

STATEMENT OF BASIS FOR NO FURTHER ACTION
YAKIMA HOPS

MABTON, WASHINGTON

EPA ID No: WAH 00001 0488

Administrative Order on Consent RCRA-10-2003-0116

U.S. ENVIRONMENTAL PROTECTION AGENCY

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INTRODUCTION

This document presents the Statement of Basis for the U.S. Environmental Protection Agency (EPA) proposal that no further corrective action be taken at the Yakima Hops Facility (Facility) to address releases of solid and hazardous waste. The Facility is located in Mabton, Washington on land owned in fee within the Confederated Tribes and Bands of the Yakama Indian Nation Reservation (see Figures 1a and 1b).

In December 2003, Yakima Hops, Inc. and Hop Union USA, Inc. (Respondents) and the EPA entered into an Administrative Order on Consent RCRA-10-2003-0116 (Order) issued pursuant to Section 7003 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §6973. The Order requires Respondents to conduct a Site Investigation (SI) and complete a Corrective Measures Study (CMS).

This Statement of Basis documents EPA's rationale for proposing no further action for the Facility and for proposing to issue a determination of "Corrective Action Complete Without Controls" for the Facility. A "Corrective Action Complete Without Controls" determination means that EPA, under RCRA authority, has determined that no further activity or controls are necessary to protect human health and the environment.

This Statement of Basis was prepared to provide the public with an opportunity to submit written comments and to request a public meeting regarding the EPA's no further action proposal. The EPA is also seeking comment on its proposed Corrective Action is Complete without Controls determination for the Facility. The documents available in the Administrative Record provide the basis for the EPA's proposed determinations, and include the key documents listed below.

This Statement of Basis summarizes key information that can be found in greater detail in 1) Site Characterization and Interim Corrective Action Measures Report, 2) Revised Additional Site Characterization Report, 3) Off-site Characterization Report, and 4) other pertinent documents contained in the Administrative Record. Key documents from the Administrative Record are being made available for public review during the public comment period, from December 10, 2014 through January 23, 2015. Information on how and where to submit written comments as well as the location and availability of the Administrative Record is provided in the last section of this Statement of Basis.

The EPA encourages the public to review the Administrative Record to gain a more comprehensive understanding of EPA's proposed no further action and corrective action complete without controls determination and to provide comments. The EPA will consider significant comments received before making a final decision and determination and may modify its proposal and/or require additional corrective action at the Facility based on new information or public comments.

PROPOSED REMEDY

EPA is proposing that no further corrective action be taken to address releases of solid and hazardous waste at the Yakima Hops Facility as interim action that has been completed is protective of human health and the environment. EPA is also proposing to issue a determination that corrective action at the Facility is complete and that additional controls are not needed.

FACILITY BACKGROUND

The Facility is an approximately one hundred and twenty acre parcel located near Mabton, Yakima County, Washington within Section 36, Township 9 North, and Range 22 East, of the Willamette Meridian. Yakima Hops, Inc. purchased the Facility on February 10, 1992 from L&R Building Sales. The Facility includes several agricultural fields, a residence and associated outbuildings, above ground storage tanks approximately 100 feet northwest of the residence (referred to as the AST Area), and a seasonal irrigation pond. The Facility had an area where the ends of poles used in hop farming were treated with wood preservatives and stored (Dip Tank Area – east of the irrigation pond), an area where farm equipment was stored (Old Machinery Storage Area – east of the Dip Tank Area) and an area where drums containing used motor oil were stored (Drum Area - northeast of the irrigation pond and northwest of the dip tanks). Hops were historically grown on the agricultural fields but currently other crops are being grown.

Wood treating occurred between the late 1980s until 1999 in five below grade dip tanks. The ends of wood poles used in hop farming were treated with a diesel solution containing less than 25% pentachlorophenol (PCP), a RCRA hazardous constituent. The Dip Tank Area includes the former location of the five in-ground dip tanks, former treated and untreated wood storage areas and former areas of discarded treated and untreated wood ends. Wood treatment was discontinued in 1999. Facility contractors removed liquids and sludge from the dip tanks and cleaned the tanks in January 2000. Dip tank contents were transferred to 55 gallon drums which were transported to the Washington State Department of Agriculture facility in Prosser, Washington. The dip tanks remained on site until they were removed in 2002.

Releases and potential releases of hazardous wastes, solid wastes and/or hazardous constituents from the Facility occurred and are documented in the following reports prepared on behalf of the Respondents: 1) *Phase I Environmental Site Assessment Report* by AGRA Earth and Environmental, Inc. (AGRA), dated October 11th, 1999; 2) *Phase II Environmental Site Assessment Report* prepared by AMEC Earth and Environmental, Inc. (AMEC), dated May 11, 2000 (AMEC purchased AGRA in 2000); and 3) *Expanded Phase II Environmental Site Assessment Report* by AMEC, dated March 29, 2001. The reports, which pre-date the Order, confirmed the presence of PCP and Total Petroleum Hydrocarbons as diesel (“TPH-diesel”) within the soil and groundwater. The reports also show that TPH-lube/fuel oil and mineral oil were also found at some soil locations.

PHYSICAL SETTING

The Site is bounded to the north by agricultural grazing land, lakes and wetlands, to the east by 1st Avenue/Mabton-Sunnyside Road, to the south by Monroe Street and agricultural property, and to the west by residences and undeveloped property. Other than the on-site seasonal irrigation pond, the nearest surface water body is Round Lake, which is located in the Yakima River floodplain. There is an unnamed tributary draining into the lake approximately 360 feet north of the site. The Yakima River is approximately 0.5 miles north of the site.

The Dip Tank Area is situated on a terrace above the wetlands. The wetlands contain water during a portion of the year. Surficial drainage of runoff from the Dip Tank Area is north towards the wetlands and west towards the irrigation pond. Wind direction is predominately to north-northeast such that any airborne transport of dust from the Dip Tank Area that would have occurred would have been predominantly to the north-northeast, towards Round Lake. Groundwater depth ranges between 21 to 24 feet below ground surface and groundwater flows toward Round Lake and the Yakima River system. Round Lake is approximately 200 feet northeast of the Dip Tank Area.

Figure 1b is a map of the Facility that identifies the areas of concern. The Drum Area was northeast of the irrigation pond and northwest of the Dip Tank Area. The AST Area is near the residence. The Old Machinery Storage Area was east of the Dip Tank Area. The residence, irrigation pond, and agricultural fields occupy the remainder of the Facility parcels. The residence is approximately 790 feet southwest of the Dip Tank Area. An agricultural field is located between the residence and Dip Tank Area.

CORRECTIVE ACTION HISTORY AND PROCESS

In December 2003, Respondents and the EPA entered into the Order which required Respondents to:

- Complete a Site Investigation to determine the nature and extent of contamination and any threat to the public health or the environment caused by the release or threatened release of Hazardous Wastes or Solid Wastes at or from the Facility and to provide sufficient data and information to design and implement corrective measures to be taken.
- Complete a Corrective Measures Study to identify and evaluate, in accordance with the results of the site investigation and other such data as may be relevant or necessary, the corrective measures alternatives necessary to mitigate, remedy or otherwise respond to any threat to the public health or the environment from any release, threatened release or migration of Hazardous Wastes or Solid Wastes at or from the Facility.
- Implement any Interim Measures that may be required to relieve threats to human health and/or the environment resulting from the release or threatened release of Hazardous Wastes or Solid Wastes from the Facility.

- Implement the corrective measures selected by the EPA, or exercise its right to withdraw its consent to implement the corrective measures selected by the EPA.

Land use at the Facility, with the exception of the residence and wood treatment operations, has been agricultural for decades. Land use for adjacent parcels to the north, west, east and south has been a mixture of residences surrounded by agricultural and/or grazing lands. EPA has determined that the current and reasonably expected future uses of the Facility land includes residential use.

While screening for potential contaminants of concern, the EPA compared site media concentrations to the lowest EPA Human Health (HH) risk-based screening levels (RSLs) which are protective of potential future residential use. Residential HH RSLs are lower than screening levels protective of agricultural use because residents are assumed to be exposed to contaminants for longer periods of time.

Prior to EPA involvement at the Facility, Environmental Site Assessment (ESA) sampling (by the Facility) identified PCP in the surface and subsurface soils and in groundwater around the area used for treating and storing poles used in hop farming (Dip Tank Area). PCP groundwater contamination was reduced to levels below that capable of being detected after pre-Order removal of liquids and sludge from the dip tanks.

The EPA approved a work plan for a Site Investigation and Interim Corrective Action Measure (ICAM) under the Order in October 2004. The empty dip tanks and surrounding soil were removed during implementation of the ICAM in November 2004. Sampling conducted after the ICAM shows residual PCP concentrations in surface soil in limited areas around the excavations. However, the residual PCP surface soil concentrations are within EPA's standard acceptable individual excess lifetime cancer risk range of one in ten thousand (10^{-4}) to one in one million (10^{-6}) for potential future residential use. EPA's non-cancer residential HH soil screening level for PCP is more than 200 times greater than the cancer based RSL.

Based on the Site Investigation conducted pursuant to the Order and the ESA sampling, EPA identified PCP as the contaminant of concern (COC) and residential use as the current and reasonably likely future use of the land and groundwater which would result in maximum exposure. The reasonably likely future use of land and groundwater were used to determine potential routes of exposure of humans and environmental receptors to the COC.

Soil Contaminants

Drum Area: During the ESA, 106 drums, many empty, were observed northeast of the irrigation pond and northwest of the dip tanks. According to the ranch manager at the time, drum contents included used motor oil. Empty drums (80) were transported for disposal in January 2000. The remaining 26 drums and contents were disposed of later.

Hand augered 0 to 0.5 foot soil borings were analyzed for TPH as part of the ESA. The EPA TPH RSLs are not specific to gasoline, diesel, fuel or lube oil petroleum products and TPH is not a RCRA hazardous constituent. However, in the absence of EPA RSLs, the sample results were compared to Washington State Model Toxics Control Act (MTCA) criteria. Numerous samples had TPH-diesel and TPH-fuel/lube oil detected above MTCA Method A unrestricted

use soil cleanup levels at Washington Administrative Code 173-340-900 Table 740-1. The 0 to 0.5 foot samples were also analyzed for polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), cadmium, chromium, and lead. PCBs were not detected. Detected VOCs and metals were well below EPA's current residential RSLs.

TPH contaminated soil was removed in February 2000, prior to the Order, and samples obtained after removal confirmed that any remaining TPH was below MTCA Method A TPH unrestricted use cleanup standards (2,000 mg/Kg).

AST Area: A shallow (0-0.5 feet below ground surface) hand augered soil boring sample was analyzed for TPH and chlorinated pesticides during the ESA. The one pesticide detected was below EPA's current residential HH RSL. Diesel and fuel/lube oil hydrocarbons were detected above MTCA Method A cleanup levels. The source of the hydrocarbon mixture in the sample was suspected to be crop (mineral) oil. Further evaluation of the sample results led to the conclusion that the TPH in this area is mineral oil. Soil was not removed from this area since the mineral oil detected does not pose a risk to human health and the environment

Dip Tank Area: ESA samples were collected from multiple soil borings prior to the ICAM. The samples were all analyzed for PCP and some samples were analyzed for polyaromatic hydrocarbons (PAHs) and/or diesel and heavy oil range TPH. One sample was also analyzed for polychlorinated dibenzo dioxins/polychlorinated dibenzo furans (PCDDs/PCDFs).

No PAHs were detected above historic EPA HH RSLs. However the current HH residential RSL for 1-Methylnaphthalene is now lower and one result (20 mg/Kg) was above the current RSL of 17 mg/Kg. Because there was only one exceedance of this RSL (which represents a 1.0×10^{-6} cancer risk) and the soil in that area was removed, 1-Methylnaphthalene is not considered to be a contaminant of concern.

Pre-ICAM PCP soil concentrations ranged from non-detect to 1,010 mg/Kg. The dip tanks were removed during the November 2004 ICAM conducted under the Order. PCP contaminated soil was also removed from three locations within the Dip Tank Area: 1) soil surrounding the dip tanks was excavated to 12-14 feet below ground surface (bgs), 2) soil under a former pole storage pile north of the dip tanks (Northern Surface Soil Sampling Area (NSSSA)) was excavated to one-two feet bgs, and 3) soil within a surface drainage area northwest of the dip tanks (Central Surface Soil Sampling Area (CSSSA)) was excavated to one foot bgs. A total of 625 tons of soil were removed and transported to the ChemWaste facility in Arlington, Oregon.

Sampling of the side-walls of the area excavated around the dip tanks was conducted at six feet below ground surface, the approximate depth where PCP leaked from incomplete seals at the bottom of some of the dip tanks. Confirmation samples were also collected from the bottom of the three areas excavated. PCP was not detected in the confirmation samples associated with removal of the soil surrounding the dip tanks and soil in the CSSSA. PCP was detected in one of the NSSSA confirmation samples.

Groundwater Contaminants

Groundwater was collected from three of the ESA soil boring locations in the Dip Tank Area. The samples were analyzed for TPH (diesel, heavy oil and gasoline fractions), PAHs, PCP, and VOCs. With the exception of PCP, detected analytes were below EPA HH tapwater RSLs or in the case of TPH, below MTCA Method A groundwater TPH cleanup levels. In the absence of EPA tapwater RSLs, the TPH sample results were compared to MTCA Method A cleanup levels for potable groundwater at Washington Administrative Code 173-340-900 Table 720-1. PCP was detected in groundwater at concentrations exceeding the EPA HH tapwater RSL (0.04 µg/L) and above the EPA MCL¹ of 1.0 µg/L, and therefore was identified as a contaminant of concern for groundwater. EPA also publishes national recommended water quality criteria (AWQC) for the protection of human health and aquatic life pursuant to Section 304(a) of the Clean Water Act. The recommended aquatic life freshwater AWQC for PCP (15 µg/L for chronic or long term exposure and 19 µg/L for acute or short term exposure) are higher than the EPA MCL. The recommended human health AWQC for consumption of fish is 3.0 µg/L while the AWQC for consumption of fish and lake water is 0.27 µg/L.

Three monitoring wells were installed and sampled in the Dip Tank Area in 2000. TPH-diesel, TPH-heavy oil, PAHs, and PCP were monitored quarterly between June 2001 and April 2003. PAH and TPH results were non-detect except for one sample where TPH was detected at a concentration below MTCA Method A groundwater cleanup levels. Two additional wells, one upgradient to the Dip Tank Area and another within the Dip Tank Area, were installed and sampled during the November 2004 ICAM. The three existing wells were also sampled.

One PAH (naphthalene) was detected in all the wells and two additional PAHs (fluoranthene and pyrene) were detected in the upgradient well. The PAHs that were detected were below EPA tapwater RSLs and their AWQCs for the protection of human health. There are no AWQCs for PAHs for protection of aquatic life. No other PAHs were detected. Even though special analyses (selected ion monitoring) were used to achieve low detection levels, groundwater detection levels for seven other PAHs were above tapwater RSLs protective of drinking water and/or the AWQC. These seven PAHs were not detected in soil. Their AWQC for ingestion of surface water and organisms is 0.0038 µg/L and their AWQC for ingestion of just organisms is 0.018 µg/L. Two of the seven PAHs, benzo(a)pyrene and dibenz(a,h)anthracene, had detection levels of 0.024 µg/L and 0.047 µg/L, respectively, which were above the AWQC and above their tapwater RSL of 0.0034 µg/L. Detection levels for benzo(a)pyrene, the only PAH with an MCL, were below the 0.2 µg/L EPA MCL. The remaining five PAHs had detection levels less than 0.024 µg/L which were above the AWQC but below their respective tapwater RSLs.

Quarterly monitoring between October 2001 and April 2004 showed that PCP was not detected in site groundwater, with the exception of one 0.315 µg/L detection in July 2002 which, while above the EPA tapwater RSL, is well below the EPA MCL. Special analysis (selected ion monitoring) was used to detect PCP at lower concentrations but even with the special analysis the PCP reporting limits were still above the very low EPA tap water RSL.

¹ 40 CFR Part 141, National Primary Drinking Water Regulations, establishes primary drinking water regulations pursuant to section 1412 of the Public Health Service Act, as amended by the Safe Drinking Water Act (Pub. L. 93-523); and related regulations applicable to public water systems.

However, PCP reporting limits were below the AWQC for the protection of human health and aquatic life. The lowest AWQC for PCP is 0.27 µg/L. PCP reporting limits ranged from 0.236 µg/L to 0.246 µg/L except for the 1.0 µg/L reporting limit in January 2003. Quarterly groundwater monitoring was discontinued after repeated non-detect PCP results with reporting limits below the EPA MCL and AWQC for the protection of human health and aquatic life.

Upon comparing pre-Order monitoring well metals data against current EPA tapwater RSLs and MCLs, arsenic and lead became potential groundwater contaminants of concern at the site. In the summer of 2007, all five monitoring wells and the residential well at the site were sampled for total and dissolved arsenic and lead. Table 2 contains a summary of the arsenic and lead groundwater results.

EPA has no consensus reference dose or cancer slope factor to calculate HH RSLs for inorganic lead. The RSL user guide recommends the 15 µg/L EPA Treatment Technique (TT) action level under 40 CFR Part 141, National Primary Drinking Water Regulations for the purpose of screening groundwater results for lead. There were two detected (total) lead results but they were below 15 µg/L. The two (total) lead results were above the 2.5 µg/L freshwater aquatic life AWQC for chronic exposure to lead in surface water. However, the AWQC is based on dissolved metals in the water column and the dissolved lead results were all non-detect below the AWQC. There are no AWQC for the protection of human health for lead.

The EPA tapwater RSL for arsenic is 0.052 µg/L, but arsenic initially wasn't of concern as results were below the historic 50 µg/L EPA MCL. The EPA MCL for arsenic was lowered from 50 µg/L to 10 µg/L in 2006. Total and dissolved arsenic was detected in all samples collected in 2007. All results were above the EPA tapwater RSL and AWQC for protection of human health (0.018 µg/L for consumption of fish and lake water, 0.14 µg/L for consumption of fish only) and a number of results were above the current EPA MCL. All of the results were below the AWQC for protection of aquatic life.

Arsenic is not known to be associated with the diesel and PCP solution used to treat wood at the Facility and the highest arsenic results (17.5 µg/L total, 20 µg/L dissolved) were from the well 375 feet upgradient of the Dip Tank Area (MW-5). EPA has concluded that the arsenic in groundwater is a local (beyond the Facility) background issue and arsenic is not a contaminant of concern.

The Washington State Department of Health maintains a map of state regulated public water supplies that have historically contained more than 10 µg/L arsenic. The map shows multiple supply systems with arsenic historically above 10 µg/L in Yakima County. (<http://www.doh.wa.gov/Portals/1/Documents/4200/arsenic.pdf>)

SUMMARY OF RESIDUAL PCP SOIL CONCENTRATIONS AND COMPARISON TO SCREENING LEVELS

EPA's interim final ecological risk soil screening levels (Eco SSLs) for PCP updated in April 2007² are 5.0 mg/Kg dry weight for plants, 31 mg/Kg dry weight for soil invertebrates, 2.1 mg/Kg dry weight for avian receptors and 2.8 mg/Kg dry weight for mammalian receptors.

² http://www.osti.gov/nlsearch/link.html?type=RESULT&redirectUrl=http://rais.ornl.gov/documents/eco-ssl_pcp.pdf

EPA HH RSLs were revised to reflect updated PCP toxicology information in November 2010. The most recent revision to EPA's HH RSLs was in May 2014. The current HH residential use soil RSL of 0.99 mg/Kg corresponds to an individual excess lifetime cancer risk of one in one million (1.0×10^{-6}). Concentrations of PCP in soil of 0.99 mg/kg, 9.9 mg/kg and 99 mg/kg would represent individual excess lifetime cancer risks of 1.0×10^{-6} , one in one hundred thousand (1.0×10^{-5}) and one in ten thousand (1.0×10^{-4}), respectively.

All of the areas described below are collectively referred to as the Dip Tank Area. See Figure 2 which shows the NSSSA, CSSSA, and Dip Tank excavations and nearby surface soil results. Sampling conducted after the ICAM showed residual surface soil PCP concentrations above some of the screening levels. Table 1 shows the maximum remaining PCP concentration and screening levels.

West of the Dip Tank Excavation: A grab surface soil sample collected 10 feet west of the excavation had a result of 1.77 mg/Kg for PCP which is a little above the HH residential soil RSL.

South of the Dip Tank Excavation: The southernmost perimeter boring was only contaminated at the surface and that contamination was removed as part of the excavation of that area. A grab surface sample collected ten feet south of the excavation showed PCP at 14.2 mg/Kg, which exceeds HH and some ecological screening levels. Another grab sample collected twenty feet south of the excavation had PCP at 0.158 mg/Kg, well below the screening levels.

CSSSA: during the ICAM, composite soil samples were collected in two rill areas (surface water erosion areas on slopes) west of the dip tank excavation. PCP at the southern rill was not detected. Soil was not excavated in this rill. The northern rill was excavated to one foot below ground surface (CSSSA Excavation) and PCP was not detected in the confirmation sample. Post ICAM surface soil grab samples collected around the CSSSA Excavation were below the screening levels.

NSSSA: The NSSSA is north of the Dip Tank Excavation and extends to the northern property line. Bottom of excavation confirmation sampling showed PCP at 1.76 mg/Kg in the central third of the excavated area, slightly above the HH residential soil RSL. Bottom of excavation confirmation sampling results for the western and eastern thirds of the excavation were below the screening levels.

The five foot wide perimeter around the NSSSA excavation had composite surface soil PCP concentrations ranging between 3.03 and 72.1 mg/Kg, above some of the screening levels. The step-out PCP composite samples five to ten feet around the NSSSA excavation were below the screening levels except for the area five to ten feet south of the excavation. The 2.58 mg/Kg PCP concentration is above the human health and avian screening levels.

South surface soil sampling area (SSSSA): The SSSSA is south of the Dip Tank Excavation. A pile of cut up hop poles was located in this area. Eight composite surface soil samples were collected southwest of the Dip Tank Excavation during the 2004 ICAM. PCP was not detected in the samples. Two composite samples collected after the ICAM from former storage areas

southeast and south of the Dip Tank Excavation had PCP detected, but the results were below the screening levels. No excavation was conducted in the SSSSA.

SUMMARY OF HUMAN HEALTH AND ECOLOGICAL RISK FROM RESIDUAL PCP SOIL CONCENTRATIONS

Risk to human health from residual PCP soil concentrations: For human health, the areas where post-interim measure residual PCP exists above the HH RSL, the PCP concentrations are still within EPA's standard acceptable cancer risk range of 10^{-4} to 10^{-6} ; for both residents and workers. All residual PCP concentrations are below the HH screening levels for non-cancer risk. The maximum excess cancer risk from residual PCP is 7.3×10^{-5} . The cancer risk estimates are likely biased high, since they are based on following reasonable maximum exposure assumptions: workers would be exposed to the contamination continuously over the course of their work days for 25 years and residents would be continuously exposed for 26 years. This kind of exposure is highly unlikely to be sustainable in the limited areas of residual contamination. If the PCP concentrations measured in post-interim measure residual PCP soil samples were representative of a significant portion of the site, and if there were subsistence tribal exposures potentially exposed to such areas (e.g., subsistence farming, working with vegetation to create baskets, etc.), risks associated with direct exposure to soil would be higher and would be evaluated in a baseline risk assessment. However, these exposure scenarios are not plausible given the limited areas of residual soil contamination.

Risk to ecological health from residual PCP soil concentrations: While there are exceedances of Eco SSLs, Avian and mammalian receptors have a much larger range than the contaminated area and would not be at risk from PCP at the site because it is present above Eco SSLs only in limited areas. There is possible plant toxicity in four small areas exceeding 5.0 mg/Kg PCP. There is also possible invertebrate toxicity in one small area exceeding 31 mg/Kg PCP. However, when considering the very limited extent of contamination, the area of potential risk is small and of limited ecological significance. EPA has determined that no further work is necessary based on ecological risks.

DIOXINS AND FURANS (PCDD/PCDF)

Commercial PCP solutions are known to contain trace PCDD/PCDF impurities. The EPA evaluates PCDDs/PCDFs as a collective constituent using dioxin toxicity equivalents (TEQs) for each constituent which are summed to a single combined TEQ for each sample. Data for individual PCDDs and PCDFs are multiplied by toxicity equivalency factors (TEFs) to adjust toxicity to be equivalent to the toxicity of 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD). The individual PCDD and PCDF TEQs are then summed to derive the TEQ for each sample. To estimate potential risk to humans, the TEFs for humans/mammals are used. There are also TEFs for assessing risk to birds and fish. Where an individual PCDD or PCDF is not detected it was assumed to be present at $\frac{1}{2}$ the lowest level the analytical method used can detect (detection level). A pre-excavation ICAM surface soil sample located just east of the dip tanks had a TEQ of 11.4 ng/Kg for humans/mammals. PCP was detected at 28 mg/Kg in this sample. Soil in the area of the sample was removed during excavation of the dip tanks.

EPA required post excavation sampling for PCDD/PCDF. Three grab-composite samples were collected - two below the NSSSA excavation and one below the CSSSA excavation. Post

excavation soil TEQs for the three samples were 73.5, 5.9, and 9.1 ng/Kg for humans/mammals. PCP was not detected in these samples. EPA required that the Respondents evaluate risk from residual PCDD/PCDF contamination, using the post excavation sample results.

Estimated risks to an adult occupational worker, adolescent trespasser, future adult resident farmer, future neonate resident, future child resident, future Native American adult resident farmer, future Native American neonate resident, and future Native American child resident were within the EPA's acceptable excess individual lifetime cancer risk range of 10^{-4} to 10^{-6} . Estimated risks to the American robin, red-tailed hawk, deer mouse, short-tailed shrew and coyote were less than a hazard quotient of 1, except that the estimated risk from the 73.5 ng/Kg TEQ sample has a hazard quotient of 13 for the short-tailed shrew and 5 for the coyote. A hazard quotient greater than or equal to 1 may pose a potential adverse risk.

The ecological hazard quotients for mammals in the risk assessment were calculated by dividing the average daily dose (mg/day of PCDD/PCDF per Kg body weight) for each mammal by the most conservative toxicity reference value (TRV) - the No Observed Adverse Effect Level (NOAEL). However, the Lowest Observed Adverse Effect Level (LOAEL) for mammals is ten times higher than the NOAEL. Using the higher LOAEL as the TRV, the short-tailed shrew and coyote would not be predicted to be at risk from the 73.5 ng/Kg TEQ sample.

The risk assessment used a computer program to calculate how PCDD/PCDF in the soil at the site would migrate to groundwater and also off-site. This program estimated off-site concentrations for the soil, sediment, groundwater and surface water in the nearby wetlands and Round Lake. Risks to the child fisher and unborn fisher (neonate) are within EPA's acceptable excess individual lifetime cancer risk range of 10^{-4} to 10^{-6} . Risk to the adult fisher was 7.2×10^{-4} . Estimated risks to the great blue heron and bald eagle were less than a hazard quotient of 1.

Estimated off-site risk to the mink was a hazard quotient of 5 and to the spotted sandpiper was a hazard quotient of 2040. However, the off-site risks calculated for the samples equaled the risks calculated for background concentrations of dioxin. EPA determined that the estimated off-site results were biased high and off-site risks were exaggerated as Respondents added calculated background PCDD/PCDF concentrations to the calculated off-site concentrations for sediment that were used to calculate surface water and fish results used in the risk calculations.

As modified and approved by the EPA, the Human Health and Ecological Risk Assessment for Yakima Hops concludes: "Given these overestimations of background that are included in the off-site calculations, as well as conservatism in media modeling and area use and exposure assumptions, it is concluded that no unacceptable increased risks to potential individual human or ecological population receptors are anticipated due to PCDDs/PCDFs in site soil."

In February 2012, after the Yakima Hops risk assessment was prepared, an oral reference dose for TCDD was published in EPA's Integrated Risk Information System (IRIS). IRIS reference doses include varying degrees of safety factors for individual chemicals, depending on the types and degrees of uncertainties associated with laboratory and/or epidemiological information available to the scientists conducting the evaluation. This is to ensure that they are

likely to err on the side of being protective of human health. EPA's non-cancer soil TCDD HH RSL representing a hazard quotient of 1.0 is 51 ng/Kg for a child resident and 520 ng/kg for an adult resident. Two of three of the PCDD/PCDF site sample TEQs were below both the child and adult non-cancer HH RSLs. One sample, at 73.5 ng/Kg, represents a calculated hazard quotient of 1.4 for a child resident, which is only marginally higher than the ideal estimated hazard quotient of 1.0 or less.

The Yakama Nation expressed concern about exposure to tribal members and to wildlife from any PCDD/PCDF contamination that may have migrated off-site prior to the ICAM. EPA and representatives from the Yakama Nation collected PCP and PCDD/PCDF soil, sediment and fish samples at and around Round Lake in November 2012. The results of that investigation are documented in the January 29, 2014 EPA Report titled: *Environmental Sampling at Round Lake November 2012; Data Report: Pentachlorophenol and Polychlorinated Dibenzodioxins/ Polychlorinated Dibenzofurans Detected in Soil, Sediment and Fish.*

The soil and sediment human health TEQs for soil near and sediment from Round Lake were within EPA's 10^{-4} to 10^{-6} cancer risk range. The TEQs were also below the 51 ng/Kg non-cancer HH soil RSL protective of children. The soil and sediment fish TEQs are below the EPA Screening Level Ecological Risk Assessment Protocol Freshwater Sediment toxicity reference value (TRV) of 410 ng/Kg dry weight for bed sediment that is protective of rainbow trout.

EPA Region 3 currently uses an ecological freshwater screening sediment benchmark of 0.85 ng/Kg that is the 2001 Canadian interim freshwater sediment quality guideline for aquatic life based on a threshold effects level (TEL) with a safety factor of 10 applied. The corresponding probable effect level (PEL) with a safety factor of 10 is 21.5 ng/Kg. Without the safety factor, the dry weight TEL is 8.5 ng/Kg and the PEL is 215 ng/Kg. All but one of the sediment TEQs protective of fish are below the TEL without the safety factor. The sediment TEQ of 13.6 ng/Kg for one sediment sample is above the TEL without a safety factor but significantly below the PEL with a safety factor of 10.

EPA's estimated excess individual lifetime cancer risk for consumption of fish from Round Lake were within EPA's risk range of 10^{-4} to 10^{-6} . The non-cancer hazard quotient of approximately 2 is higher than the ideal of 1 or less, but is within the range of uncertainty surrounding estimates of acceptable daily intakes of a given chemical of concern.

The avian/bird TEQs for two of the three Round Lake fish samples are below the 0.9 ng/Kg screening target fish concentration benchmark for the bald eagle utilized in the Yakima Hops risk assessment. The avian/bird TEQ for one Round Lake sample is 1.1 ng/Kg. The avian/bird TEQs calculated for fish in the risk assessment were 13.7 ng/Kg. Since the screening benchmark was exceeded, risks to the bald eagle were calculated in the risk assessment. Risks to the bald eagle, which were biased high by inclusion of background, were still less than a hazard quotient of 1. The 1.1 ng/Kg TEQ Round Lake fish result is more than ten times lower than the fish concentrations evaluated in the risk assessment.

CORRECTIVE MEASURES STUDY

Consistent with the no action proposal, EPA proposes that a CMS, which would evaluate alternative corrective measures to address contamination, is not necessary for this Facility. The basis for this determination is: 1) PCP was not detected in site groundwater after multiple quarterly monitoring events, and 2) residual PCP surface soil contamination remaining at the Facility after completion of the 2004 ICAM does not pose unacceptable risk to human health and the environment. In addition:

- Assessment of risk to human health and the environment from residual on-site PCDD/PDDF contamination did not show unacceptable risk,
- Evaluation of Round Lake sediment and nearby soil PCP and PCDD/PCDF concentrations did not show unacceptable risk to human health and the environment,
- PCP was not detected in Round Lake fish, and
- Round Lake fish tissue PCDD/PCDF concentrations are comparable to Yakima River samples.

Because EPA believes residual contamination from historic Facility operations does not pose unacceptable risk, an evaluation of alternative corrective measures is not needed.

EPA's RATIONALE FOR PROPOSED NO FURTHER ACTION AND CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS

The EPA is proposing no further action for the Facility. The EPA is also proposing to issue a corrective action complete without controls determination for the Facility. Below is a summary of the EPA's rationale for no further action for each individual area:

- Drum Area: TPH contaminated soil and drums have been removed.
- AST Area: Stained soil is from mineral (crop) oil, which does not pose a risk to human health and the environment.
- Old Machinery Storage Area: Unused farm equipment, scrap metal, five unused and empty steel storage tanks, empty fertilizer bottles, and farm equipment were observed during the 1999 Phase I ESA. No visual evidence (staining, distressed vegetation) of release of hazardous substances was observed in this area. Reportedly, the tanks were 1) used at other sites for gasoline storage, 2) cleaned prior to transport to the Facility, and 3) never in service at the Facility. The materials have since been removed.
- Dip Tank Area: The former dip tanks and contaminated soil were removed during the November 2004 ICAM. For human health, the areas where post-interim measure residual PCP exists are within EPA's standard acceptable cancer risk range of 10^{-4} to 10^{-6} for residential exposure; and the areas are so limited in size as to not be expected to result in significant exposure to workers or future residents. Avian and mammalian receptors have a much larger range than the contaminated area and would not be at risk due to PCP at the site because it is present above Eco SSLs only in limited areas. Although there is possible plant toxicity in four small areas and possible invertebrate toxicity in one small area, the area of potential risk is small and of limited ecological significance. EPA has determined that no further work is necessary based on ecological risks.

- Remainder of the Facility: The 1999 Phase 1 Environmental Site Assessment included a review of records and visual survey of the Facility. Other than the areas identified and addressed above, no evidence of releases for the Facility (agricultural fields, residence and irrigation pond) was identified.
- Groundwater: Removal of the liquid source of PCP resulted in a reduction of PCP contamination to non-detectable concentrations. EPA has concluded that the arsenic in groundwater is a local (beyond the Facility) background issue and arsenic is not a contaminant of concern.

OPPORTUNITY FOR PUBLIC COMMENT

The EPA requests comment from the public on EPA’s proposal that corrective action is complete without controls for the Facility and no further action is required. The EPA has established a 30-day public comment period from December 10, 2014 through January 23, 2015. Comments must be postmarked or emailed by January 23, 2015, and should include all reasonably available references, factual grounds, and supporting materials. The EPA will respond to significant written public comments received during this time period, and will conduct a public meeting if it appears that public interest warrants such a meeting. Public comments will be summarized, along with the Agency’s response, in the Final Decision and Response to Comments document which will be prepared subsequent to the public comment period. If no significant comments are received during the public comment period, the EPA intends to declare that corrective action is complete without controls and decide that no further action is required for the Facility.

As noted, the EPA will consider holding a public meeting if there is sufficient interest. To request a public meeting, please submit a written request to Laura Castrilli at the address below by December 24, 2014. The EPA will not hold a public meeting if we do not receive sufficient requests by December 24, 2014. If you did not request a meeting, but want to find out if a meeting will take place, please call Laura Castrilli at 1-800-424-4372, extension 4323.

The Statement of Basis for the Proposed No Further Action and Corrective Action Complete without Controls Determination, and key documents from the Administrative Record are available for public review at the following locations:

U.S. EPA Region 10 Library 1200 6th Avenue Seattle, Washington 98101	Local Phone: (206) 553-0256 Toll free in Region 10: (800) 424-4EPA TTY: (800) 877-8339 Hours of operation: 9:00am-noon and 1:00pm-4:00pm, Monday-Friday (except federal holidays).
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Sunnyside Public Library 621 Grant Avenue Sunnyside, WA 98944	Local Phone: (509) 837-3234 Hours of operation: Mon - Thurs: 10-7pm; Fri: 10-6pm; Sat: 10-5pm; Sun: 10-5pm (except holidays).
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The Statement of Basis is also available on the following website:
<http://go.usa.gov/HXxC>

To submit comments, submit them in writing by mail or email to the following address before the close of the comment period:

Laura Castrilli
U.S. Environmental Protection Agency, Region 10
1200 6th Avenue, Suite 900, Mail Stop AWT-150
Seattle, Washington 98101
(206) 553-4323
castrilli.laura@epa.gov

The library repositories will have a list of administrative records for this Statement of Basis that were not copied. To schedule an appointment to review these records at the EPA Region 10 Seattle Office or to obtain further information, contact Laura Castrilli. Her contact information is provided above.

KEY DOCUMENTS FROM THE ADMINISTRATIVE RECORD

Site Characterization and Interim Corrective Action Measures Report, Hop Union, USA, Yakima Hops – Boyville, AMEC Earth and Environment Inc., February 2005.

Revised Additional Site Characterization Report, Yakima Hops, Inc. – Hop Union USA, AMEC Earth and Environment Inc., March 2008.

Off-site Characterization Report, Yakima Hops, Inc. – Hop Union USA, AMEC Earth and Environment Inc., July 2008.

Human Health and Ecological Risk Assessment, Yakima Hops, Inc. – Hop Union USA, AMEC Earth & Environmental, Inc., November 19, 2008.

Approval with modifications of the Human Health and Ecological Risk Assessment, EPA Region 10 Letter, March 12, 2014.

Environmental Sampling at Round Lake, November 2012, Data Report: Pentachlorophenol and Polychlorinated Dibenzodioxins/ Polychlorinated Dibenzofurans Detected in Soil, Sediment and Fish FINAL, EPA Region 10, January 29, 2014.

EPA Region 10, November 15, 2013, correspondence regarding EPA's Draft Report on Environmental Sampling at Round Lake with enclosed fish ingestion risk calculations.

Residual Pentachlorophenol in Soil at the RCRA Yakima Hops Site, EPA Region 10 Memorandum, April 24, 2014.

EPA Human Health Medium-Specific Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites, May 2014 revision, Summary Table, available at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

Phase I Environmental Site Assessment Report by AGRA Earth and Environmental, Inc. (AGRA), dated October 11th, 1999.

Phase II Environmental Site Assessment Report prepared by AMEC Earth and Environmental, Inc. (AMEC), dated May 11, 2000.

Expanded Phase II Environmental Site Assessment Report by AMEC, dated March 29, 2001.

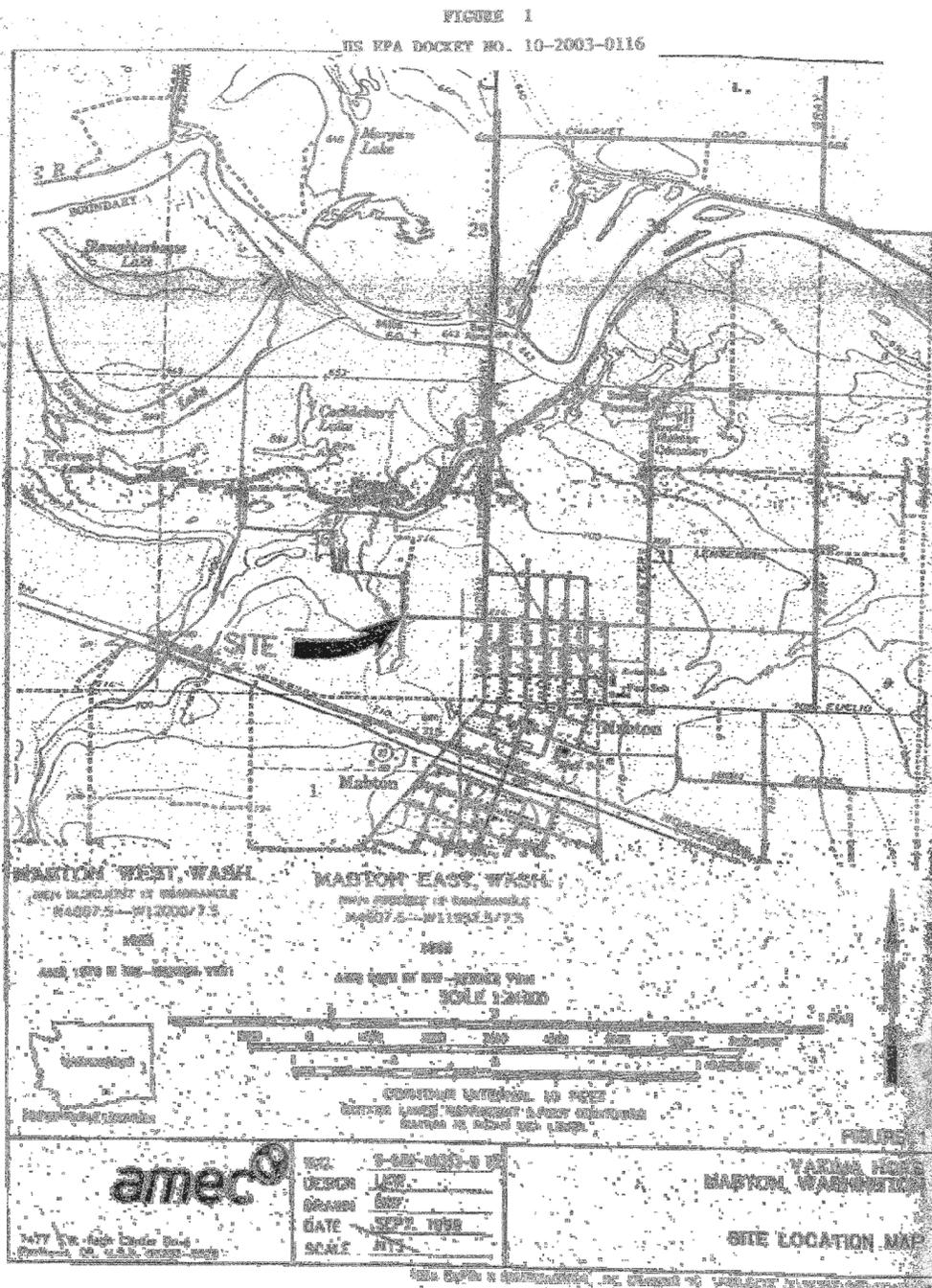
OTHER REFERENCES

Model Toxics Control Act Cleanup Level Tables at Washington Administrative Code 173-340-900 available at:
<http://app.leg.wa.gov/WAC/default.aspx?cite=173-340-900>

See Table 720-1 for Method A Cleanup Levels for Groundwater and Table 740-1 for Method A Soil Cleanup Levels for Unrestricted Land Uses.

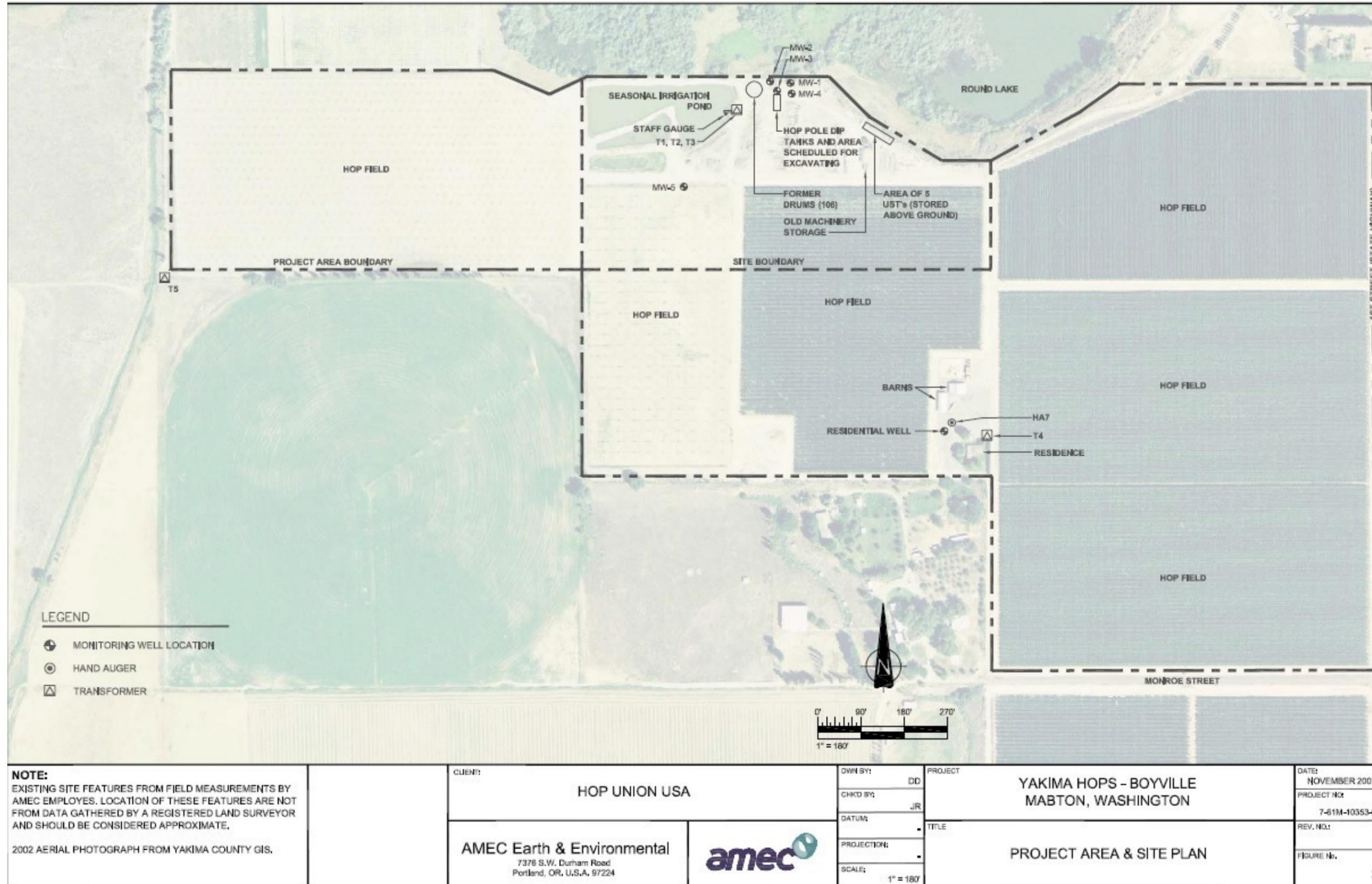
FIGURES

Figure 1a – Yakima Hops Facility/site³



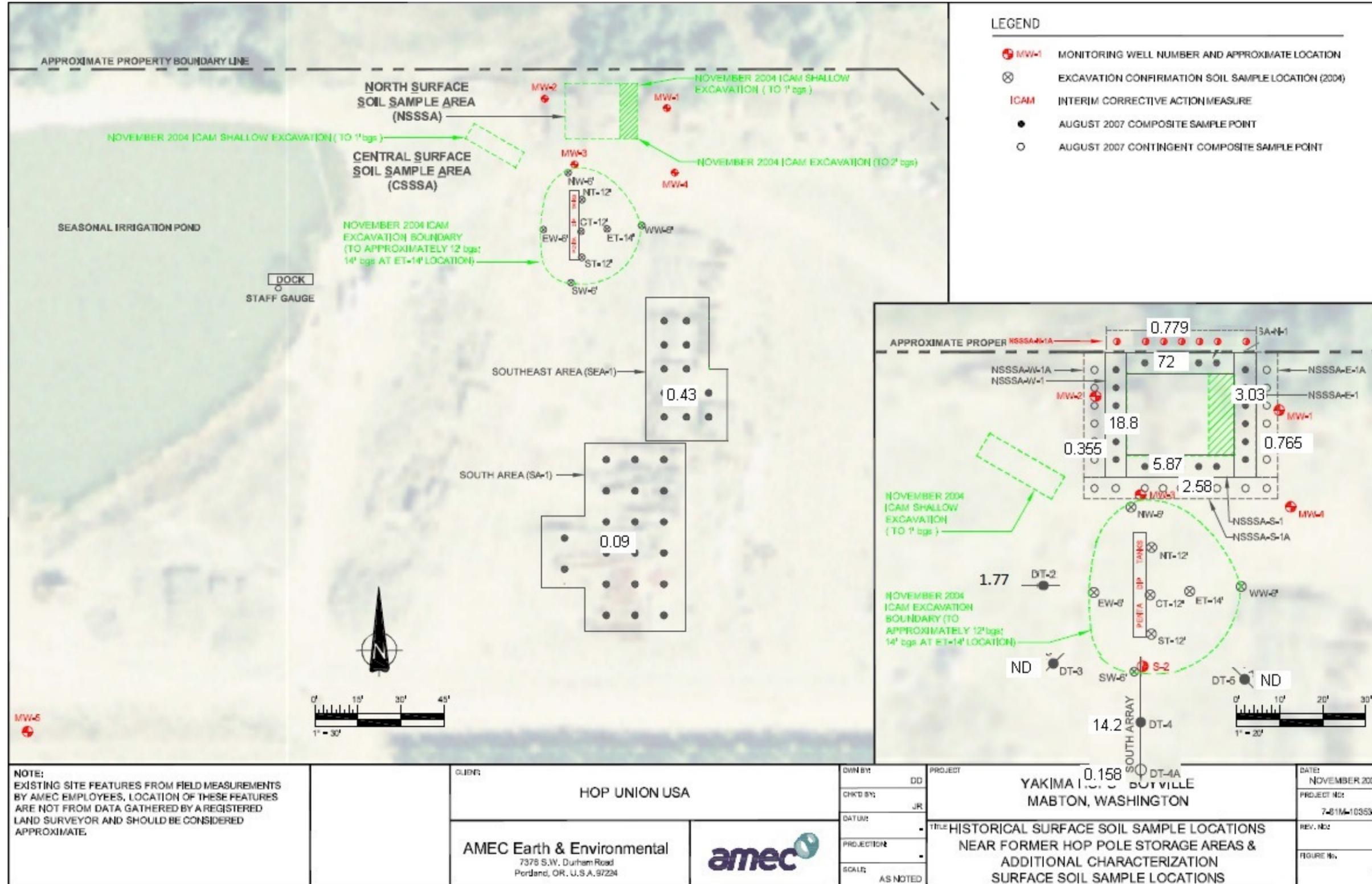
³ Figure 1 from the Administrative Order on Consent.

Figure 1b –Yakima Hops Facility⁴



⁴ Source: Yakima Hops Additional Site Characterization Report

Figure 2 - Residual PCP Surface Soil Concentrations⁵



⁵ Source: Yakima Hops Additional Characterization Report. The figure was edited in Microsoft Paint to add PCP soil concentrations (mg/Kg units), additional grab locations/results west and south of the dip tank excavation, and from the Off-site Characterization Report - the location/result of the composite sample collected just north of the Facility.

TABLES

Table 1 COC in Soil and Screening Levels (mg/Kg)						
Contaminant of Concern in soil	Maximum remaining Concentration	HH residential 1.0×10^{-6} RSL	Plant SSL	Soil invertebrate SSL	Avian SSL	Mammal SSL
Pentachlorophenol	72.1*	0.99	5.0	31	2.1	2.8

*Rounded to 72 for display on Figure 2.

Table 2 Arsenic and Lead Groundwater Monitoring Results
 Samples collected 8/23-24, 2007

Well ID	Total Arsenic	Dissolved Arsenic		Total Lead	Dissolved Lead
MW-1	8.85	10.6		ND	ND
MW-2	3.84	4.29		ND	ND
MW-3	8.96	9.97		ND	ND
MW-4	16.4	12.4		10.6	ND
MW-5	17.5	20.0		4.18	ND
WW-1	2.97	3.63		ND	ND

Bold results are above the MCL of 10 µg/L for arsenic

All arsenic results are above AWQC for protection of human health but below AWQC for protection of aquatic life.

ND = not detected at a reporting level of 1 µg/L.

WW-1 = domestic well

Grey-shading indicates wells upgradient of historic wood treating operations.