3	10

EPA uses an excess cancer risk range between 10⁻⁴ and 10⁻⁶ for assessing potential exposures, which corresponds to 1,2-DCP concentrations between 0.44 and 44 µg/L for residential exposures. The cleanup goal of 10 µg/L remains protective.

Ecological Review

No record of an original ecological risk assessment was found during the document review for this FYR. The FYR review team assessed the risk to the birds and animals that may reside temporarily or permanently at the Site as minimal, since there is no evidence of contamination in surface water or soils.

6.3. Data Review

Table 4. Concentration (µg/L) of 1,2-DCP in Site Groundwater Monitoring Wells 2010-2014

Well ID	Sampling Date						
	10/27/2010	5/4/2011	12/21/2011	8/22/2012	4/3/2013	2/25/2014	9/22/2014
MW 26	NS	NS	ND	ND	ND	ND	ND
MW 104	12.0	1.20	0.95	ND	0.60	0.87	1.20
MW 105	6.6	8.7	4.7	4.0	7.9	2.2	3.4
MW 107	NS	NS	ND	ND	ND	ND	ND

ND = Not detected above analytical reporting limit

NS = Not sampled

Of the four wells sampled, only two (MW-104 and MW-105) have detectable concentrations of 1,2-DCP. MW 105 has been below the cleanup level of 10 µg/L for the review period, and MW104 only exceeded it once in 2010. Because the result of 12 µg/L in MW-104 is so much higher than the levels found in the well before or since, the 12 µg/L in MW 104 is an anomaly; the level may be due to a sampling error, an analytical error, or a clerical error. 12 µg/L is the highest concentration reported for 1,2-DCP at MW-104 since 1998; it is more than two times the highest concentration reported since 2002; more than three times the highest concentration reported since 2006; and there is no new source of 1,2-DCP.

Fluctuations in 1,2-DCP concentrations at low levels have occurred and continue to occur. Despite some intermittent trends, these fluctuations do not appear to be consistently statistically connected directly to

season or water table variability. The COC concentrations vary inconsistently with time of year and water table depth. Figure 3 and Figure 4 present a comparison of COC concentration to water table, and Figure 5 and Figure 6 compare COC concentration variation to season.

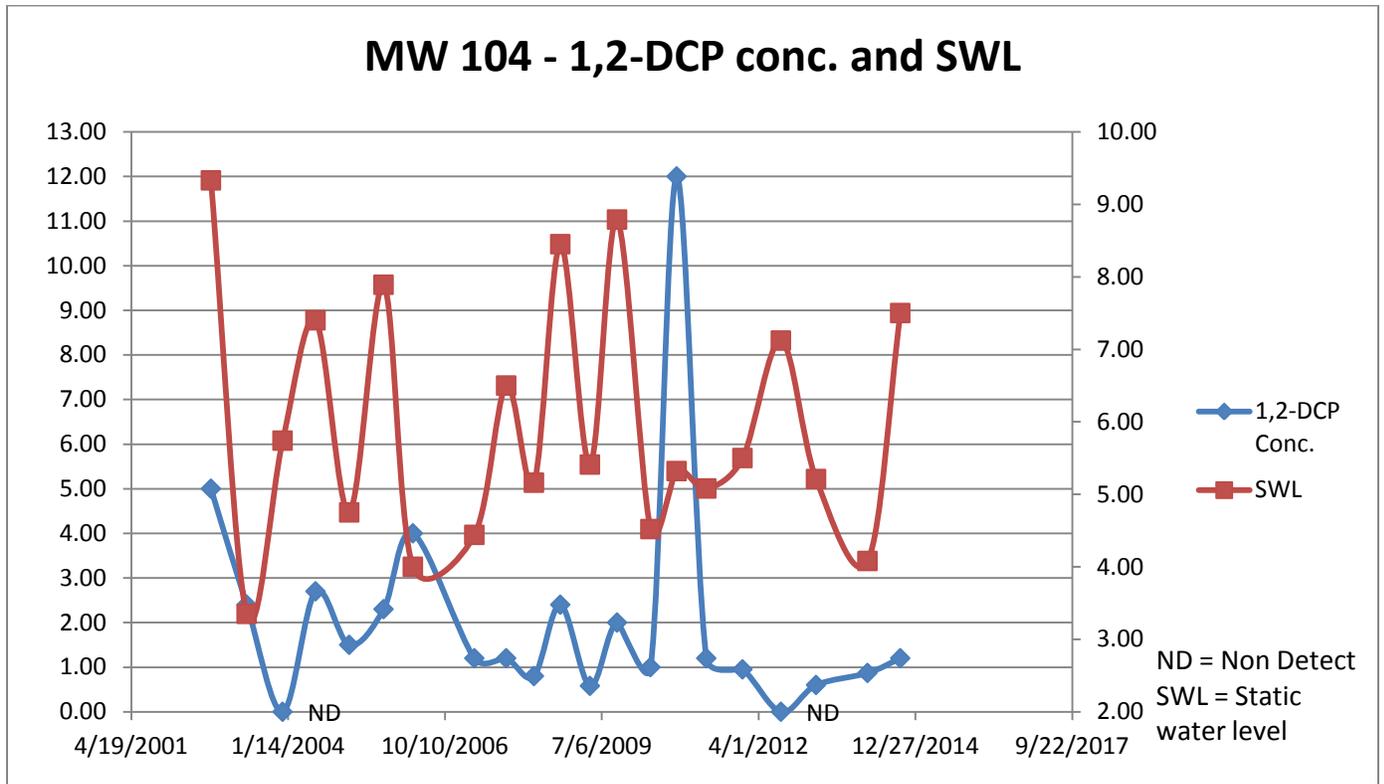


Figure 3. Comparison of 1,2-DCP concentrations (µg/L) and SWL fluctuations at MW-104

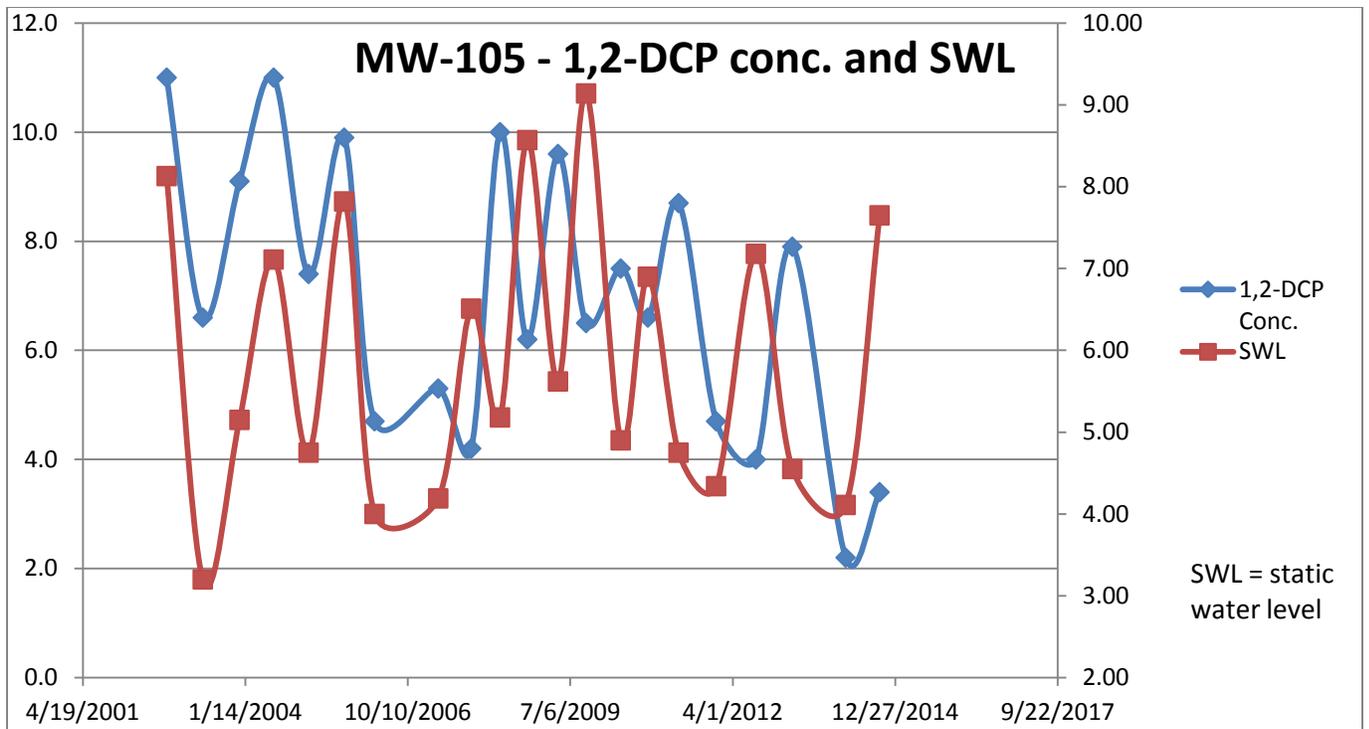


Figure 4. Comparison of 1,2-DCP concentrations (µg/L) and SWL fluctuations at MW-105

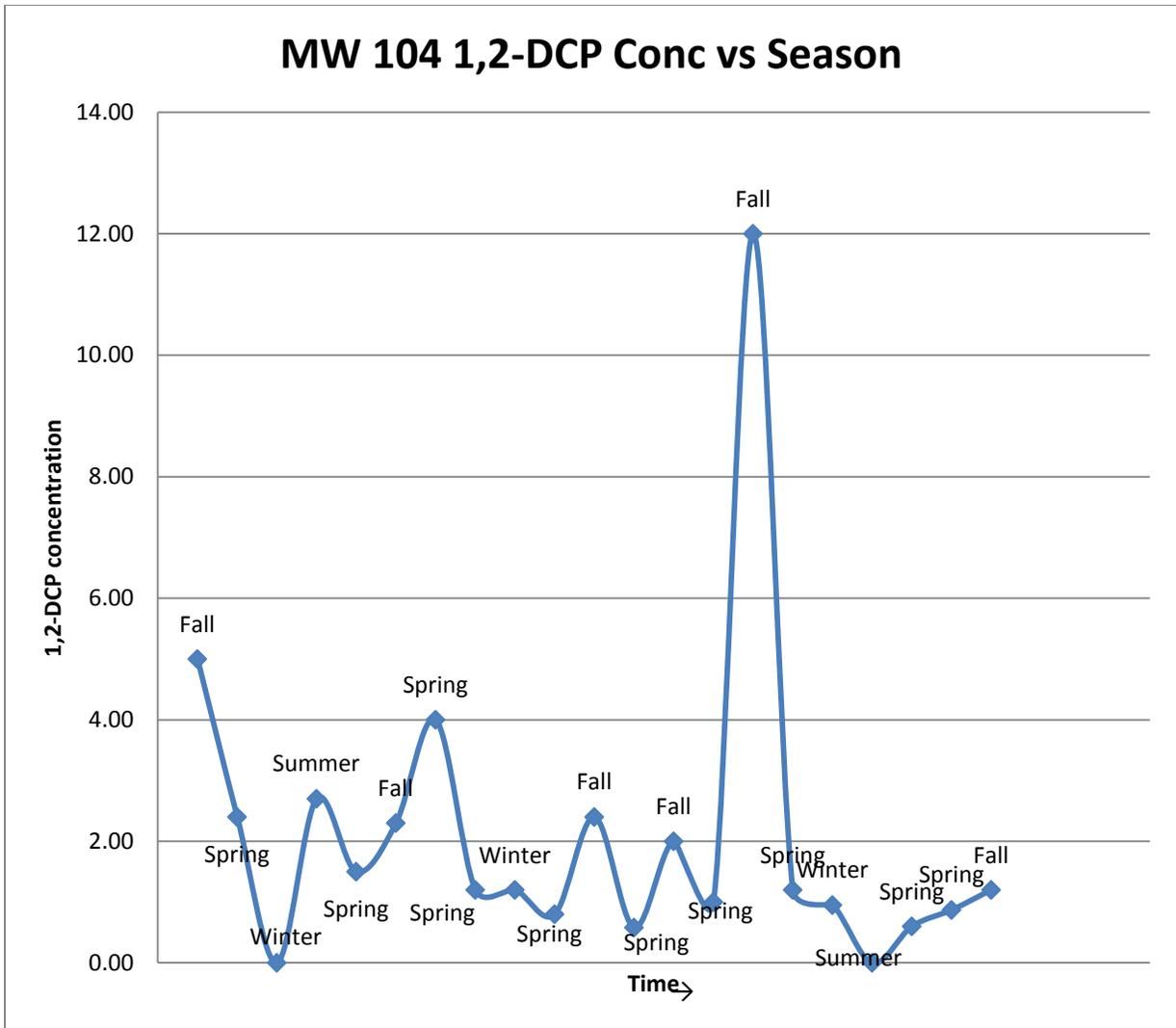


Figure 5. MW-104 1,2-DCP Concentration (µg/L) versus Season

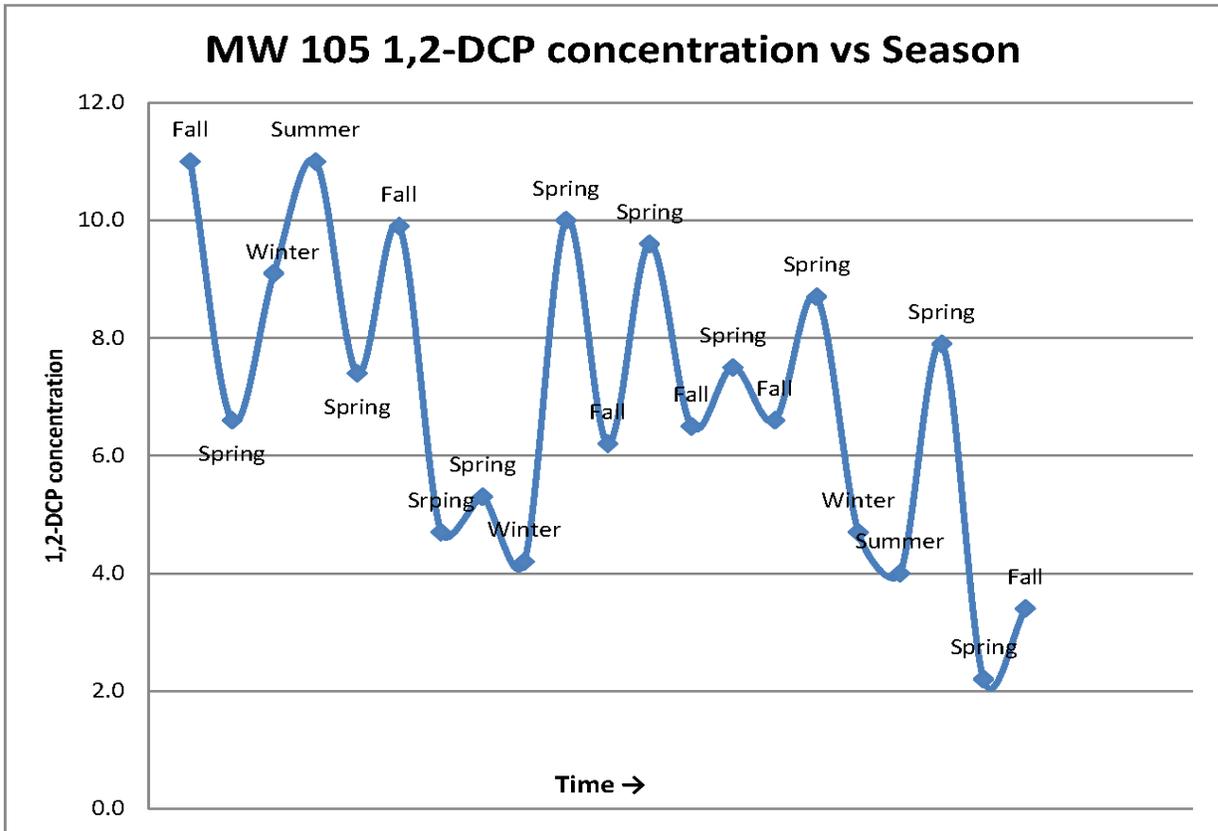


Figure 6. MW-105 1,2-DCP Concentration (µg/L) versus Season

Trend Analysis

USACE conducted a trend analysis using EPA’s Groundwater Statistics Tool. Datasets for both MW-104 and MW-105 consisted of 20 data points each. Outliers were checked with a Dixon’s test using a 1% risk of false outlier rejection criteria, which identified one statistical outlier in the dataset for MW-104. The tool used a Shapiro-Wilk test with a 5% confidence level to check for normality. A 95% confidence level was used to calculate confidence around the trend lines. Upper Confidence Limits (UCLs) on the mean were normal for MW 105, and were calculated for MW-104 using Kaplan-Meier Chebyshev and Theil-Sen/Mann-Kendall, and for MW-105 using Student’s t-test and Ordinary Least Squares. The trends and confidence bands were linear, and linear regression was used to evaluate slopes and UCLs.

Figure 7 and Figure 8 present 1,2-DCP concentration trends based on the trend analysis using EPA’s Groundwater Statistics Tool. The shallow, decreasing slope for MW-104 (Figure 7) suggests that 1,2-DCP concentrations will remain below the cleanup level and, importantly, even below the 1,2-DCP MCL of 5 µg/L, and will continue to decrease below detectable limits.

The 1,2-DCP concentrations in MW-105 show a linear downward trend (Figure 8) which suggests that 1,2-DCP concentrations will remain below the cleanup level of 10 µg/L. In addition, four of the last five

sampling events had 1,2-DCP concentrations below the MCL of 5 µg/L. This indicates that MW-105 will likely continue to decrease to below detectable limits.

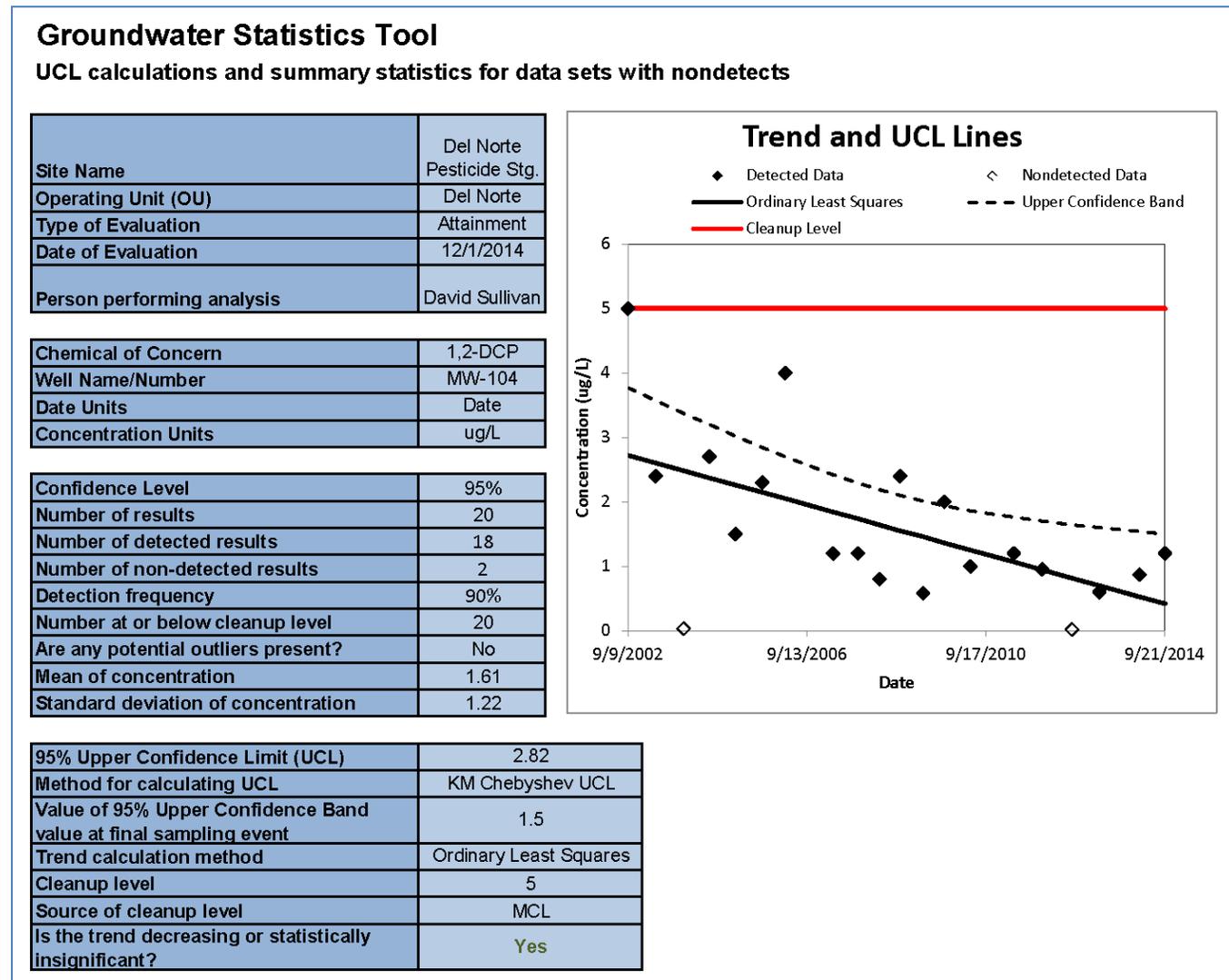


Figure 7. MW-104 1,2-DCP Concentration Trend

Groundwater Statistics Tool

UCL calculations and summary statistics for data sets that are normally distributed

Site Name	Del Norte Pesticide Stg.
Operating Unit (OU)	Del Norte
Type of Evaluation	Attainment
Date of Evaluation	12/1/2014
Person performing analysis	David Sullivan

Chemical of Concern	1,2-DCP
Well Name/Number	MW-105
Date Units	Date
Concentration Units	ug/L

Confidence Level	95%
Number of results	20
Number < cleanup level	6
Are any potential outliers present?	No
Mean of concentration	6.78
Standard deviation of concentration	2.46
t-value for UCL calculation	1.729

95% Upper Confidence Limit (UCL)	7.73
Method for calculating UCL	Student's t UCL
Value of 95% Upper Confidence Band value at final sampling event	6.92
Trend calculation method	Ordinary Least Squares
Cleanup level	5
Source of cleanup level	MCL
Is the trend decreasing or statistically insignificant?	Yes

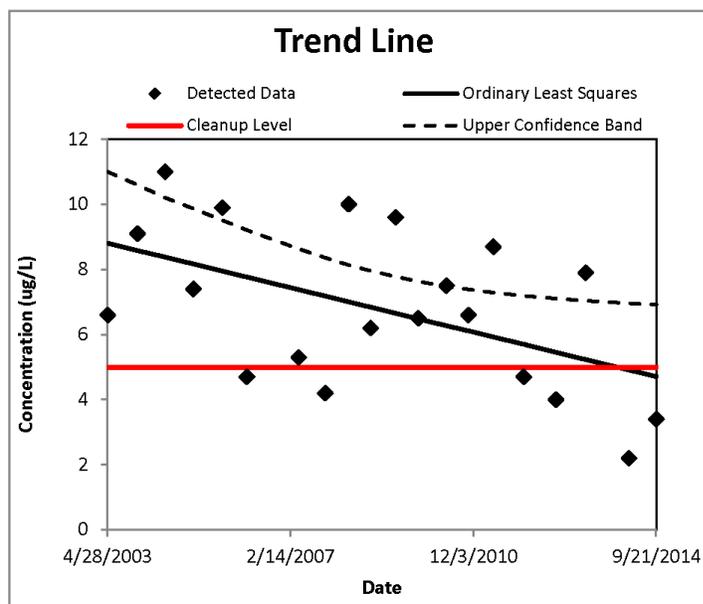


Figure 8. MW-105 1,2-DCP Concentration Trend

6.4. Site Inspection

The Site inspection was conducted on October 8, 2014 by Kevin Mayer, EPA. Personnel in attendance were Brian McNally (Del Norte County Senior Environmental Health Specialist) and Kevin Mayer. Mr. McNally drove Mr. Mayer from the County offices about 700 feet north along the access road to the Site. Mr. McNally led the way along the forest paths to the four monitoring wells currently used for the monitoring events. The inspection also including checking the visible and/or accessible fencing sections.

In general, the site is overgrown with trees and shrubs. The monitoring well locations are marked on the Site map (Figure 2) and are also in a GPS database maintained by the County. The monitoring wells are locatable without undue difficulty along the paths and are marked with flagging tape. The wells themselves are in good condition, despite the surface rust coating the outer protective casings. All wells were locked, with locks operable and in good condition. No structures remain on Site.

6.5. Interviews

During the FYR process, interviews were conducted with parties affected by or involved with the Site, including the current landowners and regulatory agencies. The purpose of the interviews was to document the perceived status of the Site and any perceived problems or successes with the phases of the remedy that have been implemented to date. All of the interviews were conducted during the Site visit on October 6, 2014. Interviews are summarized below and complete interviews are included in Appendix C.

Interviews were conducted with Brian McNally (Del Norte County Senior Environmental Health Specialist), David Cayell (Del Norte County Manager, Weights and Measures, Agricultural Inspection, Animal Control), Heidi Kunstall (Del Norte County Director Community Development), and Susan Daugherty (Jack McNamara Airport Program Manager). Ms. Daugherty's interview was focused on the Airport's plans to use the access road through the Site for a runway expansion project. Since the interview, the Airport has eliminated all plans to use any portion of the Site for their future construction projects; therefore Ms. Daugherty's interview is not discussed further in this FYR.

All interviews were documented on the Interview Record forms, and are included in Appendix C.

None of the interviewees noted any problems or unusual situations with the Site. Ms. Kunstall and Mr. McNally each mentioned decreasing contaminant levels on Site and scarce financial resources. They each mentioned looking forward to when routine groundwater monitoring is no longer necessary.

6.6. Institutional Controls

The AROD of August 29, 2000, added an IC component to the remedy to “ensure that the remaining contaminated groundwater will not be used.” The ICs in the AROD were:

- Restriction of access to the Site to protect existing monitoring wells and to prevent use of the contaminated groundwater
- Prohibition of disturbing existing wells
- Prohibition of using the contaminated groundwater
- Prohibition of well installation in the area of the contamination plume that could cause the plume to move or flow differently
- Prohibition of all residential use of the Site and industrial/commercial use of the Site that would interfere with containment of the plume or with existing wells

In July 2002, the California Department of Toxic Substances Control (DTSC) used a Land Use Covenant (LUC) to implement the AROD ICs. In March 2007, a corrected LUC that included both parcels at the Site was recorded with Del Norte County. Restricted site access is accomplished by fencing, a gate, and signage, all of which were inspected during the site visit on October 8, 2014, and found to be in good condition. In reviewing the Title Report for the Del Norte property, the only exception to the title is the Property and Environmental Restriction placed on the property by DTSC in 2007. As a result, the title to the property is otherwise clear.

Actions that could affect the LUC are monitored by an independent company under contract to DTSC through an internet-based monitoring program. No violations of the LUC have been recorded in the last five years.

Table 5 lists the ICs for groundwater at the Site.

Table 5. IC Summary Table

Media	Decision Document	Affected Parcel(s)	IC Objective	Instrument in Place
Ground Water	AROD	110-010-22 and 120-020-36	Restrict access to and use of ground water.	Land Use Covenant

7. Technical Assessment

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

Yes, the remedy as selected in the 1985 ROD and amended in the 2000 ROD Amendment is functioning as intended. As specified in the ROD, COCs in soil have been remediated by excavation and disposal and the levels of 1,2-DCP were reduced to levels where the pump and treat system specified in the 1985 ROD was no longer effective. The pump and treat system was shut down, dismantled, and removed in 1997. The components of the 2000 AROD (natural attenuation and ICs) are functioning as intended. The ICs are in place and prevent exposure to and interference with contaminated groundwater, and the progress of natural attenuation is monitored by a semi-annual groundwater monitoring program. Although the remedy selected is containment, natural attenuation at the Site is happening faster than the plume migrates, so groundwater restoration is actually being achieved. Access controls consisting of fencing, signage, and a locked gate are in good condition and prevent Site access.

7.2. Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives (RAOs) Used at the Time of Remedy Selection Still Valid?

Yes, the exposure assumptions, toxicity data, cleanup levels, and RAOs are still valid.

- Changes in Standards and Exposure Pathways:* There have been no changes in standards since the ROD or 2000 AROD was signed. There have been no changes in Site conditions that affect exposure pathways since the signing of the ROD or AROD. Specifically, there have been no changes in land use, contaminants, sources or routes of exposure, as well as no change in the potential for vapor intrusion since the signing of the ROD or AROD. The cleanup level of 10 µg/L for 1,2-DCP established in the original ROD has not changed and this value was maintained when the AROD was signed in 2000 because the AROD waived the MCL as the ARAR for 1,2-DCP. The MCL of 5 µg/L has not changed since the AROD or the third FYR. The AROD discussed how natural attenuation had been successful at shrinking the contamination plume, but

at the time the levels did not appear to be further decreasing after monitoring for many years. The 2000 AROD discussed that the levels of 1,2-DCP were stable and concluded that those low levels were protective. Therefore, the cleanup levels and MCLs used at the time of the ROD and AROD are still valid.

- *Changes in Toxicity and Other Contaminant Characteristics:* The current RSLs for residential and ground water for Site COCs are less stringent than they were at the time the ROD was signed; accordingly the current cleanup levels are still valid.
- *Changes in Risk Assessment Methods:* There have been no changes in risk assessment methodologies identified since the third FYR that would affect the protectiveness of the remedy. There have also been no changes in risk assessment methods since the signing of the ROD.
- *Expected Progress Toward Meeting RAOs:* The AROD RAOs were to contain the groundwater contamination and prevent use of groundwater until drinking water standards could be met. The original ROD had an RAO to clean up groundwater to drinking water standards which, although waived in the AROD, nevertheless appears to have been achieved.

7.3. Question C: Has Any Other Information Come to Light That Could Call Into Question the Protectiveness of the Remedy?

No other information has come to light over the course of this FYR that would call into question the protectiveness of the remedy. No new ecological risks have been identified and no adverse impacts from natural disasters have occurred.

7.4. Technical Assessment Summary

The review of Site data, documents, ARARs, risk assumptions and the results of the site inspection indicates that the remedy is functioning as intended by the ROD, as modified by the AROD. Previously, contaminated soil has been removed to allow unlimited use and unrestricted access. In addition, the only two remaining wells with 1,2-DCP detections are below MCLs and have a statistically downward trend.

The Remedial Action Objectives (RAOs) from the decision documents have been achieved. In addition, based on concentrations and trends of 1,2-DCP in groundwater, use and access restrictions may no longer be necessary. EPA expects to document this in an appropriate decision document.

8. Technical Assessment Summary

There are no known site issues that, either currently or in the future, prevent the remedy from being protective.

9. Recommendations and Follow-up Actions

No recommendations that affect protectiveness were identified during the course of this FYR. However, the following recommendations have been identified during the FYR to accelerate Site close out:

- This Site may be eligible for a determination of Unlimited Use and Unrestricted Exposure (UU/UE) due to recent sampling results below the current MCL for 1,2-DCP and the statistical trends that concentrations are expected to remain below the MCL. The State has agreed to conduct confirmation sampling within the next five years. When data confirm that concentrations of all COCs remain below MCLs, EPA will then document the Site's UU/UE status. EPA will address the ARAR waiver for 1,2-DCP with an appropriate Decision Document.
- Unnecessary monitoring wells should be abandoned to protect unintended transport from the surface.
- The State of California DTSC manages and enforces the institutional controls including monitoring. Once it is determined that the Site no longer requires restrictions, including the requirement of notification of significant land use plans, EPA will inform the State that it may consider modification or termination of the institutional controls for the purpose of this Site.

10. Protectiveness Statement

The remedy at the Del Norte County Pesticide Storage Area Superfund Site is protective of human health and the environment.

11. Next Review

CERCLA requires ongoing FYRs as long as contaminants remain on site at levels that do not allow for unlimited use and unrestricted exposure. This FYR analysis indicates that Site conditions may be appropriate for unlimited use and allow for unrestricted exposure. EPA intends to assess whether the Site meets the unlimited use and unrestricted exposure criteria, and, if so, will issue a Decision Document clarifying that ICs are no longer required at the Site to achieve protectiveness.

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Appendix A: List of Documents Reviewed

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List of Documents Reviewed

Environmental Protection Agency, Del Norte County Pesticide Storage Area Superfund Site Record of Decision. September 1985.

Environmental Protection Agency. Del Norte Pesticide Storage Record of Decision Amendment. August 2000.

Environmental Protection Agency. Second Five-Year Review Report for Del Norte Pesticide Storage Area. September 2005.

Environmental Protection Agency. Third Five-Year Review Report for Del Norte Pesticide Storage Area. June 2010.

Environmental Protection Agency. Technical Factsheet on: 1,2-Dichloropropane. 1994.

Environmental Protection Agency. Comprehensive Five-Year Review Guidance. June 2001.

Environmental Protection Agency. Institutional Controls: a Guide to Preparing Institutional Control Implementation and Assurance Plans at Contaminated Sites. December 2012.

Environmental Protection Agency. Groundwater Statistics Tool User's Guide. July 2014.

Environmental Protection Agency. Regional Screening Levels for ground water and soil. November 2014.

Environmental Protection Agency. Regional Screening Levels for ground water and soil. October 2004.

Department of Toxic Substances Control. Covenant to Restrict Use of Property, Environmental Restriction, Re: Del Norte Pesticide Storage Area. March 2007.

Department of Toxic Substances Control. Semiannual Groundwater Monitoring Report for the Del Norte Pesticide Storage Area Site. February 2011.

County of Del Norte. Semiannual Groundwater Monitoring Report, Sixteenth Sampling Cycle, Del Norte Pesticide Storage Area. May 2011.

County of Del Norte. Nineteenth Semiannual Groundwater Monitoring Report for the Del Norte Pesticide Storage Area Site. April 2013.

County of Del Norte. Twenty-second Semiannual Groundwater Monitoring Report for the Del Norte Pesticide Storage Area Site. October 2014.

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Appendix B: Press Notices

No press notices were issued for this Five-Year Review.

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Appendix C: Interview Forms

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Five-Year Review Interview Record				
Site: Del Norte				EPA ID No: CAD000626176
Interview Type: Visit Location of Visit: Del Norte County Superfund Site Date: October 6, 2014 Time:				
Interviewers				
Name	Title		Organization	
Kevin Mayer	EPA RPM		EPA	
Interviewees				
Name	Organization	Title	Telephone	Email
Brian McNally	Del Norte County	Senior Environmental Health Specialist	707-465-0426	BMcNally@co.del-norte.ca.us
Summary of Conversation				
<p>1) What is your overall impression of the project? He is doing all he can for the project, and feels there is no remaining risk.</p> <p>2) Is the remedy functioning as expected? How well is the remedy performing? Yes.</p> <p>3) What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Yes. The trends are decreasing.</p> <p>4) Is there a continuous O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities. There is no continuous presence, though there is a routine one.</p> <p>5) Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines in the last five years? If so, do they affect protectiveness of the remedy? Please describe changes and impacts. There have been no changes.</p> <p>6) What are the annual operating costs for your organization's involvement with the site? The annual cost was about \$4,032.77 last fiscal year.</p> <p>7) Have there been unexpected O&M difficulties or costs at the site in the last five years? If so, please give details. None.</p> <p>8) Have there been opportunities to optimize O&M or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency. No.</p> <p>9) Are you aware of any changes in Federal/State/County/Local laws and regulations that may impact the protectiveness of the remedy? He is aware that there are none.</p> <p>10) Do you have any comments, suggestions, or recommendations regarding the project? The county has few resources, dwindling budget, and increasing needs, so he looks forward to when the monitoring is no longer needed.</p>				
Additional Site-Specific Questions				
<i>[If needed]</i>				

Five-Year Review Interview Record				
Site: Del Norte				EPA ID No: CAD000626 176
Interview Type: Visit Location of Visit: Del Norte County Superfund Site Date: October 6, 2014 Time:				
Interviewers				
Name			Title	Organization
Kevin Mayer			EPA RPM	EPA
Interviewees				
Name	Organization	Title	Telephone	Email
David Cavyell	Del Norte County	Manager, Weights and Measures, Agricultural Inspection, Animal Control	707-464-7235	
Summary of Conversation				
<p>1) What is your overall impression of the project? It's no trouble for him.</p> <p>2) Is the remedy functioning as expected? How well is the remedy performing? He doesn't know specifics, but knows the active treatment is no longer active.</p> <p>3) What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? He doesn't know.</p> <p>4) Is there a continuous O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities. There is not a continuous presence. The gates are locked after 5 pm. His staff, volunteers, and clients are present at their facilities and the areas nearby the Site, but not on the Site, all day and on weekends.</p> <p>5) Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines in the last five years? If so, do they affect protectiveness of the remedy? Please describe changes and impacts. He doesn't know, but would be aware if any changes occurred due to his presence near the Site.</p> <p>6) What are the annual operating costs for your organization's involvement with the site? O&M is not part of his organization's duties.</p> <p>7) Have there been unexpected O&M difficulties or costs at the site in the last five years? If so, please give details. Not applicable.</p> <p>8) Have there been opportunities to optimize O&M or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency. Not applicable.</p> <p>9) Are you aware of any changes in Federal/State/County/Local laws and regulations that may impact the protectiveness of the remedy? No.</p> <p>10) Do you have any comments, suggestions, or recommendations regarding the project? He has none.</p>				
Additional Site-Specific Questions				
<i>[If needed]</i>				

Five-Year Review Interview Record				
Site: Del Norte		EPA ID No:		CAD000626176
Interview Type: Visit Location of Visit: Del Norte County Superfund Site Date: October 6, 2014 Time:				
Interviewers				
Name	Title		Organization	
Kevin Mayer	EPA RPM		EPA	
Interviewees				
Name	Organization	Title	Telephone	Email
Heidi Kunstall	Del Norte County	Director Community Development	707-464-7254	hkunstall@co.del-norte.ca.us
Summary of Conversation				
<p>1) What is your overall impression of the project? The project is going well, and she looks forward to ending the monitoring process.</p> <p>2) Is the remedy functioning as expected? How well is the remedy performing? Yes.</p> <p>3) What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Yes. The contaminant levels are decreasing.</p> <p>4) Is there a continuous O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities. No.</p> <p>5) Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines in the last five years? If so, do they affect protectiveness of the remedy? Please describe changes and impacts. No.</p> <p>6) What are the annual operating costs for your organization's involvement with the site? The annual operating costs have run about four thousand dollars a year.</p> <p>7) Have there been unexpected O&M difficulties or costs at the site in the last five years? If so, please give details. No.</p> <p>8) Have there been opportunities to optimize O&M or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency. No.</p> <p>9) Are you aware of any changes in Federal/State/County/Local laws and regulations that may impact the protectiveness of the remedy? She doesn't know.</p> <p>10) Do you have any comments, suggestions, or recommendations regarding the project? She cooperates in maintaining the LUC. She seems to look forward to the point where the LUC can be modified or lifted. She feels the County has a limited budget. She stated that there is no development planned at the Site, but the main access road through the Site may be used during the Airport's planned runway expansion. There would be no impact on the Site's groundwater system.</p>				
Additional Site-Specific Questions				
<i>[If needed]</i>				

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Appendix D: Site Inspection Checklist

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3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Del Norte County Agriculture Department
 Contact David Cavyell Manager, Dept of Agriculture Oct 6 2014 707-464-7235
 Name Title Date Phone no.
 Problems; suggestions; Report attached

Agency _____
 Contact _____
 Name Title Date Phone no.
 Problems; suggestions; Report attached

Agency Del Norte County Community Development Dept
 Contact Heidi Kunstall Director Oct 6 2014 707-464-7254
 Name Title Date Phone no.
 Problems; suggestions; Report attached

Agency _____
 Contact _____
 Name Title Date Phone no.
 Problems; suggestions; Report attached

4. **Other interviews** (optional) Report attached.

Other interviews are included in the Interview Record Forms.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

<input checked="" type="checkbox"/> O&M manual	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A

Remarks As-builts and maintenance logs were present but not inspected since the site is no longer operating.

2. **Site-Specific Health and Safety Plan** Readily available Up to date N/A

Contingency plan/emergency response plan Readily available Up to date N/A

Remarks

3.	O&M and OSHA Training Records	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks Site not operational in last 5 years, so not applicable.				
4.	Permits and Service Agreements	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks System shut down permamnently in 1997.				
5.	Gas Generation Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks System shut down permamnently in 1997.				
6.	Settlement Monument Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
7.	Groundwater Monitoring Records	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks				
8.	Leachate Extraction Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				
9.	Discharge Compliance Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks System shut down permamnently in 1997.				
10.	Daily Access/Security Logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks				

IV. O&M COSTS																																	
1.	<p>O&M Organization</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> State in-house <input type="checkbox"/> PRP in-house <input type="checkbox"/> Federal Facility in-house <input checked="" type="checkbox"/> Other County in-house </div> <div style="width: 45%;"> <input type="checkbox"/> Contractor for State <input type="checkbox"/> Contractor for PRP <input type="checkbox"/> Contractor for Federal Facility </div> </div>																																
2.	<p>O&M Cost Records</p> <div style="display: flex; justify-content: space-between;"> <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> Funding mechanism/agreement in place </div> <p>Original O&M cost estimate _____ <input type="checkbox"/> Breakdown attached</p> <p style="text-align: center;">Total annual cost by year for review period if available</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">From _____</td> <td style="width: 20%;">To _____</td> <td style="width: 40%;"></td> <td style="width: 20%; text-align: right;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td style="text-align: right;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td style="text-align: right;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From Oct 2013</td> <td>To Oct 2014</td> <td style="text-align: center;">4,032.77</td> <td style="text-align: right;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> </table>	From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From Oct 2013	To Oct 2014	4,032.77	<input type="checkbox"/> Breakdown attached	Date	Date	Total cost	
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Date	Date	Total cost																															
From Oct 2013	To Oct 2014	4,032.77	<input type="checkbox"/> Breakdown attached																														
Date	Date	Total cost																															
3.	<p>Unanticipated or Unusually High O&M Costs During Review Period</p> <p>Describe costs and reasons:</p> <p>No unusually high O&M costs in last 5 years.</p>																																
V. ACCESS AND INSTITUTIONAL CONTROLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A																																	
A. Fencing																																	
1.	<p>Fencing damaged <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Gates secured <input type="checkbox"/> N/A</p> <p>Remarks Fencing that was observed was in good condition.</p>																																
B. Other Access Restrictions																																	
1.	<p>Signs and other security measures <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A</p> <p>Remarks Signs were present and legible.</p>																																

C. Institutional Controls (ICs)			
1.	Implementation and enforcement	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
	Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
	Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
	Type of monitoring (e.g., self-reporting, drive by)	<u>Inspection</u>	
	Frequency	<u>Twice per year</u>	
	Responsible party/agency	<u>Del Norte County, EPA</u>	
	Contact	<u>Brian McNally</u>	<u>Senior Env. Health Specialist</u>
		Name	Title
			Date Phone no.
	Reporting is up-to-date	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
	Reports are verified by the lead agency	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
	Specific requirements in deed or decision documents have been met	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
	Violations have been reported	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
	Other problems or suggestions:	<input type="checkbox"/> Report attached	
2.	Adequacy	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A
	Remarks		
D. General			
1.	Vandalism/trespassing	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident
	Remarks		
2.	Land use changes on site	<input checked="" type="checkbox"/> N/A	
	Remarks	There are currently no land use changes anticipated.	
3.	Land use changes off site	<input type="checkbox"/> N/A	
	Remarks	Airport expansion is probable, but will not affect the Site.	
VI. GENERAL SITE CONDITIONS			
A. Roads	<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A	
1.	Roads damaged	<input checked="" type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A
	Remarks		

B. Other Site Conditions	
Remarks Trees and vegetation are prevalent, but do not restrict access to monitoring wells.	
VII. LANDFILL COVERS <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
A. Landfill Surface	
1. Settlement (Low spots) Areal extent _____ Remarks	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident Depth _____
2. Cracks Lengths _____ Widths _____ Depths _____ Remarks	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Cracking not evident
3. Erosion Areal extent _____ Remarks	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident Depth _____
4. Holes Areal extent _____ Remarks	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Holes not evident Depth _____
5. Vegetative Cover Remarks	<input type="checkbox"/> Grass <input type="checkbox"/> Cover properly established <input type="checkbox"/> No signs of stress <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram)
6. Alternative Cover (armored rock, concrete, etc.) Remarks	<input type="checkbox"/> N/A
7. Bulges Areal extent _____ Remarks	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Bulges not evident Height _____

8.	Wet Areas/Water Damage <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks	<input type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map	Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____
9.	Slope Instability Areal extent _____ Remarks	<input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of slope instability
B. Benches <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Applicable (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench Remarks	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
2.	Bench Breached Remarks	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
3.	Bench Overtopped Remarks	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement Areal extent _____ Remarks	<input type="checkbox"/> Location shown on site map Depth _____	<input type="checkbox"/> No evidence of settlement
2.	Material Degradation Material type _____ Remarks	<input type="checkbox"/> Location shown on site map Areal extent _____	<input type="checkbox"/> No evidence of degradation
3.	Erosion Areal extent _____ Remarks	<input type="checkbox"/> Location shown on site map Depth _____	<input type="checkbox"/> No evidence of erosion

4.	Undercutting	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks		
5.	Obstructions	Type _____	<input type="checkbox"/> No obstructions <input type="checkbox"/> Location shown on site map
	Areal extent _____	Size _____	
	Remarks		
6.	Excessive Vegetative Growth	Type _____	
	<input type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Remarks		
D. Cover Penetrations <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Gas Vents	<input type="checkbox"/> N/A <input type="checkbox"/> Active <input type="checkbox"/> Passive <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning	
		<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration	
	Remarks		
2.	Gas Monitoring Probes	<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition	
		<input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A	
	Remarks		
3.	Monitoring Wells (within surface area of landfill)	<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition	
		<input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A	
	Remarks		
4.	Leachate Extraction Wells	<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition	
		<input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A	
	Remarks		
5.	Settlement Monuments	<input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A	
	Remarks		

E. Gas Collection and Treatment		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks		
2.	Gas Collection Wells, Manifolds and Piping <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks		
F. Cover Drainage Layer		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Outlet Pipes Inspected Remarks	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
2.	Outlet Rock Inspected Remarks	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
G. Detention/Sedimentation Ponds		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Siltation <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Areal extent _____ Depth _____ Remarks		
2.	Erosion Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks		
3.	Outlet Works Remarks	<input type="checkbox"/> Functioning <input type="checkbox"/> N/A	
4.	Dam Remarks	<input type="checkbox"/> Functioning <input type="checkbox"/> N/A	

H. Retaining Walls		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Deformations	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement _____	Vertical displacement _____	
	Rotational displacement _____		
	Remarks		
2.	Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
	Remarks		
I. Perimeter Ditches/Off-Site Discharge		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
	Areal extent _____	Depth _____	
	Remarks		
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
		<input type="checkbox"/> Vegetation does not impede flow	
	Areal extent _____	Type _____	
	Remarks		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident
	Areal extent _____	Depth _____	
	Remarks		
4.	Discharge Structure	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks		
VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Settlement	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
	Areal extent _____	Depth _____	
	Remarks		
2.	Performance Monitoring	Type of monitoring _____	
	<input type="checkbox"/> Performance not monitored	<input type="checkbox"/> Evidence of breaching	
	Frequency _____	Head differential _____	
	Remarks		
IX. GROUNDWATER/SURFACE WATER REMEDIES		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Pumps, Wellhead Plumbing, and Electrical		
	<input type="checkbox"/> Good condition	<input type="checkbox"/> All required wells properly operating	<input type="checkbox"/> Needs Maintenance
	<input type="checkbox"/> N/A		
	Remarks Remedy was shut down permanently in 1997.		

2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks
B. Surface Water Collection Structures, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Collection Structures, Pumps, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks
C. Treatment System <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Treatment Train (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks Remedy was shut down permanently in 1997.
2.	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks

3.	Tanks, Vaults, Storage Vessels <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks
4.	Discharge Structure and Appurtenances <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks
5.	Treatment Building(s) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks
6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks
D. Monitoring Data	
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input checked="" type="checkbox"/> Contaminant concentrations are declining
D. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks
X. OTHER REMEDIES	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	

XI. OVERALL OBSERVATIONS	
A.	Implementation of the Remedy
	Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).
B.	Adequacy of O&M
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.
C.	Early Indicators of Potential Remedy Problems
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.
D.	Opportunities for Optimization
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

