

# Five-Year Review Report

## Second Five-Year Review Report

for

## Del Norte Pesticide Storage Area

Crescent City

Del Norte County, California

September 2005

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Region IX

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## List of Acronyms

1,2-DCP	1,2- Dichloropropane
2,4-D	2,4- Dichlorophenoxyacetic acid
g/l	micrograms per liter
AOC	Administrative Order on Consent
ARARs	Applicable or Relevant and Appropriate Requirements
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	California Department of Health Services
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
MCLs	Maximum Contaminant Levels
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
OSC	On Scene Coordinator
OU	Operable Unit
P&T	Pump and Treat
PCOR	Preliminary Closeout Report
ppb	parts per billion
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act of 1986
RPM	Remedial Project Manager
SSC	State Superfund Contract
TI	Technical Impracticability
VOCs	Volatile Organic Compounds

## Executive Summary

This is the second Five-Year Review of the Del Norte County Pesticide Storage Area Superfund site (Site) in Crescent City, Del Norte County, California. The results of the first Five-Year Review completed on September 26, 2000 indicate that although Institutional Controls (ICs) were not in place at the Site, the remedy was protective of human health and the environment. The purpose of this Five-Year Review is to assess the nature of any contamination left on-site and determine whether or not the remedy is protective of human health and the environment.

The August 29, 2000 Amendment to the Record of Decision (ROD Amendment) concluded that the groundwater plume was technically impracticable to remediate to cleanup goals. A pump and treatment system that had been operating for approximately seven years was no longer effective at reducing concentrations of the contaminant 1,2-Dichloropropane (1,2-DCP) and that 1,2-DCP levels remained stable whether or not the system was operating. Groundwater monitoring since the first Five-Year Review indicates that residual 1,2-DCP levels remain above the Maximum Contaminant Level (MCL) of 5 micrograms per liter (  $\mu\text{g/l}$ ). Exposure to the remaining on-site 1,2-DCP contamination, however, is being adequately controlled by land and well use and development policies of the Del Norte County Department of Health and Social Services and Community Development Department. In accordance with a Consent Decree (CD) between EPA, the California Department of Toxic Substances Control (DTSC), and Del Norte County, a Covenant to Restrict Use of Property was recorded with Del Norte County on July 31, 2002 to further limit exposure to 1,2-DCP. This Covenant was mistakenly recorded on only a portion of the Site area, parcel #120-020-36. The approximately one acre Site lies within adjacent parcel #110-010-22. The EPA attorney for this Site is currently working with DTSC counsel and Del Norte County counsel to record the deed restriction as intended against the second of these parcels, parcel #110-010-22. The next Five-Year Review should ensure that the Covenant is recorded on both parcels. The finding of this Five-Year Review is that Del Norte County policies, together with the existing Covenant and the plans to record deed restrictions against the second parcel, are ensuring that the remedial actions at the Site are protective of human health and the environment.

## Five-Year Review Summary Form

SITE IDENTIFICATION		
<b>Site name (from WasteLAN):</b> Del Norte Pesticide Storage Area		
<b>EPA ID (from WasteLAN):</b> CAD000626176		
<b>Region:</b> IX	<b>State:</b> CA	<b>City/County:</b> Crescent City/Del Norte County
SITE STATUS		
<b>NPL status:</b> <input type="checkbox"/> Final   Deleted <input type="checkbox"/> Other (specify) _____		
<b>Remediation status</b> (choose all that apply): <input type="checkbox"/> Under Construction <input type="checkbox"/> Operating   Complete		
<b>Multiple OUs?*</b> <input type="checkbox"/> YES   NO	<b>Construction completion date:</b> 06/18/1992	
<b>Has Site been put into reuse?</b> <input type="checkbox"/> YES   NO		
REVIEW STATUS		
<b>Lead agency:</b> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency _____		
<b>Author name:</b> Yvonne Fong		
<b>Author title:</b> Remedial Project Manager	<b>Author affiliation:</b> U.S. EPA Region IX	
<b>Review period:**</b> 09/26/2000 to 09/08/2005		
<b>Dates of Site inspections:</b> 06/13/2005 and 06/20/2005		
<b>Type of review:</b> Statutory Policy   ( <input type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead <input type="checkbox"/> Regional Discretion)		
<b>Review number:</b> <input type="checkbox"/> 1 (first)   2 (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify) _____		
<b>Triggering action:</b> <input type="checkbox"/> Actual RA On-site Construction at OU # _____ <input type="checkbox"/> Actual RA Start at OU# _____ <input type="checkbox"/> Construction Completion   Previous Five-Year Review Report <input type="checkbox"/> Other (specify) _____		
<b>Triggering action date (from WasteLAN):</b> 09/26/2000		
<b>Due date (five years after triggering action date):</b> 09/26/2005		

\* ["OU" refers to operable unit.]

\*\* [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

## Five-Year Review Summary Form, cont'd.

### Issues:

ICs were part of the remedy contained in the 2000 ROD Amendment. Del Norte County took steps to implement those controls by lodging a Covenant to Restrict Use of Property on July 31, 2002. The Covenant, however, does not include both parcels of land which comprise the Site. The July 31, 2002 Covenant was found to apply solely to parcel #120-020-36. The Covenant should be lodged for both parcels #120-020-36 and #110-010-22.

### Recommendations and Follow-up Actions:

The CD between EPA, the State and the County was entered by the Court on March 6, 2002. The specific controls that were adopted at the Site were to be listed in detail in this document. Del Norte County recorded a Land Use Covenant which placed restrictions on only a portion of the property. No land use restrictions are in place for parcel #110-010-22, which is the parcel containing the Site. The next Five-Year Review should verify that the Covenant's applicability has been corrected and that these controls have been put into practice on both parcels at the Site. Table 6 establishes a one year milestone date for amending the Covenant to Restrict Use. Subsequent to the lodging of a Covenant to Restrict Use on parcel #110-010-22, title searches should be executed and a plan for the County to monitor compliance with the Covenants on both parcels #120-020-36 and #110-010-22 should be established.

Corrosion of the protective metal casings around the monitoring wells requires maintenance and possibly replacement of the caps. The thick underbrush has begun to overgrow the footpaths to the wells and should continue to be cut back as needed.

### Protectiveness Statement:

The remedy at the Del Norte Pesticide Storage Area across the single OU currently protects human health and the environment because there is no current exposure to the contamination that remains at the Site. However, in order for the remedy to be protective in the long-term, a Land Use Covenant to Restrict Use of Property that is applicable to the entire Site must be put in place to ensure long-term protectiveness.

The plume has been stable since the groundwater treatment system was shut down in October 1997. The extent of the original plume was believed to be about 12,000 square feet, reaching approximately 300 feet south of the source. The nearest private well to the Site is over a quarter-mile from the source of the plume. Due to the source removal, groundwater treatment systems, and subsequent natural attenuation, the plume has decreased to approximately 5,000 square feet and 120 feet south of the source. Contamination levels have been in gradual decline and are expected to continue to do so at a slow rate. Site contaminants have never been detected in the surrounding residential wells, and there is no evidence that contamination has been introduced since the last sampling event.

Ecological risks from the contaminated groundwater are considered insignificant due to no complete exposure pathways to ecological receptors (Attachment 8).

## I. Introduction

The purpose of a Five-Year Review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review Reports. In addition, Five-Year Review Reports identify issues found during the review, if any, and recommendations to address them.

The Agency is preparing this Five-Year Review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution 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.*

The agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) 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 action no less often than every five years after the initiation of the selected remedial action.*

The United States Environmental Protection Agency (EPA) Region IX has conducted a Five-Year Review of the remedial actions implemented at the Del Norte Pesticide Storage Area Superfund site (Site) in Crescent City, Del Norte County, California. The entire Site comprises one Operable Unit (OU). This review was conducted from May 2005 through June 2005. This report documents the results of the review.

The August 29, 2000 Amendment to the Record of Decision (ROD Amendment) altered the remedy originally selected in the September 30, 1985 Record of Decision (ROD). As a result of the ROD Amendment, hazardous substances, pollutants, or contaminants were left on-site at levels that would prohibit unlimited use and unrestricted exposure. This Five-Year Review is therefore required by statute because the remedy now allows contaminant levels in groundwater to exceed the Maximum Contaminant Level (MCL) indefinitely. This is the second Five-Year Review for the Site. The triggering action for this statutory review is the signature date of the previous Five-Year Review Report, as shown in EPA's WasteLAN database: September 26, 2000. The due date for this Five-Year Review Report has been met.

## II. Site Chronology

Table 1 lists the chronology of events for the Site.

**Table 1: Chronology of Site Events**

Event	Date
Operation of the Del Norte Pesticide Storage Area	1970-1981
Initial discovery of problem by NCRWQCB	08/13/1981
EPA inspection reveals RCRA violations	09/25/1981
Cleanup and Abatement Order No. 81.213 issued by NCRWQCB	10/1981
DHS collects on-site soil samples	12/1981
Removal of 1,150 containers from the Site	01/1982
Shipment of 440 contaminated barrels to licensed recycler	04/1982
Final NPL listing	09/21/1984
Remedial Investigation/Feasibility Study complete	05/1985
ROD signature	09/30/1985
Removal of 290 cubic yards of contaminated soil	08/1987
RD complete	04/20/1988
EPA ascertains on-site chromium is naturally occurring	1985-1987
U.S. Army Corps of Engineers contracted to design Pump & Treat (P&T) system	05/1989
ESD (for presence of natural chromium)	09/21/1989
Construction of P&T system begins	10/25/1989
P&T system completed and operational	04/1990
DTSC assumes cost for 50% of RA under SSC	04/23/1990
PCOR/Construction Completion	06/18/1992
P&T system shut off when contaminant concentrations stabilize	10/1997
AOC for cost recovery	05/11/1998
Proposed Plan for first Five-Year Review presented at community meeting	03/09/2000
ROD Amendment signature	08/29/2000
First Five-Year Review	09/26/2000
CD entered by Court	03/06/2002
Final Close-out Report	07/19/2002
Deletion from NPL	09/18/2002
Covenant to Restrict Use of Property Recorded with County	07/31/2002
Second Five-Year Review due	09/26/2005

**Table 1: Chronology of Site Events**

Event	Date
Third Five-Year Review scheduled	09/2010

### **III. Background**

#### **Physical Characteristics**

The Site, located approximately one mile northwest of Crescent City, California, consists of less than one acre of land contaminated with a variety of herbicides, pesticides, and other compounds. The Site is located in a rural area immediately south of McNamara Field, the airport that serves Del Norte County (See Attachment 1). The Site lies within the 20-acre Jack McNamara parcel, which is comprised of County Assessor parcel #110-010-22 and parcel #120-020-36 (See Attachment 2).

According to the California Department of Finance, the population of Del Norte County was 27,507 in 2000. By 2020, the population is expected to increase to 39,000. In 2000, the population of Crescent City was estimated to be 7,347 (including the population of Pelican Bay State Prison). In 1999, EPA estimated that 800 persons live within one mile of the Site.

#### **Land and Resource Use**

Del Norte County owns the Del Norte Pesticide Storage Area and the land surrounding it. 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 encompassed by approximately 480 acres of County-owned property, predominantly used as a public airport. The County property is bounded by State-owned land which is intended for use as a natural and recreational area to the north; by Washington Boulevard and farmland to the south; by Riverside Drive and residences to the east; and the Pacific Ocean to the west. The Del Norte County Agriculture Department office and animal quarantine facility are currently co-located with the Site.

The groundwater at the Site is relatively shallow and fluctuates with seasonal and annual precipitation patterns. During the June 2005 site inspection, the water level in drainage ditches at the Site indicated the water table was approximately 5 or 6 feet below the grade level of the Site. These ditches are upgradient of the plume area. Since the airport and on-site County Agriculture Department facilities are using municipal water, the underlying groundwater aquifer within one-quarter of a mile of the Site is not used as a drinking water source. The nearest residence is a single-family farmhouse to the south of the site more than one-quarter mile from the plume. The nearest multi-family residences, the Seawood Apartments, are one mile to the east of the site.

It appears that the land uses of the Site and surrounding area are essentially the same as they were during the Five-Year Review in 2000. The General Plan and Zoning Maps for the Site property indicate that part of the Site property is zoned for manufacturing and industrial uses and the remainder of the Site is zoned for resource conservation. The only observed change is the relocation of the sole lessee of County property, the Wild Feline Rescue Society, from the Humane Society building on Washington Boulevard to other non-County property. The Humane Society building is in disrepair and is no longer being utilized. With regard to future land use, Del Norte County intends to relocate the County Agriculture Department office and animal

quarantine facility off of the Jack McNamara parcel at some unspecified point in the future and to utilize the County property solely for airport-related purposes. Condemnation and razing of several residences on Riverside Drive are planned as part of a proposed airport expansion. Aside from the possible relocation of County offices and the removal of homes on Riverside Drive, it is anticipated that present land uses of the Site and surrounding area will continue into the future.

## **History of Contamination**

In December 1969, Del Norte County notified the North Coast Regional Water Quality Control Board (NCRWQCB) of the County's intent to operate a pesticide container storage area. The County requested operating advice and approval from the NCRWQCB, and in January 1970, the NCRWQCB responded with suggested operating procedures and additional information requests regarding the planned facility. During 1970, the Del Norte Pesticide Storage Area was designated by the NCRWQCB as a Class II-2 disposal site. 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. The NCRWQCB approved the operation of the Del Norte Pesticide Storage Area provided that all containers were triple rinsed and punctured prior to arrival at the facility.

The Del Norte Pesticide Storage Area operated from 1970-1981. In the fall of 1981, the NCRWQCB and California Department of Health Services (DHS) discovered soil and groundwater contamination. This discovery indicated that pesticide containers had been rinsed on-site and that the residues and rinseates were improperly disposed of in a bermed, unlined sump area. Preliminary investigations from 1981-1983 by NCRWQCB and DHS identified soil and groundwater contamination with herbicides, pesticides and volatile and semi-volatile organic compounds. In January 1982, Del Norte County removed 1,150 containers from the Site and disposed of them at the Crescent City Landfill. In April 1982, 440 remaining unrinsed drums were shipped to a licensed recycler, the Rose Cooperage Company, in Montebello, California. Del Norte County's inability to fund further investigations initiated the process of listing the Del Norte Pesticide Storage Area on the National Priorities List (NPL) in the fall of 1983.

## **Basis for Taking Action**

EPA completed Remedial Investigation/ Feasibility Study (RI/FS) activities in 1985. The results of those investigations indicated that operations at the Site resulted in contamination of soil and groundwater. Contaminants of concern in both soil and groundwater were 1,2-Dichloropropane (1,2-DCP) and 2,4-Dichlorophenoxyacetic acid (2,4-D). Soil contamination was detected to a depth of 15 feet but contained to a 15 feet by 20 feet on-site area. At the time, the groundwater contaminant plume was estimated to extend approximately 170 feet to the southeast of the Site. Potential use of the contaminated aquifer as a water supply would result in a significant health risk. Ingestion of these contaminants at the levels found on-site during the RI/FS have been linked to increased cancer risk. Investigations also indicated that elevated levels of chromium were also present in soils at the Site.

## IV. Remedial Actions

### Remedy Selection

The Record of Decision (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:

- Minimize off-site contamination by migration of contaminated groundwater and
- Minimize exposure to contaminated soil.

These RAOs were further specified as:

- Prevention of nearby well contamination and
- Restoration of contaminated on-site ground water to MCLs and clean-up of on-site soils.

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.

An Explanation of Significant Differences (ESD) which justified and documented the change in the groundwater treatment method that was selected in the 1985 ROD was issued on September 21, 1989. Following source removal activities and initial biodegradation and/or volatilization of on-site contaminants, concentrations of 2,4-D and 1,2-DCP had reached asymptotic levels, indicating that continuation of the carbon adsorption component of the remedy was no longer appropriate. Furthermore, the discovery of naturally occurring chromium in on-site bedrock rendered the treatment of groundwater by coagulation/filtration and the remediation of soil to remove chromium impracticable and prohibited under Section 104 (a)(3)(A) of CERCLA as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The selected groundwater remedy was changed by the ESD from carbon adsorption and coagulation/filtration to aeration. Aeration 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. The cleanup level for 1,2-DCP was not changed by the ESD.

In a ROD Amendment signed on August 29, 2000, EPA concluded that the remedial objective of restoring the contaminated groundwater to MCLs will not be met because no technology exists which is capable of reaching drinking water quality standards under the conditions found at the Site.

The RAOs included in the 2000 ROD Amendment are:

- Containment of contaminated groundwater and
- Prevention of its use as drinking water as long as contaminant concentrations remain above drinking water quality standards.

The 2000 ROD Amendment provides for:

- 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 g/l),
- A Technical Impracticability waiver (TI) of this newly identified ARAR, and
- Institutional Controls (ICs) to prevent exposure to contaminated groundwater.

## **Remedy Implementation**

In December 1987, EPA performed the first remedial action at the Site. Approximately 290 cubic yards of contaminated soil were excavated and disposed of off-site at a licensed hazardous waste disposal facility. Contracted removal activities were provided by Emergency Response Contracting Services (ERCS), Riedel Environmental Services. This removal action completed the soil remedy for the Site.

On July 19, 1988, DHS Toxic Substances Control Division, currently the Department of Toxic Substances Control (DTSC), signed a State Superfund Contract (SSC) with EPA, agreeing to pay for 50% of Remedial Design (RD) and Remedial Action (RA) costs. This contract was later amended in 1993 to include a 50% cost share of removal, RI/FS, RD, and RA costs. The authority for higher and broader cost sharing (exceeding the typical 10% cost share of RA costs) is granted under CERCLA Section 104(c)(3) which provides that States pay at least 50% of all response costs for sites where the State, or a political subdivision thereof, is responsible as an operator.

The RD for the aeration treatment system at the Site was executed by an EPA On Scene Coordinator (OSC). Construction of the treatment system was conducted through ERCS from September 1989 through April 1990. Extraction and monitoring wells were already in place from activities conducted during the RI/FS and RD.

Groundwater monitoring indicated that the extent and levels of 2,4-D and 1,2-DCP in groundwater were decreasing significantly (See Attachment 3). Between 1985 and 1989, after source removal but before installation of the pump and treatment system, the levels of 2,4-D in monitoring wells at the Site decreased to less than 2 g/l, well below the 100 g/l cleanup level established under the ROD. The levels of 1,2-DCP also decreased in the same time period from approximately 2000 g/l to 600 g/l; although the concentrations remained above the 10 g/l cleanup level established under 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. 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 40 g/l and 15 g/l. In 1994, EPA installed an air sparging system to determine if the 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.

The Site achieved construction completion status when the Preliminary Close Out Report was signed on June 18, 1992.

In 1994, EPA began a program of turning the groundwater treatment system off 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 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 agency to finalize a ROD Amendment on August 29, 2000, with the identification of a new ARAR for 1,2-DCP (equivalent to the newly established MCL of 5 g/l) and a TI waiver of this ARAR. Ongoing components of the remedy now include containment of the plume through natural attenuation, semi-annual groundwater monitoring, and ICs. The Fifth Semi-annual Groundwater Monitoring Report was submitted to EPA on March 14, 2005. A Covenant to Restrict Use of Property 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.

### **System Operations/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 has now been amended to containment, monitoring, land use restrictions and a TI waiver of the remediation goal. The 2002 Consent Decree requires semi-annual sampling as a component of the O&M. Five Semi-annual Groundwater Monitoring Reports are available since the Consent Decree. The sampling has been consistent with the previous sampling plan approved under the O&M and Sampling Manual prepared in February 1991. Costs for the most part have been within an acceptable range.

O&M was previously handled in-house by EPA. Repairs to the discharge pipeline, daily inspections and recording instrument readings were performed by employees of Del Norte County.

## **V. Progress Since the Last Review**

The first Five-Year Review found that remedial actions taken at the Site were expected to be protective of human health and the environment. At the time of the first Five-Year Review, the Consent Decree (CD) between EPA and the State was being drafted. The specific ICs that would be adopted at the Site were to be detailed in this document. As a result, verification that the ICs included in the 2000 ROD Amendment remedy were incorporated into the CD and put into practice at the Site were listed as follow-up actions of the first Five-Year Review. The CD was entered by the Court on March 6, 2002. A Covenant to Restrict Use of Property was recorded with Del Norte County on July 31, 2002. This Covenant was found to apply only to a portion of the Site area, parcel #120-020-36. The Covenant should also apply to parcel #110-010-22 in order to fully prevent exposure to contaminated groundwater as intended by the 2000 ROD Amendment.

## **VI. Five-Year Review Process**

### **Administrative Components**

Del Norte County representatives were notified of the initiation of the Five-Year Review process on February 17, 2005. The Five-Year Review was led by Yvonne Fong, EPA's Remedial Project Manager (RPM) for the Del Norte Pesticide Storage Area Superfund site. The following EPA Site team members assisted in the review:

- Kevin Mayer, RPM;
- Kim Muratore, Case Developer;
- Cameron McDonald, Community Involvement Coordinator (CIC);
- Bethany Dreyfus, Attorney; and
- Ned Black, Regional Ecologist.

The following County officials were interviewed as part of the Five-Year Review:

- Leon Perreault, Del Norte County Department of Health and Social Services;
- James Buckles, Del Norte County Department of Agriculture;
- Dave Cavyell, Del Norte County Department of Agriculture; and
- Ernie Perry, Del Norte County Department of Planning;

This Five-Year Review consisted of the following activities: community notification and involvement, a review of relevant documents and data, site inspections, and interviews with Del Norte County personnel.

## Community Notification and Involvement

Activities to involve the community in the Five-Year Review were initiated in February 2005. A notice regarding the forthcoming Five-Year Review was prepared by Cameron McDonald, CIC, and Kevin Mayer, RPM, both of EPA, and mailed out to the community in May 2005. The notice was sent to 63 individuals and organizations, including local politicians, city and county leaders, local libraries, news organizations and others listed in the EPA Community Involvement Database for the Site. In addition, an article entitled “EPA Reviewing Tests from Contaminated Site” appeared in the June 2, 2005 edition of *The Daily Triplicate*, the local newspaper. Both the notice and the article provided background information on the Site, explained the reason for the Five-Year Review, and requested that anyone interested in submitting comments regarding the performance of the remedy at the Site contact the toll-free phone number provided. No comments were received prior to the closing of the comment period on June 15, 2005.

A notice will be published in *The Daily Triplicate* announcing that the Five-Year Review Report for the Site is complete and that the results of the review and report are available to the public. The completed Five-Year Review Report will be available at the following locations:

- Del Norte County Public Library, 190 Price Mall, Crescent City, CA 95531 and
- EPA Records Center, 95 Hawthorne Street, Suite 403S, San Francisco, CA 94105.

## Document Review

This Five-Year Review consisted of a review of relevant documents including records and monitoring data (See Attachment 4). The following standards were identified as ARARs in the 1985 ROD and 2000 ROD Amendment. They were reviewed for changes that could affect protectiveness, and these standards have not changed.:

- National Primary Drinking Water Standards (40 CFR Parts 141):
- Title 22 CCR Section 64444: and
- Porter-Cologne Water Quality Control Act (California Water code Sections 13140-13147, 13172, 13260, 13262, 13267).

The 2002 CD outlined access and institutional controls critical to the effectiveness of the remedy for the Site. The July 31, 2002 Covenant to Restrict Use of Property was reviewed to determine if Del Norte County’s responsibilities to control Site access and employ ICs under the CD were fulfilled. The Covenant was made between Del Norte County, the Covenantor, and DTSC, the Covenantee, with EPA as a third party beneficiary. The Covenant prohibits use of the Site as a residence, hospital, school, or daycare; interference with the groundwater monitoring wells and contaminated groundwater; improper handling of any contaminated soils; and any restriction of DTSC or EPA’s rights of entry and access. The Covenant further enables DTSC and EPA to enforce the provisions of the Covenant at any time.

## Data Review

A review of records and monitoring reports through March 2000 indicate that the groundwater treatment system operated for nearly seven years from April 1990 to October 1997. When operating, the system had a continuous pumping rate of 15 gpm. Since its installation, and accounting for shut-down periods, the system operated a total of 79 months which represents approximately 51 million gallons of treated groundwater. The system processed roughly 68 pore volumes of the plume and removed an estimated volume of 3.75 gallons (14.2 liters or 16.4 kilograms) of 1,2-DCP. Approximately 95% of that volume was removed within the first four years of operation (1990 to 1994). Table 2 summarizes peak contaminant concentrations.

**Table 2: Historical Groundwater Concentrations**

Contaminant	Well	1985 Highest Concentration (Pre-Remedy) (ppb)	1987 Highest Concentration (ppb)	1994 Highest Concentration (ppb)	1999 Highest Concentration (ppb)	Clean-up Level (ppb)
1,2-DCP	1/108*	2100	–	–	ND	5
1,2-DCP	25	5	–	8	1.9	5
1,2-DCP	104	–	–	130	8.2	5
1,2-DCP	105	–	–	23	23	5
2,4-D	1/108*	150	28	–	–	100

\* Monitoring well #1 was replaced with monitoring well #108 in 1994.

ND indicates contaminant was not detected

– indicates the well was not sampled on this date

In October 1997, the groundwater treatment system was shut off when no differences in contaminant concentrations could be detected during temporary shut-down periods. The clean-up level for 2,4-D has been achieved. Although the 5 g/l clean-up level for 1,2-DCP has not been achieved, semi-annual groundwater monitoring reports show that 1,2-DCP concentrations continue to decline slowly. The influence of seasonal and annual fluctuations in the water table is likely to be a factor in the variability of 1,2-DCP concentrations in the shallow groundwater. Such year-to-year variation should be considered in assessing whether the RAOs have been fully achieved. Table 3 summarizes the results of the five Semi-annual Groundwater Monitoring Reports prepared by the Del Norte County Department of Health and Social Services to date.

**Table 3: Recent Groundwater Concentrations**

Concentration of 1,2-DCP (µg/l)					
Well	Semi-annual Groundwater Monitoring Report Date				
	10/29/2002	05/28/2003	01/05/2004	08/09/2004	03/14/2005
26	ND	ND	ND	ND	ND
104	5	2.4	ND	2.7	1.5
105	11	6.6	9.1	11	7.4
107	ND	ND	–	ND	ND

ND indicates contaminant was not detected  
– indicates the well was not sampled on this date

### Site Inspection

This Five-Year Review for the Site included two site inspections performed on June 13 and 20, 2005. Yvonne Fong, Kevin Mayer and Cameron McDonald conducted the earlier inspection and the latter was conducted by Kim Muratore, all of EPA. A representative of the Del Norte County Department of Health and Social Services was present at the June 13, 2005 inspection. The purpose of the inspections was to assess the protectiveness of the remedy by verifying that Site access and land and groundwater use have been restricted according to the CD. The protectiveness of land use controls was further evaluated through visits to the Del Norte County Assessor's, Recorder's, and Community Development Department offices where zoning maps were reviewed and compared to the General Plan, title history was researched, and County officials knowledgeable in future plans for the area were interviewed.

No significant issues have been identified as a result of the site inspections. Perimeter fencing around the Site was in place and in good condition. Signs restricting access were posted. The groundwater treatment system has been shut-off since October of 1997; therefore, the machinery itself was not inspected for proper functioning. No new uses of land or groundwater and no activities that would have violated the ICs were observed. Attachment 5 contains photos documenting the Site conditions.

The four monitoring wells and their protective casings stood several feet above the ground surface. The metal casings protecting the monitoring wells suffered from considerable corrosion. Although the PVC wells themselves were not compromised, corroded metal lids and corrosion-blocked drain holes allowed rainwater to accumulate around the wellhead. The County official, Leon Perreault, agreed that the metal casings would be repaired or replaced. Access to wells was made difficult by overgrowth of the surrounding vegetation.

The Site Inspection Checklist (See Attachment 6) attached to this document contains more details on the site inspections.

## Interviews

Interviews conducted with various parties connected to the Site are summarized below. The attached Interview Documentation Form (See Attachment 7) provides further details regarding these interviews.

Leon Perreault, Lead Environmental Scientist for the Del Norte County Department of Health and Social Services was interviewed in person on June 13, 2005 at his office. The Department of Health and Social Services is responsible for issuing well permits and Mr. Perreault provided information on wells in the area of the Site. Considerations regarding the location of septic systems and the generally dry condition of nearby wells across Washington Boulevard and on Napa Street and Riverside Drive create practical and financial limitations to the development of new wells in the area. While there is no direct evidence that ICs are being actively enforced, there have been no demands to develop new wells in the area subject to the ICs on groundwater well development and operation. Furthermore, the County has adopted a policy to transition from reliance on private groundwater wells to municipal water supplies.

Ernie Perry, Director of the Community Development Department was interviewed in person on June 21, 2005 at his office. The Community Development Department is responsible for ensuring that land use in Del Norte County complies with zoning restrictions contained in the County's General Plan and Zoning Maps. Mr. Perry confirmed that there are no plans for development on the Site other than the possible expansion of the airport. Currently, the General Plan and Zoning Maps for the Site property indicate that part of the Site property is zoned for manufacturing and industrial uses and the remainder of the Site is zoned for resource conservation. Although a daycare or school could be permitted under the current zoning allowed on a portion of the Site, Mr. Perry felt confident that a use permit would not be granted for either a daycare or school because the County intends to relocate the existing on-site office of the Department of Agriculture to an off-site location and ultimately restrict all Site uses to airport-related purposes. Despite the lack of a website or other formal tracking system, Mr. Perry felt that the terms of the CD and deed restriction are being overseen and enforced through a combination of the following: 1) a small County staff with knowledge in special areas like the Site, 2) close communication between different County Departments, 3) an airport master plan that specifies that County property in the area will be used for airport-related uses, and 4) a County policy to transition residents from private well water to municipal water. Mr. Perry recognized that the Covenant to Restrict Use of Property was incorrectly recorded solely for parcel #120-020-36 and that EPA should work with County Counsel, Bob Black, to amend the Covenant to include parcel #110-010-22 in order to fully prevent exposure to contaminated groundwater as intended by the 2000 ROD Amendment.

Interviews with Jim Buckles and Dave Cayell, both of the Del Norte Department of Agriculture confirm that the only current use of the Site is for the County's Department of Agriculture office and that the office is supplied with municipal water.

## VII. Technical Assessment

A technical assessment of a site's remedy is based on information gathered during the Five-Year Review in response to the following three questions:

- Question A - Is the remedy functioning as intended by the decision documents?
- Question B - Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?
- Question C - Has any other information come to light that could call into question the protectiveness of the remedy?

These questions provide a framework for organizing and evaluating data and information and ensure that all relevant issues are considered when determining the protectiveness of the remedy. The following conclusions support the determination that the remedy at the Site is protective of human health and the environment.

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

- ***Remedial Action Performance:*** The groundwater treatment system has been shut off since October 1997. Monitoring shows that the plume is contained and contaminant concentrations are in a slow decline.
- ***System Operations/O&M:*** Currently, O&M requires semi-annual sampling. Five Semi-annual Groundwater Monitoring Reports are available. The sampling has been consistent with the previous sampling plan approved under the O&M and Sampling Manual prepared in February 1991. Costs for the most part have been within an acceptable range.
- ***Opportunities for Optimization:*** The groundwater treatment system has been shut off since October 1997. Optimization is not applicable.
- ***Early Indicators of Potential Issues:*** No early indicators of potential remedy failure were noted during the review.
- ***Implementation of Institutional Controls and Other Measures:*** Fencing and signs limit access to the Site. A Covenant to Restrict Use of Property was recorded for one of two on-site parcels, parcel #120-020-36. Site use is limited to the Del Norte County Department of Agriculture's office. The land is property of the County and, as the owner and sole user, the County has been able to adequately ensure that no uses of the Site prohibited under the Covenant have occurred.

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

- ***Changes in Standards and TBCs (To Be Considered):*** There were no changes since the ROD Amendment was signed on August 29, 2000.
- ***Changes in Exposure Pathways:*** No changes in Site conditions that affect exposure pathways were identified as part of the Five-Year Review. First, there are no current changes in land use. Second, no new contaminants, sources, or routes of exposure were identified as part of this Five-Year Review. Finally, there is no indication that hydrologic/hydrogeologic conditions are not adequately characterized. The rate of decrease in groundwater contaminant levels is consistent

with expectations at the time of the ROD Amendment. The groundwater plume has been successfully contained.

There have been no changes in exposure pathways to ecological receptors identified during the review and inspection. Although the water table fluctuates with climatic factors, the contaminants of concern remain below ground and there are no complete exposure pathways to ecological receptors.

- ***Changes in Toxicity and Other Contaminant Characteristics:*** Toxicity and other factors for contaminants of concern have not changed.
- ***Changes in Risk Assessment Methods:*** Changes in risk assessment methodologies since the time of the ROD Amendment do not call into question the protectiveness of the remedy.
- ***Expected Progress Towards Meeting RAOs:*** The remedy is progressing as expected.

***Question C: Has any other information come to light that could call into question the protectiveness of the remedy?*** No additional information has been identified that could call into question the protectiveness of the remedy.

## **Technical Assessment Summary**

According to the review of relevant documents and data, site inspections, and interviews with Del Norte County personnel, the remedy is functioning as intended by the ROD, as modified by the ESD and ROD Amendment. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. Aside from a TI waiver of the 5 g/l MCL for 1,2-DCP, all ARARs cited in the 1985 ROD and 2000 ROD Amendment have been met. There have been no changes in the toxicity factors for the contaminants of concern and there have been no changes in the standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

## **VIII. Issues**

ICs were part of the remedy contained in the 2000 ROD Amendment. Del Norte County took steps to implement those controls by lodging a Covenant to Restrict Use of Property on July 31, 2002. The Covenant, however, does not include both parcels of land which comprise the Site. The July 31, 2002 Covenant was found to apply solely to parcel #120-020-36. The Covenant should be lodged for both parcels #120-020-36 and #110-010-22.

The metal casings protecting the monitoring wells were observed during the June 13, 2005 site inspection to be considerably corroded. The corroded metal caps and corrosion-blocked drain holes allowed rainwater to accumulate around the wellhead. Overgrowth of vegetation surrounding the wells limited access to the monitoring wells.

**Table 4: Issues**

Issue	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1) The July 31, 2002 Covenant to Restrict Use of Property applies to only one of two Site parcels	N	Y
2) Corrosion of metal well casings/caps	N	N
3) Limited access to monitoring wells due to overgrown vegetation	N	N

## **IX. Recommendations and Follow-up Actions**

The CD between EPA, the State and the County was entered by the Court on March 6, 2002. The specific controls that were adopted at the Site were to be listed in detail in this document. Del Norte County recorded a Land Use Covenant which placed restrictions on only a portion of the property. No land use restrictions are in place for parcel #110-010-22, which is the parcel containing the Site. The next Five-Year Review should verify that the Covenant's applicability has been corrected and that these controls have been put into practice on both parcels at the Site. Table 5 establishes a one year milestone date for amending the Covenant to Restrict Use. Subsequent to the lodging of a Covenant to Restrict Use on parcel #110-010-22, title searches should be executed and a plan for the County to monitor compliance with the Covenants on both parcels #120-020-36 and #110-010-22 should be established.

Corrosion of the protective metal casings around the monitoring wells requires maintenance and possibly replacement of the caps prior to the onset of the winter rains in 2005. The thick underbrush has begun to overgrow the footpaths to the wells. The underbrush should be cleared to allow access during the next sampling event in 2005 and should continue to be cut back as needed. Neither of these follow-up actions affect the protectiveness of the remedy.

**Table 5: Recommendations and Follow-up Actions**

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
1	Amend Covenant to Restrict Use of Property	Del Norte County	EPA	09/26/2006	N	Y
1	Conduct Title Search	Del Norte County	EPA	09/26/2010	N	N
1	Establish Covenant Compliance Monitoring Plan	Del Norte County	EPA	09/26/2010	N	N
2	Maintenance/Replacement of Well Casings/Caps	Del Norte County	EPA	12/30/2005	N	N
3	Clearing of Underbrush Surrounding Wells	Del Norte County	EPA	11/30/2005	N	N

## **X. Protectiveness Statement**

The remedy at the Del Norte Pesticide Storage Area across the single OU currently protects human health and the environment because there is no current exposure to the contamination that remains at the Site. However, in order for the remedy to be protective in the long-term, a Land Use Covenant to Restrict Use of Property that is applicable to the entire Site must be put in place to ensure long-term protectiveness.

The plume has been stable since the groundwater treatment system was shut down in October 1997. The extent of the original plume was believed to be about 12,000 square feet, reaching approximately 300 feet south of the source. The nearest private well to the Site is over one-quarter mile away from the source of the plume. Due to the source removal, groundwater treatment systems, and subsequent natural attenuation, the plume has decreased to approximately 5,000 square feet and 120 feet south of the source. Contamination levels have been in gradual decline and are expected to continue to do so at a slow rate. Site contaminants have never been detected in the surrounding residential wells, and there is no evidence that contamination has been introduced since the last sampling event. There are no complete exposure pathways to ecological receptors.

## **XI. Next Review**

This Site requires on-going Five-Year Reviews as a matter of statute because the remedy does not allow for unrestricted use and unrestricted exposure. The next review will be conducted within five years of the completion of this Five-Year Review Report. The completion date is the date of signature shown on the cover of this report.