Completion of Corrective Action at Site 54-017 in PJ-SMA-20

October 25, 2013

NPDES PERMIT NO. NM0030759

LA-UR-13-28149

NPDES PERMIT NO. NM0030759 **LA-UR-13-28149**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: J027 **PJ-SMA-20** **Site: 54-017**

The following certification was performed in accordance with NPDES Permit No.NM0030759, Part I.E.2, which requires the Permittees (i.e., DOE and LANS) to certify the completion of corrective action.

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

Oct 24, 2013
Date

Los Alamos Field Office
National Nuclear Security Administration

10-25-2013
Date

NPDES PERMIT NO. NM0030759 **LA-UR-13-28149**

LOS ALAMOS NATIONAL LABORATORY
CERTIFICATION OF COMPLETION OF CORRECTIVE ACTION

PF: J027 **PJ-SMA-20** **Site: 54-017**

Introduction

This certification documents the no exposure condition of Site 54-017 [known as Solid Waste Management Unit (SWMU) 54-017 under the New Mexico Environment Department (NMED) Consent Order] for completion of corrective action at site monitoring area (SMA) PJ-SMA-20 under Part 1.E.2(c) of National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759 (the Individual Permit or 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 54-017 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 54-017 is associated with PJ-SMA-20 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-20 on July 29, 2011, that showed an exceedance of the target action level (TAL) for copper. Corrective action is to be certified complete within 3 yr of the effective date of the Individual Permit (i.e., November 2013).

The PJ-SMA-20 drainage area is located at the eastern end of Los Alamos National Laboratory's (the Laboratory's) Area G and overlies portions of five pits (Pits 1 through 5) included in Site 54-017. Pits 1 through 5 were closed in succession and subsequently covered with crushed Bandelier Tuff between 1961 and 1974 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 SWMU 54-017 Disposal Pits 1 through 5, 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-20 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 Individual 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 the EPA's NPDES Storm Water Multi-Sector General Permit (MSGP) No. NMR05GB21. Figure 1 is a 2011 aerial photograph of the area that shows the developed conditions within PJ-SMA-20, the location of Pits 1 through 5 within of Site 54-017, and the collocated MSGP sampler.

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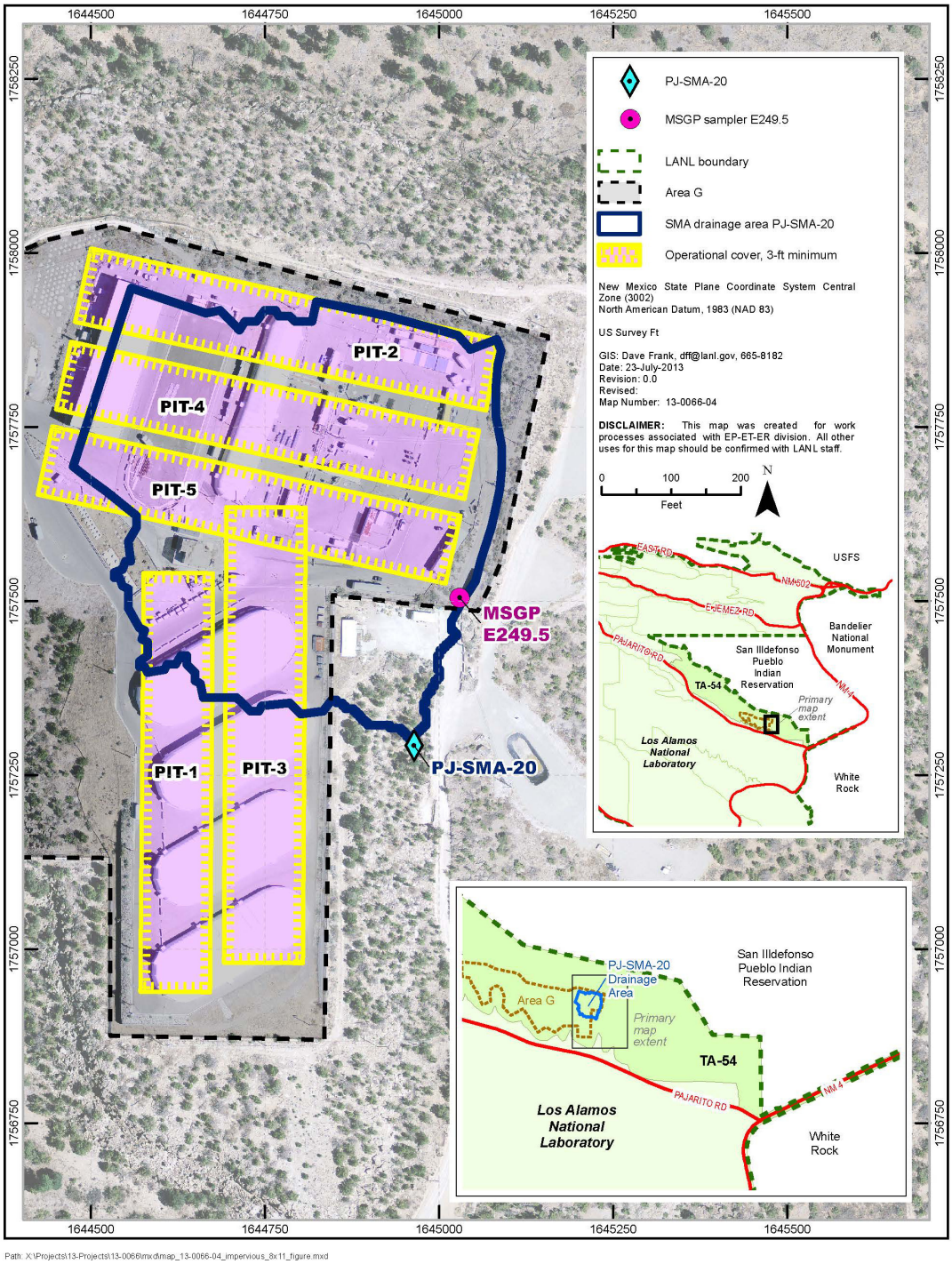

Figure 1 **Location of PJ-SMA-20**

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Site Description

One historical industrial activity area is associated with Permitted Feature J027, PJ-SMA-20, Site 54-017.

Site 54-017 consists of 19 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 PJ-SMA-20 drainage area overlies portions of five of the disposal pits (Pits 1 through 5) comprising Site 54-017. Pits 1 through 5 operated between 1959 and 1974 and received solid radioactive-, mixed-, and TRU-contaminated waste. Potential contaminants associated with industrial materials historically disposed of in the Site 54-017 pits 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 54-017. 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 emplacement, 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 and prevented storm water runoff during the operational life of each pit.

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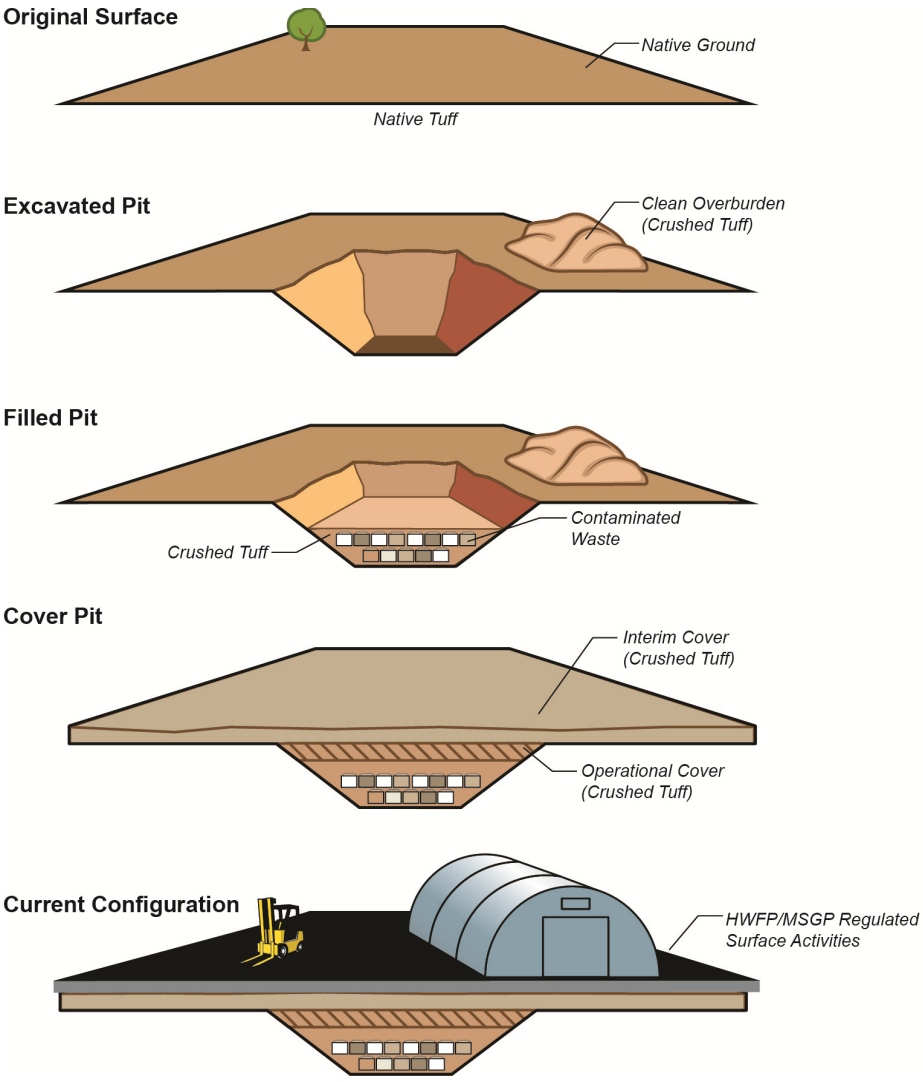

Figure 2 Typical pit evolution at Area G

Waste placement operation protocol for Pits 1 through 5 at Site 54-017 required wastes to be placed no closer than within 2 ft of the existing land surface (Koopman1965). 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 1 through 5 (i.e., that portion of Site 54-017 within the PJ-SMA-20 drainage area) were complete and the pits covered by 1974 (Rogers 1977a). After 1974, 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 for erosion control 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. Present facility infrastructure within the boundary of PJ-SMA-20 has resulted in 100% of the area above Pits 1 through 5 being covered with impervious infrastructure.

Surface activities regulated under the HWFP for the storage and handling of mixed wastes within the PJ-SMA-20 drainage area are subject to Sector K of the MSGP. Storm water runoff from these active waste management operations are 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 E249.5.

Individual Permit Storm Water Monitoring

Storm water runoff from the area above portions of the subsurface pits comprising Site 54-017 is monitored within PJ-SMA-20. Following the installation of baseline control measures, one baseline storm water sample was collected on July 29, 2011. Analytical results from this sample yielded one TAL exceedance:

Analyte	Result	MTAL	Exceedance Ratio	Date
Copper	8.1 µg/L	4.3	1.8837	7/29/2011

Potential contaminants associated with industrial materials historically managed at Site 54-017 are metals, including copper, VOC, SVOC, 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 copper TAL exceedance for monitoring location PJ-SMA-20 was 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 Figure 3. 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 Figure 3.

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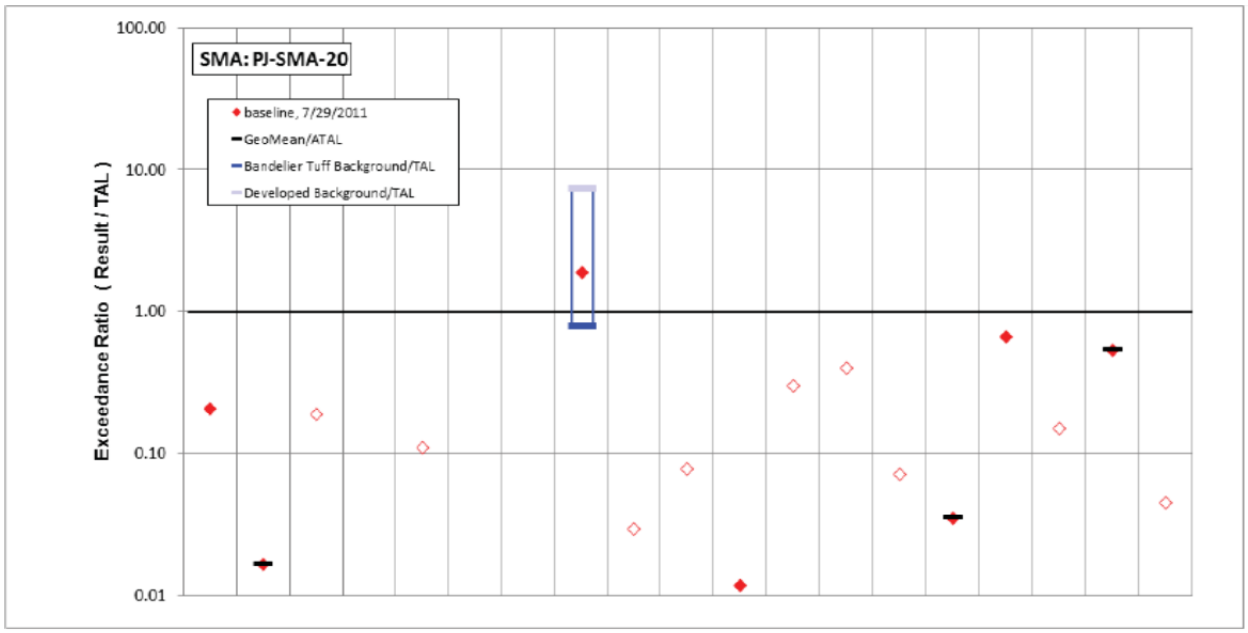

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	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
7/29/2011 result	155	10.6	*1.7*	28.4	*0.11*	*2*	1	**8.1**	*0.5*	*0.06*	2	*1.5*	*0.2*	*0.45*	3.5	27.9	*0.002*	8	*1.35*
result / TAL	0.21	0.017	*0.19*	0.0057	*0.11*	*0.01*	0.001	**1.9**	*0.029*	*0.078*	0.012	*0.3*	*0.4*	*0.071*	0.035	0.66	*0.15*	0.53	*0.045*

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-20

Monitoring location PJ-SMA-20 receives storm water run-on from developed environments, as shown in Figure 1, including paved parking lots, roads, and buildings, as well as landscape containing sediment derived from Bandelier Tuff. Thus, background levels of copper at PJ-SMA-20 would be expected to be between the Bandelier Tuff background and the background levels for the developed sites.

Copper is associated with building materials, parking lots, and automobiles and also occurs naturally at low concentrations in 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 2011 is between these values and is therefore within the range of background values expected for this site.

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Corrective Action Control Measure Description

Because of the nature of the wastes disposed of at Site 54-017, 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 54-017 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 explained 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 54-017 is located within Area G at Technical Area 54 (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 of 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 isolating 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.

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-2201, Revision 11, LLW Receipt, Storage, and Disposal to TA-54 Area G; and EP-AREAG-FP-SOP-1077, TA-54 Area G Inactive Pit and Shaft Quarterly Inspections.

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-2201, Section 6.1);
- 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-2201, Section 6.1); and
- 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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LANL (Los Alamos National Laboratory), February 2009. "TA-54 Stormwater Pollution Prevention Plan," Environmental Waste Management Operations document no. EP PLAN-3202, R.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

LASL (Los Alamos Scientific Laboratory), July 27, 1965. Material Disposal Areas, Standard Pit Specifications," Engineering Drawings, Engineering Drawing R-5009.

LASL (Los Alamos Scientific Laboratory), July 27, 1977a. "Material Disposal Areas, Area G Pit Sections for Pit 1, TA-54," Engineering Drawings, Engineering Drawing R-5005, sheet number 1 of 5.

LASL (Los Alamos Scientific Laboratory), July 27, 1977b. "Material Disposal Areas, Area G Pit Sections for Pit 2, TA-54," Engineering Drawings, Engineering Drawing R-5006, sheet number 2 of 5.

LASL (Los Alamos Scientific Laboratory), July 27, 1977c. "Material Disposal Areas, Area G Pit Sections for Pit 3, TA-54," Engineering Drawings, Engineering Drawing R-5007, sheet number 3 of 5.

LASL (Los Alamos Scientific Laboratory), July 27, 1977d. "Material Disposal Areas, Area G Pit Sections for Pit 4, TA-54," Engineering Drawings, Engineering Drawing R-5008, sheet number 4 of 5.

LASL (Los Alamos Scientific Laboratory), July 27, 1977e. "Material Disposal Areas, Area G Pit Sections for Pit 5, TA-54," Engineering Drawings, Engineering Drawing R-5009, sheet number 5 of 5.

Rogers, M.A., June 1977a. "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.

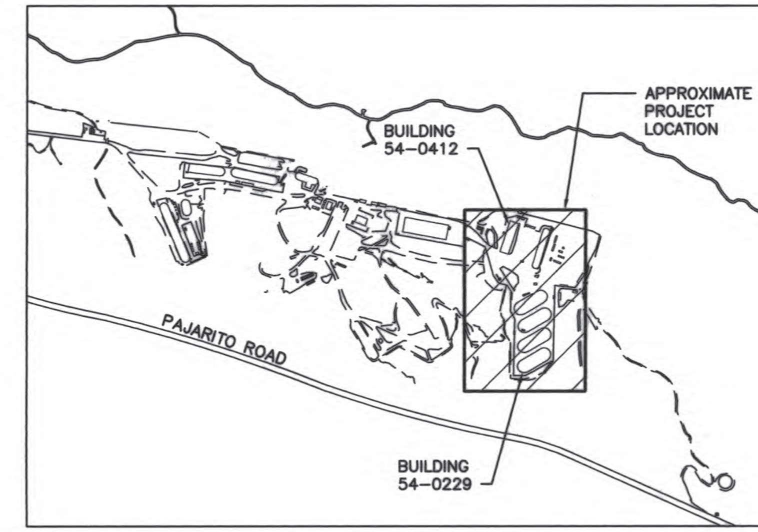
Rogers, M.A., June 1977b. "History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T)," Vol. II, Los Alamos Scientific Laboratory report LA-6848-MS, Los Alamos, New Mexico.

Attachment 1

As-Built Conditions for SWMU 54-017
Disposal Pits 1 through 5

PJ-SMA-20 AS-BUILT DRAWINGS

PITS 1-5 TA-54



LOCATION PLAN
SCALE: NONE TA-54

GENERAL NOTE

THIS DRAWING SET REPRESENTS "AS-FOUND" CONDITIONS THAT WERE IN PLACE PRIOR TO THE NOVEMBER 1, 2010, EFFECTIVE DATE OF THE LOS ALAMOS NATIONAL LABORATORY NPDES INDIVIDUAL PERMIT, PERMIT NO. NM0030759 (IP). "AS-FOUND" CONDITIONS DESCRIBED IN THIS DRAWING SET ARE BASED ON FIELD-VERIFIED LAND CLASSIFICATION/DEVELOPMENT, GIS AERIAL PHOTOGRAPHY, AND HISTORICAL DOCUMENTATION THAT INCLUDES ENGINEERING DRAWINGS, LAND SURVEYS, LETTERS, MEMORANDUMS AND OTHER DOCUMENTS THAT DESCRIBE PAST AND PRESENT CONDITIONS. THIS DRAWING SET IS BEING PREPARED TO SATISFY PART.I.E.1(B) OF THE IP.

LIST OF DRAWINGS

REVISION NUMBER	SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
0	1	G-0001	TITLE SHEET
0	2	C-0001	LEGEND, ABBREVIATIONS, REFERENCES, AND GENERAL NOTES
0	3	C-1000	PLAN VIEW
0	4	C-1001	LAND CLASSIFICATION ABOVE PITS 1-5 WITHIN PJ-SMA-20
0	5	C-3000	SECTION VIEW

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DES	CHKD	SUB	APP
			Billy Turney Unclassified						

ENVIRONMENTAL PROGRAMS

PJ-SMA-20 AS-BUILT DRAWINGS

TITLE SHEET

DRAWN	E MARTIN EM
DESIGN	T KOSTRUBALA
CHECKED	R RAGER REX
DATE	

BLDG NA TA-54

SUBMITTED ALAN MacGREGOR

APPROVED FOR RELEASE Steve Veenis Steve Veenis

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

SHEET G-0001 1 OF 5

CLASSIFICATION Unclassified REVIEWER Billy Turney DATE 10.24.13

PROJECT ID 102891 DRAWING NO C-56063 REV 0

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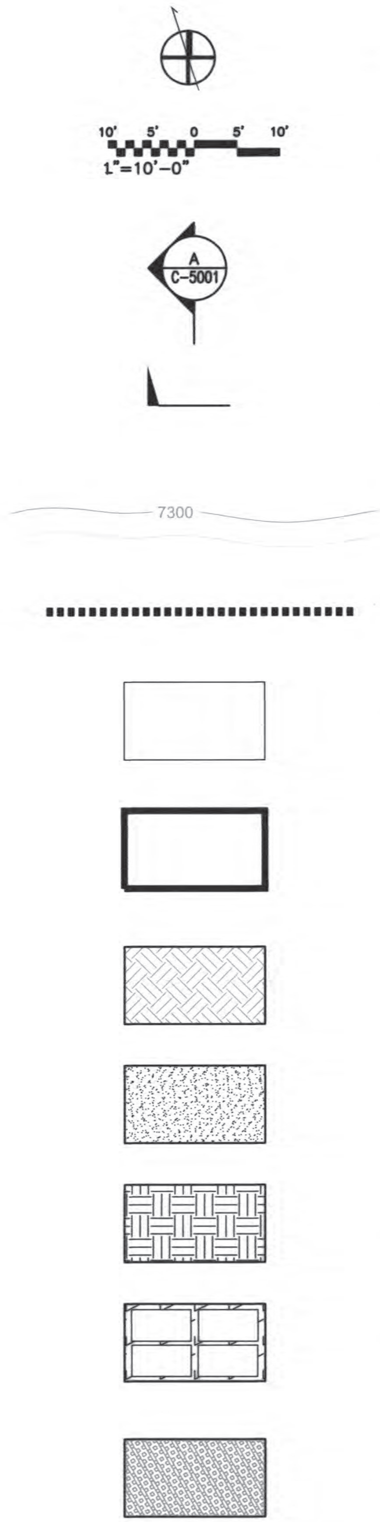

- NORTH ORIENTATION SYMBOL
- GRAPHIC SCALE
- SECTION TAG
- SECTION END LINE
- EXISTING CONTOUR
- SMA DRAINAGE BOUNDRY
- MISC EXISTING STRUCTURE
- SWMU BOUNDARY
- EXISTING EARTH/TUFF
- INTERIM COVER
- OPERATIONAL COVER
- CONTAMINATED MATERIAL
- SOIL

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	– SITE MONITORING AREA
SWMU	– SOLID WASTE MANAGEMENT UNIT
TYP	– TYPICAL

LIST OF REFERENCES

IFC KAISER ENGINEERS, INC., MARCH 1994. "TA-54 AREA G BURIAL PITS LAND SURVEY AND RESEARCH: FINAL REPORT," DOCUMENT PREPARED FOR LOS ALAMOS NATIONAL LABORATORY, LOS ALAMOS, NEW MEXICO.

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LASL (LOS ALAMOS SCIENTIFIC LABORATORY), JULY 27, 1977E. "MATERIAL DISPOSAL AREAS, AREA G PIT SECTIONS FOR PIT 5, TA-54," ENGINEERING DRAWINGS, ENGINEERING DRAWING R-5009, SHEET NUMBER 5 OF 5.

ROGERS, M.A., JUNE 1977A. "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, 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.

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-20 AS-BUILT DRAWINGS

LEGEND, ABBREVIATIONS, REFERENCES, AND GENERAL NOTES

DRAWN	E MARTIN
DESIGN	T KOSTRUBALA
CHECKED	R RAGER
DATE	

BLDG NA TA-54

SUBMITTED: ALAN MACLEOD — APPROVED FOR RELEASE: STEVE VEENIS

Los Alamos NATIONAL LABORATORY
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SHEET C-0001 — 2 OF 5

CLASSIFICATION Unclassified — REVIEWER — DATE 10.24.13

PROJECT ID 102891 — DRAWING NO C-56063 — REV 0

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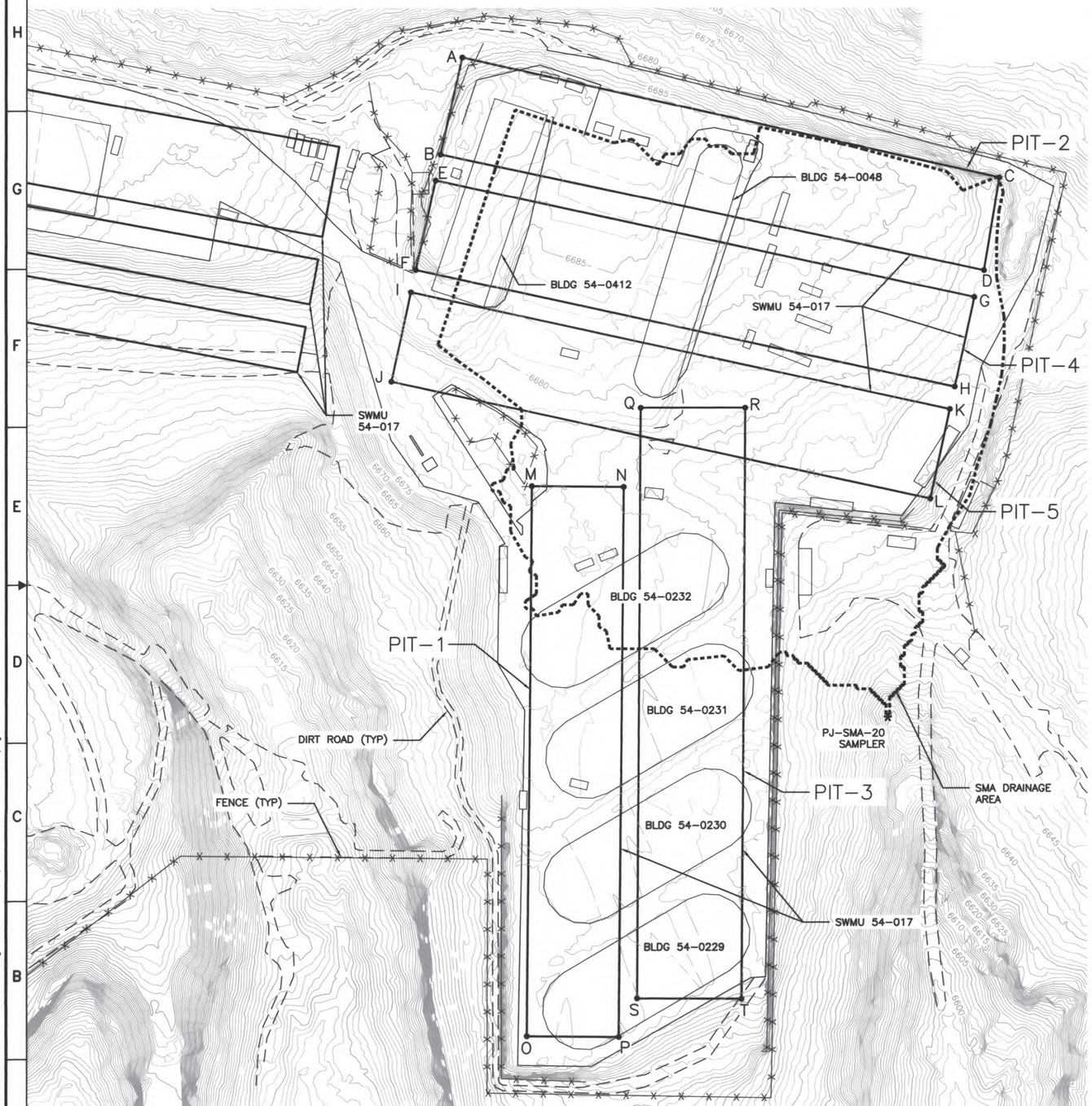

PLAN VIEW

60' 30' 0 30' 60'

1"=60'-0"

PIT CORNER POINTS

POINT #	NORTHING	EASTING
A	1758006.5	1644500.2
B	1757900.7	1644476.6
C	1757874.9	1645084.4
D	1757773.7	1645067.8
E	1757872.3	1644471.4
F	1757774.6	1644450.0
G	1757744.3	1645057.3
H	1757646.6	1645036.0
I	1757750.2	1644444.7
J	1757652.6	1644423.3
K	1757622.2	1645030.7
L	1757524.6	1645009.3
M	1757538.5	1644576.1
N	1757537.6	1644676.0
O	1756938.4	1644570.7
P	1756937.5	1644670.6
Q	1757634.5	1644694.4
R	1757633.8	1644808.3
S	1756979.8	1644690.5
T	1756979.1	1644804.4

GENERAL NOTES

1. IF THIS SHEET IS NOT 24" X 36" THEN IT IS A REDUCED–SIZE PLOT.
2. DATA FOR ALL NORTHING/EASTING POINTS STATED (PIT CORNER POINTS) ARE BASED ON PIT CORNER POINT COORDINATES TRANSFORMED FROM THE LASL COORDINATE SYSTEM TO STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM 1983 (NAD83) (IFC KAISER ENGINEERS, INC. 1994).

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DES	CHKD	SUB	APP
			Sally Janney Unclassified						

ENVIRONMENTAL PROGRAMS

PJ–SMA–20 AS–BUILT DRAWINGS

PLAN VIEW

BLDG NA TA–54

DRAWN	E MARTIN EM
DESIGN	T KOSTRUBALA
CHECKED	R RAGER RER
DATE	

SUBMITTED SEAN MacCRACKEN APPROVED FOR RELEASE STEVE YOUNG

Los Alamos NATIONAL LABORATORY
PO Box 1663
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SHEET C–1000
3 OF 5

CLASSIFICATION Sally Janney Unclassified
REVIEWER Sally Janney DATE 10-24-13

PROJECT ID 102891
DRAWING NO C–56063
REV 0

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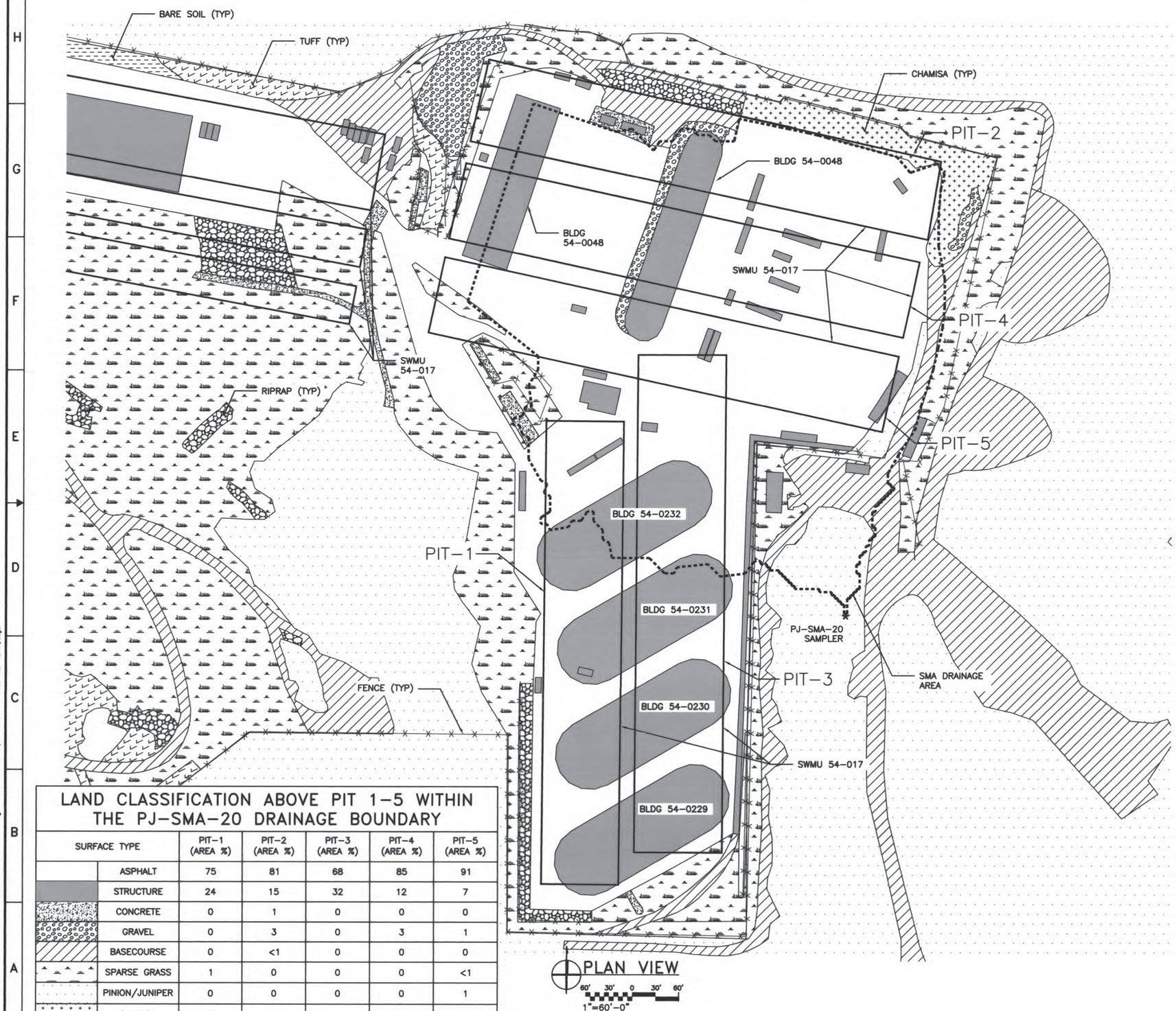

GENERAL NOTES

1. IF THIS SHEET IS NOT 24" X 36" THEN IT IS A REDUCED-SIZE PLOT.
2. LAND COVER INTIALLY DEVELOPED USING HIGHEST RESOLUTION ORTHOPHOTOS IN ARCGIS AND FIELD VERIFIED BY LANL ENVIRONMENTAL PROGRAMS STAFF SEPTEMBER 2013.

LAND CLASSIFICATION ABOVE PIT 1-5 WITHIN THE PJ-SMA-20 DRAINAGE BOUNDARY

SURFACE TYPE		PIT-1 (AREA %)	PIT-2 (AREA %)	PIT-3 (AREA %)	PIT-4 (AREA %)	PIT-5 (AREA %)
	ASPHALT	75	81	68	85	91
	STRUCTURE	24	15	32	12	7
	CONCRETE	0	1	0	0	0
	GRAVEL	0	3	0	3	1
	BASECOURSE	0	<1	0	0	0
	SPARSE GRASS	1	0	0	0	<1
	PINION/JUNIPER	0	0	0	0	1
	CHAMISA	0	<1	0	0	0

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DES	CHKD	SUB	APP
			Kelly Jurney Unclassified						

ENVIRONMENTAL PROGRAMS

PJ-SMA-20 AS-BUILT DRAWINGS

LAND CLASSIFICATION ABOVE PITS 1-5 WITHIN PJ-SMA-20

BLDG NA TA-54

DRAWN	E MARTIN EM
DESIGN	T KOSTRUBALA
CHECKED	R RAGER
DATE	

SUBMITTED Alan MacGregor

APPROVED FOR RELEASE Steve Veenis

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SHEET C-1001
4 OF 5

CLASSIFICATION Unclassified
REVIEWER Kelly Jurney
DATE 10.24.13

PROJECT ID 102891
DRAWING NO C-56063
REV 0

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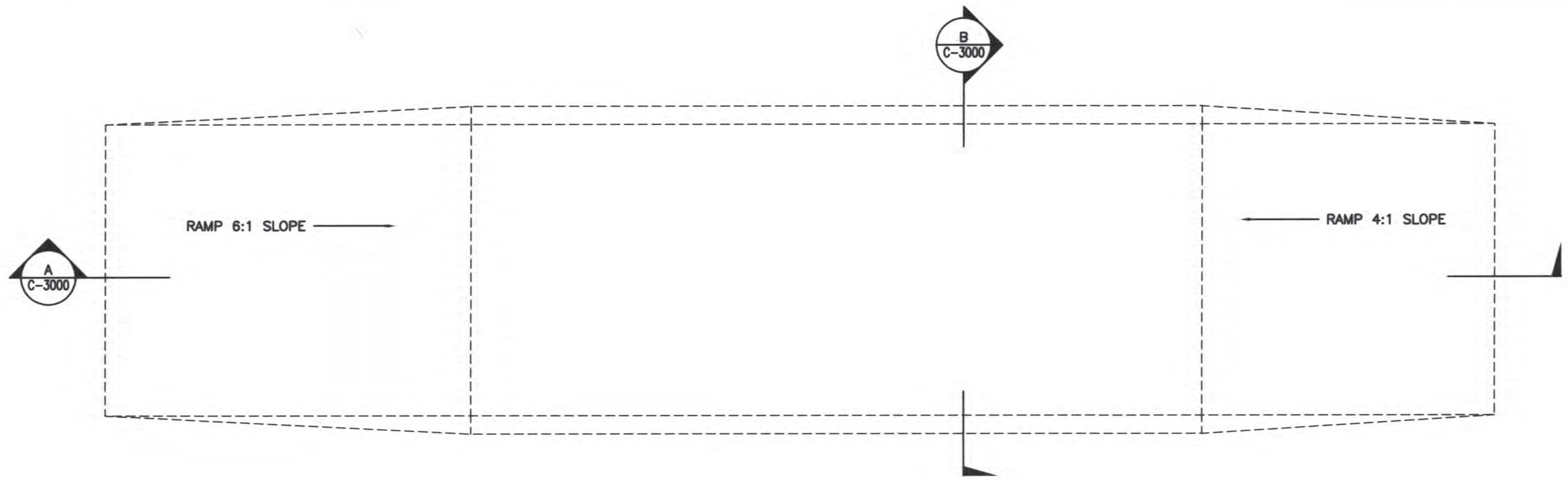
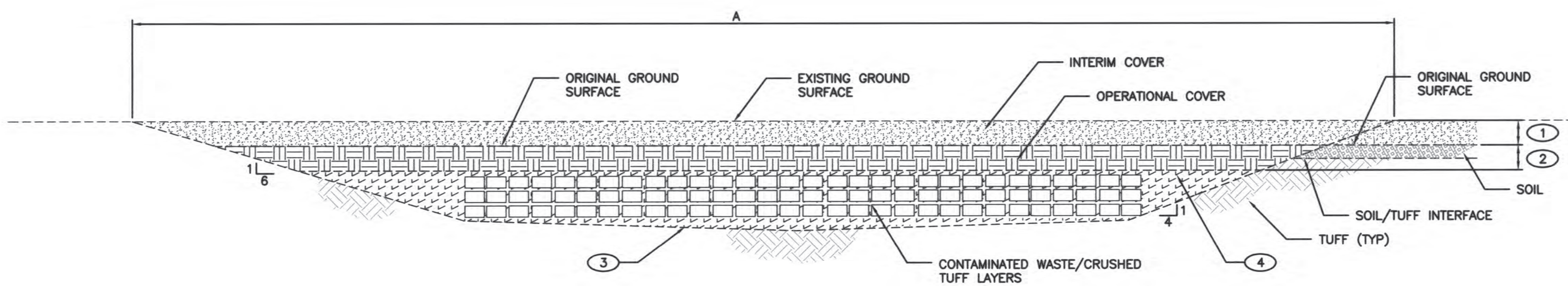
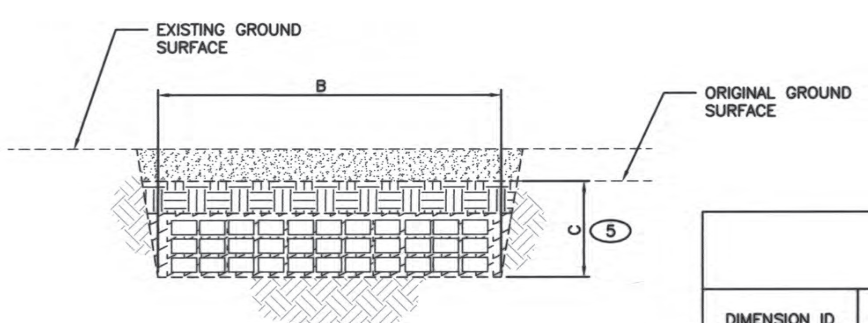


STANDARD PIT PLAN



A C-3000 SECTION VIEW

SCALE: NONE



B C-3000 SECTION VIEW

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).
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. SEE SHEET C-1000 FOR DETAILS.

(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 FEET MINIMUM (ROGERS 1977A).

(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." (KOOPMAN 1965).

(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-1	PIT-2	PIT-3	PIT-4	PIT-5
A	600	605	655	600	600
B	99	103	114	100	100
C	25	28	34	24	30
SOURCE: LANL ENGINEERING DRAWING	R-5005 (LASL 1977A)	R-5006 (LASL 1977B)	R-5007 (LASL 1977C)	R-5008 (LASL 1977D)	R-5009 (LASL 1977E)

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DES	CHKD	SUB	APP

ENVIRONMENTAL PROGRAMS

PJ-SMA-20 AS-BUILT DRAWINGS

SECTION VIEW

DRAWN: E MARTIN
DESIGN: T KOSTRUBALA
CHECKED: R RAGER
DATE

BLDG NA   TA-54

SUBMITTED: ALAN MACGREGOR
APPROVED FOR RELEASE: STEVE VEENIS

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SHEET C-3000   5 OF 5

CLASSIFICATION: Unclassified   REVIEWER   DATE 10-24-13

PROJECT ID 102891   DRAWING NO C-56063   REV 0

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