NOTICE

All drawings located at the end of the document.

Rocky Flats Environmental Technology Site

RISK-BASED APPROACH FOR IN-SITU BACKFILL OF POLYCHLORINATED BIPHENYLS (PCB) – BASED PAINTED CONCRETE

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1.0 INTRODUCTION

The Rocky Flats Technology Site (RFETS or Site) is currently involved in decontamination and decommissioning activities that are regulated under the Rocky Flats Cleanup Agreement[1] (RFCA), as approved by the Department of Energy (DOE), Colorado Department of Public Health and Environment (CDPHE) and the Environmental Protection Agency (EPA). RFCA is both a cleanup agreement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund) and a compliance order on consent under the Resource Conservation and Recovery Act and the Colorado Hazardous Waste Act Decommissioning of buildings under RFCA includes dismantlement and demolition activities Pursuant to RFCA, decommissioning is conducted as a CERCLA removal action Before a building can be decommissioned, the building must be characterized in accordance with *The RFETS Decontamination & Decommissioning Characterization Protocol*[2] This characterization is needed to determine if the facility undergoing decommissioning is contaminated, and, if so, by what constituent(s), to what level(s) and what the management criterion is for the material

Many Site buildings were constructed during the 1950's and 1960's, with apparently little knowledge concerning the type of paints that were used As EPA noted in a 1994 proposed rulemaking[3], there is limited information regarding many products containing non-liquid polychlorinated biphenyls (NLPCBs), including paints However, as reported to EPA[4], "during the 1950-1960 timeframe, polychlorinated biphenyls (PCBs) were added to paint formulations as drying oils (resins) and plasticizers or softening agents (liquids) in concentrations that range from 10-12% PCBs (100,00-120,000 ppm) to 20-30% (200,000-300,000 ppm)" Research indicates that PCBs were used in high-grade paints, such as those with military specification numbers, typical of paints purchased by Federal facilities

Based on this information RFETS personnel conducted sampling of Building 111 (B111) and Building 771 (B771) in order to determine if these buildings are coated with paints that contain regulated levels of PCBs, thereby requiring compliance with the substantive requirements of 40 CFR 761 These buildings were chosen for sampling because both were constructed in the 1950's, B111 was an administrative building with no PCB paints anticipated, and B771 was a production building where PCB paints were anticipated. The sampling results indicate varying levels of PCB concentrations ranging from non-detect (ND) to 28, 000 parts per million (ppm) 40 CFR 761 62(c) directs a person who seeks to dispose of PCB bulk product waste in a manner not currently authorized in the regulations to demonstrate to EPA that an alternative disposal method will not pose an unreasonable risk to health or the environment In accordance with RFCA and supporting documents such as the RFCA Standard Operating Protocol for Recycling Concrete, RFETS plans to place concrete demolition, including painted concrete in the basements of demolished buildings Before authorizing the backfilling option for concrete containing paint with PCBs, however, CDPHE requested direction from EPA

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EPA, in turn, asked Kaiser-Hill to demonstrate that the backfilling would not pose an unreasonable risk to health and environment, and to perform this analysis consistent with the risk-based approached outlined in 40 CFR 761 62(c)

What follows is a risk-based approach, in accordance with 40 CFR 761 62 (c), to support the backfill of painted concrete containing PCBs in the basements of demolished buildings. It is anticipated that the potential building basements that will receive the PCB-based painted concrete are Buildings 111, 371/374, 444, 771, and 881 This risk-based assessment will evaluate the technical, environmental, and material-specific characteristics or considerations demonstrating that this backfilling and the locations of these buildings will not pose an unreasonable risk to human health or the environment

2 0 BACKGROUND

2 1 Sample Site Background

B111 was constructed in 1953 and is located on the north side of Central Avenue, one block west of Fourth Street. The size of the north-south section is approximately 50' wide by 263' long, with a basement, main, and 2nd floor The east-west section measures approximately 50' wide by 185' long, and it has only one floor. B111 contains approximately 44,000 square feet of floor space

B111 was designed and built as an administration office facility and has always been used as such B111 is a steel-reinforced poured-concrete superstructure and is an L-shaped building The B111 exterior walls are poured steel-reinforced concrete between the poured concrete superstructure columns The auditorium section, which was an add-on modification, consists of 8" reinforced, poured concrete floors, walls and roof/deck

The building stairway walls are steel-reinforced poured-concrete walls All of the stairways and handrails are constructed from steel There are several rooms on all three floors and the west wing that has steel reinforced poured-concrete walls All of the floors in B111 are poured steel-reinforced concrete

B111 was used as the Site's main administration building for approximately 47 years During this time, it also housed, in the basement area, a Site photographic department, a Site printing department, and two or more Site libraries at various times For many years it provided administration offices for Site contractor management and DOE management

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Building 771 is located in the north-central section of RFETS. The building is predominantly constructed of reinforced concrete with some non-production portions of the building constructed of concrete block and fabricated metal. The original building was a two-story structure built into the side of a hill with most of the three sides covered by earth The fourth side, facing the north, provides the main entrance to the building The original building measures 262 feet (north to south) by 282 feet (east to west) on the ground floor and 202 feet by 282 feet on the second floor The building is 31 feet tall, and there are no outside windows in the main building

Since completion of the original building, six major additions have been constructed This series of expansion brought the total area of the building to approximately 151,000 square feet The first addition was Building 771A, which was constructed in 1962. It is a one-story structure, approximately 41 feet by 110 feet on the north side of the main building Offices and the cafeteria were moved into Building 771A when it was completed This addition is separated from the process areas by a hallway and doors, and has a separate ventilation system Completed in 1966, the 771B office addition is a one-story building, measuring 41 feet by 81 feet The addition was built on the north side of the main building, west of 771A The Dock Number 1 addition was added to the northwest side of the main building in 1968. The maintenance shop on the west side of the main building was constructed in 1970 The maintenance shop is 60 feet by 77 feet The waste packaging facility, Building 771C, was built in 1972, and is a one-story addition to the east side of Building 771, extending to the west side of Building 774 Building 771C was used to store, count, and ship waste, waste packaging and repackaging occurred within Building 771

Building 771, the primary facility for plutonium operations, was one of the four major buildings to be constructed and placed in operations at RFETS Building 771 operations included the chemical and physical operations for recovering plutonium and refining plutonium metal, plutonium chemistry and metallurgical research, and a radiochemical analytical laboratory

2 2 Background on PCBs

PCBs are compounds characterized by two carbon rings joined by a chemical bond at a carbon atom on each ring, to which one to ten chlorine atoms are attached There are 209 possible PCB congeners, based on the various combinations of chlorine substitutions and their positions on the molecule

The primary manufacturer of PCBs, in the United States, was Monsanto Corporation, who marketed under the trade name Aroclor[5] The primary Aroclors were 1016, 1221, 1232, 1242, 1248, 1254, 1260, and 1268. The last two digits of

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this numbering system indicate the chlorine content, by percent, of the mixture (i e , the higher the number the higher the chlorine content)

The physical and chemical properties of PCBs influence the fate and transport of the same in the environment The following Table 1 summarizes some of the key physical and chemical properties of PCB Aroclors that affect their fate in the environment

Based on the solubility and Octanol Water Partition Coefficient (K_{OW}) values presented in Table 1, PCBs are relatively insoluble in water, and Aroclors with higher chlorine content (i e , the higher Aroclor numbers) tend to be more insoluble The Organic Carbon Distribution Coefficient (K_{OC}) values indicate that PCBs adsorb readily to organic materials such as sediments and soils, with adsorption increasing with the chlorine content of either the Aroclor in question or the environmental media Although PCBs display low vapor pressures they are likely to volatilize especially from water, Aroclors with lower chlorine contents are more volatile

In addition, EPA's Office of Water[6] states. "If released to soil, PCBs experience tight adsorption with adsorption generally increasing with the degree of chlorination of the PCB PCBs will generally not leach significantly in aqueous soil systems; the higher chlorinated congeners will have a lower tendency to leach than the lower chlorinated congeners."

Table 1. Physical and Chemical Properties of PCB Aroclors

Aroclor	Molecular Weight (g/mole)[a]	Solubility (mg/L)[a]	Vapor Pressure (mmHg at 25°C)[a]	Henry's Law Constant (atm-m^3/mol at 25°C)[a]	Organic Carbon Distribution Coefficient (K_{OC})[7]	Octanol Water Partition Coefficient (K_{OW})[a]
1016	257 9	0 42 (25°C)	4 00 x 10^{-4}	2 9 x 10^{-4}	180,000	5 6
1221	200 7	0 59 (24°C)	6 70 x 10^{-3}	3 5 x 10^{-3}	5,800	4 7
1232	232 2	0 45 (25°C)	4.06 x 10^{-3}	-	771	5.1
1242	266 5	0 34 (25°C)	4 06 x 10^{-4}	5 2 x 10^{-4}	6,300	5 6
1248	299 5	0.06 (24°C)	4 94 x 10^{-4}	2 8 x 10^{-3}	277,000	6.2
1254	328	0.057 (24°C)	7.71 x 10^{-5}	2 0 x 10^{-3}	530,000	6 5
1260	375 7	0 08 (24°C)	4 05 x 10^{-5}	4 6 x 10^{-3}	6,700,000	6.8
1262	389	0.052 (24°C)	-	-	-	-
1268	453	0 30 (24°C)	-	-	-	-

[a] ATSDR (1996)

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3 0 DATA COLLECTION AND EVALUATION

3 1 Sampling Approach

The sampling approach, taken for sampling PCB paints, was to sample proportionate to the total surface area of interest (i e , painted concrete surfaces). Initial estimates for sample quantities relied on the use of SW-846 guidance[8], which recommends a 10% sampling of a waste stream. Certain assumptions were made a) a gallon of paint covers approximately 200 ft^2, b) the total painted concrete surface area of the building, and c) the total building painted concrete surface area was divided by 200 ft^2, to determine the number of unique locations for sampling the total population In accordance with SW-846, samples were taken from 10% of the potential sample locations, this equaled 29 samples for B111 However, for larger buildings at RFETS, this approach produced extremely large sample quantities. Therefore, for buildings with 50 or more samples, based on the above approach, it was proposed to reduce the number of samples taken to 30 The use of 30 samples is a generally accepted guideline for the purpose of statistically defining distribution characteristics and attaining a 90% to 95% confidence in decisions[9]

3 2 Building 111 Sampling

The sampling of B111 occurred in two different phases The original phase was strictly the interior perimeter walls of the basement area of the north-south portion of the building The reason for this sampling criterion was the project wanted to leave the basement intact, therefore, it was necessary to determine if the painted concrete could be considered PCB Bulk Product Waste. Sixteen samples in the basement area were taken The colors of the paints noted at the various sample locations include blue, black (darkroom), white on cream on green, white on blue on green, rusty brown, and white. Sample locations, Chain of Custodies and laboratory results are reported in Attachment 1

The second phase of the sampling was in accordance with the previously described sampling approach. The first and second floors were gridded and the 10% sample locations were randomly generated. This resulted in 22 samples, with 3 duplicates The color of paints noted during sampling was white for the interior walls and white or brown for the exterior walls It was not noted during sampling if there were additional colors of paints below the surficial layer Sample locations, Chain of Custodies and laboratory results are reported in Attachment 2

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3 3 Building 771 Sampling

The sampling conducted in B771 was conducted of primarily radiologically contaminated areas (approximately 90%). The sampling event collected 67 samples in the building. Building 771 conducted a biased/random statistical sampling of paints in the building Sample locations, Chain of Custodies and laboratory results are reported in Attachment 3.

3 4 Sample Summary

In the B111 basement samples, the PCB concentration for Aroclor 1242 ranged from ND to 130 ppm. However, additional sampling did not indicate the presence of Aroclor 1242, rather only the presence of Aroclors 1254 and 1260 In the samples taken from the first and second floor of B111 the PCB concentrations ranged from ND to 89 ppm, for Aroclor 1254 and 1260 The majority of positive hits, in the B111 samples, were for Aroclors 1254 or 1260

In the B771 samples, the PCB concentrations ranged from ND to 28,000 ppm, for Aroclor 1254

Based on analytical results from both B111 and B771, it is conservatively concluded that RFETS buildings, constructed during the 1950 to 1960 timeframe, were painted/coated with paints primarily containing Aroclor 1254 This risk-based analysis will cover placement of any concrete building debris, from buildings of this era, as backfill in deep basements at RFETS

3 5 Quality Assurance/Quality Control (QA/QC)

Lionville Laboratory, Inc in Lionville, PA analyzed all PCB samples from B111 and B771. The extraction procedures are based on Method 3540, and the extracts were analyzed based on Method 8082 for Aroclors (methods from SW-846) The following is a summary of QC results

- All required holding times for extractions and analyses were met
- The method blank was below the reporting limits for all target compounds
- All obtainable surrogate recoveries were within acceptance criteria.
- All blank spike recoveries were within acceptance criteria.
- All initial calibrations associated with these data sets were within acceptance criteria

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- All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria
- The reported Aroclors were chosen based on the best pattern match and fit Quantification was performed using congeners common to the Aroclors to give the best overall total PCB concentration

4 0 EXPOSURE ASSESSMENT

This exposure assessment is an estimate of the health risk to humans from the backfilling of PCB-based painted concrete in basements on-Site This assessment will look at (1) potential pathways of exposure, (2) potentially exposed populations, and (3) quantifying intakes and potential doses Possible exposure routes include oral, inhalation, or dermal absorption However, for the risk assessment the only exposure route that will be evaluated will be oral, due to the material being buried and not available for exposure by inhalation or dermal adsorption

4 1 Potential Exposure Pathways

Two potential exposure pathways were evaluated They were ingestion of groundwater or surface water The parameters for these exposure pathways were taken from RFCA

The pathway evaluated under the RFCA Residential Groundwater Exposure scenario was ingestion of groundwater However, it should be noted that this is an extremely conservative approach, since the quantity of groundwater on Site would not support a residential well, and the future land uses of RFETS does not include residential use Dermal and inhalation routes of exposure were not considered valid means of exposure since the material will be buried into intact basements and covered with clean soil

The other route of exposure considered was if groundwater seeps to the surface, and the impacts it may have on surface water (again considering only ingestion) This approach is consistent with the Basis of Action Levels presented in RFCA, Attachment 5 (March 21, 2000), which states that "Since no other human exposure to on-site ground water is foreseen, ground water action levels are based on surface water and ecological protection This framework for ground water action levels assumes that all contaminated ground water emerges to surface water before leaving the RFETS."

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4 2 Potentially Exposed Populations

Currently, the RFCA parties are considering alternative assumptions for future land use at RFETS The most reasonable assumptions appear to be open space, as presented in RFCA, and a wildlife refuge, as described in legislation pending in Congress Although RFCA originally named limited industrial uses as a possible land use scenario, there is now no intention for future industrial development at the Site

The proposal is to place PCB-based painted concrete in building basements so to be conservative, this assessment will take into account the RFCA Residential Groundwater Exposure scenario for an adult resident that lives at the site for 30 years, with an exposure frequency of 350 days/year Again, this is a conservative scenario, since the painted concrete will be placed in basements that are relatively impermeable, and any future residential use at RFETS will not occur

The assessment will also evaluate the Open Space Surface Water Exposure scenario for incidental ingestion of surface water by an open space visitor who recreates at the site for 30 years, with an exposure frequency of 100 times a year This scenario is being evaluated because RFCA action levels are based on the assumption that groundwater will emerge to surface water before leaving the Site

4 3 Quantified Potential Intakes and Doses

For residential groundwater, it has been determined in RFCA that the groundwater ingestion rate for an adult would be 2 L/day. Based on these intakes RFCA determined Programmatic Preliminary Remediation Goal (PPRG) [10] for RFETS For Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260, for a Residential Groundwater Exposure scenario the PPRG is 4 26 x 10^{-5} mg/L (42 6 parts per trillion [ppt]) However, according to RFCA, Attachment 5, Table 1 – Surface Water Action Levels & Standards, for all Aroclors the practical quantification level (PQL) is used as the compliance threshold (since PCBs cannot be analytically quantified at the groundwater PPRG levels) Therefore, if the concentration of Aroclors exceeds the PQL, then a compliance action (i e , remediation) will need to be initiated at the PQL of 1 x 10^{-3} mg/L (1000 ppt).

For open space surface water, based on incidental ingestion, the PPRG as determined in RFCA for Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260 is 5 96 x 10^{-3} mg/L (5960 ppt) Our risk characterization intends to demonstrates that the potential for PCBs to migrate, from the basements, into groundwater and surface water will be significantly below the PQL and PPRG values

5 TOXICITY EVALUATION

When the PPRGs were determined under RFCA, toxicity information from EPA was used[11] The toxicity information used to calculate the PPRGs include the following oral slope factor (SFo), the oral reference dose (RfDo), the reference concentration (RfC), the target hazard index (THI), the target excess lifetime cancer risk (TR), the adult body weight (BW), averaging time – noncarcinogenic, averaging time – carcinogenic, exposure frequency (EF), exposure duration (ED), contact rate (CR), exposure time (ET), and the daily water ingestion rate (IRw) The SFo is a plausible upper-bound estimate of the probability of a response per unit intake of that chemical over a lifetime, in other words an upper-bound probability of an individual developing cancer as a result of a lifetime of exposure to a particular level of a carcinogen. The SFo is expressed in units of $(mg/kg/day)^{-1}$ A RfDo is the daily intake or dose per unit body weight that is likely to be without appreciable risk to human populations The calculations used to determine the PPRG for Residential Groundwater Exposure were

- Noncarcinogenic Effects – PPRG (mg/L) = (THI x BW x AT_NC x 365d/yr)/(EF x ED x IRw x 1/RfDo)
- Carcinogenic Effects – PPRG (mg/L) = (TR x BW x AT_C x 365d/yr)/(EF x ED x IRw x SFo)

Following are the toxicity information values used to calculate the PPRG for Residential Groundwater Exposure under RFCA

THI – 1 (no unit)	TR – 1×10^{-6} (no unit)	BW – 70 kg
AT_NC – 30 yr	AT_C – 70 yr	EF – 350 day/yr
ED – 30 yr	IRw – 2 L/day	SFo – 2 00 $(mg/kg\text{-}day)^{-1}$
RfDo – 2×10^{-5} (mg/kg-day)		

For Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260, for a Residential Groundwater Exposure scenario the PPRG is 4 26 x 10^{-5} mg/L

The calculations used to determine the PPRG for Open Space Surface Water Exposure were

- Noncarcinogenic Effects – PPRG (mg/L) = (THI x BW x AT_NC x 365d/yr)/(CR x EF x ET x ED x 1/RfDo)
- Carcinogenic Effects – PPRG (mg/L) = (TR x BW x AT_C x 365d/yr)/(CR x ET x EF x ED x SFo)

Following are the toxicity information values used to calculate the PPRG for Open Space Surface Water Exposure under RFCA:

THI – 1 (no unit)	TR – 1×10^{-6} (no unit)	BW – 70 kg
AT_NC – 30 yr	AT_C – 70 yr	EF – 100 day/yr
ED – 30 yr	IRw – 2 L/day	SFo – 2 00 $(mg/kg\text{-}day)^{-1}$
CR – 0 05 L/hr	ET – 1 hr/day	

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RfDo – 2 x 10^{-5} (mg/kg-day)

For Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260, for an Open Space Surface Water Exposure scenario the PPRG is 5 96 x 10^{-3} mg/L

6 RISK CHARACTERIZATION

For this analysis the Method of Characteristics[12] (MOC) computer model developed by the U S Geological Survey (USGS) was used This model simulates two-dimensional solute transport in groundwater, including the processes of advection, dispersion, adsorption to aquifer materials, and areal recharge, which are the primary processes affecting PCB migration This model was chosen for two reasons· 1) it is a proven model for fate and transport of solutes in groundwater, and 2), it was effectively applied to evaluate PCB migration in groundwater in the Environmental Impact Study[13] conducted by the U S Air Force Command at Grand Rapids AFB, N D , and accepted by EPA RFETS[14] used the newest version of MOC (Version 3 2 2 1996/01/22)[15] to evaluate PCB migration for a 30 year period following initial leaching of PCBs into groundwater, which is consistent with the monitoring requirements, established under RFCA

6 1 Model Domain

The MOC requires a uniform model grid A model grid of 24 columns by 34 rows was used to simulate transport of PCBs downgradient from a typical building basement (400 ft x 400 ft) Each model cell in the grid was 20 ft in the "x" (perpendicular to groundwater flow) direction and 1 ft in the "y" (downgradient) direction. The short length of the model cell in the downgradient direction was necessary due to the low solubility and mobility of PCBs in groundwater

6 2 Aquifer Parameters

RFETS has two hydrostratigraphic units, the upper and lower unit. The upper unit contains most of the groundwater impacted by site activities, and is composed of the Quaternary Rocky Flats Alluvium, colluvium, and valley-filled alluvium, underlain by weathered bedrock composed of siltstones and sandstones of the Arapahoe and Laramie Formations The lower unit contains competent claystones and sandstones of the Arapahoe and Laramie Formations that are less permeable thereby acting as an aquitard, preventing downward groundwater movement[16] Most of the buildings where concrete rubble would be used as backfill, the basements are under underlain by Rocky Flats Alluvium, and then weathered Arapahoe and Laramie Formation siltstones and sandstones

The geometric mean of the measured hydraulic conductivity (K) in the Rocky Flats Alluvium is approximately 2 06 x 10^{-4} cm/sec The geometric mean of the weathered sandstones and siltstones of the Arapahoe Formation is 3 89 x 10^{-5} cm/sec and 2 88 x 10^{-5} cm/sec, respectively The geometric mean of the hydraulic conductivity of the weathered bedrock Arapahoe Formation sandstone is 7 88 x 10^{-4} cm/sec (EG&G 1995) To provide a conservative estimate of potential PCB migration rates, the highest hydraulic conductivity of 7 88 x 10^{-4} cm/sec was used in the groundwater transport model

The average saturated thickness of the alluvium and underlying weathered bedrock that are downgradient of Buildings 111, 371/374, 444, 771 and 881 is 35 ft (EG&G 1995) This value will be used in the model

Groundwater flow at RFETS is primarily from west to east, although locally it may flow to the northeast or southeast toward creeks or surface water impoundments Various water level measurements have been taken over the course of RFETS history in both the surficial deposits and the weathered bedrock These measurements indicate that hydraulic gradients range from 0 02 near B111 to 0 1 near B881 To provide a conservative (i e , upper bound) estimate of the groundwater velocity, a gradient of 0.1 was used for the groundwater transport model The upgradient and downgradient hydraulic boundary conditions in the model were fixed (i e , constant head) to duplicate this gradient and the model was run to obtain a steady state hydraulic head distribution in the model domain with a hydraulic gradient of 0 1

The calculations for groundwater transport were also based on certain estimates or assumptions that are as follow:

- Longitudinal dispersivity, α_L, is estimated as approximately 10 percent of the travel distance, x_r[17] α_L=0 1x_r With the transport distance of the model set at 30 ft, this gives a longitudinal dispersivity value of 3 0 ft
- The transverse dispersivity, α_T, was estimated as 0 3α_L, based on values in Gelhar and Axness (1981)

The model multiplies the dispersivity by the calculated groundwater velocity to obtain the hydrodynamic dispersion coefficient.

6 3 Chemical Parameters

The organic carbon partitioning coefficient, K_{OC}, for Aroclor 1254, the predominant Aroclor found during RFETS sampling, is 530,000 L/kg Using an

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organic carbon fraction value that is an average for soils of the U S [18], of 0 3%, gives a linear distribution coefficient, K_d, of 1590 L/kg

The retardation, R, of the PCBs relative to the groundwater velocity is calculated using the following equation

$$R = 1 + \frac{K_d \rho_b}{n}$$

where ρ_b is the bulk density and n is the effective porosity of the alluvial material. Using literature values[19], the effective porosity of the alluvium and sandstone was estimated at 0 25, which is the value for fine sands The bulk density of the aquifer is estimated from the total porosity, 0 3 (de Marsily 1986), and assuming a grain density of 2.65 g/cm^3 (typical of silicate minerals), using 2 65(1-n) This gives an estimated bulk density of 1 9 g/cm^3 Using the above equation, the PCB retardation coefficient is approximately 12,000, which means that PCBs will travel approximately 12,000 times slower than the groundwater

The solubility of Aroclor 1254, 0 057 mg/L (ATSDR 1996), was used as a conservative upper bound estimate of PCB concentration in the infiltrating water. This is a conservative estimate since it does not consider the leaching/dissolution rate of PCBs from the paint, which will likely limit the concentration in the infiltrating water

In this analysis, degradation of PCBs into other compounds was not considered However, some biodegradation of PCBs would occur under aerobic conditions

6.4 Hydrologic Parameters

In general, it is assumed that the PCBs will leach from the concrete rubble into the groundwater from precipitation as well as groundwater influx to the basements, which extend below the water table For the model, mass loading of PCBs to the groundwater was calculated using an average areal recharge rate of 1 0 in/yr[20], and that the equivalent of 1 ft per year of groundwater leaking into and out of the basement, over the entire area of the building (this is similar to the assumption made in Grand Forks AFB transport model) It is assumed that this water infiltrating into the basement will have immediate access to the painted surfaces, and leaching begins instantaneously, with the water discharging to the groundwater through fractures in the basement wall and floor. In reality, exposure to groundwater will result from seepage into the basement, and the less damage (i e., cracks or fractures) suffered by the structure during demolition, the slower the seepage rate will be into and out of the structure

In the transport model, a building footprint of 400 x 400 ft was assumed The mass-loading rate of PCBs over the entire building footprint was calculated, and applied over a line of model cells representing the downgradient edge of the 400-ft wide building. The PCB loading rate was considered constant over time, when in reality the PCBs available for leaching in the source would reduce over time.

6 5 Model Results

Results of the groundwater transport modeling show that PCBs will be nearly immobile in the RFETS groundwater, even with the conservative assumptions made for input parameters (i e , selection of parameters that resulted in higher transport rates) Over a 30-year period of groundwater leaching, the model predicted PCB concentrations in groundwater at a distance of 5, 10, 20 and 30 ft downgradient of the building The following Table 2 shows the results of the transport model study

Additionally, the model was used to simulate the time when PCBs would be detected in groundwater/surface water (i.e , groundwater that seeps to the surface) at concentrations equal to the PQL or PPRG levels It should be noted that model uncertainties increase with increased timeframes, so the values for PQL and PPRG are rough estimates

Table 2 – Modeled PCB Concentrations

Years after Placement	PCBs at 5 ft (ppt)	PCBs at 10 ft (ppt)	PCBs at 20 ft (ppt)	PCBs at 30 ft (ppt)
30	27	0 0	0 0	0.0

7 UNCERTAINTY ASSESSMENT

The uncertainties of the RFETS inputs are presented showing the potential effects these inputs would have on the modeled results of PCB transport in groundwater

One major difference between the Grand Forks AFB and RFETS modeled conditions is there are no potable shallow water wells for domestic use within ¼ to ½ mile downgradient of the RFETS basement sites, nor in the future, will there be any potable domestic use wells on Site The closest downgradient potable domestic use well is outside the boundaries of RFETS, and at least one mile from any building basement that would be filled with concrete containing PCB paint Therefore, the possibility of

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groundwater ingestion from RFETS is nonexistent Additionally, if the groundwater was to seep to the surface at a distance of 30 ft from the basement, the PQL, of 1 x 10^{-3} mg/L (1000 ppt), would not be exceeded based on the modeled transport rate of Aroclor 1254 until at least 500 years after placement.

One other uncertainty concerns the sampling events that were conducted in Buildings 111 and 771 These samples were randomly generated, but were biased to the nearest concrete wall/floor, if the randomly generated sample location was not on a painted concrete surface Additionally, some samples were from the same surfaces, within 10 ft, yet had significantly different results (i e , 130 ppm vs 11 ppm). This is possibly due to improper mixing of the paint before application or the variability of the paint application, which could indicate that the actual concentrations of PCBs in the paint are somewhere between these noted values

It should be noted that due to the conservative assumptions made for the transport model, the actual PCB concentrations and transport rates are likely significantly lower than the summarized modeled predictions Given the assumptions and uncertainty inherent in the model parameters, it should be noted that the model is not intended to predict the exact concentration that will be observed downgradient of the building, but to provide an conservative (i e , "upper bound") estimate The low predicted mobility of PCBs is consistent with the known environmental behavior of PCBs in groundwater The model demonstrates that leaching of PCBs from the paint on the concrete rubble, and subsequent migration in the groundwater is unlikely to occur at RFETS

8 CONCLUSIONS

Based on the transport model it is concluded that the potential for PCBs to be transported, from in-situ backfilling of PCB-based painted concrete in essentially intact building basements, either by groundwater or to surface water, is negligible. Even using highly conservative assumptions, the model indicates that PCB concentrations will be only 2 7 x 10^{-5} mg/L or 27 ppt, at a distance of 5-ft downgradient from the basement, and 0.0 at a distance of 10 ft downgradient at 30 years after placement When the model is extrapolated out, PCBs levels at 1000 ppt (PQL level) would not be exceeded within 500 years, at a location 30-ft downgradient from the basement PCB concentrations are not predicted to exceed 5960 ppt in groundwater or surface water at a location 30-ft downgradient of the building within 500 years The nearest surface water (i.e , North Walnut Creek) to a building basement that would be backfilled with concrete occurs 500 ft to the north of Building 371/374 Our conclusion is there are no exposure routes for PCBs by either ground or surface water to humans

9 PROPOSED BACKFILL OPTION

The walls and floor of the basement will be left in place, leaving a fairly impermeable shell with the concrete rubble from the other floors being size reduced, placed into the basements in lifts of approximately 1 5 to 2 ft, with soil addition and compaction of the lifts to achieve a lifetime slump of less than one percent After placement of backfill, clean soil will be placed on the backfilled area to ensure the area blends with the surrounding topography Topsoil will be used as necessary to support vegetation of the area

The risks associated with leaving this debris in place are minimal, and pose no risk to human health or the environment through the evaluated exposure routes The PCBs bound in the paint are very stable, degrade and volatize slowly, and are not released unless in the presence of organic solvents. The potential of an organic chemical migrating into the rubble filled basement area is negligible, since liquid infiltration would mainly be from the surface (i e , recharge) or through groundwater seepage Additionally for all basements except B111, which will be backfill with PCB-based painted concrete, there exist monitoring wells downgradient that could be used to confirm the model conclusion of no transport of PCBs in the groundwater

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REFERENCES

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[2] RFETS MAN-077-DDCP, The Decontamination & Decommissioning Protocol, Rev 2, July 26, 2000

[3] See 59 FR 62809-62811, December 6, 1994

[4] Ropes Gray Letter from Mark A Greenwood to Mr John H Smith, USEPA Subject Response to Data Request on PCBs in Paint (July 21, 1998) and U S Department of Energy Letter from Thomas T Traceski to Mr John Melone, USEPA Subject Results of Testing at the Savannah River Site (October 29, 1998)

[5] ATSDR Toxicological Profile for Polychlorinated Biphenyls Draft Atlanta, Georgia Agency for Toxic Substances and Disease Registry, U S Department of Health and Human Services (1996)

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[7] U S Environmental Protection Agency Aquatic Fate Process Data for Organic Priority Pollutants Washington, D C U S Environmental Protection Agency, Office of Water (1982)

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[9] Ott, 1977 An Introduction to Statistical Methods and Data Analysis Duxbury Press, Boston

[10] Final RFCA Implementation Guidance Document, Appendix N, Table 6 (September 2, 1999)

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[17] Stochastic analysis of macro-dispersion in three-dimensionally heterogeneous aquifers, Report No H-8, Hydraulic research program, New Mexico Institute of Mining and technology, Socorro, NM, Gelhar, L W , and C J Axness (1981)

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[20] Work Plan Site-Wide Water Balance, RFETS, Kaiser-Hill L L C (August 15, 2000)

ATTACHMENT 1

B111 BASEMENT

SAMPLING PACKAGE

B111 Basement PCB
Paint Sample Results

KAISER-HILL
COMPANY
ANALYTICAL SERVICES DIVISION

FAX COVER SHEET FOR FINAL DATA PACKAGE REPORTS

RIN NUMBER: 01R0049

FROM: SKIP NIELSEN

PHONE: (303) 966-4289

FAX: (303) 966-4555

TO: Kevin Nell

FAX: 6678

PHONE: _____

NUMBER OF PAGES, INCLUDING COVER SHEET: _____

Please contact _____ if the fax is not received in its entirety.
(phone number)

NOTE:
This facsimile contains the results, in the Final Sample Data Package, for the analytes requested in this RIN. The package has been scheduled for verification or validation Until verification or validation is completed the results must be considered preliminary. You will be forwarded a copy of the verification or validation report shortly after it is received by ASD. You should examine this report to determine if any qualifiers (flags) have been attached to the results Flagged data may or may not be suitable for use as originally intended and should be evaluated for acceptability before use If you have any questions please contact your Analytical Services Project Lead, do no contact the laboratory directly.

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LIONVILLE LABORATORY INC.

Analytical Report

Client: K-11 RIN #01R0049
RFW#: 0101L788
Subcontract #: K117003271-P6

W.O.#: 11830-001-001-9999-00
Date Received: 01-18-01

PCB

The set of samples consisted of sixteen (16) solid samples collected on 01-15-01.

The samples and their associated QC samples were extracted on 01-18-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 01-23,24-01. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature has been recorded on the chain-of-custodies.

2. All required holding times for extraction and analysis have been met.

3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.

4. The method blank was below the reporting limits for all target compounds.

5. All obtainable surrogate recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. All samples required instrument dilutions due to the high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

8. All initial calibrations associated with this data set were within acceptance criteria.

9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

10. Patterns for Aroclors 1254 and 1260 were identified in these samples. The reported Aroclor was chosen based on the best pattern match and fit. Quantitation was performed using congeners common to both Aroclors to give the best overall total PCB concentration.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 376 pages

11. As of January 27, 2001, Reera Labnet Philadelphia became Lionville Laboratory Inc Some forms may still reference Reera Labnet Philadelphia

By _____ 01-31-01
J. Michael Taylor Date
President
Lionville Laboratory Inc.

[illegible]

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05

mmodore Advanced
iences, Inc

RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# 01R0049#002

Page 1 of 2

pler(s) [redacted]	Contact/Requester KENNEDY, JoANN / NIELSEN, SKIP	Telephone No. 5433-4289
01R0049 Tom Lomsky	Sampling Origin BLDG. 111 TRIAL PAINT CHIP SMPLS	Purchase Order/Charge Code HA11A0305
ect Title LDG 111 TRIAL PAINT CHIP SAMPLES (PCBs) T12672	Logbook No. 94 Daole	Ice Chest No. n/a Temp.
Lab) RECRA Labnet-PA (L)	Method of Shipment Service Team	Bill of Lading/Air Bill No. n/a 9168
tocol CAS Sol. 003 Rev 3	Related COC (if any) 01R0049 #001	PRE

SSIBLE SAMPLE HAZARDS/REMARKS
acid preserved samples DOT hazardous per 40 CFR Part 136 3 Table II? YES or NO
other known hazardous substances present? YES or NO
* **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
IDC 1919 Priority code changed to Rush per Skip Nielsen on 1/17/01 [illegible]

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative, Packing
1R0049-01 005	n/a	SOLID	01/15/01	0905	BLDG 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] Rush JJC 1/17/01	None 4 degrees C
1R0049-01 006		SOLID		0940	BLDG 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] Rush JJC 1/17/01	None 4 degrees C
1R0049-01 007		SOLID		0950	BLDG 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] Rush JJC 1/17/01	None 4 degrees C
1R0049-001 008		SOLID		0915	BLDG. 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] Rush JJC 1/17/01	None 4 degrees C
01R0049-002.005		SOLID		1010	BLDG 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] Rush JJC 1/17/01	None 4 degrees C
01R0049-2 006		SOLID		1030	BLDG. 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] Rush JJC 1/17/01	None 4 degrees C
01R0049-002.007		SOLID			BLDG. 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] Rush	None 4 degrees C

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
[illegible]	01/15/01 1500	[illegible] R Ref #2	01/15/01 1500	Ref #2	1/17/01 1400	[illegible]	1/17/01 1400
[illegible]	1/17/01 1500	FedEx		FedEx	1-18-01 0935	[illegible]	1-18-01 0935

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)	Disposed By	Date/Time

25

'ommodore Advanced
ciences, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# 01R0049#002

01R0049

Contact/Requester: KENNEDY, JoANN / NIELSEN, SKIP

Telephone No.: 5433/4289

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative; Packing
1R0049-02.008	N/A	SOLID	01/07/01	1020	BLDG 111 TRIAL PAINT CHIP SMPLS	10 G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] JHC 1/17/01 Rush	None 4 degrees C
1R0049-03 005		SOLID		0930	BLDG. 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] JHC 1/17/01 Rush	None 4 degrees C
01R0049-03.006		SOLID		0910	BLDG. 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] JHC 1/17/01 Rush	None 4 degrees C
0049-03 007		SOLID		0925	BLDG. 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] JHC 1/17/01 Rush	None 4 degrees C
01R0049-003.008		SOLID		0945	BLDG 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] JHC 1/17/01 Rush	None 4 degrees C
01R0049-004.005		SOLID		1050	BLDG. 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] JHC 1/17/01 Rush	None 4 degrees C
01R0049-004.006		SOLID		1050	BLDG 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] JHC 1/17/01 Rush	None 4 degrees C
01R0049-004 007		SOLID		1100	BLDG. 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] JHC 1/17/01 Rush	None 4 degrees C
01R0049-004.008		SOLID		1100	BLDG. 111 TRIAL PAINT CHIP SMPLS	10-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [~~Priority~~] JHC 1/17/01 Rush	None 4 degrees C

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
[signature]	01/15/01 1500	Ref #2 T891R	01/15/01 1500	Ref #2	1/17/01 1400	[signature]	1/17/01 1400
[signature]	1/17/01 1500	[signature]		FedEx	1-18-01 0935	[signature]	1-18-01 0935
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)	Disposed By	Date/Time

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Lionville Laboratory Inc.
PCBs by GC

Report Date: 01/30/01 P.26

RFW Batch Number. 0101L788 Client: K-H RIN#01R0049 Work Order: 1183030101C01 Page: 1

	Cust ID	01R0049-001.005		01R0049-001.006		01R0049-001.007		01R0049-001.008		01R0049-002.005		01R0049-002.006	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
	D.F.:	10.0		20.0		20.0		10.0		5.00		10.0	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate.	Tetrachloro-m-xylene	D	%	D	%	D	%	D	%	D	%	D	%
	Decachlorobiphenyl	D	%	D	%	D	%	D	%	D	%	D	%
			fl		fl		fl		fl		fl		fl
Aroclor-1016		2000	U	4000	U	4000	U	2000	U	1000	U	2000	U
Aroclor-1221		4000	U	8000	U	8000	U	4000	U	2000	U	4000	U
Aroclor-1232		2000	U	4000	U	4000	U	2000	U	1000	U	2000	U
Aroclor-1242		7700		20000		25000		8400		4200		7500	
Aroclor-1248		2000	U	4000	U	4000	U	2000	U	1000	U	2000	U
Aroclor-1254		4100		4000	U	4600		3900		2000		2700	
Aroclor-1260		2000	U	4000	U	4000	U	2000	U	1000	U	2000	U

	Cust ID:	01R0049-002.007		01R0049-002.008		01R0049-003.005		01R0049-003.006		01R0049-003.007		01R0049-003.008	
Sample Information	RFW#:	007		008		009		010		011		012	
	Matrix.	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
	D.F.:	5.00		5.00		5.00		10.0		100		5.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate	Tetrachloro-m-xylene	D	%	D	%	D	%	D	%	D	%	D	%
	Decachlorobiphenyl	D	%	D	%	D	%	D	%	D	%	D	%
			fl		fl		fl		fl		fl		fl
Aroclor-1016		1000	U	1000	U	1000	U	2000	U	20000	U	1000	U
Aroclor-1221		2000	U	2000	U	2000	U	4000	U	40000	U	2000	U
Aroclor-1232		1000	U	1000	U	1000	U	2000	U	20000	U	1000	U
Aroclor-1242		4300		4700		4300		11000		130000		1900	
Aroclor-1248		1000	U	1000	U	1000	U	2000	U	20000	U	1000	U
Aroclor-1254		1700		2900		2500		4500		20000	U	2700	
Aroclor-1260		1000	U	1000	U	1000	U	2000	U	20000	U	1000	U

U= Analyzed, not detected J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Lionville Laboratory Inc.

PCBs by GC

Report Date: 01/30/01 11:26

RFW Batch Number: 0101L788 Client: K-H RIN#01R0049 Work Order: 118300C1001 Page: 2

	Cust ID:	01R0049-004.005	01R0049-004.006	01R0049-004.007	01R0049-004.008	PBLKMQ	PBLKMQ BS
Sample Information	RFW#:	013	014	015	016	01LE0058-MB1	01LE0058-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F	10.0	5.00	5.00	10.0	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Tetrachloro-m-xylene		D %	D %	D %	D %	95 %	95 %
Decachlorobiphenyl		D %	D %	D %	D %	99 %	105 %
Aroclor-1016		2000 U	1000 U	1000 U	2000 U	33 U	33 U
Aroclor-1221		4000 U	2000 U	2000 U	4000 U	67 U	67 U
Aroclor-1232		2000 U	1000 U	1000 U	2000 U	33 U	33 U
Aroclor-1242		11000	2300	1800	11000	33 U	33 U
Aroclor-1248		2000 U	1000 U	1000 U	2000 U	33 U	33 U
Aroclor-1254		4300	2800	2900	2700	33 U	72 %
Aroclor-1260		2000 U	1000 U	1000 U	2000 U	33 U	33 U

	Cust ID	PBLKMQ BSD
Sample Information	RFW#:	01LE0058-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate Tetrachloro-m-xylene		88 %
Decachlorobiphenyl		99 %
Aroclor-1016		33 U
Aroclor-1221		67 U
Aroclor-1232		33 U
Aroclor-1242		33 U
Aroclor-1248		33 U
Aroclor-1254		95 %
Aroclor-1260		33 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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4C

PESTICIDE METHOD BLANK SUMMARY

Lab Name: Lionville Laboratory Inc. Contract: 1830-01-01

Case No.: K-H RTN#01R0049

Lab Sample ID: 01LE0058-MB1 Lab File ID: 01220107 .38

Matrix: (Soil/Water) SOIL Level: (low/med) LOW

Date Extracted: 01/18/01 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed (1): 01/23/01 Date Analyzed (2): 01/23/01

Time Analyzed (1): 1804 Time Analyzed (2): 1804

Instrument ID (1): 07 Instrument ID (2): 08

GC Column ID (1): DB608 GC Column ID (2): RTX-1701

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	01R0049-001.005	0101L788-001	01/23/01	01/23/01
02	01R0049-001.006	0101L788-002	01/23/01	01/23/01
03	01R0049-001.007	0101L788-003	01/23/01	01/23/01
04	01R0049-001.008	0101L788-004	01/24/01	01/24/01
05	01R0049-002.005	0101L788-005	01/24/01	01/24/01
06	01R0049-002.006	0101L788-006	01/24/01	01/24/01
07	01R0049-002.007	0101L788 007	01/24/01	01/24/01
08	01R0049-002.008	0101L788-008	01/24/01	01/24/01
09	01R0049-003.005	0101L788-009	01/24/01	01/24/01
10	01R0049-003.006	0101L788-010	01/24/01	01/24/01
11	01R0049-003.007	0101L788-011	01/24/01	01/24/01
12	01R0049-003 008	0101L788-012	01/24/01	01/24/01
13	01R0049-004.005	0101L788-013	01/24/01	01/24/01
14	01R0049-004.006	0101L788-014	01/24/01	01/24/01
15	01R0049-004.007	0101L788-015	01/24/01	01/24/01
16	01R0049-004.008	0101L788-016	01/24/01	01/24/01
17	PBLKMQLE0058-MB1 BS	01LE0058-MB1S	01/23/01	01/23/01
18	PBLKMQLE0058-MB1 BSD	01LE0058-MB1T	01/23/01	01/23/01

COMMENTS:

1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0049-001 005

Lab Name: Lionville Laboratory Inc Work Order. 11030001001

Client: K-H R1N#01R0049

Matrix: SOLID

Lab Sample ID: 0101L788-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 01220107.43

Level: (low/med) LOW

Date Received: 01/18/01

% Moisture. not dec 100 dec.

Date Extracted. 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 01/23/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 10.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674 11-2-----	Aroclor-1016	2000	U
11104 28-2------	Aroclor-1221	4000	U
11141 16-5------	Aroclor-1232	2000	U
53469-21-9 -----	Aroclor-1242	7700	
12672-29-6 -----	Aroclor-1248	2000	U
11097-69-1 -----	Aroclor 1254	4100	
11096-82-5------	Aroclor-1260	2000	U

FORM 1 PEST 12/88 Rev.

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
01R0049-001.006

Lab Name Lionville Laboratory Inc. Work Order: 11830001001

Client: K-H RIN#01R0049

Matrix: SOLID

Lab Sample ID: 0101L788-002

Sample wt/vol: 5.00 (g/mL) G

Lab File ID 01220107.44

Level: (low/med) LOW

Date Received: 01/18/01

% Moisture not dec. 100 dec.

Date Extracted. 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 01/23/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 20.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	4000	U
11104-28-2	Aroclor-1221	8000	U
11141-16 5	Aroclor-1232	4000	U
53469-21-9	Aroclor-1242	20000	
12672-29-6	Aroclor-1248	4000	U
11097-69-1	Aroclor-1254	4000	U
11096-82-5	Aroclor-1260	4000	U

Reg/lab

FORM 1 PEST 12/88 Rev.

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0049-001 007

Lab Name: Lionville Laboratory Inc. Work Order. 11830001001

Client. K-H RIN#01R0049

Matrix: SOLID

Lab Sample ID: 0101L788-003

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 01220107.45

Level. (low/med) LOW

Date Received. 01/18/01

% Moisture. not dec. 100 dec.

Date Extracted: 01/18/01

Extraction (SepF/Cont/Sonc) CONT

Date Analyzed: 01/23/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 20.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	4000	U
11104-28-2	Aroclor-1221	8000	U
11141-16-5	Aroclor-1232	4000	U
53469-21-9	Aroclor-1242	25000	
12672-29-6	Aroclor-1248	4000	U
11097-69-1	Aroclor-1254	4600	
11096-82-5	Aroclor-1260	4000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0049-001 008

Lab Name: Lionville Laboratory Inc Work Order: 11830001001

Client K-H R1N#01R0049

Matrix: SOLID

Lab Sample ID: 0101L788-004

Sample wt/vol: 5.00 (g/mL) G

Lab File ID. 01220107.46

Level: (low/med) LOW

Date Received. 01/18/01

% Moisture: not dec. 100 dec

Date Extracted: 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed. 01/24/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor. 10.0

CAS NO.	COMPOUND	CONCENTRATION UNITS. (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	2000	U
11104-28-2	Aroclor-1221	4000	U
11141-16-5	Aroclor-1232	2000	U
53469-21-9	Aroclor-1242	8400	
12672-29-6	Aroclor-1248	2000	U
11097-69-1	Aroclor-1254	3900	
11096-82-5	Aroclor-1260	2000	U

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1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0049-002 005

Lab Name Lionville Laboratory Inc. Work Order: 11830001001

Client: K-H RIN#01R0049

Matrix: SOLID

Lab Sample ID: 01011788-005

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 01220107.47

Level. (low/med) LOW

Date Received 01/18/01

% Moisture: not dec. 100 dec

Date Extracted: 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 01/24/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 5.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	1000	U
11104-28-2	Aroclor-1221	2000	U
11141-16-5	Aroclor-1232	1000	U
53469-21-9	Aroclor-1242	4200	
12672-29-6	Aroclor-1248	1000	U
11097-69-1	Aroclor-1254	2000	
11096-82-5	Aroclor-1260	1000	U

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1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

01R0049-002 006

Lab Name Lionville Laboratory Inc. Work Order: 11830001001

Client: K-H RIN 01R0049

Matrix: SOLID

Lab Sample ID: 01011788-006

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 01220107.48

Level: (low/med) LOW

Date Received: 01/18/01

% Moisture: not doc. 100 dec

Date Extracted: 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 01/24/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 10.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	2000	U
11104-28-2	Aroclor-1221	4000	U
11141-16-5	Aroclor-1232	2000	U
53469-21-9	Aroclor-1242	7500	
12672-29-6	Aroclor-1248	2000	U
11097-69-1	Aroclor-1254	2700	
11096-82-5	Aroclor-1260	2000	U

flsm/ln/o

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1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0049-002.007

Lab Name: Lionville Laboratory Inc. Work Order: 11830001001

Client: K-H R1N#01R0049

Matrix: SOLID

Lab Sample ID: 0101L788-007

Sample wt/vol: 5.00 (g/mL) G

Lab File ID. 01220107.49

Level: (low/med) LOW

Date Received: 01/18/01

% Moisture: not dec. 100 dec.

Date Extracted 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed 01/24/01

GPC Cleanup: (Y/N) N pH. ____

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2-	----Aroclor-1016	1000	U
11104-28-2	------Aroclor-1221	2000	U
11141-16-5	------Aroclor-1232	1000	U
53469-21-9	------Aroclor-1242	4300	
12672-29-6	------Aroclor-1248	1000	U
11097-69-1	------Aroclor-1254	1700	
11096-82-5	------Aroclor-1260	1000	U

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1b

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0049-002.008

Lab Name. Lionville Laboratory Inc Work Order: 11830001001

Client: K-H RIN#01R0049

Matrix SOLID

Lab Sample ID: 0101L788-008

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 01220107.50

Level. (low/med) LOW

Date Received: 01/18/01

% Moisture: not dec 100 dec.

Date Extracted. 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed. 01/24/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 5.00

CONCENTRATION UNITS. (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	1000	U
11104-28-2	Aroclor-1221	2000	U
11141-16-5	Aroclor-1232	1000	U
53469-21-9	Aroclor-1242	4700	
12672-29-6	Aroclor-1248	1000	U
11097-69-1	Aroclor-1254	2900	
11096-82-5	Aroclor-1260	1000	U

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1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0049-003.005

Lab Name: Lionville Laboratory Inc. Work Order: 11830001001

Client: K H RIN#01R0049

Matrix: SOLID

Lab Sample ID: 0101L788-009

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 01220107.b1

Level: (low/med) LOW

Date Received: 01/18/01

% Moisture: not dec. 100 dec

Date Extracted: 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 01/24/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	1000	U
11104-28-2	Aroclor-1221	2000	U
11141-16-5	Aroclor-1232	1000	U
53469-21-9	Aroclor-1242	4000	
12672-29-6	Aroclor-1248	1000	U
11097-69-1	Aroclor-1254	2500	
11096-82-5	Aroclor-1260	1000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0049-003 006

Lab Name. Lionville Laboratory Inc. Work Order: 11830001001

Client. K-H RIN#01R0049

Matrix: SOLID

Lab Sample ID: 01011788-010

Sample wt/vol. 5.00 (g/mL) G

Lab File ID: 01220107.52

Level: (low/med) LOW

Date Received: 01/18/01

% Moisture: not dec. 100 dec.

Date Extracted: 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 01/24/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 10.0

CAS NO	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	2000	U
11104-28-2	Aroclor-1221	4000	U
11141-16-5	Aroclor-1232	2000	U
53469-21-9	Aroclor-1242	11000	
12672-29-6	Aroclor-1248	2000	U
11097-69-1	Aroclor-1254	4500	
11096-82-5	Aroclor-1260	2000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
01R0049-003.007

Lab Name: Lionville Laboratory Inc Work Order: 11830001001

Client: K H RIN#01R0049

Matrix: SOLID

Lab Sample ID: 0101L788-011

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 01220107.56

Level (low/med): LOW

Date Received: 01/18/01

% Moisture: not dec. 100 dec.

Date Extracted: 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 01/24/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 100

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674 11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor 1221	40000	U
11141-16-5	Aroclor 1232	20000	U
53469-21-9	Aroclor-1242	130000	
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	20000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
01R0049-004 005

Lab Name: Lionville Laboratory Inc. Work Order: 11830001001

Client: K-H RIN#01R0049

Matrix: SOLID

Lab Sample ID: 01011788-013

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 01220107 58

Level: (low/med) LOW

Date Received: 01/18/01

% Moisture: not dec. 100 dec.

Date Extracted: 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 01/24/01

GPC Cleanup: (Y/N) N pH: ___

Dilution Factor: 10.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	2000	U
11104-28-2	Aroclor-1221	4000	U
11141-16-5	Aroclor-1232	2000	U
53469-21-9	Aroclor-1242	11000	
12672-29-6	Aroclor-1248	2000	U
11097-69-1	Aroclor 1254	4300	
11096-82-5	Aroclor-1260	2000	U

Aroclor

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0049-004 006

Lab Name: Lionville Laboratory Inc. Work Order: 11830001001

Client: K-H RIN#01R0049

Matrix: SOLID

Lab Sample ID: 01011788-014

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 01220107 59

Level: (low/med) LOW

Date Received: 01/18/01

% Moisture not dec. 100 dec.

Date Extracted: 01/18/01

Extraction (SepF/Cont/Sonc) CONT

Date Analyzed: 01/24/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	1000	U
11104-28-2	Aroclor-1221	2000	U
11141-16-5	Aroclor-1232	1000	U
53469-21-9	Aroclor-1242	2300	
12672-29-6	Aroclor-1248	1000	U
11097-69-1	Aroclor-1254	2800	
11096-82-5	Aroclor-1260	1000	U

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1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0049-004.007

Lab Name: Lionville Laboratory Inc. Work Order: 11830001001

Client: K-H RIN#01R0049

Matrix: SOLID

Lab Sample ID: 0101L788-015

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 01230107 60

Level: (low/med) LOW

Date Received: 01/18/01

% Moisture not dec. 100 dec

Date Extracted: 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 01/24/01

GPC Cleanup: (Y/N) N pH. ____

Dilution Factor: 5.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	1000	U
11104-28-2	Aroclor-1221	2000	U
11141-16-5	Aroclor-1232	1000	U
53469-21-9	Aroclor-1242	1800	
12672-29-6	Aroclor-1248	1000	U
11097-69-1	Aroclor-1254	2900	
11096-82-5	Aroclor-1260	1000	U

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1b

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0049-004.008

Lab Name: Lionville Laboratory Inc. Work Order 11810001001

Client K-H RIN#01R0049

Matrix: SOLID

Lab Sample ID: 0101L708-016

Sample wt/vol. 5.00 (g/mL) G

Lab File ID. 01220107.61

Level: (low/med) LOW

Date Received: 01/18/01

% Moisture: not dec. 100 dec.

Date Extracted. 01/18/01

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 01/24/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor: 10.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	2000	U
11104-28-2	Aroclor-1221	4000	U
11141-16-5	Aroclor 1232	2000	U
53469-21-9	Aroclor-1242	11000	
12672-29-6	Aroclor-1248	2000	U
11097-69-1	Aroclor-1254	2700	
11096-82-5	Aroclor-1260	2000	U

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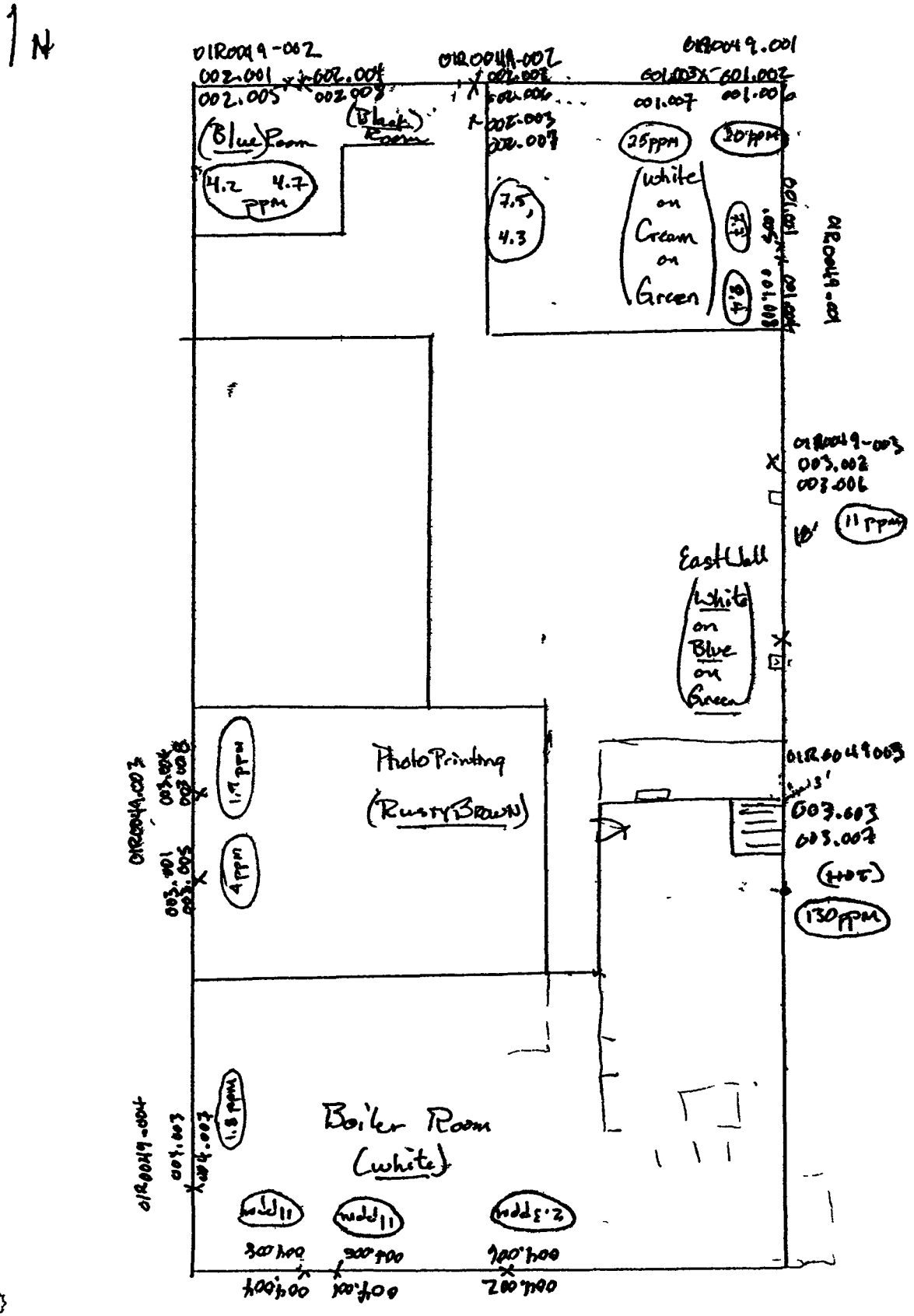
B111 Basement Samples

SAMPLE #	LOCATION	RESULTS (PPM)
01R0049-001 005	NE room, east wall, toward SE corner	7 7
01R0049-001 006	NE room, east wall, toward SE corner	20
01R0049-001.007	NE room, north wall, toward NE corner	25
01R0049-001 008	NE room, north wall, toward NE corner	8 4
01R0049-002 005	North wall, blue room near NW corner	4 2
01R0049-002 006	Black room, north wall, NE corner	7 5
01R0049-002 007	Black room, east wall, near NE corner	4 3
01R0049-002 008	north wall, blue room near NW corner, east of #5	4 7
01R0049-003 005	photo printing room, west wall, toward SW corner	4
01R0049-003 006	east wall, near concrete pillar	11
01R0049-003 007	east wall, SE quadrant, near stairs	130
01R0049-003 008	photo printing room, west wall, toward NW corner	2.7
01R0049-004 005	south wall of boiler room, west middle of wall btn # 6 and #8	11
01R0049-004 006	south wall, boiler room, middle of wall	2.3
01R0049-004 007	west wall, boiler room, near SW corner	2 9
01R0049-004 008	South wall, boiler room, near SW corner	11

Bill Basement PCB Paint Sample Locations



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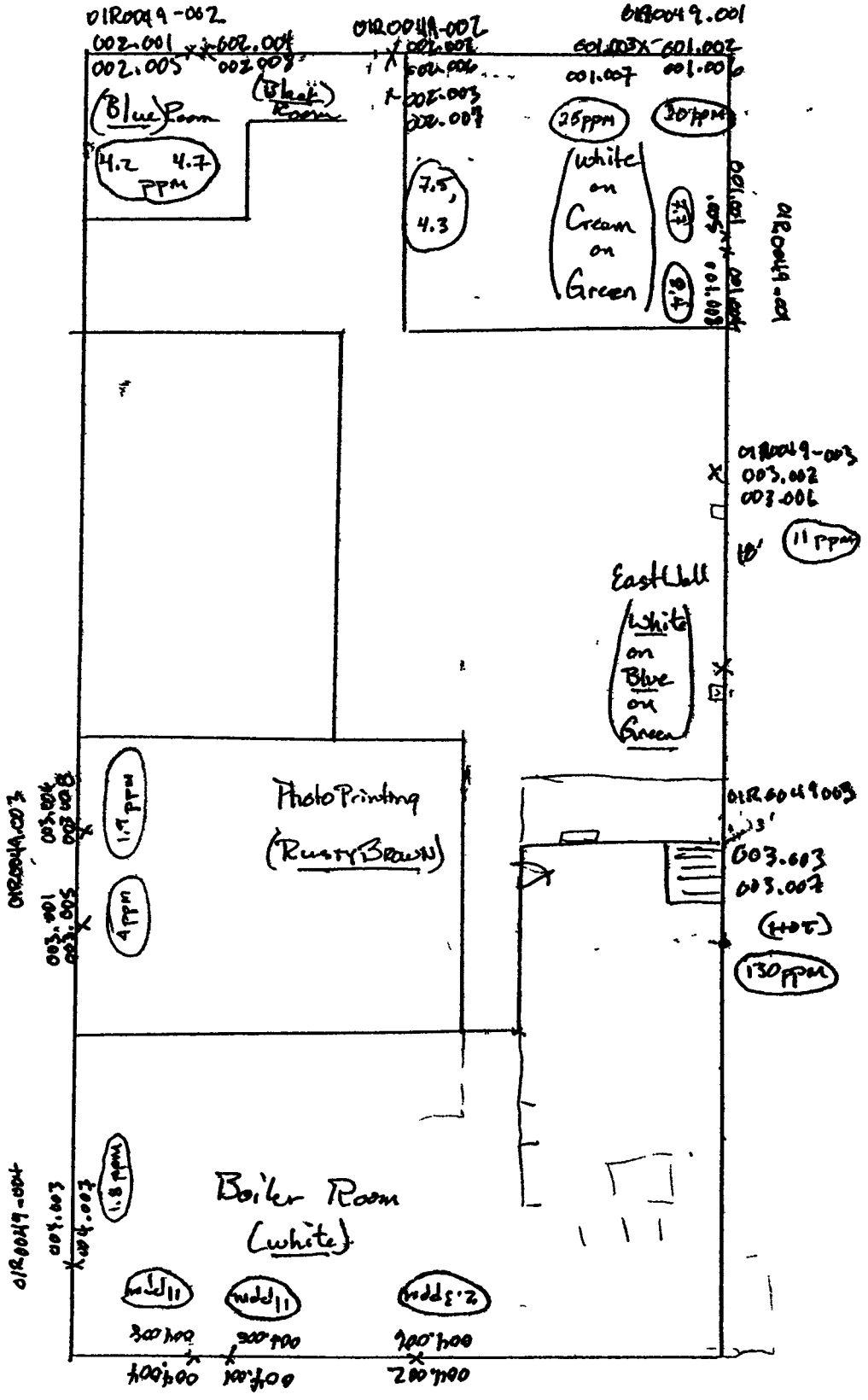
B111 Basement PCB Paint Sample locations



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B111 PCB Samples-prelim

Sample Location	Paint Samples Number	Core Samples Number	Paint results (ppm)	(Aroclor)	Core Results (ppm)	(Aroclor)
Rm 111, W Wall	01R0160-004 001	01D0751-001 001	89	(1260)	0 15 1 3	(1016) (1260)
Wall outside women's rest Rm 151	01R0160-012.001	01D0751-002 001	58	(1260)	0 047 0 77	(1016) (1260)
Exterior wall, Door 3	01R0160-007 001	01D0751-003 001	57	(1254)	None Detected	
Rm 158D, N Wall	01R0160-017 001	01D0751-004 001	67	(1260)	0 067 0 78	(1016) (1260)
Basement, East Wall	01R0049-003 007	01D0751-005 001	130	(1242)	0 34 0 17	(1016) (1260)

B111 PCB Samples-final

Sample Location	Paint Samples Number	Core Samples Number	Paint results (ppm)	(Aroclor)	Core Results (ppm)	(Aroclor)
Rm 111, W Wall	01R0160-004 001	01D0751-001 001	89	(1260)	0 15 **2 5**	(1016) (1260)
Wall outside women's rest Rm	01R0160-012 001	01D0751-002 001	58	(1260)	0 047 **1.2**	(1016) (1260)
Exterior wall, Door 3	01R0160-007 001	01D0751-003 001	57	(1254)	None Detected	
Rm 158D, N Wall	01R0160-017 001	01D0751-004 001	67	(1260)	0 067 **1.2**	(1016) (1260)
Basement, East Wall	01R0049-003 007	01D0751-005 001	130	(1242)	**0.44** 0 17	(1016) (1260)

Core Samples

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SAMPLE SUMMARY FOR RIN: 01D0751

RIN Title: B111 CONCRETE CORES
Project Name: Industrial and Site Services Project
Task Name: Decommissioning 100/300/500/900 Area
Aggregate Area: N/A

Sampling Team: CAST
Sampling Mgr/Coordinator:
Samplers: CH|RB|DL|MN
Field Logbook ID: 1999 Step + 1994 Van
Media: SOLID

This sample summary is supplied to waste generators as notification of sample collection. Inquiries into the status of this sampling effort may be directed to the Analytical Services Division (ASD).

Bottle Number	Customer Bottle Number	Location	LIC (See Attached)	Laboratory	Date Collected	Date Shipped	Date Returned	Comments
01D0751-001 001	Rm 111 N. Wall	B111	1	Paragon Analytics	4/26/01	4/27/01		
01D0751-002 001	Main Hall Bathroom	B111	1	Paragon Analytics	↓	↓		
01D0751-003 001	Door 3 S.W. Side	B111	1	Paragon Analytics	↓	↓		
01D0751-004 001	Rm 158D	B111	1	Paragon Analytics	4/27/01	↓		
01D0751-005 001	Basement E. side	B111	1	Paragon Analytics	↓	↓		

Returning Excess Sample Material:

Unmodified sample material remaining after analysis is generally returned to the generator. The generator must be prepared to receive and dispose of excess sample material for applicable state and federal regulations. Regulatory exclusions for returning excess sample material are specified in the Code of Colorado Regulation (CCR) 1007-3, Part 261.4(d) 'Samples'. If problems with the disposal of excess sample material are encountered, the Environmental Coordinator for the generation area should be contacted for resolution of the issues. Only sample material which has not been modified during analysis will be returned. Material which has been acidified for preservation purposes will not be returned.

Customer Acknowledgement _____
(Sign and Print Name)

Comments:

Line Item Codes:

1) SS03B006 (PCB 8080A/8081-Solid)

CASI 3039667228 05/03/2001 15:17

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Paragon Analytics, Inc.

PCBs Case Narrative

Kaiser-Hill Co., L.L.C.

B111 CONCRETE CORES -- 01D0751

Order Number - 0104220

1. This report consists of 5 solid samples The samples were received at 13° C by Paragon on 04/27/2001

2 These samples were extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the solid samples were extracted using soxhlet procedures according to Paragon Analytics, Inc. Standard Operating Procedure 625 Revision 4 based on Method 3540C. The extracts were then processed using sulfuric acid cleanup according to Paragon Analytics Standard Operating Procedure 651 Revision 4 based on Method 3665 in an attempt to remove potential interferences.

3. The extracts were then analyzed using GC/ECD (electron capture detectors) with a RTX-CLPesticides capillary column according to Paragon Analytics Standard Operating Protocol 409 Revision 0 based on SW-846 Method 8082. All positive results were then confirmed on a RTX-CLPesticidesII column. The quantitation of each analyte is the lower of the concentrations obtained from each column which met initial and continuing calibration criteria. This minimizes the chances of reporting elevated results based on interferences.

4. All initial and continuing calibration criteria were met with the following exceptions:

   Continuing calibration 1254 043001-2CCV - aroclor 1254 was out high on column 1.
   Continuing calibration 1254 050101-2CCV - aroclor 1254 was out high on column 1.
   Continuing calibration 1660 050101-2CCV - aroclor 1016 was out high on column 1.
   Quantitation for each analyte was reported from the column that passed initial and continuing calibration criteria

5. The method blank associated with this project was below the reporting limits for all analytes

6. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.

7. All matrix spike and matrix spike duplicate recoveries and RPDs were within acceptance criteria.

8. All samples were extracted and analyzed within the established holding times.

9. Surrogate recoveries could not be reported for samples 1RR1, 2RR1, and 4RR1 due to sample dilutions.

10 Samples 1RR1, 2RR1, 4RR1, and 5RR1 were analyzed at a higher dilution in order to bring target analytes within the calibration range of the instrument. The reporting limits have been adjusted accordingly.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

for Dan Shenenman
GC Analyst

Date

Reviewer's Initials

05-08-01
Date

PE Group	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # 01D0751#001
RF[redacted]		Page 1 of 1

Sampler(s) T.T. Nell[redacted] R. Bagle[redacted]	Contact/Requester JOHNSEN, SHELLY/NELL, KEVIN	Telephone No. 6401/3689
RIN 01D0751	Sampling Origin B111	Purchase Order/Charge Code EFD20220
Project Title B111 CONCRETE CORES	Logbook No. 1999 Step Van	Ice Chest No. Temp
To (Lab) Paragon Analytics	Method of Shipment Fed. Ex	Bill of Lading/Air Bill No. N/A
Protocol CAS-SOP. 003	Related COC (if any) N/A	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table III YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time 0104220

Bottle No.	Container Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative Packing
01D0751-001.001	Rm 111 N. Wall	SOLID	4/26/01	1710	B111	125-G / P/G /1	SS03B006 (PCB 8080A/8081-Solid) [Rush] 1	None 4 degrees C
01D0751-002.001	Main Hall	SOLID	↓	1745	B111	125-G / P/G /1	SS03B006 (PCB 8080A/8081-Solid) [Rush] 2	None 4 degrees C
01D0751-003.001	Door 3 S.W. side outside ent.	SOLID	↓	1820	B111	125-G / P/G /1	SS03B006 (PCB 8080A/8081-Solid) [Rush] 3	None 4 degrees C
01D0751-004.001	Rm 158D	SOLID	4/27/01	11:15	B111	125-G / P/G /1	SS03B006 (PCB 8080A/8081-Solid) [Rush] 4	None 4 degrees C
01D0751-005.001	Basement E. side	SOLID	↓	12:00	B111	125-G / P/G /1	SS03B006 (PCB 8080A/8081-Solid) [Rush] 5	None 4 degrees C
				4/27/01				

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Locked Cooler with samples 001, 002, 003 Locked Bldg. 111 M. Nunley Cooler 4/26/01	1830	Locked Cooler with samples 001, 002, 003 Bldg. 111 4/26/01	1830	Locked Cooler with samples 001, 002, 003 Bldg. 111 4/26/01	1830	1247 W. Foutz 4-27-01	
W. Foutz 4-27-01	1525	4-27-01	1525				

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)	Disposed By	Date/Time

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PCBs

Method SW8082
Sample Results

Lab Name Paragon Analytics, Inc
Work Order Number 0104220
Client Name Kaiser-Hill Co , L L C
ClientProject ID B111 CONCRETE CORES 01D0751

[redacted] 01D0751-001 001
[redacted] 0104220-1

Sample Matrix	SOLID	**Prep Batch**	EX010428-1	**Sample Aliquot**	30 01 G
% Moisture	N/A	**QCBatchID**	EX010428-1-1	**Final Volume**	10 ML
Date Collected	26-Apr-01	**Run ID**	PT010430-1	**Result Units**	UG/KG
Date Extracted	28-Apr-01	**Cleanup**	SW3665	**CleanupDF**	1
Date Analyzed	30-Apr-01	**Basis**	As Received	**File Name**	EA004093

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	150	33		
11104-28-2	AROCLOR-1221	1	67	67	U	
11141-16-5	AROCLOR-1232	1	33	33	U	
53469-21-9	AROCLOR-1242	1	33	33	U	
12672-29-6	AROCLOR-1248	1	33	33	U	
11097-69-1	AROCLOR-1254	1	33	33	U	
11096-82-5	AROCLOR-1260	1	1300	33	E	

70

155

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	15 9		16 7	95	34 - 129
877-09-8	TETRACHLORO-M-XYLENE	16 1		16 7	97	47 - 137

Aroclor 1260 reported from diluted analysis

XS 6/19/01

Data Package ID. *PT0104220-1*

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00010

PCBs

Method SW8082
Sample Results

Lab Name Paragon Analytics, Inc
Work Order Number 0104220
Client Name Kaiser-Hill Co , L L C
ClientProject ID B111 CONCRETE CORES 01D0751

Field ID	01D0751-001 001	**Sample Matrix**	SOLID	**Prep Batch**	EX010428-1
Lab ID	0104220-1RR1	**% Moisture**	N/A	**QCBatchID**	EX010428-1-1
		Date Collected	26-Apr-01	**Run ID**	PT010501-1
		Date Extracted	28-Apr-01	**Cleanup**	SW3665
		Date Analyzed	01-May-01	**Basis**	As Received

Sample Aliquot	30 01 G
Final Volume	10 ML
Result Units	UG/KG
CleanupDF	1
File Name	EA004107

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	20	670	670	U	
11104-28-2	AROCLOR-1221	20	1300	1300	U	
11141-16-5	AROCLOR-1232	20	670	670	U	
53469-21-9	AROCLOR-1242	20	670	670	U	
12672-29-6	AROCLOR-1248	20	670	670	U	
11097-69-1	AROCLOR-1254	20	670	670	U	
11096-82-5	AROCLOR-1260	20	2500	670		

142, 70

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL		*	16 7	0	34 - 129
877-09-8	TETRACHLORO-M-XYLENE		*	16 7	0	47 - 137

Report only Aroclor 1260
_ see undiluted Form I

KS 6/19/01

Data Package ID *PT0104220-1*

PCBs

Method SW8082
Sample Results

Lab Name Paragon Analytics, Inc
Work Order Number 0104220
Client Name Kaiser-Hill Co , L L C
ClientProject ID B111 CONCRETE CORES 01D0751

[redacted] 01D0751-002 001	**Sample Matrix** SOLID	**Prep Batch** EX010428-1	**Sample Aliquot** 30 G
[redacted] 0104220-2	**% Moisture** N/A	**QCBatchID** EX010428-1-1	**Final Volume** 10 ML
	Date Collected 26-Apr-01	**Run ID** PT010430-1	**Result Units** UG/KG
	Date Extracted 28-Apr-01	**Cleanup** SW3665	**CleanupDF** 1
	Date Analyzed 30-Apr-01	**Basis** As Received	**File Name** EA004094

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	47	33		
11104-28-2	AROCLOR-1221	1	67	67	U	
11141-16-5	AROCLOR-1232	1	33	33	U	
53469-21-9	AROCLOR-1242	1	33	33	U	
12672-29-6	AROCLOR-1248	1	33	33	U	
11097-69-1	AROCLOR-1254	1	33	33	U	
11096-82-5	AROCLOR-1260	1	770	33	E	

703

155

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	17 3		16 7	104	34 - 129
877-09-8	TETRACHLORO-M-XYLENE	15 1		16 7	91	47 - 137

Aroclor 1260 reported from diluted analysis

SC 5/6/19/01

Data Package ID. *PT0104220-1*

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PCBs

Method SW8082
Sample Results

Lab Name Paragon Analytics, Inc
Work Order Number 0104220
Client Name Kaiser-Hill Co L L C
ClientProject ID B111 CONCRETE CORES 01D0751

[redacted] 01D0751-002 001	**Sample Matrix**	SOLID	**Prep Batch**	EX010428-1	**Sample Aliquot** 30 G
[redacted] 0104220-2RR1	**% Moisture**	N/A	**QCBatchID**	EX010428-1-1	**Final Volume** 10 ML
	Date Collected.	26-Apr-01	**Run ID**	PT010501-1	**Result Units** UG/KG
	Date Extracted	28-Apr-01	**Cleanup**	SW3665	**CleanupDF** 1
	Date Analyzed	01-May-01	**Basis**	As Received	**File Name** EA004108

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	10	330	330	U	
11104-28-2	AROCLOR-1221	10	670	670	U	
11141-16-5	AROCLOR-1232	10	330	330	U	
53469-21-9	AROCLOR-1242	10	330	330	U	
12672-29-6	AROCLOR-1248	10	330	330	U	
11097-69-1	AROCLOR-1254	10	330	330	U	
11096-82-5	AROCLOR-1260	10	1200	330		

142,703

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL		*	16 7	0	34 - 129
877-09-8	TETRACHLORO-M-XYLENE		*	16 7	0	47 - 137

Report only Aroclor 1260
- see undiluted Form I
XS 6/19/01

Data Package ID *PT0104220-1*

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PCBs

Method SW8082
Sample Results

Lab Name *Paragon Analytics, Inc*
Work Order Number 0104220
Client Name Kaiser-Hill Co L L C
ClientProject ID B111 CONCRETE CORES 01D0751

Field ID: 01D0751-003 001	**Sample Matrix**	SOLID	**Prep Batch**	EX010428-1	**Sample Aliquot** 30 G
Lab ID: 0104220-3	**% Moisture**	N/A	**QCBatchID**	EX010428-1-1	**Final Volume** 10 ML
	Date Collected	26-Apr-01	**Run ID**	PT010430-1	**Result Units** UG/KG
	Date Extracted	28-Apr-01	**Cleanup**	SW3665	**CleanupDF** 1
	Date Analyzed	30-Apr-01	**Basis**	As Received	**File Name** EA004095

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	33	33	U	
11104-28-2	AROCLOR-1221	1	67	67	U	
11141-16-5	AROCLOR-1232	1	33	33	U	
53469-21-9	AROCLOR-1242	1	33	33	U	
12672-29-6	AROCLOR-1248	1	33	33	U	
11097-69-1	AROCLOR-1254	1	33	33	U	
11096-82-5	AROCLOR-1260	1	33	33	U	

703

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	16 7		16 7	100	34 - 129
877-09-8	TETRACHLORO-M-XYLENE	16 3		16 7	98	47 - 137

CS 6/19/01

Data Package ID: *PT0104220-1*

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00014

PCBs

Method SW8082

Sample Results

Lab Name Paragon Analytics, Inc
Work Order Number 0104220
Client Name Kaiser-Hill Co L L C
ClientProject ID B111 CONCRETE CORES 01D0751

Field ID 01D0751-004 001 Lab ID 0104220-4	**Sample Matrix**	SOLID	**Prep Batch**	EX010428-1	**Sample Aliquot** 30 01 G
	% Moisture	N/A	**QCBatchID**	EX010428-1-1	**Final Volume** 10 ML
	Date Collected	27-Apr-01	**Run ID**	PT010430-1	**Result Units** UG/KG
	Date Extracted	28-Apr-01	**Cleanup**	SW3665	**CleanupDF** 1
	Date Analyzed	30-Apr-01	**Basis**	As Received	**File Name** EA004098

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	67	33		
11104-28-2	AROCLOR-1221	1	67	67	U	
11141-16-5	AROCLOR-1232	1	33	33	U	
53469-21-9	AROCLOR-1242	1	33	33	U	
12672-29-6	AROCLOR-1248	1	33	33	U	
11097-69-1	AROCLOR-1254	1	33	33	U	
11096-82-5	AROCLOR-1260	1	780	33	E	

703

155

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	16 1		16 7	97	34 - 129
877-09-8	TETRACHLORO-M-XYLENE	14 7		16 7	88	47 - 137

Aroclor 1260 reported from diluted analysis.

XS 6/19/01

Data Package ID. *PT0104220-1*

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PCBs

Method SW8082
Sample Results

Lab Name	Paragon Analytics, Inc
Work Order Number	0104220
Client Name	Kaiser-Hill Co , L L C
ClientProject ID	B111 CONCRETE CORES 01D0751

Field ID: 01D0751-004 001	Sample Matrix	SOLID	Prep Batch	EX010428-1	Sample Aliquot 30 01 G
Lab ID: 0104220-4RR1	% Moisture	N/A	QCBatchID	EX010428-1-1	Final Volume 10 ML
	Date Collected	27-Apr-01	Run ID	PT010501-1	Result Units UG/KG
	Date Extracted	28-Apr-01	Cleanup	SW3665	CleanupDF 1
	Date Analyzed	01-May-01	Basis	As Received	File Name EA004109

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	10	330	330	U	
11104-28-2	AROCLOR-1221	10	670	670	U	
11141-16-5	AROCLOR-1232	10	330	330	U	
53469-21-9	AROCLOR-1242	10	330	330	U	
12672-29-6	AROCLOR-1248	10	330	330	U	
11097-69-1	AROCLOR-1254	10	330	330	U	
11096-82-5	AROCLOR-1260	10	1200	330		

142,703

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL		*	16 7	0	34 - 129
877-09-8	TETRACHLORO-M-XYLENE		*	16 7	0	47 - 137

Report only Aroclor 1260
_see undiluted Form I

6/19/01

Data Package ID *PT0104220-1*

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PCBs

Method SW8082
Sample Results

Lab Name	Paragon Analytics, Inc
Work Order Number	0104220
Client Name	Kaiser-Hill Co , L.L C
ClientProject ID	B111 CONCRETE CORES 01D0751

Field ID: 01D0751-005 001	Sample Matrix	SOLID	Prep Batch	EX010428-1	Sample Aliquot 30 G
Lab ID: 0104220-5	% Moisture	N/A	QCBatchID	EX010428-1-1	Final Volume 10 ML
	Date Collected	27-Apr-01	Run ID	PT010430-1	Result Units UG/KG
	Date Extracted	28-Apr-01	Cleanup	SW3665	CleanupDF 1
	Date Analyzed	30-Apr-01	Basis	As Received	File Name EA004099

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	1	340	33	E	
11104-28-2	AROCLOR-1221	1	67	67	U	
11141-16-5	AROCLOR-1232	1	33	33	U	
53469-21-9	AROCLOR-1242	1	33	33	U	
12672-29-6	AROCLOR-1248	1	33	33	U	
11097-69-1	AROCLOR-1254	1	33	33	U	
11096-82-5	AROCLOR-1260	1	170	33		

70%

155

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	16 9		16 7	102	34 - 129
877-09-8	TETRACHLORO-M-XYLENE	14 9		16 7	89	47 - 137

Aroclor 1016 reported from dilated analysis

JS 6/19/01

Data Package ID. *PT0104220-1*

60

PCBs

Method SW8082

Sample Results

Lab Name Paragon Analytics, Inc
Work Order Number 0104220
Client Name Kaiser-Hill Co , L L C
ClientProject ID B111 CONCRETE CORES 01D0751

[redacted] 01D0751-005 001	**Sample Matrix**	SOLID	**Prep Batch**	EX010428-1	**Sample Aliquot** 30 G
[redacted] 0104220-5RR1	**% Moisture**	N/A	**QCBatchID**	EX010428-1-1	**Final Volume** 10 ML
	Date Collected	27-Apr-01	**Run ID**	PT010501-1	**Result Units** UG/KG
	Date Extracted	28-Apr-01	**Cleanup**	SW3665	**CleanupDF** 1
	Date Analyzed	01-May-01	**Basis.**	As Received	**File Name** EA004104

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	5	440	170		
11104-28-2	AROCLOR-1221	5	330	330	U	
11141-16-5	AROCLOR-1232	5	170	170	U	
53469-21-9	AROCLOR-1242	5	170	170	U	
12672-29-6	AROCLOR-1248	5	170	170	U	
11097-69-1	AROCLOR-1254	5	170	170	U	
11096-82-5	AROCLOR-1260	5	140	170	J	

J 14/,7

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	18 3		16 7	110	34 - 129
877-09-8	TETRACHLORO-M-XYLENE	16 7		16 7	100	47 - 137

Report only Aroclor 1016
- see undiluted Form I

NS 6/19/01

Data Package ID: *PT0104220-1*

Lab Batch: 0104220 RIN: 01D0751

GC WORKSHEETS

5503B006

TechLaw

HOLDING TIMES

Method # 8082

Client & Batch #. RF RF # 1292

Validation /Date Alex Schroeder 6/17/01

Review/Date [illegible]

Include samples, dilutions & reanalyses

	#	SAMPLE NUMBER (per COC)	(If Applicable) COC# = Form1 Y/N	*SAMPLE PRE-SERVED Y/N	TEMP 4°C (±2°C) Y/N	CONC LEVEL/ MATRIX	DATE COLLECTED	Extractables DATE EXTRACTED	DATE ANALYZED	Extractables EXT DATE - COLL. DATE	ANAL. DATE - EXT DATE	ANAL. DATE - COLL. DATE	Action Taken Aromatic J(+) UJ(U)	J ALL	J (+) R (U)	COMMENTS ANY PROBLEMS ESP WITH SHIPPING, RECEIPT & SAMPLING CONDITION
-1	1	001.001	Y	N	N	Soil	4/26/01	4/28/01	4/30/01	2	2	—				ALL H-T MET.
-2	2	002.001	↓	↓	↓	↓	↓	↓	↓	2	2	—				
-3	3	003.001								2	2	—				
-4	4	004.001					4/27/01			1	2	—				
-5	5	005.001								1	2	—				
	6															
	7															
20XDIL	8	001 001 RE						4/28/01	5/1/01	2	3	—				
10XDIL	9	002 001 RE						4/28/01	5/1/01	2	3	—				
10XDIL	10	004.001 RE						4/28/01	5/1/01	1	3	—				
5XDIL	11	005.001 RE						4/28/01	5/1/01	1	3	—				
	12															
	13															Cooler = 13°C
	14															Comment
	15															[703]
	16															
	17															
	18															
	19															
	20															
	21															
	22															
	23															
	24															
	25															

For all worksheets (1) If a particular category is "Not Applicable," denote with N/A (2) Calculation checks performed by validators

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Gcwk98 xlsholding

INITIAL CALIBRATION

Include samples, dilutions, reanalyses, spikes & blanks

INITIAL CALIBRATION	DATE CALIBRATED	INSTRUMENT ID/GC COLUMN	RSD ≤ 20 % Y/N	1ST ORD CORR COEF (r) or ^2 ≥ 0.99 Y/N	2ND ORD VALUES TRACEABLE Y/N	CALCULATIONS CHECKS: 1 CF PER I-CAL STD	MIN 1 AVG CF & %RSD	MIN 1 CORR COEFFICIENT	COMMENTS & COMPOUNDS FAILING CRITERIA
I-CAL 1	3/14/01	ECD1 Col.1 & Col.2	1) —	2) Y	3) —	—	—	✓	Linear curve used. Aroclor 1016 & 1260
Associated samples: ALL									No Action
I-CAL 2	3/19/01	ECD1 Col.1 & Col 2	4) —	5) Y	6) —	—	—	✓	Linear Curve used. Aroclor 1254
Associated samples: ALL									No Action
I-CAL 3			7)	8)	9)				
Associated samples									
I-CAL 4			10)	11)	12)				
Associated samples									
I-CAL 5			13)	14)	15)				
Associated samples									
I-CAL 6			16)	17)	18)				
Associated samples									

CONTINUING CALIBRATION

Include samples, dilutions, reanalyses, spikes & blanks

CONTINUING CALIBRATION	DATE & TIME CALIBRATED	INSTRUMENT ID / GC COLUMN	%Ds ≤ 15 % Y/N	OCL. PEST % BRK-DOWN < 20% Y/N	CALCULATIONS CHECKS MIN 1 DAILY CF	MIN 1 %D	MIN 1 % BRK-DOWN	COMMENTS & COMPOUNDS FAILING CRITERIA
C-CAL 1 CCV1 (1254)	4/30/01 14:56	ECD 1 Col.1 & Col 2	1) Y	2) —	—	✓	—	5) Aroclor 1254 = 16% (Col 1 only) No Action since 1254 is "ND" in all samples.
Associated samples								
C-CAL 2 CCV1 (1016 +1260)	4/30/01 15:17	ECD 1 Col. 1 & Col. 2	3) Y	4) —	—	✓	—	
Associated samples								
C-CAL 3 CCV2 (1254)	4/30/01 19 53	ECD 1 Col 1 & Col. 2	5) N	6) —	—	✓	—	
Associated samples #1, #2, #3, #4, #5, LCS, LCSD, MS, MSD								
C-CAL 4 CCV2 (1016 +1260)	4/30/01 20.14	ECD 1 Col. 1 & Col. 2	7) Y	8) —	—	✓	—	
Associated samples #1, #2, #3, #4, #5, LCS, LCSD, MS, MSD								
C-CAL 5 CCV3 (1254)	5/1/01 00 08	ECD 1 Col 1 & Col-2	9) Y	10) —	—	✓	—	
Associated samples → same								
C-CAL 6 CCV3 (1016 +1260)	5/1/01 00·29	ECD 1 Col 1 & Col. 2	11) Y	12) —	—	✓	—	
Associated samples → same								

Q4

(CONT)

CONTINUING CALIBRATION

Include samples, dilutions, reanalyses, spikes & blanks

CONTINUING CALIBRATION	DATE & TIME CALIBRATED	INSTRUMENT ID / GC COLUMN	%Ds ≤ 15 % Y/N	OCL. PEST % BRK-DOWN < 20% Y/N	CALCULATIONS CHECKS MIN 1 DAILY CF	MIN 1 %D	MIN 1 % BRK-DOWN	COMMENTS & COMPOUNDS FAILING CRITERIA
C-CAL 1 CCV1 (1254)	5/1/01 11.48	ECD1 col 1&2	1) Y	2) —	—	✓	—	5) %D = 16 on col. #1 (1254) No Action since 1254 is "ND" in all samples.
Associated samples: #1 RE, #2RE, #4RE, #5RE								
C-CAL 2 CCV1 (1016 & 1260)	5/1/01 12:09	ECD1 col. 1 & 2	3) Y	4) —	—	✓	—	
Associated samples: #1 RE, #2RE, #4RE, #5RE								
C-CAL 3 CCV2 (1254)	5/1/01 16:28	ECD1 col 1&2	5) N	6) —	—	✓	—	
Associated samples: → same								
C-CAL 4 CCV2 (1016 & 1260)	5/1/01 16.49	ECD1 Col. 1 & 2	7) N	8) —	—	✓	—	7) %D = 16% on col #1 (1016) Action J[141] Aroclor 1016 in #5RE only (For all other samples 1016 reported from original run.)
Associated samples: → same								
C-CAL 5			9)	10)				
Associated samples								
C-CAL 6			11)	12)				
Associated samples								

65

BLANKS

Include method, trip, equipment & field blanks

BLANK NUMBER & TYPE (Method, Trip, Equipment, Field)	EXTRACTABLES DATE EXTRACTED	DATE ANALYZED	CORRECT MATRIX & LEVEL Y/N	FREQ-UENCY MET Y/N	ENTER BLANK CONAMINANTS FOLLOWED BY CONCENTRATION	COMMENTS
BLK #/TYPE EX010428-1MB	4/28/01	4/30/01	Y	Y	NONE	No Action
Associated samples ALL						
BLK #/TYPE						
Associated samples						
BLK #/TYPE						
Associated samples						
BLK #/TYPE						
Associated samples						
BLK #/TYPE						
Associated samples						
BLK #/TYPE						
Associated samples						

SURROGATES & INTERNAL STANDARDS

Include samples, dilutions, reanalyses, spikes & blanks which do not met criteria

	#	SAMPLE NUMBER (Include sample number if limits not met)	SURROGATES RECOVERIES WITHIN LIMITS Y/N	IF NOT, RE-EXT / RE-ANAL Y/N	RE-EXT/ RE-ANAL WITHIN LIMITS Y/N	INTERNAL STANDARDS AREAS WITHIN LIMITS MET Y/N	RTS WITHIN LIMITS Y/N	CALC OK	SURROGATES OUTSIDE QC LIMITS*	INTERNAL STANDARDS OUTSIDE QC LIMITS*	ACTIONS/ COMMENTS
	1	001 001	Y	NA	NA			Y			
	2	002 001									comment [142]
	3	003.001									for 3 samples
	4	004 001									(RE only)
	5	005.001									
20X	6	001.001 RE	Dilout	NO					DCB=0 TCK=0		
10X	7	002 001 RE									
10X	8	004 001 RE									
5X	9	005 001 RE	Y	NA							
	10										
	11										
	12										
	13										
	14										
	15										
	16										
	17										
	18										
	19										
	20										
	21										
	22										
	23										
	24										
	25										

*Indicate whether surrogate recovery (or internal standard area) was above or below QC limits Use for extremely low surrogate recoveries (<10%) or internal standard areas(<2x the lower limit)

SPIKES, LFBs, & LCS's

Include matrix spikes & laboratory fortified blanks which do not met spiking criteria

TYPE OF SPIKE (Circle One) & ID NUMBER	DATE & TIME ANALYZED	FREQUENCY CRITERIA MET Y/N	SPIKED AT CORRECT LEVEL Y/N	CALC & TRANS OK Y/N	LIST SPIKING COMPOUNDS OUTSIDE PERCENT RECOVERY CRITERIA (Followed by percent recovery)	LIST MS/MSD SPIKING COMPOUNDS OUTSIDE RPD CRITERIA (Followed by RPD)	ACTIONS/COMMENTS
LFB/MS/MSD/LCS# (LCSD) GX010428-1	4/30/01 20:35 and 20:57	Y	Y	Y	NONE	NONE	No Action (Aroclor 1016 & 1260)
Associated samples: ALL							
LFB/MS/MSD/LCS# 0104220-3	4/30/01 22:22 and 22:43	Y	Y	Y	NONE	None	No Action (Aroclor 1016 & 1260)
Associated samples: ALL							
LFB/MS/MSD/LCS#							
Associated samples							
LFB/MS/MSD/LCS#							
Associated samples							
LFB/MS/MSD/LCS#							
Associated samples							
LFB/MS/MSD/LCS#							
Associated samples							

COMPOUND IDENTIFICATION, QUANTITATION & MDLS

Include samples, dilutions, reanalyses & blanks

#	SAMPLE NUMBER (Include if problems exist)	ID CRITERIA: 1ST COL. RT IN WINDOW Y/N	ID CRITERIA: 2ND COL RT IN WINDOW Y/N	COMMENTS & COMPOUNDS FAILING ID CRITERIA	CALC. CHECKS: MDLS CORRECT Y/N	CALC. CHECKS: CHECK 1-3 HIT(S) PER SAMPLE	CALC. CHECKS: TRANS-CRIPTION ERRORS Y/N	ACTIONS/COMMENTS
1	001 001	Y	Y	None	Y	Y	N	Comment: Various results exceeded the linear calibration range in various samples. Therefore, the results for these compds were reported from the diluted analysis of each sample [155]
2	002.001							
3	003.001							
4	004.001							
5	005.001							
6	001.001 RE							
7	002 001 RE							
8	004.001 RE							
9	005.001 RE							
10								
11								
12								
13								
14								
15								
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18								
19								
20								
21								
22								
23								
24								
25								

For all worksheets. (1) If a particular category is "Not Applicable," denote with N/A (2) Calculation checks performed by validators

SYSTEM PERFORMANCE, DATA COMPLETENESS & ADDITIONAL QC

Include samples for which problems exist.

SYSTEM PERFORMANCE			DATA COMPLETENESS	
#	SAMPLE NUMBER	IDENTIFY FACTORS THAT INDICATE SYSTEM PERFORMANCE PROBLEMS (e g , Baseline Shifts, Large Air Peaks, I S Area Changes, etc.)	SAMPLE NUMBER	OTHER MISSING DATA (including Mass Spectra)

Include field duplicates

ADDITIONAL, QC		
FIELD DUPLICATE SAMPLE NUMBERS	LIST COMPOUNDS WITH RPDs OUTSIDE RPD CRITERIA (followed by RPD)	ACTION/COMMENTS

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SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Kevin Nell 11/6/41

[illegible]	[illegible]	[illegible]
01D0751 (Order # 0104220)	PCBs by SW-846 Method 8082/SS03B006	Validation (RF# 001292)

[illegible]	[illegible]	[illegible]
Paragon Analytics, Inc	TechLaw, Inc	5/solid/B006

Sample Numbers 01D0751-001 001, 01D0751-002 001, 01D0751-003 001, 01D0751-004 001, 01D0751-005 001

Quality Component	Reviewed	Non-Compliance Identified
General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	Y	N
Sample Preservation	Y	Comment 1
Surrogate Recovery	Y	Comment 2
MS/MSD Recovery	Y	N
Sample Results	Y	Comment 3
Calibration	Y	Action Item 1
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	N
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

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Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments Action Items are technical non-compliances that result in qualification of analytical results Data may be qualified as valid (V), estimated (J) presumptively estimated (NJ) estimated at an elevated level of detection (UJ) or rejected (R) Multiple qualifiers may be associated with any given data point based on the number of problems identified, however the assigned qualifier is based upon the following hierarchy R UJ NJ J V All data points that are not qualified based upon action items in this report are considered valid (V) Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data

Action Items:

1 The following detected result was qualified as estimated (J) because the percent drift (%D) on column 1 exceeded 15% in the associated continuing calibration

- Aroclor 1016 in sample 01D0751-005 001RE **[141]**

Comments:

1 The samples were received at the laboratory at 13 degrees Celsius, which exceeds the temperature criteria No action was taken, as the effect of temperature on the samples is unknown **[703]**

2 The recoveries of the surrogates tetrachloro-m-xylene and decachlorobiphenyl were reported as zero percent for samples 01D0751-001 001RE, 01D0751-002 001RE, and 01D0751-004 001RE No action was taken, as these samples were analyzed at dilutions ranging from 10X to 20X and the surrogates were diluted outside the calibration range **[142]**

3 Various results exceeded the linear calibration range in various samples Therefore, the results for these compounds were reported from the diluted analysis of each sample **[155]**

Verification/Validation Signature Dan Schwarz Date 6/20/01

Reviewer Signature Robert J Shellee Date 6/26/01
(*Validation Only*)

12

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COMPANY
ANALYTICAL SERVICES DIVISION

FAX COVER SHEET

RIN NUMBER: NONE

FROM: TOM SZYDLOWSKI

PHONE: (303) 966-8165

FAX: (303) 966-4555

TO: Steve Luker

FAX: 5180

PHONE:

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SW 846 Method 8082
Section 8 QA/QC
PCBs

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injection port temperature to room temperature. Inspect the injection port and remove any noticeable foreign material.

7.11.2.1 Place a beaker beneath the injector port inside the oven. Using a wash bottle, rinse the entire inside of the injector port with acetone and then rinse it with toluene, catching the rinsate in the beaker.

7.11.2.2 Consult the manufacturer's instructions regarding deactivating the injector port body. Glass injection port liners may require deactivation with a silanizing solution containing dimethyldichlorosilane

7.11.3 Column rinsing

The column should be rinsed with several column volumes of an appropriate solvent. Both polar and nonpolar solvents are recommended. Depending on the nature of the sample residues expected, the first rinse might be water, followed by methanol and acetone. Methylene chloride is a good final rinse and in some cases may be the only solvent required. The column should then be filled with methylene chloride and allowed to stand flooded overnight to allow materials within the stationary phase to migrate into the solvent. The column is then flushed with fresh methylene chloride, drained, and dried at room temperature with a stream of ultrapure nitrogen.

8.0 QUALITY CONTROL

8.1 Refer to Chapter One and Method 8000 for specific quality control (QC) procedures Quality control procedures to ensure the proper operation of the various sample preparation techniques can be found in Method 3500. If an extract cleanup procedure was performed, refer to Method 3600 for the appropriate quality control procedures. Each laboratory should maintain a formal quality assurance program. The laboratory should also maintain records to document the quality of the data generated.

8.2 Quality control procedures necessary to evaluate the GC system operation are found in Method 8000, Sec. 7.0 and include evaluation of retention time windows, calibration verification and chromatographic analysis of samples.

8.3 Initial Demonstration of Proficiency - Each laboratory must demonstrate initial proficiency with each sample preparation and determinative method combination it utilizes, by generating data of acceptable accuracy and precision for target analytes in a clean matrix. The laboratory must also repeat the following operations whenever new staff are trained or significant changes in instrumentation are made. See Method 8000, Sec. 8.0 for information on how to accomplish this demonstration.

8.3.1 The QC Reference Sample concentrate (Method 3500) should contain PCBs as Aroclors at 10-50 mg/L for water samples, or PCBs as congeners at the same concentrations. A 1-mL volume of this concentrate spiked into 1 L of organic-free reagent water will result in a sample concentration of 10-50 µg/L. If Aroclors are not expected in samples from a particular source, then prepare the QC reference samples with a mixture of Aroclors 1016 and 1260. However, when specific Aroclors are known to be present or expected in samples, the specific Aroclors should be used for the QC reference sample.

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8.3.1.1 The frequency of analysis of the QC reference sample analysis is equivalent to a minimum of 1 per 20 samples or 1 per batch if less than 20 samples.

8.3.1.2 If the recovery of any compound found in the QC reference sample is less than 80 percent or greater than 120 percent of the certified value, the laboratory performance is judged to be out of control, and the problem must be corrected. A new set of calibration standards should be prepared and analyzed.

8.3.2 Include a calibration standard after each group of 20 samples (it is *recommended* that a calibration standard be included after every 10 samples to minimize the number of repeat injections) in the analysis sequence as a calibration check. The response factors for the calibration should be within 15 percent of the initial calibration. When this continuing calibration is out of this acceptance window, the laboratory should stop analyses and take corrective action.

8.3.3 Whenever quantitation is accomplished using an internal standard, internal standards must be evaluated for acceptance. The measured area of the internal standard must be no more than 50 percent different from the average area calculated during calibration. When the internal standard peak area is outside the limit, all samples that fall outside the QC criteria must be reanalyzed

8.4 Sample Quality Control for Preparation and Analysis - The laboratory must also have procedures for documenting the effect of the matrix on method performance (precision, accuracy, and detection limit). At a minimum, this includes the analysis of QC samples including a method blank, a matrix spike, a duplicate, and a laboratory control sample (LCS) in each analytical batch and the addition of surrogates to each field sample and QC sample.

8.4.1 Documenting the effect of the matrix should include the analysis of at least one matrix spike and one duplicate unspiked sample or one matrix spike/matrix spike duplicate pair. The decision on whether to prepare and analyze duplicate samples or a matrix spike/matrix spike duplicate must be based on a knowledge of the samples in the sample batch. If samples are not expected to contain target analytes, laboratories should use a matrix spike and matrix spike duplicate pair, spiked with the Aroclor 1016/1260 mixture. However, when specific Aroclors are known to be present or expected in samples, the specific Aroclors should be used for spiking. If samples are expected to contain target analytes, then laboratories may use one matrix spike and a duplicate analysis of an unspiked field sample.

8.4.2 A Laboratory Control Sample (LCS) should be included with each analytical batch. The LCS consists of an aliquot of a clean (control) matrix similar to the sample matrix and of the same weight or volume. The LCS is spiked with the same analytes at the same concentrations as the matrix spike. When the results of the matrix spike analysis indicate a potential problem due to the sample matrix itself, the LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

8.4.3 See Method 8000, Sec. 8.0 for the details on carrying out sample quality control procedures for preparation and analysis.

8.5 Surrogate recoveries - The laboratory must evaluate surrogate recovery data from individual samples versus the surrogate control limits developed by the laboratory. See Method 8000, Sec. 8.0 for information on evaluating surrogate data and developing and updating surrogate limits.

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8.6 It is recommended that the laboratory adopt additional quality assurance practices for use with this method. The specific practices that are most productive depend upon the needs of the laboratory and the nature of the samples. Whenever possible, the laboratory should analyze standard reference materials and participate in relevant performance evaluation studies.

9.0 METHOD PERFORMANCE

9.1 The MDL is defined in Chapter One. The MDLs for Aroclors vary in the range of 0.054 to 0.90 µg/L in water and 57 to 70 µg/kg in soils, with the higher MDLs for the more heavily chlorinated Aroclors. Estimated quantitation limits may be determined using the data in Table 1.

9.2 Estimated quantitation limits for PCBs as congeners vary by congener, in the range of 5 - 25 ng/L in water and 160 - 800 ng/kg in soils, with the higher values for the more heavily chlorinated congeners.

9.3 The accuracy and precision obtainable with this method depend on the sample matrix, sample preparation technique, optional cleanup techniques, and calibration procedures used. Table 9 provides single laboratory recovery data for Aroclors spiked into clay and soil and extracted with automated Soxhlet. Table 10 provides multiple laboratory data on the precision and accuracy for Aroclors spiked into soil and extracted by automated Soxhlet.

9.4 During method performance studies, the concentrations determined as Aroclors were larger than those obtained using the congener method. In certain soils, interference prevented the measurement of congener 66. Recoveries of congeners from soils spiked with Aroclor 1254 and Aroclor 1260 were between 80% and 90%. Recoveries of congeners from environmental reference materials ranged from 51 - 66% of the certified Aroclor values.

10.0 REFERENCES

1. Lopez-Avila, V., Baldin, E., Benedicto, J, Milanes, J., Beckert, W.F., Application of Open-Tubular Columns to SW-846 GC Methods", final report to the U.S. Environmental Protection Agency on Contract 68-03-3511, Mid-Pacific Environmental Laboratory, Mountain View, CA, 1990.

2. Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 10 - Pesticides and PCB Report for the U.S. Environmental Protection Agency on Contract 68-03-2606.

3. Ahnoff, M , Josefsson, B., "Cleanup Procedures for PCB Analysis on River Water Extracts", Bull. Environ Contam. Toxicol., 1975, 13, 159.

4. Marsden, P.J., "Performance Data for SW-846 Methods 8270, 8081, and 8141", U.S. Environmental Protection Agency, EMSL-Las Vegas, EPA/600/4-90/015.

5. Marsden, P.J , "Analysis of PCBs", U.S. Environmental Protection Agency, EMSL-Las Vegas, NV, EPA/600/8-90/004.

6. Erickson, M., Analytical Chemistry of PCBs, Butterworth Publishers, Ann Arbor Science Book, (1986).

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7. Stewart, J., "EPA Verification Experiment for Validation of the SOXTEC® PCB Extraction Procedure", Oak Ridge National Laboratory, Oak Ridge, TN, 37831-6138, October 1988.

8. Lopez-Avila, V. (Beckert, W., Project Officer), "Development of a Soxtec Extraction Procedure for Extracting Organic Compounds from Soils and Sediments", EPA 600/X-91/140, U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Las Vegas, NV, October 1991.

9. Stewart, J.H., Bayne, C.K., Holmes, R.L., Rogers, W.F., and Maskarinec, M.P., "Evaluation of a Rapid Quantitative Organic Extraction System for Determining the Concentration of PCB in Soils", Proceedings of the U.S. EPA Symposium on Waste Testing and Quality Assurance, Oak Ridge National Laboratory, Oak Ridge, TN, 37831, July 11-15, 1988.

10. Tsang, S.F., Marsden, P.J., and Lesnik, B., "Quantitation of Polychlorinated Biphenyls Using 19 Specific Congeners", Proceedings of the 9th Annual Waste Testing and Quality Assurance Symposium, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, DC, July 1993.

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ATTACHMENT 2

B111 1ST AND 2ND FLOOR

SAMPLING PACKAGE

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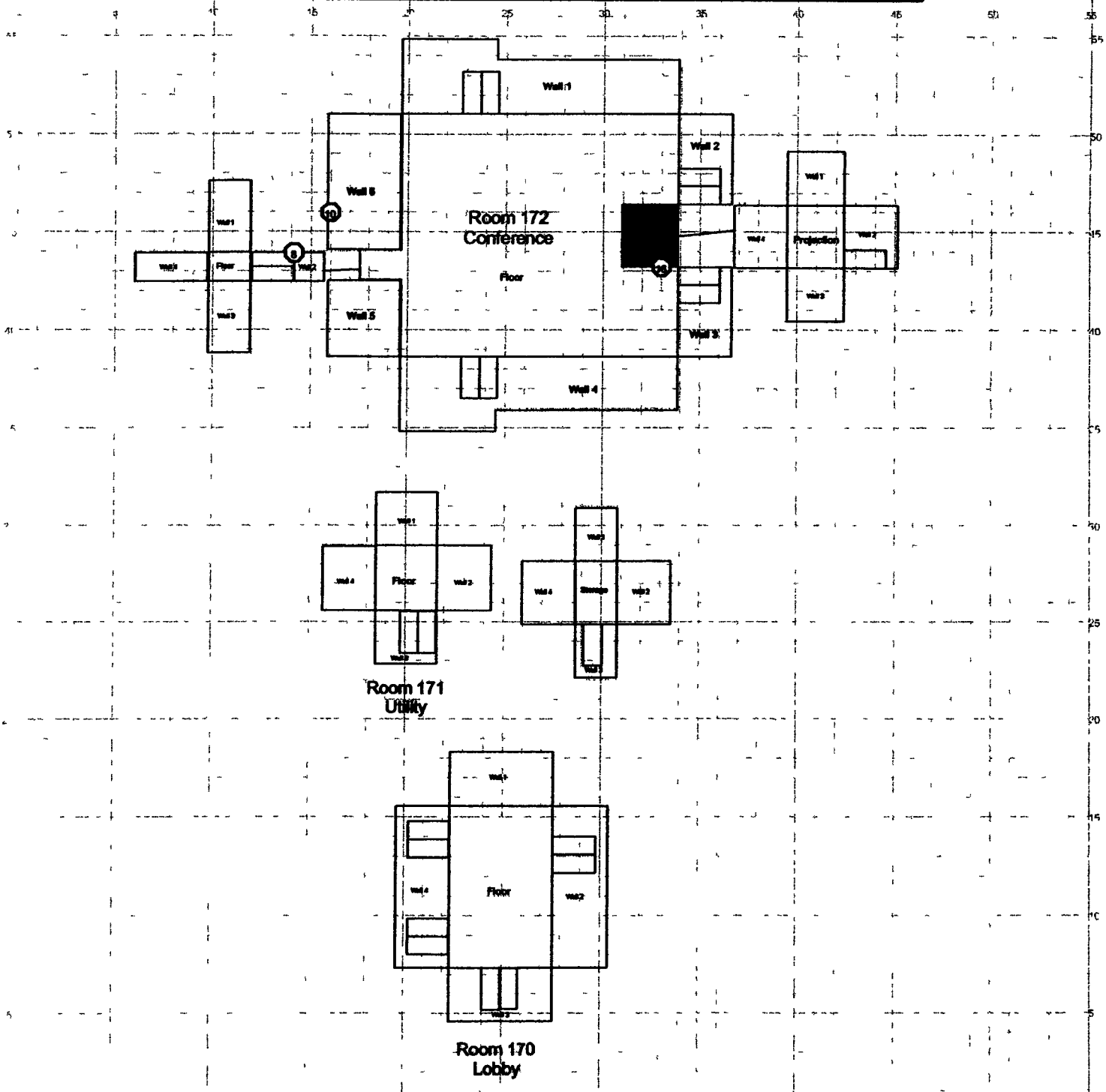
B111 1st & 2nd Floor PCB Paint Sample Results

B111 Sample Breakdown

SAMPLE #	LOCATION	RESULTS (PPM)
01R0160-001	East wall at Rm 206	40
01R0160-002	West side exterior wall, middle	BDL
01R0160-003	Rm 134A	15 (present BDL)
01R0160-004	Room 113	89
01R0160-005	Exterior, west side near door 1	BDL
01R0160-006	Northwest exterior near door 4	BDL
01R0160-007	West exterior near door 3	57
01R0160-008	Auditorium, southwest wall interior	BDL
01R0160-009	Room 112	18 (present BDL)
01R0160-010	Auditorium, northwest wall, interior	BDL
01R0160-011	main hall near room 162	21
01R0160-012	hallway, near room 151	58
01R0160-013	wall at room 214	33
01R0160-014	entrance way of door 1, southeast wall, exterior	BDL
01R0160-015	north exterior, door 1	BDL
01R0160-016	auditorium, east wall, interior	BDL
01R0160-017	room 158D	67
01R0160-018	hallway by door to room 110	31
01R0160-019	room 110	BDL
01R0160-020	hallway wall at room 216	24
01R0160-021	east wall exterior at door 3	22
01R0160-022	main bldg, north wall, exterior	BDL
01R0160-023	duplicate of sample 20	31
01R0160-024	duplicate of sample 11	43
01R0160-025	duplicate of sample 2	BDL

PRE-DEMOLITION SURVEY FOR BUILDING 111

Survey Area N/A **Survey Unit** 111-PCB **Classification** N/A
Building 111
Survey Unit Description Interior Concrete Walls PCB Survey
Total Area N/A **Total Floor Area.** N/A



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCBS Sample Location

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Open/Inaccessible Area

Area in Another Survey Unit

N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

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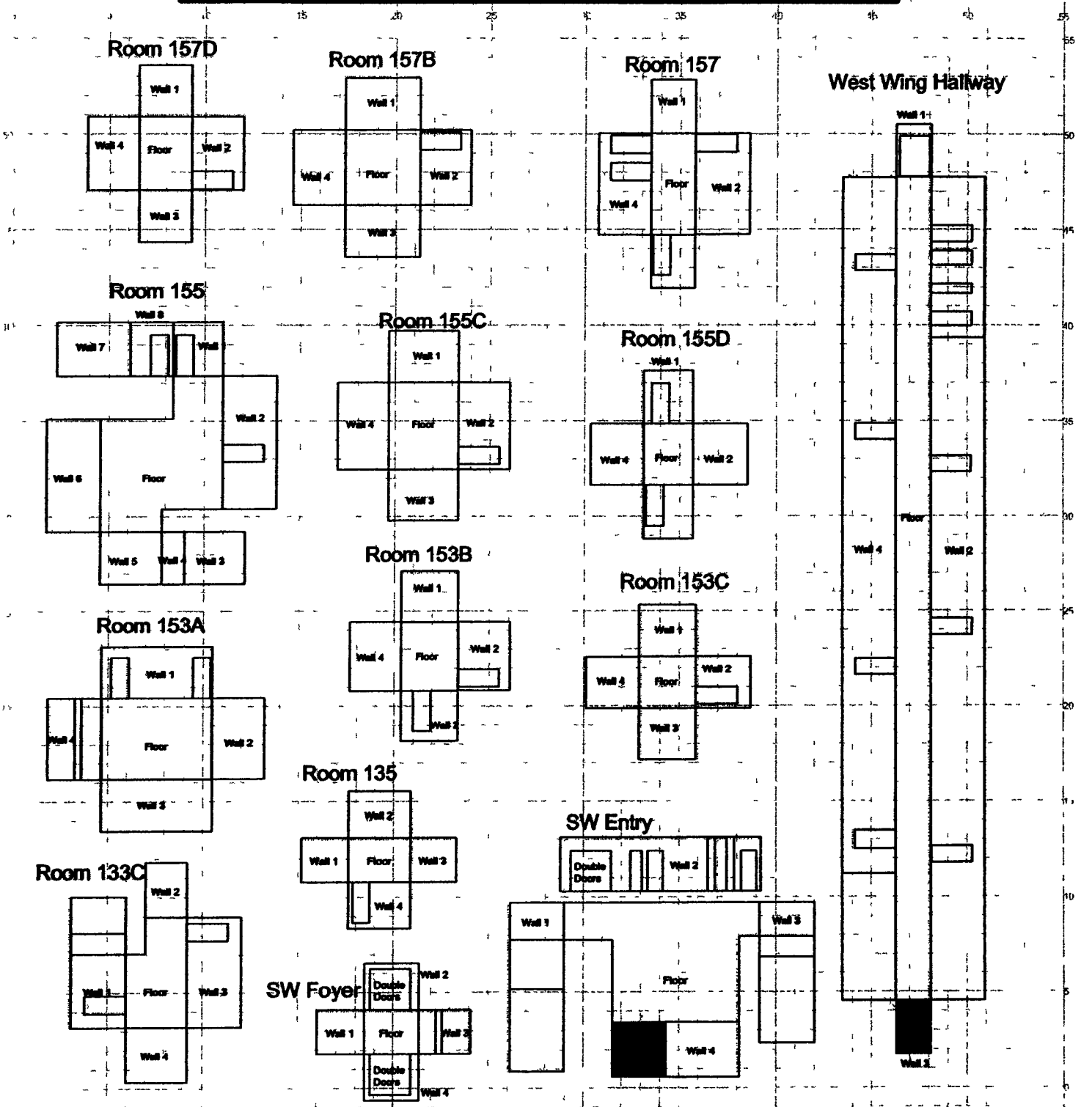
PRE-DEMOLITION SURVEY FOR BUILDING 111

Survey Area N/A **Survey Unit** 111-PCB **Classification** N/A
Building 111
Survey Unit Description Interior Concrete Walls PCB Survey
Total Area. N/A **Total Floor Area.** N/A



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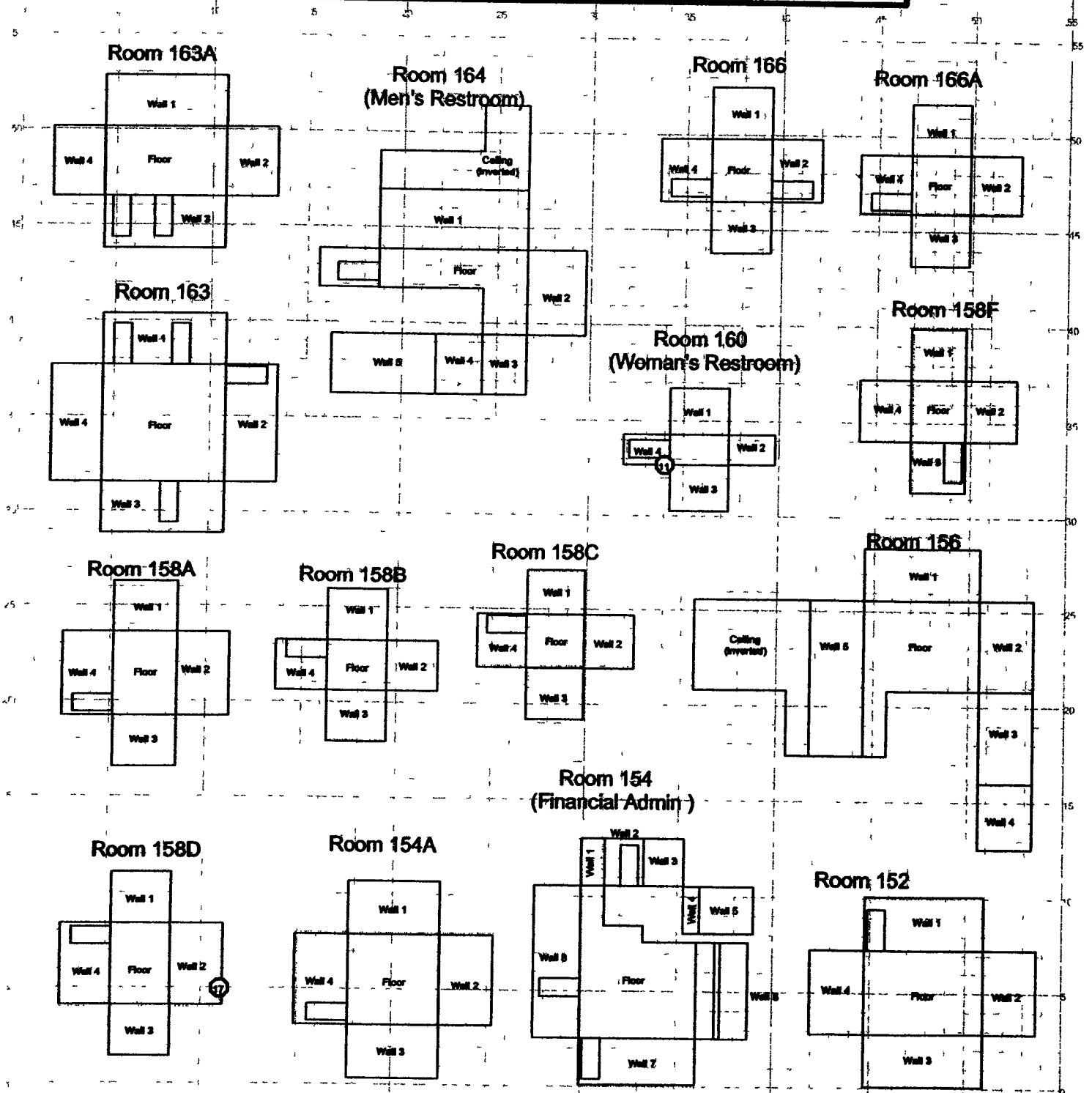

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111-PCB

PRE-DEMOLITION SURVEY FOR BUILDING 111

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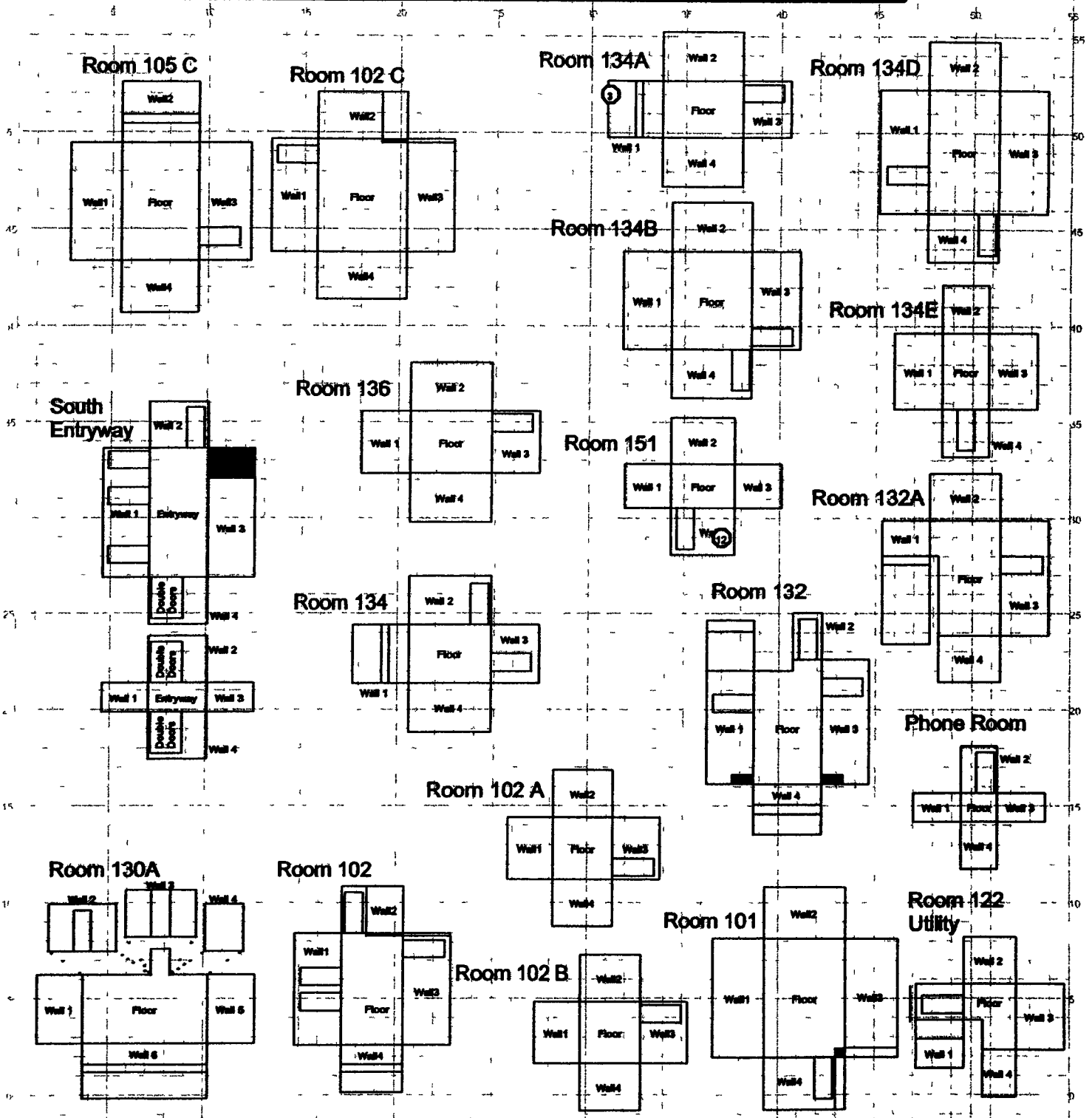
Building 111
Survey Unit Description Interior Concrete Walls PCB Survey
Total Area N/A **Total Floor Area** N/A



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PRE-DEMOLITION SURVEY FOR BUILDING 111

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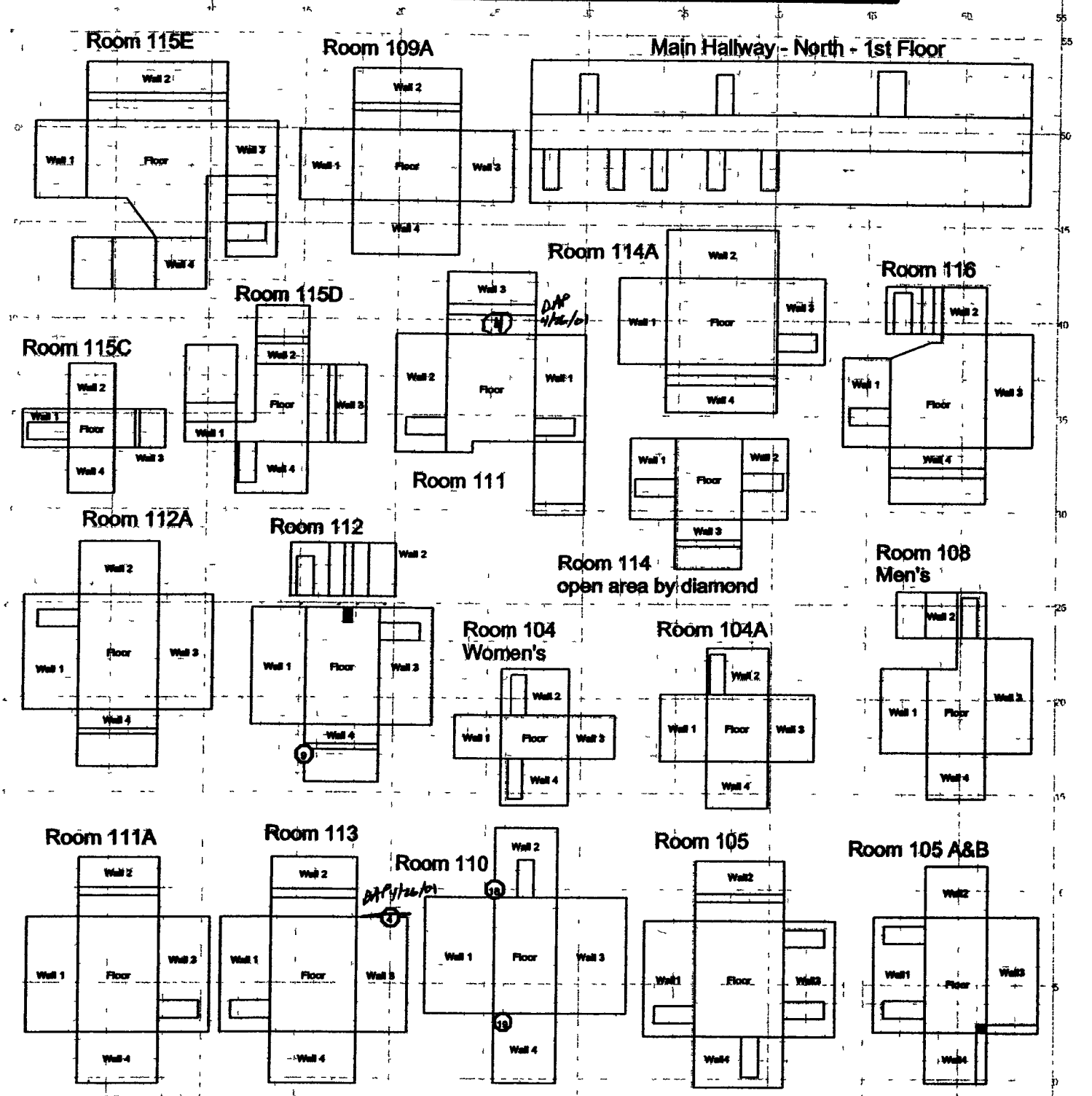
Building 111
Survey Unit Description Interior Concrete Walls PCB Survey
Total Area. N/A **Total Floor Area** N/A



SURVEY MAP LEGEND

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- Lead Sample Location
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- PCBS Sample Location
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111-PCB

PRE-DEMOLITION SURVEY FOR BUILDING 111

Survey Area. N/A **Survey Unit.** 111-PCB **Classification** N/A
Building 111
Survey Unit Description. Interior Concrete Walls PCB Survey
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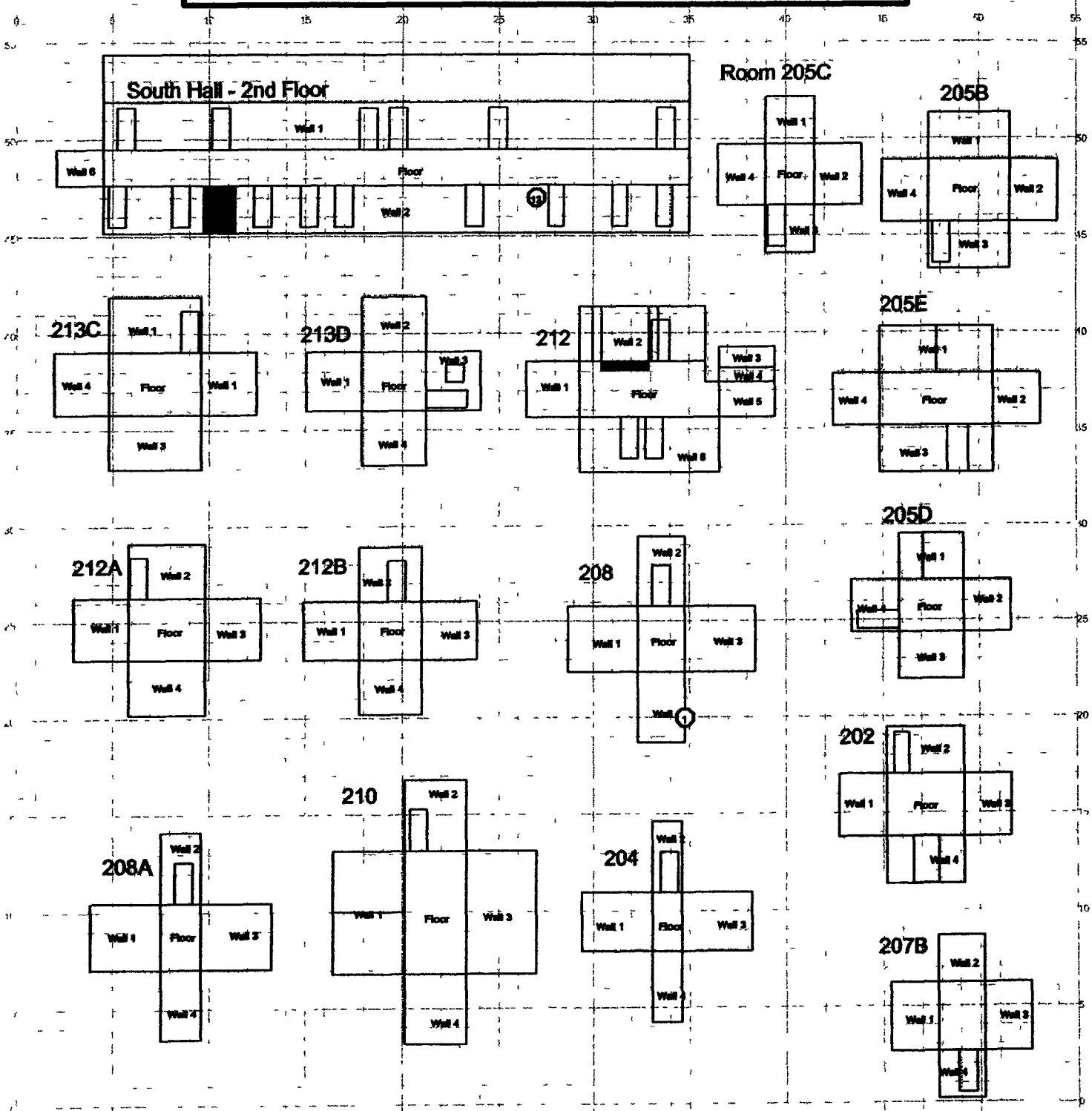

SURVEY MAP LEGEND

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- Lead Sample Location
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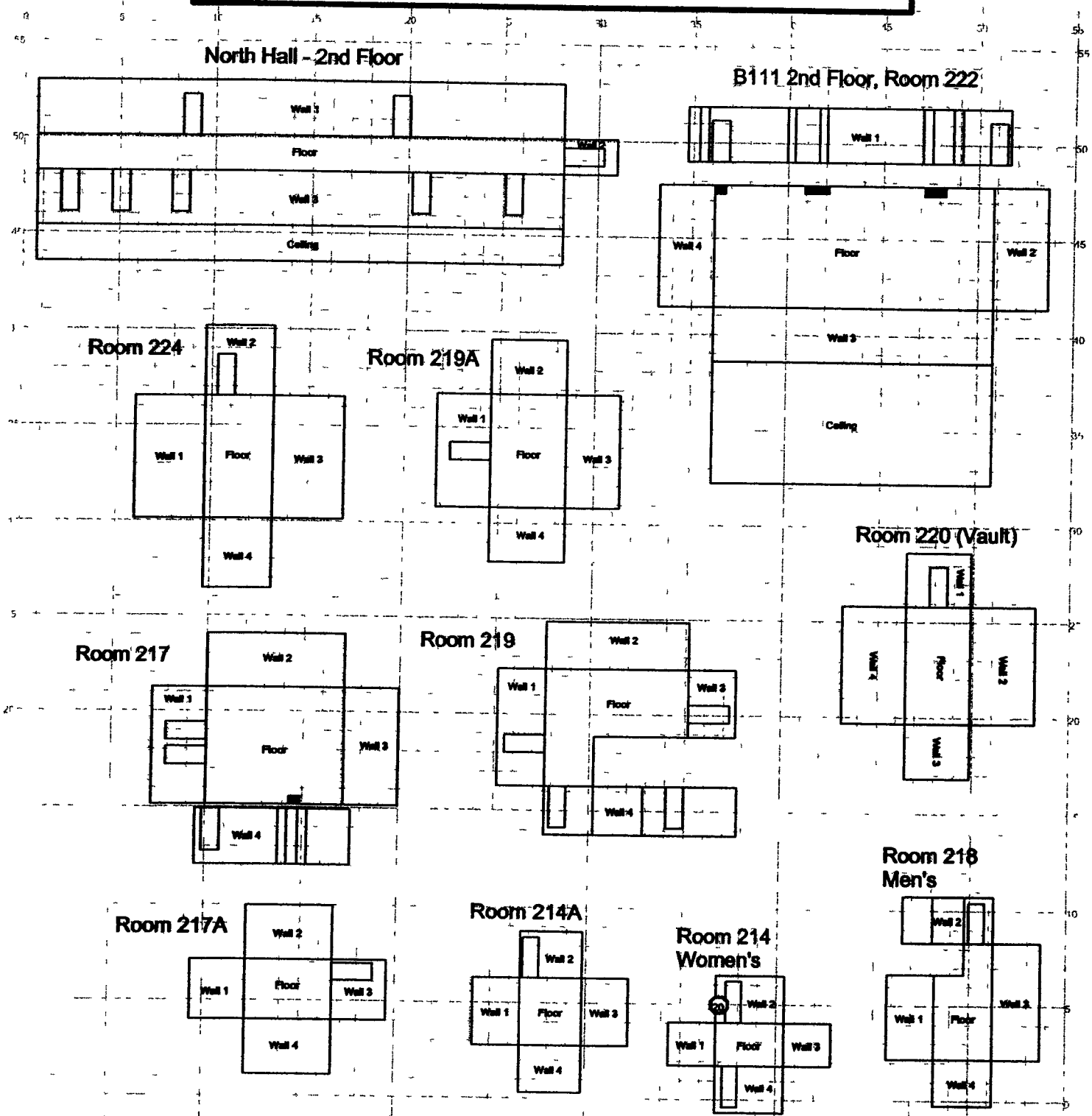
PRE-DEMOLITION SURVEY FOR BUILDING 1

Survey Area. N/A Survey Unit: 111-PCB Classification N/A
Building: 111
Survey Unit Description Interior Concrete Walls PCB Survey
Total Area. N/A Total Floor Area. N/A



SURVEY MAP LEGEND

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- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCBS Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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111-PCB

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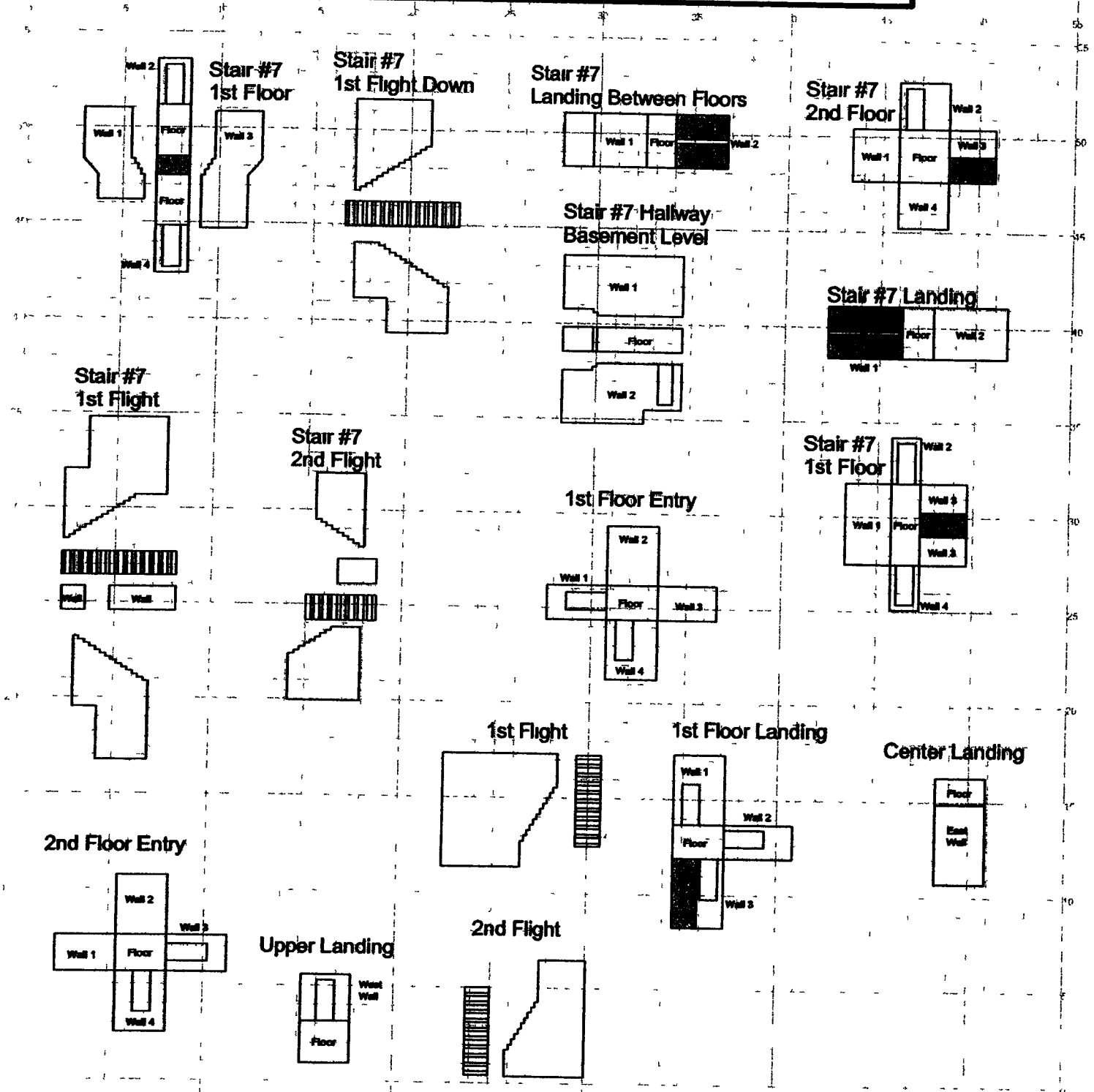
PRE-DEMOLITION SURVEY FOR BUILDING 111

Survey Area N/A **Survey Unit:** 111-PCB **Classification** N/A
Building 111
Survey Unit Description Interior Concrete Walls PCB Survey
Total Area N/A **Total Floor Area** N/A



SURVEY MAP LEGEND

- Asbestos Sample Location
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U.S. Department of Energy
Rocky Flats Environmental Technology Site

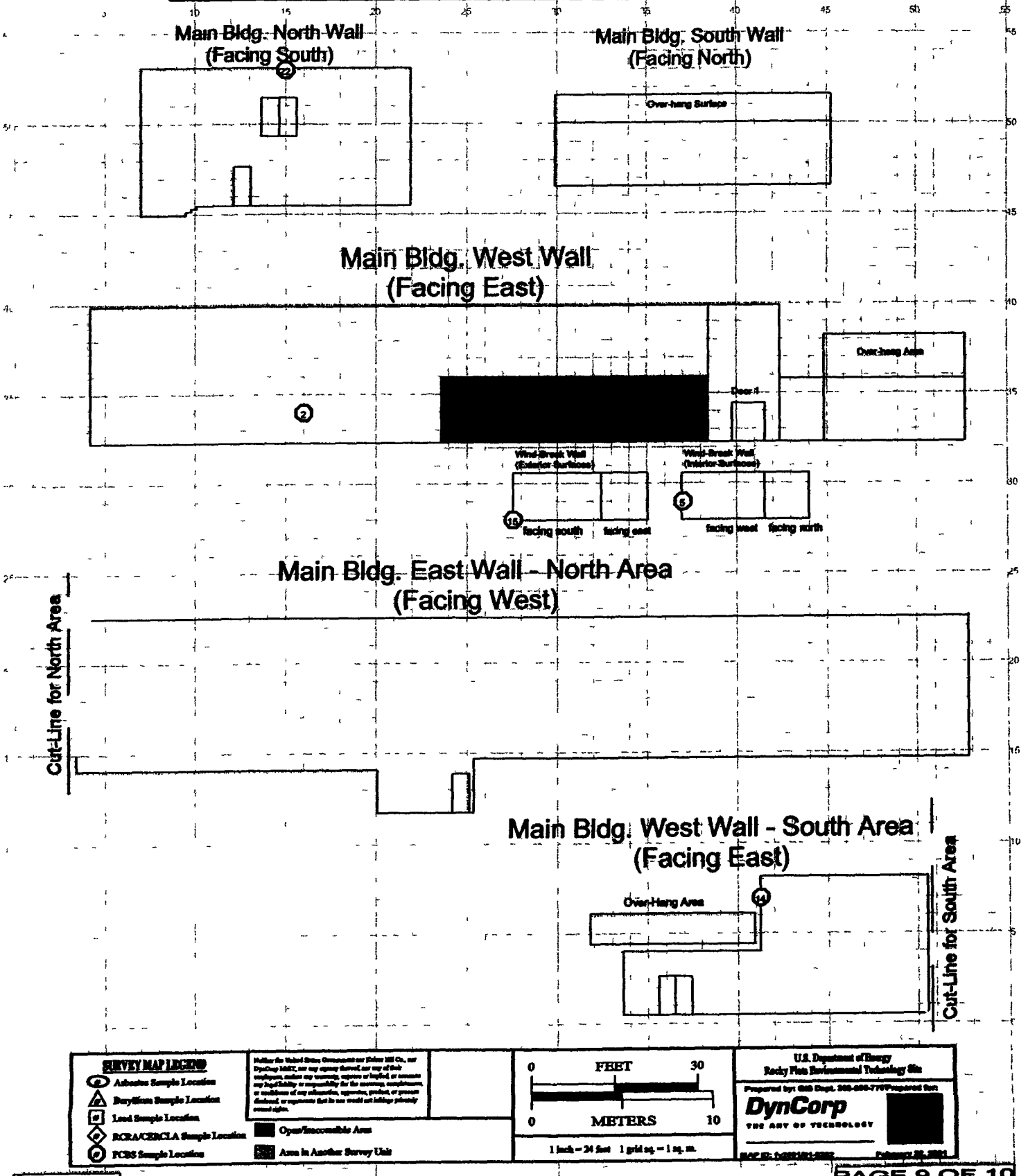
Prepared by: GIS Dept. 303-966-7707 Prepared for:

DynCorp
THE ART OF TECHNOLOGY

MAP ID: [illegible] February 28, 2001

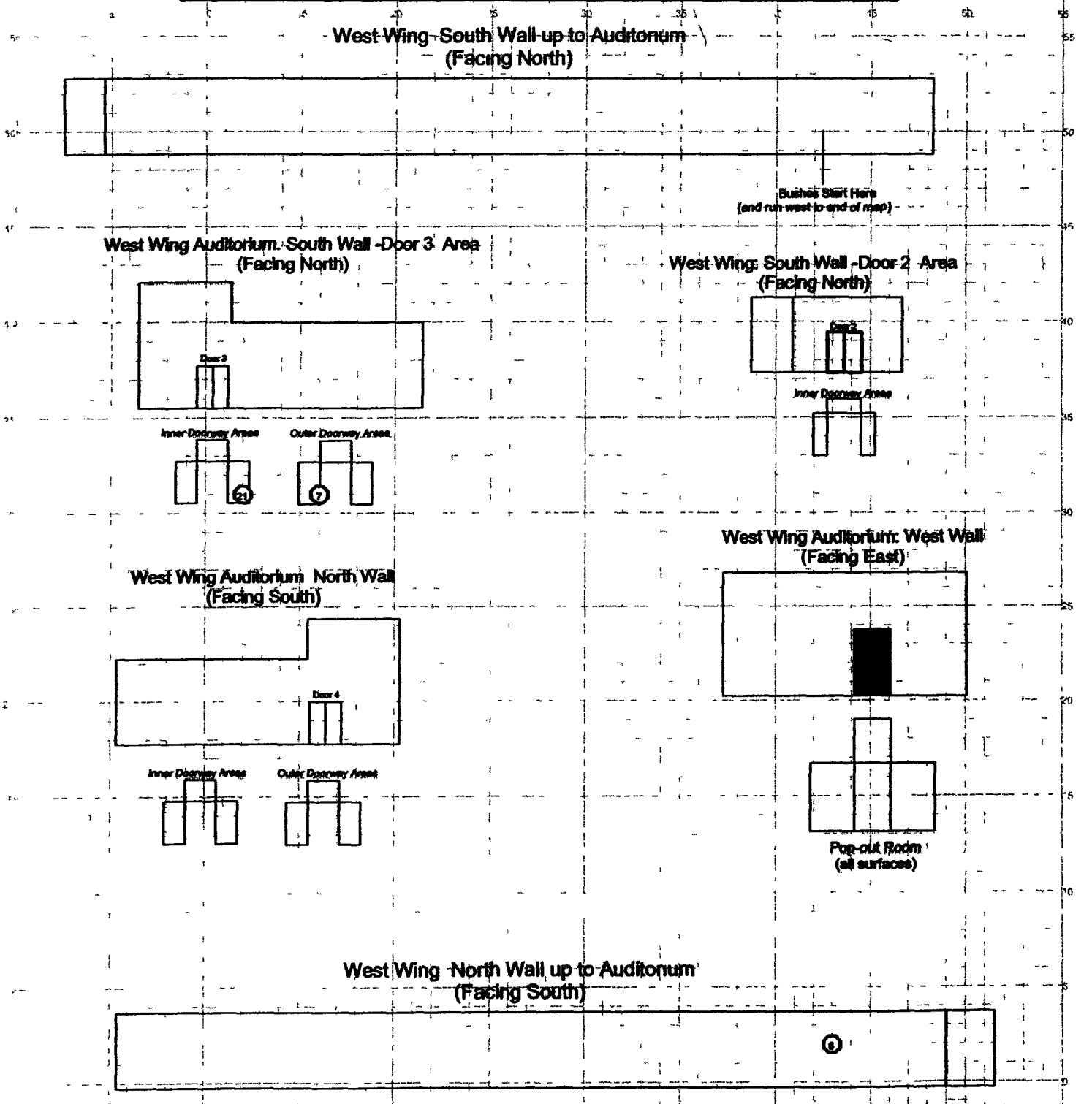
PRE-DEMOLITION SURVEY FOR BUILDING 111

Survey Area N/A **Survey Unit.** 111-PCB **Classification** N/A
Building 111
Survey Unit Description Exterior Concrete Walls PCB Survey
Total Area N/A **Total Floor Area** N/A



PRE-DEMOLITION SURVEY FOR BUILDING 111

Survey Area N/A **Survey Unit.** 111-PCB **Classification** N/A
Building 111
Survey Unit Description Exterior Concrete Walls PCB Survey
Total Area. N/A **Total Floor Area** N/A



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCBS Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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0 FEET 30
0 METERS 10
1 inch = 24 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7700 Prepared for:

DynCorp
THE ART OF TECHNOLOGY

MAP ID: [illegible] February 20, 2001

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SAMPLE SUMMARY FOR RIN: 01R0160

DUD 2,11,20

RIN Title: B111 PAINT CHIP SAMPLING INTERIOR/EXTERIOR
Project Name: Industrial and Site Services Project
Task Name: Decommissioning 100/300/500/900 Area
Aggregate Area:

Sampling Team: CHS
Sampling Mgr/Coordinator: Shawn Knapp
Samplers: CH, SK, RB
Field Logbook ID: 99 Ford
Media: SOLID

This sample summary is supplied to waste generators as notification of sample collection. Inquiries into the status of this sampling effort may be directed to the Analytical Services Division (ASD).

Bottle Number	Customer Bottle Number	Location	LIC (See Attached)	Laboratory	Date Collected	Date Shipped	Time Date Returned	Comments	
01R0160-001.001		B111	1	RECRA Labnet-PA (L)	3/6/01		0910	East wall at room 206	
01R0160-002.001		B111	1	RECRA Labnet-PA (L)	3/7/01		0845	west side middle 33g	EX
01R0160-003.001		B111	1	RECRA Labnet-PA (L)	3/6/01		1015	Rm 134 A 64g	
01R0160-004.001	HOT 89 PPM	B111	1	RECRA Labnet-PA (L)			1240	Rm 113 33g	
01R0160-005.001		B111	1	RECRA Labnet-PA (L)			1458	West door 1 30g	EX
01R0160-006.001		B111	1	RECRA Labnet-PA (L)	3/7/01		0835	N.W by door 4 43g	EX
01R0160-007.001	54 PPM	B111	1	RECRA Labnet-PA (L)	3/6/01		1415	West Door 3 32g	EX
01R0160-008.001		B111	1	RECRA Labnet-PA (L)			1320	Conference Rm S.W 37g	
01R0160-009.001		B111	1	RECRA Labnet-PA (L)			1430	Rm 112 56g	
01R0160-010.001		B111	1	RECRA Labnet-PA (L)			1348	Conference Rm N.W 60g	
01R0160-011.001		B111	1	RECRA Labnet-PA (L)			1409	main Hall by Rm 162 30g	
01R0160-012.001	58 PPM	B111	1	RECRA Labnet-PA (L)			1030	wall by rm 151 32g	
01R0160-013.001		B111	1	RECRA Labnet-PA (L)			0920	wall at room 214	59
01R0150-014.001		B111	1	RECRA Labnet-PA (L)			1458	entrance of door 1 to South Pat	EX
01R0160-015.001		B111	1	RECRA Labnet-PA (L)			1455	North exterior door 1 64g	EX
01R0160-016.001		B111	1	RECRA Labnet-PA (L)			1320	Conference Rm East 49g	
01R0160-017.001	67 PPM	B111	1	RECRA Labnet-PA (L)			1050	Rm 158 D 41g	
01R0160-018.001		B111	1	RECRA Labnet-PA (L)			1105	Hallway by doorway 110 - 45g	
01R0160-019.001		B111	1	RECRA Labnet-PA (L)			1320	Room 110 32g	
01R0160-020.001		B111	1	RECRA Labnet-PA (L)			0930	wall at room 216 50g	
01R0160-021.001		B111	1	RECRA Labnet-PA (L)			1430	East door 3 55g	EX

Date: 3/1/01 12:42:04 PM

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Bottle Number	Customer Bottle Number	Location	LIC (See Attached)	Laboratory	Date Collected	Date Shipped	Date Returned	Comments
01R0160-022.001		B111	1	RECRA Labnet-PA (L)	3/7/01		0900	N. side door 439
01R0160-023.001		B111	1	RECRA Labnet-PA (L)	3/6/01		0930	Dup of event 20 709
01R0160-024.001		B111	1	RECRA Labnet-PA (L)	↓		1409	Dup of event 11 309
01R0160-025.001		B111	1	RECRA Labnet-PA (L)	3/7/01		0835	Dup of event 2 319 (EX)

Returning Excess Sample Material.

Unmodified sample material remaining after analysis is generally returned to the generator. The generator must be prepared to receive and dispose of excess sample material for applicable state and federal regulations. Regulatory exclusions for returning excess sample material are specified in the Code of Colorado Regulation (CCR) 1007-3, Part 261.4(d) 'Samples'. If problems with the disposal of excess sample material are encountered, the Environmental Coordinator for the generation area should be contacted for resolution of the issues. Only sample material which has not been modified during analysis will be returned. Material which has been acidified for preservation purposes will not be returned.

Customer Acknowledgement _____
(Sign and Print Name)

Comments.

Line Item Codes:

1) SS03B006 (PCB 8060A/8081-Soil)

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Lionville Laboratory, Inc.

PCBs by GC

Report Date. 03/27/01 13:16

RFW Batch Number: 0103L226 Client: K-H RIN#01R0160 Work Order: 11830001001 Page: 1

Sample Information													
Cust ID:	01R0160-002. 001		01R0160-006. 001		01R0160-022. 001		01R0160-025. 001		01R0160-001. 001		01R0160-003. 001	
RFW#:	001		002		003		004		005		006	
Matrix:	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
D.F.:	20.0		20.0		20.0		20.0		20.0		20.0	
Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate: Tetrachloro-m-xylene	D	%	D	%	D	%	D	%	D	%	D	%
Decachlorobiphenyl	D	%	D	%	D	%	D	%	D	%	D	%
		fl		fl		fl		fl		fl		fl
Aroclor-1016	20000	U	20000	U	19000	U	19000	U	20000	U	20000	U
Aroclor-1221	39000	U	40000	U	38000	U	38000	U	40000	U	40000	U
Aroclor-1232	20000	U	20000	U	19000	U	19000	U	20000	U	20000	U
Aroclor-1242	20000	U	20000	U	19000	U	19000	U	20000	U	20000	U
Aroclor-1248	20000	U	20000	U	19000	U	19000	U	20000	U	12000	J
Aroclor-1254	20000	U	20000	U	19000	U	19000	U	20000	U	20000	U
Aroclor-1260	20000	U	20000	U	19000	U	19000	U	40000		15000	J

Sample Information													
Cust ID:	01R0160-004. 001		01R0160-005. 001		01R0160-007. 001		01R0160-008. 001		01R0160-009. 001		01R0160-010. 001	
RFW#:	007		008		009		010		011		012	
Matrix:	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
D.F.:	20.0		20.0		20.0		20.0		20.0		20.0	
Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Tetrachloro-m-xylene	D	%	D	%	D	%	D	%	D	%	D	%
Decachlorobiphenyl	D	%	D	%	D	%	D	%	D	%	D	%
		fl		fl		fl		fl		fl		fl
Aroclor-1016	20000	U	19000	U	18000	U	20000	U	20000	U	19000	U
Aroclor-1221	40000	U	37000	U	36000	U	39000	U	39000	U	38000	U
Aroclor-1232	20000	U	19000	U	18000	U	20000	U	20000	U	19000	U
Aroclor-1242	20000	U	19000	U	18000	U	20000	U	20000	U	19000	U
Aroclor-1248	20000	U	19000	U	18000	U	20000	U	20000	U	19000	U
Aroclor-1254	20000	U	19000	U	57000		20000	U	20000	U	19000	U
Aroclor-1260	89000		19000	U	18000	U	20000	U	18000	J	19000	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Lionville Laboratory, Inc.

PCBs by GC

Report Date: 03/27/01 13:16

RFW Batch Number: 0103L226 Client: K-H RINW01R0160 Work Order: 11830001001 Page: 2

	Cust ID:	01R0160-011. 001	01R0160-012. 001	01R0160-013. 001	01R0160-014. 001	01R0160-015. 001	01R0160-016. 001
Sample Information	RFW#:	013	014	015	016	017	018
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	20.0	20.0	20.0	20.0	20.0	20.0
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	D %	D %	D %	D %	D %	D %
	Decachlorobiphenyl	D %	D %	D %	D %	D %	D %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		20000 U	19000 U	19000 U	20000 U	19000 U	20000 U
Aroclor-1221		39000 U	38000 U	38000 U	39000 U	38000 U	39000 U
Aroclor-1232		20000 U	19000 U	19000 U	20000 U	19000 U	20000 U
Aroclor-1242		20000 U	19000 U	19000 U	20000 U	19000 U	20000 U
Aroclor-1248		20000 U	19000 U	19000 U	20000 U	19000 U	20000 U
Aroclor-1254		20000 U	19000 U	19000 U	20000 U	19000 U	20000 U
Aroclor-1260		21000	58000	33000	20000 U	19000 U	20000 U

	Cust ID.	01R0160-017. 001	01R0160-018. 001	01R0160-019. 001	01R0160-020. 001	01R0160-021. 001	01R0160-023. 001
Sample Information	RFW#:	019	020	021	022	023	024
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	20.0	20.0	20.0	20.0	20.0	20.0
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	D %	D %	D %	D %	D %	D %
	Decachlorobiphenyl	D %	D %	D %	D %	D %	D %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		19000 U	19000 U	20000 U	19000 U	19000 U	20000 U
Aroclor-1221		38000 U	37000 U	39000 U	38000 U	38000 U	39000 U
Aroclor-1232		19000 U	19000 U	20000 U	19000 U	19000 U	20000 U
Aroclor-1242		19000 U	19000 U	20000 U	19000 U	19000 U	20000 U
Aroclor-1248		19000 U	19000 U	20000 U	19000 U	19000 U	20000 U
Aroclor-1254		19000 U	19000 U	20000 U	19000 U	22000	20000 U
Aroclor-1260		67000	31000	20000 U	24000	19000 U	31000

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
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Lionville Laboratory, Inc.

PCBs by GC

Report Date: 03/27/01 13:16

RPW Batch Number: 01C3L226 Client: K-H RIN#01R0160 Work Order: 11330001001 Page: 3

	Cust ID:	01R0160-024.001	PBLKSD	PBLKSD BS	PBLKSD BSD	PBLKSE	PBLKSE BS
Sample Information	RPW#:	025	01LE0285-MB1	01LE0285-MB1	01LE0285-MB1	01LE0286-MB1	01LE0286-MB1
	Matrix:	SOLID	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	20.0	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		D %	90 %	82 %	42 %	85 %	100 %
Decachlorobiphenyl		D %	83 %	81 %	39 %	85 %	96 %
Aroclor-1016		19000 U	170 U	170 U	170 U	1000 U	1000 U
Aroclor-1221		38000 U	330 U	330 U	330 U	2000 U	2000 U
Aroclor-1232		19000 U	170 U	170 U	170 U	1000 U	1000 U
Aroclor-1242		19000 U	170 U	170 U	170 U	1000 U	1000 U
Aroclor-1248		19000 U	170 U	170 U	170 U	1000 U	1000 U
Aroclor-1254		19000 U	170 U	87 %	47 %	1000 U	86 %
Aroclor-1260		43000	170 U	170 U	170 U	1000 U	1000 U

	Cust ID:	PBLKSE BSD
Sample Information	RPW#:	01LE0286-MB1
	Matrix	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate: Tetrachloro-m-xylene		88 %
Decachlorobiphenyl		88 %
Aroclor-1016		1000 U
Aroclor-1221		2000 U
Aroclor-1232		1000 U
Aroclor-1242		1000 U
Aroclor-1248		1000 U
Aroclor-1254		88 %
Aroclor-1260		1000 U

U= Analyzed, not detected. J= Present below detection limit B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Enabling Technology, Inc

RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# 01R0160#001

Page 1 of 3

Sampler: [redacted]	Contact/Requester: KNAPP, SHAUN/JOHNSEN, SHELLY	Telephone No.: 7821/6401
RIN: 01R0160	Sampling Origin: B111	Purchase Order/Charge Code: EFD20220
Project Title: B111 PAINT CHIP SAMPLING INTERIOR/EXTERIOR	Logbook No.: 99 ford	Ice Chest No.: NA Temp.: NA
To (Lab): RECRA Labnet-PA (L)	Method of Shipment: Sample Team	Bill of Lading/Air Bill No.: NA
Protocol: CAS.SOP.003 Rev. 3	Related COC (if any): NA	PRE: 1

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

Bottle No	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative, Packing
01R0160-001.001		SOLID	3/06/01	0910	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-002.001		SOLID		CXL	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None ~~4 degrees C~~
01R0160-003.001		SOLID	3/06/01	1015	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-004.001		SOLID		1240 1458	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-005.001		SOLID		1458	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-006.001		SOLID		CXL	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-007.001		SOLID	3/06/01	1415	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
[signature]	3/6/01 1530	B111 Conference Rm	3/6/01 1530				
B111 Conference Rm	3/7/01 0830	[signature]	3/7/01 0830				

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)	Disposed By	Date/Time

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Enabling Technology, Inc

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# 01R0160#001

RIN 01R0160

Contact/Requestor KNAPP, SHAUN/JOHNSEN, SHELLY

Telephone No. 7828/6401

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative, Packing
01R0160-008 001		SOLID	3/06/01	1350	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-009 001		SOLID		1430	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-010.001		SOLID		1345	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-011.001		SOLID		1409	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-012 001		SOLID		1030	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-013 001		SOLID		0920	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-014 001		SOLID		1458	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-015 001		SOLID		1455	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-016 001		SOLID		1350	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-017.001		SOLID		1050	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-018 001		SOLID		1105	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
[illegible]	3/6/01 1530	B111 Conference Rm	3/6/01 1530				
B111 Conference Rm	3/7/01 0850	[illegible]	3/7/01 0850				

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)	Disposed By	Date/Time

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Enabling Technology, Inc

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# 01R0160#001

Page 3 of 3

RIN 01R0160

Contact/Requestor KNAPP, SHAUN/JOHNSEN, SHELLY

Telephone No. 7828/6401

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (type/quantity)	Sample Analysis	Preservative, Packing
01R0160-019.001		SOLID		1320	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-020 001		SOLID		0930	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-021 001		SOLID		1430	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
~~01R0160-022 001~~		SOLID	CEH		B111	30-G / G /1	~~SS03B006 (PCB 8080A/8081-Soil) [Priority]~~	None 4 degrees C
01R0160-023.001		SOLID		0930	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-024 001		SOLID		1409	B111	30-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
~~01R0160-025 001~~		SOLID	CEH		B111	30-G / G /1	~~SS03B006 (PCB 8080A/8081-Soil) [Priority]~~	None 4 degrees C
				CEH 3/06/01				

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
CEHuntt	3/6/01 1530	Bldg 111 Conference Rm	3/6/01 1530				
Bldg 111 Conference Rm	3/7/01 0830	CEHuntt	3/7/01 0830				

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)	Disposed By	Date/Time

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Commodore Advanced Sciences, Inc. REETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C.# 01R0160#002 Page 1 of 1

Sampler: [redacted]	Contact/Requester: JOHNSEN, SHELLY	Telephone No.: 6401
RIN: 01R0160	Sampling Origin:	Purchase Order/Charge Code: FFD00220
Project Title: B111 PAINT CHIP SAMPLING INTERIOR/EXTERIOR	Logbook No.: ~99 Van	Ice Chest No.: NA Temp.: NA
To (Lab): RECRA Labnet-PA (L)	Method of Shipment: Sample Team	Bill of Lading/Air Bill No.: NA
Protocol: CASSOP.003 Rev3	Related COC (if any): 01R0160.001	PRE

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED: ☐

SPECIAL INSTRUCTIONS Hold Time

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative, Package
01R0160-002 001		SOLID	3/7/01	0845	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-006.001		SOLID		3/7/01 0835	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-022 001		SOLID		0900	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C
01R0160-025 001		SOLID		0845	B111	30-G / G / 1	SS03B006 (PCB 8080A/8081-Soil) [Priority]	None 4 degrees C

AGU 3/7/01

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
CS Hunger	3/6/01 1530	B111 Conference Rm	3/6/01 1530				
B111 Conference Rm	3/7/01 0830	CS Hunger	3/7/01 0850				

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process) Disposed By Date/Time

98

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name Lionville Labs, Inc. Contract: 1830-01-01

Case No K-H RIN#01R0160 RFW Lot No 0103L226

MATRIX Spike - Sample No.: PBLKSDLD0285-MB1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
Aroclor-1254	625	0	545	87	30 -146

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Aroclor-1254	625	293	47	59 *	50	30 -146

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD 1 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS:

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3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name. Lionville Labs, Inc Contract- 1830-01-01

Case No. K-H RIN#01R0160 RFW Lot No.: 0103L226

MATRIX Spike - Sample No PBLKSELF0286-MB1 Level (low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
Aroclor-1254	3750	0	3240	86	30 -146

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Aroclor-1254	3750	3300	88	2	50	30 -146

Acceptable

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-002 001

Lab Name Lionville Labs. Inc. Work Order 11830001001

Client: K-II RIN#01R0160

Matrix SOLID

Lab Sample ID 0103L226-001

Sample wt/vol: 5 10 (g/mL) G

Lab File ID. 03240105.22

Level: (low/med) LOW

Date Received. 03/09/01

% Moisture: not dec. 100 dec.

Date Extracted· 03/14/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup. (Y/N) N pH: 7.0

Dilution Factor: 20.0

CAS NO	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	39000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	20000	U

FORM 1 PEST 12/88 Rev

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-006 001

Lab Name: Lionville Labs, Inc. Work Order 11830001001

Client: K-H RIN#01R0160

Matrix SOLID

Lab Sample ID: 01031L226-002

Sample wt/vol: 5.00 (g/mL) G

Lab File ID. 03240105 23

Level. (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec. 100 dec.

Date Extracted: 03/14/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 20.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	40000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	20000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
01R0160-027.001

Lab Name. Lionville Labs, Inc. Work Order: 11830001001

Client K-H RINH01R0160

Matrix SOLID

Lab Sample ID 0103L226-003

Sample wt/vol: 5.20 (g/mL) G

Lab File ID 03240105.24

Level (low/med) LOW

Date Received 03/09/01

% Moisture: not dec. 100 dec

Date Extracted: 03/14/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup (Y/N) N pH: 7.0

Dilution Factor. 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO	COMPOUND		
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	38000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	19000	U
11096-82-5	Aroclor-1260	19000	U

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1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

01R0160-025.001

Lab Name. Lionville Labs, Inc Work Order: 11830001001

Client K-H RIN#01R0160

Matrix SOLID

Lab Sample ID: 01031L226-004

Sample wt/vol 5.30 (g/mL) G

Lab File ID: 03240105.25

Level: (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec. 100 dec

Date Extracted: 03/14/01

Extraction. (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH 7.0

Dilution Factor: 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO	COMPOUND		
12674-11-2------	Aroclor-1016	19000	U
11104-28-2------	Aroclor-1221	38000	U
11141-16-5------	Aroclor-1232	19000	U
53469-21-9------	Aroclor-1242	19000	U
12672-29-6------	Aroclor-1248	19000	U
11097-69-1------	Aroclor-1254	19000	U
11096-82-5------	Aroclor-1260	19000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0160-001 001

Lab Name: Lionville Labs, Inc. Work Order: 11830001001

Client K-H RIN#01R0160

Matrix: SOLID Lab Sample ID 01031276-005

Sample wt/vol: 5.00 (g/mL) G Lab File ID. 03240105.26

Level (low/med) LOW Date Received. 03/09/01

% Moisture, not dec. 100 dec Date Extracted 03/14/01

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed 03/25/01

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 20.0

CAS NO	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	40000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	40000	

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-003 001

Lab Name Lionville Labs, Inc. Work Order 11830001001

Client K-H RIN#01R0160

Matrix SOLID

Lab Sample ID. 0103L226-006

Sample wt/vol. 5.00 (g/mL) G

Lab File ID: 03240105.27

Level: (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec. 100 dec.

Date Extracted: 03/14/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup (Y/N) N pH: 7.0

Dilution Factor: 20.0

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	40000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	12000	J
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	15000	J

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-004.001

Lab Name Lionville Labs, Inc. Work Order 11830001001

Client: K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID. 01031226-007

Sample wt/vol: 5 00 (g/mL) G

Lab File ID 03240105.28

Level: (low/med) LOW

Date Received. 03/09/01

% Moisture: not dec. 100 dec.

Date Extracted. 03/14/01

Extraction: (Sept/Cont/Sonc) SONC

Date Analyzed 03/25/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	40000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	89000	

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PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-005.001

Lab Name Lionville Labs, Inc. Work Order: 11830001001

Client K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID: 0103L226-008

Sample wt/vol 5.40 (g/mL) G

Lab File ID 03240105.31

Level: (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec 100 dec.

Date Extracted. 03/14/01

Extraction. (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH. 7.0

Dilution Factor. 20.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	37000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	19000	U
11096-82-5	Aroclor-1260	19000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-007 001

Lab Name: Lionville Labs, Inc Work Order: 11830001001

Client K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID: 0103L226-009

Sample wt/vol: 5.50 (g/mL) G

Lab File ID 03240105.37

Level: (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec. 100 dec

Date Extracted: 03/14/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor. 20.0

CAS NO.	COMPOUND	CONCENTRATION UNITS. (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	18000	U
11104-28-2	Aroclor-1221	36000	U
11141-16-5	Aroclor-1232	18000	U
53469-21-9	Aroclor-1242	18000	U
12672-29-6	Aroclor-1248	18000	U
11097-69-1	Aroclor-1254	57000	
11096-82-5	Aroclor-1260	18000	U

KB 5/29/01

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-008 001

Lab Name Lionville Labs, Inc. Work Order 11830001001

Client: K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID 0103L226-010

Sample wt/vol. 5.10 (g/mL) G

Lab File ID: 03240105.33

Level (low/med) LOW

Date Received 03/09/01

% Moisture: not dec. 100 dec

Date Extracted. 03/14/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH: 7 0

Dilution Factor: 20.0

CAS NO	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	39000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	20000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-009 001

Lab Name Lionville Labs, Inc. Work Order 11830001001

Client K-H RIN#01R0160

Matrix. SOLID

Lab Sample ID 0103L226-011

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: 03240105.34

Level. (low/med) LOW

Date Received: 03/09/01

% Moisture not dec 100 dec.

Date Extracted: 03/14/01

Extraction (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH 7.0

Dilution Factor: 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	39000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	18000	J

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-010 001

Lab Name Lionville Labs, Inc. Work Order 11830001001

Client. K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID 0103L226-012

Sample wt/vol: 5.30 (g/mL) G

Lab File ID 03240105.35

Level (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec. 100 dec

Date Extracted 03/14/01

Extraction (SepF/Cont/Sonc) SONC

Date Analyzed. 03/25/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 20.0

CAS NO	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	38000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	19000	U
11096 82-5	Aroclor-1260	19000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLILN1 SAMPLE NO
01R0160-011 001

Lab Name Lionville Labs, Inc Work Order 11830001001

Client K-H RIN401R0160

Matrix SOLID

Lab Sample ID 0103L226-013

Sample wt/vol 5.10 (g/mL) G

Lab File ID 03240105.36

Level (low/med) LOW

Date Received. 03/09/01

% Moisture: not dec 100 dec.

Date Extracted 03/14/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH. 7.0

Dilution Factor. 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO	COMPOUND		
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	39000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	21000	

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1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0160-012 001

Lab Name Lionville Labs, Inc. Work Order 11830001001

Client K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID 01031226-014

Sample wt/vol 5.20 (g/mL) G

Lab File ID 03240105.37

Level: (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec. 100 dec

Date Extracted 03/11/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH 7.0

Dilution Factor. 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO	COMPOUND		
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	38000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	19000	U
11096-82-5	Aroclor-1260	58000	

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PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0160-013 001

Lab Name Lionville Labs, Inc. Work Order 11830001001

Client K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID. 01031L226-015

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: 03240105.38

Level: (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec 100 dec.

Date Extracted: 03/14/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor. 20.0

CAS NO	COMPOUND	CONCENTRATION UNITS. (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	38000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	19000	U
11096-82-5	Aroclor-1260	33000	

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0160-014 001

Lab Name. Lionville Labs, Inc. Work Order. 11830001001

Client K-H RIN#01R0160

Matrix SOLID

Lab Sample ID: 01031L226-016

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: 03240105.39

Level (low/med) LOW

Date Received 03/09/01

% Moisture: not dec. 100 dec

Date Extracted: 03/14/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO	COMPOUND		
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	39000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	20000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-015 00[illegible]

Lab Name: Lionville Labs, Inc. Work Order 11830001001

Client K-U RIN#01R0160

Matrix: SOLID

Lab Sample ID: 0103L226-017

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: 03240105 40

Level (low/med) LOW

Date Received: 03/09/01

% Moisture not dec 100 dec.

Date Extracted: 03/14/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	38000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	19000	U
11096-82-5	Aroclor-1260	19000	U

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1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0160-016 001

Lab Name Lionville Labs, Inc Work Order: 11830001001

Client. K-H RIN#01R0160

Matrix: SOLID Lab Sample ID. 01031226-016

Sample wt/vol. 5.10 (g/mL) G Lab File ID: 03240105 43

Level (low/med) LOW Date Received: 03/09/01

% Moisture: not dec 100 dec Date Extracted: 03/14/01

Extraction (SepF/Cont/Sonc) SONC Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 20.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	39000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	20000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0160-017 001

Lab Name Lionville Labs, Inc. Work Order. 11830001001

Client K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID. 0103L226-019

Sample wt/vol: 5.30 (g/mL) G

Lab File ID- 03240105.11

Level (low/med) LOW

Date Received: 03/09/01

% Moisture not dec 100 dec

Date Extracted: 03/14/01

Extraction (SepF/Cont/Sonc) SONC

Date Analyzed. 03/25/01

GPC Cleanup: (Y/N) N pH. 7.0

Dilution Factor: 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO	COMPOUND		
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	38000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	19000	U
11096-82-5	Aroclor-1260	67000	

FORM 1 PEST 12/88 Rev

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-018 001

Lab Name Lionville Labs, Inc. Work Order: 11830001001

Client: K-H RIN#01R0160

Matrix SOLID

Lab Sample ID: 01031226-020

Sample wt/vol: 5 40 (g/mL) G

Lab File ID: 03240105 45

Level: (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec. 100 dec

Date Extracted: 03/14/01

Extraction (Sep/Cont/Sonc) SONC

Date Analyzed: 03/26/01

GPC Cleanup (Y/N) N pH 7.0

Dilution Factor. 20.0

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	37000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	19000	U
11096-82-5	Aroclor-1260	31000	

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1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0160-019.001

Lab Name Lionville Labs, Inc Work Order. 11830001001

Client K-H RIN#01R0160

Matrix. SOLID

Lab Sample ID 0103L226-021

Sample wt/vol. 5.10 (g/mL) G

Lab File ID: 03240105.46

Level: (low/med) LOW

Date Received: 03/09/01

% Moisture; not dec 100 dec.

Date Extracted: 03/14/01

Extraction: (SepF/Cont/Sonc) N/A

Date Analyzed: 03/26/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO	COMPOUND		
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	39000	U
11141-16-5	Aroclor-1232	20000	U
53469-21-9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	20000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-020 001

Lab Name Lionville Labs, Inc. Work Order 11830001001

Client: K-H RIN#01R0160

Matrix SOLID

Lab Sample ID 0103I226-022

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: 03240105.47

Level. (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec 100 dec

Date Extracted. 03/14/01

Extraction: (SepF/Cont/Sonc) N/A

Date Analyzed: 03/26/01

GPC Cleanup. (Y/N) N pH: 7.0

Dilution Factor: 20.0

CAS NO.	COMPOUND	CONCENTRATION UNITS. (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	38000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	19000	U
11096-82-5	Aroclor-1260	24000	

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-021.001

Lab Name Lionville Labs, Inc Work Order: 11830001001

Client: K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID 01031226-023

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: 03240105.48

Level: (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec 100 dec

Date Extracted: 03/14/01

Extraction: (SepF/Cont/Sonc) N/A

Date Analyzed: 03/26/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	38000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	22000	
11096-82-5	Aroclor-1260	19000	U

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
01R0160-023 001

Lab Name Lionville Labs, Inc. Work Order. 11830001001

Client K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID: 01031226-024

Sample wt/vol. 5.10 (g/mL) G

Lab File ID. 03240105.49

Level (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec. 100 dec

Date Extracted: 03/14/01

Extraction (SepF/Cont/Sonc) N/A

Date Analyzed. 03/26/01

GPC Cleanup: (Y/N) N pH 7.0

Dilution Factor: 20.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		
12674-11-2	Aroclor-1016	20000	U
11104-28-2	Aroclor-1221	39000	U
11141-16-5	Aroclor-1232	20000	U
53469-21 9	Aroclor-1242	20000	U
12672-29-6	Aroclor-1248	20000	U
11097-69-1	Aroclor-1254	20000	U
11096-82-5	Aroclor-1260	31000	

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PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01R0160-024 001

Lab Name. Lionville Labs, Inc. Work Order 11830001001

Client. K-H RIN#01R0160

Matrix: SOLID

Lab Sample ID. 01031226-025

Sample wt/vol. 5.20 (g/mL) G

Lab File ID 03240105.50

Level (low/med) LOW

Date Received: 03/09/01

% Moisture: not dec 100 dec.

Date Extracted: 03/14/01

Extraction: (SepF/Cont/Sonc) N/A

Date Analyzed. 03/26/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 20.0

CAS NO	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	19000	U
11104-28-2	Aroclor-1221	38000	U
11141-16-5	Aroclor-1232	19000	U
53469-21-9	Aroclor-1242	19000	U
12672-29-6	Aroclor-1248	19000	U
11097-69-1	Aroclor-1254	19000	U
11096-82-5	Aroclor-1260	43000	

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
PBLKSD

Lab Name. Lionville Labs, Inc. Work Order· 11830001001

Client: K-H RIN#01R0160

Matrix: SOIL

Lab Sample ID: 01LE0285-MB1

Sample wt/vol: 30 0 (g/mL) G

Lab File ID: 03240105 19

Level: (low/med) LOW

Date Received 03/14/01

% Moisture· not dec. 0 dec

Date Extracted: 03/14/01

Extraction· (SepF/Cont/Sonc) SONC

Date Analyzed: 03/25/01

GPC Cleanup: (Y/N) N pH. 7.0

Dilution Factor· 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	170	U
11104-28-2	Aroclor-1221	330	U
11141-16-5	Aroclor-1232	170	U
53469-21-9	Aroclor-1242	170	U
12672-29-6	Aroclor-1248	170	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	170	U

FORM 1 PEST 12/88 Rev

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO
PBLKSF

Lab Name. Lionville Labs, Inc. Work Order 11830001001

Client· K-H RIN#01R0160

Matrix SOIL

Lab Sample ID· 01LE0286-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID· 03240105.51

Level: (low/med) LOW

Date Received. 03/14/01

% Moisture: not dec. 0 dec

Date Extracted· 03/14/01

Extraction (SepF/Cont/Sonc) N/A

Date Analyzed: 03/26/01

GPC Cleanup: (Y/N) N pH· 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS. (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	1000	U
11104-28-2	Aroclor-1221	2000	U
11141-16-5	Aroclor-1232	1000	U
53469-21-9	Aroclor-1242	1000	U
12672-29-6	Aroclor-1248	1000	U
11097-69-1	Aroclor-1254	1000	U
11096-87-5	Aroclor-1260	1000	U

FO 3/26/01

FORM 1 PEST 12/88 Rev

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LIONVILLE LABORATORY INC.

Analytical Report

Client: K-H RIN #01R0160
LVL#: 0103L226
Subcontract #: K11700327EP6

W.O.#: 11830-001-001-9999-00
Date Received: 03-09-01

PCB

The set of samples consisted of twenty-five (25) solid samples collected on 03-06,07-01

The samples and their associated QC samples were extracted on 03-14-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 03-25,26-01. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1 The cooler temperature has been recorded on the chain-of-custodies.

2. All required holding times for extraction and analysis have been met

3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.

4. All method blanks were below the reporting limits for all target compounds.

5. All obtainable surrogate recoveries were within acceptance criteria.

6 All blank spike recoveries were within acceptance criteria.

7. All samples required instrument dilutions due to the high concentrations of target and non-target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

8. All initial calibrations associated with this data set were within acceptance criteria.

9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

10. Patterns for Aroclors 1248, 1254 and 1260 were identified in these samples. The reported Aroclor was chosen based on the best pattern match and fit. Quantitation was performed using congeners common to both Aroclors to give the best overall total PCB concentration

The results presented in this report relate only to the analytical testing and conditions of the samples in receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 522 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

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11 As of January 27, 2001, Recra Labnet Philadelphia became Lionville Laboratory Incorporated. Some forms may still reference Recra Labnet Philadelphia

Stephen D. Wesson
Laboratory Manager
Lionville Laboratory Incorporated

04-03-01
Date

pcfv\[illegible]\02L226.pcb

ATTACHMENT 3

B771 SAMPLING PACKAGE

KAISER•HILL COMPANY

ANALYTICAL SERVICES DIVISION

FAX COVER SHEET

RIN NUMBER: 01N0110-002, 001
Revised PCB Result.

FROM: NORM ROSS

PHONE: (303) 966-2920

FAX: (303) 966-4555

TO: Mike Bemski

FAX: 5180

PHONE: 4090

NUMBER OF PAGES, INCLUDING COVER SHEET: 4

Please contact Norm **if the fax is not received in its entirety.**
(phone number)
X 2920

PCBs
Room 231 + 237
Correction to Room 237 wall sample

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FAX COVER SHEET

CONFIDENTIALITY NOTICE

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Lionville Laboratory Incorporated

208 Welsh Pool Road
Lionville, PA 19341-1333
Phone: (610) 280-3000
Fax: (610) 280-3041

DATE: 3/29/01

TIME:

NO. PAGES: (including cover sheet)

TO: Data / Pat Preen

OF: K-H

FAX #: 303-966-3345 / 303-966-357

FROM: Judy Stu

COPY TO:

SPECIAL INSTRUCTIONS:

- ☐ Confidential
- ☐ Please Reply / Call
- ☐ Urgent
- ☐ For Your Information
- ☐ Other:

Send Original? ☐ No

- ☐ Regular Mail / Fed Ex / UPS
- ☐ Overnight Express

MESSAGE:

Revised result for sample 01N0110-002.001
went down
(calculation error)
package out Friday

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New

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 03/29/01 18:35

RFW Batch Number: 0102L053 Client: K-H RIN#01N0110 Work Order: 11830001001 Page: 1

	Cust ID:	01N0110-001. 001	01N0110-002. 001	01N0110-003. 001	01N0110-004. 001	PBLKPY	PBLKPY BS
Sample Information	RFW#:	001	002	003	004	01LK0205-MB1	01LK0205-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	2.00	5.00	10000	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		78 %	D %	D %	75 %	88 %	88 %
Decachlorobiphenyl		73 %	D %	D %	77 %	17 * %	19 * %
Aroclor-1016		1900 U	4600 U	0.10E+08 U	970 U	1000 U	1000 U
Aroclor-1221		3700 U	9200 U	0.20E+08 U	1900 U	2000 U	2000 U
Aroclor-1232		1900 U	4600 U	0.10E+08 U	970 U	1000 U	1000 U
Aroclor-1242		1900 U	4600 U	0.10E+08 U	970 U	1000 U	1000 U
Aroclor-1248		1900 U	4600 U	0.10E+08 U	970 U	1000 U	1000 U
Aroclor-1254		4300	7700	6500000	3500	1000 U	89 %
Aroclor-1260		1900 U	4600 U	0.10E+08 U	970 U	1000 U	1000 U

Rm. 231-wall

Rm. 237-wall

Room 231 Floor

Room 237-Floor

	Cust ID:	PBLKPY BSD
Sample Information	RFW#:	01LK0205-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate: Tetrachloro-m-xylene		118 %
Decachlorobiphenyl		116 %
Aroclor-1016		1000 U
Aroclor-1221		2000 U
Aroclor-1232		1000 U
Aroclor-1242		1000 U
Aroclor-1248		1000 U
Aroclor-1254		83 %
Aroclor-1260		1000 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 03/20/01 14:37

RFW Batch Number: 0102L053 Client: K-H RIN#01N0110 Work Order: 11830001001 Page: 1

	Cust ID:	01N0110-001. 001	01N0110-002. 001	01N0110-003. 001	01N0110-004. 001	PELKPY	PELKPY BS
Sample Information	RFW#:	001	002	003	004	01LE0205-MB1	01LE0205-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	2.00	5.00	10000	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		78 %	D %	D %	75 %	88 %	88 %
Decachlorobiphenyl		73 %	D %	D %	77 %	17 * %	19 * %
Aroclor-1016		1900 U	4600 U	0.10E+08 U	970 U	1000 U	1000 U
Aroclor-1221		3700 U	9200 U	0.20E+08 U	1900 U	2000 U	2000 U
Aroclor-1232		1900 U	4600 U	0.10E+08 U	970 U	1000 U	1000 U
Aroclor-1242		1900 U	4600 U	0.10E+08 U	970 U	1000 U	1000 U
Aroclor-1248		1900 U	4600 U	0.10E+08 U	970 U	1000 U	1000 U
Aroclor-1254		4300	150000	6500000	3500	1000 U	89 %
Aroclor-1260		1900 U	4600 U	0.10E+08 U	970 U	1000 U	1000 U

	Cust ID:	PELKPY BSD
Sample Information	RFW#:	01LE0205-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate: Tetrachloro-m-xylene		118 %
Decachlorobiphenyl		116 %
Aroclor-1016		1000 U
Aroclor-1221		2000 U
Aroclor-1232		1000 U
Aroclor-1242		1000 U
Aroclor-1248		1000 U
Aroclor-1254		83 %
Aroclor-1260		1000 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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KAISER•HILL
COMPANY
ANALYTICAL SERVICES DIVISION

COPY AND MAIL

COPY

RIN NUMBER: 01NO77 PCB Results

FROM: NORM ROSS

PHONE: (303) 966-2920

FAX: (303) 966-8345

TO: Mike Bemski B116

DATE COPIED: 3-12-01

Selected Pages from the Final Report

Room 114

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LIONVILLE LABORATORY INC.

Analytical Report

Client: K-H RIN #01N0077
LVL#: 0102L887
Subcontract #: KH700327EP6

W.O.#: 11830-001-001-9999-00
Date Received: 02-02-01

PCB

The set of samples consisted of four (4) solid samples collected on 01-24,29-01.

The samples and their associated QC samples were extracted on 02-08-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 02-12,14-01 The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses

1 The cooler temperature has been recorded on the chain-of-custody.

2 Samples 01N0077-001 002 and 01N0077-003.002 were extracted outside their required holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. The samples and their associated QC samples received a sulfuric acid cleanup.

4 The method blank was above the reporting limit for target compound Aroclor 1254. All results have been flagged accordingly A copy of the Sample Discrepancy Report (SDR) has been enclosed

5 All obtainable surrogate recoveries were within acceptance criteria.

6 All blank spike recoveries were within acceptance criteria

7 Most samples required instrument dilutions due to the high concentrations of target analytes Reporting limits have been adjusted to reflect the necessary dilutions.

8. All initial calibrations associated with this data set were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 332 pages.

9 All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria, with the exception of target compound Aroclor 1016 analyzed on 02-14-01 at 13 42 on the RTX1701 column The data reflected a decrease in instrument response, therefore quantitation from the primary column was used A copy of the Sample Discrepancy Report (SDR) has been enclosed

10 As of January 27, 2001, Recra Labnet Philadelphia became Lionville Laboratory Incorporated Some forms may still reference Recra Labnet Philadelphia

11 I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above Release of the data contained in this hard-copy sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the laboratory Manager or the Manager's designee, as verified by the following signature.

J Michael Taylor
President
Lionville Laboratory Incorporated

02-20-01
Date

pcf\r\group\data\pestdh\\01L887.pcb

Lionville Laboratory Sample Discrepancy Report (SDR) SDR # 016C071

Initiator L Weiter Batch 01022887 Parameter PCB
Date 2/2/01 Samples -001 -003 Matrix. Solid
Client L-IT Method SW846/MCAWW/CLP/ Prep Batch 01LC0123

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
✓ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note* Verified by [Log-In] or [Prep Group] (circle) signature/date, _____

c. Problem (Include all relevant specific results, attach data if necessary)

Date Collected - 01-24-01
Date Received : 02-02-01
Date Extracted : 02-08-01

2. Known or Probable Causes(s)

Samples listed were extracted out of holding time. Analyst error.

3. Discussion and Proposed Action Other Description

Narrative

__ Re-log
__ Entire Batch
__ Following Samples _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions. signature/date JL 2/20/01

__ Concur with Proposed Action
__ Disagree with Proposed Action, See Instruction
✓ Include in Case Narrative
__ Client Contacted
Date/Person _____
__ Add
__ Cancel

5. Final Action. signature/date SSD VCM 02-13-01 Other Explanation

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab General Manager: M Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson	__	__ GC/LC Pastor
__	X Technical Mgr: Wesson/Daniels	__	__ MS Rycklak/Layman
__	X QA (file). Alberts	__	__ Log-in Keppel
__	__ Data Management: Feldman	__	__ Admin Soos
__	__ Sample Prep Doughty/Kiger	__	__ Other _____

L-WI-006/E-01/01

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Lionville Laboratory Sample Discrepancy Report (SDR) SDR # 01LC0070

Initiator M. Kebel Batch 01021887, 888 Parameter CPCB
Date 2/15/01 Samples B 01021888-001 Matrix Soil
Client K-H Method SW846/MCAWW/CLP/ Prep Batch 01LE0123

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note* Verified by [Log-In] or [Prep Group] (circle) signature/date _____

c. Problem (Include all relevant specific results, attach data if necessary)

(1) decreased AR1016 prior to samples in CCV on confirmation column Quantitated from primary column (samples contain AR1254)
(2) blank contains AR1254 @ 37 ug/kg
(3) Sample 001 from 01021888 has low surrogates; TCX @ 15% and DCB @ 13%.

2. Known or Probable Causes(s)

* Contamination due to samples containing AR1254 at levels up to 920 ppm.
* caused instruments to be down for 2 days (recalibrating and conditioning)

3. Discussion and Proposed Action Other Description

__ Re-log
__ Entire Batch
__ Following Samples _____
__ Re-leach
✓ Re-extract 888-001
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions signature/date _____ 2/15/01

__ Concur with Proposed Action
__ Disagree with Proposed Action, See Instruction
✓ Include in Case Narrative
__ Client Contacted*
Date/Person _____
__ Add
__ Cancel

(1) narrate
(2) narrate
(3) report what we have as preliminary + reextract /narrate

narrate the problem

5. Final Action signature/date, SC Owen 02/16/01 Other Explanation.

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals Doughty
__	X Lab General Manager M Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr Stone/Johnson	__	__ GC/LC Pastor
__	X Technical Mgr Wesson/Daniels	__	__ MS. Rycklak/Layman
__	X QA (file) Alberts	__	__ Log-in Keppel
__	__ Data Management: Feldman	__	__ Admin Soos
__	__ Sample Prep Doughty/Kiger	__	__ Other _____

L-WI-006/E-01/01

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GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U)

J = Indicates an estimated value This flag is used in cases where a target analyte is detected at a level less than the lower quantification level If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J

B = This flag is used when the analyte is found in the associated blank as well as in the sample It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable

DF = Dilution Factor

NR = Not Required.

SP = Indicates Spiked Compound

GLOSSARY OF PESTICIDE/PCB DATA

P	=	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X) The lower of the two values is reported on Form I and flagged with a "P"
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor
C	=	This flag applies to a compound that has been confirmed by GC/MS

RECRA LabNet Use Only

01021887

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client K-H Bin# 01N0077

Est Final Proj. Sampling Date

Project # 11830-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager JS

QC Spec Del Spec TAT 14 day

Date Rec'd 2 2 01 Date Due 2-16-01

Account #

Refrigerator #																		
#/Type Container	Liquid																	
	Solid																	
Volume	Liquid																	
	Solid																	
Preservatives																		
ANALYSES REQUESTED →				ORGANIC							INORG							
				VOA	BNA	Pest/PCB	Herb				TCLP Metal	CN						
RECRA LabNet Use Only																		
						OPCB					TCLP		Met(1)					

MATRIX CODES
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OPCB	TCLP	Met(1)
001	01N0077-001.002			SO	1/24/01	1400	✓	X	
002	-002.002				1/24/01	1000	✓	X	
003	-003.002				1/24/01	1425	✓	X	
004	-004.002				1/24/01	1002	✓	X	
005	01N0077-001.002 tcpdf	001		L	*	–			✓
006	-002.002	002							✓
007	-003.002	003							✓
008	-004.002	004							✓

Special Instructions

OPCB: SS03B006

Met(1): SS08C006: HSL+Li, Mo, Sn, Sr, U leachates

DATE/REVISIONS

* 1 See labchron

2/7/01 2 MU TC added

3

4

5

6

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered

Airbill # See Below

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

COC Tape was 1) Present on Outer Package Y or N

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp 2 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES 4533 2126 9753

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	2/2/01	0935

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Commodore Advanced Sciences, Inc.

RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # 01N0077#001

Page 1 of 1

Samp[redacted]	Contact/Requester: ROSS, NORM/BEMSKI, MIKE	Telephone No.: X2920/4090
RIN: 01N0077	Sampling Origin: B 771 Rm 114 EAST SIDE	Purchase Order/Charge Code: CADBA0A1
Project Title: B771/774 NON-RAD RECONNAISSANCE LEVEL CHARACTERIZAT	Logbook No.: 94 Dodge	Ice Chest No: NA Temp.: NA
To (Lab): RECRA Labnet-PA (L)	Method of Shipment: Sample Team / Hand Carry	Bill of Lading/Air Bill No.: NA 7753
Protocol: CAS-SOP.003 Rev3	Related COC (if any): 01N0077 #002	PRE

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136 3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED: | |

SPECIAL INSTRUCTIONS Hold Time
IF THE PREFERED SAMPLE AMOUNT OF 400 GRAMS IS NOT OBTAINABLE, A MINIMUM OF 150 GRAMS IS DESIRED FOR ANALYSES WITHOUT REDUCED SAMPLE SIZES ONE SAMPLE SHOULD HAVE MORE FOR USE AS LAB QC ANALYSES SHOULD BE COMPLETED WITH REDUCED SIZES ONLY IF NECESSARY, THE VERY MINIMUM FOR THIS IS 50 GRAMS

Bottle No	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative, Packing
01N0077-001 002	771W-114-1	SOLID	01/29/01	1400	B 771 Rm 114 EW-1	400-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]; SS08C006 (TCLP Metals 1311) [Priority]	None 4 degrees C
01N0077-002 002	771W -114-2	SOLID	01/29/01	10:06	B 771 Rm 114 EW-2	400-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority]; SS08C006 (TCLP Metals 1311) [Priority]	None 4 degrees C
01N0077-003 002	771F -114-1	SOLID	01/29/01	1425	B 771 Rm 114 EF-1	400-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority], SS08C006 (TCLP Metals 1311) [Priority]	None 4 degrees C
01N0077-004 002	771F-114-2	SOLID	01/29/01	10:02	B 771 Rm 114 EF-2	400-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority], SS08C006 (TCLP Metals 1311) [Priority]	None 4 degrees C

01/25/01

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
[signature] CAS 01/26/01	1445	B771 Rm 114 Cab. 3 01/26/01	1445	[signature]	1/30/01 1115	Fedex #2	01/30/01 1115
[signature] CAS 01/26/01	1030	B771 Rm 114 Cab. 3 01/26/01	1030	Fedex #2	2/1/01 1330	[signature]	2/1/01 1330
[illegible] 3 01/26/01	1000	[signature] CAS 01/26/01	1000	[signature]	2/1/01 1530	FedEx	
		[signature]	1/26/01 1110	FedEx	2/2/01 0930	[signature]	2/2/01 09:30

(Flash procedure used in analytical process)

Disposed By

Date/Time

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Lionville Laboratory, Inc.

PCBs by GC

Report Date: 02/16/01 07 02

RFW Batch Number. 0102L887 Client. K-H RIN#01N0077 Work Order: 11830001001 Page. 1

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	Cust ID	01N0077-001. 002	01N0077-002. 002	01N0077-003. 002	01N0077-004. 002	PBLKOZ	PBLKOZ BS
Sample Information	RFW#.	001	002	003	004	01LE0123-MB1	01LE0123-MB1
	Matrix	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D F	1 00	10.0	50.0	500	1.00	1.00
	Units	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Tetrachloro-m-xylene		48 %	D %	D %	D %	82 %	98 %
Decachlorobiphenyl		43 %	D %	D %	D %	80 %	94 %
Aroclor-1016		180 U	1900 U	9800 U	89000 U	200 U	200 U
Aroclor-1221		360 U	3800 U	20000 U	180000 U	400 U	400 U
Aroclor-1232		180 U	1900 U	9800 U	89000 U	200 U	200 U
Aroclor-1242		180 U	1900 U	9800 U	89000 U	200 U	200 U
Aroclor-1248		180 U	1900 U	9800 U	89000 U	200 U	200 U
Aroclor-1254		620 B	5000 B	24000 B	220000 B	220	60 %
Aroclor-1260		180 U	1900 U	9800 U	89000 U	200 U	200 U

114 Wall 114 Wall 114 Floor 114 Floor

	Cust ID	PBLKOZ BSD
Sample Information	RFW#	01LE0123-MB1
	Matrix	SOIL
	D F .	1.00
	Units.	UG/KG
Surrogate Tetrachloro-m-xylene		88 %
Decachlorobiphenyl		87 %
Aroclor-1016		200 U
Aroclor-1221		400 U
Aroclor-1232		200 U
Aroclor-1242		200 U
Aroclor-1248		200 U
Aroclor-1254		51 %
Aroclor-1260		200 U

gw 02.19-01

U= Analyzed, not detected J= Present below detection limit B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery D= Diluted out. I= Interference NA= Not Applicable. *= Outside of EPA CLP QC

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2F

SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: Lionville Labs, Inc. Contract: 1830-01-01

Case No : K-H RIN#01N0077

RFW Lot No.: 0102L887

	CLIENT SAMPLE NO.	S1 ( )#	OTHER
01	01N0077-001.002	48	43
02	01N0077-002.002	D	D
03	01N0077-003 002	D	D
04	01N0077-004.002	D	D
05	PBLKOZLE0123-MB1	82	80
06	PBLKOZLE0123-MB1 BS	98	94
07	PBLKOZLE0123-MB1 BSD	88	87

	ADVISORY QC LIMITS
S1 ( ) = Tetrachloro-m-xylene	(28-118)
S2 ( ) = Decachlorobiphenyl	(38-122)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogates diluted out

02-14-01

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name Lionville Labs, Inc. Contract· 1830-01-01

Case No.: K-H RIN#01N0077 RFW Lot No . 0102L887

MATRIX Spike - Sample No.: PBLKOZLE0123-MB1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
Aroclor-1254	750	0	448	60	30 -146

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Aroclor-1254	750	380	51	16	50	30 -146

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 1 outside limits
Spike Recovery· 0 out of 2 outside limits

COMMENTS:

02.Mol

FORM III PEST-2 5/88 Rev.

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4C

PESTICIDE METHOD BLANK SUMMARY

Lab Name: Lionville Labs, Inc — Contract: 1830-01-01

Case No.: K-H RIN#01N0077

Lab Sample ID: 01LE0123-MB1 — Lab File ID: 02120107 03

Matrix:(Soil/Water) SOIL — Level:(low/med) LOW

Date Extracted: 02/08/01 — Extraction:(SepF/Cont/Sonc) SONC

Date Analyzed (1): 02/12/01 — Date Analyzed (2): 02/12/01

Time Analyzed (1): 1816 — Time Analyzed (2): 1816

Instrument ID (1): 07 — Instrument ID (2): 08

GC Column ID (1): DB608 — GC Column ID (2): RTX1701

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	01N0077-001.002	0102L887-001	02/14/01	02/14/01
02	01N0077-002.002	0102L887-002	02/12/01	02/12/01
03	01N0077-003.002	0102L887-003	02/14/01	02/14/01
04	01N0077-004.002	0102L887-004	02/14/01	02/14/01
05	PBLKOZLE0123-MB1 BS	01LE0123-MB1S	02/12/01	02/12/01
06	PBLKOZLE0123-MB1 BSD	01LE0123-MB1T	02/12/01	02/12/01

COMMENTS:

gw 02-19-01

KAISER•HILL
COMPANY
ANALYTICAL SERVICES DIVISION

COPY

COPY AND MAIL

RIN NUMBER: 01N0108 – PCB Results

FROM: NORM ROSS

PHONE: (303) 966-2920

FAX: (303) 966-8345

TO: Mike Borski – B116

DATE COPIED: 3-13-01

Selected Pages from Final Data Pkg

Room 146 + 146B
w/ Duplicates

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LIONVILLE LABORATORY INC.

RECEIVED
MAR - 8 2001

7 March 2001

ENTERED 3-8-01

Attn· Analytical Services
Kaiser-Hill Company
Rocky Flats Environmental Technology Site
B881, Room 214
State Hwy 93 and Cactus Road
Rocky Flats, CO 80007

Ref: Subcontract No. KH700327EP6
Data Package for RIN # 01N0108
RFW Batch No. 0102L949

Dear Sir/Madam:

Enclosed please find the data package for 6 solid samples received 8 February 2001 for analysis for SS03B006 PCBs and SS08C006 TCLP metals. The EDD is being emailed. These data were faxed 22 February for the priority turnaround.

Please do not hesitate to contact me at (610) 280-3029 with any questions you may have regarding either the hard copy or electronic report.

Very truly yours,

Lionville Laboratory Incorporated

Judy Stone

Judith L Stone
Senior Project Manager

Enclosure.

VALIDATION
MAR 2001
SOM ANALYTICAL SERVICES

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208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Commodore Advanced Sciences, Inc. RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC.# 01N0108#001 Page 1 of 1

Sampler [redacted]	Contact/Requester ROSS, NORM/BEMSKI, MIKE	Telephone No. X2920/4090
RIN 01N0108 Jaime Goodrich 5/21/98	Sampling Origin B 771 Rm 146	Purchase Order/Charge Code CADBA0A1
Project Title B771/774 NON-RAD RECONNAISSANCE LEVEL CHARACTERIZAT	Logbook No. 94 Dodge	Ice Chest No n/a Temp n/a
To (Lab) RECRA Labnet-PA (L)	Method of Shipment Sample Team	Bill of Lading/Air Bill No n/a 4533212699 81
Protocol CAS SOP 003 REV3	Related COC (if any) 01N0108 #002	PRE 010206 00771 001

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136 3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
IF THE PREFERED SAMPLE AMOUNT OF 400 GRAMS IS NOT OBTAINABLE, A MINIMUM OF 150 GRAMS IS DESIRED FOR ANALYSES WITHOUT REDUCED SAMPLE SIZES ONE SAMPLE SHOULD HAVE MORE FOR USE AS LAB QC ANALYSES SHOULD BE COMPLETED WITH REDUCED SIZES ONLY IF NECESSARY, THE VERY MINIMUM FOR THIS IS 50 GRAMS

Bottle No	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative, Packing
01N0108-001 001	771W-146-1	SOLID	01/31/01	01015	B 771 Rm 146 W-1	400-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority], SS08C006 (TCLP Metals 1311) [Priority]	None 4 degrees C
01N0108-002 001	771W-146-2	SOLID	01/31/01	1340	B 771 Rm 146 W-2	400-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority], SS08C006 (TCLP Metals 1311) [Priority]	None 4 degrees C
01N0108-003 001	771F-146-1	SOLID	01/31/01	0955	B 771 Rm 146-FUT-1	400-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority], SS08C006 (TCLP Metals 1311) [Priority]	None 4 degrees C
01N0108-004 001	771F-146-2	SOLID	01/31/01	1356	B 771 Rm 146 FUT-2	400-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority], SS08C006 (TCLP Metals 1311) [Priority]	None 4 degrees C
01N0108-005 001	771W-146-3	SOLID	01/31/01	0955	B 771 Rm 146 W-3	400-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority], SS08C006 (TCLP Metals 1311) [Priority]	None 4 degrees C
01N0108-006 001	771F-146-3	SOLID	01/31/01	0955	B 771 Rm 146 FUT-3	400-G / G /1	SS03B006 (PCB 8080A/8081-Soil) [Priority], SS08C006 (TCLP Metals 1311) [Priority]	None 4 degrees C
		GR.	01/	/01				

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
S. Powell	1/31/01 01130	B-771 Rm 142B Cabnet 3	01/31/01 01130	Refrig #2	2/1/01 1455	J. Chuchman	2/1/01 1455
B771 Rm 146B Cab 3	1000	[illegible]	1000	J. Chuchman	2/1/01 1500	Fed Ex	
[illegible]	1340	R. Miller	02-01-01 1340	Fed Ex	2-8-01 9:40	Carlos Hernandez	2-8-01 9:40
R. Miller	02-01-01 1350	Refrig. #2	02-01-01 1350				

FINAL SAMPLE DISPOSITION	Disposal Method (e g , returned to customer, disposed of per lab procedure, used in analytical process)	Disposed By	Date/Time

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SAMPLE DATA PACKAGE COVER PAGE

Laboratory Code: LVLI **Subcontract #:** KH700327EP6 **RIN #:** 01N0108

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
K-H RIN#01N0108

DATE RECEIVED: 02/08/01 LVL LOT # .0102L949

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
01N0108-001.001	001	SO	01LE0142	01/31/01	02/09/01	02/21/01
01N0108-002.001	002	SO	01LE0142	01/31/01	02/09/01	02/21/01
01N0108-003.001	003	SO	01LE0142	01/31/01	02/09/01	02/22/01
01N0108-004.001	004	SO	01LE0142	01/31/01	02/09/01	02/22/01
01N0108-005.001	005	SO	01LE0142	01/31/01	02/09/01	02/22/01
01N0108-006.001	006	SO	01LE0142	01/31/01	02/09/01	02/22/01

LAB QC:

PBLKPA	MB1	S	01LE0142	N/A	02/09/01	02/12/01
PBLKPA	MB1 BS	S	01LE0142	N/A	02/09/01	02/12/01

2/28/01

I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the laboratory Manager or the Manager's designee, as verified by the following signature.

J. Michael Taylor
President
Lionville Laboratory Inc.

02-28-01
Date

01

som\group\data\bas\khr-12-635.doc

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LIONVILLE LABORATORY INC.

Analytical Report

Client: K-H RIN #01N0108
LVL#: 0102L949
Subcontract #: KH700327EP6

W.O.#: 11830-001-001-9999-00
Date Received: 02-08-01

PCB

The set of samples consisted of six (6) solid samples collected on 01-31-01

The samples and their associated QC samples were extracted on 02-09-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 02-12,21,22-01 The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses·

1 The cooler temperature has been recorded on the chain-of-custody

2. All required holding times for extraction and analysis have been met.

3 The samples and their associated QC samples received a sulfuric acid cleanup

4 The method blank was below the reporting limits for all target compounds

5. All obtainable surrogate recoveries were within acceptance criteria.

6 The blank spike recovery was within acceptance criteria.

7 Most samples required instrument dilutions due to the high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

8 All initial calibrations associated with this data set were within acceptance criteria.

9 All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

10 As of January 27, 2001, Recra Labnet Philadelphia became Lionville Laboratory Incorporated. Some forms may still reference Recra Labnet Philadelphia

J. Michael Taylor
President
Lionville Laboratory Incorporated

02-28-01
Date

pefvr\group\data\pestlch\\02L949.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 439 pages.

Lionville Laboratory Sample Discrepancy Report (SDR) SDR # 01FX023

Initiator M KEOHANE Batch 01021948, 01021949, 01021945, 01021950 Parameter PCB
Date 2/10/01 Samples. All Matrix S
Client. F-H Method. SW846/MCAWW/CLP/ Prep Batch 01LE0172

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note* Verified by [Log-In] or [Prep Group] (circle) signature/date _____

c. Problem (Include all relevant specific results, attach data if necessary)

Used 5 g of sample because matrix was paint chips
Samples were SUB w 500ml Prep spiked 1250ml AE 1154
BS went dry on rack Soxhlet cracked during extraction
and taken to 50ml Final Volume

2. Known or Probable Causes(s)

Matrix - Paint chips

3. Discussion and Proposed Action Other Description

__ Re-log
__ Entire Batch
__ Following Samples _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions signature/date _____ 2/12/01

__ Concur with Proposed Action
__ Disagree with Proposed Action, See Instruction
✓ Include in Case Narrative
__ Client Contacted
Date/Person _____
__ Add
__ Cancel

5. Final Action signature/date _____ 2/28/01 Other Explanation

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

SDR in package

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals Doughty
__	X Lab General Manager M Taylor	__	__ Inorganic Perrone
__	X Project Mgr (Stone) Johnson	__	__ GC/LC Pastor
__	X Technical Mgr Wesson/Daniels	__	__ MS Rychlak/Layman
__	X QA (file) Alberts	__	__ Log-in Keppel
__	__ Data Management: Feldman	__	__ Admin Soos
__	__ Sample Prep Doughty/Kiger	__	__ Other _____

L-WI-006/E-01/01

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GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected The minimum detection limit for the sample (not the method detection limit) is reported with the U (e g, 10U)

J = Indicates an estimated value This flag is used in cases where a target analyte is detected at a level less than the lower quantification level If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J

B = This flag is used when the analyte is found in the associated blank as well as in the sample It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method Spike recoveries are reported

BSD = Indicates blank spike duplicate

MS = Indicates matrix spike

MSD = Indicates matrix spike duplicate

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable

DF = Dilution Factor

NR = Not Required

SP = Indicates Spiked Compound

GLOSSARY OF PESTICIDE/PCB DATA

P	=	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X) The lower of the two values is reported on Form I and flagged with a "P"
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor
C	=	This flag applies to a compound that has been confirmed by GC/MS

RA LabNet Use Only

12C 949

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

60

t Kaw RIN # 01N0108

Final Proj. Sampling Date

ect # 11830-001-001-9999-00

ect Contact/Phone #

RA Project Manager JS

Spec Del Spec TAT 14 day

Rec'd 2-8-01 Date Due 2.22.01

ount #

Refrigerator #		A																	
#/Type Container	Liquid			6								1							
	Solid			~~1pt~~ 1pt															
Volume	Liquid																		
	Solid			125															
Preservatives				-															
ANALYSES REQUESTED		ORGANIC										INORG							
		VOA	BNA	~~Pest~~/PCB	Herb							Metal	CN						
RECRA LabNet Use Only				OPCB								ITCLP		mt(1)					

RIX ES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
Soil Sediment · Solid Sludge Water Oil Air · Drum Solids · Drum Liquids EP/TCLP Leachate · Wipe Other Fish	001	01N0108-001.001			So	1-31-01	1015			X					✓						
	002	002.001					1340			X					✓						
	003	003.001					0955			X					✓						
	004	004.001					1356			X					✓						
	005	005.001					0955			X					✓						
	006	006.001								X					✓						
	007	01N0108-001.001 tclp of 001				*	-								✓						
	008	-002.001 002															✓				
	009	-003.001 003															✓				
	010	-004.001 004															✓				

pecial Instructions

DATE/REVISIONS:

OPCB 1 SS03Bore

mt(1) 2 SS08Core: HSL+Li, Mo, Sn, Sr, U

* 3 Spec lab chron

#003 4 Rec'd w/cracked jar - Sample intact

5.

6.

Relinquished by	Received by	Date	Time
FED EX	Paula Hernandez	2-8-01	9:40
1516			

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 4533 2126 9981

RECRA LabNet Use Only

Samples were ✓
1) Shipped ___ or Hand Delivered ___
Airbill # SEE BELOW
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or (N) 2-8-01
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp 4 °C

CRA LabNet Use Only

1021949

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

int K-H Bin# 01N0108

. Final Proj. Sampling Date

ject #

ject Contact/Phone #

CRA Project Manager

Del TAT

te Rec'd Date Due

count #

Refrigerator #																	
#/Type Container	Liquid																
	Solid																
Volume	Liquid																
	Solid																
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
		RECRA LabNet Use Only															

TRIX DES.	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
Soil • Sediment • Solid • Sludge • Water Oil Air • Drum Solids • Drum Liquids EP/TCLP Leachate • Wipe • Other • Fish	011	01N0108-005.001 tripofoos			L	*	-											✓				
	012	⊥ -006.001 ⊥ 006			⊥	⊥	-											✓				

Special Instructions

DATE/REVISIONS

1

2

3

4

5

6

Relinquished by	Received by	Date	Time
Fed Ex	Carla Amend	2-8-01	9:40

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES

RECRA LabNet Use Only

Samples were
1) Shipped ____ or
Hand Delivered ____

Airbill # ____

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

COC Tape was
1) Present on Outer Package Y or N

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp ____ °C

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 02/27/01 11·04

RFW Batch Number. 0102L949 Client. K-H RIN#01N0108 Work Order: 11830001001 Page. 1

	Cust ID	01N0108-001. 001	01N0108-002. 001	01N0108-003 001	01N0108-004. 001	01N0108-005 001	01N0108-006. 001
Sample Information	RFW#	001	002	003	004	005	006
	Matrix·	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D F.	1 00	200	5000	10.0	100	20.0
	Units.	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
		Wall 146-B	Wall 146	Floor 146B	Floor 146	Dup. of wall 146B	Dup of floor 146-B 13
Surrogate Tetrachloro-m-xylene		90 %	D %	D %	D %	D %	D %
Decachlorobiphenyl		92 %	D %	D %	D %	D %	D %
Aroclor-1016		920 U	200000 U	5100000 U	10000 U	80000 U	26000 U
Aroclor-1221		1800 U	390000 U	0.10E+08 U	20000 U	160000 U	52000 U
Aroclor-1232		920 U	200000 U	5100000 U	10000 U	80000 U	26000 U
Aroclor-1242		920 U	200000 U	5100000 U	10000 U	80000 U	26000 U
Aroclor-1248		920 U	200000 U	5100000 U	10000 U	80000 U	26000 U
Aroclor-1254		920 U	1600000	0 14E+08	34000	550000	120000
Aroclor-1260		920 U	200000 U	5100000 U	10000 U	80000 U	26000 U

	Cust ID·	PBLKPA	PBLKPA BS
Sample Information	RFW#	01LE0142-MB1	01LE0142-MB1
	Matrix.	SOIL	SOIL
	D F	1 00	1 00
	Units·	UG/KG	UG/KG
Surrogate Tetrachloro-m-xylene		82 %	78 %
Decachlorobiphenyl		84 %	81 %
Aroclor-1016		1000 U	1000 U
Aroclor-1221		2000 U	2000 U
Aroclor-1232		1000 U	1000 U
Aroclor-1242		1000 U	1000 U
Aroclor-1248		1000 U	1000 U
Aroclor-1254		1000 U	92 %
Aroclor-1260		1000 U	1000 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

158

2F

SOIL PESTICIDE SURROGATE RECOVERY

Lab Name Lionville Labs, Inc. Contract 1830-01-01

Case No . K-H RIN#01N0108

RFW Lot No.: 0102L949

	CLIENT SAMPLE NO.	S1 ( )#	OTHER
01	01N0108-001.001	90	92
02	01N0108-002.001	D	D
03	01N0108-003.001	D	D
04	01N0108-004 001	D	D
05	01N0108-005.001	D	D
06	01N0108-006.001	D	D
07	PBLKPALE0142-MB1	82	84
08	PBLKPALE0142-MB1 BS	78	81

78 82 2/2/01

ADVISORY QC LIMITS

S1 ( ) = Tetrachloro-m-xylene (28-118)

S2 ( ) = Decachlorobiphenyl (38-122)

Column to be used to flag recovery values

• Values outside of QC limits

D Surrogates diluted out

3F

SOIL PESTICIDE MATRIX SPIKE RECOVERY

Lab Name. Lionville Labs, Inc. Contract· 1830-01-01

Case No K-H RIN#01N0108 RFW Lot No.. 0102L949

MATRIX Spike - Sample No : PBLKPALE0142-MB1 Level.(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
Aroclor-1254	3750	0	3440	92	30 -146

Column to be used to flag recovery value with an asterisk
* Values outside of QC limits

Spike Recovery 0 out of 1 outside limits

COMMENTS.

4C

PESTICIDE METHOD BLANK SUMMARY

Lab Name: Lionville Labs, Inc. Contract: 1830-01-01

Case No.: K-H RIN#01N0108

Lab Sample ID: 01LE0142-MB1 Lab File ID: 02100135 68

Matrix.(Soil/Water): SOIL Level:(low/med): LOW

Date Extracted: 02/09/01 Extraction.(SepF/Cont/Sonc): SONC

Date Analyzed (1): 02/12/01 Date Analyzed (2): 02/12/01

Time Analyzed (1): 2011 Time Analyzed (2): 2011

Instrument ID (1): 35 Instrument ID (2): 36

GC Column ID (1): B608 GC Column ID (2): RTX-1701

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	01N0108-001.001	0102L949-001	02/21/01	02/21/01
02	01N0108-002.001	0102L949-002	02/21/01	02/21/01
03	01N0108-003.001	0102L949-003	02/22/01	02/22/01
04	01N0108-004.001	0102L949-004	02/22/01	02/22/01
05	01N0108-005.001	0102L949-005	02/22/01	02/22/01
06	01N0108-006.001	0102L949-006	02/22/01	02/22/01
07	PBLKPALE0142-MB1 BS	01LE0142-MB1S	02/12/01	02/12/01

COMMENTS:

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Lionville, PA 19341-1333
Phone: (610) 280-3000
Fax: (610) 280-3041

DATE: 2/22/01

TIME:

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OF: K-H

FAX #: 303-966-8345

FROM: Judy Stm

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MESSAGE:

RIN #6IN0108 01021949

metals
PCBs

+Duplicates Room 146 + 146B
PCB's + Metals

162

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 02/22/01 15:33

RFW Batch Number: 0102L949 Client: K-H RICH01N0108 Work Order: 11830001001 Page: 1

	Cust ID:	01N0108-001. 001		01N0108-002. 001		01N0108-003. 001		01N0108-004. 001		01N0108-005. 001		01N0108-006. 001	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
	D.F.:	1.00		200		5000		10.0		100		20.0	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate:	Tetrachloro-m-xylene	90	%	D	%	D	%	D	%	D	%	D	%
	Decachlorobiphenyl	92	%	D	%	D	%	D	%	D	%	D	%
Aroclor-1016		920	U	200000	U	5100000	U	10000	U	80000	U	26000	U
Aroclor-1221		1800	U	390000	U	0.10E+08	U	20000	U	160000	U	52000	U
Aroclor-1232		920	U	200000	U	5100000	U	10000	U	80000	U	26000	U
Aroclor-1242		920	U	200000	U	5100000	U	10000	U	80000	U	26000	U
Aroclor-1248		920	U	200000	U	5100000	U	10000	U	80000	U	26000	U
Aroclor-1254		920	U	1600000		0.14E+08		34000		550000		120000	
Aroclor-1260		920	U	200000	U	5100000	U	10000	U	80000	U	26000	U

	Cust ID:	PBLKPA		PBLKPA BSD	
Sample Information	RFW#:	01LE0142-MB1		01LE0142-MB1	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	UG/KG		UG/KG	
Surrogate:	Tetrachloro-m-xylene	82	%	78	%
	Decachlorobiphenyl	84	%	81	%
Aroclor-1016		1000	U	1000	U
Aroclor-1221		2000	U	2000	U
Aroclor-1232		1000	U	1000	U
Aroclor-1242		1000	U	1000	U
Aroclor-1248		1000	U	1000	U
Aroclor-1254		1000	U	92	%
Aroclor-1260		1000	U	1000	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

163

KAISER•HILL
COMPANY

ANALYTICAL SERVICES DIVISION

FAX COVER SHEET

RIN NUMBER: 01N0109- QT Results

FROM: NORM ROSS

PHONE: (303) 966-2920

FAX: (303) 966-4555

TO: Mike Bonski

FAX: 3160

PHONE: 4090

NUMBER OF PAGES, INCLUDING COVER SHEET: 10

Please contact Norm **if the fax is not received in its entirety.**
(phone number)
x2920

Room 149
Hi PCB's
+ metals

Ket

ENTERED 2-21-01

FAX COVER SHEET

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Lionville Laboratory Incorporated

208 Welsh Pool Road
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Phone: (610) 280-3000
Fax: (610) 280-3041

DATE: 2/15/01

TIME:

NO. PAGES: (including cover sheet)

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OF: K-K

FAX #: 303-966-8345

FROM: Judy Stone

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Send Original? ☐ No

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- ☐ Overnight Express

MESSAGE:

PCBs RM# 01N077 01021887
01N109 01021888

There was low level A-1254 in the blank, likely from the sampler - some were very high.

TCLP metals are being reviewed.

165

Room 149

Lionville Laboratory, Inc.
PCBs by GC

RFW Batch Number: 0102LB88 Client: K-H RIN#01N0109 Work Order: 11830001001 Page: 1 Report Date: 02/15/01 14:57

	Cust ID:	01N0109-001. 001	01N0109-002. 001	01N0109-003. 001	01N0109-004. 001	PBLKOZ	PBLKOZ BS
Sample Information	RFW#:	001	002	003	004	01LE0123-MB1	01LE0123-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	1.00	1.00	1000	200	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
		Wall	Wall	Floor	Floor		
Surrogate: Tetrachloro-m-xylene		15 * %	78 %	D %	D %	82 %	98 %
Decachlorobiphenyl		13 * %	77 %	D %	D %	80 %	94 %
Aroclor-1016		170 U	190 U	200000 U	37000 U	200 U	200 U
Aroclor-1221		340 U	380 U	390000 U	74000 U	400 U	400 U
Aroclor-1232		170 U	190 U	200000 U	37000 U	200 U	200 U
Aroclor-1242		170 U	190 U	200000 U	37000 U	200 U	200 U
Aroclor-1248		170 U	190 U	200000 U	37000 U	200 U	200 U
Aroclor-1254		540 B	520 B	920000 B	97000 B	220	60 %
Aroclor-1260		170 U	190 U	200000 U	37000 U	200 U	200 U

	Cust ID:	PBLKOZ BSD
Sample Information	RFW#:	01LE0123-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate: Tetrachloro-m-xylene		88 %
Decachlorobiphenyl		87 %
Aroclor-1016		200 U
Aroclor-1221		400 U
Aroclor-1232		200 U
Aroclor-1242		200 U
Aroclor-1248		200 U
Aroclor-1254		51 %
Aroclor-1260		200 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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KAISER•HILL
COMPANY

ANALYTICAL SERVICES DIVISION

FAX COVER SHEET

RIN NUMBER: 01N0116

FROM: NORM ROSS

PHONE: (303) 966-2920

FAX: (303) 966-4555

TO: Mike Bemski

FAX: 5180

PHONE: 4090

NUMBER OF PAGES, INCLUDING COVER SHEET: 11

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(phone number)

X2920

Room 165
PCB's
+ METALS

167

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 02/22/01 11:21

RFW Batch Number: 0102L945 Client: K-H RIN#01N0116 Work Order: 11830001001 Page: 1

	Cust ID:	01N0116-001. 002	01N0116-002. 002	01N0116-003. 002	01N0116-004. 002	PBLKPA	PBLKPA BSD
Sample Information	RFW#:	001	002	003	004	01LE0142-MB1	01LE0142-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	2.00	2.00	1.00	2.00	1.00	1.00
	Units:	UG/KG Wall	UG/KG Wall	UG/KG Floor	UG/KG Floor	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	125 * %	98 %	102 %	85 %	82 %	78 %
	Decachlorobiphenyl	130 * %	107 %	104 %	78 %	84 %	81 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		1900 U	2000 U	1100 U	2100 U	1000 U	1000 U
Aroclor-1221		3800 U	3900 U	2100 U	4300 U	2000 U	2000 U
Aroclor-1232		1900 U	2000 U	1100 U	2100 U	1000 U	1000 U
Aroclor-1242		1900 U	2000 U	1100 U	2100 U	1000 U	1000 U
Aroclor-1248		1900 U	2000 U	1100 U	2100 U	1000 U	1000 U
Aroclor-1254		6500	4600	2700	5900	1000 U	92 %
Aroclor-1260		1900 U	2000 U	1100 U	2100 U	1000 U	1000 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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LVLI

Lionville Laboratory Incorporated

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Phone: (610) 280-3000
Fax: (610) 280-3041

DATE: 2/22/01

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MESSAGE:

RIN # 01N0117 01021948

metals

PCBs

Room 174 + 175

PCB + Metals

169

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 02/22/01 15:28

RFW Batch Number: 0102L948 Client: K-H RUN#01N0117 Work Order: 1183000101 Page: 1

	Cust ID:	01N0117-001. 001	01N0117-002. 001	01N0117-003. 001	01N0117-004. 001	PBLKPA	PBLKPA BSD
Sample Information	RFW#:	001	002	003	004	01LE0142-MB1	01LE0142-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	2.00	1.00	10.0	10.0	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		135 * %	45 %	D %	D %	82 %	78 %
Decachlorobiphenyl		103 %	109 %	D %	D %	84 %	81 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		2100 U	1000 U	9000 U	8400 U	1000 U	1000 U
Aroclor-1221		4200 U	2100 U	18000 U	17000 U	2000 U	2000 U
Aroclor-1232		2100 U	1000 U	9000 U	8400 U	1000 U	1000 U
Aroclor-1242		2100 U	1000 U	9000 U	8400 U	1000 U	1000 U
Aroclor-1248		2100 U	1000 U	9000 U	8400 U	1000 U	1000 U
Aroclor-1254		6900	1000 U	26000	13000	1000 U	92 *
Aroclor-1260		2100 U	1000 U	9000 U	8400 U	1000 U	1000 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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LVLI

Lionville Laboratory Incorporated
208 Welsh Pool Road
Lionville, PA 19341-1333
Phone: (610) 280-3000
Fax (610) 280-3041

DATE: 2/22/01
TIME:
NO. PAGES: 9 (including cover sheet)

TO: Data
OF: K-H
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MESSAGE:
RIN #01N0118 0102L950
PCBs
metals

Room 181A
PCB's + Metals

171

Lionville Laboratory, Inc.
PCBs by GC

Report Date: 02/22/01 15:37

RFW Batch Number: 0102L950 Client: K-H RIN#01N0118 Work Order: 11830001001 Page: 1

	Cust ID:	01N0118-001. 001		01N0118-002. 001		01N0118-003. 001		01N0118-004. 001		PBLKPA		PBLKPA BSD	
Sample Information	RFW#:	001		002		003		004		01LK0142-MB1		01LK0142-MB1	
	Matrix:	SOLID		SOLID		SOLID		SOLID		SOIL		SOIL	
	D.F.:	10.0		200		5.00		10.0		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate:	Tetrachloro-m-xylene	D	%	D	%	D	%	D	%	82	%	78	%
	Decachlorobiphenyl	D	%	D	%	D	%	D	%	84	%	81	%
			fl		fl		fl		fl		fl		fl
Aroclor-1016		7700	U	200000	U	5300	U	10000	U	1000	U	1000	U
Aroclor-1221		15000	U	410000	U	11000	U	20000	U	2000	U	2000	U
Aroclor-1232		7700	U	200000	U	5300	U	10000	U	1000	U	1000	U
Aroclor-1242		60000		200000	U	5300	U	10000	U	1000	U	1000	U
Aroclor-1248		7700	U	200000	U	5300	U	10000	U	1000	U	1000	U
Aroclor-1254		45000		1200000		12000		25000		1000	U	92	%
Aroclor-1260		7700	U	200000	U	5300	U	10000	U	1000	U	1000	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

KAISER•HILL
COMPANY

ANALYTICAL SERVICES DIVISION

FAX COVER SHEET

RIN NUMBER: 01N0125 QT PCB Results

FROM: NORM ROSS

PHONE: (303) 966-2920

FAX: (303) 966-4555

TO: Mike Bemski

FAX: 5180

PHONE: 4080

NUMBER OF PAGES, INCLUDING COVER SHEET: 4

Please contact Norm (phone number) if the fax is not received in its entirety.

X2920.

Rooms 184+ 187 PCB's.

173

FAX COVER SHEET

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LVLI

Lionville Laboratory Incorporated

208 Welsh Pool Road
Lionville, PA 19341-1333
Phone: (610) 280-3000
Fax: (610) 280-3041

DATE: 3/9/01

TIME:

NO. PAGES: (including cover sheet)

TO: Data / Pat Reese

OF: K-H

FAX #: 303-966-8345 / 303-966-3578

FROM: Judy Stone

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MESSAGE:

RIN #01N0125 01021980 PCBs

Wow! Some really high ones here!

174

3/9/01

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 03/09/01 14:42

RFW Batch Number: 0102L980 Client: K-H RIN#01N0125 Work Order: 11830001001 Page: 1

	Cust ID:	01N0125-001. 001		01N0125-002. 001		01N0125-003. 001		01N0125-004. 001		PBLKPJ		PBLKPJ BS	
Sample Information	RFW#:	001		002		003		004		01LE0164-MB1		01LE0164-MB1	
	Matrix:	SOLID		SOLID		SOLID		SOLID		SOIL		SOIL	
	D.F.:	20.0		5.00		50.0		2500		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate: Tetrachloro-m-xylene		D	%	D	%	D	%	D	%	92	%	92	%
Decachlorobiphenyl		D	%	107	%	D	%	D	%	101	%	105	%
Aroclor-1016		19000	U	4900	U	51000	U	2600000	U	1000	U	1000	U
Aroclor-1221		39000	U	9800	U	100000	U	5100000	U	2000	U	2000	U
Aroclor-1232		19000	U	4900	U	51000	U	2600000	U	1000	U	1000	U
Aroclor-1242		19000	U	4900	U	51000	U	2600000	U	1000	U	1000	U
Aroclor-1248		19000	U	4900	U	51000	U	2600000	U	1000	U	1000	U
Aroclor-1254		19000	U	12000		300000		7700000		1000	U	127	*
Aroclor-1260		40000		4900	U	51000	U	2600000	U	1000	U	1000	U

	Cust ID:	PBLKPJ BSD	
Sample Information	RFW#:	01LE0164-MB1	
	Matrix:	SOIL	
	D.F.:	1.00	
	Units:	UG/KG	
Surrogate: Tetrachloro-m-xylene		88	%
Decachlorobiphenyl		97	%
Aroclor-1016		1000	U
Aroclor-1221		2000	U
Aroclor-1232		1000	U
Aroclor-1242		1000	U
Aroclor-1248		1000	U
Aroclor-1254		113	*
Aroclor-1260		1000	U

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175

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 03/09/01 14:18

RFW Batch Number: 0102L957 Client: BJC BYYP01625A Work Order: 05471601059 Page: 1

	Cust ID:	RS00035	RS00038	PBLKPG	PBLKPG BS	PBLKPG BSD
Sample Information	RFW#:	001	002	01LE0144-MB1	01LE0144-MB1	01LE0144-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		75 %	70 %	60 %	95 %	78 %
Decachlorobiphenyl		86 %	86 %	71 %	111 %	90 %
Aroclor-1016		40 U	39 U	33 U	33 U	33 U
Aroclor-1221		79 U	78 U	67 U	67 U	67 U
Aroclor-1232		40 U	39 U	33 U	33 U	33 U
Aroclor-1242		40 U	39 U	33 U	33 U	33 U
Aroclor-1248		40 U	39 U	33 U	33 U	33 U
Aroclor-1254		40 U	39 U	33 U	124 %	102 %
Aroclor-1260		40 U	39 U	33 U	33 U	33 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
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176

March 19, 2001
9:50 a.m.
FAX 5180

TO: Mike Bemski

FROM: Shelly R. Johnsen for Norm Ross

RE: PCB preliminary results for
01N0126 = Rooms 249+248
01N0110 = Rooms 231+237

Please call if you have any questions. Shelly X6401

177

FAX COVER SHEET

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Lionville Laboratory Incorporated

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Phone: (610) 280-3000
Fax: (610) 280-3041

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OF: K-H

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FROM: Judy Stone

COPY TO: Pat Breeze
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MESSAGE:

PCBs for RIN#01N0126 01020046
054

RIN# 01N0110 01020053

178

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 03/15/01 20:07

RFW Batch Number: 0102L046 Client: K-H RKM01N0126 Work Order: 11830001001 Page: 1

Sample Information														
	Cust ID:	01N0126-001. C01		01N0126-002. 001		01N0126-003. 001		PELKPY		PELKPY BS		PELKPY BSD		
	RFW#:	001		002		003		01LE0205-MB1		01LE0205-MB1		01LE0205-MB1		
	Matrix:	SOLID		SOLID		SOLID		SOIL		SOIL		SOIL		
	D.F.:	5.00		50000		5.00		1.00		1.00		1.00		
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		
Surrogate: Tetrachloro-m-xylene		D	%	D	%	D	%	88	%	88	%	118	%	
Decachlorobiphenyl		D	%	D	%	D	%	17 *	%	19 *	%	116	%	
Aroclor-1016		4600	U	0.43E+08	U	4900	U	1000	U	1000	U	1000	U	
Aroclor-1221		9100	U	0.86E+08	U	9800	U	2000	U	2000	U	2000	U	
Aroclor-1232		4600	U	0.43E+08	U	4900	U	1000	U	1000	U	1000	U	
Aroclor-1242		4600	U	0.43E+08	U	4900	U	1000	U	1000	U	1000	U	
Aroclor-1248		4600	U	0.43E+08	U	4900	U	1000	U	1000	U	1000	U	
Aroclor-1254		17000		0.28E+08		7600		1000	U	89	%	83	%	
Aroclor-1260		4600	U	0.43E+08	U	4900	U	1000	U	1000	U	1000	U	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

179

Lionville Laboratory, Inc.

PCBs by GC

RFW Batch Number: 0102L054 Client: K-H RIN#01K0126 Report Date: 03/15/01 20:07 Work Order: 11830001001 Page: 1

	Cust ID:	01K0126-004. 001	PBLKPY	PBLKPY BS	PBLKPY BSD
Sample Information	RFW#:	001	01LK0205-MB1	01LK0205-MB1	01LK0205-MB1
	Matrix:	SOLID	SOIL	SOIL	SOIL
	D.F.:	20000	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		D %	88 %	88 %	118 %
Decachlorobiphenyl		D %	17 * %	19 * %	116 %
Aroclor-1016		0.21E+08 U	1000 U	1000 U	1000 U
Aroclor-1221		0.41E+08 U	2000 U	2000 U	2000 U
Aroclor-1232		0.21E+08 U	1000 U	1000 U	1000 U
Aroclor-1242		0.21E+08 U	1000 U	1000 U	1000 U
Aroclor-1248		0.21E+08 U	1000 U	1000 U	1000 U
Aroclor-1254		0.17E+08	1000 U	89 %	83 %
Aroclor-1260		0.21E+08 U	1000 U	1000 U	1000 U

248-872 Floor

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

180

Lionville Laboratory, Inc.

PCBs by GC

RFW Batch Number: 0102L053 Client: K-H RTN#01N0110 Work Order: 11830001001 Page: 1 Report Date: 03/15/01 19:59

Sample Information																	
Cust ID:	01N0110-001. 001		01N0110-002. 001		01N0110-003. 001		01N0110-004. 001		PBLKPY		PBLKPY BS	
RFW#:	001		002		003		004		01LK0205-MB1		01LK0205-MB1	
Matrix:	SOLID		SOLID		SOLID		SOLID		SOIL		SOIL	
D.F.:	2.00		5.00		10000		1.00		1.00		1.00	
Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate: Tetrachloro-m-xylene	78	%	D	%	D	%	75	%	88	%	88	%
Decachlorobiphenyl	73	%	D	%	D	%	77	%	17 *	%	19 *	%
Aroclor-1016	1900	U	4600	U	0.10E+08	U	970	U	1000	U	1000	U
Aroclor-1221	3700	U	9200	U	0.20E+08	U	1900	U	2000	U	2000	U
Aroclor-1232	1900	U	4600	U	0.10E+08	U	970	U	1000	U	1000	U
Aroclor-1242	1900	U	4600	U	0.10E+08	U	970	U	1000	U	1000	U
Aroclor-1248	1900	U	4600	U	0.10E+08	U	970	U	1000	U	1000	U
Aroclor-1254	4300		150000		6500000		3500		1000	U	89	%
Aroclor-1260	1900	U	4600	U	0.10E+08	U	970	U	1000	U	1000	U

Sample Information		
Cust ID:	PBLKPY BSD	
RFW#:	01LK0205-MB1	
Matrix:	SOIL	
D.F.:	1.00	
Units:	UG/KG	
Surrogate: Tetrachloro-m-xylene	118	%
Decachlorobiphenyl	116	%
Aroclor-1016	1000	U
Aroclor-1221	2000	U
Aroclor-1232	1000	U
Aroclor-1242	1000	U
Aroclor-1248	1000	U
Aroclor-1254	83	%
Aroclor-1260	1000	U

U= Analysed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

181

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 04/05/01 16:19

RFW Batch Number: 0103L339 Client: K-H RIMN01N0135 Work Order: 11830001001 Page: 1

	Cust ID:	01N0135-001. 002	01N0135-002. 002	01N0135-003. 002	01N0135-004. 002	01N0135-005. 002	PBLKTK
Sample Information	RFW#:	001	002	003	004	005	01LE0333-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOIL
	D.F.:	20.0	20.0	20.0	20.0	500	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		D %	D %	D %	D %	D %	115 %
Decachlorobiphenyl		D %	D %	D %	D %	D %	105 %
Aroclor-1016		20000 U	19000 U	19000 U	17000 U	480000 U	1000 U
Aroclor-1221		40000 U	39000 U	38000 U	35000 U	960000 U	2000 U
Aroclor-1232		20000 U	19000 U	19000 U	17000 U	480000 U	1000 U
Aroclor-1242		20000 U	19000 U	19000 U	17000 U	480000 U	1000 U
Aroclor-1248		20000 U	19000 U	19000 U	17000 U	480000 U	1000 U
Aroclor-1254		20000 U	19000 U	19000 U	17000 U	1300000	1000 U
Aroclor-1260		20000 U	19000 U	19000 U	17000 U	480000 U	1000 U
		774-220-Wall	774-220 Wall	774-220 Floor	774-220 Floor	771-181A-Floor	

Sample taken to replace earlier one that hit drain cover.

	Cust ID:	PBLKTK BS	PBLKTK BSD
Sample Information	RFW#:	01LE0333-MB1	01LE0333-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		110 %	115 %
Decachlorobiphenyl		110 %	111 %
Aroclor-1016		1000 U	1000 U
Aroclor-1221		2000 U	2000 U
Aroclor-1232		1000 U	1000 U
Aroclor-1242		1000 U	1000 U
Aroclor-1248		1000 U	1000 U
Aroclor-1254		106 %	107 %
Aroclor-1260		1000 U	1000 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

182

Lionville Laboratory, Inc.
PCBs by GC

RFM Batch Number: 0103L307 Client: K-H RIN#01N0144 Work Order: 11830001001 Page: 1 Report Date: 04/03/01 17:43

	Cust ID:	01N0144-001.	01N0144-002.	01N0144-003.	01N0144-004.	FBLKTK	FBLKTK BS
Sample Information		001	001	001	001		
	RFM#:	001	002	003	004	01LE0333-MB1	01LE0333-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	20.0	20.0	20.0	20.0	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
		WALL	Wall	Floor	Floor		
Surrogate:	Tetrachloro-m-xylene	D %	D %	D %	D %	115 %	110 %
	Decachlorobiphenyl	D %	D %	D %	D %	105 %	110 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		18000 U	20000 U	20000 U	17000 U	1000 U	1000 U
Aroclor-1221		36000 U	40000 U	39000 U	35000 U	2000 U	2000 U
Aroclor-1232		18000 U	20000 U	20000 U	17000 U	1000 U	1000 U
Aroclor-1242		18000 U	20000 U	20000 U	17000 U	1000 U	1000 U
Aroclor-1248		18000 U	20000 U	20000 U	17000 U	1000 U	1000 U
Aroclor-1254		18000 U	20000 U	20000 U	17000 U	1000 U	106 %
Aroclor-1260		18000 U	20000 U	20000 U	17000 U	1000 U	1000 U

Pure Orange Sealant

Cust ID: FBLKTK BSD

Sample Information	RFM#:	01LE0333-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate:	Tetrachloro-m-xylene	115 %
	Decachlorobiphenyl	111 %
		fl
Aroclor-1016		1000 U
Aroclor-1221		2000 U
Aroclor-1232		1000 U
Aroclor-1242		1000 U
Aroclor-1248		1000 U
Aroclor-1254		107 %
Aroclor-1260		1000 U

Exhaust Tunnel

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COMPANY

ANALYTICAL SERVICES DIVISION

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RIN NUMBER: 01N0144

FROM: NORM ROSS

PHONE: (303) 966-2920

FAX: (303) 966-4555

TO: Mike Bemski

FAX: 5180

PHONE: 4090

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KAISER•HILL
COMPANY

ANALYTICAL SERVICES DIVISION

FAX COVER SHEET

RIN NUMBER: 01N0115 - PCB + TCLP Metals

FROM: NORM ROSS

PHONE: (303) 966-2920

FAX: (303) 966-4555

TO: Mike Bonski

FAX: 5186

PHONE: 4090

NUMBER OF PAGES, INCLUDING COVER SHEET: 13

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Bldg. 771-C
(AWex.)
w/ Dups

185

FAX COVER SHEET

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TIME:

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MESSAGE:

RIN # 01N0145 01042429

metals
PCBs

186

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 04/17/01 16:56

RFW Batch Number: 01041429 Client: K-H KDH01N0145 Work Order: 11830001001 Page: 1

Sample Information	Cust ID:	01N0145-001. 001	01N0145-002. 001	01N0145-003. 001	01N0145-004. 001	01N0145-005. 001	01N0145-006. 001
	RFW#:	001	002	003	004	005	006
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	20.0	20.0	20.0	20.0	20.0	20.0
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		96 %	107 %	95 %	96 %	97 %	102 %
Decachlorobiphenyl		115 %	120 %	106 %	106 %	109 %	113 %
Aroclor-1016		21000 U	20000 U	21000 U	20000 U	21000 U	21000 U
Aroclor-1221		41000 U	40000 U	41000 U	41000 U	41000 U	42000 U
Aroclor-1232		21000 U	20000 U	21000 U	20000 U	21000 U	21000 U
Aroclor-1242		21000 U	20000 U	21000 U	20000 U	21000 U	21000 U
Aroclor-1248		21000 U	20000 U	21000 U	20000 U	21000 U	21000 U
Aroclor-1254		21000 U	20000 U	21000 U	20000 U	21000 U	21000 U
Aroclor-1260		21000 U	20000 U	21000 U	20000 U	21000 U	21000 U

1+6 are WALL dups.
4+5 are floor dups.
2 is wall
3 is floor

Sample Information	Cust ID:	PBLKNO	PBLKNO BS	PBLKNO BSD
	RFW#:	01LN0390-MB1	01LN0390-MB1	01LN0390-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	20.0	20.0	20.0
	Units:	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		102 %	102 %	99 %
Decachlorobiphenyl		115 %	116 %	114 %
Aroclor-1016		20000 U	20000 U	20000 U
Aroclor-1221		40000 U	40000 U	40000 U
Aroclor-1232		20000 U	20000 U	20000 U
Aroclor-1242		20000 U	20000 U	20000 U
Aroclor-1248		20000 U	20000 U	20000 U
Aroclor-1254		20000 U	93 %	90 %
Aroclor-1260		20000 U	20000 U	20000 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

KAISER•HILL
COMPANY

ANALYTICAL SERVICES DIVISION

FAX COVER SHEET

RIN NUMBER: 01N0133, 01N0134, + 01N0146

FROM: NORM ROSS

PHONE: (303) 966-2920

FAX: (303) 966-4555

TO: Mike Bemski

FAX: 5180

PHONE: 4090

NUMBER OF PAGES, INCLUDING COVER SHEET: 1

Please contact Norm **if the fax is not received in its entirety.**
(phone number)
X2920.

I have contacted Charlie Tarines to see if he will provide a more detailed report.

188

CASE NARRATIVE

Lab Name: RFETS - Radiological Laboratories

Priority/analysis type: Screen/PCB

The Laboratory performed the analyses (screen) by procedure L-4171 "Determination of Polychlorinated Biphenyls (PCBs) In Waste Samples". SW-846 8082 was base method.

Customer ID	Sample Description
01N0133 001.003	Solid
01N0133 003.003	Solid
01N0133 004.003	Solid
01N0134 001.003	Solid
01N0133 002.003	Solid
01N0133 003.003	Solid
01N0146 003.003	Solid — 7/76 Tunnel

A screen was performed on the solid paint samples listed above. The samples contain PCBs greater than 50 ppm.

5/2/01

* These Bottle #'s were previously 001 before they were converted to 003 in order to facilate transfer to 559 Labs

5-2-01

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FAX COVER SHEET

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LVLI

Lionville Laboratory Incorporated

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Lionville, PA 19341-1333
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Fax: (610) 280-3041

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MESSAGE:

RIN 01N0116 01021945 metals

(PCBs faxed earlier)

+ PCBs

190

FAX COVER SHEET

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LVLI

Lionville Laboratory Incorporated

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- ☐ Overnight Express

MESSAGE:

RIN# 01N0116 PCBs 0102L945

Surrogates in -001, 002 are a little above the upper limits. Do you require reextraction?

Let me know ASAP

191

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 02/22/01 11:21

RFW Batch Number: 0102L945 Client: K-K RIN#01N0116 Work Order: [illegible]83000C10C1 Page: 1

	Cust ID:	01N0116-001. 002	01N0116-002. 002	01N0116-003. 002	01N0116-004. 002	PBLKPA	PBLKPA BSD
Sample Information	RFW#:	001	002	003	004	01LE0142-MB1	01LE0142-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	2.00	2.00	1.00	2.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		125 * %	98 %	102 %	85 %	82 %	78 %
Decachlorobiphenyl		230 * %	107 %	104 %	78 %	84 %	81 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		1900 U	2000 U	1100 U	2100 U	1000 U	1000 U
Aroclor-1221		3800 U	3900 U	2100 U	4300 U	2000 U	2000 U
Aroclor-1232		1900 U	2000 U	1100 U	2100 U	1000 U	1000 U
Aroclor-1242		1900 U	2000 U	1100 U	2100 U	1000 U	1000 U
Aroclor-1248		1900 U	2000 U	1100 U	2100 U	1000 U	1000 U
Aroclor-1254		6500	4600	2700	5900	1000 U	92 %
Aroclor-1260		1900 U	2000 U	1100 U	2100 U	1000 U	1000 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

192

SS03

PB

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

COPY

01N0110 (Order #.0102L053)	PCBs by SW-846 Method 8082 SS03/B006	Validation (RF# 001259)

Lionville Laboratory, Inc	TechLaw, Inc	4/solid/B006

Sample Numbers: 01N0110-001 001, 01N0110-002 001, 01N0110-003 001, 01N0110-004 001

General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	N	Action Item 1
Sample Preservation	Y	N
Surrogate Recovery	Y	Comments 1, 2
MS/MSD Recovery	Y	Comment 3
Sample Results	Y	Comment 4
Calibration	Y	Action Item 2; Comments 5-7
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	N
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

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193

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments Action Items are technical non-compliances that result in qualification of analytical results Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R) Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy R, UJ, NJ, J, V All data points that are not qualified based upon action items in this report are considered valid (V) Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data.

Action Items:

1 1. Two samples were extracted one day over the 14 day holding time. These samples were received 12-13 days after the sample collection, and exceeded holding times were not attributed to the laboratory. The following sample results are qualified as estimated (J/UJ):

- All Aroclors in samples 01N0110-001.001 and 01N0110-003.001. **[701]**

(The case narrative incorrectly listed that sample 01N0110-004 001 rather than sample 01N0110-003.001 was outside holding time criteria.)

2. Several peaks for Aroclor-1016 and Aroclor-1260 in the continuing calibrations (03/09/01) reported percent differences (%Ds) greater than the 15% criteria on the primary column. Additionally, all peaks reported %Ds outside criteria for Aroclor-1016 and Aroclor-1260 on the confirmation column RTX5. Only the average %D for Aroclor-1016 was within criteria on the primary column. The following result was qualified as estimated (UJ), because the average %Ds exceeded criteria on both columns in the associated continuing calibration:

- Aroclor-1260 in sample 01N0110-002 001. **[141]**

Comments:

1 The recoveries of the surrogates, tetrachloro-m-xylene and decachlorobiphenyl were reported as diluted out for samples 01N0110-002.001 and 01N0110-003. No action was taken, as these samples were analyzed at 5 and 10000 times dilutions, respectively and the surrogates were diluted outside the calibration range Dilutions were required because of the high levels of Aroclor-1254 in these samples. **[142]**

2. The surrogate recoveries of decachlorobiphenyl in the method blank and blank spike analyses were reported below the QC limits at 17%, and 19%, respectively. No action is taken on QC samples. Low surrogate recoveries were not reported in the undiluted sample analyses **[142]**

3. MS/MSD analyses were not included in this data package. The LCS recovery for Aroclor-1254 was within QC limits and no action is required.

4. All samples, except 01N0110-004 001, were analyzed at dilutions ranging from 2 times to 10000 times. All sample results and reporting limits were properly adjusted for these dilutions as well as for the initial sample size and final extract volumes.

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5 The laboratory did not provide initial calibration summaries (average calibration factors, %RSDs, or correlation coefficients) for Aroclor-1016, Aroclor-1260, and Aroclor-1254. This data was requested and received. **[801]**

6 The laboratory did not provide a continuing calibration summary for the confirmation column, RTX1701, analyzed on 03/14/01. The %Ds for the primary column, DB608, were all within the 15% criteria. These standards were associated with samples 01N0110-001 001, 01N0110-003.001, and 01N0110-004.001. Quantitation reports were not provided for the confirmation column for these samples. No action was taken, as Aroclors are identified and confirmed by pattern recognition and retention times **[802]**

7. Aroclor-1254 was identified in all samples Although five point curves were analyzed for Aroclor-1254 on all columns, no calibration linearity summary was provided for this Aroclor. Additionally, a continuing Aroclor-1254 standard was not analyzed for any of the samples. The laboratory did bracket the samples with Aroclor-1660 (Aroclors 1016 and 1260) continuing calibrations. No action additional action was taken as linearity was demonstrated with the Aroclor-1660 standard **[802]**

Verification/Validation Signature Ken Schwartz for Amy Ballow Date: 5/21/01

Reviewer Signature BJG Date 5-21-01
(Validation Only)

195

1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01N0110-001 001

Lab Name Lionville Labs, Inc Work Order 11830001001

Client: K-H RIN#01N0110

Matrix. SOLID

Lab Sample ID. 0102L053-001

Sample wt/vol: 5.40 (g/mL) G

Lab File ID. 03130107 36

Level (low/med) LOW

Date Received 02/21/01

% Moisture· not dec. 1 dec

Date Extracted 02/23/01

Extraction· (SepF/Cont/Sonc) SONC

Date Analyzed.· 03/14/01

GPC Cleanup: (Y/N) N pH. ____

Dilution Factor 2 00

801 802
All

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND			
12674-11-2	Aroclor-1016	1900	U	UJ -701
11104-28-2	Aroclor-1221	3700	U	
11141-16-5	Aroclor-1232	1900	U	
53469-21-9	Aroclor-1242	1900	U	
12672-29-6	Aroclor-1248	1900	U	
11097-69-1	Aroclor-1254	4300		J
11096-82-5	Aroclor-1260	1900	U	UJ

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gd 03-27-01

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04-24 01

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01N0110-002 001

Lab Name Lionville Labs, Inc Work Order: 11830001001

Client K-H RIN#01N0110

Matrix: SOLID

Lab Sample ID 0102L053-002

Sample wt/vol 5 50 (g/mL) G

Lab File ID 03070105.24

Level: (low/med) LOW

Date Received 02/21/01

% Moisture not dec 1 dec

Date Extracted. 02/23/01

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed 03/09/01

GPC Cleanup: (Y/N) N pH: ____

Dilution Factor. 5.00

CAS NO	COMPOUND	CONCENTRATION UNITS. (ug/L or ug/Kg) UG/KG		
12674-11-2	Aroclor-1016	4600	U	1421 All 607 608 All
11104-28-2	Aroclor-1221	9200	U	
11141-16-5	Aroclor-1232	4600	U	
53469-21-9	Aroclor-1242	4600	U	
12672-29-6	Aroclor-1248	4600	U	
11097-69-1	Aroclor-1254	7700		
11096-82-5	Aroclor-1260	4600	U	UJ - 141

FORM 1 PEST 12/88 Rev.

03-29-01

AB
04-24-01

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01N0110-003 003

Lab Name Lionville Labs, Inc Work Order 11830001001

Client K-H RIN#01N0110

Matrix SOLID

Lab Sample ID 0102L053-003

Sample wt/vol 5 10 (g/mL) G

Lab File ID 03130107 38

Level. (low/med) LOW

Date Received· 02/21/01

% Moisture not dec 2 dec.

Date Extracted. 02/23/01

Extraction (SepF/Cont/Sonc) SONC

Date Analyzed. 03/14/01

GPC Cleanup. (Y/N) N pH· ____

Dilution Factor: 10000

CONCENTRATION UNITS
(ug/L or ug/Kg) UG/KG

142↓ 802, 804 A

CAS NO	COMPOUND			
12674-11-2	Aroclor-1016	0.10E+08	U	UJ ·701
11104-28-2	Aroclor-1221	0 20E+08	U	
11141-16-5	Aroclor-1232	0.10E+08	U	
53469-21-9	Aroclor-1242	0.10E+08	U	
12672-29-6	Aroclor-1248	0 10E+08	U	
11097-69-1	Aroclor-1254	6500000		J
11096-82-5	Aroclor-1260	0.10E+08	U	UJ

FORM 1 PEST 12/88 Rev.

03 29 01

AB
04-24-01

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1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO

01N0110-004 001

Lab Name Lionville Labs, Inc Work Order 11830001001

Client K-H RIN#01N0110

Matrix SOLID

Lab Sample ID 0102L053-004

Sample wt/vol 5.20 (g/mL) G

Lab File ID 03130107 46

Level (low/med) LOW

Date Received. 02/21/01

% Moisture not dec 1 dec

Date Extracted. 02/23/01

Extraction. (SepF/Cont/Sonc) SONC

Date Analyzed 03/15/01

GPC Cleanup (Y/N) N pH: ____

Dilution Factor 1 00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Sol, dr2

CAS NO	COMPOUND		
12674-11-2	Aroclor-1016	970	U
11104-28-2	Aroclor-1221	1900	U
11141-16-5	Aroclor-1232	970	U
53469-21-9	Aroclor-1242	970	U
12672-29-6	Aroclor-1248	970	U
11097-69-1	Aroclor-1254	3500	
11096-82-5	Aroclor-1260	970	U

FORM 1 PEST 12/88 Rev

03-29-01

AB
04-24-01

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SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

MB

01N0126 (Lab ID 0102L054)	PCBs by SW-846 Method 8082 SS03/B006	Complete Verification

Recra LabNet, Lionville	TechLaw, Inc	1/solid/B006

Sample Numbers 01N0126-004 001

General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	Y	Action Item 1
Sample Preservation	Y	N
Surrogate Recovery	Y	Comment 1
MS/MSD Recovery	Y	Comment 2
Sample Results	Y	Comments 3,4
Calibration	Y	Action Item 2
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	N
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

200

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments Action Items are technical non-compliances that result in qualification of analytical results Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R) Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy R, UJ, NJ, J, V All data points that are not qualified based upon action items in this report are considered valid (V) Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data

Action Items:

1 Aroclor-1260 was outside of the %D criteria of 15% in both columns in the continuing calibration on 3/9/01 Sample 01N0126-003 001 was quantitated on 3/9/01 The following sample result has been estimated (UJ) as follows

- Aroclor-1260 in sample 01N0126-003 001 **[141]**

2 Sample 01N0126-003 001 was extracted one day past the holding time Sample results have been qualified as estimated (J/UJ) as follows

- All aroclors in sample 01N0126-003 001. **[701]**

Comments:

1 All samples in this SDG required dilutions due to high concentrations of target compounds This caused the surrogates to be diluted out or reported as "D" in the sample **[142]**

2 MS/MSD analyses were not performed on these samples No action is taken as organics data are not qualified using MS/MSD data and the LCS recoveries for Aroclor 1254 were within QC limits.

3. Aroclors were reported in these samples Compound identifications and quantitations were not evaluated as this data package was only requested for verification.

4 Confirmation results were not reported for the samples in this SDG The Sample Discrepancy Report (SDR) notes that the CTR was contacted and reported values were approved as is **[145]**

Verification/Validation Signature Dana Dawson Date: 4/26/01

Reviewer Signature _____ Date: _____
(Validation Only)

201

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

MB

01N0135 (Lab ID 0103L339)	PCBs by SW-846 Method 8082 SS03/B006	Complete Verification

Recra LabNet, Lionville	TechLaw, Inc	5/solid/B006

Sample Numbers 01N0135-001 002, 01N0135-002 002, 01N0135-003 002, 01N0135-004 002, 01N0135-005 002

General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	Y	Action Items 1, 2
Sample Preservation	Y	N
Surrogate Recovery	Y	Comment 1
MS/MSD Recovery	Y	Comment 2
Sample Results	Y	N
Calibration	Y	Action Item 3
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	N
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

202

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Data Quality Assessment Report

Rocky Flats Environmental Technology Site

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Action Items:

1. Samples were received (3/22) by the laboratory beyond the 14 day extraction holding time limit (collected on 2/14), and also exceeded greater than two times the maximum holding time As a result all sample results are rejected (R)·

- All non-detected aroclors in samples 01N0135-001.002, 01N0135-002.002, 01N0135-003.002, and 01N0135-004.002 . **[701]**

2. Samples were received (3/22) by the laboratory beyond the 14 day extraction holding time limit, but were extracted before the 28 day limit. As a result all sample results are estimated (UJ)·

- All aroclors in sample 01N0135-005.002 **[701]**

3. The following sample results were qualified as estimated (UJ) because the %D was greater than 15% on both columns in the continuing calibration.

- All aroclors in samples 01N0135-001 002, 01N0135-002 002, 01N0135-003.002, and 01N0135-004 002. **[141]**

Comments:

1. All five samples were initially diluted 20X, and 500X which caused the surrogates to be diluted out and reported as "D" in the samples. **[142]**

2. MS/MSD analyses were not performed on these samples. No action is taken as organics data are not qualified using MS/MSD data and the LCS recoveries for Aroclor 1254 were within QC limits

Verification/Validation Signature _____ Date: 5/2/01

Reviewer Signature _____ Date: _____
(Validation Only)

SS03

Data Quality Assessment Report

MB

Rocky Flats Environmental Technology Site

01N0144 (Lab ID.0103L307)	PCBs by SW-846 Method 8082 SS03/B006	Complete Verification

Recra LabNet, Lionville	TechLaw, Inc	4/solid/B006

Sample Numbers 01N0144-001 001, 01N0144-002 001, 01N0144-003 001, 01N0144-004 001

General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	Y	Action Item 1
Sample Preservation	Y	N
Surrogate Recovery	Y	Comment 1
MS/MSD Recovery	Y	Comment 2
Sample Results	Y	N
Calibration	Y	Action Item 2
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	N
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

204

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

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Action Items:

1 Samples were received by the laboratory one day beyond the 14 day extraction holding time limit, but were extracted before the 28 day limit. As a result all sample results are estimated (UJ)·

- All four samples. **[701]**

2 The following sample results were qualified as estimated (UJ) because the %D was greater than 15% on both columns in the continuing calibration:

- All four samples. **[141]**

Comments:

1. All four samples were initially diluted 20X which caused the surrogates to be diluted out and reported as "D" in the samples. **[142]**

2. MS/MSD analyses were not performed on these samples. No action is taken as organics data are not qualified using MS/MSD data and the LCS recoveries for Aroclor 1254 were within QC limits.

Verification/Validation Signature _____ Date: 4/25/01

Reviewer Signature _____ Date: _____
(*Validation Only*)

205

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

MB

01N0116 (Lab ID 0102L945)	PCBs by SW-846 Method 8082 SS03/B006	Complete Verification

Recra LabNet, Lionville	TechLaw, Inc	4/solid/B006

Sample Numbers 01N0116-001 002, 01N0116-002 002, 01N0116-003 002, 01N0116-004 002

General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	Y	N
Sample Preservation	Y	N
Surrogate Recovery	Y	Action Item 1
MS/MSD Recovery	Y	Comment 1
Sample Results	Y	Comment 2
Calibration	Y	N
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	N
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

286

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments Action Items are technical non-compliances that result in qualification of analytical results Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R) Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy R, UJ, NJ, J, V All data points that are not qualified based upon action items in this report are considered valid (V) Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data

Action Items:

1 Both surrogates were above the QC limits for one sample The following results are qualified as estimated (J) because of an elevated surrogate recovery

- Aroclor-1254 in sample 01N0116-001 002 **[142]**

Comments:

1 MS/MSD analyses were not performed on these samples No action is taken as organics data are not qualified using MS/MSD data and the LCS recoveries for Aroclor 1254 were within QC limits

2 Aroclors were reported in these samples Compound identifications and quantitations were not evaluated as this data package was only requested for verification

Verification/Validation Signature _____ Date 4/20/01

Reviewer Signature _____ Date. _____
(*Validation Only*)

207

SS03

Data Quality Assessment Report

MB

Rocky Flats Environmental Technology Site

01N0117 (Lab ID 0102L948)	PCBs by SW-846 Method 8082 SS03/B006	Complete Verification

Recra LabNet, Lionville	TechLaw, Inc	4/solid/B006

Sample Numbers 01N0117-001 001, 01N0117-002 001, 01N0117-003 001, 01N0117-004 001

General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	Y	N
Sample Preservation	Y	N
Surrogate Recovery	Y	Comment 1, 2
MS/MSD Recovery	Y	Comment 3
Sample Results	Y	Comment 4
Calibration	Y	N
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	N
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

208

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments Action Items are technical non-compliances that result in qualification of analytical results. Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R) Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy R, UJ, NJ, J, V All data points that are not qualified based upon action items in this report are considered valid (V) Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data.

Action Items:

None

Comments:

1 Two samples 01N0117-003 001, and 01N0117-004 001 required dilutions of 10x due to high concentrations of target compounds This caused the surrogates to be diluted out or reported as "D" in the samples **[142]**

2. One sample 01N0117-001 001 had only one surrogate out No action was taken

3 MS/MSD analyses were not performed on these samples No action is taken as organics data are not qualified using MS/MSD data and the LCS recoveries for Aroclor 1254 were within QC limits

4 Aroclors were reported in these samples Compound identifications and quantitations were not evaluated as this data package was only requested for verification

Verification/Validation Signature _____ Date 4/20/01

Reviewer Signature _____ Date _____
(Validation Only)

SS03

Data Quality Assessment Report

MB

Rocky Flats Environmental Technology Site

01N0118 (Lab ID 0102L950)	PCBs by SW-846 Method 8082 SS03/B006	Complete Verification

Recra LabNet, Lionville	TechLaw, Inc	4/solid/B006

Sample Numbers 01N0118-001 001, 01N0118-002 001, 01N0118-003 001, 01N0116-004 001

General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	Y	N
Sample Preservation	Y	N
Surrogate Recovery	Y	Comment 1
MS/MSD Recovery	Y	Comment 2
Sample Results	Y	Comment 3
Calibration	Y	N
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	N
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

210

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments Action Items are technical non-compliances that result in qualification of analytical results Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R) Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy R, UJ, NJ, J, V All data points that are not qualified based upon action items in this report are considered valid (V) Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data.

Action Items:

None

Comments:

1 The samples required dilutions from 5x to 100x due to high concentrations of target compounds This caused the surrogates to be diluted out or reported as "D" in the samples No action was taken **[142]**

2 MS/MSD analyses were not performed on these samples. No action is taken as organics data are not qualified using MS/MSD data and the LCS recoveries for Aroclor 1254 were within QC limits

3 Aroclors were reported in these samples. Compound identifications and quantitations were not evaluated as this data package was only requested for verification

Verification/Validation Signature _____ Date: 4/20/01

Reviewer Signature _____ Date: _____
(*Validation Only*)

SS03

Data Quality Assessment Report MB

Rocky Flats Environmental Technology Site

[illegible]		
01N0125 (Lab ID 0102L980)	PCBs by SW-846 Method 8082 SS03/B006	Complete Verification

[illegible]		
Recra LabNet, Lionville	TechLaw, Inc	4/solid/B006

Sample Numbers 01N0125-001 001, 01N0125-002 001, 01N0125-003 001, 01N0125-004 001

[illegible]		
General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	Y	N
Sample Preservation	Y	N
Surrogate Recovery	Y	Comment 2
MS/MSD Recovery	Y	N
Sample Results	Y	Comment 1
Calibration	Y	Action Item 1
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	N
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments Action Items are technical non-compliances that result in qualification of analytical results Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R) Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy R, UJ, NJ, J, V All data points that are not qualified based upon action items in this report are considered valid (V) Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data.

Action Items:

1 Aroclor-1016 was outside of the 15%D limit at 21% in the continuing calibration on 3/8/01 in both columns All results for aroclor-1016 were non-detects and were estimated at the detection limit (UJ) as follows

- Aroclor-1016 in all samples **[141]**

Comments:

1 All of the samples in this sample delivery group were diluted to report high concentrations of target analytes The RDLs were not met for these samples **[213]**

2 The surrogates were diluted out of the samples All QC samples had acceptable surrogate recoveries No action is taken **[142]**

Verification/Validation Signature Jana Dawson Date: 4/17/01

Reviewer Signature _____ Date _____
(*Validation Only*)

213

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

01N0126 (Lab ID 0102L054)	PCBs by SW-846 Method 8082 SS03/B006	Complete Verification

Recra LabNet, Lionville	TechLaw, Inc	1/solid/B006

Sample Numbers 01N0126-004 001

General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	Y	N
Sample Preservation	Y	N
Surrogate Recovery	Y	Comment 1
MS/MSD Recovery	Y	Comment 2
Sample Results	Y	Comments 3,4
Calibration	Y	N
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	N
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

214

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments Action Items are technical non-compliances that result in qualification of analytical results Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R) Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy R, UJ, NJ, J, V All data points that are not qualified based upon action items in this report are considered valid (V) Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data.

Action Items:

None

Comments:

1 Samples 01N0126-004 001 required a dilution of 20000x due to high concentrations of target compounds This caused the surrogates to be diluted out or reported as "D" in the sample **[142]**

2. MS/MSD analyses were not performed on these samples. No action is taken as organics data are not qualified using MS/MSD data and the LCS recoveries for Aroclor 1254 were within QC limits

3 Aroclors were reported in these samples Compound identifications and quantitations were not evaluated as this data package was only requested for verification.

4 No confirmation results were reported for this sample. SDR notes that CTR was contacted and reported values were approved as is. **[145]**

Verification/Validation Signature _____ Date: 4/20/01

Reviewer Signature _____ Date _____
(Validation Only)

215

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

MB

COPY

01N0109 (Lab ID 0102L888)	PCBs by SW-846 Method 8082 SS03/ B006	Validation (RF# 1257)

Lionville Laboratory Inc	TechLaw, Inc	4/solid/B006

Sample Numbers 01N0109-001 001, 01N0109-002 001, 01N0109-003 001, 01N0109-004 001

General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	N
Chain of Custody	Y	N
Holding Times	Y	Action Item 1
Sample Preservation	Y	N
Surrogate Recovery	Y	Comment 1
MS/MSD Recovery	Y	N
Sample Results	Y	Comment 2
Calibration	Y	Action Item 2
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	Action Item 3
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

ENTERED
RECEIVED
MAY 10 2001

216

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments. Action Items are technical non-compliances that result in qualification of analytical results. Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R) Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy R, UJ, NJ, J, V All data points that are not qualified based upon action items in this report are considered valid (V) Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data.

Action Items:

1 Sample 01N0109-001 001 was re-extracted due to extremely low surrogate recoveries in the original analysis The extraction of this sample occurred 8 days past the 14 day holding time limit. The following sample results are estimated (J/UJ):

- All aroclor results in the reanalysis of sample 01N0109-001.001. **[101]**

Note: The original result and the re-analysis result for Aroclor 1254 in sample 01N0109-001.001 differ by a large amount. The re-analysis result was much larger, indicating that the original result (which had low surrogate recoveries) did not successfully recover the analytes of interest The re-analysis (01N0109RE) is reported even though it occurred outside of the holding time limit. (Because of the surrogate recoveries less than 10% in the original analysis the detected result would be estimated and the non-detects rejected.)

2 The following sample results are qualified as estimated (UJ) because the continuing calibration percent differences were greater than 15%·

- Aroclor-1016 and Aroclor 1260 in samples 01N0109-002 001, 01N0109-003.001, and 01N0109-004 001. **[141]**

3 The method blank extracted on 2/8/01 and analyzed on 2/12/01 was contaminated with Aroclor-1254 at 220 ug/kg. The following sample result is qualified as non-detected (U):

- Aroclor-1254 in sample 01N0109-002.001 **[249]**

Comments:

1 The surrogate compounds were diluted out of samples 01N0109-001.001RE, 01N0109-003 001, and 01N0109-004 001 Surrogate criteria were met for all QC analyses. The sample dilutions were required to quantitate target analytes and no further action is taken. **[142]**

2. The reporting limits for samples 01N0109-001.001RE, 01N0109-003 001, and 01N0109-004 001 were not met due to the dilutions required to quantitate target analytes No action is taken

Verification/Validation Signature JPBarnett for Jane Dawson Date. 5-9-01

Reviewer Signature BJG Date 5-8-01
(*Validation Only*)

217

1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

01N0109-001.001

Lab Name: Lionville Labs, Inc. Work Order: 11830001001

Client: K-H RIN#01N0109

Matrix: SOLID

Lab Sample ID: 0102L888-001

Sample wt/vol: 5.80 (g/mL) G

Lab File ID: 02140107.06

Level: (low/med) LOW

Date Received: 02/02/01

% Moisture: not dec. 100 dec.

Date Extracted: 02/08/01

Extraction: (SepF/Cont/Sonc) N/A

Date Analyzed: 02/14/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
12674-11-2	Aroclor-1016	170	U
11104-28-2	Aroclor-1221	340	U
11141-16-5	Aroclor-1232	170	U
53469-21-9	Aroclor-1242	170	U
12672-29-6	Aroclor-1248	170	U
11097-69-1	Aroclor-1254	540	B
11096-82-5	Aroclor-1260	170	U

FORM 1 PEST 12/88 Rev.

Not Used - See Re-analysis

J.D
4/12/01

031

218

1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

01N0109-001.001RE

Lab Name: Lionville Labs, Inc. Work Order: 11830001001

Client: K-H RIN#01N0109

Matrix: SOLID

Lab Sample ID: 0102L888-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 02280107.34

Level: (low/med) LOW

Date Received: 02/02/01

% Moisture: not dec. 100 dec.

Date Extracted: 02/20/01

Extraction: (SepF/Cont/Sonc) N/A

Date Analyzed: 03/02/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 10.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

142

CAS NO.	COMPOUND			
12674-11-2	Aroclor-1016	10000	U	UJ[101]
11104-28-2	Aroclor-1221	20000	U	
11141-16-5	Aroclor-1232	10000	U	
53469-21-9	Aroclor-1242	10000	U	
12672-29-6	Aroclor-1248	10000	U	
11097-69-1	Aroclor-1254	28000		J[101]
11096-82-5	Aroclor-1260	10000	U	UJ[101]

FORM 1 PEST 12/88 Rev.

039

219

J.D 4/12/01

1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

01N0109-002.001

Lab Name: Lionville Labs, Inc. Work Order: 11830001001

Client: K-H RIN#01N0109

Matrix: SOLID

Lab Sample ID: 0102L888-002

Sample wt/vol: 5.30 (g/mL) G

Lab File ID: 02140107.07

Level: (low/med) LOW

Date Received: 02/02/01

% Moisture: not dec. 100 dec.

Date Extracted: 02/08/01

Extraction: (SepF/Cont/Sonc) N/A

Date Analyzed: 02/14/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND			
12674-11-2	Aroclor-1016	190	U	UJ [41]
11104-28-2	Aroclor-1221	380	U	
11141-16-5	Aroclor-1232	190	U	
53469-21-9	Aroclor-1242	190	U	
12672-29-6	Aroclor-1248	190	U	
11097-69-1	Aroclor-1254	520	B	UC [249]
11096-82-5	Aroclor-1260	190	U	UJ [41]

FORM 1 PEST 12/88 Rev.

046

J.D. 4/1

220

PESTICIDE ORGANICS ANALYSIS SHEET

01N0109-003.001

Lab Name: Lionville Labs, Inc. Work Order: 11830001001

Client: K-H RIN#01N0109

Matrix: SOLID

Lab Sample ID: 0102L888-003

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: 02140107.08

Level: (low/med) LOW

Date Received: 02/02/01

% Moisture: not dec. 100 dec.

Date Extracted: 02/08/01

Extraction: (SepF/Cont/Sonc) N/A

Date Analyzed: 02/14/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1000

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND			
12674-11-2	Aroclor-1016	200000	U	UJ[41]
11104-28-2	Aroclor-1221	390000	U	
11141-16-5	Aroclor-1232	200000	U	
53469-21-9	Aroclor-1242	200000	U	
12672-29-6	Aroclor-1248	200000	U	
11097-69-1	Aroclor-1254	920000	B	
11096-82-5	Aroclor-1260	200000	U	UJ[41]

[142]

FORM 1 PEST 12/88 Rev.

221

056

JP 4/12/1

PESTICIDE ORGANICS ANALYSIS SHEET

01N0109-004.001

Lab Name: Lionville Labs, Inc. Work Order: 11830001001

Client: K-H RIN#01N0109

Matrix: SOLID

Lab Sample ID: 0102L888-004

Sample wt/vol: 5.40 (g/mL) G

Lab File ID: 02140107.09

Level: (low/med) LOW

Date Received: 02/02/01

% Moisture: not dec. 100 dec.

Date Extracted: 02/08/01

Extraction: (SepF/Cont/Sonc) N/A

Date Analyzed: 02/14/01

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 200

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND			
12674-11-2	Aroclor-1016	37000	U	UJ[141]
11104-28-2	Aroclor-1221	74000	U	
11141-16-5	Aroclor-1232	37000	U	
53469-21-9	Aroclor-1242	37000	U	
12672-29-6	Aroclor-1248	37000	U	
11097-69-1	Aroclor-1254	97000	B	
11096-82-5	Aroclor-1260	37000	U	UJ[141] [illegible]

[142]

FORM 1 PEST 12/88 Rev.

064

222

J.O. 4/1/

SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

MB

[illegible]	[illegible]	[illegible]
01N0077 (Lab ID 0102L887)	PCBs by SW-846 Method 8081 SS03/B006	Complete Verification

[illegible]	[illegible]	[illegible]
Recra LabNet, Lionville	TechLaw, Inc	4/solid/B006

Sample Numbers 01N0077-001 002, 01N0077-002 002, 01N0077-003 002, 01N0077-004 002

[illegible]	[illegible]	[illegible]
General (Cover Page, Table of Contents, DRC Checklist, Narrative)	Y	Comment 1
Chain of Custody	Y	N
Holding Times	Y	Action Item 1
Sample Preservation	Y	N
Surrogate Recovery	Y	N
MS/MSD Recovery	Y	N
Sample Results	Y	N
Calibration	Y	Comment 2
Analytical Sequence (CLP)	NA	NA
Florisil Cartridge Check (CLP)	NA	NA
Gel Permeation Chromatography (CLP)	NA	NA
Blanks	Y	Action Item 2
Sample Preparation	Y	N
Other QC	Y	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

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SS03

Data Quality Assessment Report

Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments Action Items are technical non-compliances that result in qualification of analytical results Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R) Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy R, UJ, NJ, J, V All data points that are not qualified based upon action items in this report are considered valid (V) Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data.

Action Items:

1 Samples 01N0077-001 002 and 01N0077-003 002 were received at the lab five days after collection and were extracted outside of the required hold time of 14 days Sample results have been estimated (J) as follows·

- All aroclors in samples 01N0077-001.002 and 01N0077-003 002 **[701]**

2 Aroclor-1254 was detected in the method blank Sample results have been estimated (JB) as follows

- Aroclor-1254 in all samples **[249]**

Comments:

1. Samples 01N0077-002 002, 01N0077-003 002, and 01N0077-004 002 were diluted due to the matrix and concentrations of analytes. The RDLs were not met for these samples. **[213]**
2. Aroclor-1260 was outside of the %D limit in the continuing calibrations on both columns on 2/13/01 Sample results were not reported from this date of analysis Further, aroclor 1016 was outside of the %D limit on column 2 in the continuing calibration on 2/14/01. The primary column results for aroclor 1016 were acceptable and all sample results for this aroclor were non-detects No further action was taken.

Verification/Validation Signature Jana Dawson Date. 4/11/01

Reviewer Signature _____ Date. _____
(Validation Only)

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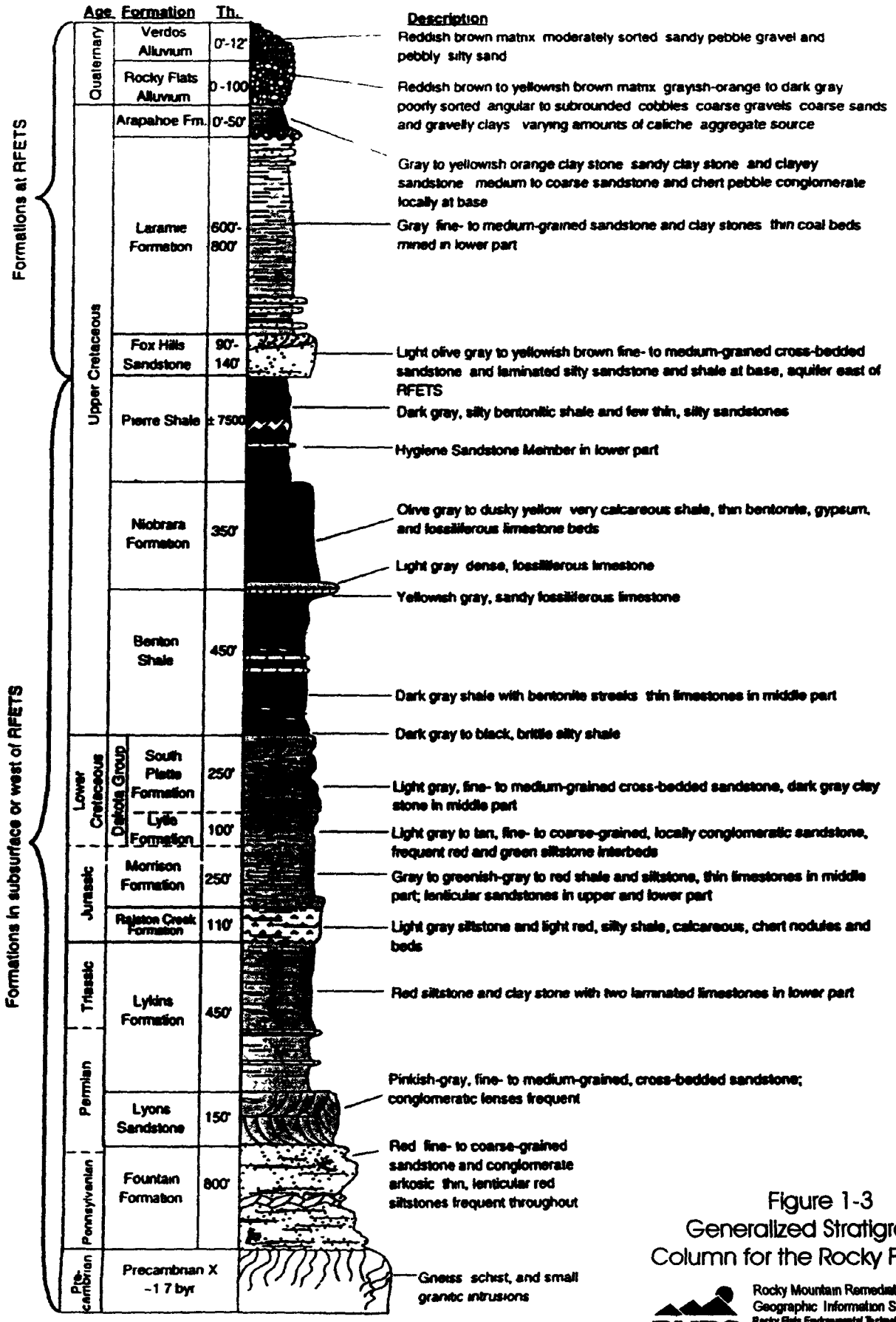
ATTACHMENT 4

SITE MAPS



Modified from LeRoy and Weimer (1971)

Figure 1-3
Generalized Stratigraphic Column for the Rocky Flats Area

RMRS
Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464
/projects/fy2/ufcs-rp/figures/stratigraphic

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ATTACHMENT 5

MODEL PICTORIAL

229

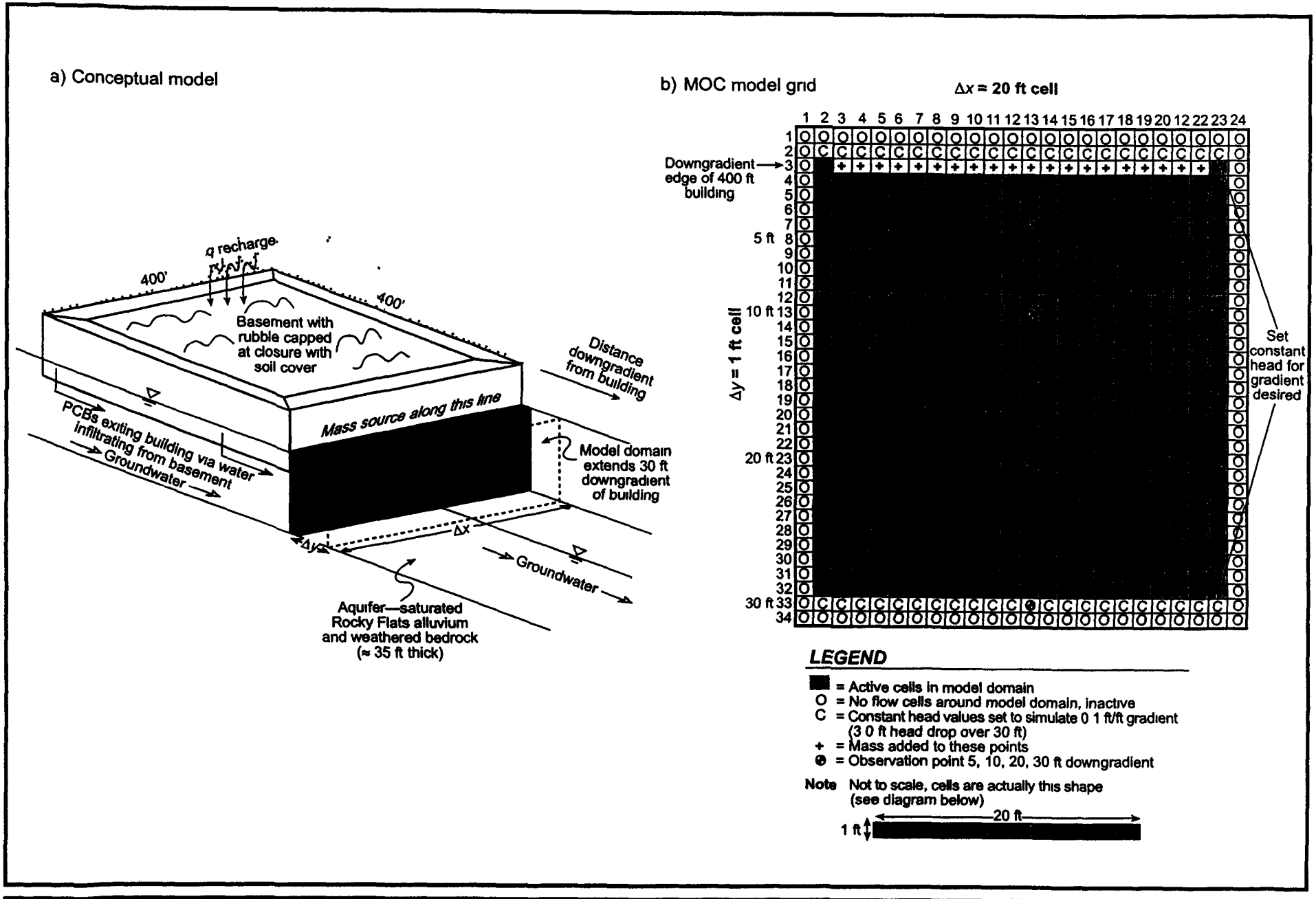

Figure 1 Conceptual model (a) and MOC model grid (b) for PCB migration from backfilled concrete rubble at RFETS.

\\Boulder1\Data\Groups\Graphics\Projects\1454\Conceptual Model for PCB fh8 07/18/01 CO

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ATTACHMENT 6

MODEL RAW DATA

```
ocky Flats PCB Migration from Concrete Rubble, 400 x 400 ft source area
  1   1  24  34        1   7   5 150  20   9   2  10   1   0   0   0   1 1
 30  0001 2500   3 00 0000 0000 000 20 0  1 0 3000 50001 000
  5 60E-08       5 400E+10       0 0000E+000
1 0 0 0 1
3 3
3 8
313
323
333
3 3-6 9E-076 30E+05
4 3-6 9E-076 30E+05
5 3-6 9E-076 30E+05
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7 3-6 9E-076 30E+05
3 3-6 9E-076 30E+05
9 3-6 9E-076 30E+05
0 3-6 9E-076 30E+05
1 3-6 9E-076 30E+05
2 3-6 9E-076 30E+05
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INPUT FOR
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 1    1 0000   000e+00   000E+00 0
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 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0
 0 0103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103
 03 103 103 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100.100 100 100 100
 00.100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100.
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00.100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
 00 100 100 0 0
 0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
```

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```
00 100 100 0 0
0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
00 100 100 0 0
0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
00 100 100 0 0
0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
00 100 100 0 0
0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
00 100 100 0 0
0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
00 100 100 0 0
0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
00 100 100 0 0
0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
00 100 100 0 0
0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
00 100 100 0 0
0 0100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100
00 100 100 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0
 0 000E+00
```

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U S G S Method-of-characteristics model for solute transport in ground water

Rocky Flats PCB Migration from Concrete Rubble, 400 x 400 ft source area

OUTPUT

UNITS
µg
ft

I N P U T D A T A

GRID DESCRIPTORS

NX	(Number of columns)	=	24
NY	(Number of rows)	=	34
XDEL	(Grid spacing in X-direction)	=	20 0
YDEL	(Grid spacing in Y-direction)	=	1 0

TIME PARAMETERS

NTIM	(Max no of time steps)	=	1
NPMP	(No of pumping periods)	=	1
PINT	(Pumping period in years)	=	30 000
TIMX	(Time step multiplier--flow)	=	0 00
TINIT	(Initial time step in sec)	=	0

HYDROLOGIC AND CHEMICAL PARAMETERS

S	(Storage coefficient)	=	0 000000
POROS	(Effective porosity)	=	0 250
BETA	(Longitudinal dispersivity)	=	3 0
DLTRAT	(Ratio of transverse to longitudinal dispersivity)	=	0 30
ANFCTR	(Ratio of Tyy to Txx)	=	1 000000

EXECUTION PARAMETERS

NITP	(No of iteration parameters)	=	7
TOL	(Convergence criteria--flow)	=	0 10E-03
ITMAX	(Max no of iterations--flow)	=	150
CELDIS	(Max cell distance per move of particles--M O C)	=	0 500
NPTPND	(No particles per node)	=	9

PROGRAM OPTIONS

NPNT	(Time step interval for complete printout)	=	1
NPNTMV	(Move interval for chem concentration printout)	=	10
NPNTVL	(Time step interval for velocity printout 0=Never, -1=First time step, -2=Last time step, N>0=Every Nth time step)	=	1
NPNTD	(Print option--dispersion-equation coefficients 0=Never, 1=First time step, 2=All time steps)	=	0
NUMOBS	(No of observation wells for hydrograph printout)	=	5
NREC	(No of pumping wells)	=	20

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```
NCODES (No  of codes used for node identification)        =   2
NPDELC (Print option--conc  change   0=NO, 1=YES)         =   0
IREACT (Reaction specifier)                                =   1
NOUTFL (Extra output file specifications  0=NO, 1=YES)     =   1


REACTION - LINEAR SORPTION


RHOB     (Bulk density)                  =  5 40000E+10
DK       (Distribution coefficient)      =  5 60000E-08
RF       (Retardation factor)            =  1 20970E+04

          OPTIONS TO CREATE ADDITIONAL OUTPUT FILES

NOBSO     Write observation well data   (0  do not write, 1  write all
          data to one file, 2  write data to NUMOBS files--one file for
          each observation point)                                      =  1

NHEADO    Write head data (0  do not write, -1  write initial head only,
          1  write final head only,  2  write initial and final head)   =  0

NPNCHV    Write velocity data (-1  first time step, 0  do not write,
          -2  last time step, N>0  every Nth time step)                =  0

NCONCO    Write concentration data (0  do not write, -1  write initial
          conc , 1  write final conc , 2· write initial and final conc ) =  0

NPARMO    Write transmissivity, sat  thickness, diffuse recharge/dis-
          charge, & hydraulic conductivity data to separate files using
          values from input data  (0  do not write any, 1  write all)   =  0

IFMT      Write data in column or matrix format (0  column, 1  matrix)   =  1

   THE FOLLOWING ADDITIONAL OUTPUT FILES WILL BE CREATED

 observation well data              c \rfets\rf_fin obs


             STEADY-STATE FLOW

    TIME INTERVALS (IN SEC) FOR SOLUTE-TRANSPORT SIMULATION
   0 94673E+09

        LOCATION OF OBSERVATION WELLS

              NO       X       Y

               1      13       3
               2      13       8
               3      13      13
               4      13      23
```

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LOCATION OF PUMPING WELLS

X	Y	RATE(L**3/SEC)	CONC
3	3	0 0000	********
4	3	0 0000	********
5	3	0 0000	********
6	3	0 0000	********
7	3	0 0000	********
8	3	0 0000	********
9	3	0 0000	********
10	3	0 0000	********
11	3	0 0000	********
12	3	0 0000	********
13	3	0 0000	********
14	3	0 0000	********
15	3	0 0000	********
16	3	0 0000	********
17	3	0 0000	********
18	3	0 0000	********
19	3	0 0000	********
20	3	0 0000	********
21	3	0 0000	********
22	3	0 0000	********

AREA OF ONE CELL = 20 00

X-Y SPACING
20 000
1 0000

TRANSMISSIVITY MAP (L**2/SEC)

0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00
0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00
0 00E+00	0 00E+00	0 00E+00	0 00E+00						
0 00E+00	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9.00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	0 00E+00						
0.00E+00	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	0 00E+00						
0 00E+00	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	0 00E+00						
0 00E+00	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	0 00E+00						
0 00E+00	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9.00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	0 00E+00						
0 00E+00	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04

9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	0 00E+00							
0 00E+00	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04

9 00E-04	9 00E-04	9 00E-04	0 00E+00									
0 00E+00	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04
9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04	9 00E-04

| | | |

```
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2.57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05  2 57E-05
2 57E-05  2 57E-05  2 57E-05  0 00E+00
0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00
0 00E+00  0 00E+00  0 00E+00  0 00E+00  0.00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00
0 00E+00  0 00E+00  0 00E+00  0 00E+00
```

241 NO OF FINITE-DIFFERENCE CELLS IN AQUIFER = 704

AREA OF AQUIFER IN MODEL = 14080 (L**2)

NZCRIT (Max no of cells that can be void of particles, if exceeded, particles are regenerated) = 14

NODE IDENTIFICATION MAP

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NO OF NODE IDENT CODES SPECIFIED = 2

THE FOLLOWING ASSIGNMENTS HAVE BEEN MADE

242 CODE NO LEAKANCE SOURCE CONC RECHARGE

2	0 100E+01	0 00
1	0 100E+01	0 00

LEAKANCE COEF = VERTICAL HYDRAULIC COND /THICKNESS (L/(L*SEC))

0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00
0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00
0 00E+00	0 00E+00	0 00E+00	0 00E+00							
0 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00
1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00	1 00E+00
1 00E+00	1 00E+00	1 00E+00	0 00E+00							
0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00
0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00
0 00E+00	0 00E+00	0

0 00E+00	0 00E+00	0 00E+00	0 00E+00												
0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00
0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00

DIFFUSE RECHARGE AND DISCHARGE (L/SEC)

0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00
0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00
0 00E+00	0 00E+00	0 00E+00	0 00E+00							
0 00E+00	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09
2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09	2 60E-09
2 60E-09	2 60E-09	2 60E-09

```
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09  2 60E-09
 2 60E-09  2 60E-09  2 60E-09  0 00E+00
 0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00
 0 00E+00  0 00E+00  0 00E+00  0 00E+00  0.00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00  0 00E+00
 0 00E+00  0 00E+00  0 00E+00  0 00E+00
```

INITIAL HEADS AND SPECIFIED BOUNDARY HEADS

```
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0
   0  103  103  103  103  103  103  103  103  103  103  103  103  103  103. 103  103  103  103  103
 103  103  103    0
   0  100  100  100  100  100  100  100  100  100  100  100  100  100  100  100  100  100  100  100
 100  100  100    0
   0  100  100  100  100. 100  100  100  100  100  100  100  100  100  100  100  100  100  100  100
```

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100	100	100	0																
0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

```
100  100  100   0
  0    0    0   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
  0    0    0   0
```

HEAD DISTRIBUTION (BY ROW)

```
Number of time steps =      0
      Time (seconds) =  0 00000
      Time (days)    =  0 00000E+00
      Time (years)   =  0 00000E+00

  0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000
  0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000
  0 0000000   0 0000000   0 0000000   0 0000000
  0 0000000 103 0000000 103 0000000 103 0000000 103 0000000 103 0000000 103 0000000 103 0000000 103 0000000 103 0000000
103 0000000 103 0000000 103 0000000 103 0000000 103 0000000 103 0000000 103 0000000 103 0000000 103 0000000 103 0000000
103 0000000 103 0000000 103 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100.0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100.0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100.0000000 100 0000000 100 0000000 100.0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0.0000000
  0 0000000 100 0000000 100 0000000 100.0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100.0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0.0000000
  0 0000000 100 0000000 100 0000000 100.0000000 100 0000000 100.0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100.0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
```

```
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000 100 0000000
100 0000000 100 0000000 100 0000000   0 0000000
  0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000
  0 0000000   0 0000000   0 0000000   0 0000000   0.0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000
  0 0000000   0 0000000   0 0000000   0 0000000
```

CONCENTRATION

```
Number of time steps =      0
      Time (seconds) =  0 00000
 Chem time (seconds) =  0 00000E+00
 Chem time (days)    =  0 00000E+00
      Time (years)   =  0 00000E+00
 Chem time (years)   =  0 00000E+00
 No  moves completed =      0

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
```

250

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0

```
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0


  N =    1
  NUMBER OF ITERATIONS =   42


HEAD DISTRIBUTION (BY ROW)

Number of time steps =     1
      Time (seconds) =  0 94673E+09
      Time (days)    =  0 10958E+05
      Time (years)   =  0 30000E+02

   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000
   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000
   0 0000000   0 0000000   0 0000000   0.0000000
   0 0000000 102 9999128 102 9999129 102 9999129 102 9999129 102 9999129 102 9999129 102 9999129 102 9999129 102 9999129
 102 9999129 102 9999129 102 9999129 102.9999129 102 9999129 102 9999129 102 9999129 102 9999129 102 9999129 102 9999129
 102 9999129 102 9999129 102 9999128   0 0000000
   0 0000000 102 9030664 102 9031021 102 9031027 102 9031028 102 9031028 102 9031028 102 9031028 102 9031028 102 9031028
 102 9031028 102 9031028 102 9031028 102 9031028 102 9031028 102 9031028 102 9031028 102 9031028 102 9031028 102 9031028
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  0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000   0 0000000
  0 0000000   0 0000000   0 0000000   0 0000000
```

HEAD DISTRIBUTION (BY ROW)

```
Number of time steps =     1
      Time (seconds) =  0 94673E+09
      Time (days)    =  0 10958E+05
      Time (years)   =  0 30000E+02

  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103   0
  0 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103   0
  0 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103   0
  0 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103   0
  0 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103   0
  0 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103   0
  0 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102   0
  0 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102 102   0
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0	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	0
0	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	0
0	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	0
0	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	0
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0	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	0
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0	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	0
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0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0
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0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0
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0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Cumulative mass balance -- (IN L**3)

```
Recharge and injection      =  0 13065E+05
Pumpage and E-T withdrawal  = -0 34658E+05
Cumulative net pumpage      = -0 21593E+05
```

```
Water release from storage =  0 00000E+00
Leakage into aquifer       =  0 36297E+08
Leakage out of aquifer     = -0 36262E+08
Cumulative net leakage     =  0 35116E+05

    Mass balance residual  =   13523
    Error (as percent)     =  0 37251E-01


RATE MASS BALANCE -- (IN L**3/SEC)


Leakage into aquifer       =  0 38339E-01
Leakage out of aquifer     = -0 38302E-01
Net leakage     (QNET)     =  0 37092E-04
Recharge and injection     =  0 13800E-04
Pumpage and E-T withdrawal = -0 36608E-04
Net withdrawal    (TPUM)   = -0 22808E-04
```

X VELOCITIES

AT NODES

0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00
0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00
0 000E+00	0 000E+00	0 000E+00	0 000E+00						
0 000E+00	-8 262E-14	-8 398E-14	-1 498E-15	-1 610E-16	-2 803E-17	-5 335E-18	-1 827E-19	1 242E-18	1 462E-18
1 060E-18	3 654E-19	-3.654E-19	-1 060E-18	-1 462E-18	-1 242E-18	1 827E-19	5 335E-18	2 803E-17	1 610E-16
1 498E-15	8 398E-14	8 262E-14	0 000E+00						
0 000E+00	-9 189E-11	-9 340E-11	-1 666E-12	-1 791E-13	-3 120E-14	-5 920E-15	-2 060E-16	1 369E-15	1 601E-15
1 184E-15	4 298E-16	-4 299E-16	-1 184E-15	-1 601E-15	-1 369E-15	2 060E-16	5 920E-15	3 120E-14	1 791E-13
1 666E-12	9 340E-11	9 189E-11	0 000E+00						
0 000E+00	-8 544E-11	-8 826E-11	-3 104E-12	-3 232E-13	-4 272E-14	-5 905E-15	-2 277E-15	-2 575E-15	-2 549E-15
-1 833E-15	-6 615E-16	6 615E-16	1 833E-15	2 549E-15	2 575E-15	2 277E-15	5 905E-15	4 272E-14	3 232E-13
3 104E-12	8 826E-11	8 544E-11	0 000E+00						
0 000E+00	-7 973E-11	-8 362E-11	-4 334E-12	-5 116E-13	-8 466E-14	-1 520E-14	-1 293E-15	2 033E-15	2 544E-15
1 897E-15	6 903E-16	-6 902E-16	-1 897E-15	-2 544E-15	-2 033E-15	1 293E-15	1 520E-14	8 466E-14	5 116E-13
4 334E-12	8 362E-11	7 973E-11	0 000E+00						
0 000E+00	-7 416E-11	-7 898E-11	-5 376E-12	-6 418E-13	-9 511E-14	-1 506E-14	-3 259E-15	-1 764E-15	-1 460E-15
-1 015E-15	-3 637E-16	3 638E-16	1 015E-15	1 460E-15	1 764E-15	3 259E-15	1 506E-14	9 511E-14	6 418E-13
5 376E-12	7 898E-11	7 416E-11	0 000E+00						
0 000E+00	-6 907E-11	-7 463E-11	-6 246E-12	-7.949E-13	-1 250E-13	-2 100E-14	-3 196E-15	9 918E-17	6 537E-16
5 389E-16	1 998E-16	-1 998E-16	-5.388E-16	-6 537E-16	-9 925E-17	3 196E-15	2 100E-14	1 250E-13	7 949E-13
6 246E-12	7 463E-11	6 907E-11	0 000E+00						
0 000E+00	-6 423E-11	-7 039E-11	-6 959E-12	-9 191E-13	-1 430E-13	-2 358E-14	-4 115E-15	-8 939E-16	-3 252E-16
-1 652E-16	-5 452E-17	5 448E-17	1.654E-16	3 252E-16	8 938E-16	4 115E-15	2 358E-14	1 430E-13	9 191E-13
6 959E-12	7 039E-11	6 423E-11	0.000E+00						
0 000E+00	-5 968E-11	-6 631E-11	-7 528E-12	-1 035E-12	-1 626E-13	-2 689E-14	-4 679E-15	-9 884E-16	-3 381E-16
-1 646E-16	-5 353E-17	5 350E-17	1 647E-16	3 381E-16	9 884E-16	4 679E-15	2 689E-14	1 626E-13	1 035E-12
7 528E-12	6 631E-11	5 968E-11	0 000E+00						
0 000E+00	-5 547E-11	-6 245E-11	-7 967E-12	-1 140E-12	-1 816E-13	-3 026E-14	-5 074E-15	-7 459E-16	4 202E-18
9 388E-17	4 074E-17	-4 074E-17	-9 391E-17	-4 202E-18	7 459E-16	5 074E-15	3 026E-14	1 816E-13	1 140E-12

7 907E-12	0 245E-11	5 347E-11	0 000E+00							
0 000E+00	-5 154E-11	-5 876E-11	-8 285E-12	-1 228E-12	-1 981E-13	-3 316E-14	-5 453E-15	-6 225E-16	2 061E-16	
2 482E-16	9 709E-17	-9 702E-17	-2 482E-16	-2 062E-16	6 226E-16	5 453E-15	3 316E-14	1 981E-13	1 228E-12	
8 285E-12	5 876E-11	5 154E-11	0 000E+00							
0 000E+00	-4 785E-11	-5 522E-11	-8 495E-12	-1 301E-12	-2 119E-13	-3 556E-14	-5 815E-15	-6 166E-16	2 700E-16	
3 002E-16	1 162E-16	-1 161E-16	-3 002E-16	-2 701E-16	6 166E-16	5 815E-15	3 556E-14	2 119E-13	1 301E-12	
8 495E-12	5 522E-11	4 785E-11	0 000E+00							
0 000E+00	-4 436E-11	-5 180E-11	-8 605E-12	-1 358E-12	-2 227E-13	-3 738E-14	-6 181E-15	-7 863E-16	1 342E-16	
2 054E-16	8 211E-17	-8 196E-17	-2 054E-16	-1 343E-16	7 864E-16	6 181E-15	3 738E-14	2 227E-13	1 358E-12	
8 605E-12	5 180E-11	4 436E-11	0 000E+00							
0 000E+00	-4 105E-11	-4 848E-11	-8 626E-12	-1 398E-12	-2 308E-13	-3 871E-14	-6 528E-15	-1 060E-15	-1 222E-16	
2 182E-17	1 582E-17	-1 571E-17	-2 189E-17	1 221E-16	1 060E-15	6 527E-15	3 871E-14	2 308E-13	1 398E-12	
8 626E-12	4 848E-11	4 105E-11	0 000E+00							
0 000E+00	-3 792E-11	-4 527E-11	-8 566E-12	-1 424E-12	-2 367E-13	-3 972E-14	-6 789E-15	-1 256E-15	-3 032E-16	
-1 072E-16	-3 073E-17	3 081E-17	1 072E-16	3 032E-16	1 256E-15	6 788E-15	3 972E-14	2 367E-13	1 424E-12	
8 566E-12	4 527E-11	3 792E-11	0 000E+00							
0 000E+00	-3 497E-11	-4 217E-11	-8.432E-12	-1 436E-12	-2 407E-13	-4 049E-14	-6 931E-15	-1 289E-15	-3 175E-16	
-1 153E-16	-3 347E-17	3 355E-17	1 153E-16	3 175E-16	1 289E-15	6 931E-15	4 049E-14	2 407E-13	1 436E-12	
8 432E-12	4 217E-11	3 497E-11	0 000E+00							
0 000E+00	-3 218E-11	-3 919E-11	-8 232E-12	-1 434E-12	-2 425E-13	-4 095E-14	-6 973E-15	-1 222E-15	-2 334E-16	
-5 262E-17	-1 067E-17	1 074E-17	5 251E-17	2 335E-16	1 223E-15	6 973E-15	4 095E-14	2 425E-13	1 434E-12	
8 232E-12	3 919E-11	3 218E-11	0.000E+00							
0 000E+00	-2 955E-11	-3 631E-11	-7 971E-12	-1 418E-12	-2 418E-13	-4 097E-14	-6 951E-15	-1 161E-15	-1 666E-16	
-3 472E-18	7 126E-18	-7 126E-18	3 435E-18	1 666E-16	1 161E-15	6 951E-15	4 097E-14	2 418E-13	1 418E-12	
7 971E-12	3 631E-11	2 955E-11	0 000E+00							
0 000E+00	-2 704E-11	-3 351E-11	-7 656E-12	-1 388E-12	-2 384E-13	-4 050E-14	-6 884E-15	-1 157E-15	-1 716E-16	
-8 003E-18	5 445E-18	-5 481E-18	7 966E-18	1 717E-16	1 157E-15	6 883E-15	4 050E-14	2 384E-13	1 388E-12	
7 656E-12	3 351E-11	2 704E-11	0 000E+00							
0 000E+00	-2 464E-11	-3 079E-11	-7 292E-12	-1 344E-12	-2 324E-13	-3 957E-14	-6 764E-15	-1 188E-15	-2 256E-16	
-4 930E-17	-9 574E-18	9 538E-18	4 926E-17	2 257E-16	1 188E-15	6 764E-15	3 957E-14	2 324E-13	1 344E-12	
7 292E-12	3 079E-11	2 464E-11	0 000E+00							
0 000E+00	-2 235E-11	-2 814E-11	-6 884E-12	-1 289E-12	-2 242E-13	-3 825E-14	-6 575E-15	-1 203E-15	-2 723E-16	
-8 631E-17	-2 313E-17	2 313E-17	8 624E-17	2 724E-16	1 203E-15	6 575E-15	3 825E-14	2 242E-13	1 289E-12	
6 884E-12	2 814E-11	2 235E-11	0 000E+00							
0 000E+00	-2 016E-11	-2 556E-11	-6 437E-12	-1 223E-12	-2 139E-13	-3 659E-14	-6 305E-15	-1 163E-15	-2 696E-16	
-8 825E-17	-2 408E-17	2 404E-17	8 821E-17	2 697E-16	1 163E-15	6 305E-15	3 659E-14	2 139E-13	1 223E-12	
6 437E-12	2 556E-11	2 016E-11	0 000E+00							
0 000E+00	-1 806E-11	-2 304E-11	-5 955E-12	-1 146E-12	-2 018E-13	-3 461E-14	-5 953E-15	-1 060E-15	-2 091E-16	
-4 911E-17	-1 020E-17	1 009E-17	4 904E-17	2 092E-16	1 060E-15	5 953E-15	3 461E-14	2 018E-13	1 146E-12	
5 955E-12	2 304E-11	1 806E-11	0 000E+00							
0 000E+00	-1 604E-11	-2 058E-11	-5 442E-12	-1 060E-12	-1 878E-13	-3 233E-14	-5 527E-15	-9 125E-16	-1 097E-16	
1 732E-17	1 345E-17	-1 356E-17	-1 736E-17	1 098E-16	9 126E-16	5 527E-15	3 233E-14	1 878E-13	1 060E-12	
5 442E-12	2 058E-11	1 604E-11	0 000E+00							
0 000E+00	-1 409E-11	-1 818E-11	-4.903E-12	-9 656E-13	-1 720E-13	-2 972E-14	-5 040E-15	-7 465E-16	-4 385E-19	
8 978E-17	3 921E-17	-3 928E-17	-8 986E-17	4 750E-19	7 466E-16	5 040E-15	2 972E-14	1 720E-13	9 656E-13	
4 903E-12	1 818E-11	1 409E-11	0 000E+00							
0 000E+00	-1 221E-11	-1 581E-11	-4.339E-12	-8 629E-13	-1 546E-13	-2 680E-14	-4 505E-15	-5 860E-16	9 395E-17	
1 503E-16	6 055E-17	-6 059E-17	-1 503E-16	-9 395E-17	5 861E-16	4 505E-15	2 680E-14	1 546E-13	8 629E-13	
4 339E-12	1.581E-11	1 221E-11	0 000E+00							
0 000E+00	-1.037E-11	-1 349E-11	-3 756E-12	-7 531E-13	-1 356E-13	-2 358E-14	-3 931E-15	-4 448E-16	1 591E-16	
1 883E-16	7.363E-17	-7 363E-17	-1.884E-16	-1 592E-16	4 449E-16	3.931E-15	2 358E-14	1 356E-13	7 531E-13	
3 756E-12	1.349E-11	1 037E-11	0.000E+00							
0 000E+00	-8 581E-12	-1 120E-11	-3 155E-12	-6 371E-13	-1 152E-13	-2 008E-14	-3 324E-15	-3 277E-16	1 909E-16	
2 010E-16	7 747E-17	-7 747E-17	-2 011E-16	-1 909E-16	3 278E-16	3 324E-15	2 008E-14	1 152E-13	6 371E-13	
3 155E-12	1 120E-11	8 581E-12	0.000E+00							
0 000E+00	-6 825E-12	-8 929E-12	-2 541E-12	-5 159E-13	-9 358E-14	-1 636E-14	-2 692E-15	-2 335E-16	1 914E-16	
1 901E-16	7 265E-17	-7 268E-17	-1.901E-16	-1 914E-16	2 336E-16	2.692E-15	1 636E-14	9 358E-14	5 159E-13	
2 541E-12	8 929E-12	6 825E-12	0 000E+00							

0 000E+00	-5 095E-12	-6 680E-14	-1 915E-12	-3 906E-13	-7 103E-14	-1 244E-14	-2 038E-15	-1 584E-16	1 663E-16	
1 598E-16	6 073E-17	-6 077E-17	-1 598E-16	-1 663E-16	1 585E-16	2 038E-15	1 244E-14	7 103E-14	3 906E-13	
1 915E-12	6 680E-12	5 095E-12	0 000E+00							
0 000E+00	-3 386E-12	-4 446E-12	-1 282E-12	-2 622E-13	-4 777E-14	-8 373E-15	-1 368E-15	-9 768E-17	1 217E-16	
1 147E-16	4 349E-17	-4 352E-17	-1 147E-16	-1 217E-16	9 771E-17	1 368E-15	8 373E-15	4 777E-14	2 622E-13	
1 282E-12	4 446E-12	3 386E-12	0.000E+00							
0 000E+00	-1 691E-12	-2 222E-12	-6 424E-13	-1 317E-13	-2 402E-14	-4 213E-15	-6 871E-16	-4 652E-17	6 410E-17	
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6 424E-13	2 222E-12	1 691E-12	0.000E+00							
0 000E+00	-1 520E-15	-1 998E-15	-5 777E-16	-1 184E-16	-2 160E-17	-3 764E-18	-6 212E-19	-3 654E-20	3 654E-20	
3 654E-20	3 654E-20	-3 654E-20	-3 654E-20	-3 654E-20	3 654E-20	6 212E-19	3 764E-18	2 160E-17	1 184E-16	
5 777E-16	1 998E-15	1 520E-15	0.000E+00							
0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	
0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	
0 000E+00	0 000E+00	0 000E+00	0 000E+00							

Y VELOCITIES

AT NODES

0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00
0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00	0 000E+00
0 000E+00	0 000E+00	0 000E+00	0 000E+00						
0 000E+00	4 981E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06
4 979E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06	4 979E-06
4 979E-06	4 979E-06	4 981E-06	0 000E+00						
0 000E+00	9 957E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06
9 955E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06	9 955E-06
9 955E-06	9 955E-06	9 957E-06	0 000E+00						
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9 958E-06	9 958E-06	9 958E-06	0 000E+00						
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9 957E-06	9 957E-06	9 956E-06	0 000E+00						
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9 955E-06	9 955E-06	9 955E-06	0 000E+00						
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9 958E-06	9 958E-06	9 957E-06	0 000E+00						
0 000E+00	9 956E-06	9 956E-06	9 956E-06	9 956E-06	9 956E-06	9 956E-06	9 956E-06	9 956E-06	9 956E-06
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9 956E-06	9 956E-06	9 956E-06	0 000E+00						
0 000E+00	9 957E-06	9 957E-06	9 957E-06	9 957E-06	9 957E-06	9 957E-06	9 957E-06	9 957E-06	9 957E-06
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9 957E-06	9 957E-06	9 957E-06	0 000E+00						
0 000E+00	9 956E-06	9 956E-06	9 956E-06	9 956E-06	9 956E-06	9 956E-06	9 956E-06	9 956E-06	9 956E-06
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9 956E-06	9 956E-06	9 956E-06	0 000E+00						
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9 955E-06	9 955E-06	9 955E-06	0.000E+00						
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9 954E-06	9 954E-06	9 954E-06	0 000E+00						
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9 954E-06	9 954E-06	9 954E-06	0.000E+00						

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9 954E-06	9 954E-06	9 954E-06	9 954E-06	0 000E+00					
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9 954E-06	9 954E-06	9 954E-06	9 954E-06	0 000E+00					
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9 954E-06	9 954E-06	9 954E-06	9 954E-06	0 000E+00					
0 000E+00	9 954E-06	9 954E-06	9 954E-06	9 954E-06	9 954E-06	9 954E-06	9 954E-06	9 954E-06	9 954E-06
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9 954E-06	9 954E-06	9 954E-06	9 954E-06	0 000E+00					
0 000E+00	9 953E-06	9 953E-06	9 953E-06	9 953E-06	9 953E-06	9 953E-06	9 953E-06	9 953E-06	9 953E-06
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9 953E-06	9 953E-06	9 953E-06	9 953E-06	0 000E+00					
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9 953E-06	9 953E-06	9 953E-06	9 953E-06	0 000E+00					
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9 953E-06	9 953E-06	9 952E-06	0 000E+00						
0 000E+00	9 952E-06	9 952E-06	9 952E-06	9 952E-06	9 952E-06	9 952E-06	9 952E-06	9 952E-06	9 952E-06
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9 952E-06	9 952E-06	9 952E-06	0 000E+00						
0 000E+00	9 952E-06	9 952E-06	9 952E-06	9 952E-06	9 952E-06	9 952E-06	9 952E-06	9 952E-06	9 952E-06
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9 952E-06	9 952E-06	9 952E-06	0 000E+00						
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9 952E-06	9 952E-06	9 952E-06	0 000E+00						
0 000E+00	9 951E-06	9 951E-06	9 951E-06	9 951E-06	9 951E-06	9 951E-06	9 951E-06	9 951E-06	9 951E-06
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9 951E-06	9 951E-06	9 951E-06	0 000E+00						
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9 951E-06	9 951E-06	9 951E-06	0 000E+00						
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9 951E-06	9 951E-06	9 950E-06	0 000E+00						
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9 950E-06	9 950E-06	9 950E-06	9 950E-06	9 950E-06	9 950E-06	9 950E-06	9 950E-06	9 950E-06	9 950E-06
9 950E-06	9.950E-06	9 950E-06	0 000E+00						
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9 950E-06	9.950E-06	9 950E-06	0 000E+00						
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9 950E-06	9 950E-06	9.950E-06	9 950E-06	9 950E-06	9 950E-06	9 950E-06	9 950E-06	9 950E-06	9 950E-06
9 950E-06	9.950E-06	9 950E-06	0.000E+00						
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9 949E-06	9 949E-06	9 949E-06	0 000E+00						
0 000E+00	9.949E-06	9 949E-06	9 949E-06	9 949E-06	9 949E-06	9 949E-06	9 949E-06	9 949E-06	9 949E-06
9 949E-06	9.949E-06	9 949E-06	9 949E-06	9 949E-06	9 949E-06	9 949E-06	9 949E-06	9 949E-06	9 949E-06
9 949E-06	9 949E-06	9 949E-06	0 000E+00						
0 000E+00	4 974E-06	4 974E-06	4 974E-06	4 974E-06	4 974E-06	4 974E-06	4 974E-06	4 974E-06	4 974E-06

```
4 974E-06   4 974E-06   4 974E-06   4 974E-06   4 974E-06   4 974E-06   4 974E-06   4 974E-06   4.974E-06   4 974E-06
4 974E-06   4 974E-06   4 974E-06   0 000E+00
0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00
0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00   0 000E+00
0 000E+00   0 000E+00   0 000E+00   0 000E+00

      STABILITY CRITERIA --- M O C


   Maximum fluid velocities (L/T)   X-VEL =  1 84E-10     Y-VEL =  9 96E-06

   Maximum effective solute velocities   X-VEL =  1 52E-14     Y-VEL =  8 24E-10

TMV (MAX  INJ ) =  0 12144E+10
TIMV (CELDIS)   =  0 60709E+09

TIMV =  6 07E+08     NTIMV =     1     NMOV =     2

 TIM (N)   =  0 94673E+09
 TIMEVELO =  0 47336E+09
 TIMEDISP =  0 20221E+09

TIMV =  1 89E+08     NTIMD =     4     NMOV =     5

      THE LIMITING STABILITY CRITERION IS BETA

      NO  OF PARTICLE MOVES REQUIRED TO COMPLETE THIS TIME STEP  =    5


 NP       =          6336          IMOV     =          1
 TIM(N)   =  0 94673E+09          TIMV     =  0 18935E+09          SUMTCH =  0 18935E+09

 NP       =          6396          IMOV     =          2
 TIM(N)   =  0 94673E+09          TIMV     =  0 18935E+09          SUMTCH =  0 37869E+09

 NP       =          6396          IMOV     =          3
 TIM(N)   =  0 94673E+09          TIMV     =  0 18935E+09          SUMTCH =  0 56804E+09

 NP       =          6516          IMOV     =          4
 TIM(N)   =  0 94673E+09          TIMV     =  0 18935E+09          SUMTCH =  0 75738E+09

 NP       =          6582          IMOV     =          5
 TIM(N)   =  0 94673E+09          TIMV     =  0 18935E+09          SUMTCH =  0 94673E+09


CONCENTRATION

Number of time steps =     1
      Delta t        =  0 94673E+09
      Time (seconds) =  0 94673E+09
 Chem time (seconds) =  0 94673E+09
 Chem time (days)    =  0 10958E+05
      Time (years)   =  0 30000E+02
 Chem time (years)   =  0 30000E+02
 No  moves completed =     5
```

260

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
0 0 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40
40 40 0 0
0 0 76 76 76 76 76 76 76 76 76 76 76 76 76 76 76 76 76 76
76 76 0 0
0 0 38 38 38 38 38 38 38 38 38 38 38 38 38 38 38 38 38 38
38 38 0 0
0 0 24 24 24 24 24 24 24 24 24 24 24 24 24 24 24 24 24 24
24 24 0 0
0 0 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
9 9 0 0
0 0 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 3 0 0
0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0

261

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0

```
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
 0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
 0    0    0    0
```

CHEMICAL MASS BALANCE

```
      Mass in boundaries      =  0 00000E+00
      Mass out boundaries     =  0 00000E+00
      Mass pumped in          =  0 82309E+10
      Mass pumped out         = -0 96366E+05
      Mass lost by decay      =  0 00000E+00
      Mass adsorbed on solids=  0 81105E+10
      Initial mass adsorbed   =  0 00000E+00
      Inflow minus outflow    =  0 82308E+10
      Initial mass dissolved  =  0 00000E+00
      Present mass dissolved  =  0 67051E+06
      Change mass dissolved   =  0 67051E+06
      Change totl mass stored=  0 81111E+10
    COMPARE RESIDUAL WITH NET FLUX AND MASS ACCUMULATION
      Mass balance residual   =  0 11963E+09
      Error  (as percent)     =  0 14535E+01
```

Rocky Flats PCB Migration from Concrete Rubble, 400 x 400 ft source area

Time versus head and concentration at selected observation points

PUMPING PERIOD NO 1

STEADY-STATE SOLUTION

OBS WELL NO	X	Y	N	HEAD	CONCENTRATION	TIME (YEARS)
1	13	3				
			0	100 0	0 0	0 000
			1	102 9	38 9	6 000
			2	102 9	37 5	12 000
			3	102 9	58 7	18 000
			4	102 9	62 0	24 000
			5	102 9	75 9	30 000
OBS WELL NO	X	Y	N	HEAD	CONCENTRATION	TIME (YEARS)
2	13	8				
			0	100 0	0 0	0 000
			1	102 4	0 0	6 000
			2	102 4	0 0	12 000
			3	102 4	0 0	18 000
			4	102 4	0 1	24 000
			5	102 4	0 8	30 000
OBS WELL NO	X	Y	N	HEAD	CONCENTRATION	TIME (YEARS)
3	13	13				
			0	100 0	0 0	0 000
			1	101 9	0 0	6 000
			2	101 9	0 0	12 000
			3	101 9	0 0	18 000
			4	101 9	0 0	24 000
			5	101 9	0 0	30 000
OBS WELL NO	X	Y	N	HEAD	CONCENTRATION	TIME (YEARS)
4	13	23				
			0	100 0	0 0	0 000
			1	101 0	0 0	6 000
			2	101 0	0 0	12 000
			3	101 0	0 0	18 000
			4	101 0	0 0	24 000
			5	101 0	0 0	30 000
OBS WELL NO	X	Y	N	HEAD	CONCENTRATION	TIME (YEARS)
5	13	33				
			0	100 0	0 0	0 000
			1	100 0	0 0	6 000
			2	100 0	0 0	12 000
			3	100 0	0 0	18 000
			4	100 0	0 0	24 000

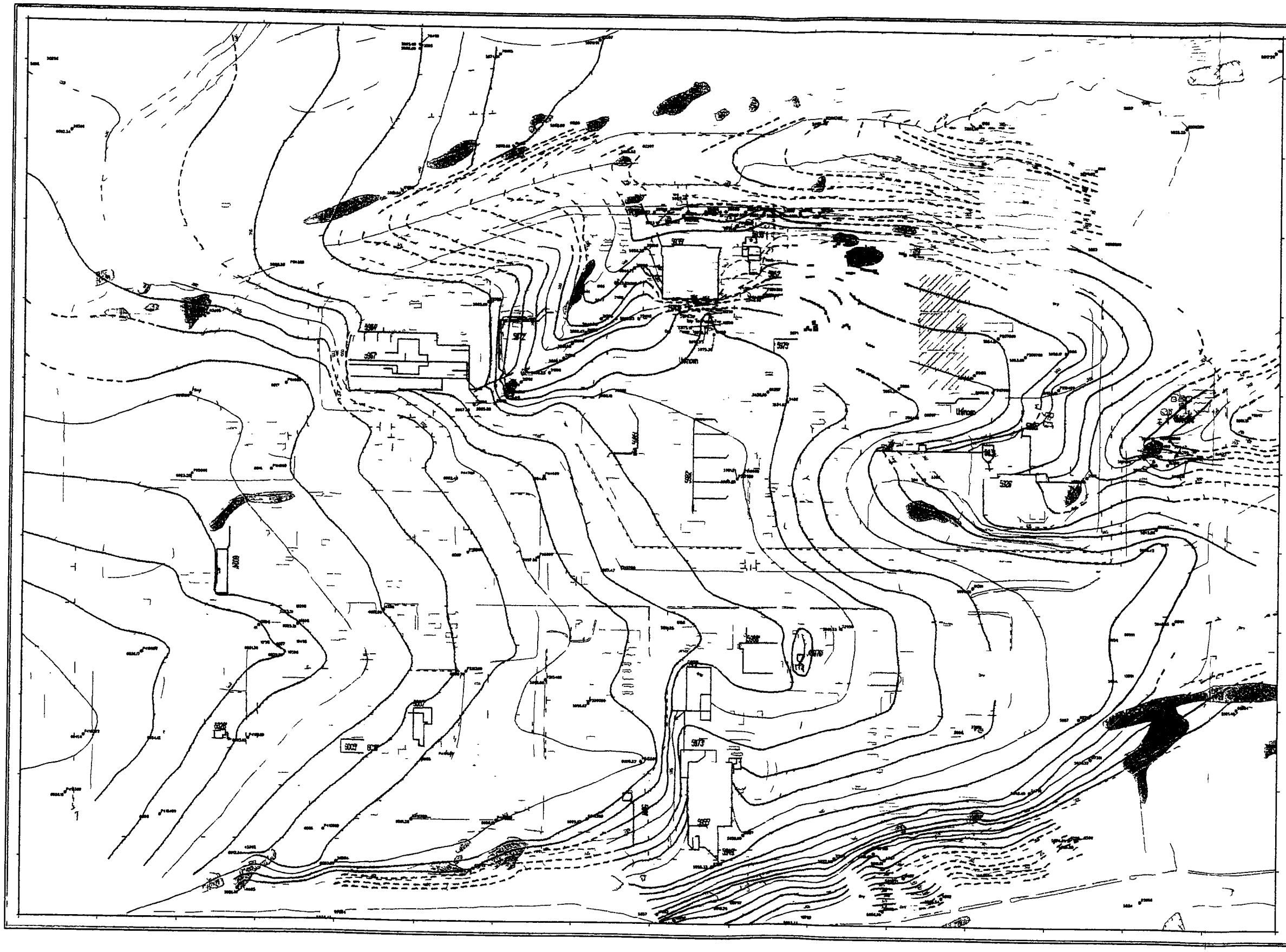

Plate 4

Industrial Area Potentiometric Surface
Permeable Units of the UHSU
Second Quarter 1999
1999 Annual RFCA
Groundwater Monitoring Report

Groundwate Monitoring Well

0- oot Water Lev Con ou

Dashed wher rred

5-Foot rmediat Wate Leve on ur

ashed wher rred

Found tion ain

Appr mat e ent Unsaturated Are

Are hou round E va ion

Standard M p Fe ture

Seeps

Buildings th ructures

Sola evapora on ponds

Lakes and pond

Streams, tches, o her drainage eatures

Fences nd th rrie

Contours ntervals

Road

Rock Ra Bound ry

DATA SOURCE BASE FEATURES:
All Topographic Contours and Groundwater Data were generated the RMRS Groundwater Program.

Rpky Contour.
Shape: Shaded X, RMRS
p:\4100\4-04-2007
rgc4100.212-d
Surfer 7.0(32" Rev 97)

N

10 0 300 600

S Plan oordina Proj ti
Colorad Ca IZ ne
Datum NAD27

U S D partme t f En rgy
Rocky Flats E iro me tal Tech ology S te

I Dept 303-966-7707

Prep red by:
DynCorp

Prep ad f
KAISER HILL

MAP ID: fy2k/rfca rpt

December 04, 2000

MT By :/projects/fy2k/rfca-rp/plot_mapsipo ent99-la_spring_balzu. dr

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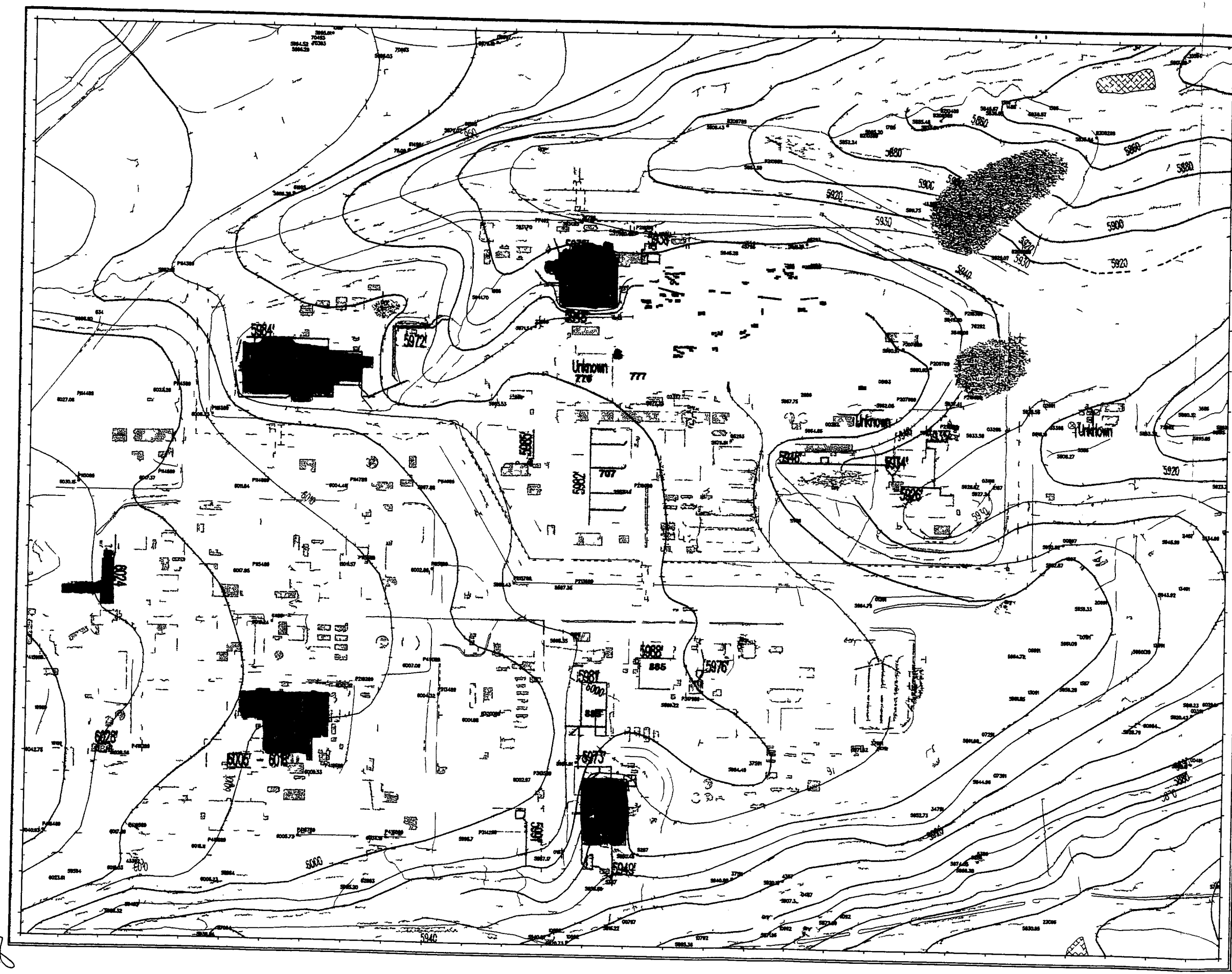

Figure 1 2

Potentiometric Surface of Unconsolidated Surficial Deposits Second Quarter 1998

- Groundwater Monitoring Well
- Water Level Contour
- Dashed where i ferred
- Intermediate Water Level Contou
- Dashed where inferred
- Found tion Drai and Elevation
- Approximat extent of U tur ted A e
- Are without G oundwater Elev tion Data

Standard Map Features

- Building & other structures
- Sola ev porati pond
- Lakes and pond
- Stream ditch or other dr i ag featu
- Fences and other b rrier
- Contours (20 I terval)
- Roads

DATA SOURCE.
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over dat captured by EG&G RSL, Las Vegas. Digitized from the orthophotographs. 1/95

Scale 58
o represent ap roximately 484 feet

Stat Plane Coordinat Projection
Colored Central ons
Datum. NAD27

U S Dep rtment f Energy
Ro ky Flat Enviro ment I T chnology Sit

Prepared by:
RMRS Rocky Mountai Remediatio Services L.L.C.
Geographic Informatio Systems Group
Rocky Flats Environmental chnology Site
O. Box 464
golden, 0402-0464

MAP ID: 2k-0100

February 09, 2000

NT S w/p j /ry2k/2k 10 /p i m l f m p /fig1 2 ml

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