

MERCED COUNTY
 DIVISION OF ENVIRONMENTAL HEALTH
 CASE CLOSURE SUMMARY
 DTSC Delegated Program – Hazardous Waste Cleanup

I Agency Information

Date: September 29, 2011

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| Agency Name: County of Merced, Division of Environmental Health | Address: 777 West 22nd Street |
| City/State/Zip: Merced CA 95340 | Telephone: (209) 381-1075 |
| Responsible Staff Person: Eric Swenson | Title: Project Engineer |

II Case Information

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| Site Facility Name: Merced Irrigation District Franklin Yard | | |
| Site Facility Address: 3321 North Franklin Road, Merced, CA | | |
| Case Opened: 11/2/1994 | | APN # 005-150-006 |
| Responsible Party | Address(es) | Telephone Number |
| Merced Irrigation District | 744 W. 20 th Street Merced, CA 95340 | 209-722-5761 |

III Site Characterization and Cleanup Information

Location: F-1 (Former Waste Oil Disposal)

Description: Petroleum impacted soil, infiltration pit for hydraulic oil, used motor oil, including French drain feature in north east section of maintenance yard.

Timeframe: Investigation started in 1988 with installation of TW-6. Removal of impacted soil started on April 17, 1995 and backfill was completed on May 3, 1995. Impacted soil was bio-remediated on site and MCDEH determined that the soil was suitable for reuse on August 25, 1997.

Chemicals of Concern: Lubricating range petroleum, hydraulic oil, metals associated with used motor oil such as lead and chromium, and volatile organic compounds.

Material Removal: 1250 cubic yards of soil removed.

Material Disposal: Bio-remediated soil utilized for MID construction projects, likely related to canal maintenance and rebuilding.

Concentration Soil Before: TRPH as high as 37,800 mg/kg, TPH(motor oil) as high as 6,200 mg/kg.

Concentration Soil After: TRPH was non-detect (ND). VOC was non-detect in 2011 investigation

Concentration Compared to Risk Screening Level: RWQCB-2 ESL (Nov 2007) for residential and commercial TPH(middle distillates) is 83 mg/kg. Health Hazard Risk Assessment (HHRA) conducted by Kleinfelder in 2011

Merced Irrigation District, Franklin Yard, Case Closure Summary

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| Location: F-2 (Former Infiltration Gallery and Steam Cleaning Pad Area Drain) |
| Description: Drainage and infiltration area for part and equipment wash water. Gasoline and solvents used to clean parts. Primarily petroleum impacted water with cleaning agent drainage. |
| Timeframe: Investigation started in 1988 with installation of TW-5 and TW-7. In April of 1995 the investigation of this area continued. Over-excavation of impacted soil completed on July 20, 1995. Impacted soil was bio-remediated on site and MCDEH determined that the soil was suitable for reuse on August 25, 1997. |
| Chemicals of Concern: Petroleum compounds and volatile organic compounds. |
| Material Removal: 65 cubic yards of soil removed. |
| Material Disposal: Bio-remediated soil utilized for MID construction projects, likely related to canal maintenance and rebuilding. |
| Concentration Soil Before: Groundwater in TW-5 and TW-7 did not detect solvents or related compounds or metals above typical concentrations with the exception of one detection of 1,2-Dichloropropane at 4.7 µg/L. |
| Concentration Soil After: TRPH < 50 mg/kg. |
| Concentration Compared to Risk Screening Level: RWQCB-2 ESL (Nov 2007) for residential and commercial TPH (middle distillates) is 83 mg/kg. |

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| Location: F-3 (Parts Wash Room Infiltration Gallery) |
| Description: This area incorporated into work on UST release assessment and cleanup (area F-5). |

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| Location: F-4 (Former 'Weed Oil' Storage Tank) |
| Description: Petroleum impacted soil from waste oil used to spray weeds. Weed Oil 5,000 gallon UST removed in 1985 or 1986. |
| Timeframe: Removal of impacted soil started on May 3, 1995 with the removal of 20 cubic yards of impacted soil. An additional 1,600 cubic yards of soil was removed by July 20, 1995. Impacted soil was bio-remediated on site and MCDEH determined that the soil was suitable for reuse on August 25, 1997. |
| Chemicals of Concern: Lubricating soil range petroleum and metals associated with used motor oil such as lead and chromium. |
| Material Removal: 500 cubic yards of visually stained soil was removed and an additional 1,100 cubic yards of adjacent soil was also removed as a precautionary measure. |
| Material Disposal: Bio-remediated soil utilized for MID construction projects, likely related to canal maintenance and rebuilding. |
| Concentration Soil Before: TRPH as high as 4,000 mg/kg. |
| Concentration Soil After: TRPH was 31.3 mg/kg. |
| Concentration Compared to Risk Screening Level: RWQCB-2 ESL (Nov 2007) for residential and commercial TPH(middle distillates) is 83 mg/kg. |

Merced Irrigation District, Franklin Yard, Case Closure Summary

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| Location: B-1 a,b,c,d (Disposal Trenches) |
| Description: Waste disposal location and former debris burn pit. Contaminants of concern were dioxin and petroleum. |
| Timeframe: Excavation and removal of material between July 11 and 12, 1995. |
| Chemicals of Concern: Petroleum compounds and dioxin. |
| Material Removal: 2 gallons of petroleum type liquid waste removed and approximately 20 cubic yards of solid waste including soil. |
| Material Disposal: Solid waste disposed of at Laidlaw Environmental Services landfill in Buttonwillow, CA and liquid waste disposed of at Pacific Resource Recovery in Los Angeles, CA. |
| Concentration Soil Before: TRPH as high as 2370 mg/kg, lead 14.7 mg/kg, nickel 8.4 mg/kg, chromium 9.8 mg/kg, and cadmium 0.75 mg/kg. Dioxin equivalent concentration total TCDD and TCDF equivalents 2.5 pg/g maximum. |
| Concentration Soil After: TRPH of 14.7 mg/kg |
| Concentration Compared to Risk Screening Level: RWQCB-2 ESL (Nov 2007) for residential TPH(middle distillates) is 83 mg/kg. RWQCB-2 ESL (Nov 2007) for Dioxin TCDD equivalent for residential is 4.5 pg/g and for commercial is 18 pg/g. See 2011 Kleinfelder HHRA for additional discussion |

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| Location: B-2 a, b, c, d, e (Alleged Former Disposal of Empty 2,4 D Product Drums) |
| Description: Alleged location of disposal of empty 2,4 D product drums per labeled disposal instructions on drum. |
| Timeframe: Field site assessment May 24-25, 1995. |
| Chemicals of Concern: 2,4-D and dioxin. |
| Material Removal: Misc. metal debris. |
| Material Disposal: Misc. metal debris |
| Concentration Soil Before: NA – Not applicable – nothing found. |
| Concentration Soil After: NA |
| Concentration Compared to Risk Screening Level: NA |

Merced Irrigation District, Franklin Yard, Case Closure Summary

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| Location: B-3 a, b, c, d, e, f, g (Alleged Former Disposal of Empty 2,4 D and other Product Drums) |
| Description: Alleged location of disposal of empty 2,4 D product drums per labeled disposal instructions on drum and burial of other drums and material. The remains of at least 8 crushed drums were found at this location along with other debris. Some of the debris had been burned. 21 empty 55 gallon drums labeled <i>2,4-D Amine Weedkiller</i> was found within this material. |
| Timeframe: Field site assessment May 24-25, 1995. Removal of solid hazardous debris between October 24 and 26, 1995. |
| Chemicals of Concern: TRPH, 2,4-D, and dioxin. |
| Material Removal: 36 drums between 30 and 55 gallon capacity, a number of smaller containers with petroleum related material, 3 used fire extinguishers, old batteries, and a variety of miscellaneous items of debris and trash. Soils were screened with 2 x 4 inch mesh screen and material passing through screen other than clearly identified items such as batteries were returned with backfill to the excavation area. |
| Material Disposal: Solid waste disposed of at Laidlaw Environmental Services landfill in Buttonwillow, CA and liquid waste disposed of at Pacific Resource Recovery in Los Angeles, CA. |
| Concentration Soil Before: TRPH 724 mg/kg, lead 357 mg/kg, chromium 37.4 mg/kg, cadmium 1.6 mg/kg. Dioxin equivalent concentration total TCDD and TCDF equivalents 45 pg/g maximum. |
| Concentration Soil After: No 2,4-D residual was found in soil at this location. Geochemical analyses of soil with respect to pH, moisture, and total organic carbon indicate a significant natural capacity to attenuate 2,4-D. Since soil was screened to remove debris and then returned to excavation, concentrations of the following detected materials may be unchanged in 'after' condition: TRPH 724 mg/kg, lead 357 mg/kg, chromium 37.4 mg/kg, cadmium 1.6 mg/kg. Dioxin equivalent concentration total TCDD and TCDF equivalents 45 pg/g maximum. |
| Concentration Compared to Risk Screening Level: RWQCB-2 ESL (Nov 2007) for residential and commercial TPH(middle distillates) is 83 mg/kg. RWQCB-2 ESL (Nov 2007) for lead for residential is 200 mg/kg and for commercial is 750 mg/kg. RWQCB-2 ESL (Nov 2007) for Dioxin TCDD equivalent for residential is 4.5 pg/g and for commercial is 18 pg/g. Kleinfelder 2011 HHRA reported risk to human health and environment unlikely. |

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| Location: B-4 a (Debris Burial Area) |
| Description: Alleged location of disposal of empty 2,4 D product drums per labeled disposal instructions on drum. |
| Timeframe: Field site assessment April 5, 1995. Removal of general non-hazardous debris on October 24, 1995. |
| Chemicals of Concern: None |
| Material Removal: Misc. debris including porcelain plumbing fixtures, metal, wood, rubber, metal pipe, chains and wire. |
| Material Disposal: Merced County Landfill, Highway 59 |
| Concentration Soil Before: NA – Not applicable – nothing hazardous material found. |
| Concentration Soil After: NA |
| Concentration Compared to Risk Screening Level: NA |

Merced Irrigation District, Franklin Yard, Case Closure Summary

Location: Soil Gas (near main shop building and office)

Description: Soil vapor measurements were made at 5 feet bgs at 4 locations near the main shop building to evaluate vapor intrusion into the building from petroleum and non-petroleum products. Soil samples collected in two locations in 2011

Timeframe: Field samples were collected in August of 2007, August of 2008, November of 2010, and February 2011.

Chemicals of Concern: Petroleum compounds including benzene, chlorinated solvents (PCE), and other volatile compounds.

Soil Gas Concentrations Measured:

| Analyte | Max. Concentration ($\mu\text{g}/\text{m}^3$) | ESL RWQCB-2 Commercial ($\mu\text{g}/\text{m}^3$) |
|-------------------------|---|---|
| TPH(g) | 2,200 | 29,000 |
| Benzene | 140 | 280 |
| Toluene | 400 | 180,000 |
| Xylene | 130 | 58,000 |
| Tetrachloroethene (PCE) | 26,000 | 1,400 |

Concentration Compared to Risk Screening Level: Kleinfelder 2011 HHRA concluded risk to environment and on site workers was low.

Location: Groundwater

Description: Analytical data indicates that groundwater at the site was impacted with long chain hydrocarbons, diesel range hydrocarbons, gasoline range hydrocarbons, and solvents. The site previously had two pumping wells, one larger capacity well used for industrial water in the north east portion of the yard and one domestic well for a former residence in the south west quadrant of the corporation yard. Contaminant impacts to the industrial well were measured whereas the domestic well was not impacted and has subsequently been taken out of service and the residential structure demolished. Impacts to industrial well no longer present.

Timeframe: On site well sampling began in April of 1986.

Chemicals of Concern: TPH(g), TPH(d), metals, Polychlorinated biphenyls (PCB), 1,2-dichloroethane, trans-1,2- dichloroethene, methylene chloride, benzene, ethylbenzene, toluene, and xylenes.

Material Removal: Significant removals of petroleum (diesel and gasoline) impacted soils were removed from the site. Description of this work can be found in MCDEH's Local Oversight Program (LOP) files under project No. 2461.

Material Disposal: Significant quantities of impacted soil from areas F-1, F-2, and F-4 along with locations of former fuel USTs was removed from the subsurface. Minor soil vapor extraction was completed in the former subsurface fuel release area.

Concentration in Groundwater:

| Analyte | Max. Concentration ($\mu\text{g}/\text{L}$) | Final Concentration ($\mu\text{g}/\text{L}$) | Drinking Water MCL (or as noted) |
|---------------------------|---|--|----------------------------------|
| TPH(g) | 2,200 | ND | 21 (USEPA Superfund Provisional) |
| TPH(d) | 5,700 | 870 | 100 (RWQCB-2 ESL 2007) |
| TPH(mo) | 13,000 | 1,400 | 100(RWQCB-2 ESL 2007) |
| Benzene | 170 | ND | 1 |
| Toluene | 400 | ND | 150 |
| Ethyl Benzene | 60 | ND | 300 |
| Xylene | 280 | ND | 1750 |
| 1,2-DCA | 10 | ND | 0.5 |
| EDB | 1.3 | ND | 0.05 |
| Polychlorinated biphenyls | 0.51 | ND | 0.5 |
| trans-1,2- dichloroethene | 4 | NA | 10 |
| 1,2-Dichloropropene | 4.7 | NA | 5 |
| methylene chloride | 340 | NA | 4 (public health goal) |

Comments on Groundwater Quality: Groundwater samples collected in 2010 and 2011 were non-detect for all VOCs. Maximum detection of methylene chloride of 340 $\mu\text{g}/\text{L}$ was from sample collected from on site industrial well in August of 1986.

Merced Irrigation District, Franklin Yard, Case Closure Summary

III Release and Site Characterization Information

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| Site characterization complete? Yes | Date approved by oversight agency: 9/28/2011 | |
| Monitoring wells installed? Yes | Number: 14 | Proper screened interval? Status of some monitoring wells is unknown. Significant number of monitor wells are currently dry. |
| Highest groundwater depth below ground surface: 8 Ft. (1988) | Lowest depth: 60 Ft (2011) | Flow direction: East-southeast to northwest |
| Well Screen Depths (& Soil Boring Data): TH-1 (?-10'), TH-2 (?-20'), TH-3 (?-20'), TH-4 (?-20'), TH-101 (?-43.5'), TH-102 (?-44'), TH-104 (44'), TH-107 (?-31'), TH-108 (?-31'), TW-1 (?-35'), TW-2 (?-30'), TW-3 (?-35'), TW-4 (?-30'), TW-5 (4-19'), TW-6 (30-45'), TW-7 (25-45'), TW-8 (35-65'), TW-9 (36-64'), TW-10 (35-65'), BH-6 (?-50'), BH-9 (?-50'), MW-7 (44-64'), MW-8 (44-64'), MW-9 (?-50'), MW-10 (39-59'), MW-11(40-60'), MW-12 (39-59'), MW-13 (40-60'), MW-14 (39-59'), VEW-1 (?-25'), VEW-2 (?-25'), VEW-3 (?-25'), VEW-4 (?-25'), VEW-5 (?-25'), and VEW-6 (?-25'). | | |
| Flow Velocity: : not determined using on-site data; Boyle Engineering estimates a general unconfined aquifer velocity of 231 ft/yr. for the Meadowbrook Water Company area nearby (Wellhead Protection Program, April 1996). | | |
| Most sensitive current use: Commercial and agricultural property adjacent to site. | | |
| Are drinking water wells affected? On site wells were impacted with petroleum products and solvents. | Aquifer name: San Joaquin Valley Basin 5C | |
| Is surface water affected? None identified. | Nearest/affected SW name: NA | |
| Off-site beneficial use impact (address/locations): None identified. | | |
| Report(s) on file? Yes | Where is /are report(s) filed? MCDEH | |

IV Closure

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| Does corrective action protect public health for current land use? Yes | | |
| Site management requirements: Subsurface excavations in areas with elevated metals and dioxin must be implemented with measures to control migration of dust from the property. New domestic wells drilled on the property should avoid areas of potential residual contamination and should be sealed adequately to prevent pumping of first encountered water. | | |
| Should corrective action be reviewed if land use changes? Yes, limited soil contamination remains at the site in the various locations. MCDEH should be contacted for requirements prior to new construction or subsurface excavations on the property. | | |
| Monitoring wells decommissioned? No | Number decommissioned: Unknown at this time. | Number retained: Unable to determine number of viable wells currently at site. |
| List enforcement actions: MCDEH cleanup directive on 11/2/94; MCDEH comment letters on 11/22/94, 1/25/95, 2/23/95, 4/19/95, 5/1/95, 5/23/95, 6/20/95, 7/11/95, 7/12/95, 7/19/95, 8/21/95, 8/31/95, 10/12/95, 10/17/95, 11/29/95, 12/12/95, 5/7/96, 8/28/96, 6/25/97, 9/17/97, 12/8/97, 6/10/98, 8/8/02, 5/4/05, 5/19/08, 5/11/09, 6/3/10, 8/2/10, 8/11/10, 4/8/11, 5/6/11, 6/20/11. | | |
| List enforcement actions rescinded: None | | |

Merced Irrigation District, Franklin Yard, Case Closure Summary

V Local Agency Representative Data

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| Name: Eric Swenson, P.E. | Title: Project Engineer, County of Merced, Division of Environmental Health |
| Signature: <i>Eric Swenson</i> | Date: September 29, 2011 |



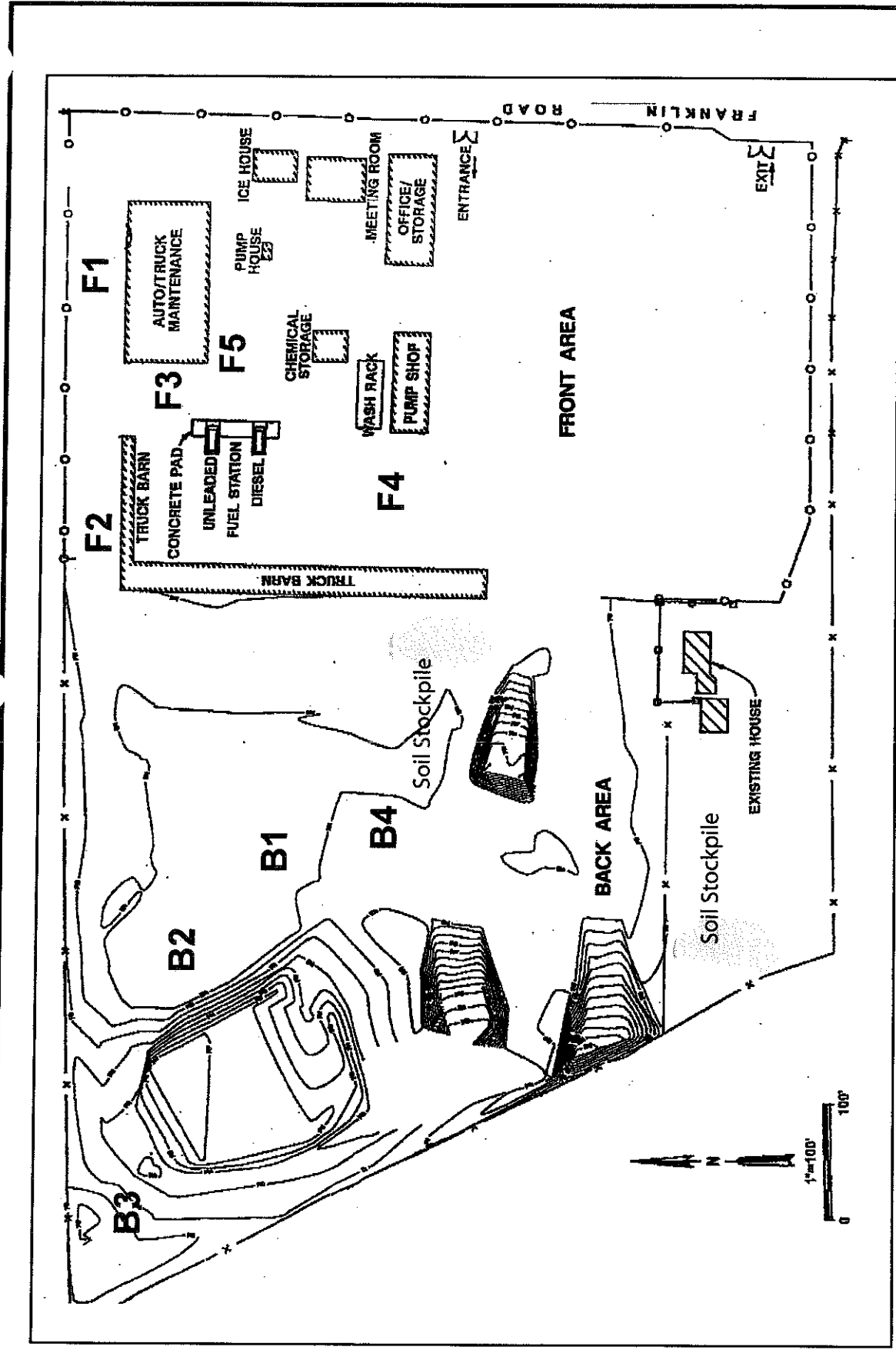
Stephen G. Muir
 Consulting Geologist & Geophysicist
 Merced Irrigation District
 3321 Franklin Road, Merced, California

**Franklin Yard Site Map and
 Areas of Initial Concern**

January 2010 Figure 7

Environmental Area of Concern (Back Area)
 B1a, b, c, d Back Area Disposal Trench
 B2a, b, c, d, e Back Area- 2,4D Can Disposal
 B3a, b, c, d, e, f, g Back Area- Empty Can Pit and Debris Burial
 B4a Back Area- Barrel Pit
 (see Figures 9 and 10 for detailed areas)

Environmental Area of Concern (Front Area)
 F1: Front Area Oil Pit and Leach Line (French Drain)
 F2: Front Area Steam Clean Area Trench and Infiltration Gallery
 F3: Front Area- Wash Room Infiltration Gallery (combined with F5)
 F4: Front Area- Weed Oil Tank Excavation (backfilled)
 F5: Front Area Underground Fuel Storage Tank



Source: CH2M Hill (1994)