Completion of Corrective Action at Site 54-018 in PJ-SMA-17

August 27, 2014

NPDES PERMIT NO. NM0030759

LA-UR-14-25905

NPDES PERMIT NO. NM0030759 **LA-UR-14-25905**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: J024 **PJ-SMA-17** **Site: 54-018**

The following certification of completion of corrective action was performed in accordance with NPDES Permit No NM0030759, Part I.E.1(b), which requires the Permittees (i.e., DOE and LANS) to submit "certified as-built drawings, that such measures have been properly installed to perform their function to totally eliminate exposure of pollutants to storm water" at a Site or Sites.

CERTIFICATION STATEMENT OF AUTHORIZATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Environmental Programs
Corrective Actions Program
Los Alamos National Laboratory

8/15/2014
Date

Los Alamos Field Office
National Nuclear Security Administration

8-26-2014
Date

NPDES PERMIT NO. NM0030759 **LA-UR-14-25905**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: J024 **PJ-SMA-17** **Site: 54-018**

Introduction

This certification documents the no exposure condition of Site 54-018 (referred to as Solid Waste Management Unit [SWMU] 54-018 under the New Mexico Environment Department [NMED] Compliance Order on Consent [Consent Order]) for completion of corrective action at site monitoring area (SMA) PJ-SMA-17 under Part 1.E.2(c) of National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 (hereafter, the Permit), issued by the U.S. Environmental Protection Agency (EPA) to the U.S. Department of Energy (DOE) and Los Alamos National Security, LLC (LANS), collectively, the Permittees. Site 54-018, located within Technical Area 54 (TA-54), is listed as a SWMU in the 1990 SWMU Report (LANL 1990) based on the historical disposal of solid radioactive, mixed, and transuranic- (TRU-) contaminated waste. Site 54-018 is associated with PJ-SMA-17 and is listed as a High Priority Site in Part I.E.4(a) of the Permit. The requirement for corrective action in Part I.E.1 was triggered by analytical data from a storm water sample collected from PJ-SMA-17 on July 25, 2013, that showed an exceedance of the target action levels (TALs) for copper and gross-alpha radioactivity.

The PJ-SMA-17 drainage area is located in the southwest portion of Los Alamos National Laboratory's (the Laboratory's) Area G and overlies portions of eight waste disposal pits (Pits 26, 27, 29, 30, 32, 33, 35, and 36) included in Site 54-018. The eight pits were closed and subsequently covered with crushed Bandelier Tuff between 1982 and 1990 in accordance with DOE radiological protection requirements. As a result of the placement of this cover material, the wastes within these pits are not exposed to storm water. Attachment 1, As-Built Conditions for PJ-SMA-17 Disposal Pits 26, 27, 29, 30, 32, 33, 35 and 36, presents a detailed reference of the no exposure conditions. Maintenance of the cover material during ongoing activities to prevent exposure of the waste is required per DOE nuclear safety and radiological protection requirements until the final closure of Area G.

The PJ-SMA-17 portion of Area G is currently used for the active storage and handling of mixed wastes in accordance with the Laboratory's Hazardous Waste Facility Permit (HWFP). The Permit does not regulate storm water discharges associated with these current conventional industrial activities at the Laboratory (see Part I of the Permit). This distinction is important at Area G where storm water discharges from surface activities are permitted under Sector K of EPA's NPDES Storm Water Multi-Sector General Permit (MSGP) No. NMR05GB21. Figure 1 is a 2011 aerial photograph of the area in question depicting developed conditions within PJ-SMA-17, the location of associated waste disposal pits within Site 54-018, and the collocated MSGP sampler location E248.

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PF: J024 **PJ-SMA-17** **Sites: 54-018**

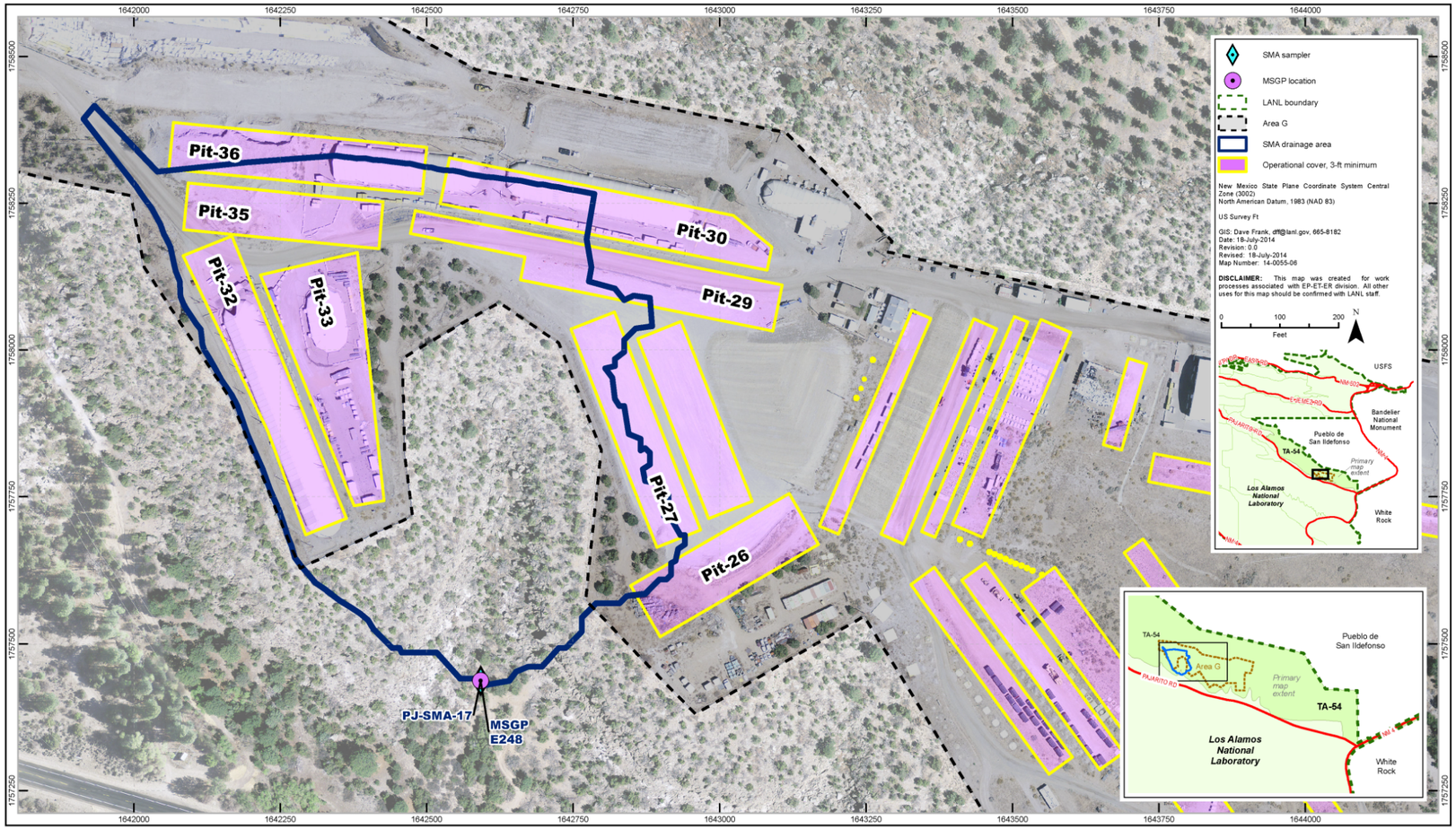

Figure 1 Location of PJ-SMA-17

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Site Description

One historical industrial activity area is associated with Permitted Feature (PF) J024, PJ-SMA-17: Site 54-018.

Site 54-018 consists of a total of 12 inactive subsurface radioactive waste disposal pits located within Area G in the eastern portion of the Laboratory immediately north of Pajarito Road. Area G is a 63-acre area that houses active radioactive- and mixed-waste container storage units and repackaging and characterization facilities and active and inactive radioactive waste disposal pits and shafts. The disposal pits currently have a minimum of 3 ft of soil cover over the buried wastes.

The PJ-SMA-17 drainage area overlies portions of only eight of the disposal pits comprising Site 54-018. These waste disposal units operated between 1981 and 1990 and received solid radioactive, mixed and TRU-contaminated waste. Potential contaminants associated with industrial materials historically disposed in the Site 54-018 disposal units included metals, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and radionuclides.

Figure 2 shows the evolution of a typical subsurface disposal pit at Area G and Site 54-018. Before the initial excavation of the first pits, Area G was an undeveloped mesa-top consisting of piñon-juniper woodlands. The mesa top was covered with a thin layer of soil underlain by Bandelier Tuff bedrock. The Bandelier Tuff was deposited during volcanic eruptions and is composed of pumice, minor rock fragments, and crystals supported in an ashy matrix. Pits were excavated into tuff, which was crushed and stockpiled separately from the pit area to prevent contact with the waste. The pits were filled with alternating layers of waste and crushed tuff. First, waste was placed in the bottom of the pit. Following placement, the waste layer was covered with crushed tuff and compacted with heavy equipment, effectively filling void spaces within the waste and providing an even, consolidated surface for the placement of the next layer of waste. This practice ensured the waste was contained within the disposal pit, preventing storm water runoff during the operational life of each pit.

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PF: J024 **PJ-SMA-17** **Site: 54-018**

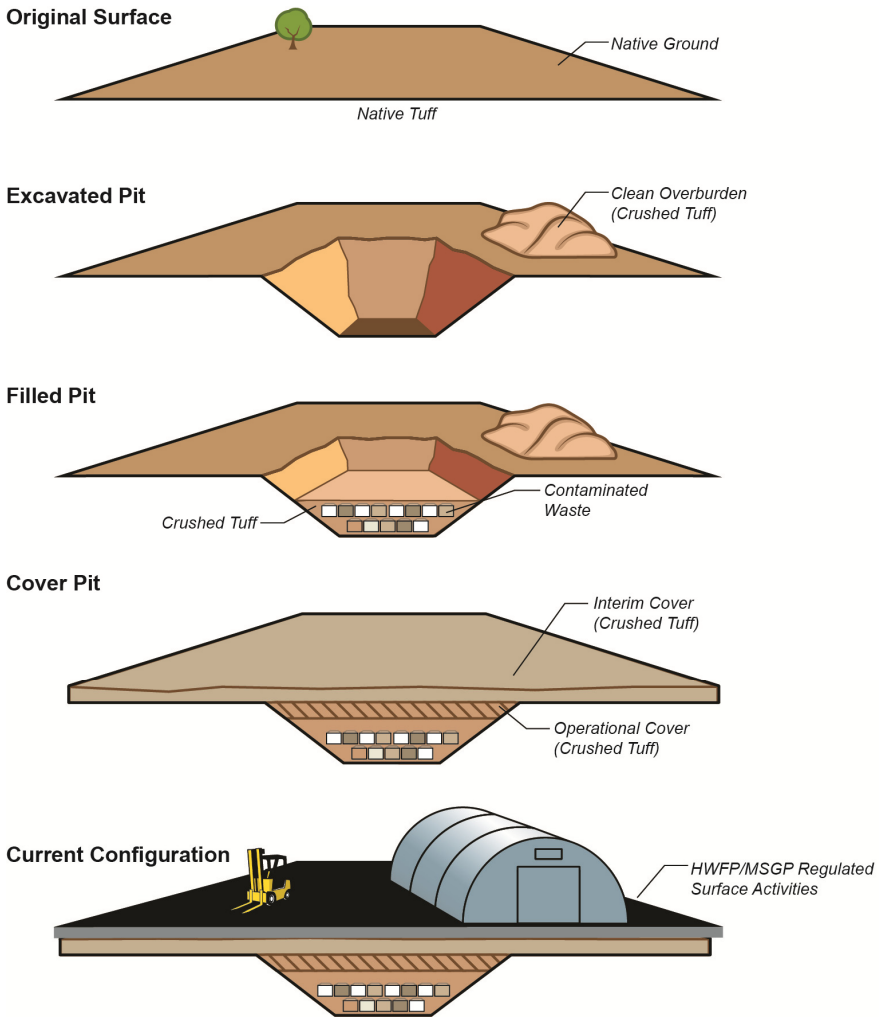

Figure 2 Typical disposal pit evolution at Area G

Waste placement operation protocol for disposal pits at Site 54-018 required wastes to be placed no closer than within 2 ft of the existing land surface (Koopman 1965; LASL 1974). The remaining capacity of each pit was filled and compacted with crushed tuff. This final layer of fill/tuff is referred to as the operational cover. Waste disposal operations at disposal pits (i.e., that portion of Site 54-018 within the PJ-SMA-17 drainage area) were complete and the pits covered by 1990. Following the closure of the waste pits, additional activities at Area G provided added cover thickness over the pits. This cover is identified as the interim cover and was the result of grading and stabilization activities to control erosion that began in the mid-1970s and the placement of additional fill over the Site to support the more recent construction of facilities and infrastructure (such as temporary domes, storage pads, and asphalt areas) for managing mixed wastes at Area G under the HWFP.

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Surface activities regulated under the HWFP for the storage and handling of mixed wastes within the PJ-SMA-17 drainage area are subject to Sector K of the MSGP. Storm water runoff from these active waste management operations is identified and characterized in the "TA-54 Storm Water Pollution Prevention Plan" (LANL 2009) and monitored in accordance with the MSGP. Figure 1 shows the location of MSGP sampler E248.

Storm Water Monitoring under the Permit

Storm water runoff from the area above portions of the subsurface pits comprising Site 54-018 is monitored within PJ-SMA-17. Following the installation of baseline control measures, one baseline storm water sample was collected on July 25, 2013. Analytical results from this sample yielded two TAL exceedances:

Table 1
TAL Exceedances in Storm Water Samples Collected at Site 54-018

Analyte	Result	Maximum TAL	Exceedance Ratio	Date
Copper	5.13 µg/L	4.3 µg/L	1.2	7/25/2013
Gross-alpha Radioactivity	61.6 pCi/L	15 pCi/L	4.1	7/25/2013

Potential contaminants associated with industrial materials historically managed at Site 54-018 are metals, including copper; VOCs; SVOCs; and radionuclides. These industrial materials are all associated with wastes that were placed in subsurface disposal pits and subsequently covered with crushed tuff. Therefore, these materials are not exposed to storm water.

The TAL exceedances for monitoring location PJ-SMA-17 were evaluated against the appropriate storm water background values, which consist of "Bandelier Tuff background" for undisturbed SMAs or "developed background" for SMAs in urban settings. Background values are expressed as upper tolerance limits (UTLs) determined using the recommendations provided in ProUCL 4.1, an EPA-developed statistical software package (available at http://www.epa.gov/nerlesd1/databases/datahome.htm). UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled "Bandelier Tuff Background" in Figures 3 and 4. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled "Developed Background" in Figures 3 and 4.

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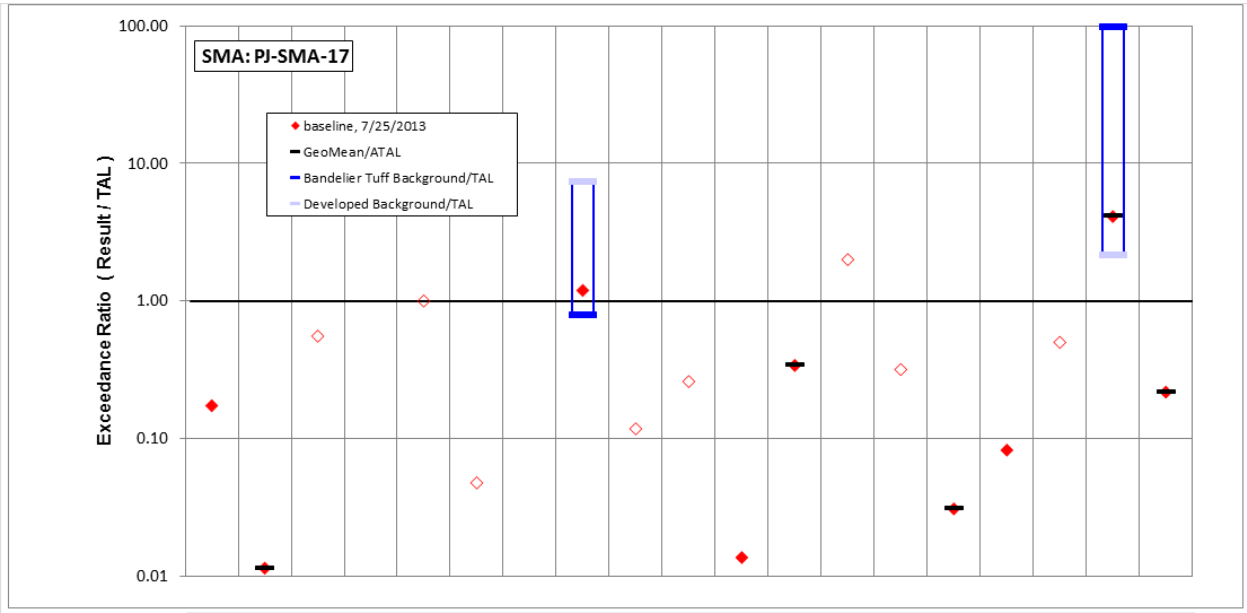

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/25/2013 result	130	7.31	*5*	28.3	*1*	*10*	2.76	**5.13**	*2*	*0.2*	2.32	1.7	***1***	*2*	3.08	3.46	*0.005*	**61.6**	6.52
result / TAL	0.17	0.011	*0.56*	0.0057	*1*	*0.048*	0.0028	**1.2**	*0.12*	*0.26*	0.014	0.34	***2***	*0.32*	0.031	0.082	*0.5*	**4.1**	0.22

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 3 Inorganic analytical results summary plot for PJ-SMA-17

Figures 3 and 4 present the analytical results in a manner that allows direct comparison with the TALs as defined in the Permit. Data are presented in one or more plots. The first plot contains results for all metals, weak acid dissociable cyanide, and gross-alpha and radium radioactivity, and the second presents the results for organic compounds, if analyzed. The organic plot is presented only if one or more groups of organic compounds were analyzed in the storm water sample collected at the Site and associated SMA per the requirements set forth in Appendix B of the Permit.

Analytical results for each analyte presented on the plots are normalized by calculating an exceedance ratio. This ratio is defined as the analytical result divided by applicable TAL. Thus, results exceeding the TAL will be greater than an exceedance ratio of 1.0. The exceedance ratios are plotted on a log scale to allow the viewing of a larger range of values. Each individual sample is represented by a symbol of a different color and shape. A solid symbol on the plot represents a result that is detected above the practical quantitation limit (PQL), while an empty symbol represents a value that is considered a nondetect. An empty symbol is a nondetect value represented graphically by the PQL.

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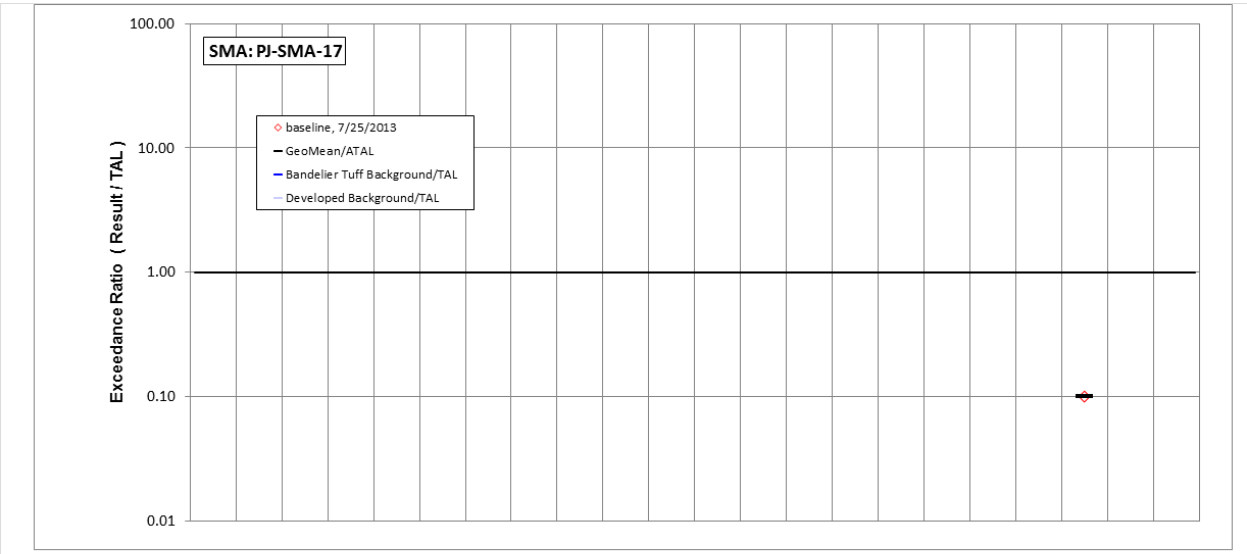

	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
7/25/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 4 Organic analytical results summary plot for PJ-SMA-17

Monitoring location PJ-SMA-17 receives runoff from developed areas (parking lots, roads and buildings); from landscape consisting of crushed Bandelier Tuff to backfill the inactive waste disposal pits and to provide additional cover over the subsurface pits and shafts; and from the undeveloped drainage directly upstream of the SMA sampler.

Copper is associated with building materials, parking lots, and automobiles and also occurs naturally at low concentrations in the Bandelier Tuff. The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2013 is between these values and, therefore, is within the range of background values expected for this Site.

Gross-alpha radioactivity in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-

on from a developed urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values and, therefore, is within the range of background values expected for this Site.

Corrective Action Control Measure Description

Because of the nature of the wastes disposed of at Site 54-018, no exposure has been a key element of radiological protection and nuclear safety requirements since disposal activities began. In addition to being a SWMU, the inactive, subsurface disposal pits comprising Site 54-018 are regulated by DOE because of their radionuclide inventory. The radiological protection requirements established for these inactive pits essentially require no exposure to potential receptors (e.g., members of the public) to the radionuclides in the wastes disposed of in the pits. As discussed in more detail below, these “no exposure” requirements under DOE regulations are fundamentally identical to the corrective action requirements for storm water control measures that prevent contamination of storm water by eliminating exposure to pollutants.

Site 54-018 is located within Area G at TA-54. Area G is a low-level radioactive waste (LLW) disposal facility regulated by DOE under the Atomic Energy Act, as implemented by DOE Order 435.1, Radioactive Waste Management. DOE Order 435.1 contains specific performance objectives related to radiological protection of the public that all LLW disposal facilities must meet. These performance objectives include limits on radiological dose to members of the public during operation of the disposal facility and after closure. LLW disposal facilities must conduct a performance assessment and composite analysis to demonstrate performance objectives will be met during operation and for a period 1000 yr after closure. The performance assessment evaluates the dose associated with LLW disposed of at the facility, and the composite analysis considers all other sources of radioactive material that may contribute to dose to the public.

The performance assessment is used to develop a closure plan for the facility that specifies how the facility will be closed in a manner that ensures performance objectives will be met. DOE Order 435.1 and its implementing manual and guidance also require the facility to be operated in a manner that adheres to the requirements and limitations contained in and derived from the closure plan and performance assessment. Compliance with the performance objectives is predicated on isolation of the disposed waste from the accessible environment, which is fundamentally identical to storm water control measures that prevent contamination of storm water by eliminating exposure to pollutants. The LLW regulated by DOE under Order 435.1 is also the source of potential storm water pollutants regulated by EPA under the Permit. Therefore, actions taken by the Laboratory to meet DOE radiological protection requirements also satisfy the requirements for control measures that totally eliminate exposure of pollutants to storm water contained in Section E.2(c) of the Permit.

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Preventing exposure to waste before final site closure is accomplished through implementation of various Laboratory procedures, including EP-AP-2202, Revision 2, Pit and Shaft Design, Construction, and Operational Closure; EP-DOP-2216, Revision 0, TA-54 Area G Low Level Waste Disposal and Pit/Shaft Deactivation; and EP-AREAG-FO-DOP-0213, Revision 4, TA-54 Area G Inactive Pit and Shaft Quarterly SR and Shaft Quarterly ISI. Relevant requirements implemented through these procedures include the following:

- Preventing runoff from entering the pit while it is in use (EP-AP-2202, Section 7.1.2)
- Preventing operational LLW from being disposed of higher than 3 m (9 ft 10 in.) below the rim of the pit (EP-DOP-2216, Section 3)
- Preventing low-activity bulk soils and debris from environmental restoration and decontamination and decommissioning activities from being disposed of higher than 0.3 m (1 ft) below the interface of site surface soils and the underlying intact tuff (EP-DOP-2216, Section 3)
- Performing quarterly inspections of inactive pits for signs of significant erosion, subsidence, or other signs of loss of cover and implementing corrective actions if deficiencies are noted (EP-AREAG-FO-DOP-0213)

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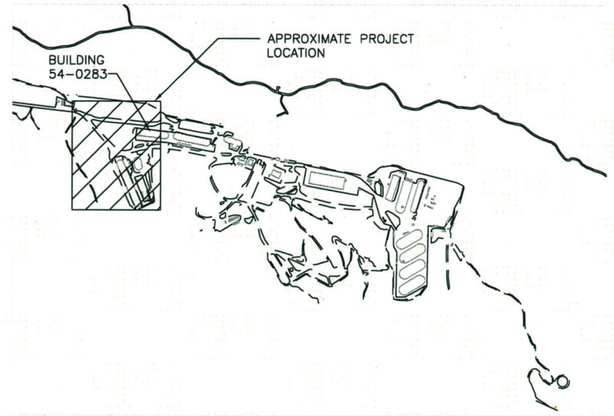
Rogers, M.A., June 1977b. "History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T)," Vol. II, Los Alamos Scientific Laboratory report LA-6848-MS, Los Alamos, New Mexico.

Attachment 1

As-Built Conditions for PJ-SMA-17
Disposal Pits 26, 27, 29, 30, 32, 33, 35 and 36

PJ-SMA-17 AS-BUILT DRAWINGS

PITS 26,27,29,30,32,33,35 AND 36



LOCATION PLAN
SCALE: NONE TA-54

LIST OF DRAWINGS

REVISION NUMBER	SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
0	1	G-0001	TITLE SHEET
0	2	C-0001	LEGEND, ABBREVIATIONS, AND GENERAL NOTES
0	3	C-1000	PLAN VIEW
0	4	C-1001	LAND CLASSIFICATION ABOVE PITS & SHAFTS WITHIN PJ-SMA-17
0	5	C-3000	PIT SECTION VIEW

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DES	CHKD	SUB	APP

ENVIRONMENTAL PROGRAMS

PJ-SMA-17 AS-BUILT DRAWINGS

TITLE SHEET

DRAWN E.FERNANDEZ 8/13/14
DESIGN C.GORHAM
CHECKED T.KOSTROBALA
DATE 8-13-14

BLDG NA TA-54

SUBMITTED

APPROVED FOR RELEASE Bill Halverson

Los Alamos NATIONAL LABORATORY
PO Box 1663
Los Alamos, New Mexico 87545

SHEET G-0001
1 OF 5

CLASSIFICATION U
REVIEWER Bill Turney 8/14/14
DATE

PROJECT ID 102891
DRAWING NO C-57037
REV 0

LEGEND

NORTH ORIENTATION SYMBOL

10' 5' 0 5' 10'
1"=10'-0"
GRAPHIC SCALE

A
C-5001
SECTION TAG

SECTION END LINE

7300
EXISTING CONTOUR

MISC EXISTING STRUCTURE

SWMU BOUNDARY

SMA BOUNDARY

EXISTING EARTH/TUFF

INTERIM COVER

OPERATIONAL COVER

CONTAMINATED WASTE/CRUSHED TUFF LAYERS

SOIL

ABBREVIATIONS

BLDG	– BUILDING
DWG	– DRAWING
E	– EASTING
EL	– ELEVATION
FT	– FOOT OR FEET
INV	– INVERT
LF	– LINEAR FEET
MAX	– MAXIMUM
MIN	– MINIMUM
N	– NORTHING
NAD	– NORTH AMERICAN DATUM
NGVD	– NATIONAL GEODETIC VERTICAL DATUM
NMDOT	– NEW MEXICO DEPARTMENT OF TRANSPORTATION
SMA	– STORM WATER MANAGEMENT AREA
TYP	– TYPICAL

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LASL (LOS ALAMOS SCIENTIFIC LABORATORY), JULY 27, 1977g. "MATERIALS DISPOSAL AREAS, AREA G PIT SECTIONS FOR PIT 36, TA-54. "ENGINEERING DRAWING R-5040, LOS ALAMOS, NEW MEXICO (LASL 1977, 76099)

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ROGERS, M.A., JUNE 1977. "HISTORY AND ENVIRONMENTAL SETTING OF LASL NEAR-SURFACE LAND DISPOSAL FACILITIES FOR RADIOACTIVE WASTES (AREAS A, B, C, D, E, F, G, AND T)," VOL. I, LOS ALAMOS SCIENTIFIC LABORATORY REPORT LA-6848-MS, LOS ALAMOS, NEW MEXICO (ROGERS 1977, 005707)

ROGERS, M.A., JUNE 1977. "HISTORY AND ENVIRONMENTAL SETTING OF LASL NEAR-SURFACE LAND DISPOSAL FACILITIES FOR RADIOACTIVE WASTES (AREAS A, B, C, D, E, F, G, AND T)," VOL. II, LOS ALAMOS SCIENTIFIC LABORATORY REPORT LA-6848-MS, LOS ALAMOS, NEW MEXICO (ROGERS 1977, 005708)

GENERAL NOTES

1. IF THIS SHEET IS NOT 24" X 36" IT IS A REDUCED SIZE PLOT.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DES	CHKD	SUB	APP

ENVIRONMENTAL PROGRAMS

PJ-SMA-17 AS-BUILT DRAWINGS

LEGEND, ABBREVIATION, AND GENERAL NOTES

BLDG NA TA-54

DRAWN	E.FERNANDEZ
DESIGN	G. FORDHAM
CHECKED	T.KOSTOBALA
DATE	8-13-14
SUBMITTED	
APPROVED FOR RELEASE	

Los Alamos NATIONAL LABORATORY
PO Box 1663 Los Alamos, New Mexico 87545

SHEET C-0001
2 OF 5

CLASSIFICATION U
REVIEWER
DATE 8/14/14

PROJECT ID 102891
DRAWING NO C-57037
REV 0

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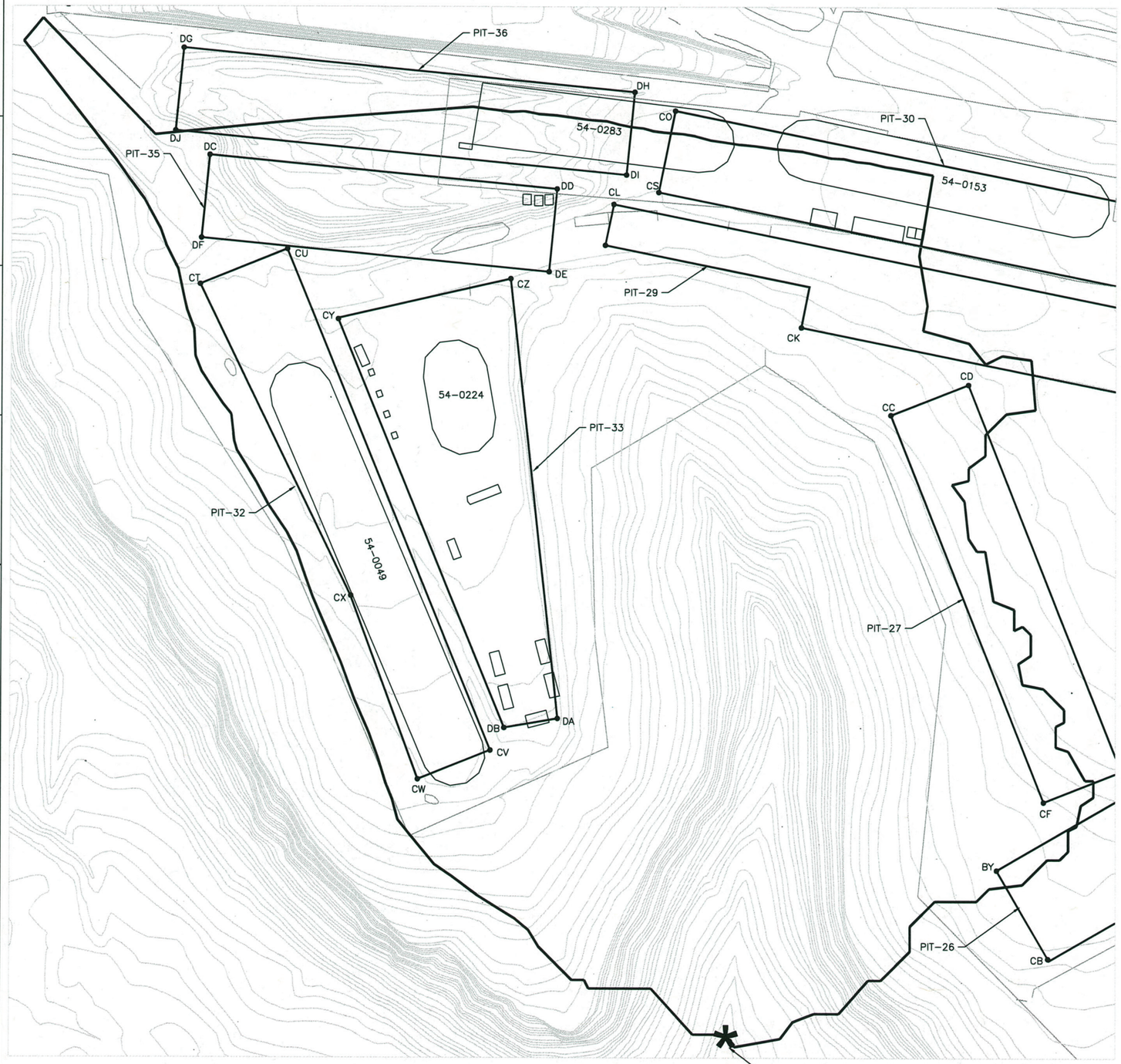

PLAN VIEW

0 50' 100'

1"=50'-0"

Point #	Easting	Northing
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CC	1642746.2	1758035.8
CD	1642820.6	1758065.2
CF	1642893.4	1757664.0
CK	1642503.2	1758151.5
CL	1642479.9	1758237.8
CO	1642538.9	1758327.9
CS	1642523.0	1758249.5
CT	1642083.7	1758160.8
CU	1642167.1	1758194.7
CV	1642363.0	1757713.2
CW	1642293.6	1757685.0
CX	1642228.2	1757861.9
CY	1642215.7	1758128.2
CZ	1642381.4	1758166.3
DA	1642427.1	1757743.7
DB	1642375.9	1757734.7
DC	1642092.3	1758284.8
DD	1642425.6	1758252.6
DE	1642417.9	1758173.0
DF	1642084.6	1758205.2
DG	1642067.1	1758387.7
DH	1642499.9	1758345.8
DI	1642492.2	1758266.2
DJ	1642059.4	1758308.1

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DES	CHKD	SUB	APP

ENVIRONMENTAL PROGRAMS

PJ-SMA-17 AS-BUILT DRAWINGS

PLAN VIEW

BLDG NA TA-54

SUBMITTED

APPROVED FOR RELEASE

DRAWN E.FERNANDEZ 8/13/14

DESIGN G. FORDHAM

CHECKED T.KOSTAL/BALA

DATE 8/13/14

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SHEET C-1000

3 OF 5

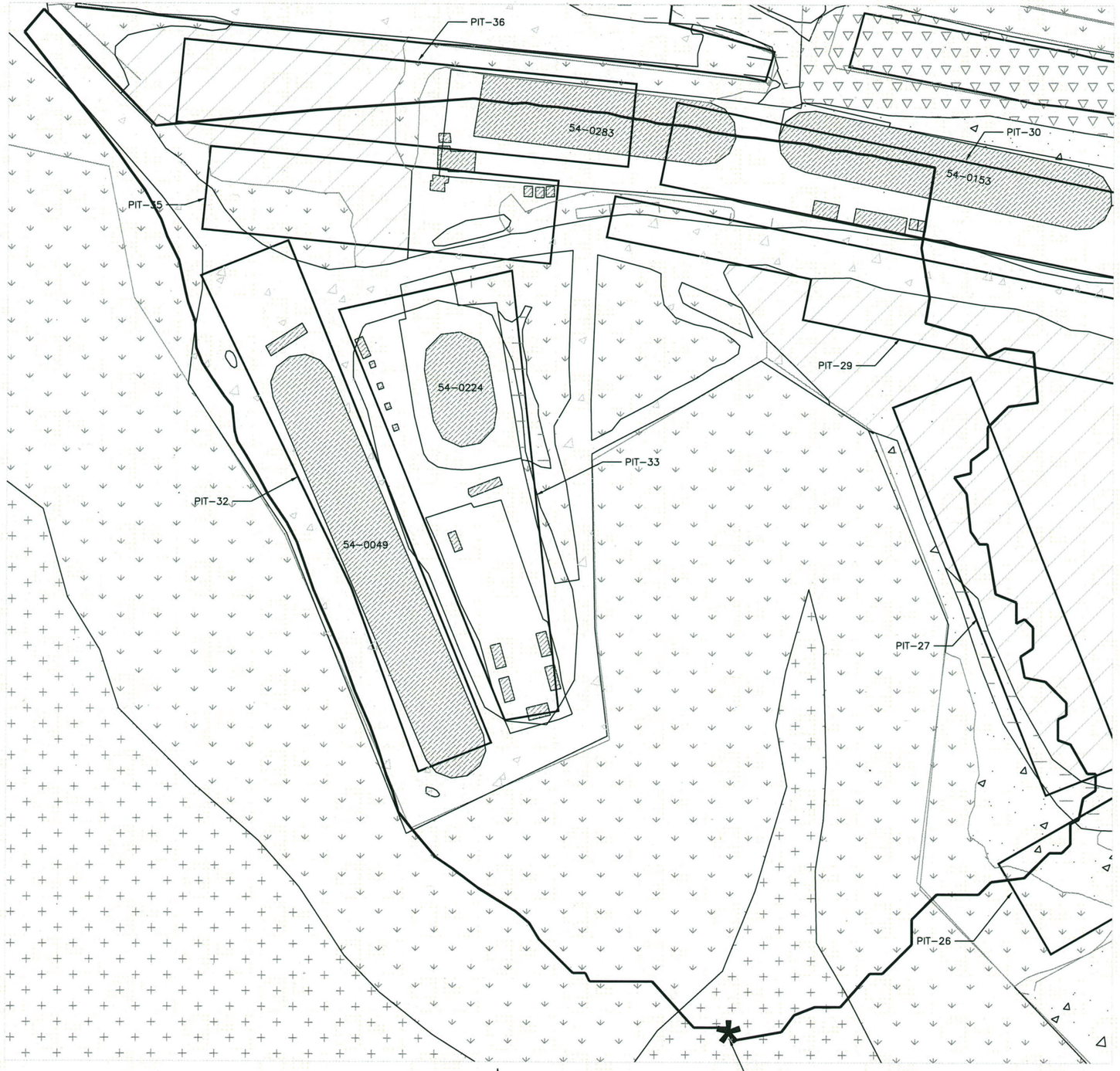
CLASSIFICATION U

REVIEWER Billy Spurney DATE 8/14/14

PROJECT ID 102891

DRAWING NO C-57037

REV 0



LAND CLASSIFICATION ABOVE PITS WITHIN THE PJ-SMA-17 BOUNDARY

SURFACE TYPE	PIT-26	PIT-27	PIT-29	PIT-30	PIT-32	PIT-33	PIT-35	PIT-36
ASPHALT	–	–	–	50	–	–	20	20
CHAMISA	–	–	–	–	–	–	–	–
CONCRETE	–	–	–	–	–	–	–	–
BASE COURSE	100	–	60	–	20	75	15	–
PINION JUNIPER	–	–	–	–	–	–	–	–
STRUCTURE	–	–	–	50	80	15	5	35
SPARSE GRASS	–	–	–	–	–	5	25	10
TUFF	–	20	–	–	–	5	–	–
BARE GROUND	–	80	40	–	–	–	35	35

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DES	CHKD	SUB	APP

ENVIRONMENTAL PROGRAMS

PJ-SMA-17 AS-BUILT DRAWINGS

LAND CLASSIFICATION ABOVE PITS AND SHAFTS WITHIN PJ-SMA-17

BLDG NA TA-54

SUBMITTED

APPROVED FOR RELEASE

DRAWN E.FERNANDEZ 8/13/14

DESIGN G. FORDHAM

CHECKED T.KOSTOBALA

DATE 8-13-14

Los Alamos NATIONAL LABORATORY
PO Box 1663
Los Alamos, New Mexico 87545

SHEET C-1001

4 OF 5

CLASSIFICATION U

REVIEWER Billy Burnett DATE 8/14/14

PROJECT ID 102891

DRAWING NO C-57037

REV 0

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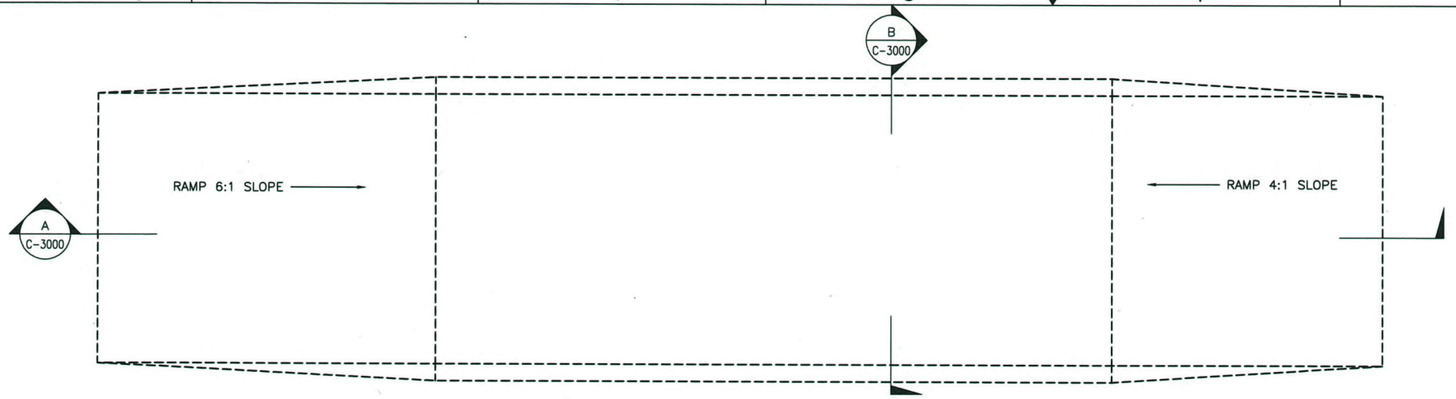
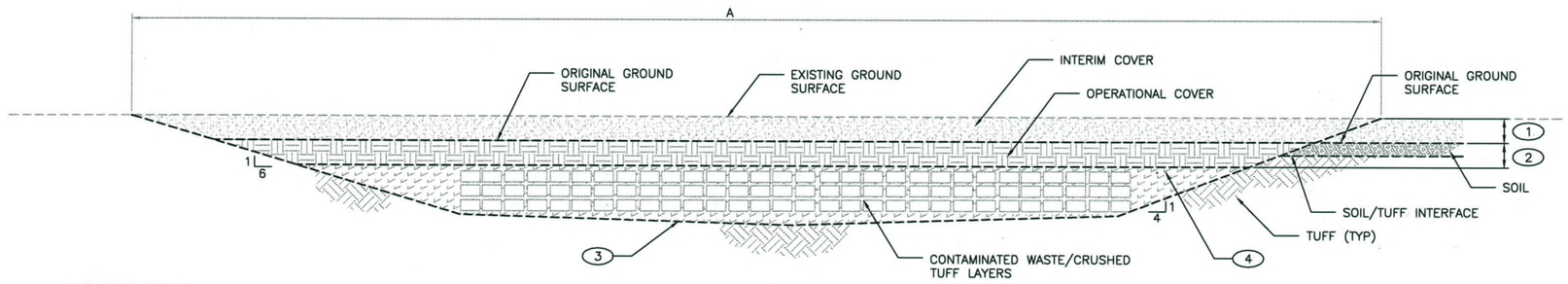
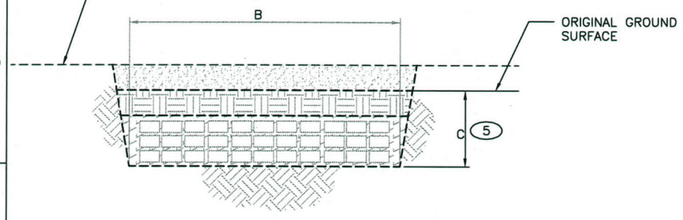


STANDARD PIT PLAN



SECTION VIEW

A C-3000 SCALE: NONE



SECTION VIEW

B C-3000 SCALE: NONE

GENERAL NOTES

1. IF THIS SHEET IS NOT 24" X 36" THEN IT IS A REDUCED SIZE PLOT.
2. STANDARD PIT LAYOUT AND SECTION VIEW DEPICTION FROM LANL ENGINEERING DRAWING, C-25703 (LASL 1965, XXXXXX).
3. SEE SHEET C-1000 FOR PIT CORNER NORTHING/EASTING LOCATIONS.
4. PIT DIMENSIONS ESTABLISHED FROM PIT SURVEYS AND DEPICTED IN LANL ENGINEERING DRAWINGS FOR EACH SPECIFIC PIT. SEE DIMENSION TABLE FOR DRAWING REFERENCE.

KEYED NOTES

(1) INTERIM COVER CONSISTS OF CRUSHED TUFF COVERED BY THE EXISTING ACTIVE WASTE MANAGEMENT OPERATIONS SURFACE (E.G. ASPHALT PADS, STORAGE BUILDINGS/DOMES, AND ROADS). DEPTH FROM EXISTING GROUND SURFACE TO ORIGINAL GROUND SURFACE VARIES FOR EACH PIT LOCATION. EXISTING GROUND SURFACE MAY BE DEFINED BY ASPHALT, CONCRETE, COVER SOIL, OR BUILDINGS.

(2) OPERATIONAL COVER CONSISTS OF CRUSHED TUFF. DEPTH FROM ORIGINAL GROUND SURFACE TO CONTAMINATED WASTE / CRUSHED TUFF LAYERS NOT TO BE LESS THAN 2 FEET PER USGS 1965 PIT CONSTRUCTION GUIDELINES LETTER. HISTORICAL RECORDS INDICATE ACTUAL DEPTHS TYPICALLY EXCEED 2 FT MINIMUM (M.A. ROGERS, 1977).

(3) PIT BOTTOM SLOPE VARIES. SEE R-SERIES DRAWING FOR SLOPES. TYPICAL SLOPE SHOWN.

(4) PER USGS 1965 PIT CONSTRUCTION GUIDELINES, "WASTES ARE TO BE BURIED IN THE CONFINES OF NATURAL TUFF. THE WASTES SHOULD BE BURIED BELOW THE SOIL ZONE WITHIN THE TUFF."

(5) DIMENSION "C" IS THE MAXIMUM DIMENSION AS MEASURED FROM THE PIT BOTTOM TO THE ORIGINAL GROUND SURFACE.

PIT DIMENSION TABLE (FT)

DIMENSION ID	PIT-26	PIT-27	PIT-29	PIT-30	PIT-32	PIT-33	PIT-35	PIT-36
A	313	400	640	570	518	425	365	435
B	100	75	78	75	74	115	80	80
C	37	46	52	49	51	40	40	42
SOURCE: LANL ENGINEERING DRAWING	R-5030 (LASL 1977A)	R-5031 (LASL 1977B)	R-5033 (LASL 1977C)	R-5034 (LASL 1977D)	(ROGERS 1977)	R-5037 (LASL 1977E)	R-5039 (LASL 1977F)	R-5040 (LASL 1977G)

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DES	CHKD	SUB	APP

ENVIRONMENTAL PROGRAMS

PJ-SMA-17 AS-BUILT DRAWINGS

PIT SECTION VIEW

BLDG NA TA-54

DRAWN	E.FERNANDEZ
DESIGN	C. FORDHAM
CHECKED	R.KOSKELA
DATE	8-13-14
SUBMITTED	APPROVED FOR RELEASE
SHEET	C-3000
	5 OF 5
CLASSIFICATION	U
REVIEWER	Brady Garner
DATE	8/14/14
PROJECT ID	102891
DRAWING NO	C-57037
REV	0

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