SAMPLING OF INSULATION ON INTER-BUILDING OVERHEAD UTILITY PIPES FOR ASBESTOS CONTENT -- NOVEMBER 1986

Introduction

This plan describes the sampling effort to be conducted in November of 1986 for determining the amount of asbestos in insulation on pipes on overhead utilities at the WSCP.

Objective

This sampling effort will be performed to determine in a statistically valid manner whether insulation on individual sections of the inter-building overhead utility pipes at WSSRAP contain asbestos. The data collected in this sampling effort will be used by the Engineering Department in the preparation of bid specifications for the removal of the overhead inter-building utilities. Pipes in or on buildings will not be sampled during this sampling effort. The samples will be collected by the Environmental Safety and Health Department (ES&H).

Sampling Schedule

Samples will be collected on Monday and Tuesday November 17 and 18, 1986. Sampling may continue into the remainder of the week if necessary. Should differences in insulation composition be noted visually during the planned sampling effort, additional samples will be collected as necessary to further define the composition of the insulation.

Sampling Locations

Sampling locations have been selected to obtain samples from each

FILE NUMBER: _____

size and type of pipe. The rationale for selection of the sampling locations is based on a review of existing WSCP construction blue prints and a site survey of the WSCP facilities conducted on November 7, 1986. Construction drawings numbered 7500-5 to 7500-28 prepared by Blaw-Knox Company in 1955 and 1956 shown locations of the pipes and the pipe support numbers for these overhead utilities. Samples will be collected from each size and type of pipe (steam, ethylene glycol, raffinate, etc.) and type of insulation. Insulation will be sampled in straight sections and at joints in the pipe. The sampling locations are described in Table 1. Figure 1 shows the planned sampling locations. These sampling locations have been selected to maximize the number of samples which can be collected at each point where the manlift will be positioned.

Equipment

The following equipment will be available for use during sample collection.

Item	Usage
Knife	Cutting Insulation and Sheathing
Cork Borer	Cutting Insulation
Hack Saw	Cutting Sheathing
Screwdriver	Sheathing Removal
Hammer	Bending Metal Sheathing
Sample Bottles	Sample Shipping
Ziploc Bags	Sample Shipping
Water Sprayer	Tool Cleaning and Dust Control
Bucket of Water	Tool Cleaning
Duct Tape	Dust Control
Camera	Documentation of Sampling Location
Sample Labels	Documentation of Sampling Location
Field Data Sheets	Documentation of Sampling Location
Clipboard	Documentation of Sampling Location
Paint	Documentation of Sampling Location

Flagging Tape	Documentation of Sampling Location
Tape Measure	Documentation of Sampling Location
Respirator with HEPA Filters	Personal Protection
Disposable Coveralls	Personal Protection
Rubber Gloves	Personal Protection
Rubber Boots	Personal Protection
Safety Glasses	Personal Protection
Hard Hat	Personal Protection
Eye Wash	Personal Protection
Radiation Monitoring Equip.	Personal Protection
Carrying Case	Transportation of Equipment
Manlift	Access to Sampling Location

Training

Personnel involved in collection of asbestos samples shall receive training in the health and safety aspects of asbestos. They shall also be trained in the operation of any special equipment (i.e. hydraulic manlifts).

Sample Collection

Prior to collecting samples, a safety meeting will be conducted to familiarize personnel with equipment and procedures. A respirator is recommended, but is not required as sampling will not generate airborne concentrations above allowable levels. Once the sampling location is verified and access is established, samples will be collected as follows:

1. Start a field data sheet for the sample to be collected. Record the date, time, location, pipe type if known, pipe size, and any other relevant information on the field data sheet. An example field data sheet is presented in Figure 2.

2. Select two corresponding pre-labeled sample bottles for the sample to be collected at that location. Example labels are shown in Figure 3.

3. Open the sheathing using a knife, hack saw or screwdriver as

›ropriate.

If the sheathing is not metal, place pieces of the removed
ɜathing in the sample containers.

Loosen a piece of insulation using a cork borer, knife, or other
›ropriate tool.

Split the piece of insulation in half. Ensure that both halves
ıtain a complete cross section of the insulation.

Place the pieces of insulation in the sample bottles.

Close the sample bottle.

Complete and sign the field data sheet.

diation Monitoring

nember of the Health Physics Group shall measure the radiation
vels of the individual samples prior to shipment of the samples off
te. Sample collection personnel shall use radiation measurement
ıipment calibrated by the Health Physics Group to monitor levels in
ɜ work area during sample collection.

ain of Custody

l samples will be kept in the custody of the sample collection
rsonnel from the time of collection shipment. A chain of custody
g sheet which lists each sample will be completed and signed by the
mple collection personnel. The original of the chain of custody
g sheet will be shipped with the samples to the laboratory. A copy
the chain of custody will be retained at WSSRAP by the ES&H
partment. An example chain of custody form is presented in Figure

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Sample Analysis

Samples will be analyzed by polarized light microscopy. The selected laboratory shall be a participant in the EPA laboratory evaluation program.

Quality Control

Sample collection will be observed on a random basis by a representative of the WSSRAP ES&H Department. One in twenty of the split samples will be submitted for analysis. The remainder of the splits will be archived at the WSSRAP facility for verification by a separate laboratory if necessary. Once QC checks of the lab data are complete, the archived samples will be used in training WSSRAP personnel and subcontractors for future asbestos removal activities.

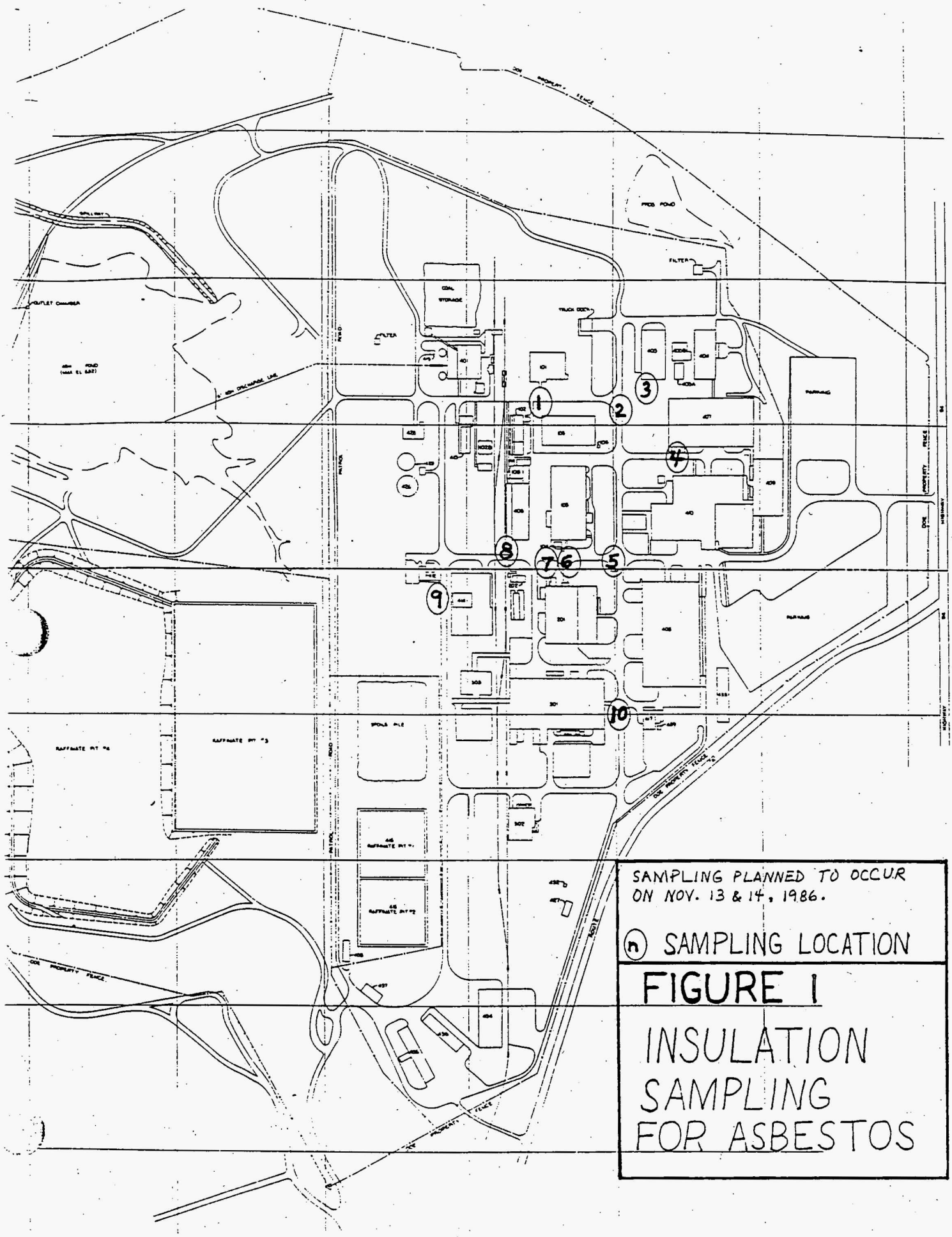
Reporting of Visual Observations

The sample collection crew will discuss with the Engineering Department observations regarding visible differences and/or similarities of the insulation at the various sampling locations.

Reporting of Analytical Results

The laboratory will report the concentration of asbestos in the sample. The lab data, field data and drawings showing the sampling locations will be incorporated in a final report by ES&H for submittal to the Engineering Department. This report will be completed within 7 days of receipt of the lab data.

SAMPLING OF INSULATION ON INTER-BUILDING OVERHEAD UTILITY PIPES FOR ASBESTOS CONTENT -- NOVEMBER 1986



SAMPLING PLANNED TO OCCUR ON NOV. 13 & 14, 1986.

(n) SAMPLING LOCATION

FIGURE 1

INSULATION SAMPLING FOR ASBESTOS

FIGURE 2

EXAMPLE FIELD DATA SHEET

WELDON SPRING SITE REMEDIAL ACTION PROJECT (WSSRAP)
Route 2, Highway 94, St. Charles, Missouri 63303
Phone (314) 441-8086 Telex (314) 447-0803

BULK MATERIAL SAMPLING FOR ASBESTOS - FIELD DATA

SAMPLE NUMBER: _____ Date: _____

SAMPLING LOCATION

Building Number _____

Floor _____

Room _____

Construction Drawing _____

Other _____

MATERIAL TYPE

____ Pipe Insulation
Pipe Diameter: _____ inches
Pipe Type: ____ Steam, ____ Ethylene Glycol, ____ Raffinate,
____ Other _____

____ Ceiling
____ Floor
____ Wall
____ Boiler Insulation
____ Other _____

COVER OVER MATERIAL

Fiber, Metal, Plaster, None, Other _____

DESCRIPTION OF MATERIAL

Color: _____

Hardness: ___ Fibrous (Friable), ___ Granular (Soft), or ___ Hard (Concrete-Like)

Thickness: _____ inches

COMMENTS _____

_____

_____

Radiation Level

____ Background Only
____ Above Background _____ cpm Instrument: _____

Sample Collection Personnel: _____ Company: _____

FIGURE 3

EXAMPLE SAMPLE LABEL

Weldon Spring Site Remedial Action Project (WSSRAP)
MK-FERGUSON COMPANY (PMC)
Rt. 2, Hwy 94, St. Charles, MO 63303
Phone (314) 441-8086

Sample Number IN-2000- 1

Location: WSCP (Pipe Support No.:_____)
Matrix: Pipe Insulation - Above Ground Utilities
Collected By: Kirk Meyer
Date: November ____ 1986

Table 1 -- Asbestos Sampling Locations, WSSRAP, Nov. 17-18, 1986
PLANNED

Location Number	Support Number	Description (Drawing No)	Insulation Samples To Be Collected Quant.	Pipe Type	Sheath	Size
1	508	NW Corner of Building 105 (7500-16)	1	Steam	Fiber	18 inches
			1	Steam	Fiber	10
			2	Ethylene Glycol	Fiber	6
			2	Unknown	Fiber	?
			1	Elbow (Steam)	Fiber	18
			1	Elbow (Steam)	Fiber	10
2	522	NE Corner of Building 105 (7500-17)	1	Steam	Fiber	8
			2	Ethylene Glycol	Fiber	6
			1	Unknown	Fiber	4
			1	Unknown	Fiber	2
			1	Unknown	Fiber	2
			1	Unknown	Fiber	1
3	71	NW Corner of Building 403 (7500-23)	1	Steam	Fiber	6
			2	Ethylene Glycol	Fiber	2
			1	D. S.	Fiber	2
			1	Steam	Fiber	8
			1	Unknown	Fiber	2
			1	Unknown	Fiber	2
4	731	From Building 407 to 410 (7500-28)	2	Ethylene Glycol	Fiber	4
			1	Unknown	Fiber	2
5	40	NE Corner of Building 201 (7500-19)	1	Steam	Fiber	18
			1	Raffinate	Fiber	3
			1	Elbow	Fiber	3
			1	Raffinate	Metal	3
			1	Elbow	Metal	3
6	562	North Center Building 201 (7500-24)	1	Steam	Fiber	6
			1	Raffinate	Fiber	3
			1	Raffinate	Metal	3
7	564	NE Corner of Building 201 (7500-24)	1	Raffinate	Unknown	3
8	Ground	SW Corner of Building 406 (N. A.)	1	Steam?	Fiber	1
9	764	West of Building 406 (7500-25)	1	Raffinate	Fiber	3
			1	Elbow	Fiber	3
			1	Raffinate	Metal	3
			1	Elbow	Metal	3
10	84	East Center Building 301 (7500-20)	1	Steam	Fiber	10
			1	Steam	Fiber	3
			1	Elbow (Steam)	Fiber	1
Total			42			

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Phone (314) 441-6086 Telex (314) 447-0803

ENVIRONMENTAL PROTECTION GROUP -- DOCUMENT REVIEW

Plan Title: PLAN FOR SAMPLING OF INSULATION ON INTER-BUILDING OVERHEAD UTILITY PIPES FOR ASBESTOS CONTENT — NOVEMBER 1986

Date Prepared: NOVEMBER 13, 1986 Author: KIRK MEYER Kirk Meyer

Draft Number: 2

Purpose of Transmittal:

____ For Approval
____ For Your Information
____ As Requested
____ Return of Loan to Us
____ Other _____
____ For Review and Comment
____ Review and Correct
____ Review and File
____ Returned for Corrections

~~Title~~ Reviewed By:

Title	~~Signature~~ Name	Date
Others	N. Ed. Hodson	Nov. 12, 1986
	Yusuf G. Naqvani	Nov. 12, 1986
Environmental Manager	F. Keith Howard	Nov. 12, 1986
E S & H Manager	Roger A. Nelson	Nov. 12 1986
Quality Manager		
Engineering Manager		
Project Manager		

WELDON SPRING SITE REMEDIAL ACTION PROJECT (WSSRAP)
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BULK MATERIAL SAMPLING FOR ASBESTOS - FIELD DATA

SAMPLE NUMBER: IN-2000-36 Date: NOVEMBER 18, 1986

SAMPLING LOCATION

Building Number: INTER-BUILDING OVERHEAD UTILITIES
~~Floor~~ NEAREST SUPPORT NO.: 764
~~Room~~ SAMPLING ZONE 9
Construction Drawing 7500-25
Other Top, Farthest East

MATERIAL TYPE

X Pipe Insulation
Pipe Diameter: ~4 inches
Pipe Type: ___ Steam, ___ Ethylene Glycol, X Raffinate,
___ Other ___
___ Ceiling
___ Floor
___ Wall
___ Boiler Insulation
___ Other ___

COVER OVER MATERIAL

Fiber, Metal, Plaster, None, Other: TAR PAPER (OVR)

DESCRIPTION OF MATERIAL

Color: White
Hardness: X Fibrous (Friable), ___ Granular (Soft), or ___ Hard (Concrete-Like)
Thickness: 2" inches

COMMENTS Steel Pipe - Real Bad Condition

Radiation Level

___ Background Only
___ Above Background ___ cpm Instrument: ___

Sample Collection Personnel: [signature] 11/18/86 Company: Jacobs Engineering

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Route 2, Highway 94, St. Charles, Missouri 63303
Phone (314) 441-8086 Telex (314) 447-0803

BULK MATERIAL SAMPLING FOR ASBESTOS - FIELD DATA

SAMPLE NUMBER: IN-2000-37 Date: NOVEMBER 18, 1986

SAMPLING LOCATION

Building Number: INTER-BUILDING OVERHEAD UTILITIES

~~Floor~~ NEAREST SUPPORT NO.: 754

~~Room~~ SAMPLING ZONE 91

Construction Drawing 7500-25

Other Top-Level 2nd from east

MATERIAL TYPE

X Pipe Insulation
Pipe Diameter: ~4" inches
Pipe Type: ____ Steam, ____ Ethylene Glycol, X Raffinate,
____ Other

____ Ceiling
____ Floor
____ Wall
____ Boiler Insulation
____ Other

COVER OVER MATERIAL

Fiber, (Metal), Plaster, None, Other

DESCRIPTION OF MATERIAL

Color: White

Hardness: X Fibrous (Friable), ____ Granular (Soft), or ____ Hard (Concrete-Like)

Thickness: 3" inches

COMMENTS Stainless steel pipe

Radiation Level

____ Background Only
____ Above Background ____ cpm Instrument:

Sample Collection Personnel: [illegible] 11/18/86 Company: Jacobs Engineering

PRING SITE REMEDIAL ACTION PROJECT (WSSRAP)
te 2, Highway 94, St. Charles, Missouri 63303
hone (314) 441-8086 Telex (314) 447-0803

K MATERIAL SAMPLING FOR ASBESTOS - FIELD DATA

N-2000-38 Date: NOVEMBER 10, 1986

g Number: INTER-BUILDING OVERHEAD UTILITIES
EAREST SUPPORT NO.: 764
SAMPLING ZONE 9
ction Drawing 7500-25
Elbow - Top level Northeast East

nsulation
pe Diameter: ~ 4" inches
pe Type: ____ Steam, ____ Ethylene Glycol, X Raffinate,
____ Other ____

Insulation

IAL
Plaster, None, Other TPR paper cover

MATERIAL
white
X Fibrous (Friable), ____ Granular (Soft), or ____ Hard (Concrete-Like)
3" inches

Steel pipe

0.0 DPM

round Only
Background ____ cpm Instrument: ____
l: [illegible] 11/15/86 Company: Jacobs Engineering
[illegible] / / / /

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BULK MATERIAL SAMPLING FOR ASBESTOS - FIELD DATA

SAMPLE NUMBER: IN-2000-39 Date: NOVEMBER 18, 1986

SAMPLING LOCATION

Building Number: INTER-BUILDING OVERHEAD UTILITIES

~~Floor~~ NEAREST SUPPORT NO.: 764

~~Room~~ SAMPLING ZONE 9

Construction Drawing 7500-25

Other Elbow - Small Section of Repair

MATERIAL TYPE

X Pipe Insulation
Pipe Diameter: ~4-11 inches
Pipe Type: ~~Steam~~, ___ Ethylene Glycol, X Raffinate,
___ Other ___

___ Ceiling
___ Floor
___ Wall
___ Boiler Insulation
___ Other ___

COVER OVER MATERIAL

Fiber, Metal, Plaster, None, Other TAR PAPER COVER

DESCRIPTION OF MATERIAL

Color: Yellow

Hardness: X Fibrous (Friable), ___ Granular (Soft), or ___ Hard (Concrete-Like)

Thickness: ~2 inches

COMMENTS FIBER GLASS

Radiation Level

___ Background Only
___ Above Background ___ cpm Instrument: ___

Sample Collection Personnel: [illegible] 11/18/86 Company: Jacobs Engineering

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BULK MATERIAL SAMPLING FOR ASBESTOS - FIELD DATA

SAMPLE NUMBER: IN-2000-40 Date: NOVEMBER 18, 1986

SAMPLING LOCATION

Building Number: INTER-BUILDING OVERHEAD UTILITIES
~~Floor~~ NEAREST SUPPORT NO.: 84
~~Room~~ SAMPLING ZONE 10
Construction Drawing 7500020
Other Elbow - Top level

MATERIAL TYPE

X Pipe Insulation
Pipe Diameter: ~ 4" inches
Pipe Type: X Steam, ___ Ethylene Glycol, ___ Raffinate,
___ Other
___ Ceiling
___ Floor
___ Wall
___ Boiler Insulation
___ Other

COVER OVER MATERIAL

Fiber, Metal, Plaster, None, Other TAR & foil covers

DESCRIPTION OF MATERIAL

Color: White
Hardness: X Fibrous (Friable), ___ Granular (Soft), or ___ Hard (Concrete-Like)
Thickness: 3" inches

COMMENTS Steel pipe

Radiation Level
___ Background Only
___ Above Background ___ cpm Instrument:

Sample Collection Personnel: [illegible] 11/18/86 Company: Jacobs Engineering

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BULK MATERIAL SAMPLING FOR ASBESTOS - FIELD DATA

SAMPLE NUMBER: IN-2000-41 Date: NOVEMBER 18, 1986

SAMPLING LOCATION

Building Number: INTER-BUILDING OVERHEAD UTILITIES

~~Floor~~ NEAREST SUPPORT NO.: SL

~~Room~~ SAMPLING ZONE

Construction Drawing 7500-20

Other ~~[illegible]~~ Straight Section of Small Pipe

MATERIAL TYPE

X Pipe Insulation
Pipe Diameter: ~ 4" inches
Pipe Type: X Steam, ___ Ethylene Glycol, ___ Raffinate,
___ Other ___

___ Ceiling
___ Floor
___ Wall
___ Boiler Insulation
___ Other ___

COVER OVER MATERIAL

Fiber, Metal, Plaster, None, Other Tar Paper

DESCRIPTION OF MATERIAL

Color: White Asbestos

Hardness: X Fibrous (Friable), ___ Granular (Soft), or ___ Hard (Concrete-Like)

Thickness: 2" ~~[illegible]~~ inches

COMMENTS ___

Radiation Level

___ Background Only
___ Above Background ___ cpm Instrument: ___

Sample Collection Personnel: Kurt Mann 11/18/86 Company: Jacobs Engineering

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BULK MATERIAL SAMPLING FOR ASBESTOS - FIELD DATA 18

SAMPLE NUMBER: IN-2000- 42 Date: NOVEMBER 18, 1986

SAMPLING LOCATION

Building Number: INTER-BUILDING OVERHEAD UTILITIES

~~Floor~~ NEAREST SUPPORT NO.: 84

~~Room~~ SAMPLING ZONE 10

Construction Drawing 7500- 20

Other ~~[illegible]~~
2nd level - furthest west

MATERIAL TYPE

X Pipe Insulation
Pipe Diameter: 18 inches
Pipe Type: X Steam, ____ Ethylene Glycol, ____ Raffinate,
____ Other ____

____ Ceiling
____ Floor
____ Wall
____ Boiler Insulation
____ Other ____

COVER OVER MATERIAL

Fiber, Metal, Plaster, None, Other Tar paper

DESCRIPTION OF MATERIAL

Color: white

Hardness: X Fibrous (Friable), ____ Granular (Soft), or ____ Hard (Concrete-Like)

Thickness: 3" inches

COMMENTS ____

Radiation Level

____ Background Only
____ Above Background ____ cpm Instrument: ____

Sample Collection Personnel: Kit Maier 11/18/86 Company: Jacobs Engineering

Appendix C

Radiological Contamination of Samples Collected to Measure Asbestos Content of Pipe Insulation at the WSCP

2.06 VEHICLE/EQUIPMENT RELEASE FOR UNRESTRICTED USE CONTAMINATION SURVEY FORM

Property # NA Date 11/19/86 HP C.J. ALSTON

Survey Instrument: LUDLUM GMC

Meter Model # _____ Probe Model # _____
Meter Serial # _____ Probe Serial # _____
Due for Calibration _____ Background _____ cpm

Detector Area _____ Scintillation Detec. YES NO

Correction Factor _____ Pancake Detec. YES NO

Release Criteria
o Fixed + Removable (By Direct Survey) : 5000 dpm/100cm^2

Counter: LUDLUM ALPHA SCINTILLATION

Scaler Model # 2000 Detector Model # 43-2
Scaler Serial # 35714 Detector Serial # 21949
Due for Calibration _____ Background 3760 (.05) cpm

Detector Efficiency (Eff) 13.2% Th^{230}

o Removable (By Smear) : 1000 dpm/100 cm^2

DIRECT SURVEY					SMEAR SURVEY					
ITEM SURVEYED	LOCATION SURVEYED	GROSS cpm	NET (GROSS-BKG)	TOTAL ACTIVITY dpm/100cm^2 (NET X CF / DETEC. AREA X 100)	GROSS cpm	NET (GROSS-BKG)	TOTAL ACTIVITY DPM (NET/EFF)	RELEASE	DECON	REMARKS
ASBESTOS SAMPLE #1 IN-2000-1	PLANCHET	NA	NA	NA	0.10	0.05	0.4	✓		Tc=10m.
#5	"				0.10	0.05	0.4	✓		2σ BKG=
#6	"				0.20	0.15	1.1	✓		0.06 CPM
#9	"				0.10	0.05	0.4	✓		
#10	"				0.00	0.00	0.0	✓		
#11	"				1.00	0.95	7.2	X		
#15	"				0.00	0.00	0.0	✓		
#30	"				0.00	0.00	0.0	✓		
#36	"				0.00	0.00	0.0	✓		