Third Five-Year Review Report

for

FMC YAKIMA

Superfund Site

Yakima, Washington

SEPTEMBER 2008

PREPARED BY:

United States Environmental Protection Agency
Region 10
Richland, Washington

Approved by:

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Office of Environmental Cleanup
U.S. EPA, Region 10

Date:

9/19/2008

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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
bgs	below ground surface
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	United States Environmental Protection Agency
CFR	Code of Federal Regulations
ESD	Explanation of Significant Difference(s)
FY	Fiscal Year
IRIS	Integrated Risk Information System
MCL	Maximum Contaminant Level
MTCA	Model Toxics Control Act (Washington State)
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PQL	Practical Quantitation Level
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RfD	Reference Dose
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
µg	micrograms
WDOE	Washington Department of Ecology

Executive Summary

In December 1992, FMC completed remedial action at the FMC Yakima Superfund Site. FMC had operated a pesticide formulation plant at the site from 1951 to 1986. The cleanup was conducted pursuant to a Consent Decree and in conformance with the 1990 Record of Decision (ROD). A 1993 Explanation of Significant Differences (ESD) addressed the impracticability of cleaning up contaminated soil below the low water table and provided for the removal of contaminated concrete surfaces, among other changes to the initial on-site incineration remedy.

As part of the cleanup, 5,600 cubic yards of contaminated material were excavated and treated through incineration. An additional 1,000 cubic yards of contaminated soil were disposed off site at an approved hazardous waste landfill. The concrete floor of the warehouse was scarified to remove contamination and then restored so that the warehouse was made ready for reuse.

Hazardous substances were left on site at depths generally below 7 feet from grade (following soil removal and treatment) at concentration levels high enough to seasonally impact groundwater quality. The groundwater has been regularly monitored by an EPA-approved network of wells and remains contaminated, mainly by dieldrin. Dieldrin was included in the ROD as a contaminant of concern (COC) for soils but not for groundwater, because it was rarely detected during the Remedial Investigation. It is listed as a probable carcinogen in EPA's toxicological database known as Integrated Risk Information System (IRIS). Levels of dieldrin and its breakdown product aldrin (a closely related chemical with nearly identical risk levels) rose dramatically during the soil removal, and then dropped and stabilized, but at concentrations about an order of magnitude higher than before the excavation. The ROD listed two primary contaminant groups: endosulfans and the DDT series. Endosulfans, like dieldrin/aldrin, rose dramatically following remedy implementation, but the endosulfan Reference Dose (RfD) was changed in IRIS so that even the elevated levels were no longer considered a risk. Endosulfan levels have since dropped and stabilized. Groundwater concentrations of the DDT series dropped dramatically following the soil excavation, and they are no longer detected.

The remedy is currently protective despite the continued presence of dieldrin for two primary reasons. First, this contaminant is at low levels and does not travel very far in groundwater before being re-adsorbed onto soil particles. As a result, the plume extent is self-limiting. The plume expands and shrinks seasonally, with the largest plume existing in the late summer/early fall. At that time, the plume may reach the site boundary. Second, no one currently uses (or is likely to use) this shallow groundwater under the former FMC property for drinking water purposes. Consequently, there is only a very low probability of a complete exposure pathway for groundwater. The site is zoned industrial, the area is served by a municipal water supply, and the current owner is fully aware of the groundwater impairment. Nevertheless, to ensure that the exposure pathway cannot lawfully be completed, now or in the future, EPA will require that enforceable institutional controls, specifically a restrictive covenant pursuant to the Washington Uniform Environmental Covenant Act or an equivalent easement, are developed and implemented. These institutional controls will be selected in a ROD Amendment which will also include measures to prevent intrusion into the subsurface contamination.

The implemented soil remedy reduced the risks from direct contact with the soil to acceptable levels down to about 7-10 feet (a little below the seasonally low water table). Excavation below the water table was ruled out (by the ESD) based on impracticability, and the remedy, constructed as documented in the Remedial Action Report, was certified complete by EPA in December 1993. Contaminants were also removed from the interior of the site warehouse building, making it safe for reuse.

The remedy at this site currently protects human health and the environment because surface and near-surface soils have been remediated to below the cleanup goals and the groundwater plume is stable beneath the site and is not a source of drinking water. However, in order for the remedy to remain protective in the long term, institutional controls and a lower detection limit for aldrin and dieldrin need to be implemented.

The Superfund Sitewide Human Exposure Environmental Indicator Status for the site remains "Under Control" because soil exposures that could pose an unacceptable risk have been addressed and no one currently uses (or is likely to use) the shallow groundwater under the former FMC property for drinking water purposes.

The Groundwater Migration Environmental Indicator for the site remains “Under Control" because the only contamination ever detected in groundwater is in shallow groundwater at low levels and does not travel very far in groundwater before being re-adsorbed onto soil particles. As a result, the plume extent is self-limiting.

The Cross Program Revitalization Measure Status for the site is “protective for people under current conditions” due to the success of the remedial action for soils. The site is being fully reused for light industrial purposes. Once the Institutional Controls are implemented as recommended, the site will fully meet the definition of “Ready for Anticipated Use.”

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: FMC Yakima

EPA ID *(from WasteLAN)*: WAD000643577

Region: 10	**State:** WA	**City/County:** Yakima, Yakima

SITE STATUS

NPL status: Final **X** Deleted Other (specify)_____

Remediation status (choose all that apply): Under Construction Operating **X (LTRA)** Complete

Multiple OUs?* YES NO **X**	**Construction completion date:** 9/1/1993

Has site been put into reuse? YES **X** NO

REVIEW STATUS

Lead agency: EPA **X** State Tribe Other Federal Agency_____

Author name: Craig Cameron

Author title: Author affiliation: Project Manager, EPA, Region 10

Review period: 4/28/2008 to 9/29/2008

Date(s) of site inspection: 6/25/2008

Type of review:

Post-SARA *(Statutory)* **X** Pre-SARA NPL-Removal only
Non-NPL Remedial Action Site NPL State/Tribe-lead
Regional Discretion

Review number: 1 (first) 2 (second) 3 (third) **X** Other (specify)_____

Triggering action:

Actual RA Onsite Construction at OU #_____ Actual RA Start at OU#____
Construction Completion Previous Five-Year Review Report **X**
Other (specify)_____

Triggering action date (from WasteLAN): 9/29/2003

Due date *(five years after triggering action date)*: 9/29/2008

* ["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:

1. Institutional controls need to be developed and implemented.
2. The detection limits for aldrin and dieldrin are above the risk level of 1x10-6 cancer risk levels set in the ROD. Detection limits below the risk level are needed to adequately evaluate risk.
3. Dieldrin is not listed as a groundwater COC covered by the remedy even though it is a carcinogen and monitoring shows it is persistent at the site.
4. There is an opportunity for expansion of groundwater monitoring to coincide with both the high and low-water table conditions (early spring and early fall) to characterize seasonal fluctuations.
5. There is a need to ensure that any facility expansion by Stephens Metal Products does not affect the monitoring well network and sampling.
6. There is an opportunity to cost-effectively optimize groundwater monitoring, including abandonment of two no longer needed wells and inclusion of one of the existing piezometer wells to more completely define the down-gradient plume boundary.

Recommendations and Follow-up Actions:

1. Develop institutional controls, modify remedy to require institutional controls, and implement institutional controls.
2. Develop an analytical method sensitive enough to result in detection limits for aldrin and dieldrin that are lower than the 1x10-6 excess cancer risk.
3. Modify remedy to add dieldrin as a groundwater COC .
4. Monitor groundwater in April 2012 and late September/early October 2012 to characterize seasonal fluctuations.
5. Maintain well access despite facility expansion at Stephens Metal Products.
6. Abandon wells W-7 and W-9A&B (following state regulations) and add the shallowest piezometer well (W-8C) to the wells to be sampled in the groundwater monitoring plan

Protectiveness Statement(s):

Protective in the short term – The remedy currently protects human health and the environment because surface and near-surface soils have been remediated to below the cleanup goals and the groundwater plume is stable beneath the site and is not a source of drinking water. However, in order for the remedy to remain protective in the long-term, institutional controls and a lower groundwater detection limit for aldrin and dieldrin need to be implemented. The lower detection limit is necessary to ensure that monitoring information used to support future NPL deletion is correct in that the site meets cleanup goals.

Other Comments:

None.

Third Five-Year Review Report
FMC YAKIMA
SUPERFUND SITE
Yakima, Washington

I. INTRODUCTION

The purpose of the 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 identify recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this Five-Year Review Report pursuant to CERCLA §121(c) and the National Contingency Plan (NCP). CERCLA §121(c) 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) 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 action no less often than every five years after the initiation of the selected remedial action.

Region 10 of the EPA conducted the Five-Year Review of the remedy implemented at the FMC Yakima Site, located in Yakima, Washington. This Third Five-Year Review for the FMC Yakima Site was conducted by the EPA Remedial Project Manager (RPM) from June 2008 through September 2008. This report documents the results of the review.

This is the third five-year review for the site. The triggering action for this statutory review was the completion of the Second Five-Year Review Report, dated September 29, 2003. The five-year review is required because hazardous substances, pollutants, or contaminants remain in the soil and groundwater above levels that allow for unlimited use and unrestricted exposure.

II. SITE CHRONOLOGY

Table 1. Chronology of Site Events
FMC YAKIMA

Event	Date
FMC operations	1951 thru 1986
Preliminary Investigations	1982
NPL Listing	September 8, 1983
Pre-MTCA State Water Program Discharge or Spill Response Order (State)	June 10, 1983
Administrative Order on Consent (EPA) – RI/FS	July 31, 1987
Administrative Order on Consent (EPA) – Removal	May 31, 1988
Removal Completion	April 1990
ROD Issuance	September 14, 1990
RD/RA Consent Decree Entry	December 6, 1991
Incineration Began	November 1992
ESD Issuance	April 21, 1993
Incineration and Construction Completed	August 1993
Final RA Report	July 1, 1994
Groundwater Monitoring Plan Approval	November 1993
Certification of Completion Issuance	December 1993
Property sold to current owners	1995
First Five-Year Review	September 1998
Second Five-Year Review	September 2003

III. BACKGROUND

Site Location and Description

The FMC Superfund Site was placed on the National Priorities List (NPL) [also known as Superfund Site List] on September 8, 1983.

The FMC Yakima Superfund Site (site) is located at 4 West Washington Avenue, approximately 1 mile east of the Yakima Municipal Airport in Yakima, Washington (see Figure 1 in Appendix A.1). The site is located in the lower Ahtanum Valley, an area of about 100 square miles in central Yakima County, Washington. The site is a 58,000-square-foot fenced area that was leased by FMC Corporation (FMC) from Union Pacific Railroad and is bounded to the east by Union Pacific Railroad tracks. Most of the surrounding area is zoned light-industrial. There are a few parcels bordering the western side of the property (across Longfibre Road) that are zoned residential (see Figure 6 in Appendix A.1). However, these parcels are up-gradient from the direction of groundwater flow. There are no homes nearby.

FMC formulated pesticide dusts at the site from 1951 until 1986. Pesticide liquids were formulated there in the 1970s. Between 1952 and 1969, FMC disposed of wastes containing

pesticides in an on-site pit. An estimated 2,000 pounds of waste consisting of raw material containers, soil contaminated by leaks or spills, and process wastes was dumped into the excavated pit and covered with soil. After 1969, waste materials were disposed of at Yakima Valley Disposal in Yakima and at Chemical Waste Management's Arlington, Oregon, facility.

The site slopes to the southeast with a grade of less than 1 percent. The site is 1.5 miles west of the Yakima River (outside of the 500-year flood plain) and 1 mile north of Wide Hollow Creek. No surface water bodies exist on site. Vegetation within the fenced site and over the residual groundwater plume consists of tall weeds and grasses. The groundwater beneath the plume occurs in alluvial silty sands and gravels and flows southeastward toward the Yakima River. Groundwater levels fluctuate seasonally with the high in the fall (average of 2 feet below ground surface (bgs)) corresponding to the agricultural growing season (regional irrigation), and a low in the winter (approximately 7 feet bgs). Groundwater flows in a southeasterly direction with a seepage velocity of about 7 feet/day. There are currently no wells used for drinking water in the shallow aquifer within a 1-mile radius.

The site currently contains an active metal fabrication facility, parking lot, and equipment storage yard owned by Stephens Metal Products. The ownership of this parcel was confirmed in 2008 with a title search. Two businesses have purchased parts of the original FMC leased property west of Stephens Metal Products and have erected buildings, a Country Farm & Garden True Value Hardware store (including a garden nursery) and Butlers Welding and RV Accessories. Most current operations are on paved ground. Figure 2 in Appendix A.1 shows the structures at Stephens Metal Products, the location of the former disposal pit, and the groundwater monitoring wells.

Site History

A. Early Investigations

Waste materials and an estimated 2,000 pounds of various chemicals were dumped into an on-site disposal pit between 1952 and 1969. A preliminary investigation was conducted for EPA in 1982, and the site was placed on the NPL later that year based on high levels of pesticides in site soils and surrounding groundwater. An Administrative Consent Order issued by the State of Washington Department of Ecology (WDOE) in 1983 required a study of the former disposal pit area. In 1986, after operations at the facility ceased, FMC claimed it removed all contents of the main warehouse and surface tanks and washed the warehouse floor and walls without EPA or WDOE oversight. EPA issued two Administrative Orders on Consent in 1987 and 1988 requiring a Remedial Investigation/Feasibility Study (RI/FS) and a removal and disposal of the pit contents, respectively. FMC's removal of the pit contents occurred in two phases in 1988 and 1989 while the RI/FS was being completed. A Record of Decision (ROD) was issued on September 14, 1990, to address all post-removal residual site contamination. Subsequent remedial action included removal and incineration of contaminated soil and concrete as well as groundwater monitoring. Structures remaining on site included an office building, a warehouse with loading dock, and a parking lot.

B. Phase 1

A Phase I removal of the contents of the disposal pit (containing pesticide concentrations up to 25,000 mg/kg) was performed in June 1988 following a Phase I investigation of the pit. The pit was excavated to a depth of 4 feet (the depth of the groundwater table at the time), and 500 tons of contaminated soil were removed. In March 1989, an additional 350 tons of soils were removed, which increased the depth of the excavation to approximately 8 feet. All waste was disposed of at Chemical Waste Management's Arlington, Oregon, permitted hazardous waste disposal facility.

C. Phase II

A Phase II investigation, or completion of the RI/FS for the remainder of the site, was completed in April 1990. A Record of Decision (ROD) selecting final remedial action was issued on September 14, 1990. FMC entered into a Consent Decree to perform the remedial action which was entered in Federal District Court for the Eastern District of Washington on December 6, 1991.

D. Basis for Action

The basis for action was the release and presence of hazardous substances at the site at levels that could posed an unacceptable risk to human health if humans were exposed and to the environment if left unaddressed. At the time of the ROD the contaminated media of concern were the contaminated soils and structures at the FMC site. Concentrations of contaminants in groundwater were below health-based levels at the time; however, continued groundwater monitoring was called for to confirm the effectiveness of source removal in protecting groundwater.

The contaminants of concern for human health at the site were DDD (l,l-dichloro-2,2-bis(p-chlorophenol) ethane), DDE (1,1,dichloro-2,2-bis(p-chlorophenol) ethylene), DDT(l,l,l-trichloro2,2-bis(p-chlorophenol) ethane), dieldrin, endosulfans, malathion, ethion, ethyl parathion, parathion, DNOC (4,6-dinitroo-cresol), cadmium, and chromium VI. All of these compounds are considered toxic to humans; cadmium, chromium VI, DDD, DDE, DDT, and dieldrin are also carcinogenic. The contaminants of concern for potential ecological effects were DDD, DDE, DDT, endosulfans, ethion, malathion, and zinc.

Groundwater contamination had been found at low concentrations, most notably the organo-chlorines (DDT, DDD and DDE), dieldrin and endosulfans.

IV. REMEDIAL ACTION

A Record of Decision for remedial action was issued on September 14, 1990. After initiation of Remedial Action in 1992, EPA modified the selected remedy and cleanup goals on April 21, 1993, in an Explanation of Significant Differences (ESD). EPA deemed that changes were necessary due to difficulties encountered during implementation of the Selected Remedy, in

particular the discovery that the depth of the contamination in some areas was greater than expected and below the water table. Both the ROD and ESD are discussed below, along with the remedial action objectives, cleanup goals, and implementation of the remedy.

A. Record of Decision

The remedial action objectives for the site included:

- Preventing human exposure to contaminated soil, structures, and debris that exceed health-based cleanup levels;

- Reducing the potential for the contaminated soil to act as a source for groundwater contamination; and

- Further defining the extent of groundwater contamination and confirming that contamination does not exceed health-based levels, or if the quality of the groundwater exceeds these levels during monitoring, evaluating the need to take appropriate measures as further response action.

The selected remedy in the ROD addressed the remaining contaminated soils and structures at the site. The selected remedy called for the following:

- Sampling of soils and concrete structures to refine the RI/FS estimate of the lateral and vertical extent of material requiring treatment,

- Excavation of contaminated soils exceeding cleanup levels,

- On-site incineration of contaminated soils,

- Dismantling of contaminated slabs and portions of the buildings that are determined to exceed cleanup goals,

- On-site incineration of contaminated concrete and debris or disposal at a RCRA Subtitle C permitted hazardous waste disposal facility, depending on volume,

- Analysis of incinerator ash to determine the degree of contaminant destruction and leachability, and delisting of the ash if health-based cleanup goals are met,

- Groundwater monitoring for 5 years to confirm source removal. Groundwater monitoring to continue quarterly for 2 years following completion of the remedial action, and then for 3 more years on an annual basis. If contamination was detected above the cleanup goals and groundwater remediation proved to be necessary, it would be addressed in a subsequent ROD. These goals were 0.1 µg/L for DDT (the 10^{-6} excess cancer risk level) and 2 µg/L for endosulfans (the 1.0 Hazard Index level at that time).

The ROD estimated the amount of contaminated soil at the site to be 900 to 4,000 cubic yards.

ROD Cleanup Goals

HEALTH - BASED CLEANUP LEVELS FOR CONTAMINATED CONCRETE AND SURFACES

Compound	Concentration (µg/100 cm^2)
DDD	6.5
DDE	4.6
DDT	4.6
Dieldrin	0.1
Endosulfans	10.0
Ethion	270.0
Malathion	8,200.0
Ethyl Parathion	2,400.0

Cleanup goals will be adjusted where multiple contaminants are found.

HEALTH - BASED CLEANUP LEVELS FOR CONTAMINATED SOIL

Compound	Concentration (mg/kg)
DDD	5.1
DDE	3.6
DDT	3.6
Dieldrin	0.076
Cadmium	8.0
Chromium VI	1.0
Endosulfans	4.2
Ethion	42.4
Malathion	1,695.0
Ethyl Parathion	11.0
DNOC	8.5
Zinc	500.0

B. Explanation of Significant Differences – Changes to the Remedy

1) Change in Site Cleanup Goals:
Two changes in the site cleanup goals became necessary as a result of the mechanical difficulties associated with excavation below the water table and the discovery that the depth of the contamination in some areas was greater than expected.

a) Change in cleanup goal from a risk of $1x10^{-6}$ to a risk of $5x10^{-6}$ for excavation at depths greater than 2 feet, but less than 7 feet bgs; and

b) Determination that the extent of the excavation would not exceed 7 feet bgs. EPA determined that excavation below 7 feet was technically impracticable, and that the material did not pose an exposure risk or a threat to the groundwater.

2) Change in Volume of Soil to Be Excavated:
The ROD estimated that there would be from 900 to 4,000 cubic yards of contaminated material. As a result of contamination extending deeper than expected, approximately 5,600 cubic yards of material was excavated.

3) Determination that Cobble Did Not Require Incineration:
Approximately one third of the material excavated was cobble, approximately 2 to 6 inches in diameter. It was crushed and sampled, and found to meet health-based and RCRA-based cleanup requirements. Therefore, EPA determined the cobble did not require incineration prior to use as backfill.

4) Modification to the Cleanup Criteria for the Warehouse Floor:
At the time the remedy was selected, there were no promulgated cleanup standards applicable to buildings. Subsequent to the beginning of site excavation, RCRA developed technology-based criteria for decontamination of concrete debris (57 Fed. Reg. 371904), which EPA determined appropriate to apply to the warehouse floor.

The RCRA decontamination criteria call for scarification to a depth of 0.6 cm (approximately 1/4 inch) and removal of any additional visual staining. As part of the remedial action, the warehouse floors were scarified to a depth of 1/4 inch or more, and no visible contamination remained. It was therefore determined that the warehouse floors were clean. The floors were restored to allow the building to return to functional use.

C. Remedial Action Implementation

The remedial design began on August 23, 1991. The design was performed in two phases to expedite the start of the remedial action. The excavation phase was approved April 23, 1992, and the remedial action started on that date. The design for the incineration phase was approved on May 30, 1992. Incineration began in November of 1992. On August 12, 1993, FMC notified EPA that construction activities were completed.

For cleanup purposes, the site was divided into several different areas based on historical usage or function. The excavation phase consisted of excavating contaminated material, followed by sampling the bottom and sides of the excavations to determine if the cleanup standards were met. If the remaining material was still above cleanup standards, excavation and sampling of an area continued until the cleanup standards were met. Contaminated material was stockpiled in a lined area on the west side of the property prior to incineration. At the conclusion of the excavation phase, the material was incinerated. Incinerator ash was stored in bags until sampling determined that it met the required standards. The ash was then used as a soil cover over the cobble backfill.

During the excavation phase, it was determined that contamination depth was greater than estimated in the RI/FS. In addition, excavation unearthed a second pesticide disposal pit located directly west of the first pit. These factors resulted in a significant increase in the amount of soil excavated and incinerated. During the remedial action, 5,600 cubic yards of contaminated material were excavated and treated.

A number of changes in the site cleanup goals became necessary as a result of the mechanical difficulties associated with excavation below the water table and the discovery that the depth of the contamination in some areas was greater than expected.

1) The cleanup goals were changed from an excess cancer risk of $1x10^{-6}$ to a risk of $5x10^{-6}$ for excavation at depths greater than 2 feet, but less than 7 feet bgs. These levels were set for industrial use. The cleanup goals in the ROD were the attainment of an overall site hazard index of less than or equal to 1, and the attainment of an overall site excess cancer risk of $1x10^{-6}$, both based on residential use exposure. When site excavation began, the water table was at its seasonal low of approximately 7 feet bgs. Over the course of the excavation the water table rose to its seasonal high of 2 feet bgs. (The water table is at 7 feet bgs during the winter and early spring, and at 2 feet bgs the rest of the year.) The majority of the site excavation was of material below the seasonal high water table. Excavation below the water table resulted in sloughing of the trenches and spillage of small quantities of excavated material back into the holes as the material was removed. Thus, minimal recontamination occurred as excavation progressed. Continued excavation was not able to alleviate the recontamination problem. In addition, some previously excavated areas became submerged and out of reach of the construction equipment, making re-excavation impossible.

The contaminant concentrations resulting from recontamination were calculated to equate to risk levels well within the EPA acceptable risk range of $1x10^{-6}$ to $1x10^{-4}$. To account for the technical impracticability of reaching the original $1x10^{-6}$ cleanup goal, EPA adjusted the cleanup goal (and the contaminant levels associated with it) to a risk of $5x10^{-6}$ for areas below 2 feet (which is below the high water table) to avoid ineffective attempts at excavation of residual contamination. For most of the site, the material with concentrations above the adjusted cleanup goal was removed by excavations ranging from 2 feet to 7 feet bgs. The areas where contaminant depth exceeded 7 feet bgs are discussed below.

2) Samples from 7 feet bgs taken during soil excavation of the drum washing area and the tank farm (two adjacent areas on the southern end of the site), contained contaminant concentrations equating to risk levels above the cleanup goals. EPA determined that excavation below 7 feet was technically impracticable, and that the material did not pose an exposure risk or a threat to the groundwater based on the following:

> a) The water table in the area fluctuates from a depth of 7 feet bgs to a high level of 6 inches to 1 foot bgs. There is no chance of incidental direct exposure to soil 7 feet bgs which is always underwater. In addition, because the high water table is at 6 inches to 1 foot bgs, there is no potential for future subsurface construction leading to exposure of the remaining contaminated soil. Because there is no probable current or future exposure to this material, it does not present a direct exposure risk.

b) Prior to excavation, the contaminant levels in the groundwater were below the health-based levels. The bulk of the contamination was removed, reducing the impact on the groundwater. The groundwater was required to be monitored for 5 years following the completion of the remedial action.

3) As a result of contamination extending deeper than expected, approximately 5,600 cubic yards of material were excavated.

4) It was determined that the cobble met the soil remediation requirements and so did not require incineration. Approximately one third of the material excavated were cobbles, approximately 2 to 6 inches in diameter. They were crushed, sampled, and found to meet the health-based and RCRA-based requirements of the Consent Decree Performance Standard. Therefore, the cobbles did not require incineration prior to use as backfill.

5) EPA developed site-specific criteria for the warehouse. The exposure assumptions for determining the cleanup criteria were based on contact with the walls. A wipe test using a filter to swab walls and floors was to be analyzed and the results compared to the cleanup standards.

Subsequent to the beginning of site excavation, RCRA developed technology-based criteria for decontamination of concrete debris (57 Fed. Reg. 371904). The new RCRA criteria were developed to allow concrete to be disposed of, after the applicable treatment, without further testing. In the case of the warehouse, the cleanup criteria in the ROD were based on decontamination of the building for reuse. However, EPA determined that it was appropriate to apply the new RCRA criteria to the warehouse floor.

As part of the remedial action, the warehouse floors were scarified to a depth of 1/4 inch or more and no visible contamination remained. It was therefore determined that the warehouse floors were clean.

At the conclusion of the remedial action after demobilization of the incinerator, FMC determined that 1,000 cubic yards of additional soil under the stockpile liner were contaminated due to breaches in the liner. Equipment operation on the stockpile area had punctured the line in a number of places, and precipitation leached contaminants from the stockpile to the ground below. This additional contaminated soil was sent off site to Chemical Waste Management's Arlington, Oregon, facility for disposal.

Close-out and Monitoring Activities

A letter dated August 12, 1993, from FMC notified EPA that the physical activities at the site were completed. EPA conducted an inspection of the site on August 19, 1993, and found that no additional work was required.

The groundwater monitoring program was conducted by FMC from December 1993 until May 1996 on a quarterly basis, and later, on a semiannual basis. The frequency of the monitoring program was reduced after the first five-year review to every other year in the early fall, the

worst-case season, and then further reduced to where it is now performed only in the fall prior to preparation of the five-year review (once every 5 years).

V. PROGRESS SINCE LAST REVIEW -- CURRENT STATUS

The EPA project manager witnessed FMC's October 2007 groundwater sampling on October 29. Results of the sampling and analysis were reported in May 2008. Pesticides continue to be detected in groundwater including dieldrin (an organochloride) and endosulfans. Tedion and alachlor were detected prior to the last five-year review, but were not detected in 2007. Aldrin and DDT were not detected in either 2002 or 2007.

Since the removal of material from the disposal pit in 1988 and 1989, pesticide contamination in the groundwater has been below drinking water standards. However, maximum contaminant levels (MCLs) have not been established for aldrin and dieldrin. Also, the practical quantitation limit (PQL) for both aldrin and dieldrin is 0.05 µg/L, which is above the $1x10^{-6}$ cancer risk level established as the groundwater cleanup goal in the ROD.

Groundwater monitoring results over the years have supported FMC's and EPA's evaluations that demonstrate the extent of the organochlorine compound plume is stable (i.e., not expanding or changing position). Seasonal fluctuations have been observed as the regional recharge of irrigation water raises the shallow groundwater table. Groundwater contamination at the site is believed to be the result of the gradual mobilization of residual soil contamination at the former disposal pit location and from other nearby areas.

EPA agreed to allow FMC to halt removal excavations at a depth of approximately 7 feet below grade where groundwater was encountered. As anticipated, analytical results from post-excavation samples indicated soil concentrations of organochlorine compounds greater than ROD cleanup levels were present in soils beneath the bottom of the excavation. Residual soil contamination at the base of the excavation is in direct contact with groundwater during periods of average and seasonally high groundwater levels.

The screened cobble backfill is much more permeable since the fines (silt and sand) were removed. As a result, groundwater flows through this area more easily than before the excavation and at a faster rate than the surrounding areas, especially when the groundwater levels are elevated during the summer and fall irrigation season. Since the cobbles are more permeable than the surrounding soils, groundwater elevations are slightly lower within this area immediately adjacent to and above soil with residual organochlorine compound contamination. Excess groundwater is pulled through those residually contaminated soils into the cobble backfill and drawn in a cross-gradient direction toward the former disposal pit area. As a result, maximum concentrations of organochlorine compounds are typically detected in monitoring wells immediately down gradient after the seasonal high water table occurs. Figure 2 in Appendix A.1 shows the groundwater table elevations across the site, while Figure 3 in Appendix A.1 shows the 2007 contaminant concentrations including an estimate of the extent of contamination.

When the ROD was issued, pesticide contaminants of concern in groundwater were endosulfans and DD-series compounds (DDD, DDE, and DDT). The non-carcinogenic hazard index for endosulfans is equal to 1, at a concentration of 200 µg/L – 100 times greater than when the ROD was issued in 1990. The concentration of endosulfans in site groundwater is significantly less than 200 µg/L; however, EPA is requiring the continued monitoring of endosulfan because it is a suspected endocrine disrupter, and the chronic toxicity of that entire class of chemicals is under review by EPA.

The 2007 groundwater samples contained low levels of pesticides (see Table 2 or Figure 3 in Appendix A.1). The highest detected level for dieldrin (0.14 µg/L) occurred at well W-12A (see Table 2 or Figure 3). The highest detected level of endosulfans (4.27 µg/L) was also found at well W-12A. When this data is plotted with data from previous monitoring events, an overall decreasing trend can be observed (see Figures 4 and 5 from Appendix A.1) since the completion of soil remedial action, although dieldrin concentrations remain above pre-excavation levels.

A site visit was conducted on June 25, 2008. Its purpose was two-fold; to conduct interviews and to observe site conditions as part of the five-year review. The site conditions are essentially the same as were observed during the last five-year review site inspection on September 4, 2003. All wells were locked and most were in excellent condition. The concrete well head for W-17 appeared to be a little higher in profile (less flush with the ground surface), possibly due to frost heave. The 2007 monitoring report says that the top of the casing and the locking cap for W-17 were repaired; however, it is the concrete well head for W-7 that appears to have been repaired. Photographs of the well locations are included in Appendix A.4. The site is operated by a metal fabricator which uses the field behind the remaining structure for open air storage of metal parts and equipment. The remainder of the fenced field is natural grasses and weeds.

Besides Stephens Metal Products (containing the monitoring well network), two other businesses are located just west of the site, Country Farm & Garden True Value Hardware, including an outdoor nursery area with planters on asphalt, and Butlers Welding and RV Accessories. (See photographs of the three business locations in Appendix A.4.) Interviews were conducted on site as part of the July 25 site inspection (one was conducted by telephone on July 24) (see Appendix A.3 for interview records). In all cases, slab foundations and shallow footings were used in the construction of the buildings. Large portions of these properties are also paved. No problems or issues were encountered during or since the construction. No issues were reported related to site environmental conditions.

Groundwater at the site and immediate vicinity is not currently used for domestic, industrial, or agricultural purposes. Two private wells were sampled during the RI, one up-gradient and one down-gradient of the site. The area is served by City of Yakima water, and the wells were used only for sampling and possibly for yard irrigation. No site contaminants were detected in either well. A well canvass was conducted in October 1988 and found that no known down-gradient wells were used for drinking water within a 1-mile radius. Prior to the first five-year review, water well records were obtained from WDOE and reviewed for wells located within a 1-mile radius. Those record searches did not identify any wells used for domestic, industrial, or agricultural purposes down-gradient of the site. No new drinking water wells in the vicinity of the site were identified during the June site visit, and an August 5, 2008, search of the WDOE

well database showed no evidence for any recently installed drinking water wells in the area. The search did turn up a few older logs for water wells in the general area, but all of them were at least 1/4 mile away from the stable site plume. Based on these surveys, EPA concludes there currently are no nearby domestic wells, all contemporaneous wells in the vicinity were evaluated during the RI/FS, and no one is currently using groundwater contaminated at the site for drinking or other purposes.

However, there are no institutional controls limiting or restricting any future use of groundwater or to prevent intrusion into the contamination zone at depth. Monitoring wells associated with the site are locked to prevent access by unauthorized personnel.

A. Protectiveness Statement from the First Five-Year Review

"The remedy selected for this site remains protective of public health and the environment. The current remedy is meeting the cleanup goals in the ROD, and ESD. Continued evaluation of the site monitoring data will be maintained to assure continued protectiveness."

B. Status of the Recommendations and Follow-up Actions from the First Five-Year Review

Recommendations from the first five-year review were to continue monitoring and to consider implementation of institutional controls. Monitoring has continued on a regular basis and the results of that monitoring are documented in this review. No action was taken to implement institutional controls.

C. Protectiveness Statement from the Second Five-Year Review

"Based on the Technical Assessment for the (Site), the remedy is considered protective in the short-term; because there is no evidence that there is a current exposure."

D. Status of the Recommendations and Follow-up Actions from the Second Five-Year Review

Recommendations included monitoring groundwater in advance of the next five-year review and that institutional controls should be developed by December 2005.

VI. FIVE-YEAR REVIEW PROCESS

This Five-Year Review was conducted according to procedures in OSWER Directive 9355.7- 03B-P, Comprehensive Five-Year Review Guidance. Activities in this review consisted of:

1) Review of site-related documents,
2) Review of monitoring data,
3) Discussions with current on-site businesses,
4) Site visit and inspection,
5) Well survey,

6) Community relations activities, and
7) Preparation of the Five-Year Review Report.

Documents reviewed for this report include:

Bechtel, 1990, *Phase II Remedial Investigation Report for a Former Pesticide Formulation Facility in Yakima, Washington:* Report to FMC dated April, 1990.

EPA, 1990, *ROD for FMC Pesticide Formulation Facility Yakima, WA*, dated September 14, 1990;

Bechtel, 1994, *Remedial Action Completion Report:* Report to FMC dated May, 1994;

ERM, 1994, *Long-Term Monitoring Plan:* Report to FMC dated June 1994;

DOJ, 1991, *Consent Decree -USA vs. FMC Corp*. dated December 6, 1991;

EPA, 1993 *Explanation of Significant Differences* dated April 24, 1993;

EPA, 1993 *Superfund Preliminary Site Closeout Report FMC Corp Yakima WA*, dated Sept. 1, 1993;

EMR, *2003 Groundwater Sampling Program Fall 2002 Results FMC Corporation, Former FMC Pesticide Formulation Facility, Yakima, Washington*;

Parsons, 2008 *Five-Year Report Fall 2007 Groundwater Monitoring Activities, Former FMC Pesticide Formulation Facility 4 West Washington Avenue, Yakima, Washington,* dated May 13, 2008.

Site Visit and Inspection
See attached appendices for site visit information and to review the site inspection check list.

Well Survey
No new drinking water wells in the vicinity of the site were identified during the June site visit, and an August 5, 2008, search of the WDOE well database showed no evidence for any recently installed drinking water wells in the area. The search did turn up a few older logs for water wells in the general area, but all of them were at least 1/4 mile away from the stable site plume. Based on these surveys, EPA concludes there currently are no nearby domestic wells and that all wells contemporaneously in the vicinity were evaluated during the RI/FS. Further, no one is currently using groundwater contaminated at the site for drinking or other purposes.

Community Notification
There has been no recent EPA-initiated community involvement, nor has any interest been expressed from the community in the last 15 years. On May 7, 2008, a Public Notice was placed in the *Yakima Herald Republic* that EPA was performing this Five-Year Review and soliciting

comment. No comments were received. A public notice of this five-year review will be put into the local newspaper upon completion of this report. Copies of the report will also be sent to the current land owners.

VII. TECHNICAL ASSESSMENT

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

Yes. The review of documents and data, ARARs, and the results of the site inspection indicate that the remedy is functioning as intended by the ROD.

There is no evidence that contaminated soils remaining at depth have been exposed or disturbed. Groundwater monitoring confirms that the small plume is not migrating. The site inspection and well survey indicate no one is currently using or being exposed to contaminated groundwater.

No institutional controls are required by the ROD, even though hazardous substances remain on site below 7 feet and in the groundwater. To remain protective in the long term, institutional controls should be developed and implemented. EPA intends to incorporate institutional controls into the remedy in a ROD Amendment following public comment, specifically in the form of enforceable land use restrictions in a covenant pursuant to the recently enacted Washington Uniform Environmental Covenant Act or an equivalent easement to prevent or appropriately restrict groundwater use and intrusion into subsurface contamination. A Proposed Amendment for public comment is anticipated in early 2009, with later FY 2009 ROD Amendment issuance. See Figure 6 in Appendix A.1 for the land use control area where institutional controls are projected to be implemented within the site.

The only operation and maintenance requirements are associated with the continued groundwater monitoring wells. All wells are currently intact and functional.

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

Yes. There are no changes in any of the remedy components or in the physical conditions of the site that would affect the protectiveness of the remedy. This site is zoned industrial, and the surface soil cleanup levels are consistent with current commercial and potential future industrial/commercial use. Buildings have been built on the site without disturbing the deeper, contaminated soils.

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

Yes. Groundwater monitoring continues to show elevated levels of dieldrin which was not included in the ROD as a groundwater contaminant of concern, but it is listed by EPA as a carcinogen. Levels of dieldrin and its breakdown product aldrin (a closely related chemical with nearly identical risk levels) rose dramatically during the soil removal, then dropped and stabilized, but at concentrations approximately an order of magnitude higher than before the

excavation. Endosulfans also rose dramatically, but the endosulfan Reference Dose (RfD) was changed so that even the elevated levels were no longer considered a risk. Endosulfan levels have since dropped and stabilized at nearly pre-excavation levels.

The remedy is currently protective despite the continued presence of dieldrin for two primary reasons. First, this contaminant is at low levels and does not travel very far in groundwater before being re-adsorbed onto soil particles. As a result, the plume extent is self-limiting, expanding and shrinking seasonally, with the largest plume existing in late summer/early fall. At that time, it may reach the site boundary. Second, no one currently uses (or is likely to use) this shallow groundwater for drinking water. Consequently, there is only a very low order of probability of a complete exposure pathway for groundwater. The site is zoned industrial, served by a municipal water supply, and the current owner is fully aware of the impairment.

The detection limit currently used for aldrin and dieldrin is above the groundwater risk goal set in the ROD. To ensure the site remains protective in the event groundwater migrates and/or is used and to evaluate progress toward and achievement of cleanup goals, a lower detection limit must be established and employed.

Technical Assessment Summary

According to the data reviewed and the site inspection, the remedy is functioning as intended by the ROD. There have been no physical changes to the site that would affect the effectiveness of the implemented remedial action.

There are two issues that require follow-up to help ensure long-term protectiveness. First, since hazardous substances remain on site above levels that allow for unlimited use and unrestricted exposure, institutional controls need to be added to the remedy and implemented to assure exposure remains consistent with the industrial land use and exposure assumptions. Also, a lower detection limit is needed for aldrin and dieldrin to ensure the site remains protective in the event groundwater migrates and/or is used, and to evaluate progress toward cleanup goals.

VIII. ISSUES

Since hazardous substances remain on site above levels that allow for unrestricted use and unlimited exposure and will remain so for the foreseeable future because of the residual contamination below the low water table, institutional controls need to be developed and implemented for protection of current and future property users. The institutional controls should prevent the lawful use of groundwater and ensure that no one intrudes into the zone of contaminated soil remaining below the seasonally low (winter-spring) water table through drilling or excavation (unless as part of an approved monitoring plan).

A more sensitive analytical method to lower the groundwater detection limit for aldrin and dieldrin below the risk level set in the ROD must be employed. Future deletion of the site from the NPL will be problematic without lowering the detection level because a comprehensive determination that the site meets cleanup goals cannot yet be confidently supported.

While dieldrin is a COC for soils, it is not listed as a COC for groundwater in the ROD or ESD. Dieldrin is being monitored in groundwater because it is a hazardous substance present at the site that persists at levels above the ROD groundwater cleanup goal of $1x10^{-6}$ excess cancer risk. However, dieldrin is not currently counted toward the calculation of excess cancer risk because it is not listed as a groundwater COC.

Minor issues related to the optimization of the groundwater monitoring network and opportunities for assessing seasonal plume characteristics through spring and late-summer/fall sampling events were also identified during the review.

The issues are presented in the table below:

Table for Listing Issues

No.	*Issues*	*Affects Protectiveness (Y/N)*	
		Current	*Future*
1	Institutional controls need to be developed and implemented.	N	Y
2	The detection limits for aldrin and dieldrin are above the risk level of $1x10^{-6}$ cancer risk levels set in the ROD. Detection limits below the risk level are needed to adequately evaluate risk.	N	Y
3	Dieldrin is not listed as a groundwater COC covered by the remedy even though it is a carcinogen and monitoring shows it is persistent at the site.	N	N
4	There is an opportunity for expansion of groundwater monitoring to coincide with both the high and low-water table conditions (early spring and early fall) to characterize seasonal fluctuations.	N	N
5	There is a need to ensure that any facility expansion by Stephens Metal Products does not affect the monitoring well network and sampling.	N	N
6	There is an opportunity to cost-effectively optimize groundwater monitoring, including abandonment of two no longer needed wells and inclusion of one of the existing piezometer wells to more completely define the down-gradient plume boundary.	N	N

Issue 1 (the need to develop and implement institutional controls) has been a recurring issue from the previous two Five-Year Reviews. This issue has been carried forward and the specifics of addressing the recommendations and follow-up actions are provided in Section IX.

IX. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

EPA projects selecting enforceable institutional controls, specifically a restrictive covenant pursuant to the Washington Uniform Environmental Covenant Act or an equivalent easement, or another similarly protective remedy, in a ROD Amendment following public comment.

A more sensitive method for monitoring aldrin and dieldrin in groundwater should be adopted prior to the next phase of groundwater monitoring scheduled for the fourth five-year review. EPA will provide oversight to FMC on the adoption of a more sensitive method. The lower detection limit resulting from a more sensitive method is necessary to ensure that monitoring information used to support future National Priority List (NPL) deletion is adequate to that the site meets cleanup goals.

EPA will modify the remedy to add dieldrin as a groundwater COC covered by the remedy. This is not a fundamental change, and could be done through an ESD but for efficiency will be incorporated in the proposed ROD Amendment for Institutional Controls. The ROD Amendment would be finalized once public comments have been addressed.

Issues related to monitoring network optimization and seasonal sampling opportunities should be addressed to continue to manage the site in a cost-effective manner that may lead to eventual deletion from the NPL. The follow-up actions for these issues include:

- Monitor groundwater in April 2012 and late September/early October 2012 to characterize seasonal fluctuations;
- Maintain well access despite facility expansion at Stephens Metal Products;
- Abandon wells W-7 and W-9A&B (following state regulations) and add the shallowest piezometer well (W-8C) to the wells to be sampled in the groundwater monitoring plan.

FMC is responsible for these three follow-up actions which do not affect the current or future protectiveness of the remedy.

The recommendations and follow-up actions from this third Five-Year Review are summarized in the table below:

Table for Listing Recommendations and Follow-up Actions

No.	*Recommendations/ Follow-up Actions*	*Party Responsible*	*Oversight Agency*	*Milestone Date*	*Follow-up Actions: Affects Protectiveness (Y/N)*	
					Current	*Future*
1	Develop institutional controls, modify remedy to require them, and implement institutional controls	EPA		September 30, 2009	N	Y
2	Develop an analytical method sensitive enough to result in detection limits for aldrin and dieldrin that are lower than the $1x10^{-6}$ excess cancer risk	FMC Corp. (PRP)	EPA	Spring and fall of 2012	N	Y
3	Modify remedy to add dieldrin as a groundwater COC	EPA		September 30, 2009	N	N
4	Monitor groundwater in April 2012 and late September/early October 2012 to characterize seasonal fluctuations	FMC Corp. (PRP)	EPA	Spring and fall of 2012	N	N
5	Maintain well access despite facility expansion at Stephens Metal Products	FMC Corp. (PRP)	EPA	Spring 2012	N	N
6	Abandon wells W-7 and W-9A&B (following state regulations) and add the shallowest piezometer well (W-8C) to the wells to be sampled in the groundwater monitoring plan	FMC Corp. (PRP)	EPA	Spring 2012	N	N

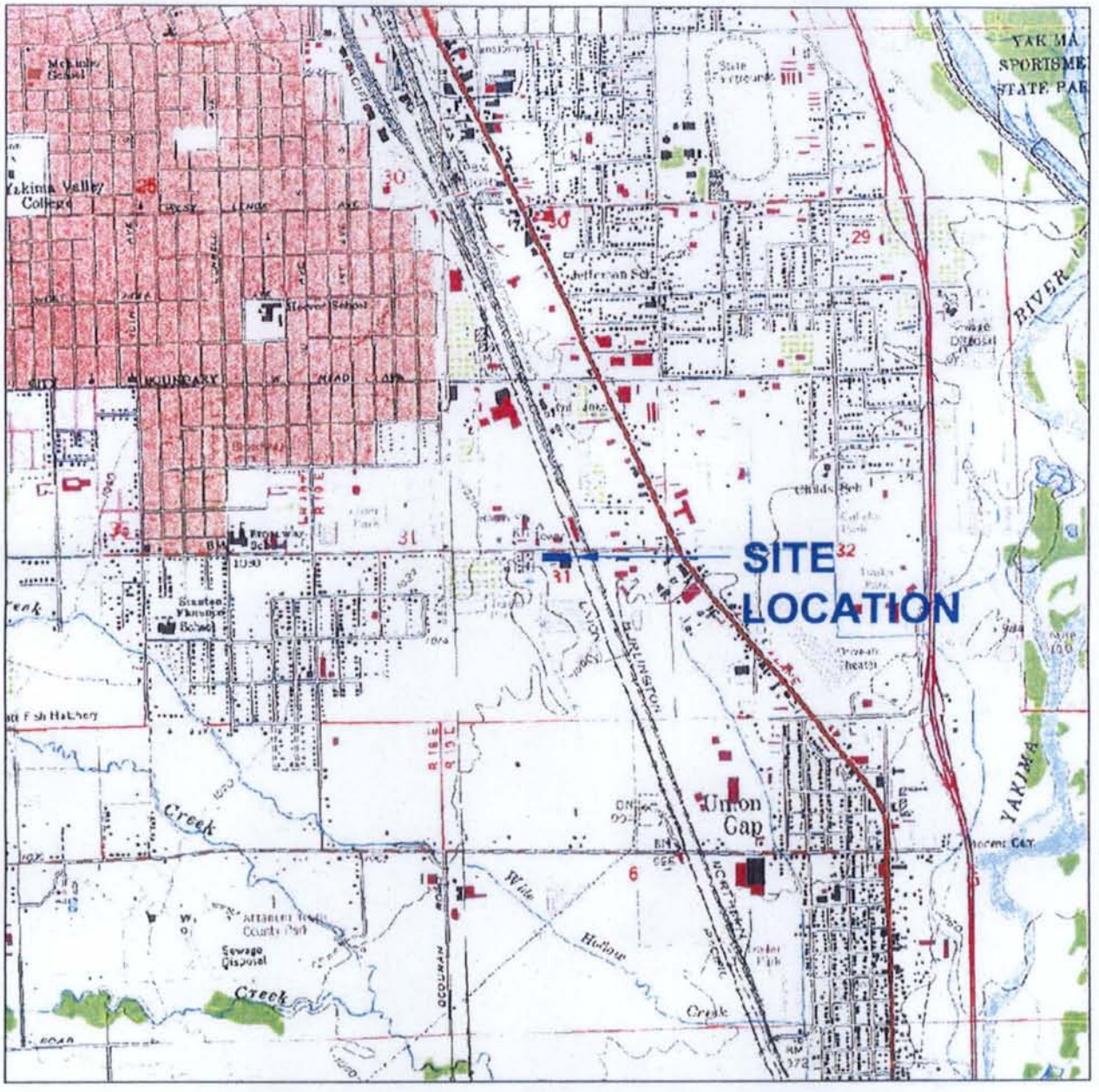
X. STATEMENT OF PROTECTIVENESS

Protective in the short term – The remedy currently protects human health and the environment because surface and near-surface soils have been remediated to below the cleanup goals and the groundwater plume is stable beneath the site and is not a source of drinking water. However, in order for the remedy to remain protective in the long-term, institutional controls and a lower groundwater detection limit for aldrin and dieldrin need to be implemented. The lower detection limit is necessary to ensure that monitoring information used to support future NPL deletion is correct in that the site meets cleanup goals.

XI. NEXT REVIEW

The next Five-Year Review should occur within five years (September 2013).

Appendix 1



North

WASHINGTON

1 1/2 0 1

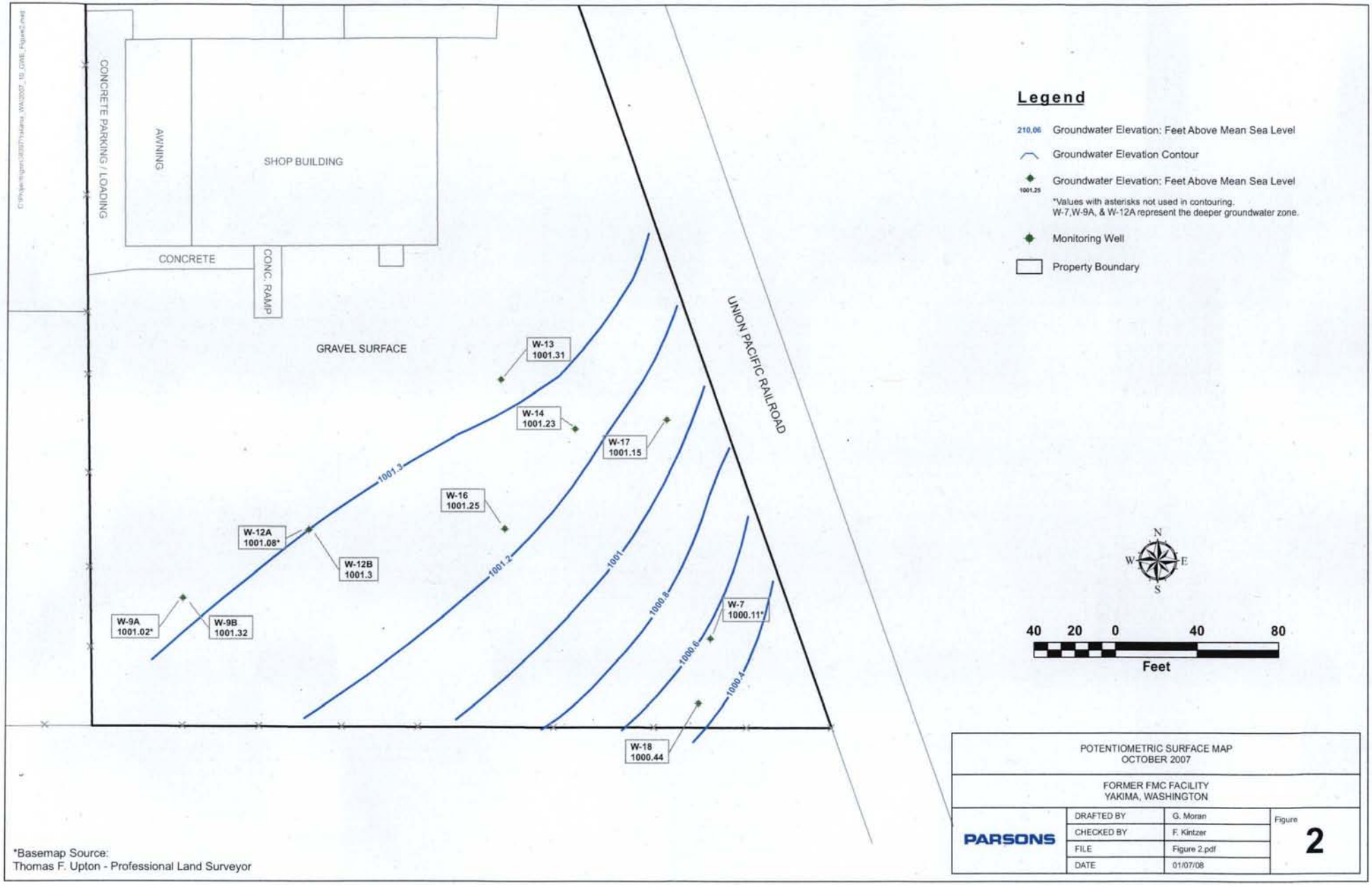
SCALE (MILES)

1000 0 1000 2000 3000 4000 5000 6000 7000

SCALE (FEET)

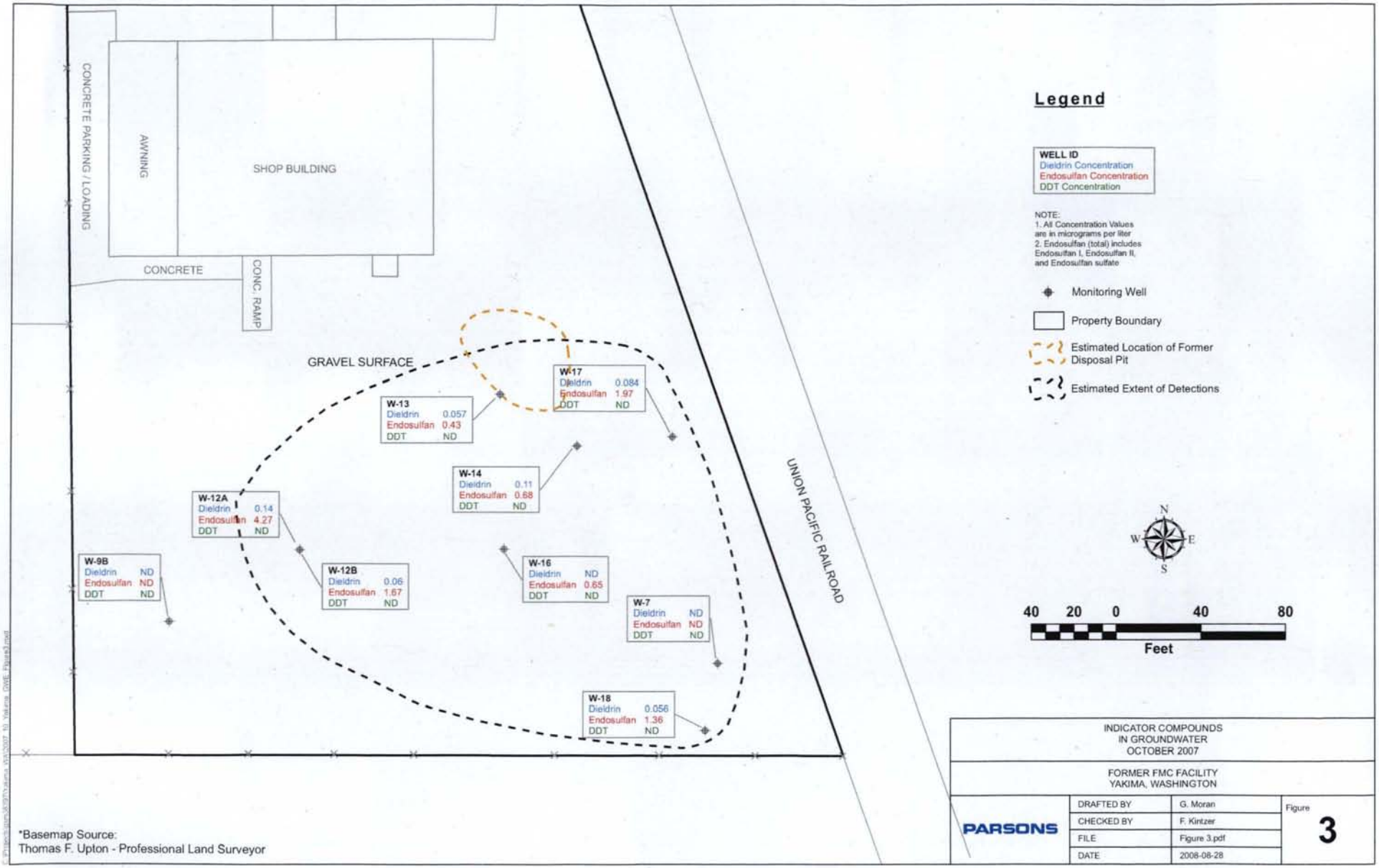
REFERENCE: USGS 7.5 MINUTE QUADRANGLE; YAKIMA EAST, WASHINGTON; 1981

PARSONS	FORMER FMC FACILITY YAKIMA, WASHINGTON	SITE LOCATION MAP		FIGURE: 1
	JOB NUMBER: 444071.05000	SOURCE: SECOR (12/03)	CHECKED BY: GM	APPROVED BY: FK	DATE: 12/17/07



*Basemap Source:
Thomas F. Upton - Professional Land Surveyor

POTENTIOMETRIC SURFACE MAP OCTOBER 2007			
FORMER FMC FACILITY YAKIMA, WASHINGTON			
PARSONS	DRAFTED BY	G. Moran	Figure 2
	CHECKED BY	F. Kintzer	
	FILE	Figure 2.pdf	
	DATE	01/07/08	



*Basemap Source:
Thomas F. Upton - Professional Land Surveyor

INDICATOR COMPOUNDS IN GROUNDWATER OCTOBER 2007

FORMER FMC FACILITY YAKIMA, WASHINGTON

PARSONS

DRAFTED BY	G. Moran
CHECKED BY	F. Kintzer
FILE	Figure 3.pdf
DATE	2008-08-28

Figure 3

Figure 4 - Total Endosulfans in Groundwater

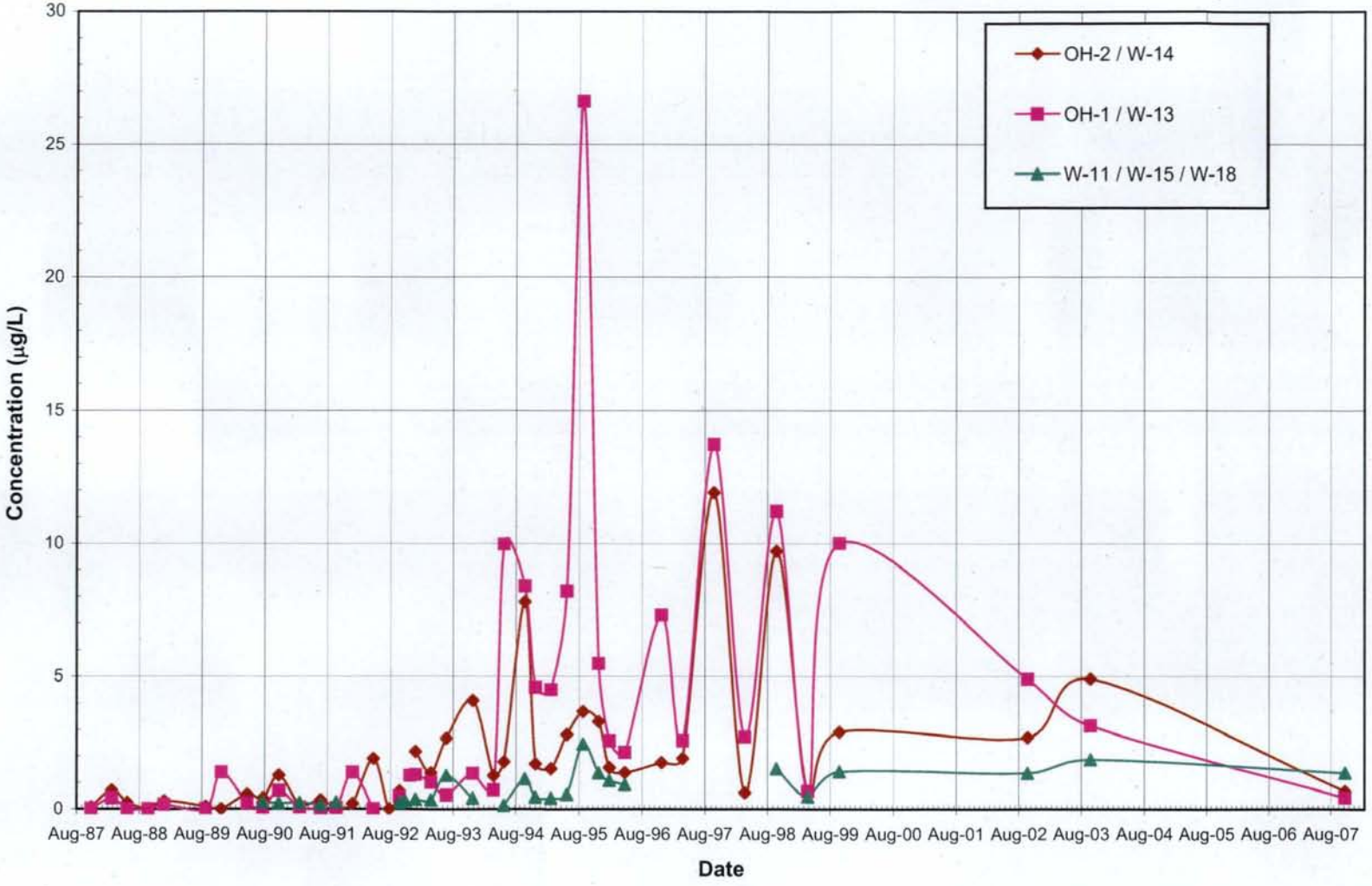


Figure 5 - Dieldrin plus Aldrin in Groundwater

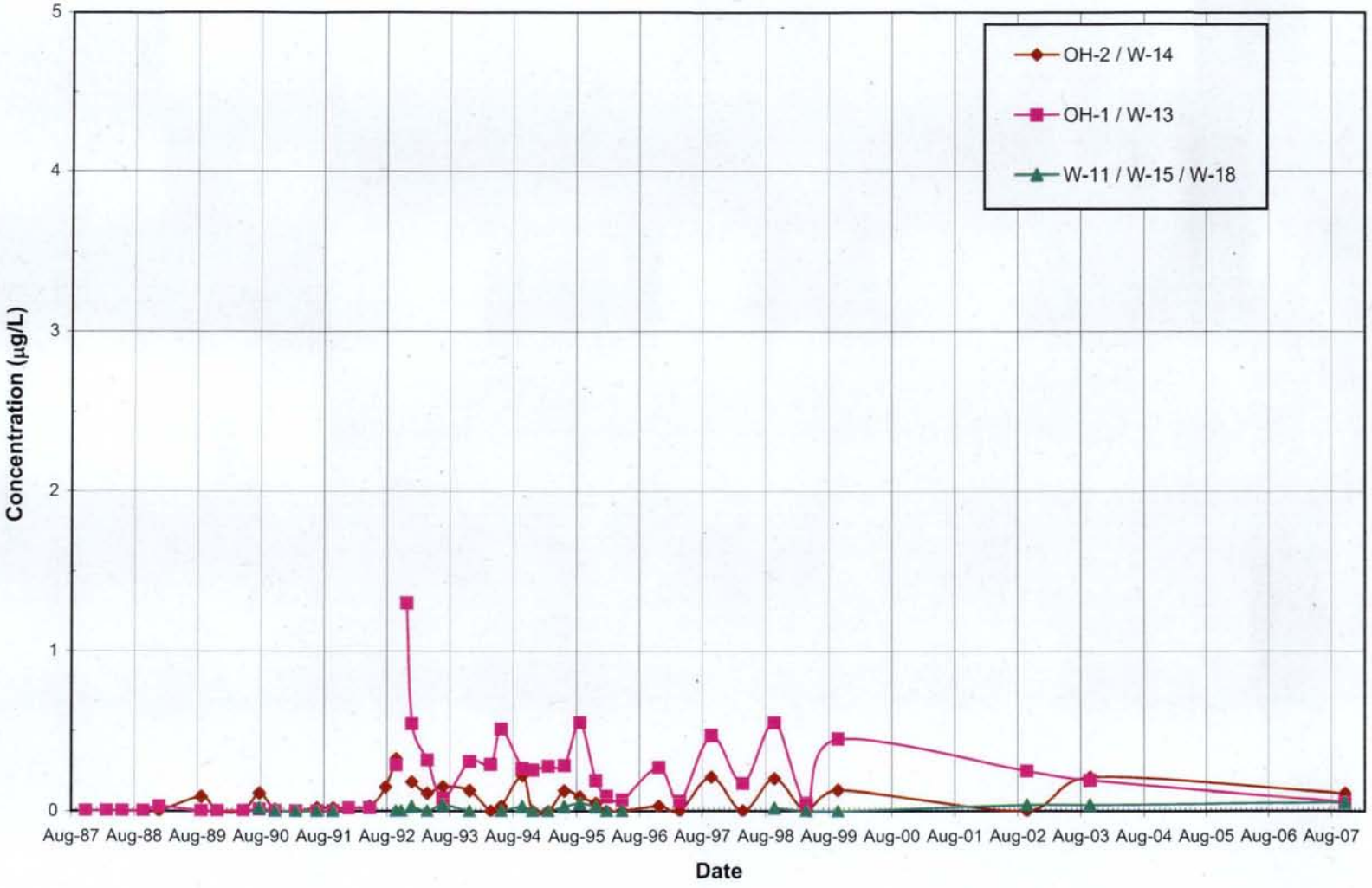


Figure 6 - Projected Land Use Control Area for the FMC Yakima Site and Proximity to Residentially Zoned Parcels

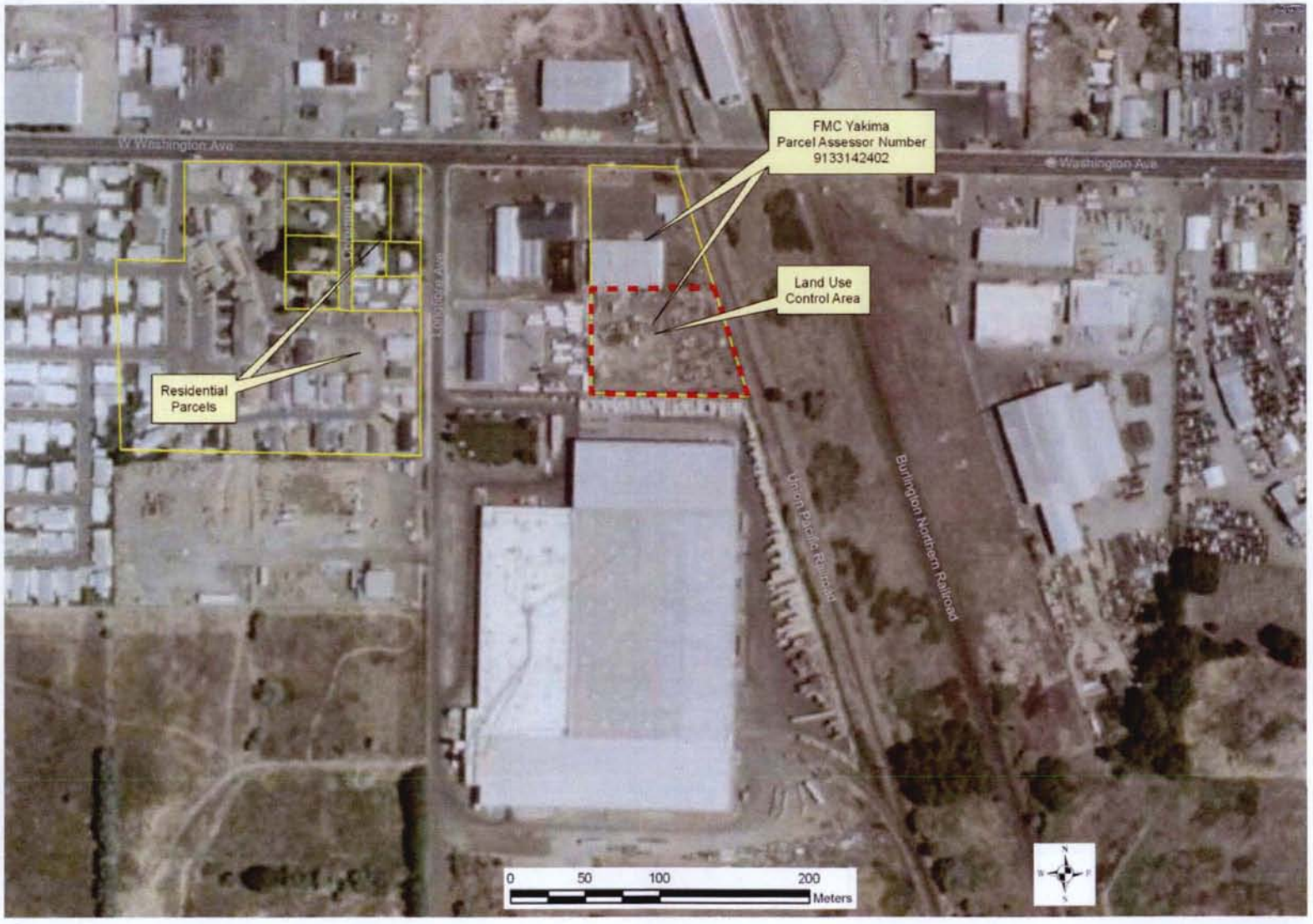


Table 1

Groundwater Elevations (Fall 2007)

WELL	Casing Diameter (inches)	Screen Length [A] (feet)	Total Depth [B] (feet)	Top of Screen (ft amsl)	Bottom of Screen (ft amsl)	Elevation Top of Casing [C] (ft amsl)	Depth to Water 10-22-07 (ft bgs)	Groundwater Elevation 10-22-07 (ft amsl)
W-7	4	15	35.07	984.22	969.22	1002.60	2.49	1000.11
W-9A	2	5	36.5	971.36	966.36	1002.80	1.78	1001.02
W-9B	2	5	14.13	994.86	989.86	1002.85	1.53	1001.32
W-12A	4	5	21.31	990.50	985.50	1003.05	1.97	1001.08
W-12B	4	5	10.46	998.50	993.50	1003.14	1.84	1001.30
W-13	2	10	15.46	999.30	989.30	1003.45	2.14	1001.31
W-14	2	10	15.11	998.73	988.73	1003.53	2.30	1001.23
W-16	2	10	14.77	998.63	988.63	1003.23	1.98	1001.25
W-17	2	10	14.99	998.20	988.20	1003.61	2.46	1001.15
W-18	2	10	14.4	997.38	987.38	1002.14	1.70	1000.44

Notes

[A] Well as-built dimensions from Secor (2004)

[B] Total depth of well measured after re-development October 22 to 24, 2007

[C] Top of casing surveyed October 23, 2007

amsl = above mean sea level

bgs = below ground surface

Table 2

Summary of Detections (Fall 2007)

	W-7	W-9B	W-12A	W12B	W-13	W-14	W-14D	W-16	W-17	W-18
2,4-DDT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-TDE/DDD	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-TDE/DDD	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
a-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Alachlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
b-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benefin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Captan	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbophenothion	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
d-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dicofol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	0.14	0.06	0.057	0.11	0.11	ND	0.084	0.056
Endosulfan I	ND	ND	1.3	0.69	0.11	0.13	0.14	0.37	0.60	0.39
Endosulfan II	ND	ND	0.87	0.38	0.13	0.20	0.20	0.17	0.41	0.28
Endosulfan sulfate	ND	ND	2.1	0.60	0.19	0.35	0.34	0.11	0.96	0.69
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Folpet	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
g-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrofen	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCNB	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perthane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tedion	ND	ND	0.66	0.35	0.16	0.25	0.27	ND	0.34	0.20
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes

All values are shown in micrograms per liter
ND - Not detected above the laboratory Practical Quantation Limit (PQL)
PQL for perthane and toxaphene = 1.0 micrograms/liter; PQL for all other compounds = 0.05 micrograms/liter
Analytical work performed by Agricultural & Priority Pollutants Laboratories, Inc., Fresno, California

Table 3

Comparison of Duplicate Samples (Fall 2007)

Parameter (ug/L)	W-14	W-14D	RPD %	PQL (ug/L)
Dieldrin	0.11	0.11	0.0	0.05
Endosulfan I	0.13	0.14	7.4	0.05
Endosulfan II	0.20	0.20	0.0	0.05
Endosulfan sulfate	0.35	0.34	2.9	0.05
Endrin	0	0	0.0	0.05
Tedion	0.25	0.27	7.7	1.0

NOTE: A zero in the sample results column signifies that the result was not detected above the analytical detection limit.

RPD: Relative Percent Difference calculated by RPD = $\{X_1-X_2\}/X_{avg}$ x 100 where:

X_1 = concentration of W-14 (original sample)

X_2 = concentration of W-14D (duplicate sample)

X_{avg} = average concentration = $(X_1 + X_2)/2$

PQL: Practical Quantitation Limit

Appendix 2

Five-Year Review Site Inspection Roster

FMC Yakima

June 25, 2008

Craig Cameron	Remedial Project Manager U.S. Environmental Protection Agency Region 10
Marcia Knadle	Hydrogeologist U.S. Environmental Protection Agency Region 10
Jeff Newschwander	Agency Representative State of Washington – Department of Ecology Central Regional Office (Yakima, WA)

Note: The City of Yakima was contacted by telephone in early June about joining the site visit. A message was left with the office manager for Dick Zais (city manager). However, no one from the city responded.

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION

Site name: FMC Corp. (Yakima Pit)	**Date of inspection:** 6/25/08
Location and Region: Yakima, WA EPA R10	**EPA ID:** WAD000643577
Agency, office, or company leading the five-year review: EPA	**Weather/temperature:** Clear and sunny, 82° F

Remedy Includes: (Check all that apply)

- Landfill cover/containment
- Access controls
- Institutional controls
- Groundwater pump and treatment
- Surface water collection and treatment
- Monitored natural attenuation
- Groundwater containment
- Vertical barrier walls
- Other Removal and treatment of soil (and other activities) completed about 15 years ago.

Attachments: ✓ Inspection team roster attached ✓ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** _____ _____ _____
   Name Title Date
   Interviewed at site at office by phone Phone no. _____
   Problems, suggestions; Report attached _____
   Not Applicable (N/A)

2. **O&M staff** _____ _____ _____
   Name Title Date
   Interviewed at site at office by phone Phone no. _____
   Problems, suggestions; Report attached N/A

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 WA Dept. of Ecology
Contact Jeff Newschwander UECA Coordinator 6/25/08 509 454-7842
Name Title Date Phone no.
Problems; suggestions; Report attached
[See interview form]

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

Agency
Contact
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.

[See interview documentation and record forms]

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

1. **O&M Documents**
   - O&M manual — Readily available — Up to date — N/A
   - As-built drawings — Readily available — Up to date — N/A
   - Maintenance logs — Readily available — Up to date — N/A

   Remarks

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** — Readily available — Up to date — N/A

   Remarks

4. **Permits and Service Agreements**
   - Air discharge permit — Readily available — Up to date — N/A
   - Effluent discharge — Readily available — Up to date — N/A
   - Waste disposal, POTW — Readily available — Up to date — N/A
   - Other permits _____ — Readily available — Up to date — N/A

   Remarks

5. **Gas Generation Records** — Readily available — Up to date — N/A

   Remarks

6. **Settlement Monument Records** — Readily available — Up to date — N/A

   Remarks

7. **Groundwater Monitoring Records** — Readily available — Up to date — N/A

   Remarks G.W. Monitoring reports are submitted to EPA on an approved schedule.

8. **Leachate Extraction Records** — Readily available — Up to date — N/A

   Remarks

9. **Discharge Compliance Records**
   - Air — Readily available — Up to date — N/A
   - Water (effluent) — Readily available — Up to date — N/A

   Remarks

10. **Daily Access/Security Logs** — Readily available — Up to date — N/A

    Remarks

IV. O&M COSTS

1. **O&M Organization**
   State in-house — Contractor for State
   PRP in-house — Contractor for PRP
   Federal Facility in-house — Contractor for Federal Facility
   Other _____
   N/A

2. **O&M Cost Records**
   Readily available — Up to date
   Funding mechanism/agreement in place
   Original O&M cost estimate _____ Breakdown attached
   N/A

   Total annual cost by year for review period if available

   From _____ (Date) To _____ (Date) _____ (Total cost) Breakdown attached
   From _____ (Date) To _____ (Date) _____ (Total cost) Breakdown attached
   From _____ (Date) To _____ (Date) _____ (Total cost) Breakdown attached
   From _____ (Date) To _____ (Date) _____ (Total cost) Breakdown attached
   From _____ (Date) To _____ (Date) _____ (Total cost) Breakdown attached

3. **Unanticipated or Unusually High O&M Costs During Review Period**
   Describe costs and reasons: N/A

V. ACCESS AND INSTITUTIONAL CONTROLS — Applicable — N/A

A. Fencing There are no formal access or institutional controls

1. **Fencing damaged** — Location shown on site map — Gates secured — N/A
   Remarks Fence along railroad track is intact but could be replaced (East side of site)

B. Other Access Restrictions Wells displayed on map

1. **Signs and other security measures** — Location shown on site map — (N/A)
   Remarks Only signs are well head markers that have "Monitor Well" on them.

C. Institutional Controls (ICs) ICs will be established shortly after the 5-Year Review

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented — Yes | No | N/A
Site conditions imply ICs not being fully enforced — Yes | No | N/A

Type of monitoring (*e.g.*, self-reporting, drive by) There currently are no ICs provided in decision documents.
Frequency
Responsible party/agency
Contact
Name | Title | Date | Phone no.

Reporting is up-to-date — Yes | No | N/A
Reports are verified by the lead agency — Yes | No | N/A

Specific requirements in deed or decision documents have been met — Yes | No | N/A
Violations have been reported — Yes | No | N/A
Other problems or suggestions: Report attached

2. **Adequacy** ICs are adequate | ICs are inadequate | N/A
Remarks [See comments above]

D. General

1. **Vandalism/trespassing** Location shown on site map (No vandalism evident)
Remarks

2. **Land use changes on site** N/A
Remarks No change from industrial-use.

3. **Land use changes off site** N/A
Remarks No changes in surrounding area.

VI. GENERAL SITE CONDITIONS

A. Roads Applicable (N/A)

1. **Roads damaged** Location shown on site map | Roads adequate | N/A
Remarks

B. Other Site Conditions

Remarks There is a lot of debris piled here and there, but that is expected for a laydown yard. Flush well heads should be safe and allow use as a laydown yard. Like this year's site visit, future visits should be preceded by a request to make sure there is proper access to all monitoring wells.

VII. LANDFILL COVERS Applicable (N/A)

A. Landfill Surface

1. **Settlement** (Low spots) Location shown on site map Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Cracks** Location shown on site map Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____

3. **Erosion** Location shown on site map Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Holes** Location shown on site map Holes not evident
   Areal extent_____ Depth_____
   Remarks_____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
   Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
   Remarks_____

7. **Bulges** Location shown on site map Bulges not evident
   Areal extent_____ Height_____
   Remarks_____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
   - Wet areas — Location shown on site map — Areal extent_____
   - Ponding — Location shown on site map — Areal extent_____
   - Seeps — Location shown on site map — Areal extent_____
   - Soft subgrade — Location shown on site map — Areal extent_____

   Remarks_____

9. **Slope Instability** Slides — Location shown on site map — No evidence of slope instability
   Areal extent_____
   Remarks_____

B. Benches Applicable N/A

(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** Location shown on site map N/A or okay
   Remarks_____

2. **Bench Breached** Location shown on site map N/A or okay
   Remarks_____

3. **Bench Overtopped** Location shown on site map N/A or okay
   Remarks_____

C. Letdown Channels Applicable 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** Location shown on site map No evidence of settlement
   Areal extent_____ Depth_____
   Remarks_____

2. **Material Degradation** Location shown on site map No evidence of degradation
   Material type_____ Areal extent_____
   Remarks_____

3. **Erosion** Location shown on site map No evidence of erosion
   Areal extent_____ Depth_____
   Remarks_____

4. **Undercutting** Location shown on site map No evidence of undercutting
Areal extent _____ Depth _____
Remarks _____

5. **Obstructions** Type _____ No obstructions
Location shown on site map Areal extent _____
Size _____
Remarks _____

6. **Excessive Vegetative Growth** Type _____
No evidence of excessive growth
Vegetation in channels does not obstruct flow
Location shown on site map Areal extent _____
Remarks _____

D. Cover Penetrations Applicable N/A

1. **Gas Vents** Active Passive
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance
N/A
Remarks _____

2. **Gas Monitoring Probes**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks _____

3. **Monitoring Wells** (within surface area of landfill)
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks _____

4. **Leachate Extraction Wells**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks _____

5. **Settlement Monuments** Located Routinely surveyed N/A
Remarks _____

E. Gas Collection and Treatment Applicable N/A

1. **Gas Treatment Facilities**
   Flaring Thermal destruction Collection for reuse
   Good condition Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   Good condition Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   Good condition Needs Maintenance N/A
   Remarks_____

F. Cover Drainage Layer Applicable N/A

1. **Outlet Pipes Inspected** Functioning N/A
   Remarks_____

2. **Outlet Rock Inspected** Functioning N/A
   Remarks_____

G. Detention/Sedimentation Ponds Applicable N/A

1. **Siltation** Areal extent_____ Depth_____ N/A
   Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   Erosion not evident
   Remarks_____

3. **Outlet Works** Functioning N/A
   Remarks_____

4. **Dam** Functioning N/A
   Remarks_____

H. Retaining Walls Applicable N/A

1. **Deformations** Location shown on site map Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** Location shown on site map Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge Applicable N/A

1. **Siltation** Location shown on site map Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** Location shown on site map N/A
   Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** Location shown on site map Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** Functioning N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS Applicable (N/A)

1. **Settlement** Location shown on site map Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   Performance not monitored
   Frequency_____ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES	Applicable	N/A (circled)

A. Groundwater Extraction Wells, Pumps, and Pipelines Applicable N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   Good condition All required wells properly operating Needs Maintenance N/A
   Remarks_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition Needs Maintenance
   Remarks_____

3. **Spare Parts and Equipment**
   Readily available Good condition Requires upgrade Needs to be provided
   Remarks_____

B. Surface Water Collection Structures, Pumps, and Pipelines Applicable N/A

1. **Collection Structures, Pumps, and Electrical**
   Good condition Needs Maintenance
   Remarks_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition Needs Maintenance
   Remarks_____

3. **Spare Parts and Equipment**
   Readily available Good condition Requires upgrade Needs to be provided
   Remarks_____

C. Treatment System Applicable N/A

1. **Treatment Train** (Check components that apply)
   Metals removal Oil/water separation Bioremediation
   Air stripping Carbon adsorbers
   Filters _____
   Additive (*e.g.*, chelation agent, flocculent) _____
   Others _____
   Good condition Needs Maintenance
   Sampling ports properly marked and functional
   Sampling/maintenance log displayed and up to date
   Equipment properly identified
   Quantity of groundwater treated annually _____
   Quantity of surface water treated annually _____
   Remarks _____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   N/A Good condition Needs Maintenance
   Remarks _____

3. **Tanks, Vaults, Storage Vessels**
   N/A Good condition Proper secondary containment Needs Maintenance
   Remarks _____

4. **Discharge Structure and Appurtenances**
   N/A Good condition Needs Maintenance
   Remarks _____

5. **Treatment Building(s)**
   N/A Good condition (esp. roof and doorways) Needs repair
   Chemicals and equipment properly stored
   Remarks _____

6. **Monitoring Wells** (pump and treatment remedy)
   Properly secured/locked Functioning Routinely sampled Good condition
   All required wells located Needs Maintenance N/A
   Remarks _____

D. Monitoring Data

1. Monitoring Data
   Is routinely submitted on time Is of acceptable quality

2. Monitoring data suggests:
   Groundwater plume is effectively contained Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
   Properly secured/locked Functioning Routinely sampled Good condition
   All required wells located Needs Maintenance 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. There are no facilities associated with the constructed remedy.

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.).

The construction of the remedy was completed over a decade ago and the site has been closed out. However, ground water and soil (below 7' in depth) have residual contamination that does not allow for unrestricted use and unrestricted exposure.

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.

N/A

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.

N/A

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

There are opportunities to abandon some of the monitoring wells based on groundwater monitoring trend data. Monitoring wells W-7 and W-9A+B can be abandoned.

Appendix 3

INTERVIEW DOCUMENTATION FORM

The following is a list of individual interviewed for this five-year review. See the attached contact record(s) for a detailed summary of the interviews.

Name	Title/Position	Organization	Date
Jeff Newschwander	UECA Coordinator	WA Dept. of Ecology	6/25/08
Eric Coble	Salesman	Country Farm + Garden True Value Hardware	6/25/08
Barb Wilson	Cashier	Country Farm + Garden True Value Hardware	6/25/08
Chester Stephens	V P of Operations	Stephens Metals	6/25/08
Erlinda Butler	Owner	Butlers Welding + RV Accessories	7/24/08

INTERVIEW RECORD

Site Name: FMC Yakima		EPA ID No.: WAD000643577
Subject: Five-Year Review		Time: 12:30 Date: 6/25/08
Type: ☐ Telephone ☑ Visit ☐ Other Location of Visit: On-site		☐ Incoming ☐ Outgoing

Contact Made By:

Name: Craig Cameron	Title: Environ. Scientist	Organization: EPA

Individual Contacted:

Name: ~~Jeff~~ Newschwander	Title: UECA Coordinator	Organization: WA Dept. of Ecology
Telephone No: 509 454-7842 Fax No: E-Mail Address: jene461@ecy.wa.gov	Street Address: 15 West Yakima Ave. City, State, Zip: Yakima, WA 98902-3452	

Summary Of Conversation

Mr. Newschwander participated in the site visit as the representative for the Dept. of Ecology. Along with Marcia Knadle (EPA), we discussed the groundwater monitoring results and trends as well as plans for putting institutional controls in place. He is charged with certain responsibilities regarding the Uniform Environmental Covenant Act implementation, so that would make him an important resource for this site. He said that Ecology had no problems with the management of the FMC Yakima site.

Page 1 of 1

INTERVIEW RECORD

Site Name: FMC Yakima		**EPA ID No.:** WAD000643577
Subject: Five-Year Review	**Time:** 12:50	**Date:** 6/25/08
Type: ☐ Telephone ☑ Visit ☐ Other **Location of Visit:** Hardware store	☐ Incoming ☐ Outgoing	

Contact Made By:

Name: Craig Cameron	**Title:** Environ. Scientist	**Organization:** EPA

Individual Contacted:

Name: Eric Coble	**Title:** Salesman	**Organization:** Country Farm + Garden True Value Hardware
Telephone No: 509 575-8877 **Fax No:** **E-Mail Address:**	**Street Address:** 6 West Washington Ave. **City, State, Zip:** Yakima, WA 98903	

Summary Of Conversation

Mr. Coble was the person managing the hardware store to the west of Stephens Metals during the site visit. He has the same last name as the owner, Leroy Coble. He said they (manager) didn't notice any problems with the former pesticide formulation site. We discussed the fact that the store's planters were all up above ground on top of asphalt. He said it gets pretty hot out there in the summer. He did express a concern about the weeds growing on the site (considering the garden area at the store).

INTERVIEW RECORD

Site Name: FMC Yakima		**EPA ID No.:** WAD000643577	
Subject: Five-Year Review		**Time:** 12:50	**Date:** 6/25/08
Type: ☐ Telephone ☑ Visit ☐ Other **Location of Visit:** Hardware store		☐ Incoming ☐ Outgoing	
Contact Made By:			
Name: Craig Cameron	**Title:** Environ. Scientist	**Organization:** EPA	
Individual Contacted:			
Name: Barb Wilson	**Title:** Cashier	**Organization:** Country Farm + Garden True Value Hardware	
Telephone No: 509 575-8877 **Fax No:** **E-Mail Address:**		**Street Address:** 6 West Washington Ave. **City, State, Zip:** Yakima, WA 98903	

Summary Of Conversation

Ms. Wilson was interviewed concurrently with Eric Coble. She was in agreement with the statements that Mr. Coble made.

INTERVIEW RECORD

Site Name: FMC Yakima		**EPA ID No.:** WAD000643577
Subject: Five-Year Review		**Time:** 12:40 **Date:** 6/25/08
Type: ☐ Telephone ☑ Visit ☐ Other **Location of Visit:** On-site		☐ Incoming ☐ Outgoing

Contact Made By:

Name: Craig Cameron	**Title:** Environ. Scientist	**Organization:** EPA

Individual Contacted:

Name: Chester Stephens	**Title:** V.P. of Operations	**Organization:** Stephens Metals Products Inc.
Telephone No: 509 452-4088 **Fax No:** **E-Mail Address:**	**Street Address:** **City, State, Zip:** 4 West Washington Ave. Yakima, WA 98903	

Summary Of Conversation

Mr. Stephens is the son of the owner. Marcia Knadle (EPA) and Jeff Newschwander (Ecology) participated in the interview of Mr. Stephens. We discussed the recent removal of railroad tracks at the back of the old building that Stephens Metals is using. They were removed to prepare for an expansion of their facility. He indicated that the expansion will come close to one of the monitoring wells. This well is still valuable and so FMC may have to coordinate with them to make sure the well can be accessed and allow expansion. He said he was glad that → (continued)

Chester Stephens (Continued)

USEPA No. 9355.7-03B-P

INTERVIEW RECORD

Site Name: FMC Yakima		**EPA ID No.:**
Subject:	**Time:**	**Date:**
Type: ☐ Telephone ☐ Visit ☐ Other **Location of Visit:**	☐ Incoming ☐ Outgoing	

Contact Made By:

Name:	**Title:**	**Organization:**

Individual Contacted:

Name:	**Title:**	**Organization:**

Telephone No: **Fax No:** **E-Mail Address:**	**Street Address:** **City, State, Zip:**

Summary Of Conversation

(Continued from page 1 of 2 for Chester Stephens interview)
... groundwater monitoring was continuing to be performed to keep track of contaminants at the site. He said that the wells didn't really get in the way (because they are basically flush with the ground).
When asked if anyone in his organization had noticed any problems (both inside and outside the building), he said no. We wrapped up our discussion with him pointing out the former footings of an FMC building that was removed. The footings were along the boundary with the hardware store's property to the west.

INTERVIEW RECORD

Site Name: FMC Yakima	EPA ID No.: WA D000643577
Subject: Five-Year Review	Time: 2 PM Date: 7/24/08
Type: ☑ Telephone ☐ Visit ☐ Other Location of Visit:	☐ Incoming ☑ Outgoing

Contact Made By:

Name: Craig Cameron	Title: Environ. Scientist	Organization: EPA

Individual Contacted:

Name: Erlinda Butler	Title: Owner	Organization: Butlers Welding + RV Accessories
Telephone No: 509 457-4686 Fax No: E-Mail Address:	Street Address: 1909 Longfibre Ave, City, State, Zip: Yakima, WA 98903	

Summary Of Conversation

Ms. Butler was contacted by telephone and identified herself as a co-owner of the business. She said that they hadn't had any problems with their property. She indicated that they had owned the business for the last 10 years. She recorded the contact information for the EPA project manager,

Appendix 4

Stephens Metal Products

Butler's RV Parts & Service

Country Farm & Garden True Value Hardware

Demolition of old railroad spur looking east towards the southwest corner of Stephens Metal Products warehouse

Looking southeast across paved garden area of hardware store towards Stephens Metal Products

Looking north from the southeast corner of the Stephens Metal Products laydown yard

Looking west from southeast corner of laydown yard

Monitoring well W-9A&B

Monitoring well W-7

Monitoring well W-12A&B

Piezometer well (not sampled) W-8A,B,C

Debris around monitoring well W-13

Monitoring well W-13

Monitoring well W-14

Monitoring well W-17

Monitoring well W-16

Monitoring well W-18

FMC Yakima Photos 06/25/08