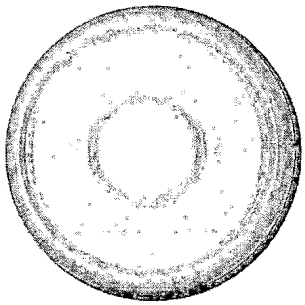
Radioactive Liquid Waste Treatment
Facility Upgrade Project (RLWTF-UP)
Zero Liquid Waste (ZLD)
Subproject – PID 100761

Contents:
ZLD As-Builts
CD 1 of 2 (pgs. 1-51D)



Los Alamos
NATIONAL LABORATORY
Los Alamos NM 87545

ENV-RCRA-12-0244
LAUR-12-25859

UNCLASSIFIED

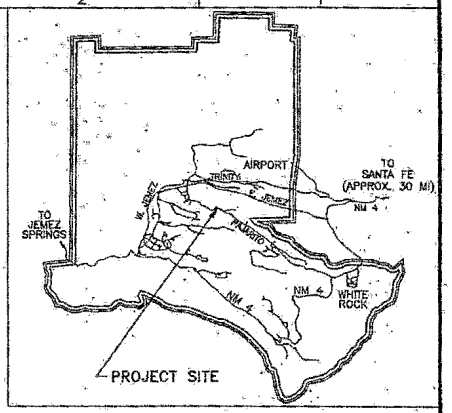
ZERO LIQUID DISCHARGE SUBPROJECT

BLDG 181,182,183 TA-50,52,63

LIST OF DRAWINGS

REVISION NUMBER	PROJECT SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
2	1	G-0000	TITLE SHEET AND LIST OF DRAWINGS
5	2	G-0001	TITLE SHEET AND LIST OF DRAWINGS TA-52 EVAPORATION AREA
4	3	G-0002	TITLE SHEET AND LIST OF DRAWINGS UNDERGROUND TRANSFER PIPING
1	4	C-0001	LEGENDS AND SYMBOLS
1	5	C-0002	CIVIL NOTES
1	6	C-1010	PROJECT SITE PLAN
1	7	C-1020	TANK AREA PLOT PLAN
1	8	C-1030	TANK AREA GRADING PLAN
1	9	C-1040	TANK AREA CUT & FILL PLAN
1	10	C-1050	TANK AREA AREA USE PLAN
1	11	C-1151	TRANSFER PIPE AREA USE PLAN 1
1	12	C-1152	TRANSFER PIPE AREA USE PLAN 2
1	13	C-1153	TRANSFER PIPE AREA USE PLAN 3
1	14	C-2001	TANK AREA SECTIONS 1
3	15	C-4001	TANK AREA ENLARGED PLOT PLAN
1	16	C-5001	TYPICAL DETAILS SITE DETAILS 1
1	17	C-5002	TYPICAL DETAILS SITE DETAILS 2
1	18	C-5101	TRANSFER PIPE TYPICAL DETAILS
1	19	S-0001	STRUCTURAL NOTES
2	20	S-1010	TANK PLAN
1	21	S-1011	TANK JOINT PLAN
1	22	S-1020	PUMP AND EQUIPMENT PAD PLAN
2	23	S-3010	TANK SECTIONS 1
1	24	S-3011	TANK SECTIONS 2
1	25	S-3020	PUMP AND EQUIPMENT PAD SECTIONS
1	26	S-4010	TANK ENLARGED PLAN
1	27	S-5001	TYPICAL DETAILS STRUCTURAL DETAILS 1
2	28	S-5010	TANK DETAILS 1
1	29	M-0001	P&ID — LEGENDS AND SYMBOLS
1	30	M-0002	P&ID — LEGENDS AND SYMBOLS
2	31	M-0003	P&ID — LEGENDS AND SYMBOLS
3	32	M-1000	TRANSFER PIPING PLAN & PROFILE 1
1	33	M-1001	TRANSFER PIPING PLAN & PROFILE 2
1	34	M-1002	TRANSFER PIPING PLAN & PROFILE 3
1	35	M-1003	TRANSFER PIPING PLAN & PROFILE 4
1	36	M-1004	TRANSFER PIPING PLAN & PROFILE 5
3	37	M-1005	PUMPS ENCLOSURE ARRANGEMENT AND COMPOSITE PIPING
2	38	M-1005	ZLD SPRAY PIPING COMPOSITE PLAN
2	39	M-1007	ZLD SPRAY PIPING COMPOSITE PLAN
4	40	M-1008	ZLD SPRAY PIPING COMPOSITE PLAN
5	41	M-1009	ZLD SPRAY PIPING COMPOSITE PLAN
2	42	M-1010	ZLD SPRAY PIPING COMPOSITE PLAN
2	43	M-1011	ZLD SPRAY PIPING COMPOSITE PLAN
2	44	M-1012	ZLD SPRAY PIPING COMPOSITE PLAN
2	45	M-1013	ZLD SPRAY PIPING COMPOSITE PLAN
4	46	M-1014	ZLD PIPING COMPOSITE PLAN AT TANKS
3	47	M-1015	ZLD SPRAY PIPING COMPOSITE PLAN
3	48	M-1016	ZLD SPRAY PIPING COMPOSITE PLAN
2	49	M-1017	ZLD SPRAY PIPING COMPOSITE PLAN
2	50	M-1018	ZLD SPRAY PIPING COMPOSITE PLAN
3	51	M-1019	AREA TA-52 PIPING SUPPORT LOCATION PLAN
0	51A	M-1019A	AREA TA-52 PIPING SUPPORT LOCATION PLAN
0	51B	M-1019B	AREA TA-52 PIPING SUPPORT LOCATION PLAN
0	51C	M-1019C	AREA TA-52 PIPING SUPPORT LOCATION PLAN
0	51D	M-1019D	AREA TA-52 PIPING SUPPORT LOCATION PLAN
4	52	M-3000	PIPING SECTIONS
4	53	M-3001	PIPING SECTIONS
4	54	M-3002	TYPICAL HANGER SECTIONS
1	55	M-4000	TERMINAL POINTS ENLARGED PLAN
1	56	M-5000	TYPICAL PIPING DETAILS
0	57	M-5001	TYPICAL HANGER DETAILS
3	58	M-5002	TYPICAL HANGER DETAILS
3	59	M-5003	TYPICAL HANGER DETAILS
2	60	M-5006	INSTRUMENT INSTALLATION DETAILS
2	61	M-5007	NO LONGER USED
5	62	M-6000	ZLD TRANSFER SYSTEM P&ID AND SEQUENCE OF OPERATION
2	63	M-6001	ZLD EVAPORATION SPRAY SYSTEM P&ID AND SEQUENCE OF OPERATION
3	64	M-7000	INSTRUMENT INDEX AND BILL OF MATERIALS
3	65	M-7001	MECHANICAL BILL OF MATERIALS
1	66	M-7002	VALVE SCHEDULE
3	67	M-7003	MECHANICAL BILL OF MATERIALS
1	68	M-7004	VALVE SCHEDULE
1	69	E-0001	ELECTRICAL SYMBOL LEGEND AND GENERAL NOTES
1	70	E-1000	TANK AREA POLE PLAN
2	71	E-1001	PUMP AND EQUIPMENT PAD U/G CONDUIT AND GROUNDING PLAN
0	72	E-5000	NO LONGER USED
1	73	E-5001	POLE DETAIL FOR CLEVIS MOUNTED CABLE FOR POLES 29034, 29039, 2903C
1	74	E-5002	NEW 3-PHASE TRANSFORMER BANK ON DEADEND POLE 29030 WITH SECONDARY DETAIL
0	75	E-5003	NO LONGER USED
1	76	E-5004	GUY POLE DETAILS
1	77	E-6000	ZERO LIQUID DISCHARGE SYSTEM ELECTRICAL ONE LINE DIAGRAM
1	78	E-1002	PUMP HOUSE EQUIPMENT PLAN
0	79	E-6002	NO LONGER USED
C	80	E-6003	NO LONGER USED
1	81	E-6004	NO LONGER USED
1	82	E-7000	ZLD PUMP HOUSE ELECTRICAL PANEL SCHEDULE
1	83	E-7001	NAMEPLATE SCHEDULE SHEET 1
1	84	E-7002	ELECTRICAL BILL OF MATERIALS SHEET 1
1	85	E-7003	POLE 2903A, 2903B, 2903C BILL OF MATERIAL
0	86	E-7004	NO LONGER USED
1	87	E-7005	NO LONGER USED
1	88	E-7006	NEW 3 PHASE TRANSFORMER BANK ON DEAD END POLE 29030 WITH SECONDARY BILL OF MATERIAL

NO PLACEHOLDER PROVIDED MAP 8/28/12



LOCATION PLAN
SCALE: NONE

GENERAL NOTES:

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NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	08/28/12	-	-	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	HL	
1	08/23/12	-	-	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	HL	
0	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	HL	

ZERO LIQUID DISCHARGE SUBPROJECT

TITLE SHEET AND LIST OF DRAWINGS

TA-50
BLDG 181,182,183 TA-52
TA-63

DRAWN	E. NEWCEK
DESIGN	E. NEWCEK
CHECKED	S. STURGE
DATE	08/22/2011

SUBMITTED: NORMAN LADY
APPROVED FOR RELEASE: JOSEPH GRUPHY

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

SHEET G-0000
1 OF 88

CLASSIFICATION:
REVIEWER: EDWARD ARTIGLIA
DATE:

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 2

STEPHEN P. STURGE, N.M. REG. 20668, REGISTERED ENGINEER

100761-C55751-G00001

Plotted By: SSNEL
Plot Date: 8/29/2012
FILE NAME: C55751-G-0001-R2.DWG

ZERO LIQUID DISCHARGE SUBPROJECT

BLDG 181,182,183 TA-50,52,63

LIST OF DRAWINGS
TA-52 EVAPORATION AREA

PROJECT DESIGN DATA

THESE DRAWINGS ARE TO BE USED IN CONJUNCTION WITH THE CONSTRUCTION SPECIFICATION FOR PROJECT 100761 FOR ML-3/PC-1

SEISMIC LOAD:
SEISMIC DESIGN CATEGORY = D
DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS, S_{DS} = 0.75
DESIGN SPECTRAL RESPONSE ACCELERATION AT 1 SEC PERIOD, S_{D1} = 0.64

SNOW LOAD:
GROUND SNOW LOAD = 18 PSF

WIND LOAD:
EXPOSURE CATEGORY = C
WIND SPEED (3 SEC GUST) = 90 mph

REFERENCE CODES:

ACI 301-05	SPECIFICATIONS FOR STRUCTURAL CONCRETE
ACI 318-05	BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ACI 350.3-06	SEISMIC DESIGN OF LIQUID CONTAINING CONCRETE STRUCTURES
ASCE 7-05	MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
ASME B31.3-2008	PROCESS PIPING
AWS D1.1-2010	WELDING CODE
AWS D1.4-2005	STRUCTURAL WELDING
IAPMO UMC-2009	UNIFORM MECHANICAL CODE
IAPMO UPC-2009	UNIFORM PLUMBING CODE
IBC-2006	INTERNATIONAL BUILDING CODE
NFPA 70-2011	NATIONAL ELECTRICAL CODE

GENERAL DRAWINGS

REVISION NUMBER	PROJECT SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
5	2	G-0001	TITLE SHEET AND LIST OF DRAWINGS TA-52 EVAPORATION AREA

CIVIL/STRUCTURAL DRAWINGS

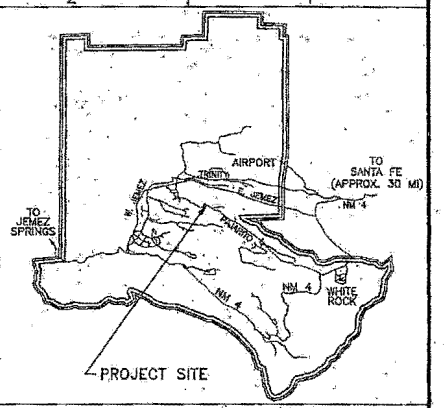
REVISION NUMBER	PROJECT SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
1	4	C-0001	LEGENDS AND SYMBOLS
1	5	C-0002	CIVIL NOTES
1	6	C-1010	PROJECT SITE PLAN
1	7	C-1020	TANK AREA PLOT PLAN
1	8	C-1030	TANK AREA GRADING PLAN
1	9	C-1040	TANK AREA CUT & FILL PLAN
1	10	C-1050	TANK AREA AREA USE PLAN
1	14	C-3001	TANK AREA SECTIONS 1
3	15	C-4001	TANK AREA ENLARGED PLOT PLAN
1	16	C-5001	TYPICAL DETAILS SITE DETAILS 1
1	17	C-5002	TYPICAL DETAILS SITE DETAILS 2
1	19	S-0001	STRUCTURAL NOTES
2	20	S-1010	TANK PLAN
1	21	S-1011	TANK JOINT PLAN
1	22	S-1020	PUMP AND EQUIPMENT PAD PLAN
2	23	S-3010	TANK SECTIONS 1
1	24	S-3011	TANK SECTIONS 2
1	25	S-3020	PUMP AND EQUIPMENT PAD SECTIONS
1	26	S-4010	TANK ENLARGED PLAN
1	27	S-5001	TYPICAL DETAILS STRUCTURAL DETAILS 1
2	28	S-5010	TANK DETAILS 1

MECHANICAL/INSTRUMENT AND CONTROL DRAWINGS

REVISION NUMBER	PROJECT SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
1	26	M-0001	P&ID -- LEGENDS AND SYMBOLS
1	30	M-0002	P&ID -- LEGENDS AND SYMBOLS
2	31	M-0003	P&ID -- LEGENDS AND SYMBOLS
3	37	M-1005	PUMPS ENCLOSURE ARRANGEMENT AND COMPOSITE PIPING
2	38	M-1006	ZLD SPRAY PIPING COMPOSITE PLAN
2	39	M-1007	ZLD SPRAY PIPING COMPOSITE PLAN
4	40	M-1008	ZLD SPRAY PIPING COMPOSITE PLAN
5	41	M-1009	ZLD SPRAY PIPING COMPOSITE PLAN
2	42	M-1010	ZLD SPRAY PIPING COMPOSITE PLAN
2	43	M-1011	ZLD SPRAY PIPING COMPOSITE PLAN
2	44	M-1012	ZLD SPRAY PIPING COMPOSITE PLAN
2	45	M-1013	ZLD SPRAY PIPING COMPOSITE PLAN
4	46	M-1014	ZLD PIPING COMPOSITE PLAN AT TANKS
3	47	M-1015	ZLD SPRAY PIPING COMPOSITE PLAN
3	48	M-1016	ZLD SPRAY PIPING COMPOSITE PLAN
2	49	M-1017	ZLD SPRAY PIPING COMPOSITE PLAN
2	50	M-1018	ZLD SPRAY PIPING COMPOSITE PLAN
3	51	M-1019	AREA TA-52 PIPING SUPPORT LOCATION PLAN
0	51A	M-1019A	AREA TA-52 PIPING SUPPORT LOCATION PLAN
0	51B	M-1019B	AREA TA-52 PIPING SUPPORT LOCATION PLAN
0	51C	M-1019C	AREA TA-52 PIPING SUPPORT LOCATION PLAN
0	51D	M-1019D	AREA TA-52 PIPING SUPPORT LOCATION PLAN
4	52	M-3000	PIPING SECTIONS
4	53	M-3001	PIPING SECTIONS
4	54	M-3002	TYPICAL HANGER SECTIONS
32	57	M-5001	TYPICAL HANGER DETAILS
3	58	M-5002	TYPICAL HANGER DETAILS
3	59	M-5003	TYPICAL HANGER DETAILS
1	60	M-5006	INSTRUMENT INSTALLATION DETAILS
2	61	M-5007	NO LONGER USED
5	62	M-6000	ZLD TRANSFER SYSTEM P&ID AND SEQUENCE OF OPERATION
2	63	M-6001	ZLD EVAPORATION SPRAY SYSTEM P&ID AND SEQUENCE OF OPERATION
3	64	M-7000	INSTRUMENT INDEX AND BILL OF MATERIALS
3	65	M-7001	MECHANICAL BILL OF MATERIALS
1	66	M-7002	VALVE SCHEDULE

ELECTRICAL DRAWINGS

REVISION NUMBER	PROJECT SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
1	69	E-0001	ELECTRICAL SYMBOL LEGEND AND GENERAL NOTES
1	70	E-1000	TANK AREA POLE PLAN
2	71	E-1001	PUMP AND EQUIPMENT PAD U/G CONDUIT AND GROUNDING PLAN
0	72	E-5000	NO LONGER USED
1	73	E-5001	POLE DETAIL FOR CLEVIS MOUNTED CABLE FOR POLES 2803A, 2803B, 2803C
1	74	E-5002	NEW 3 PHASE TRANSFORMER BANK ON DEADEND POLE 2803D WITH SECONDARY DETAIL
0	75	E-5003	NO LONGER USED
1	76	E-5004	GUY POLE DETAILS
1	77	E-6000	ZERO LIQUID DISCHARGE SYSTEM ELECTRICAL ONE LINE DIAGRAM
1	78	E-1002	PUMP HOUSE EQUIPMENT PLAN
1	82	E-7000	ZLD PUMP HOUSE ELECTRICAL PANEL SCHEDULE
1	83	E-7001	NAMEPLATE SCHEDULE SHEET 1
2	84	E-7002	ELECTRICAL BILL OF MATERIALS SHEET 1
1	85	E-7003	POLE 2803A, 2803B, 2803C BILL OF MATERIAL
0	86	E-7004	NO LONGER USED
0	87	E-7005	NO LONGER USED
1	88	E-7006	NEW 3 PHASE TRANSFORMER BANK ON DEAD END POLE 2803D WITH SECONDARY BILL OF MATERIAL



LOCATION PLAN
SCALE: NONE

GENERAL NOTES:

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$	DATE	CLASS REV.	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
4	08/28/12	--	--	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
4	08/23/12	--	--	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
3	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
2	4/25/12			UPDATED REVISION FOR DRAWINGS G-0001, M1005 THRU M-1018, M-3000, M-3001, M-3002, M-5002, M-5003, M-5007, M-6000, M-6001, M-7001, ADDED E-1001, E-1002, E-7030, AND E-7032.	TJH	SPS	SPS	NL	
1	12/12/11			UPDATED REVISION FOR DRAWINGS M-1014, M-3000, M-3001, M-5002, M-5003, M-6000, M-7000, S-1010, S-3010, AND S-5010.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TITLE SHEET AND LIST OF DRAWINGS TA-52 EVAPORATION AREA

BLDG. 181,182,183 TA-50 TA-52 TA-63

DRAWN	E. NEUCER 6-25
DESIGN	E. NEUCER 6-25
CHECKED	S. STAHSKE
DATE	09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BRIDPAY

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

SHEET G-0001
2 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTHUR
DATE 8/31/12

PROJECT ID 100761
DRAWING NO C-55751
REV 5

STEPHEN P. STAHSKE NEW MEXICO 20650 REGISTERED ENGINEER

100761-C55751-G00002

Plotted By: BRIAN
FILE Width: C55751-G-0001-G.dwg Plot Date: 8/29/2012

ZERO LIQUID DISCHARGE SUBPROJECT

BLDG N/A TA-50,52,63

LIST OF DRAWINGS
UNDERGROUND TRANSFER PIPING

PROJECT DESIGN DATA

THESE DRAWINGS ARE TO BE USED IN CONJUNCTION WITH THE CONSTRUCTION SPECIFICATION FOR PROJECT 100761 FOR ML-3/PC-1

SEISMIC LOAD:
- SEISMIC DESIGN CATEGORY = D
- DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS, S_{DS} = 0.75
- DESIGN SPECTRAL RESPONSE ACCELERATION AT 1 SEC PERIOD, S_{D1} = 0.64

SNOW LOAD:
- GROUND SNOW LOAD = 16 PSF

WIND LOAD:
- EXPOSURE CATEGORY = C
- WIND SPEED (3 SEC GUST) = 90 mph

REFERENCE CODES:

ACI 301-05	SPECIFICATIONS FOR STRUCTURAL CONCRETE
ACI 318-05	BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ACI 350.3-06	SEISMIC DESIGN OF LIQUID CONTAINING CONCRETE STRUCTURES
ASCE 7-05	MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
ASME B31.3-2008	PROCESS PIPING
AWS D1.1-2010	WELDING CODE
AWS D1.4-2005	STRUCTURAL WELDING
IAPMO UMC-2009	UNIFORM MECHANICAL CODE
IAPMO UPC-2009	UNIFORM PLUMBING CODE
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NFPA 70-2011	NATIONAL ELECTRICAL CODE

GENERAL DRAWINGS

REVISION NUMBER	PROJECT SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
4	3	G-0002	TITLE SHEET AND LIST OF DRAWINGS UNDERGROUND TRANSFER PIPING

CIVIL DRAWINGS

REVISION NUMBER	PROJECT SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
1	4	C-0001	LEGENDS AND SYMBOLS
1	5	C-0002	CIVIL NOTES
1	6	C-1010	PROJECT SITE PLAN
1	7	C-1020	TANK AREA PLOT PLAN
1	8	C-1030	TANK AREA GRADING PLAN
1	10	C-1050	TANK AREA AREA USE PLAN
1	11	C-1151	TRANSFER PIPE AREA USE PLAN 1
1	12	C-1152	TRANSFER PIPE AREA USE PLAN 2
1	13	C-1153	TRANSFER PIPE AREA USE PLAN 3
1	18	C-5101	TRANSFER PIPE TYPICAL DETAILS

MECHANICAL DRAWINGS

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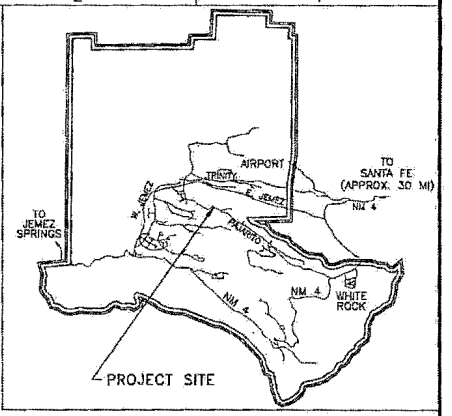
1	29	M-0001	P&ID – LEGENDS AND SYMBOLS
1	30	M-0002	P&ID – LEGENDS AND SYMBOLS
2	31	M-0003	P&ID – LEGENDS AND SYMBOLS
3	32	M-1000	TRANSFER PIPING PLAN & PROFILE 1
1	33	M-1001	TRANSFER PIPING PLAN & PROFILE 2
1	34	M-1002	TRANSFER PIPING PLAN & PROFILE 3
1	35	M-1003	TRANSFER PIPING PLAN & PROFILE 4
1	36	M-1004	TRANSFER PIPING PLAN & PROFILE 5
1	55	M-4000	TERMINAL POINTS ENLARGED PLAN
1	56	M-5000	TYPICAL PIPING DETAILS
5	62	M-6000	ZLD TRANSFER SYSTEM P&ID AND SEQUENCE OF OPERATION
3	67	M-7003	MECHANICAL BILL OF MATERIALS
1	68	M-7004	VALVE SCHEDULE

ELECTRICAL DRAWINGS

REVISION NUMBER	PROJECT SHEET NUMBER	DISCIPLINE SHEET NUMBER	DRAWING TITLE
			NONE



LOCATION PLAN
SCALE: NONE

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4	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS PJP	HS MJS	SPS	NL	
3	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
2	4/25/12			REVISED REVISION FOR M-1000, M-6000, AND M-7003.	TJH	SPS	SPS	NL	
1	12/19/11			REVISED REVISION FOR M-6000	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TITLE SHEET AND LIST OF DRAWINGS UNDERGROUND TRANSFER PIPING TA-50 TA-52 TA-63

BLDG N/A

DRAWN	E. NEWCEK
DESIGN	E. NEWCEK
CHECKED	S. STUHRKE
DATE	09/12/2011

SUBMITTED NORMAN EACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET G-0002

3 OF 88

CLASSIFICATION | REVIEWER EDWARD ARTIGLIA | DATE 8/23/12

PROJECT ID	DRAWING NO	REV
100761	C-55751	4

100761-C55751-G00003

Plotted By: SHAH
Plot Date: 8/23/2012
File Name: C55751-G-0002-r4.dwg

CIVIL SYMBOLS

SYMBOL	DESCRIPTION
	PROPERTY LINE INDICATOR
	SURFACE DRAINAGE
EL	EXISTING CONTOUR
EL	FINISHED CONTOUR
	UNDISTURBED EARTH OR TUFF
	SELECT COMPACT FILL
	ROCK
	COURSE POROUS FILL
	FINE POROUS FILL
	TOP OF SLOPE
	TOE OF SLOPE
BM	BENCHMARK INDICATOR
EL	CONTROL ELEVATION INDICATOR
NO EL	MONUMENT NO=SEQUENTIAL DESIGNATION EL=ELEVATION
NO EL	BORING INDICATOR NO=SEQUENTIAL DESIGNATION EL=ELEVATION
EL	EXISTING ELEVATION INDICATOR
EL	FINISH ELEVATION INDICATOR
SC	STEAM/COMMUNICATIONS MANHOLE
	STORM DRAIN GRATE
X	C – PRECAST CONCRETE, COMMUNICATION VAULT E – PRECAST CONCRETE, ELECTRICAL VAULT F – PRECAST CONCRETE, FUEL OIL VAULT G – PRECAST CONCRETE, NATURAL GAS VAULT T – PRECAST CONCRETE, TELEPHONE VAULT
	THRUST BLOCK
	TEE FITTING
	VALVE
X	G – UTILITY, METER, NATURAL GAS S – UTILITY, METER, SANITARY W – UTILITY, METER, WATER
	CULVERT/END SECTION
	DRAINAGE ARROW
	GUY WIRE
	EXISTING UTILITY POLE
	NEW UTILITY POLE

SYMBOL	DESCRIPTION
X	C – COMMUNICATION MANHOLE D – STORM DRAIN MANHOLE E – ELECTRICAL MANHOLE G – NATURAL GAS MANHOLE S – SEWER MANHOLE T – TELEPHONE MANHOLE W – WATER MANHOLE
	FIRE HYDRANT
W	UTILITY–WATER REGULATOR VALVE
TM	PRECAST CONCRETE, MANHOLE, TRANSFORMER VAULT
PB	PULL BOX
MH	MANHOLE
TP	TURNING POINT
℄	CENTERLINE
℞	PROPERTY LINE
℄	FLOW LINE
	HANDICAP DESIGNATION
25	INTERSTATE ROUTE
66	U.S. ROUTE
50	STATE ROUTE
	EXISTING PROPERTY CORNER INDICATOR
	NEW PROPERTY CORNER INDICATOR
MATERIAL	VAULT
CO	CLEANOUT
CO	DOUBLE CLEANOUT
CB	CATCH BASIN
	SITE UTILITIES (PIPING)
PW	POTABLE WATER
C	CONDENSATE
S	STEAM
G	NATURAL GAS HIGH PRESSURE (>5 PSI)
SS	SANITARY SEWER
STS	STORM SEWER
F	FIRE PROTECTION WATER
SWTE	SANITARY WASTEWATER TREATED EFFLUENT
E	ELECTRICAL
T	TELECOMMUNICATION
UG	NEW UNDERGROUND ELECTRICAL LINE
ZLD	NEW ZERO LIQUID DISCHARGE TRANSFER PIPE

LINE TYPES

SYMBOL	DESCRIPTION
	CENTER LINE
	DIMENSION LINE
	LEADER LINE
	FUTURE CONSTRUCTION
	EXISTING CONSTRUCTION
	HIDDEN LINE
	NEW CONSTRUCTION AND REVISION CLOUD
	NEW CONST. BACKGROUND
	MATCH LINE
	EXISTING TO BE REMOVED
	BREAK LINE

ABBREVIATIONS

BOT	BOTTOM
B/WALL	BOTTOM OF WALL
℄	CENTERLINE
DIA, ø	DIAMETER
EA	EACH
EF	EACH FACE
EL	ELEVATION
EXP	EXPANSION
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
LG	LONG
LP	LOW POINT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
OC	ON CENTER
PL	PLATE
R	RADIUS
REQD	REQUIRED
SYM	SYMMETRICAL
SS	STAINLESS STEEL
T	THICKNESS
TOC	TOP OF CONCRETE
T/WALL	TOP OF WALL
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED

NO	DATE	CLASS REV	ADC	DESCRIPTION	DRWN	DSGN	CHKD	SUB	APP
1	07/13/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	JS	PdP

ZERO LIQUID DISCHARGE SUBPROJECT

LEGENDS AND SYMBOLS

BLDG 181,182,183 TA-50 TA-52 TA-63

DRAWN: J. AMICO
DESIGN: B. URGO
CHECKED: J. COOK
DATE: 9/12/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET C-0001
4 OF 88

CLASSIFICATION: U
REVIEWER: EDWARD ARTIGLIA DATE: 9/27/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 1

100761-C55751-C00001

Plotted By: SHAH
File Name: C55751-C-0001.dwg
Plot Date: 7/9/2012

GENERAL NOTES

1. ALL CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE OWNER'S STANDARD PROCEDURES AND SITE SAFETY REQUIREMENTS UNLESS NOTED OTHERWISE ON PLANS AND/OR PROJECT SPECIFICATIONS.
2. THE SUBCONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS. THE SUBCONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY. THE COST INCURRED FOR ANY NECESSARY REMEDIAL ACTION ORDERED BY THE OWNER SHALL BE PAID BY THE SUBCONTRACTOR.
3. CONSTRUCTION DEBRIS AND WASTES SHALL BE REMOVED AND DISPOSED OF AT AN APPROPRIATE SITE.
4. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE DUE TO CONSTRUCTION ACTIVITIES, AND FOR THE MAINTENANCE AND PROTECTION OF EXISTING UTILITIES FROM ANY DAMAGE.
5. A PRE-CONSTRUCTION MEETING WITH REPRESENTATIVES FROM THE OWNER, AND THE PRIME SUBCONTRACTOR SHALL BE HELD PRIOR TO COMMENCEMENT OF CONSTRUCTION.
6. THE SUBCONTRACTOR SHALL PROVIDE VEHICLE ACCESS TO AND FROM ADJACENT STREETS AT ALL TIMES.
7. ALL EXCAVATION WORK SHALL INCLUDE EXCAVATION CALLED FOR ON THE PLANS AND ANY OTHER INCIDENTAL EXCAVATION WORK NOT CALLED FOR BUT REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT.
8. SUBCONTRACTOR SHALL TAKE EVERY PRECAUTION TO PREVENT VEHICLES FROM TRACKING SEDIMENT ONTO PAVED SURFACES, AND OFF THE PROJECT SITE. IN THE EVENT THAT SEDIMENT IS PRESENT ON PAVED SURFACES, SUBCONTRACTOR SHALL CLEAN THE AREA IMMEDIATELY.
9. VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR DIRECTION.
10. THE SUBCONTRACTOR SHALL NOTIFY THE OWNER/STR TO VERIFY THE ACTUAL LOCATIONS OF ALL UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATING. THE STR SHALL COORDINATE ALL WORK.
11. THE SUBCONTRACTOR SHALL RELOCATE, REMOVE, AND/OR REPLACE ALL EXISTING UTILITIES, ROADWAY PAVEMENT, FENCES, IRRIGATION, AND LANDSCAPING DISTURBED DUE TO WORK RELATED TO THIS PROJECT AS DIRECTED BY THE OWNER.
12. THE SUBCONTRACTOR SHALL RESTORE ALL EXISTING IMPROVEMENTS THAT ARE DAMAGED AS A RESULT OF THE CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER, INCLUDING PAVEMENTS, EMBANKMENTS, CURBS, SIGNS, LANDSCAPING, STRUCTURES, UTILITIES, WALLS, FENCES, ETC.
13. ALL WORK IN THIS PROJECT SHALL BE PERFORMED BY THE SUBCONTRACTOR AND SHALL INCLUDE THE WORK CALLED FOR ON THE PLANS AND ANY OTHER INCIDENTAL WORK NOT CALLED FOR BUT REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT.
14. SUBCONTRACTOR SHALL FIELD-VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
15. WHEN TRENCH EXCAVATION IS ADJACENT TO OR UNDER EXISTING STRUCTURES OR FACILITIES, THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND PER OSHA STANDARDS, TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS AND SETTLEMENT. THE SUBCONTRACTOR SHALL PROPERLY SUPPORT EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDER-PINNING TO FULLY PROTECT THEM FROM DAMAGE.
16. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE SUBCONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND ANY OTHER FACILITIES NOT SHOWN ON PLAN, AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHENEVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE SUBCONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR NEW LINES. ALL DAMAGED PORTIONS SHALL BE REPLACED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE AFFECTED UTILITY COMPANY AND SHALL BE THE SUBCONTRACTOR'S RESPONSIBILITY.
17. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP). BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.
18. EXISTING UNDERGROUND UTILITIES AND STRUCTURES AS SHOWN ON THE PLANS ARE FROM THE LATEST AVAILABLE DATA BUT ARE NOT GUARANTEED AS TO THE LOCATION SHOWN OR THAT OTHER OBSTACLES MAY NOT BE ENCOUNTERED IN THE COURSE OF THE WORK. THE SUBCONTRACTOR SHALL NOT ASSUME THAT WHERE NO UTILITIES ARE SHOWN THAT NONE EXISTS.
19. THE SUBCONTRACTOR SHALL SURVEY ALL EXISTING UNDERGROUND UTILITIES AND STRUCTURES AT CROSSINGS TO VERIFY INVERT ELEVATIONS PRIOR TO EXCAVATION OF PIPELINE TRENCH.
20. THE SUBCONTRACTOR, AT THEIR EXPENSE, SHALL KEEP THE PROJECT AND SURROUNDING AREAS FREE FROM DUST NUISANCE AND SHALL TAKE SUPPLEMENTARY MEASURES AS NECESSARY.
21. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO PROVIDE A COMPLETE INSTALLATION. SHOULD THERE BE OMISSIONS, THE SUBCONTRACTOR SHALL NOTIFY THE ENGINEER. THE SUBCONTRACTOR SHALL PROVIDE AND INSTALL FITTINGS, APPURTENANCES AND MATERIALS AS REQUIRED TO PROVIDE A COMPLETE FUNCTIONABLE UTILITY SYSTEM CONFORMING TO ALL APPLICABLE STANDARDS AND REQUIREMENTS.

GRADING NOTES

1. ALL GRADING WORK SHALL BE DONE IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
2. NO SUBCONTRACTOR SHALL PERFORM ANY GRADING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE SUBCONTRACTOR MAY BE CITED AND THE SUBCONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.
3. ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATERS FROM DAMAGING THE CUT FACE OF AN EXCAVATION OR THE SLOPED SURFACES OF A FILL. FURTHERMORE, ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE IN ACCORDANCE WITH THE PROJECT SWPPP.
4. ALL SLOPES AND EXPOSED AREAS SHALL BE SEEDED IN ACCORDANCE WITH THE PROJECT SWPPP. GRADING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA WITHIN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED SHALL BE PLANTED.
5. THE LOCATION OF THE BORROW/DISPOSAL SITE FOR THE PROJECT SHALL BE COORDINATED WITH THE OWNER.
6. THE LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE GRADING WORK.
7. ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE PROJECT SPECIFICATIONS.
8. THE BEST MANAGEMENT PRACTICES (BMP'S) TO CONTROL SEDIMENT AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTH MOVING PHASE OF THE GRADING IS INITIATED.
9. BMP'S SHALL NOT BE REMOVED UNTIL AFTER FINAL STABILIZATION IS ACHIEVED OR THROUGH IDENTIFICATION FOR REMOVAL AS PART OF PROJECT SWPPP INSPECTIONS.
10. IF THE GRADING WORK INVOLVES CONTAMINATED SOIL, THEN ALL GRADING WORK SHALL BE DONE IN CONFORMANCE WITH APPLICABLE OWNER, STATE AND FEDERAL REQUIREMENTS.
11. ALL GRADING AND CONSTRUCTION WORK SHALL IMPLEMENT MEASURES TO ENSURE THAT THE DISCHARGE OF POLLUTANTS FROM THE CONSTRUCTION SITE WILL BE REDUCED TO THE MAXIMUM EXTENT PRACTICAL AND WILL NOT CAUSE OR CONTRIBUTE TO AN EXCEEDANCE OF WATER QUALITY STANDARDS.

NO	DATE	CLASS REV	ADC	DESCRIPTION	JC DWN	BU DSGN	JC CHKD	BC SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	JC	BU	JC	BC	

ZERO LIQUID DISCHARGE SUBPROJECT

CIVIL NOTES

TA-50
TA-52
TA-63

ELDG 181,182,183

DRAWN: J. AMCO
DESIGN: B. URDO
CHECKED: J. COOK
DATE: 9/12/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

Los Alamos NATIONAL LABORATORY
P.O. Box 1663, Los Alamos, New Mexico 87545

SHEET C-0002
5 OF 88

CLASSIFICATION: U
REVIEWER: EDWARD ARTIGLIA
DATE: 9/12/12

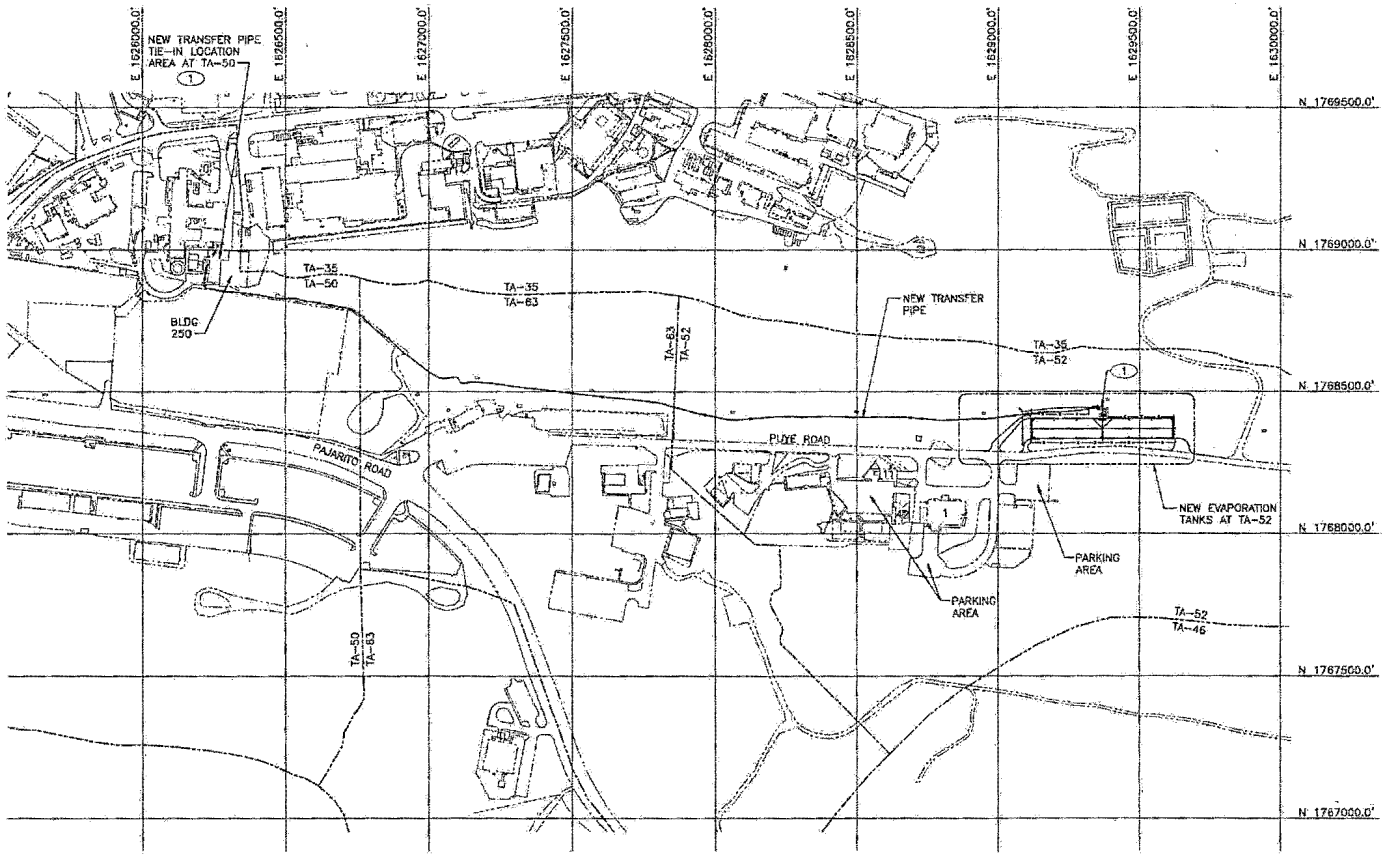
PROJECT ID: 100761
DRAWING NO: C-55751
REV: 1

BRIAN D. URDO, NEW MEXICO, 20583, PROFESSIONAL ENGINEER

100761-C55751-C00002

Plot Date: 7/5/2012
Plotted By: SHAFI
File Name: 55751-C-0002.DWG

LA-UR-12-22922



SITE PLAN

0 200' 400'

1"=200'-0"

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. TOPOGRAPHIC MAP IS AS PROVIDED BY OWNER, LOS ALAMOS NATIONAL LABORATORY (LANL). COORDINATE GRID SHOWN IS BASED UPON TOPOGRAPHIC MAP FILE PROVIDED, WITH PLAN NORTH AS INDICATED.

KEYED NOTES

(1) LIMIT OF WORK FOR NEW UNDERGROUND TRANSFER PIPE SHALL BE FROM TERMINATION POINT NEAR BLDG 50-250 TO INSIDE THE NORTH FENCE LINE NEAR THE PUMP AND EQUIPMENT PAD IN THE TA-52 EVAPORATION TANK AREA, AS INDICATED. SEE MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

NO	DATE	CLASS REV	ABC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	PC	Apt

ZERO LIQUID DISCHARGE SUBPROJECT

PROJECT SITE PLAN

TA-50
TA-52
TA-63

BLDG 181,182,183

DRAWN: J. ARICO
DESIGN: B. URIBE
CHECKED: J. COOK
DATE: 5/12/2011

SUBMITTED: NORMAN LADY
APPROVED FOR RELEASE: JOSEPH PROPHY

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

SHEET: C-1010
6 OF 88

CLASSIFICATION: U
REVIEWER: EDWARD ARTIGLIA DATE: 5/27/12

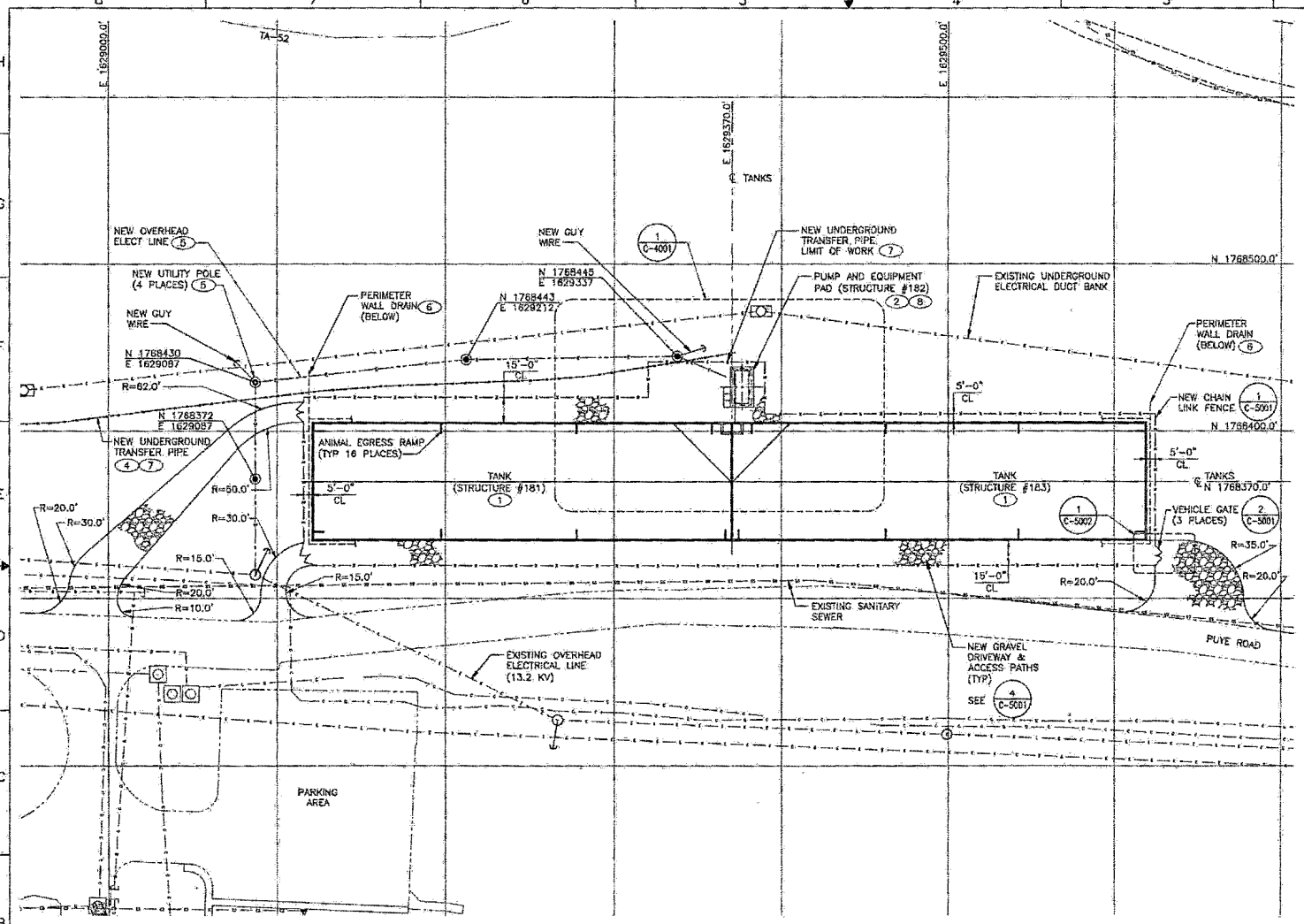
PROJECT ID: 100761
DRAWING NO: C-55751
REV: 1

BRIAN D. URIBE NEW MEXICO 12065 PROFESSIONAL ENGINEER

100761-C55751-C00003

Plotted By: SHAW
File Name: C55751-C-1010.DWG
Plot Date: 7/5/2012

Approved for public release; distribution is unlimited.
Released: 07-2012



PLOT PLAN
1"=30'-0"

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. TOPOGRAPHIC MAP IS AS PROVIDED BY OWNER, LOS ALAMOS NATIONAL LABORATORY (LANL). COORDINATE GRID SHOWN IS BASED UPON TOPOGRAPHIC MAP FILE PROVIDED, WITH PLAN NORTH AS INDICATED; ELEVATIONS PER NAVD 88 AND OTHER DATA PER NGVD 29.
3. EXISTING UTILITIES ARE SHOWN PER DRAWING "UTILITY COMPOSITE MAP" AS PRODUCED BY UTILITIES AND INFRASTRUCTURE DATED 10-19-2010. SUBCONTRACTOR SHALL VERIFY LOCATIONS OF UTILITIES IN FIELD AT TIME OF CONSTRUCTION.

KEYED NOTES

1. FOR TANKS REFER TO SHEET S-1010.
2. FOR PUMP AND EQUIPMENT PAD REFER TO SHEET S-1020. SHEET S-1020 IS PART OF THE "PUMP AND EQUIPMENT" PACKAGE.
3. NOT USED.
4. REFER TO MECHANICAL DRAWINGS FOR TRANSFER PIPE ROUTING.
5. REFER TO ELECTRICAL DRAWINGS FOR POLE, GUY AND ELECTRICAL LINE DETAILS.
6. PERIMETER WALL DRAIN SHALL BE LOCATED IN FIELD. REFER TO SHEET S-3010.
7. LIMIT OF WORK FOR NEW UNDERGROUND TRANSFER PIPE SHALL BE FROM TERMINATION POINT NEAR BLDG 50-250 TO INSIDE THE NORTH FENCE LINE NEAR THE PUMP AND EQUIPMENT PAD IN THE TA-52 EVAPORATION TANK AREA, AS INDICATED. SEE MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
8. PAD DETAILS ARE PART OF "PUMP AND EQUIPMENT" PACKAGE. REFER TO SHEET C-4001 FOR LOCATION AND ORIENTATION.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

TANK AREA PLOT PLAN

BLDG 181,182,183 TA-52

DRAWN J. AMICO
DESIGN J. COOK
CHECKED D. URGO
DATE 9/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET C-1020
7 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARRIOLA
DATE 5/27/12

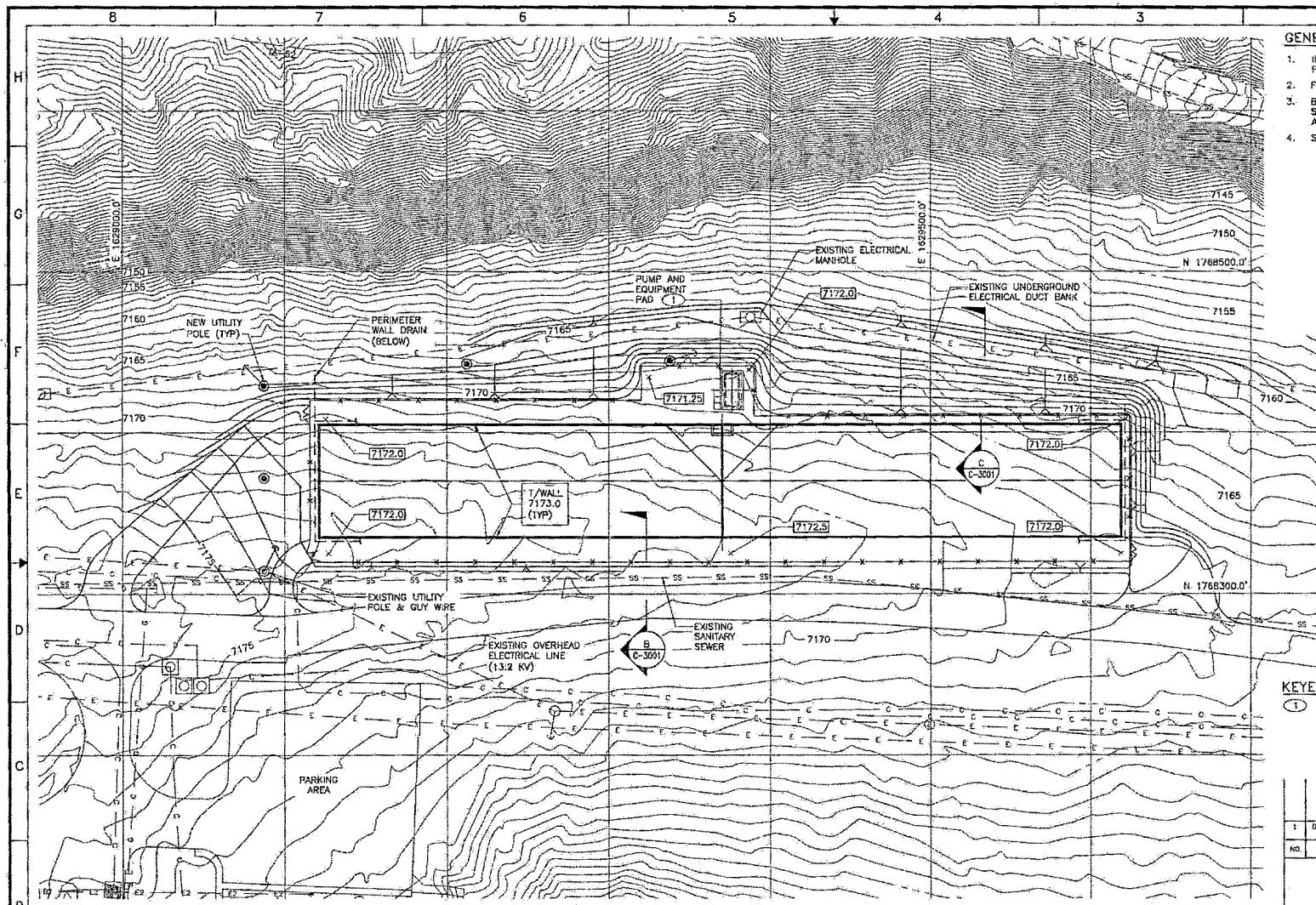
PROJECT ID 100761
DRAWING NO C-55751
REV 1

DRIAN D. URGO NEW MEXICO 20883 PROFESSIONAL ENGINEER
7/12/2012

100761-C55751-C00004

Plotted By: SHAH Plot Date: 7/5/2012
FILE NAME: C55751-C-1020.DWG

08012



GRADING PLAN

1"=30'-0"

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. FOR ADDITIONAL NOTES SEE SHEET C-1020.
3. BMP'S SHALL BE INSTALLED IN ACCORDANCE WITH PROJECT SWPPP PRIOR TO ANY GRADING OR OTHER SOIL DISTURBING ACTIVITIES.
4. SLOPES TO MEET EXIST GRADE ARE 3H:1V, MAXIMUM.

KEYED NOTES

1. PAD DETAILS ARE PART OF "PUMP AND EQUIPMENT" PACKAGE. REFER TO SHEET C-4001 FOR LOCATION AND ORIENTATION.

NO.	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

TANK AREA GRADING PLAN

BLDG 181,182,183 TA-52

DRAWN J. AMICO
DESIGN J. COOK
CHECKED B. URGO
DATE 9/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET C-1030

8 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIGLIA
DATE 8/27/12

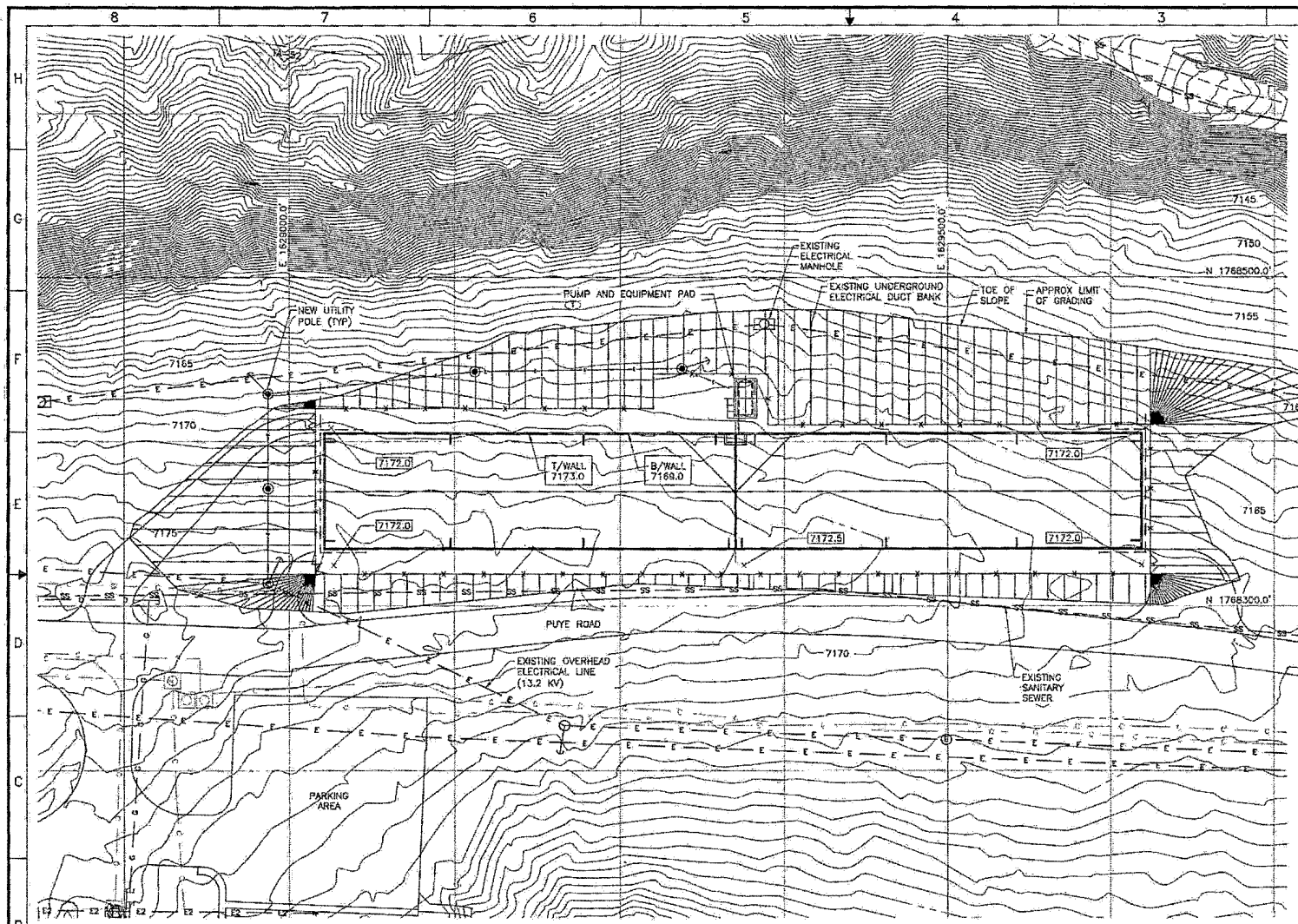
PROJECT ID 100761
DRAWING NO C-55751
REV 1

BRIAN D. URGO NEW MEXICO 20985 PROFESSIONAL ENGINEER

100761-C55751-C00005

Plotted By: SHAHI Plot Date: 7/5/2012
FILE NAME: C55751-C-1030.DWG

08013



CUT & FILL PLAN

1"=30'-0"

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. APPROXIMATE CUT & FILL QUANTITIES ARE AS SHOWN IN TABLE 1.
3. CUT & FILL QUANTITIES ARE SHOWN FOR DIFFERENCE BETWEEN EXIST GRADE AND FINAL FINISHED GRADE. WASTE AND FINISHED SURFACE TYPES ARE NOT CONSIDERED.
4. ACCESS DRIVEWAYS NOT INCLUDED FOR CUT & FILL QUANTITIES.
5. FOR ADDITIONAL NOTES SEE SHEET C-1020.

TABLE 1	
CUT & FILL QUANTITY	
TRIANGLE VOLUME	
TRIANGLE VOLUME REPORT	
ORIGINAL SURFACE:	EXIST
DESIGN SURFACE:	TANK (EL 7172.0)
MODE:	ENTIRE SURFACE
CUT FACTOR:	1.0
FILL FACTOR:	1.0
CUT:	102936.0 cu ft
FILL:	103912.1 cu ft
NET:	-976.1 cu ft
CUT:	3812.4 cu yd
FILL:	3848.6 cu yd
NET:	-36.2 cu yd

KEYED NOTES

1. PAD DETAILS ARE PART OF THE "PUMP AND EQUIPMENT" PACKAGE. REFER TO SHEET C-4001 FOR LOCATION AND ORIENTATION.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

TANK AREA
CUT & FILL PLAN

BLDG 181,182,183 TA-52

DRAWN: J. AMICO
DESIGN: J. HULT
CHECKED: B. URGO
DATE: 9/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET C-1040
9 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIGLIA
DATE 8/27/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

BRIAN D. URGO NEW MEXICO 20660 PROFESSIONAL ENGINEER

100761-C55751-C00008

Plotted By: SHAHI Plot Date: 7/11/2012
FILE NAME: C55751-C-1040.DWG

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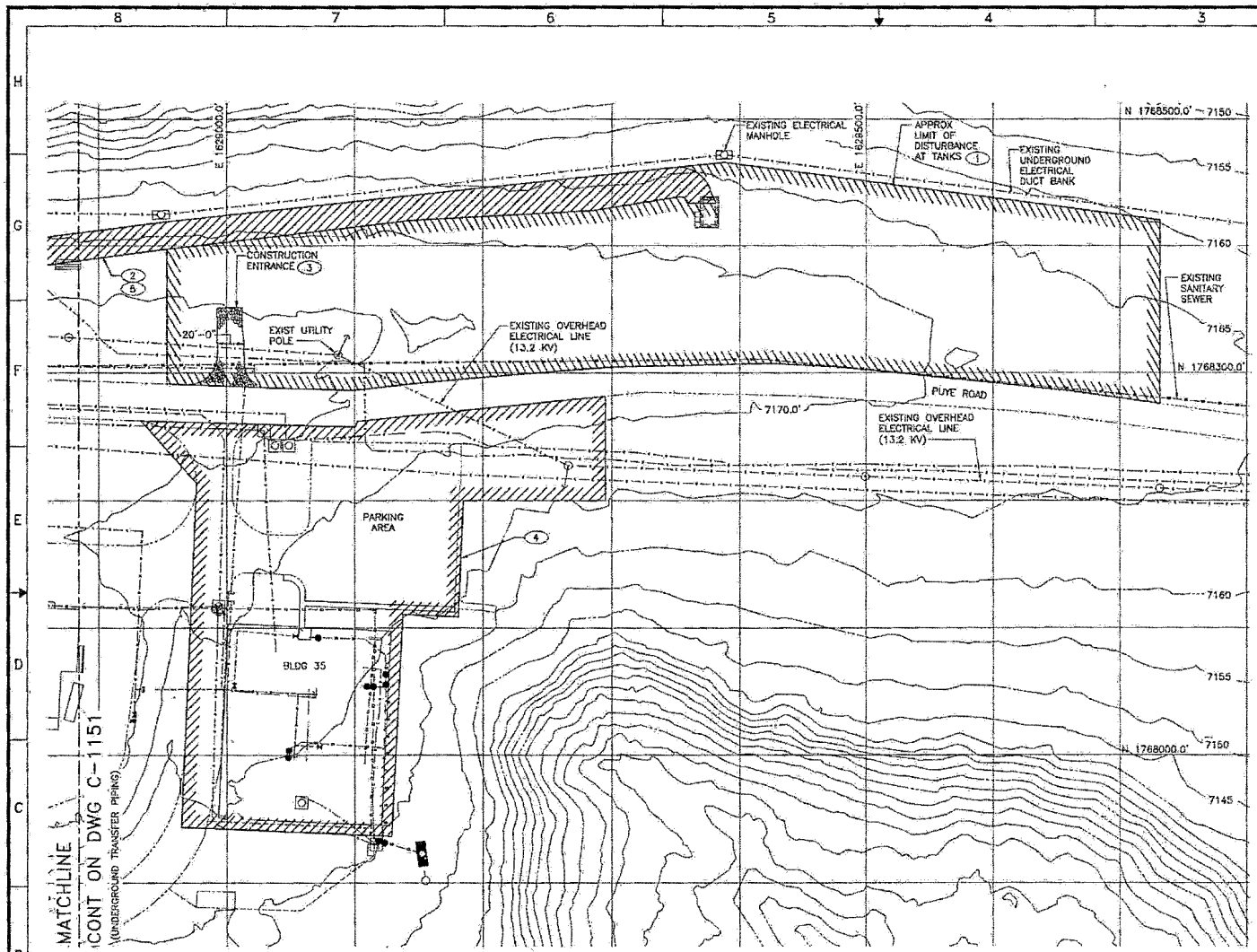
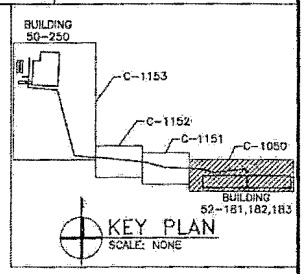


AREA USE PLAN
1"=40'-0"



GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. TOPOGRAPHIC MAP IS AS PROVIDED BY OWNER, LOS ALAMOS NATIONAL LABORATORY (LANL). COORDINATE GRID SHOWN IS BASED UPON TOPOGRAPHIC MAP FILE PROVIDED, WITH PLAN NORTH AS INDICATED, ELEVATIONS PER NAVD 88 AND OTHER DATA PER NGVD 29.
3. EXISTING UTILITIES ARE SHOWN PER DRAWING "UTILITY COMPOSITE MAP" AS PRODUCED BY UTILITIES AND INFRASTRUCTURE DATED 10-19-2010. SUBCONTRACTOR SHALL VERIFY LOCATIONS OF UTILITIES IN FIELD AT TIME OF CONSTRUCTION.
4. SHEETS C-1151, C-1152 AND C-1153 ARE PART OF "UNDERGROUND TRANSFER PIPING" PACKAGE.
5. BMP'S SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SWPPP PRIOR TO ANY TRENCHING OR OTHER SOIL DISTURBING ACTIVITIES.

KEYED NOTES

(1) APPROXIMATE AREA OF DISTURBANCE FOR TANK AREA CONSTRUCTION = 106359.0 SF.

(2) LIMIT OF DISTURBANCE FOR INSTALLATION OF TRANSFER PIPE SHALL BE APPROXIMATELY 20 FEET WIDE OVER LENGTH OF PIPE.

(3) A 50 FOOT LONG (MINIMUM) STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT POINTS OF INGRESS AND EGRESS. ENTRANCE SHALL BE 12" THICK OF 4" TO 8" CRUSHED STONE.

(4) APPROXIMATE LIMIT OF CONSTRUCTION LAYDOWN AREA AS PROVIDED BY LANL.

(5) FOR TRANSFER PIPE INSTALLATION TRENCH, SEE 1/C-5101

AS PART OF "UNDERGROUND TRANSFER PIPING" PACKAGE.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BV	JC		

ZERO LIQUID DISCHARGE SUBPROJECT

TANK AREA
AREA USE PLAN

BLDG 181,182,183 TA-52

DRAWN: J. AMICO
DESIGN: B. URIGO
CHECKED: J. COOK
DATE: 8/12/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH GROPHY

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

SHEET C-1050
10 OF 88

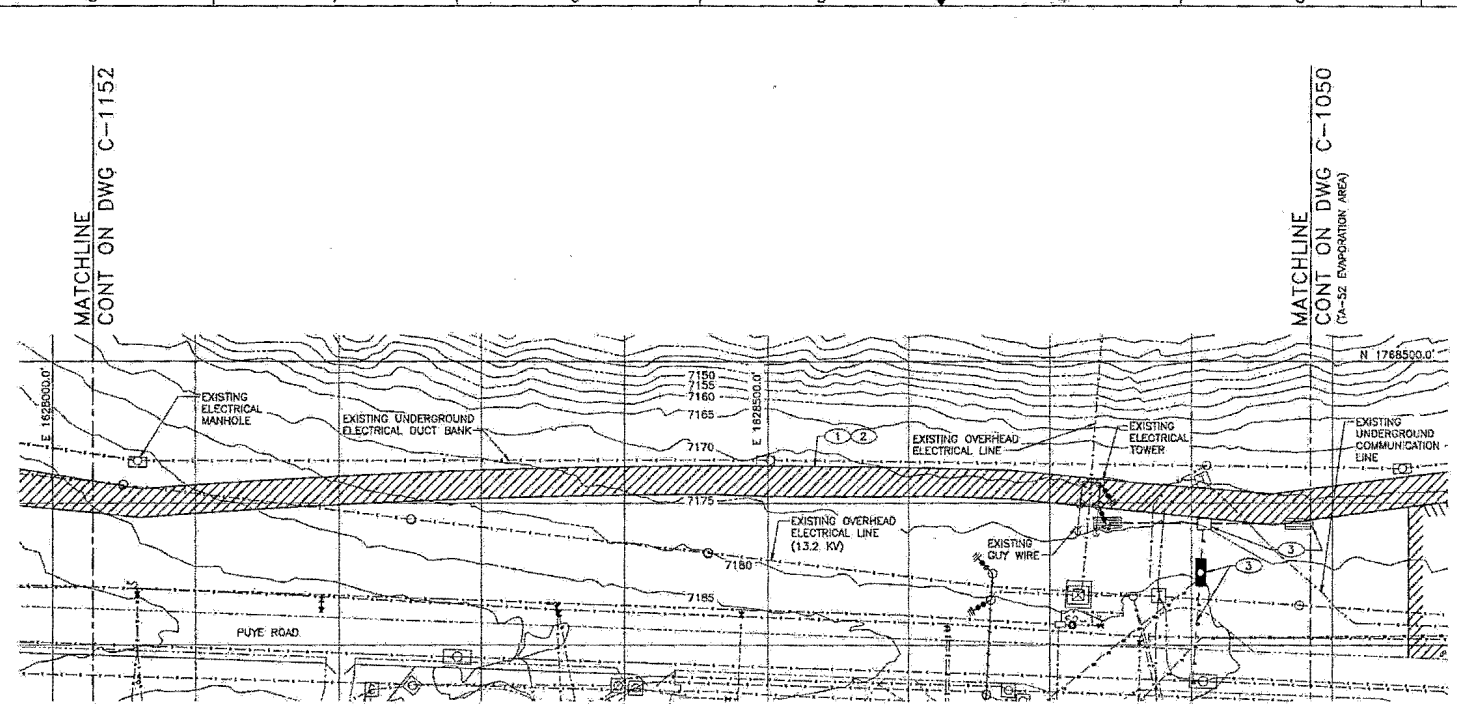
CLASSIFICATION: U
REVIEWER: EDWARD ARTHUR
DATE: 8/23/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 1

100761-C55751-C00007

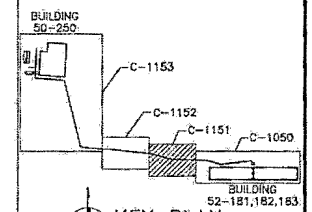
Plotted By: SHAH Plot Date: 7/5/2012
FILE NAME: C55751-C-1050.DWG

C55751



AREA USE PLAN

1"=40'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. FOR ADDITIONAL NOTES SEE SHEET C-1050.
3. EXISTING UTILITIES ARE SHOWN PER DRAWING "UTILITY COMPOSITE MAP" AS PRODUCED BY UTILITIES AND INFRASTRUCTURE DATED 10-19-2010. SUBCONTRACTOR SHALL VERIFY LOCATIONS OF UTILITIES IN FIELD AT TIME OF CONSTRUCTION.
4. SHEET C-1050 IS PART OF "TA-52 EVAPORATION AREA" PACKAGE.
5. BMP'S SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SWPPP PRIOR TO ANY TRENCHING OR OTHER SOIL DISTURBING ACTIVITIES.

KEYED NOTES

1. LIMIT OF DISTURBANCE FOR INSTALLATION OF TRANSFER PIPE SHALL BE APPROXIMATELY 20 FEET WIDE OVER LENGTH OF PIPE.
2. FOR TRANSFER PIPE INSTALLATION TRENCH, SEE 1/C-5101
3. ABANDONED SEPTIC SYSTEM AND SANITARY SEWER PER OWNER FIELD NOTES (RFI-005). SUBCONTRACTOR SHALL VERIFY IN FIELD DURING CONSTRUCTION.

NO.	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

TRANSFER PIPE
AREA USE PLAN 1

BLDG 181,182,183 TA-52

DRAWN J. AMICO
DESIGN B. URGO
CHECKED J. COOK
DATE 9/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET C-1151
11 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTICULA
DATE 8/22/12

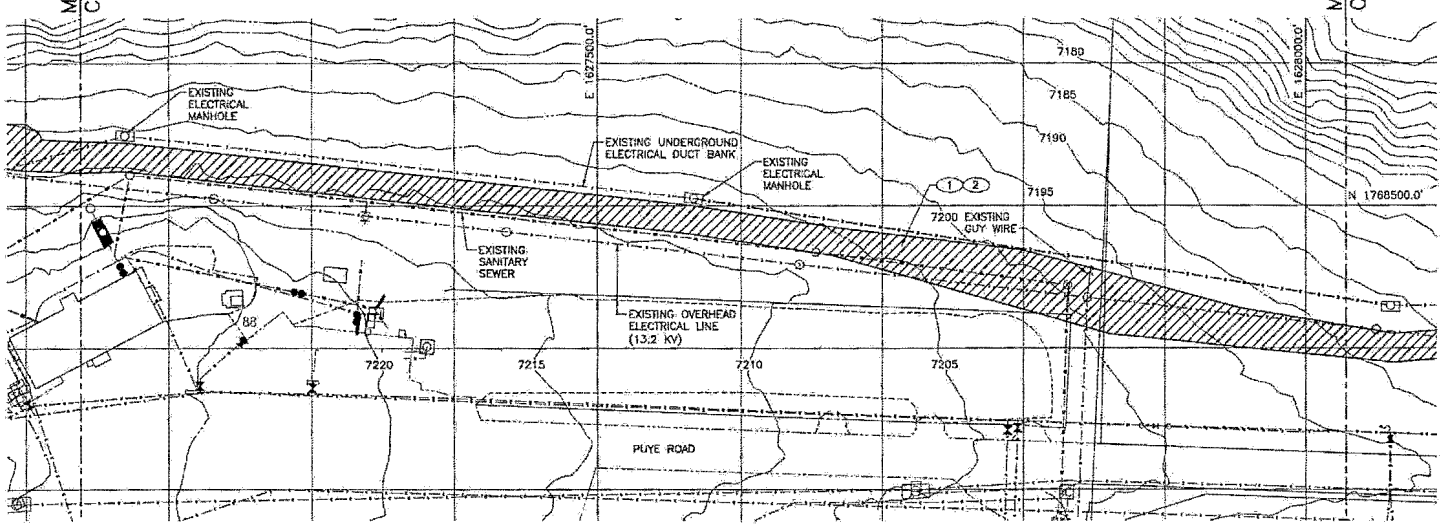
PROJECT ID 100761
DRAWING NO C-55751
REV 1

BRIAN D. URGO NEW MEXICO 20682 PROFESSIONAL ENGINEER

100761-C55751-C00008

Plotted By: SHAHH Plot Date: 7/5/2012
FILE NAME: C55751-C-1151.DWG

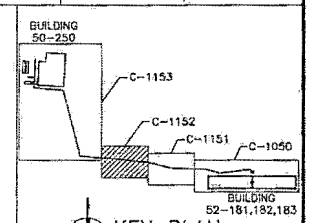
01080



AREA USE PLAN

40' 20' 0 20' 40'

1"=40'-0"



KEY PLAN

SCALE: NONE

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. FOR ADDITIONAL NOTES SEE SHEET C-1050.
3. EXISTING UTILITIES ARE SHOWN PER DRAWING "UTILITY COMPOSITE MAP" AS PRODUCED BY UTILITIES AND INFRASTRUCTURE DATED 10-19-2010. SUBCONTRACTOR SHALL VERIFY LOCATIONS OF UTILITIES IN FIELD AT TIME OF CONSTRUCTION.
4. SHEET C-1050 IS PART OF "TA-52 EVAPORATION AREA" PACKAGE.
5. BMP'S SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SWPPP PRIOR TO ANY TRENCHING OR OTHER SOIL DISTURBING ACTIVITIES.

KEYED NOTES

1. LIMIT OF DISTURBANCE FOR INSTALLATION OF TRANSFER PIPE SHALL BE APPROXIMATELY 20 FEET WIDE OVER LENGTH OF PIPE.
2. FOR TRANSFER PIPE INSTALLATION TRENCH, SEE 1/C-5101

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

TRANSFER PIPE
AREA USE PLAN 2

BLDG 181,182,183 TA-52 TA-63

DRAWN J. AMICO
DESIGN B. URGO
CHECKED J. COOK
DATE 9/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

Los Alamos NATIONAL LABORATORY PO Box 1583 Los Alamos, New Mexico 87545

SHEET C-1152

12 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIOLA
DATE 6/27/12

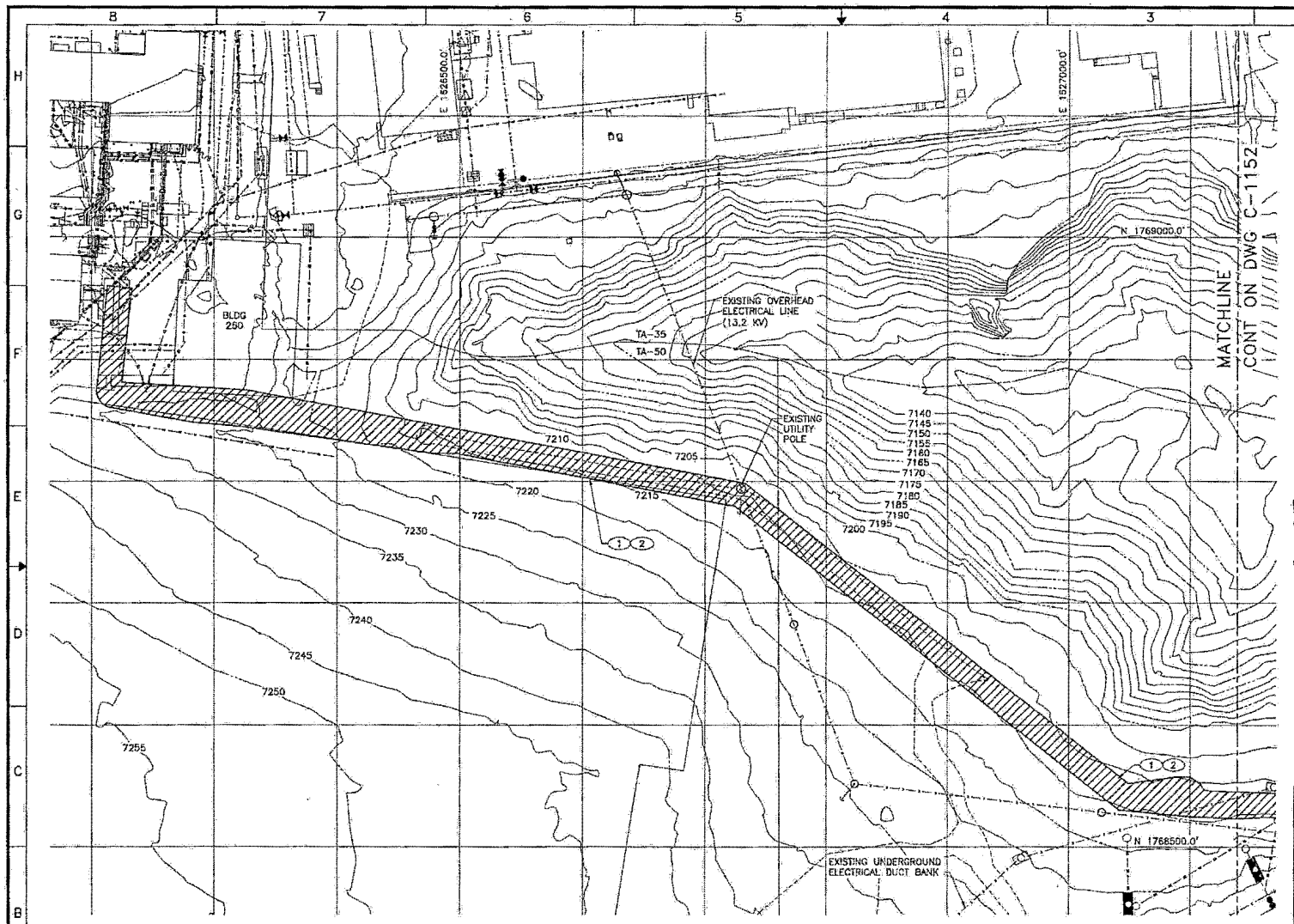
PROJECT ID 100761
DRAWING NO C-55751
REV 1

BRIAN D. URGO NEW MEXICO 20683 PROFESSIONAL ENGINEER

100761-C55751-C00009

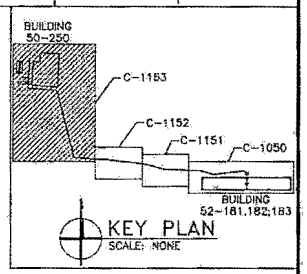
Plotted By: SMAHN Plot Date: 7/5/2012
FILE NAME: C55751-C-1152.DWG

08017



AREA USE PLAN

1"=40'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. FOR ADDITIONAL NOTES, SEE SHEET C-1050.
3. EXISTING UTILITIES ARE SHOWN PER DRAWING "UTILITY COMPOSITE MAP" AS PRODUCED BY UTILITIES AND INFRASTRUCTURE DATED 10-19-2010. SUBCONTRACTOR SHALL VERIFY LOCATIONS OF UTILITIES IN FIELD AT TIME OF CONSTRUCTION.
4. SHEET C-1050 IS PART OF "TA-52 EVAPORATION AREA" PACKAGE.
5. BMP'S SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SWPPP PRIOR TO ANY TRENCHING OR OTHER SOIL DISTURBING ACTIVITIES.

KEYED NOTES

(1) LIMIT OF DISTURBANCE FOR INSTALLATION OF TRANSFER PIPE SHALL BE APPROXIMATELY 20 FEET WIDE OVER LENGTH OF PIPE.

(2) FOR TRANSFER PIPE INSTALLATION TRENCH, SEE (1 / C-5101)

NO	DATE	CLASS REV	ADC	DESCRIPTION	DRN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	TMP

ZERO LIQUID DISCHARGE SUBPROJECT

TRANSFER PIPE
AREA USE PLAN 3

BLDG 181,182,183 TA-50 TA-63

DRAWN J. ALIGO
DESIGN B. URGO
CHECKED J. COOK
DATE 9/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET C-1153
13 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIOLA
DATE 9/12/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

BRIAN D. URGO NEW MEXICO 20089 PROFESSIONAL ENGINEER

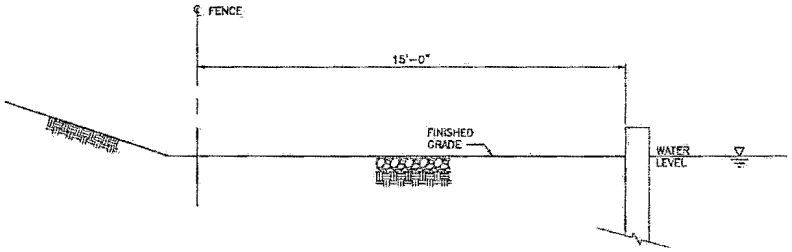
100761-C55751-C00010

Plotted By: BWAH — Plot Date: 7/5/2012
File Name: C55751-C-1153.dwg

C-1153

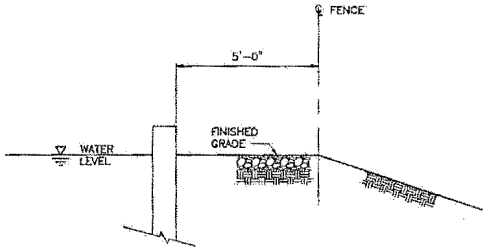
GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT, USE GRAPHIC SCALE ACCORDINGLY.



B C-1030 SECTION-DRIVEWAY

1/2"=1'-0"



C C-1030 SECTION-ACCESS PATH

1/2"=1'-0"

BRIAN D. URGO NEW MEXICO 20053 PROFESSIONAL ENGINEER

100761-C55751-C00011

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	JG	BU	JC	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

TANK AREA SECTIONS 1

BLDG 181,182,183 TA-52

DRAWN J. AMICO

DESIGN B. URGO

CHECKED J. COOK

DATE 9/21/2011

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET C-3001

14 OF 88

CLASSIFICATION U

REVIEWER EDWARD ARTIGLIA

DATE 8/23/12

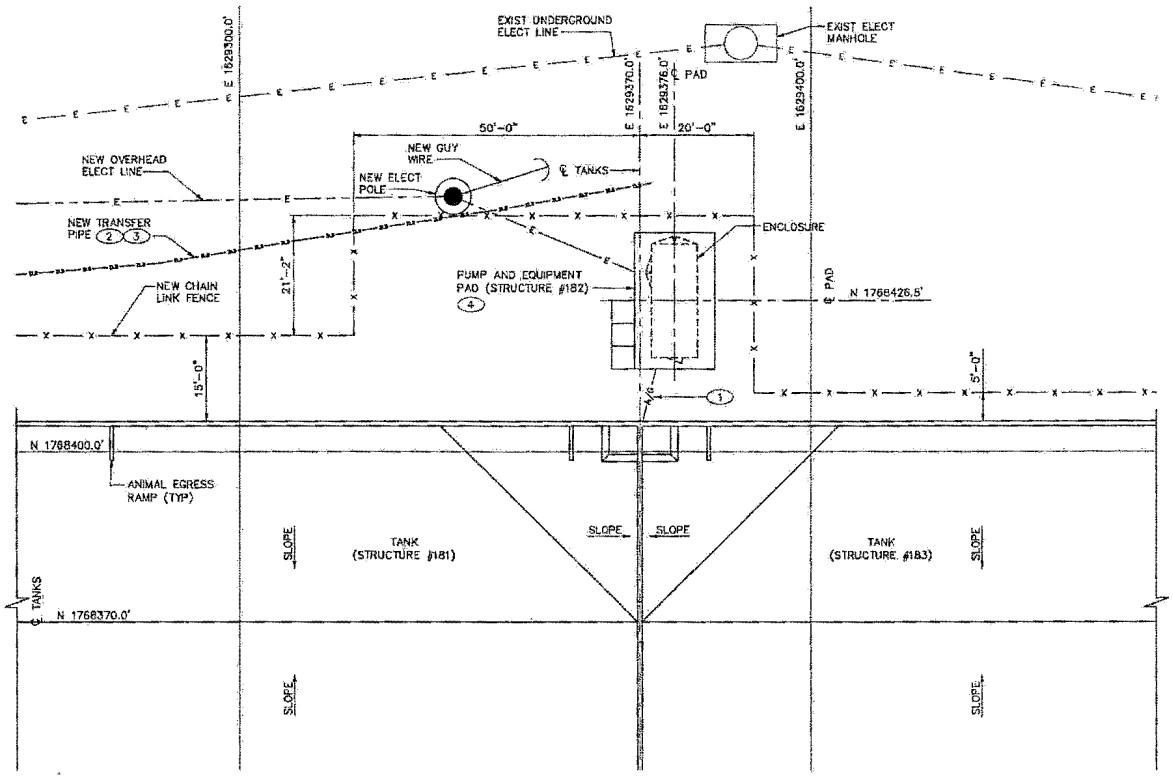
PROJECT ID 100761

DRAWING NO C-55751

REV 1

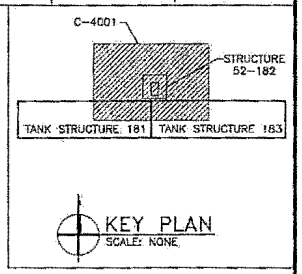
Plotted By: SNAHH Plot Date: 7/5/2012
FILE NAME: C55751-C-3001.DWG

08019



1 C-1020 ENLARGED PLOT PLAN

10' 5' 0 10' 20'
1"=10'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SUMP DISCHARGE AND SPRAY SYSTEM PIPING ARE NOT SHOWN FOR CLARITY. REFER TO MECHANICAL DRAWINGS FOR PIPE INFORMATION. PIPING SHALL BE LOCATED IN FIELD.

KEYED NOTES

(1) ELECTRICAL CONDUIT SHALL BE LOCATED IN FIELD. REFER TO ELECTRICAL DRAWINGS FOR DETAILS.

(2) UNDERGROUND PIPING SHALL BE LOCATED IN FIELD.

(3) REFER TO MECHANICAL DRAWINGS FOR PIPE INFORMATION.

(4) PAD DETAILS ARE PART OF "PUMP AND EQUIPMENT" PACKAGE. REFER TO SHEET S-1020 FOR PAD DETAILS.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	CUS	APP
3	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	BU	RO	
2	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	RO	
1	04-25-2012			REMOVE LEAK DETECTION AND SUMP PIPING, RELOCATE AND CHANGE SIZE OF PUMP PAD, REVISE KEYED NOTES, RELEASE HOLDS C-001 AND C-002	JC	JC	BU	RPC	

ZERO LIQUID DISCHARGE SUBPROJECT

TANK AREA
ENLARGED PLOT PLAN

BLDG 181,182,183 TA-52

DRAWN: A. DWYER
DESIGN: B. URGO
CHECKED: J. COOK
DATE: 09/21/2011

SUBMITTED: NORMAN LADY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET C-4001
15 OF 88

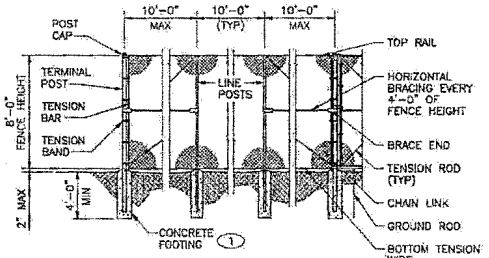
CLASSIFICATION U
REVIEWER: EDWARD ARTIGLIA
DATE: 8/23/12

PROJECT ID 100761
DRAWING NO C-55751
REV 3

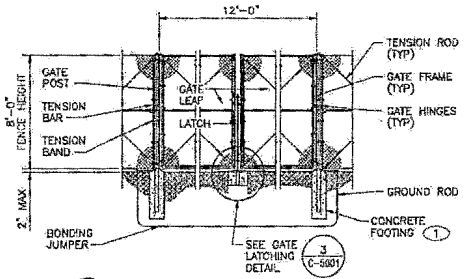
100761-C55751-C00012

Plotted by: SHAH
FILE NAME: C55751-C-4001-43.DWG
Plot Date: 8/23/2012

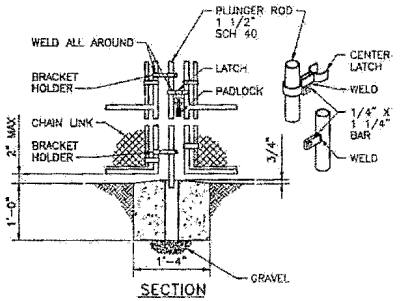
0 2 1 5 3 3 0



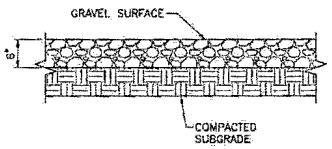
1 C-1020 TYPICAL FENCE DETAIL
SCALE: NONE



2 C-1020 VEHICLE GATE DETAIL
SCALE: NONE



3 C-5001 GATE LATCHING DETAIL
SCALE: NONE



4 C-1020 SURFACING DETAIL
SCALE: NONE

GENERAL NOTES

1. STRUCTURE IDENTIFICATION SIGNS SHALL BE FABRICATED AND SUPPLIED BY LANL, AS GFE. SIGNS SHALL BE FABRICATED IN ACCORDANCE WITH LANL STANDARD DRAWING ST-G504D-4, SHEET 8 WITH THE FOLLOWING TEXT:

   SIGN 1: TA-52-181
   SIGN 2: TA-52-182
   SIGN 3: TA-52-183

2. SUBCONTRACTOR SHALL INSTALL SIGNS UNDER DIRECTION OF LANL STR AND IN ACCORDANCE WITH PROJECT SPECIFICATIONS.

KEYED NOTES

(1) CONCRETE FOOTING FOR FENCE POST SHALL BE CONSTRUCTED IN ACCORDANCE WITH SPECIFICATIONS.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	RLF

ZERO LIQUID DISCHARGE SUBPROJECT

TYPICAL DETAILS
SITE DETAILS 1

BLDG 181,182,183 TA-52

DRAWN J. AMICO
DESIGN B. URGO
CHECKED J. COOK
DATE 9/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET C-5001
16 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIGUA
DATE 9/21/12

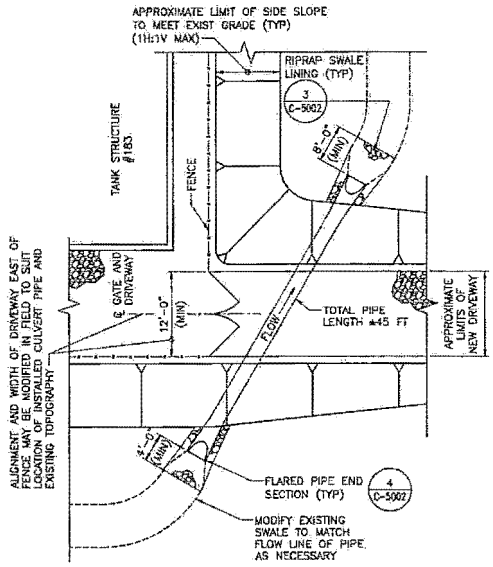
PROJECT ID 100761
DRAWING NO. C-55751
REV 1

NORMAN D. URGO NEW MEXICO 20593 PROFESSIONAL ENGINEER

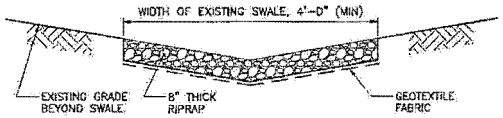
100761-C55751-C00013

Plotted By: SHAWN Plot Date: 7/9/2012
FILE NAME: C55751-C-5001.DWG

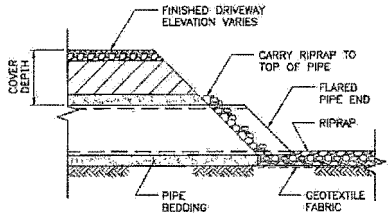
12560



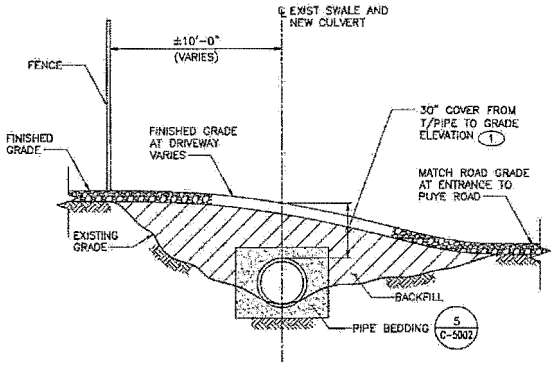
1 C-1020 DETAIL – CULVERT AT DRIVEWAY PLAN
SCALE: NONE



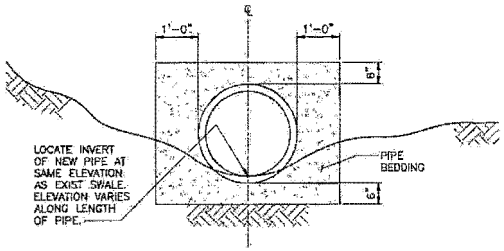
3 C-5002 DETAIL – TYPICAL SWALE LINING
SCALE: NONE



4 C-5002 DETAIL – TYPICAL PIPE INLET/OUTLET
SCALE: NONE



2 C-5002 DETAIL – CULVERT AT DRIVEWAY
SCALE: NONE



5 C-5002 DETAIL – CULVERT PIPE BEDDING
SCALE: NONE

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. LOCATE CULVERT PIPE IN FIELD WITHIN EXISTING SWALE. ADJUST CULVERT AND SWALE IN THE FIELD TO MEET EXISTING CONDITIONS. PIPE INVERT ELEVATIONS SHALL VARY WITH THE EXISTING SWALE ELEVATIONS.
3. CULVERT PIPE SHALL BE 24 INCH DIAMETER CMP, AS FURNISHED BY CONTECH ENGINEERED SOLUTIONS. PIPE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
4. PIPE JOINTS SHALL BE BANDED JOINTS.
5. FILL AND BACKFILL REQUIREMENTS SHALL BE IN ACCORDANCE WITH PROJECT SPECIFICATION 31 2000, AS APPROPRIATE, AND DETAILS SHOWN HEREIN.
6. RIPRAP SHALL BE COMPOSED OF DURABLE STONE LOCALLY PROCURED, SIMILAR TO THAT USED ELSEWHERE AT LANL. STONE SHALL BE ACCEPTED BY LANL PERSONNEL PRIOR TO INSTALLATION. THE LONGEST DIMENSION OF ANY STONE SHALL NOT BE MORE THAN THREE TIMES ITS SHORTEST DIMENSION. RIPRAP STONE SHALL BE SOUND, DENSE, AND FREE FROM CRACKS, SEAMS, AND OTHER DEFECTS. STONE SHALL BE OBTAINED OFF-SITE, OR FROM ON-SITE LOCATIONS AS DIRECTED BY LANL. GRADATION REQUIREMENTS FOR RIPRAP SHALL BE SUCH THAT AT LEAST 50% OF THE STONES SHALL BE EQUAL TO OR GREATER THAN 25 LB, WITH NO MORE THAN 5% BY WEIGHT PASSING A 1 INCH SIEVE.
7. GEOTEXTILE FILTER FABRIC, AS APPROVED BY LANL, SHALL BE LOCATED AS INDICATED AND SHALL CONSIST OF A PERVIOUS SHEET WOVEN OF MONOFILAMENT YARNS OR NON-WOVEN, NEEDLE PUNCHED FABRIC. MATERIAL SHALL BE RESISTANT TO DETERIORATION DUE TO ULTRA-VIOLET AND HEAT EXPOSURE, AND SHALL BE FREE OF DEFECTS OR FLAWS THAT COULD SIGNIFICANTLY AFFECT ITS PHYSICAL OR FILTERING PROPERTIES. FABRIC SHALL BE HELD IN PLACE WITH SUFFICIENT ANCHORAGE TO ENSURE STABILITY DURING RIPRAP INSTALLATION, IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

KEYED NOTES

1 MAINTAIN MINIMUM COVER AS SHOWN FOR LENGTH OF PIPE UNDER DRIVEWAY. GRADE ELEVATION MAY BE ADJUSTED IN FIELD AS NECESSARY TO SUIT.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	BG	

ZERO LIQUID DISCHARGE SUBPROJECT

TYPICAL DETAILS
SITE DETAILS 2

BLDG 181,182,183 TA-52

DRAWN	J. ANICO
DESIGN	B. URGO
CHECKED	J. COOK
DATE	6/21/2011

SUBMITTED NORMAN LACY APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET C-5002
17 OF 88

CLASSIFICATION U REVIEWER EDWARD ARRIOLA DATE 6/27/12

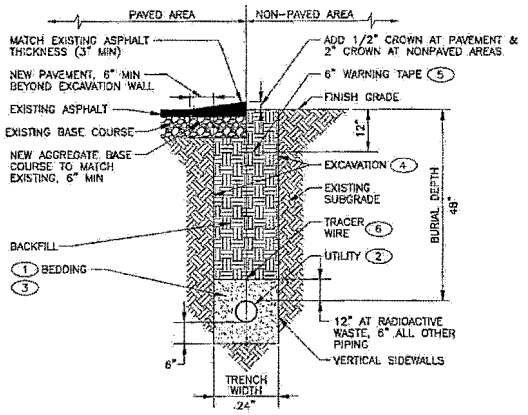
PROJECT ID 100761 DRAWING NO C-55751 REV 1

100761-C55751-C00014

BRIAN D. URGO NEW MEXICO 20555 PROFESSIONAL ENGINEER

Plotted By: BWAN — Plot Date: 7/9/2012
FILE NAME: C55751-C-5002.DWG

22908



1 SINGLE TRENCH DETAIL
C-1050 / C-1151 / C-1152 / C-1153
SCALE: NONE

KEYED NOTES

1. PROVIDE A MINIMUM OF 6" OF SAND BEDDING BETWEEN PIPE AND VERTICAL SIDEWALLS.
2. NEW UTILITY SHALL BE 4"ø HDPE PIPE PER MECHANICAL SPECIFICATIONS AND DRAWINGS.
3. BEDDING MATERIAL SHALL BE AS SPECIFIED IN PROJECT SPECIFICATIONS OR AS RECOMMENDED BY MANUFACTURER, WITH APPROVAL OF LANL STR.
4. REFER TO PROJECT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR ADDITIONAL EXCAVATION REQUIREMENTS
5. WARNING TAPE SHALL BE AS SPECIFIED IN PROJECT SPECIFICATIONS, COLOR PURPLE.
6. TRACER WIRE SHALL BE IN ACCORDANCE WITH PROJECT SPECIFICATIONS. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

TRANSFER PIPE TYPICAL DETAILS

BLDG 181,182,183 TA-52

DRAWN J. ALICO
DESIGN B. URGO
CHECKED J. COOK
DATE 9/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BADPHY

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

SHEET C-5101
18 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIOLIA DATE 9/22/11

PROJECT ID 100761
DRAWING NO C-55751
REV 1

100761-C55751-C00015

BRIAN D. URGO NEW MEXICO 20651 REGISTERED PROFESSIONAL ENGINEER

Plotted By: SHAWN
FILE NAME: C55751-S-5101.DWG
Plot Date: 7/5/2012

CONCRETE NOTES

1. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE, ACI 318, 2005 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ACI 301, 2005, "SPECIFICATIONS FOR STRUCTURAL CONCRETE" AND THE PROJECT SPECIFICATIONS.
2. CONCRETE SHALL BE NORMAL WEIGHT WITH AN ULTIMATE COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. REFER TO PROJECT SPECIFICATIONS FOR MIX DESIGN.
3. CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI-318, 2005 EDITION, PROJECT SPECIFICATIONS OR AS INDICATED ON THE CONTRACT DRAWINGS. THE MORE STRINGENT REQUIREMENTS SHALL APPLY.
4. REINFORCING BARS SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
5. CONTINUOUS REINFORCING #11 AND SMALLER, SHALL BE LAPPED AT SPLICES. LAP LENGTH OF SPLICES SHALL NOT BE LESS THAN CLASS B SPLICE. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED.
6. ALL DOWELS, ANCHOR BOLTS, EMBEDDED STEEL, ELECTRICAL CONDUITS, PIPE SLEEVES, PIPING, WATERSTOPS, INSERTS, GROUNDS, AND ALL OTHER EMBEDDED ITEMS AND FORMED DETAILS SHALL BE IN PLACE PRIOR TO START OF CONCRETE PLACEMENT. ALL EMBEDDED ITEMS SHALL BE SUPPORTED AND SECURELY TIED TO PREVENT DISPLACEMENT AND/OR DAMAGE DURING PLACEMENT OF CONCRETE.
7. POST-INSTALLED ANCHORS SHALL NOT BE INSTALLED UNTIL CONCRETE HAS BEEN IN PLACE AND CURED FOR AT LEAST 14 DAYS. REFER TO PROJECT SPECIFICATIONS.
8. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4 INCH CHAMFER.
9. SUBCONTRACTOR SHALL REFER TO PROJECT TEST AND INSPECTION PLAN (TIP) FOR ALL SPECIAL TESTING AND INSPECTION REQUIREMENTS, INCLUDING STATEMENT OF SPECIAL INSPECTIONS (SSI).

ABBREVIATIONS

BOT	BOTTOM
B/WALL	BOTTOM OF WALL
℄	CENTERLINE
DIA, ø	DIAMETER
EA	EACH
EF	EACH FACE
EL	ELEVATION
EXP	EXPANSION
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
LG	LONG
LP	LOW POINT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
OC	ON CENTER
ℙ	PLATE
R	RADIUS
REQD	REQUIRED
SYM	SYMMETRICAL
SS	STAINLESS STEEL
T	THICKNESS
TOC	TOP OF CONCRETE
T/WALL	TOP OF WALL
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED

PROJECT DESIGN DATA

WIND LOAD:
EXPOSURE CATEGORY = C
WIND SPEED (3 SEC GUST) = 90 mph

SEISMIC LOAD:
SEISMIC DESIGN CATEGORY = D
DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS, S_{DS} = 0.75
DESIGN SPECTRAL RESPONSE ACCELERATION AT 1 SEC PERIOD, S_{D1} = 0.64

SNOW LOAD:
GROUND SNOW LOAD = 16 PSF

REFERENCE CODES:

IBC-2006, INTERNATIONAL BUILDING CODE
ASCE 7-05, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
ACI 318-05, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ACI 301-05, SPECIFICATIONS FOR STRUCTURAL CONCRETE
ACI 350.3-06, SEISMIC DESIGN OF LIQUID CONTAINING CONCRETE STRUCTURES

PERFORMANCE CATEGORY = PC-1

MANAGEMENT LEVEL = ML-3

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

STRUCTURAL NOTES

BLDG 181,182,183 TA-52

DRAWN J. AMICO
DESIGN J. COOK
CHECKED B. URGO
DATE 9/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET S-0001
19 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIGLIA
DATE 8/23/12

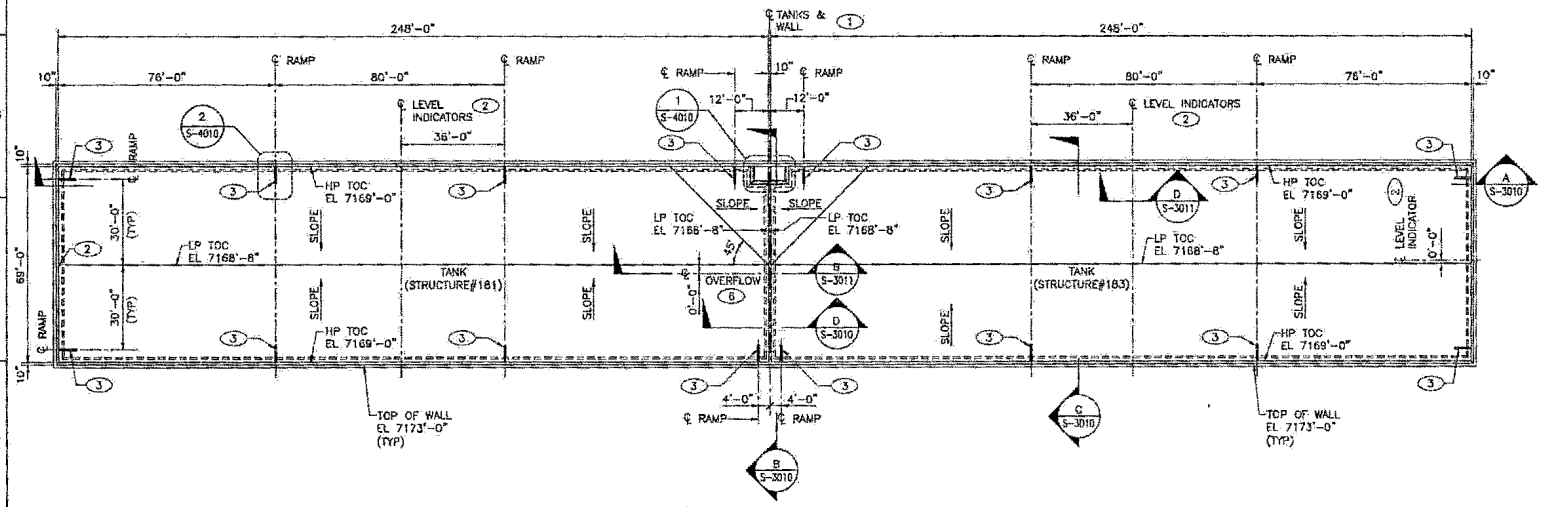
PROJECT ID 100761
DRAWING NO C-55751
REV 1

100761-C55751-S00001

Plotted By: SHAHI Plot Date: 7/5/2012
FILE NAME: C55751-S-0001.DWG

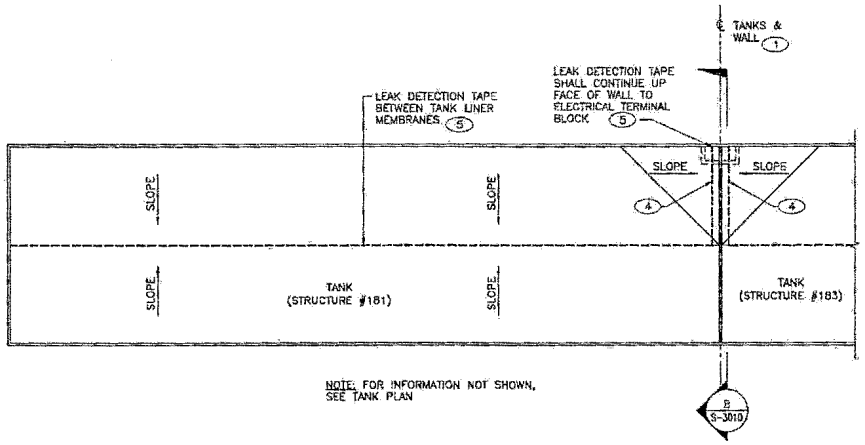
GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. CONCRETE MAT SHALL RECEIVE A FLOATED FINISH WITH TOLERANCE IN ACCORDANCE TO PROJECT SPECIFICATIONS.



TANK PLAN

20' 10' 0 10' 20'
1"=20'-0"



NOTE: FOR INFORMATION NOT SHOWN, SEE TANK PLAN

TANK PLAN – LEAK DETECTION TAPE

20' 10' 0 10' 20'
1"=20'-0"

KEYED NOTES

1. TANKS ARE SYMMETRICAL ABOUT CENTERLINE UNLESS OTHERWISE NOTED.
2. LEVEL INDICATOR SIGN SHALL BE LOCATED AND ATTACHED IN FIELD, WITH 3 SIGNS PER TANK, 6 SIGNS TOTAL.
3. ANIMAL EGRESS RAMP (16 TOTAL)
4. LEAK TAPE SHALL BE LOCATED 6" FROM FACE OF WALL AT EDGE OF GROUTED RADIUS.
5. REFER TO DRAWING SHEET S-5010 FOR DETAILS OF LEAK DETECTION TAPE LOCATION BETWEEN LINER MEMBRANES.
6. CENTERLINE OF OVERFLOW SHALL COINCIDE WITH CENTERLINE OF TANKS.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	07/12/12	-	-	PROJECT RECORD DRAWINGS	JC	BU	JC	RS	NL
1	12-20-2011			ADD LEAK TAPE PLAN, REMOVE HOLD C-002, REMOVE LEAK DETECTION AND SUMP SUCTION PIPING.	RMD	BU	JC	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TANK PLAN

BLDG 181,183 TA-92

DRAWN J. AMCO
DESIGN J. COOK
CHECKED B. URIO
DATE 9/21/2011

SUBMITTED NORMAN LAST
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET S-1010
20 OF 88

CLASSIFICATION U REVIEWER EDWARD ARTIOLA DATE 9-26-2011

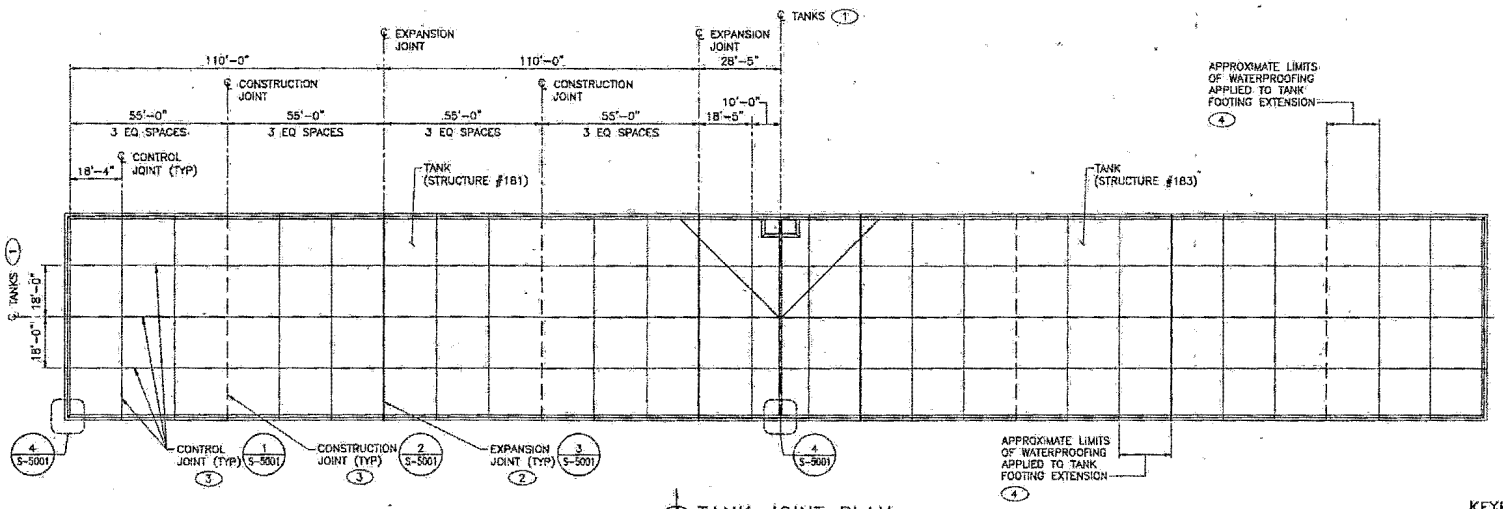
PROJECT ID 100761 DRAWING NO C-55751 REV 2

100761-C55751-S00002

BRUCE D. URIO NEW MEXICO 12885 REGISTERED PROFESSIONAL ENGINEER

Plotted By: SHARK
Plot Date: 7/5/2012
FILE NAME: C55751-S-1010.DWG

C55751



TANK JOINT PLAN

20' 10' 5 10' 20'

1"=20'-0"

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.

KEYED NOTES

(1) TANKS ARE SYMMETRICAL ABOUT CENTERLINE UNLESS OTHERWISE NOTED.

(2) EXPANSION JOINTS SHALL BE CONTINUOUS THROUGH SLAB AND WALL.

(3) CONTROL AND CONSTRUCTION JOINT LOCATIONS MAY DIFFER BETWEEN SLAB AND WALL.

(4) WATERPROOFING SHALL BE "SONNEBORN, SONOSHIELD HLM 5000" LIQUID COLD-APPLIED ELASTOMETRIC WATERPROOFING MEMBRANE SYSTEM, AS MANUFACTURED BY BASF, AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S STANDARDS.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	RP

ZERO LIQUID DISCHARGE SUBPROJECT

TANK JOINT PLAN

BLDG 181,183 TA-52

DRAWN J. AMICO
DESIGN J. COCK
CHECKED B. URGO
DATE 9/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET S-1011

21 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIGLIA
DATE 8/23/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

BRIAN D. URGO NEW MEXICO 20583 PROFESSIONAL ENGINEER

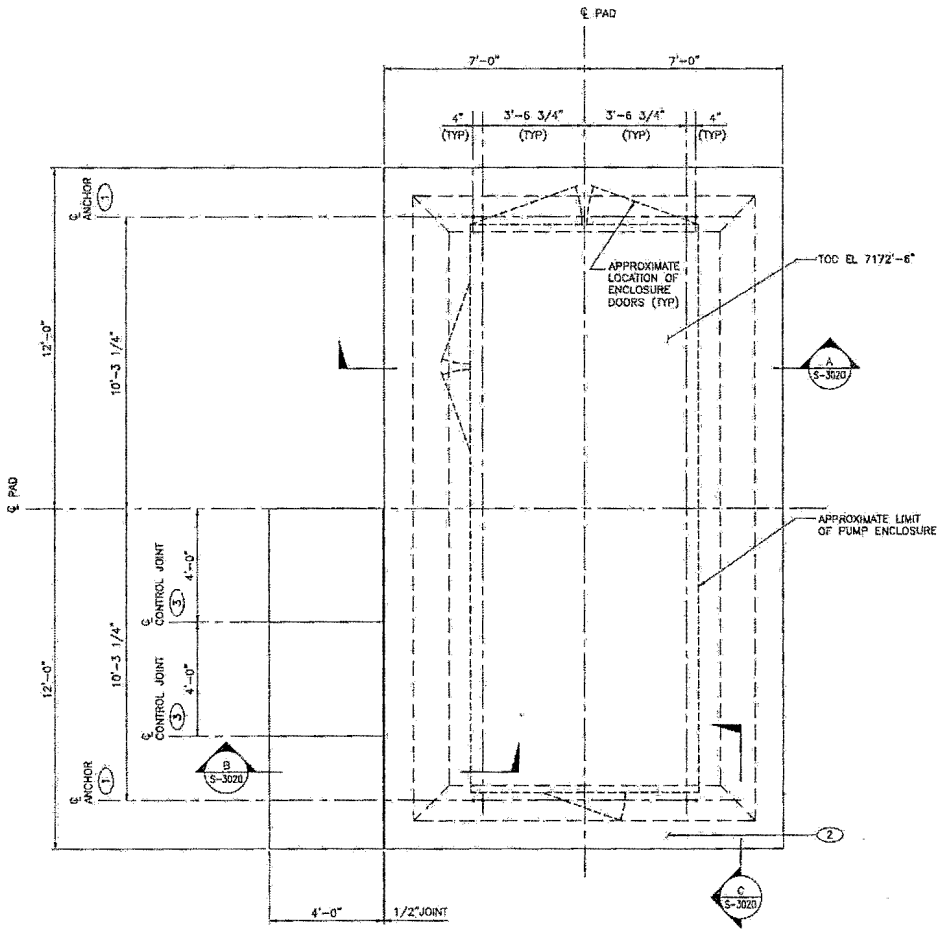
100761-C55751-S00003

Plotted By: SMAHH Plot Date: 7/5/2012
FILE NAME: C55751-S-1011.DWG

92080

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.



NOTE: FOR LOCATION SEE SHEET C-4001

PLAN-PUMP AND EQUIPMENT PAD

1/2"=1'-0"

KEYED NOTES

1. POST INSTALLED ANCHORS SHALL BE 3/4"ø, STAINLESS STEEL OF THE KWIK BOLT TZ SYSTEM AS MANUFACTURED BY HILTI, AND INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. TOTAL BOLT LENGTH SHALL BE 8", WITH 4 3/4" MINIMUM EFFECTIVE EMBEDMENT.
2. REFER TO MECHANICAL DRAWING M-1014 FOR PIPE SUPPORT LOCATIONS.
3. REFER TO KEYED NOTE 3, SHEET S-5001.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	JC	BU	JC	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

PUMP AND EQUIPMENT PAD PLAN

DRAWN J. COOK
DESIGN J. COOK
CHECKED B. URGO
DATE 4/25/2012

BLDG 182 TA-52

SUBMITTED NORMAN LACY APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET S-1020
22 OF 88

CLASSIFICATION U REVIEWER EDWARD ARTIGLIA DATE 4/27/12

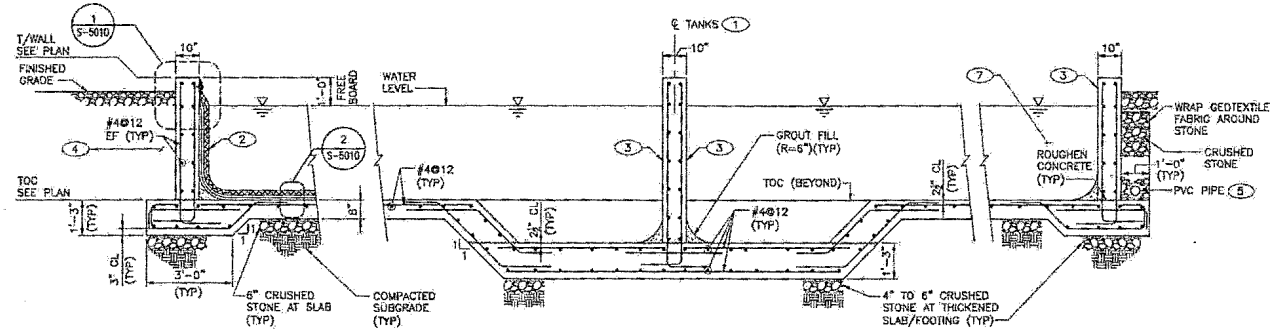
PROJECT ID 100761 DRAWING NO C-55751 REV 1

100761-C55751-S00004

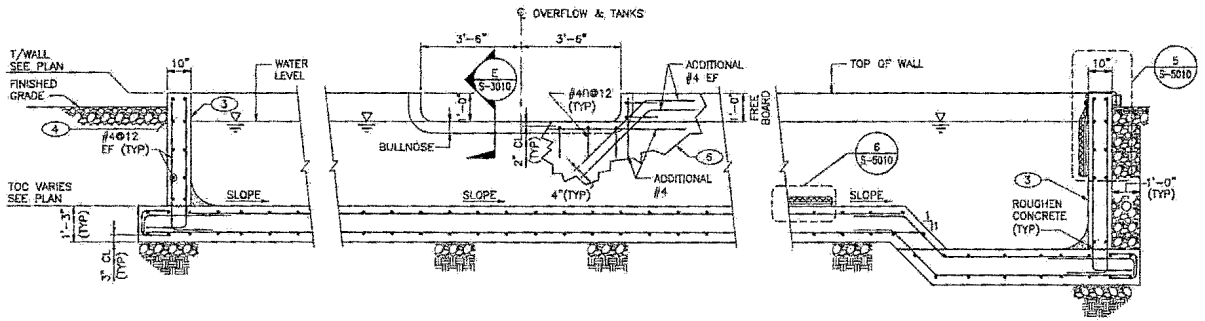
BRIAN D. URGO NEW MEXICO 20868 PROFESSIONAL ENGINEER

Plotted By: SHAWN Plot Date: 7/5/2012
FILE NAME: C55751-S-1020.DWG

2009

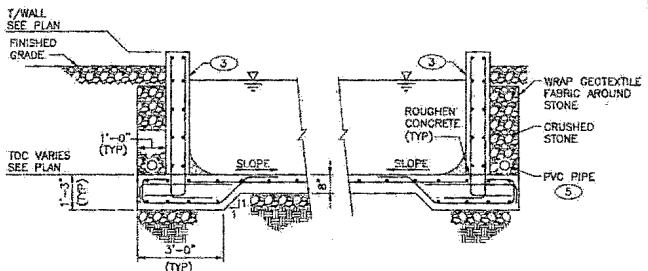


A SECTION
S-1010
1/2"=1'-0"



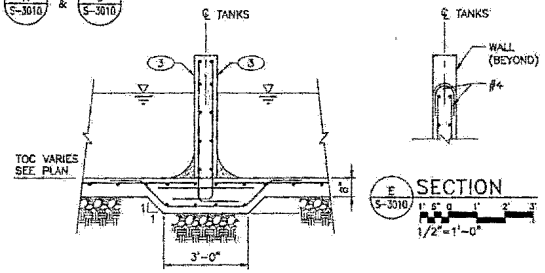
B SECTION—OVERFLOW/SUMP
S-1010/S-4010
1/2"=1'-0"

NOTE: FOR INFORMATION NOT SHOWN SEE A S-3010 & C S-3010



C SECTION
S-1010
1/2"=1'-0"

NOTE: FOR INFORMATION NOT SHOWN SEE B S-3010



D SECTION
S-1010
1/2"=1'-0"

NOTE: FOR INFORMATION NOT SHOWN SEE A S-3010

E SECTION
S-3010
1/2"=1'-0"

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. LINER SHALL BE INSTALLED, INCLUDING SEAM BONDING, IN ACCORDANCE WITH MANUFACTURER'S AND INSTALLER'S STANDARDS. REFER TO SHEET S-5010 FOR MANUFACTURER.
3. LINER SHALL BE INSTALLED SUCH THAT ALL SURFACES PROVIDE UNOBSTRUCTED SLOPE AND PATH TO SUMP.

KEYED NOTES

1. TANKS ARE SYMMETRICAL ABOUT CENTERLINE UNLESS OTHERWISE NOTED.
2. LINER COMPONENTS SHOWN AT EXAGGERATED SCALE FOR CLARITY.
3. LINER COMPONENTS NOT SHOWN.
4. WALL DRAINAGE SYSTEM NOT SHOWN FOR CLARITY.
5. PROVIDE 4"ø PERFORATED PVC PIPE, THIN WALL WITH BELL ENDS, RATED 3000LB CRUSH TEST IN ACCORDANCE WITH ASTM D2729, SLOPED TO DAYLIGHT. OUTFALL END OF PIPE SHALL INCLUDE AN END CAP WITH 1/2" STEEL MESH HARDWARE CLOTH.
6. FOR REINFORCEMENT NOT SHOWN, REFER TO SECTION D S-3010
7. ANIMAL RAMPS NOT SHOWN FOR CLARITY.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	07/12/12	-	-	PROJECT RECORD DRAWINGS	JC	BV	JC	RC	
1	12-20-2011			REMOVE LEAK DETECTION AND SUMP PIPING, ADD LINER DETAILS	RMD	BU	JC	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TANK SECTIONS 1

BLDG 181,182,183 TA-52

DRAWN	J. AMICO
DESIGN	J. COOK
CHECKED	B. URGO
DATE	9/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

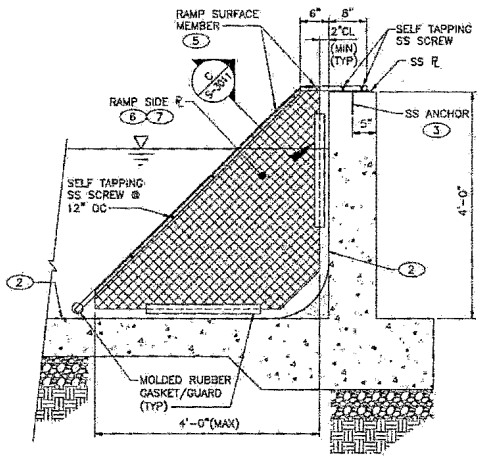
SHEET S-3010
23 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIGLIA
DATE 9-20-2011

PROJECT ID 100761
DRAWING NO C-55751
REV 2

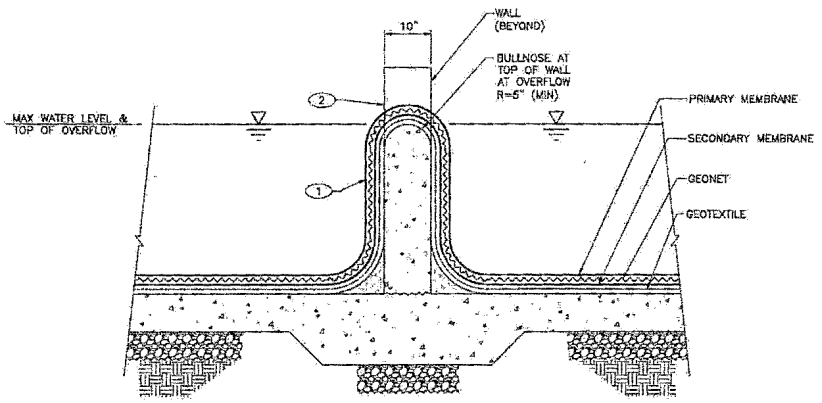
100761-C55751-S00005

Plotted By: SHAH Plot Date: 7/5/2012
FILE NAME: C55751-S-3010.DWG



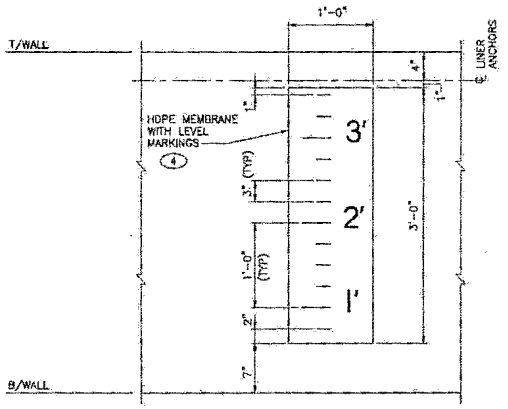
A S-4010 SECTION–ANIMAL EGRESS RAMP

1"=1'-0"



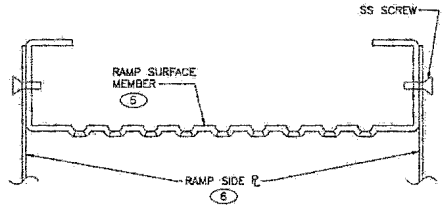
B S-1010 SECTION–OVERFLOW

1"=1'-0"



D S-1010 SECTION–LEVEL INDICATOR SIGN

1 1/2"=1'-0"



C S-3011 S-4010 SECTION–TRACTION TREAD PLANK

1 1/2"=1'-0"

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. FOR INFORMATION NOT SHOWN REFER TO SHEET S-3010.

KEYED NOTES

(1) LINER COMPONENTS SHOWN AT EXAGGERATED SCALE FOR CLARITY.

(2) LINER COMPONENTS NOT SHOWN FOR CLARITY.

(3) POST INSTALLED ANCHORS SHALL BE STAINLESS STEEL, OF THE KWIK BOLT TZ SYSTEM AS MANUFACTURED BY HILTI AND INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. TOTAL BOLT LENGTH SHALL BE 5" WITH A BOLT DIAMETER OF 3/8".

(4) LEVEL INDICATOR SHALL BE 60 MIL HDPE MEMBRANE TO MATCH PRIMARY MEMBRANE, COLORED WHITE, WITH BLACK LEVEL LINES AND NUMERALS, AS MANUFACTURED BY GSE, CORONA, CA. INDICATOR SHALL BE BONDED TO PRIMARY MEMBRANE IN FIELD IN ACCORDANCE WITH MANUFACTURER'S STANDARDS. LEVEL LINES FOR FOOT INTERVALS SHALL BE 4" LONG, NUMERALS SHALL BE 3" HIGH (MIN).

(5) 7" WIDE "TRACTION TREAD" PLANK, STAINLESS STEEL SAFETY GRATING AS MANUFACTURED BY DIRECT METALS, WAUKEGAN, IL.

(6) EXPANDED METAL, STAINLESS STEEL SHEET PLATE AS MANUFACTURED BY DIRECT METALS, WAUKEGAN, IL.

(7) STAINLESS STEEL TUBE STEEL FRAME TO SUPPORT RAMP SIDE PLATE SHALL BE DESIGNED BY SUBCONTRACTOR.

NO	DATE	CLASS REV	ADD	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	BU	BU

ZERO LIQUID DISCHARGE SUBPROJECT

TANK SECTIONS 2

BLDG 181,182,183 TA-52

DRAWN J. AMICO
DESIGN J. COOK
CHECKED B. URGO
DATE 9/21/2011

SUBMITTED NORMAN LADY APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET S-3011
24 OF 88

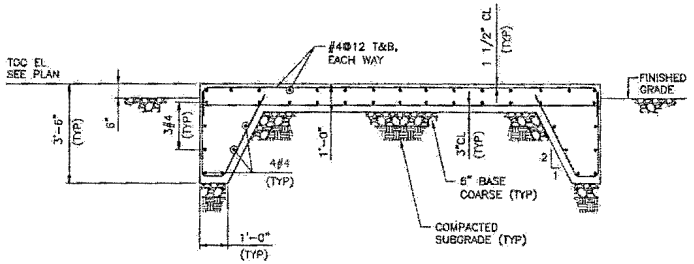
CLASSIFICATION U REVIEWER EDWARD ARTIOLA DATE 9/21/11

PROJECT ID 100761 DRAWING NO. C-55751 REV 1

100761-C55751-S00006

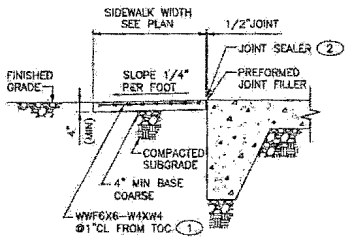
Plotted By: SHAH
File Name: C55751-S-3011.DWG
Plot Date: 7/5/2012

525868



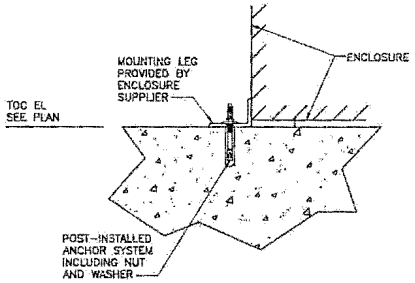
A S-1020 SECTION–PUMP AND EQUIPMENT PAD

1" 6" 0 1' 2' 3'
1/2"=1'-0"



B S-1020 SECTION–EQUIPMENT SIDEWALK

1" 6" 0 1' 2' 3'
1/2"=1'-0"



C S-1020 SECTION–ANCHOR
SCALE: NONE

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. PLACE 1/2" WIDE PREMOULDED EXPANSION JOINT FILLER MATERIAL AT INTERVALS NOT TO EXCEED 3 CONTROL JOINTS.
3. PLACE PREMOULDED EXPANSION JOINT FILLER MATERIAL BETWEEN SIDEWALKS AND ANY OTHER RIGID STRUCTURES.
4. PLACE CONTROL JOINTS IN THE SIDEWALKS TO FORM A SQUARE. JOINTS MAY BE TOOLED OR SAWED AND SHALL EXTEND AT LEAST 1/3 OF THE DEPTH OF CONCRETE (#1 1/4").
5. REFER TO SHEET S–5001 FOR ADDITIONAL TYPICAL JOINT DETAILS AS APPROPRIATE.

KEYED NOTES

(1) WWF SHALL BE SET AT 1" CLEAR FROM TOC AND LOCALLY DROPPED/SAGGED TO ± 3/4" CL AT CONTROL JOINTS.

(2) REFER TO KEYED NOTE 3, SHEET S–5001.

NO.	DATE	CLASS REV	ADC	DESCRIPTION	OWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	BU	JC	BC	MH

ZERO LIQUID DISCHARGE SUBPROJECT

PUMP AND EQUIPMENT PAD SECTIONS

DRAWN J. COOK
DESIGN J. COOK
CHECKED B. URGO
DATE 11/15/2012

BLDG 182 TA–52

SUBMITTED NORMAN LACY APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET S–3020
25 OF 88

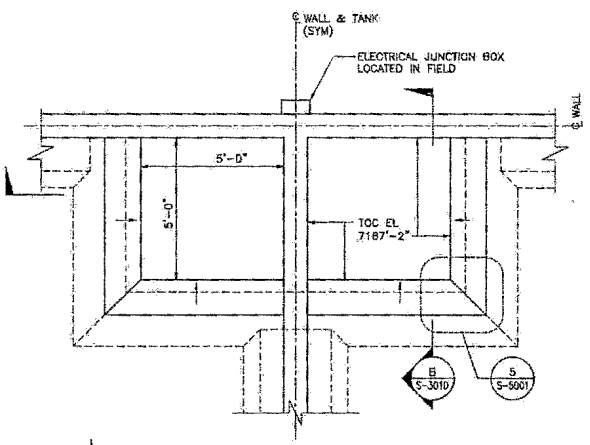
CLASSIFICATION U REVIEWER EDWARD ARTICLIA DATE 8/30/12

PROJECT ID 100761 DRAWING NO C–55751 REV 1

100761–C55751–S00007

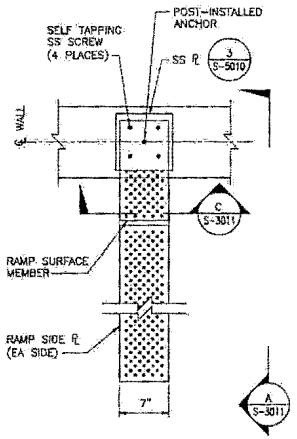
Printed By: BHAKH
File Name: S5001-S-3020.DWG
Plot Date: 7/5/2012

C55751



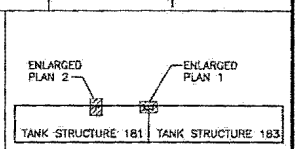
1 S-1010 ENLARGED PARTIAL PLAN–SUMP

1/2"=1'-0"



2 S-1010 ENLARGED PARTIAL PLAN–ANIMAL EGRESS RAMP

1 1/2"=1'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	DU	JC DU	RG	AGS

ZERO LIQUID DISCHARGE SUBPROJECT

TANK ENLARGED PLAN

BLDG 181,183 TA-52

DRAWN: J. AMDO
DESIGN: J. COOK
CHECKED: B. URGO
DATE: 9/21/2011

SUBMITTED: NORMAN LACY

APPROVED FOR RELEASE: JOSEPH DROPHY

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

SHEET: S-4010
26 OF 88

CLASSIFICATION: U
REVIEWER: EDWARD ARTIGLIA
DATE: 9/27/12

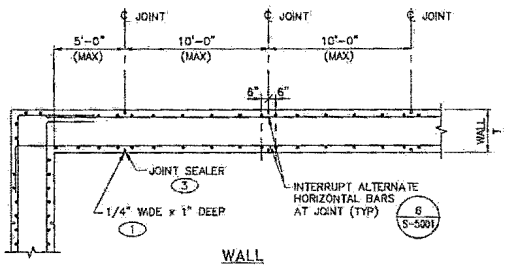
PROJECT ID: 100761
DRAWING NO: C-55751
REV: 1

BRIAN D. URGO NEW MEXICO 20663 PROFESSIONAL ENGINEER

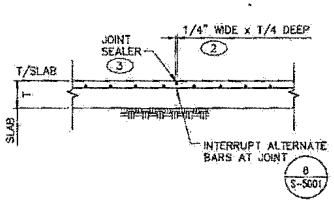
100761-C55751-S00008

Plotted By: SWAN Ref. Date: 7/9/2012
FILE NAME: C55751-S-4010.DWG

EDS



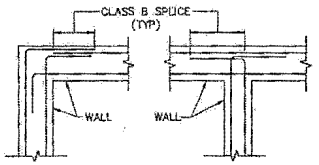
WALL



SLAB

(1 S-1011) TYPICAL CONTROL JOINT DETAILS

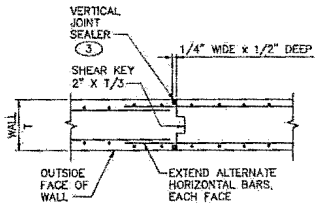
SCALE: NONE



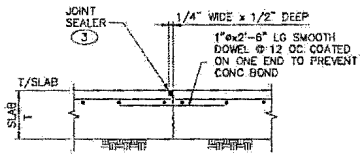
PLAN AT CORNER PLAN AT INTERSECTION

(4 S-4010) TYPICAL CORNER REINFORCING DETAIL

SCALE: NONE



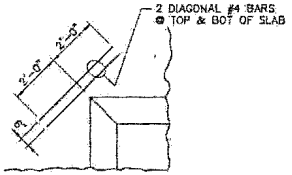
WALL



SLAB

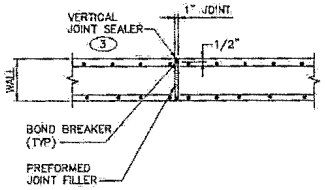
(2 S-1011) TYPICAL CONSTRUCTION JOINT DETAILS

SCALE: NONE

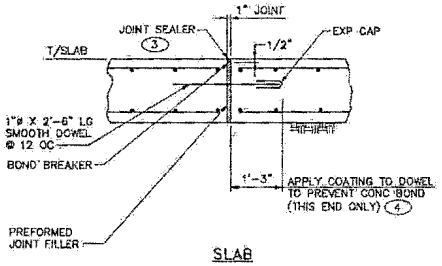


(5 S-4010) TYPICAL RE-ENTRANT CORNER REINFORCING DETAIL

SCALE: NONE



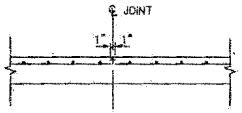
WALL



SLAB

(3 S-1011) TYPICAL EXPANSION JOINT DETAILS

SCALE: NONE



(6 S-5001) BAR INTERRUPT DETAIL

SCALE: NONE

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. FOR ADDITIONAL NOTES, SEE SHEET S-0001.
3. SUBCONTRACTOR SHALL PREPARE A DRAWING SHOWING LOCATIONS OF CONTROL, EXPANSION, AND CONSTRUCTION JOINTS. THIS DRAWING SHALL BE PROVIDED TO DETAILER AND ENGINEER OF RECORD BEFORE SHOP DRAWINGS ARE PREPARED.
4. PROVISIONS FOR CURING SHALL BE MADE IN ADVANCE OF CONCRETE PLACEMENT. CURING MEASURES SHALL BE IMPLEMENTED AS EARLY AS CONCRETE HARDENING AND FINISHING OPERATIONS WILL ALLOW. AT NO TIME SHALL THE CONCRETE BE PERMITTED TO BECOME SURFACE DRY. CURING SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT SPECIFICATION 03 3001, INCLUDING ACI 301, 2005 AS REQUIRED.
5. IMMEDIATELY AFTER PLACEMENT, CONCRETE SHALL BE PROTECTED FROM PREMATURE DRYING AND EXCESSIVELY HOT OR COLD TEMPERATURES; AND, SHALL BE MAINTAINED WITH MINIMAL MOISTURE LOSS FOR A PERIOD OF AT LEAST TEN DAYS NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.
6. SURFACES NOT IN CONTACT WITH FORMS SHALL BE CURED BY EITHER PONDING OR CONTINUOUS SPRINKLING; OR, BY APPLICATION OF A CURING COMPOUND. CURING COMPOUND SHALL BE APPLIED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND MANUFACTURERS RECOMMENDATIONS.
7. MOISTURE LOSS FROM SURFACES PLACED AGAINST WOOD OR METAL FORMS SHALL BE MINIMIZED BY KEEPING THE FORMS WET UNTIL REMOVAL. AFTER FORM REMOVAL, CONCRETE SHALL CONTINUE TO BE CURED, AS PROVIDED ABOVE, FOR AT LEAST TEN DAYS.

KEYED NOTES

1. CONTROL JOINTS IN WALL SHALL BE MADE BY PROVIDING FORMING STRIPS IN THE FORMWORK. STRIPS SHALL BE IN-PLACE BEFORE CONCRETE PLACEMENT. SUBCONTRACTOR MAY SUBMIT AN ALTERNATE CROSS SECTION FOR THE JOINT FOR OWNER APPROVAL PRIOR TO CONSTRUCTION.
2. CONTROL JOINTS IN SLAB SHALL BE FORMED AS SOON AS POSSIBLE AFTER CONCRETE PLACEMENT. JOINTS SHALL BE FORMED AFTER A SUFFICIENT TIME TO PREVENT RAVELING AT THE JOINTS, BUT NO LONGER THAN SIX HOURS AFTER PLACEMENT.
3. AFTER CURING, ALL JOINTS IN WALLS AND SLAB SHALL BE SEALED WITH JOINT SEALER, AS INDICATED, IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
4. COATING SHALL BE GREASE OR BOND BREAKER (TAPE OR OTHERWISE) IN ACCORDANCE WITH PROJECT SPECIFICATIONS.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	JC	EU	JC	RC	MAP

ZERO LIQUID DISCHARGE SUBPROJECT

TYPICAL DETAILS
STRUCTURAL DETAILS 1

BLDG 181,182,183 TA-52

DRAWN J. ARECO
DESIGN J. COOK
CHECKED B. URDD
DATE 9/21/2011

SUBMITTED NORMAN LADY
APPROVED FOR RELEASE JOSEPH BROPHY

Los Alamos NATIONAL LABORATORY P.O. Box 1663 Los Alamos, New Mexico 87545

SHEET S-5001
27 OF 88

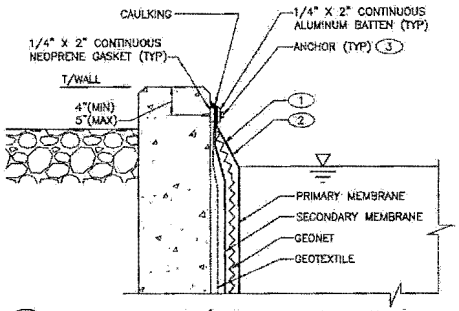
CLASSIFICATION U
REVIEWER EDWARD ARTIGLIA DATE 8/17/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

100761-C55751-S00009

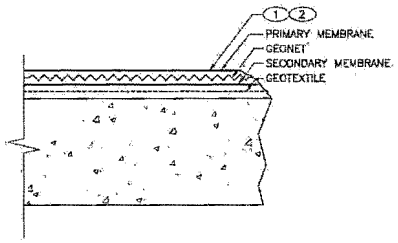
Plotted By: SWAN Plot Date: 7/9/2012
File Name: c55751-s-5001.dwg

LA-UR-12-25025



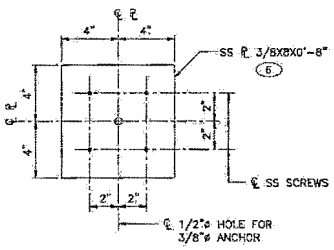
1 S-3010 DETAIL–LINER/WALL CONNECTION

1 1/2"=1'-0"



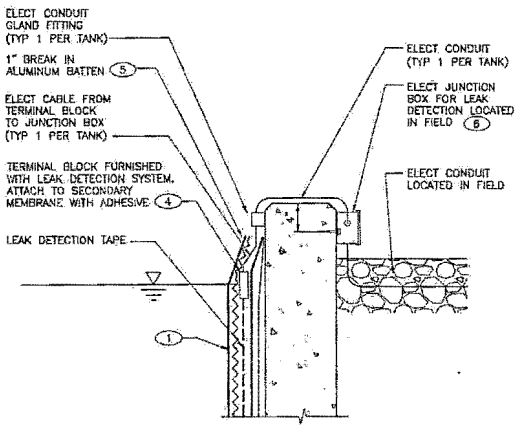
2 S-3010 DETAIL–LINER AT SLAB

3"=1'-0"



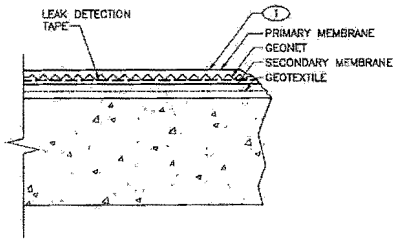
3 S-4010 DETAIL–RAMP BASE PLATE

3"=1'-0"



5 S-3010 DETAIL – LEAK DETECTION TAPE AT WALL

1 1/2"=1'-0"



6 S-3010 DETAIL– LEAK DETECTION TAPE AT SLAB

3"=1'-0"

GENERAL NOTES

1. IF THIS SHEET IS NOT 36"X24" THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.

KEYED NOTES

(1) LINER COMPONENTS SHOWN AT EXAGGERATED SCALE FOR CLARITY.

(2) LINER COMPONENTS SHALL BE AS MANUFACTURED BY GSE, CORONA, CA AS FOLLOWS:

- PRIMARY MEMBRANE SHALL BE 60 MIL HDPE, CONDUCTIVE SMOOTH
- GEONET SHALL BE 250 MIL HDPE, HYPERNET HF
- SECONDARY MEMBRANE SHALL BE 40 MIL HDPE, CONDUCTIVE SMOOTH
- GEOTEXTILE SHALL BE 12 OZ/YD², GSE NW 12

(3) POST INSTALLED ANCHORS SHALL BE SELECTED AND INSTALLED IN ACCORDANCE WITH LINER MANUFACTURER'S AND INSTALLER'S STANDARDS. REFER TO PROJECT SPECIFICATIONS FOR ANCHOR REQUIREMENTS. ANCHOR SPACING SHALL BE BETWEEN 3"(MIN) AND 12"(MAX). ANCHORS SHALL BE CONSIDERED NON-STRUCTURAL AND INSPECTED AS SUCH.

(4) INSTALL LEAK DETECTION TAPE BETWEEN GEONET AND SECONDARY MEMBRANE, SECURING TO SECONDARY MEMBRANE WITH HYDRO-TEMP GL-10 ADHESIVE. TERMINATE LEAK DETECTION TAPE NEAR TOP OF WALL AT TERMINAL BLOCK INSTALLED BETWEEN GEONET AND SECONDARY MEMBRANE, ATTACHED TO SECONDARY MEMBRANE WITH HYDRO-TEMP GL-10 ADHESIVE.

(5) PROVIDE BREAK IN ALUMINUM BATTEN FOR UNCLAMPED GAP BETWEEN MEMBRANES AND WALL AS REQUIRED TO PASS CABLE THROUGH. CAULK TO SEAL AGAINST LEAKAGE OF ANY KIND.

(6) JUNCTION BOX SHALL BE JB-2, 6"x8" NEMA 4X WITH 8PT TERMINAL STRIP, AS MANUFACTURED BY HOFFMAN, ATTACHED TO WALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	07/12/12	–	–	PROJECT RECORD DRAWINGS	JC	EU	JC	NL	
1	12-20-2011			REVISED DETAILS 2 AND 4, ADDED DETAILS 5 AND 6, REVISED KEYED NOTES 4 AND 5, DELETED KEYED NOTES 6 THROUGH 9.	RMD	EU	JC	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TANK DETAILS 1

BLDG 181,182,183 TA- 52

DRAWN J. ARCO
DESIGN J. COOK
CHECKED B. URGO
DATE 9/21/2011

SUBMITTED NORMAN LACY APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET S-5010
28 OF 88

CLASSIFICATION U REVIEWER EDWARD ARRIOLA DATE 9-26-2011

PROJECT ID 100761 DRAWING NO C-55751 REV 2

100761-C55751-S00010

Printed By: SWAN Plot Date: 7/5/2012
File Name: D:\0761-S-5010.dwg

PROCESS FLOW DIAGRAMS AND P&ID SYMBOLS (GENERAL INSTRUMENT OR FUNCTION SYMBOLS)

LINE TYPES

SYMBOL	LINE TYPE	DESCRIPTION
———	CONTINUOUS	PRIMARY PROCESS FLOW LINE
———	CONTINUOUS	SECONDARY PROCESS FLOW LINE
———	CONTINUOUS	INSTRUMENT SUPPLY OR CONNECTION TO PROCESS
—x—x—	CONTINUOUS	UNDEFINED SIGNAL
—//—//—	CONTINUOUS	PNEUMATIC SIGNAL *
———	HIDDENX2	ELECTRIC SIGNAL
—L—L—	CONTINUOUS	HYDRAULIC SIGNAL
—A—A—	CONTINUOUS	CAPILLARY TUBE
—∿—∿—	CONTINUOUS	ELECTROMAGNETIC OR SONIC SIGNAL ** (GUIDED)
~ ~	CONTINUOUS	ELECTROMAGNETIC OR SONIC SIGNAL ** (NOT GUIDED)
—o—o—	CONTINUOUS	INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK
—•—•—	CONTINUOUS	MECHANICAL LINK
OPTIONAL BINARY (ON-OFF) SYMBOLS		
—//—//—	CONTINUOUS	PNEUMATIC BINARY SIGNAL
—/—/—	DASHED2	ELECTRIC BINARY SIGNAL
—E—E—	CONTINUOUS	ELECTRICAL HEAT TRACING
—S—S—	CONTINUOUS/DASHED2	STEAM HEAT TRACING
— — —	DASHED2	BURIED LINES
———	PHANTOM	EXISTING
XX	CENTER	FP – FLOOR PENETRATION RP – ROOF PENETRATION WP – WALL PENETRATION SB – SYSTEM BREAK

NOTES:
"OR" MEANS USER CHOICE; CONSISTENCY IS RECOMMENDED.

* THE PNEUMATIC SIGNAL SYMBOL APPLIES TO A SIGNAL USING ANY GAS AS THE SIGNAL MEDIUM. IF GAS OTHER THAN AIR IS USED, THE GAS MAY BE IDENTIFIED BY A NOTE ON THE SIGNAL SYMBOL OR OTHERWISE.

** ELECTROMECHANIC PHENOMENA INCLUDE HEAT, RADIO WAVES, NUCLEAR RADIATION, AND LIGHT.

SYMBOL	DESCRIPTION
X	P=PURGE OR FLUSHING DEVICE R=RESET FOR LATCH-TYPE ACTUATOR I =UNDEFINED INTERLOCK LOGIC
X	S=SOLENOID D=DIGITAL P=PILOT T=TRAP M=MAGNETIC FLOWMETER SP=SET POINT
√	ROOT EXTRACTION
±	BIAS
×	MULTIPLY
>	HIGH SELECTING
<	LOW SELECTING
↑	HIGH LIMITING
↓	LOW LIMITING
K	PROPORTIONAL
-K	REVERSE PROPORTIONAL
+	SUMMING
÷	DIVIDING
CA-1	EQUIPMENT TAG
X Y-β	PIPE OR WIRE IS CONTINUED ON DRAWING X (INCLUDING SHEET NUMBER), GRID COORDINATE (Y-β); FLOW IS TO THAT DRAWING.
X Y-β	PIPE OR WIRE IS CONTINUED ON DRAWING X (INCLUDING SHEET NUMBER), GRID COORDINATE (Y-β); FLOW IS FROM THAT DRAWING.
X Y-β	PIPE OR WIRE IS CONTINUED ON DRAWING X (INCLUDING SHEET NUMBER), GRID COORDINATE (Y-β); FLOW IS IN BOTH DIRECTIONS

ACRONYMS

EQUIPMENT

AHU – AIR HANDLING UNIT
ASV – AIR SWITCH VALVE
CA – AIR COMPRESSOR
CAE – COOLER, AIR EVAPORATIVE
D – DAMPER
DAD – DESICCANT AIR DRYER
DAMD – DUCT AIR MONITOR DEVICE
ES – EXHAUST STACK
FAB – FILTER AIR BOX
FANE – FAN EVALUATOR
FAR – FILTER AIR REPLACEABLE
FC – FAN CIRCULATING
FD – FIRE DAMPER
FE – FAN EXHAUST
FRA – FAN, RETURN AIR
FRL – FILTER AIR ROLL
FS – FAN SUPPLY
HEPA – HIGH EFFICIENCY PARTICULATE AIR FILTER
HX – HEAT EXCHANGER
MT – MOISTURE TRAP
OIM – OPERATOR INTERFACE MODULE
SST – SYSTEM STATIC TOTALIZER
TCA – TANK COMPRESSED AIR
TK – TANK
T – TRAP
V – VALVE
VFD – VARIABLE FREQUENCY DRIVE/MOTOR CONTROLLER
YS – PLC CONTROL OUTPUT

MINOR EQUIPMENT

OPEN DRAIN ANNOTATIONS
RD – RADIOACTIVE DRAIN TO DRAIN HEADER
ND – NON-RADIOACTIVE DRAIN
AW – ACID WASTE
NW – NORMAL WASTE
OW – OIL WASTE
SW – SANITARY WASTE

LINE VALVE STATUS SYMBOLS

TYPICAL VALVE ANNOTATIONS

FO – FAIL OPEN
FC – FAIL CLOSED
FL – FAIL LOCKED (POSITION DOES NOT CHANGE)
FI – FAIL INDETERMINATE
FAI – FAIL AS IS
NO – NORMALLY OPEN
NC – NORMALLY CLOSED
LO – LOCKED OPEN
LC – LOCKED CLOSED

MISCELLANEOUS ACRONYMS

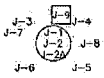
WP – WALL PENETRATION
FP – FLOOR PENETRATION
RP – ROOF PENETRATION
AO – ANALOG OUTPUT
AI – ANALOG INPUT
DI – DIGITAL INPUT
RO – RELAY OUTPUT

INSTRUMENT/FUNCTION SYMBOLS

	PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR	FIELD MOUNTED	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR	AUXILIARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A
SHARED DISPLAY, SHARED CONTROL	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A
COMPUTER FUNCTION	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A
PROGRAMMABLE LOGIC CONTROL	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A

SYMBOL	DESCRIPTION
	FLOW INDICATOR TO BE USED IN CONJUNCTION WITH P016
J1 J2 J2A J1 J2 J2A	INSTRUMENTS SHARING COMMON HOUSING
J1 J2 J2A	PANEL MOUNTED PATCHBOARD POINT 12.

INSTRUMENTATION IDENTIFICATION TABLE



J-1	COMPONENT FUNCTION NUMBER
J-2	COMPONENT SEQUENCE NUMBER
J-2A	COMPONENT SEQUENCE # CONT'D.
J-3	VENDOR DESIGNATION
J-4	PANEL NUMBER
J-5	APPLICABLE NOTES
J-6	SYSTEM ACRONYM
J-7	ASME TEST SYMBOL FOR TEST ONLY OR TEST PLUS NORMAL USE
J-8	SET-POINT(S)
J-9	FUNCTION (SEE INSTRUMENT/FUNCTION SYMBOLS)

NOTE:
INSTRUMENTATION FUNCTION IDENTIFIERS (J-1) AND FUNCTION SYMBOLS PER ANSI/ISA S5.1.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	5/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SCS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZERO LIQUID DISCHARGE
P&ID – LEGENDS & SYMBOLS TA-50
TA-52
TA-63
BLDG 181,182,183

DRAWN T. HARPER
DESIGN T. HARPER
CHECKED S. STUHRKE
DATE 09/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROMLY

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

SHEET M-0001
29 OF 88

CLASSIFICATION
REVIEWER EDWARD ARTIGLIA
DATE 5/22/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

100761-C55751-M00001

REVISION 1, DATE 9-16-2004

VALVE & INSTRUMENTATION FUNCTION IDENTIFIERS (SELECTED)

FIRST-LETTERS	INDICATING MEASURED OR CONTROLLED VARIABLE	CONTROLLERS			VALVES	READOUT DEVICE		SWITCHES AND * ALARM DEVICES			TRANSMITTERS			SOLENOIDS RELAYS COMPUTING DEVICES	PRIMARY ELEMENT	TEST POINT	WELL OR PROBE	VIEWING DEVICE GLASS	SAFETY DEVICE	FINAL ELEMENT
		RECORDING	INDICATING	BLIND		RECORDING	INDICATING	HIGH**	LOW	COMB	RECORDING	INDICATING	BLIND							
A	ANALYSIS	ARC	AIC	AC		AR	AI	ASH	ASL	ASHL	ART	AIT	AT	AY	AE	AP	AW			AV
B	BURNER/ COMBUSTION	BRC	BIC	BC		BR	BI	BSH	BSL	BSHL	BRT	BIT	BT	BY	BE		BW	BG		BZ
C	CONDUCTIVITY		CIC	CC											CE					
D	USER'S CHOICE																			
E	VOLTAGE	ERC	EIC	EC		ER	EI	ESH	ESL	ESHL	ERT	EIT	ET	EY	EE					EZ
F	FLOW RATE	FRC	FIC	FC	FCV FICV	FR	FI	FSH	FSL	FSHL	FRT	FIT	FT	FY	FE	FP		FG		FV
FQ	FLOW QUANTITY	FQRC	FQIC			FQR	FQI	FQSH	FQSL			FQIT	FQT	FQY	FQE					FQV
FF	FLOW RATIO	FFRC	FFIC	FFC		FFR	FFI	FFSH	FFSL						FE					FFV
G	USER'S CHOICE																			
H	HAND		HIC	HC	HV					HS										HV
I	CURRENT	IRC	IIC			IR	II	ISH	ISL	ISHL	IRT	IIT	IT	IY	IE					IZ
J	POWER	JRC	JIC	ARC		JR	JI	JSH	JSL	JSHL	JRT	JIT	JT	JY	JE					JV
K	TIME	KRC	KIC	KC	KCV	KR	KI	KSH	KSL	KSHL	KRT	KIT	KT	KY	KE					KV
L	LEVEL	LRC	LIC	LC	LCV	LR	LI	LSH	LSL	LSHL	LRT	LIT	LT	LY	LE		LW	LG		LV
M	MOISTURE/ HUMIDITY						MI						MT							
N	USER'S CHOICE																			
O	USER'S CHOICE																			
P	PRESSURE VACUUM	PRC	PIC	PC	PCV	PR	PI	PSH	PSL	PSHL	PRT	PIT	PT	PY	PE	PTP			PSV PSE	PV
PD	PRESSURE DIFFERENTIAL	PDRC	PDIC	PDC	PDCV	PDR	PDI	PDSH	PDSL		PDRT	PDIT	PDT	PDY	PE	PTP				PDV
Q	QUALITY	QRC	QIC			QR	QI	QSH	QSL	QSHL	QRT	QIT	QT	QY	QE					QZ
R	RADIATION	RRC	RIC	RC		RR	RI	RSH	RSL	RSHL	RRT	RIT	RT	RY	RE		RW			RZ
S	SPEED	SRC	SIC	SC	SCV	SR	SI	SSH	SSL	SSHL	SRT	SIT	ST	SY	SE					SV
T	TEMPERATURE	TRC	TIC	TC	TCV	TR	TI	TSH	TSL	TSHL	TRT	TIT	TT	TY	TE	TP	TW		TSE	TV
T	TEMPERATURE DIFFERENTIAL	TDRC	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL		TDRT	TDIT	TDT	TDY	TDE	TDP TP	TDW TW			TDV
U	MULTIVARIABLE					UR	UI							UY						UV
V	MACHINERY VIBRATION ANALYSIS					VR	VI	VSH	VSL	VSHL	VRT	VIT	VT	VY	VE					VZ
W	WEIGHT FORCE	WRC	WIC	WC	WCV	WR	WI	WSH	WSL	WSHL	WRT	WIT	WT	WY	WE					WZ
WD	WEIGHT FORCE DIFFERENTIAL	WDRC	WDIC	WDC	WDCV	WDR	WDI	WDSH	WDSL		WDRT	WDIT	WDT	WDY	WDE WE					WDZ
X	USER'S CHOICE																			
Y	EVENT STATE PRESENCE		YIC	YC		YR	YI	YSH	YSL				YT	YY	YE					YZ
Z	POSITION DIMENSION	ZRC	ZIC	ZC	ZCV	ZR	ZI	ZSH	ZSL	ZSHL	ZRT	ZIT	ZT	ZY	ZE					ZV
ZD	GAUGING DEVIATION	ZDRC	ZDIC	ZDC	ZDCV	ZDR	ZDI	ZDSH	ZDSL		ZDRT	ZDIT	ZDT	ZDY	ZDE					ZDV

NOTE:
THIS TABLE IS NOT ALL-INCLUSIVE, SEE LEM CH. 1, SECTION 230

*A, ALARM, THE ANNUNCIATING DEVICE, MAY BE USED IN THE SAME FASHION AS, SWITCH, THE ACTING DEVICE.

** THE LETTERS H AND L MAY BE OMITTED IN THE UNDEFINED CASE.

OTHER POSSIBLE COMBINATIONS:

FQ	(RESTRICTION ORIFICE)	PFR	(RATIO)
FRK, HIK	(CONTROL STATIONS)	KQI	(RUNNING TIME INDICATOR)
FX	(ACCESSORIES)	QQI	(INDICATING COUNTER)
TJR	(SCANNING RECORDER)	WKIC	(RATE-OF-WEIGHT-LOSS CONTROLLER)
LLH	(PILOT LIGHT)	HMS	(HAND MOMENTARY SWITCH)

100761-C55751-M00002

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	HL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZERO LIQUID DISCHARGE
P&ID - LEGENDS & SYMBOLS TA-50 TA-52 TA-63

BLDG 181,182,183

DRAWN T. HARPER
DESIGN T. HARPER
CHECKED S. STUHRKE
DATE 09/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BIGGHY

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

SHEET M-0002
30 OF 88

CLASSIFICATION
REVIEWER EDWARD ARTIGLIA DATE 8/22/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

PROCESS FLOW DIAGRAMS AND P&ID SYMBOLS (GENERAL INSTRUMENT OR FUNCTION SYMBOLS)

SYMBOL	DESCRIPTION
	ANGLE VALVE
	BUTTERFLY VALVE
	ROTARY VALVE
	3-WAY VALVE
	4-WAY VALVE
	OS & Y VALVE
	DIAPHRAGM VALVE
	PRESSURE RELIEF
	DIAPHRAGM ACTUATOR
	TWO-WAY VALVE, FAIL CLOSED
	TWO-WAY VALVE, FAIL OPEN
	3-WAY VALVE W/DIAPHRAM ACTUATOR
	4-WAY VALVE W/DIAPHRAM ACTUATOR
	SPRING-OPPOSED SINGLE-ACTING ACTUATOR
	SPRING-OPPOSED DOUBLE-ACTING ACTUATOR
E/H	ELECTROHYDRAULIC ACTUATOR
	HAND ACTUATOR OR HANDWHEEL
	RESTRICTION ORIFICE IN PROCESS LINE
	RESTRICTION ORIFICE DRILLED IN VALVE
	FLOW STRAIGHTING VANE
	DIAPHRAGM PRESSURE-BALANCED
	PRESSURE-REDUCING REGULATOR, SELF-CONTAINED, WITH HANDWHEEL, ADJUSTABLE SET POINT
	PRESSURE-REDUCING REGULATOR WITH EXTERNAL PRESSURE TAP
	DIFFERENTIAL-PRESSURE-REDUCING REGULATOR WITH INTERNAL AND EXTERNAL TAPS
	BACKPRESSURE REGULATOR, SELF-CONTAINED
	BACKPRESSURE REGULATOR WITH EXTERNAL PRESSURE TAP
PI	PRESSURE-REDUCING REGULATOR WITH INTEGRAL OUTLET PRESSURE RELIEF VALVE, AND OPTIONAL PRESSURE INDICATOR
PI	PRESSURE INDICATOR
	FLOW DIRECTION
	PRESSURE RELIEF OR SAFETY VALVE
	VACUUM RELIEF VALVE
	PRESSURE RELIEF OR SAFETY VALVE, STRAIGHT-THROUGH PATTERN, SPRING- OR WEIGHT-LOADED, OR WITH INTEGRAL PILOT
	RUPTURE DISK OR SAFETY HEAD FOR VACUUM RELIEF

SYMBOL	DESCRIPTION
	RUPTURE DISK OR SAFETY HEAD FOR PRESSURE RELIEF
	PILOT LIGHT X=COLOR, R=RED, G=GREEN
	FLEX. CONNECTION (RUBBER)
	FLEX. CONNECTION (STEEL BRAIDED)
	SINGLE PITOT TUBE OR PITOT VENTURI TUBE
	FLOW METER
	FLOW NOZZLE OR VENTURI
	REDUCER
	SCREWED CAP
	PIPE CAP
	HOSE CONNECTION
	FLANGED CONNECTION (PIPING OR EQUIP)
	FLOW ORIFICE FIXED
	STRAINER WITH VALVE
	Y-STRAINER
	COMPRESSED AIR
	DUCTED AIR FLOW FROM SPACE
	CAPPED AIR DUCT
	GATE VALVE (OPEN)
	GATE VALVE (CLOSED)
	GLOBE VALVE (OPEN)
	GLOBE VALVE (CLOSED)
	NEEDLE VALVE (OPEN)
	NEEDLE VALVE (CLOSED)
	PLUG VALVE (OPEN)
	PLUG VALVE (CLOSED)
	BALL VALVE (OPEN)
	BALL VALVE (CLOSED)
	CHECK VALVE
	SPRING CHECK VALVE
	ANGLE VALVE (OPEN)
	ANGLE VALVE (CLOSED)
	SAFETY OR RELIEF VALVE (INLET PORT SHOWN CLOSED)
	THREE-WAY VALVE (CLOSED PORT DARKENED)
	FOUR-WAY VALVE (ARROWS INDICATE FLOW DIRECTION)
	BALL-CHECK VALVE
	DUAL PURGE VALVE
	ALARM VALVE
	AIR INTAKE FILTER
	ALARM
	BUBBLE GAUGE

SYMBOL	DESCRIPTION
	IN-LINE FILTER
	ATMOSPHERIC FILTER
	DOUBLE BASKET STRAINER
	HOSE REEL
	OPEN DRAIN (SHOWN)
XX	XX-- DRAIN SYSTEM ANNOTATIONS
	DRAIN (PLAN VIEW)
	CLEANOUT (PLAN VIEW)
	SANITARY VENT
	SILENCER/MUFFLER
	SPACE PENETRATIONS
	FIXED LOUVERS
TRAP XX	TRAP XX ANNOTATES FUNCTION
L	LUBRICATOR
	55 GALLON DRUM
	THERMOSTATIC VENT
	SPRINKLER ALARM (WATER MOTOR GONG)
	FLOW ALARM VALVE
	COOLING TOWER
	CHILLER
	HORIZONTAL CENTRIFUGAL PUMP
	CENTRIFUGAL FAN WITH VARIABLE INLET VANES
	BLOWER/CENTRIFUGAL FAN
	ROTARY PUMP
	VERTICAL WET PIT PUMP
	PROGRESSIVE CAVITY PUMP
	VERTICAL SUMP PUMP
	HEATER
	HEAT EXCHANGER

SYMBOL	DESCRIPTION
	AXIAL FAN
	AXIAL FAN WITH VARIABLE INLET VANES
	2-STAGE RECIPROCATING AIR COMPRESSOR
	SINGLE STAGE RECIPROCATING AIR COMPRESSOR
	2-STAGE ROTARY SCREW AIR COMPRESSOR
	RECIPROCATING PUMP
	PRESSURE VESSELS, VERTICAL (SHOWN) OR HORIZONTAL (TANKS, RECEIVERS, SEPARATORS, SUMPS, ETC.)
	TANK
	HVAC COIL (A) HW HEATING WATER DX DIRECT EXPANSION CH CHILLED WATER STM STEAM (B) HCL HEATING COIL CCL COOLING COIL
	UNIT HEATER (A) HW HEATING WATER DX DIRECT EXPANSION STM STEAM (B) HCL HEATING COIL
	PRESSURIZED GAS BOTTLE
	DOUBLE CONTAINMENT TANK
	HUMIDIFIER
	MANUAL BALANCE DAMPER
	MULTI POINT PITOT TUBE ARRAY
NO/NC	DAMPER (NORMALLY OPEN) OR NORMALLY CLOSED
	EVAPORATIVE AIR COOLER
	OPPOSED BLADE DAMPER FOR HVAC EQUIPMENT
	BACKDRAFT DAMPER

SYMBOL	DESCRIPTION
	SINGLE DUCT VARIABLE VOLUME BOX
	WING TYPE FACE AND BYPASS DAMPER (A) HW HEATING WATER DX DIRECT EXPANSION CH CHILLED WATER STM STEAM (B) HCL HEATING COIL CCL COOLING COIL
	COLLECTION BIN
	CYCLONE SEPARATOR
	FLUID RECOVERY PUMP
	DUAL SERVICE HEAT EXCHANGER
	MULTI BLADE DAMPER
	SINGLE BLADE DAMPER
M	MOTOR
	TEST PORT
	PILOT LIGHT
	SEPARATOR
	MIST ELIMINATOR
	HEPA FILTER
	CARBON ABSORBER FILTER
	FILTER
SD	SUCTION DIFFUSER
	SUMP PIT DRAIN (NS)

NO.	DATE	CLASS REV.	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	08/23/12	-	-	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
1	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZERO LIQUID DISCHARGE P&ID - LEGENDS & SYMBOLS TA-50 TA-52 TA-63

BLDG 181,182,183

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STURKE
DATE	08/12/2011

SUBMITTED NORMAN LACY APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-0003 31 OF 88

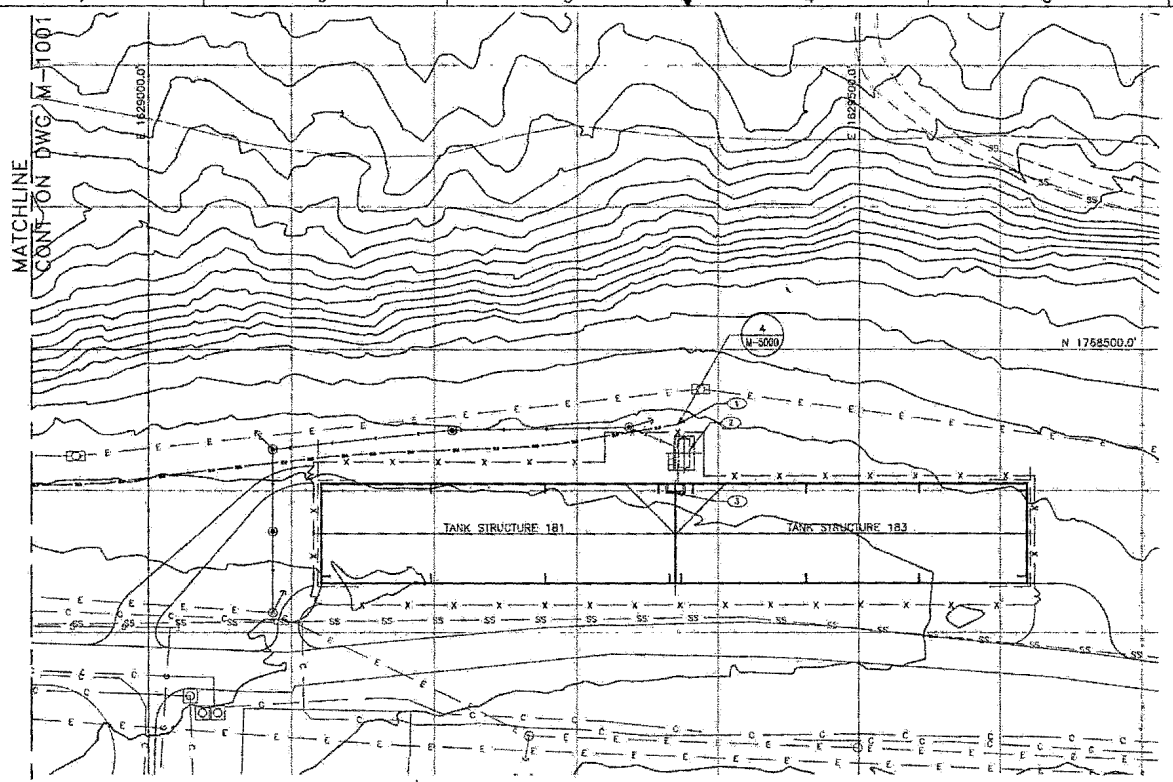
CLASSIFICATION REVIEWER EDWARD ARTIGLIA DATE 8/22/12

PROJECT ID 100761 DRAWING NO C-55751 REV 2

100761-C55751-M00003

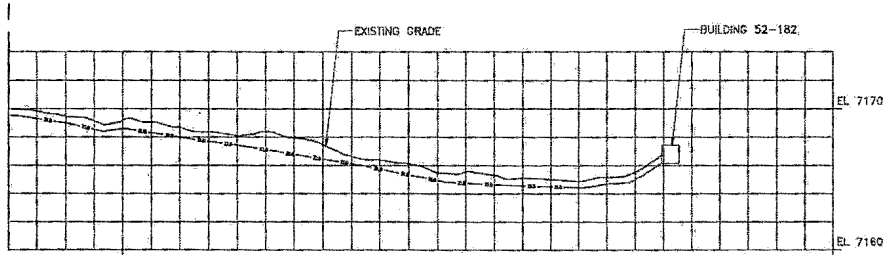
Printed by: SWHH
FILE NAME: C55751-M-0003-R2.DWG
Plot Date: 9/24/2012

55751



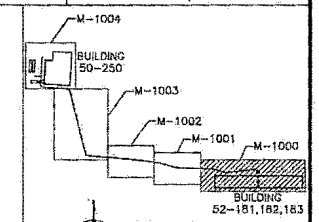
TRANSFER PIPING PLAN 1

1"=40'-0"



PIPING PROFILE

SCALE: HORIZONTAL 1"=40.0'
VERTICAL 1"=4.0'



KEY PLAN

SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. MINIMUM BURIAL DEPTH (COVER) OF THE ZLD TRANSFER PIPING SHALL BE 4 FEET.
3. TOPOGRAPHIC MAP IS AS PROVIDED BY OWNER, LOS ALAMOS NATIONAL LABORATORY (LANL). COORDINATE GRID SHOWN IS BASED UPON TOPOGRAPHIC MAP FILE PROVIDED; WITH PLAN NORTH AS INDICATED, ELEVATIONS PER NAVD 88 AND OTHER DATA PER NGVD 29.
4. EXISTING UTILITIES ARE SHOWN PER DRAWING "UTILITY COMPOSITE MAP" AS PRODUCED BY UTILITIES AND INFRASTRUCTURE DATED 10-19-2010. UNDERGROUND TRANSFER PIPING PACKAGE SHALL VERIFY LOCATIONS OF UTILITIES IN FIELD AT TIME OF CONSTRUCTION.
5. ANY CHANGES TO THE PIPE ROUTING SHOWN OR OTHER CHANGES IMPLEMENTED THE "FIELD CHANGE NOTICE CRITERIA DOCUMENT" SHALL BE FOLLOWED.

KEYED NOTES

1. LIMITS OF WORK FOR THE UNDERGROUND TRANSFER PIPING PACKAGE AND THE UNDERGROUND TRANSFER PIPE (ZLD) SHALL BE FROM THE TERMINATION POINT NEAR BUILDING 50-250 (SEE DRAWING M-4000) TO INSIDE THE NORTHERN FENCE LINE IN THE TA-52 EVAPORATION AND TANK AREA AS INDICATED ON THIS DRAWING. UNDERGROUND TRANSFER PIPING PACKAGE SHALL TERMINATE THE TRANSFER PIPE ABOVEGROUND AND APPROXIMATELY FIVE (5') FEET AWAY FROM THE PUMP AND EQUIPMENT. PIPING SHALL BE PROVIDED WITH A TEMPORARY COVER TO PREVENT CONTAMINATION AND FOR COMPLETION OF TESTING. FINAL CONNECTION TO PIPING FROM THE PUMPS AND EQUIPMENT WILL BE COMPLETED BY THE PUMP AND EQUIPMENT PACKAGE.
2. PUMP AND EQUIPMENT DETAILS ARE PART OF THE PUMP AND EQUIPMENT PACKAGE.
3. LEAK DETECTION SYSTEM AND DETAILS ARE PART OF THE TA-52 EVAPORATION AND TANK AREA PACKAGE.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
2	8/26/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	4/26/12			REVISED BASED ON ENCLOSURE DESIGN.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TRANSFER PIPING PLAN & PROFILE 1

BLDG N/A TA-52

DRAWN T. HARPER
DESIGN T. HARPER
CHECKED S. STUHRKE
DATE 09/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-1000

32 OF 88

CLASSIFICATION
REVIEWER EDWARD ARTIGUA
DATE 8/23/12

PROJECT ID 100761
DRAWING NO C-55751
REV 3

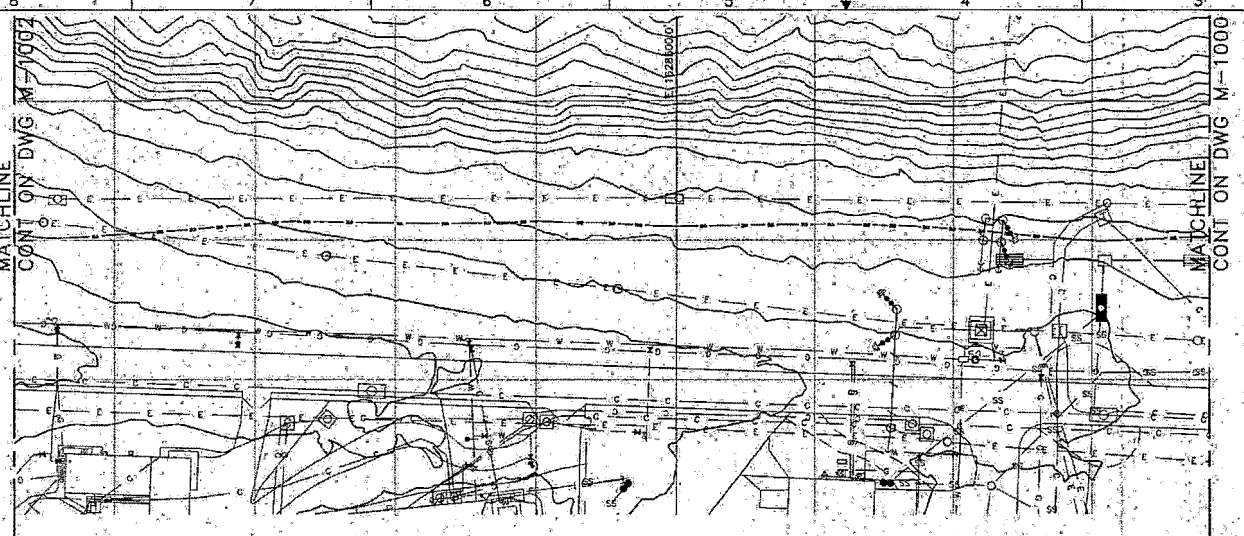
STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

8-23-12

100761-C55751-M00004

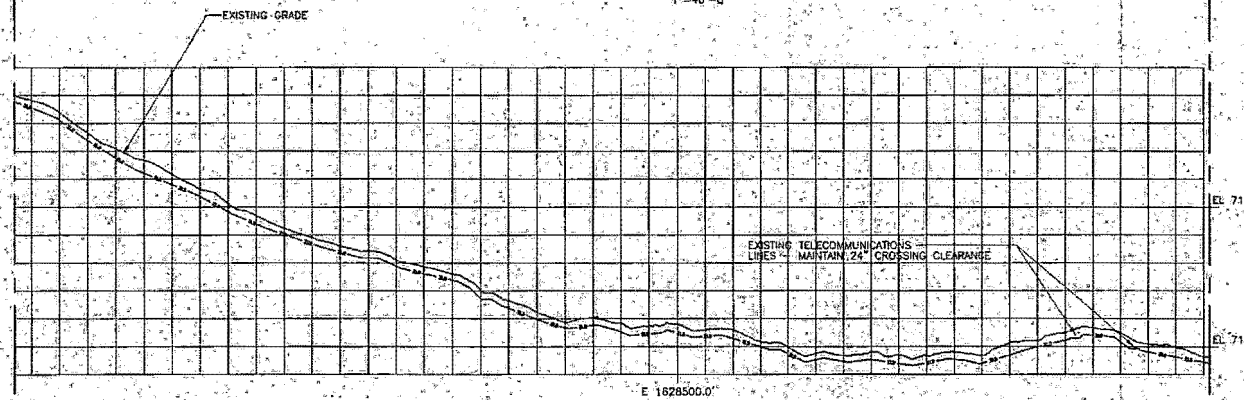
Plotted By: SHAH Plot Date: 8/23/2012
FILE NAME: C55751-M-1000-R3.DWG

08037



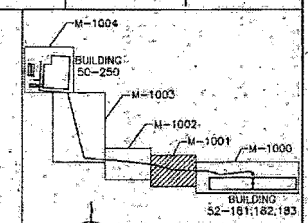
TRANSFER PIPING PLAN 2

1"=40'-0"



PIPING PROFILE

SCALE: HORIZONTAL 1"=40.0'
VERTICAL 1"=4.0'



KEY PLAN

SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. MINIMUM BURIAL DEPTH (COVER) OF THE ZLD TRANSFER PIPING SHALL BE 4 FEET.
3. CARE AND HAND EXCAVATION WILL BE REQUIRED NEAR AND WHEN CROSSING UTILITIES OR OTHER PIPELINES WITH THE ZLD TRANSFER PIPING. MAINTAIN AT LEAST THE MINIMUM CLEARANCE NOTED ON THE PIPING PROFILE.
4. FOR ADDITIONAL NOTES SEE SHEET M-1000.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	6/28/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TRANSFER PIPING PLAN & PROFILE 2

BLDG N/A TA-52

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STUHRKE
DATE	09/12/2011

SUBMITTED: NORMAN LACY

APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET M-1001

33 OF 88

CLASSIFICATION

REVIEWER EDWARD ARTIGLIA DATE 9/13/12

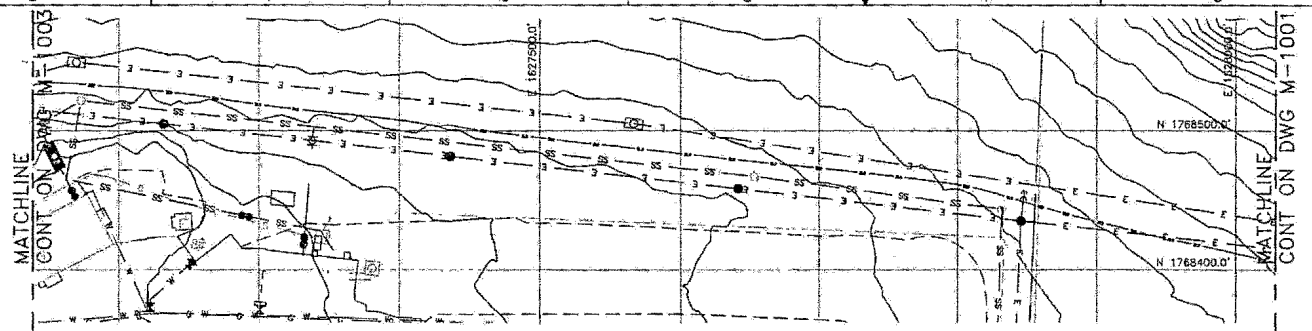
PROJECT ID 100761

DRAWING NO C-55751

REV 1

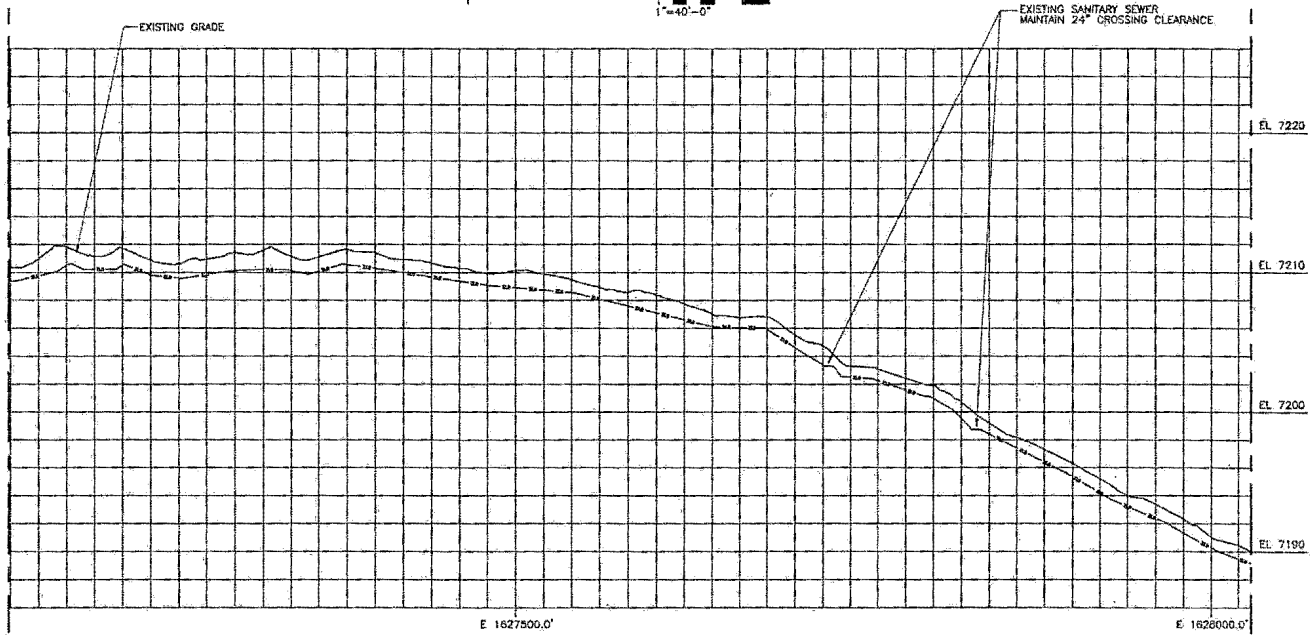
100761-C55751-M00005

08038



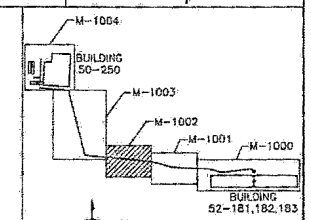
TRANSFER PIPING PLAN 3

1"=40'-0"



PIPING PROFILE

SCALE: HORIZONTAL 1"=40.0'
VERTICAL 1"=4.0'



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. MINIMUM BURIAL DEPTH (COVER) OF THE ZLD TRANSFER PIPING SHALL BE 4 FEET.
3. CARE AND HAND EXCAVATION WILL BE REQUIRED NEAR AND WHEN CROSSING UTILITIES OR OTHER PIPELINES WITH THE ZLD TRANSFER PIPING. MAINTAIN AT LEAST THE MINIMUM CLEARANCE NOTED ON THE PIPING PROFILE.
4. FOR ADDITIONAL NOTES SEE SHEET M-1000.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	6/26/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TRANSFER PIPING PLAN & PROFILE 3

BLDG N/A TA-52 TA-63

DRAWN T. HARPER
DESIGN T. HARPER
CHECKED S. STUHRKE
DATE 09/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

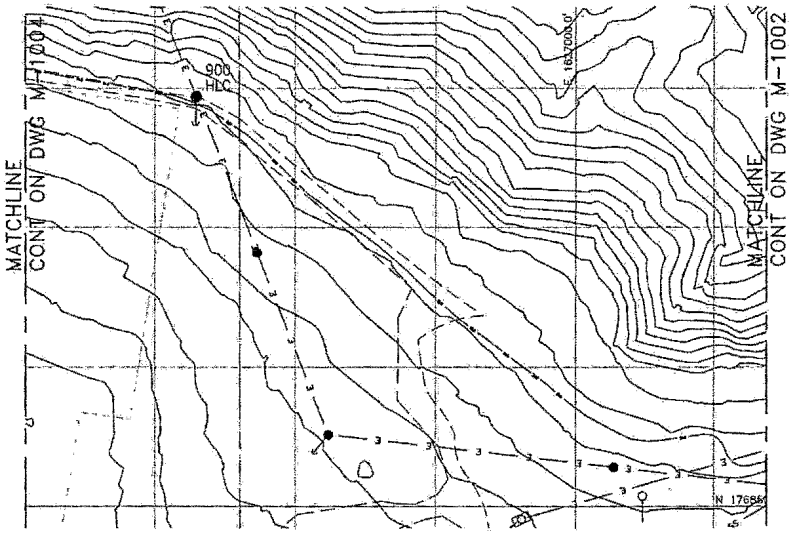
SHEET M-1002
34 OF 88

CLASSIFICATION
REVIEWER EDWARD ARTIGLIA
DATE 8/22/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

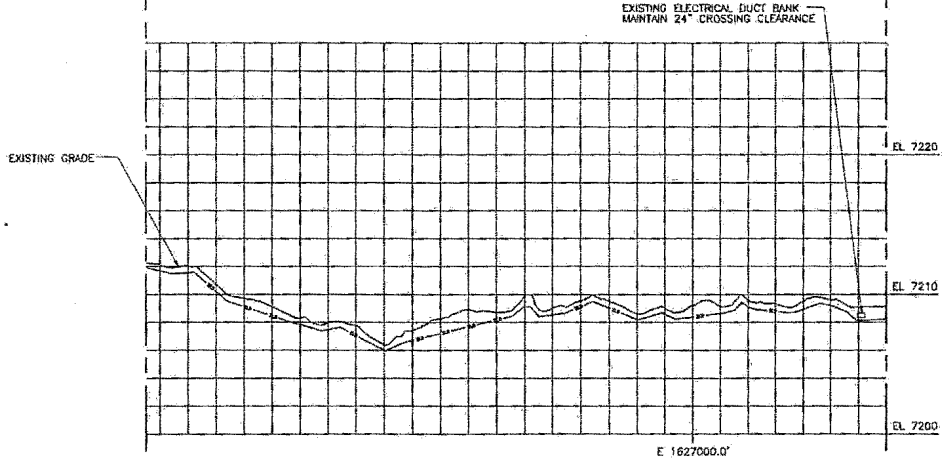
STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

100761-C55751-M00008



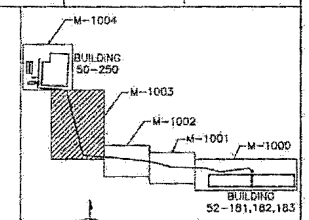
TRANSFER PIPING PLAN 4

40' 20' 0 20' 40'
1"=40'-0"



PIPING PROFILE

SCALE: HORIZONTAL 1"=40.0'
VERTICAL 1"=4.0'



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. MINIMUM BURIAL DEPTH (COVER) OF THE ZLD TRANSFER PIPING SHALL BE 4 FEET.
3. CARE AND HAND EXCAVATION WILL BE REQUIRED NEAR AND WHEN CROSSING UTILITIES OR OTHER PIPELINES WITH THE ZLD TRANSFER PIPING. MAINTAIN AT LEAST THE MINIMUM CLEARANCE NOTED ON THE PIPING PROFILE.
4. FOR ADDITIONAL NOTES SEE SHEET M-1000.

STEPHEN P. STUHRKE
NEW MEXICO
20659
PROFESSIONAL ENGINEER

100761-C55751-M00007

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	6/26/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TRANSFER PIPING PLAN & PROFILE 4

BLDG N/A TA-50 TA-63

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STUHRKE
DATE	09/12/2011

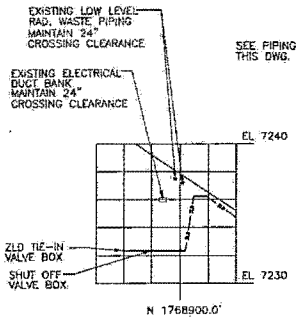
SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET M-1003
35 OF 88

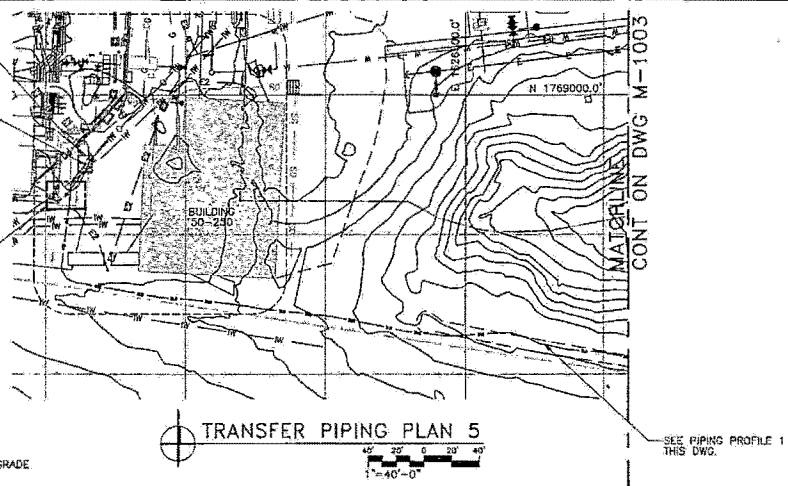
CLASSIFICATION
REVIEWER EDWARD ARTICLIA
DATE 8/27/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

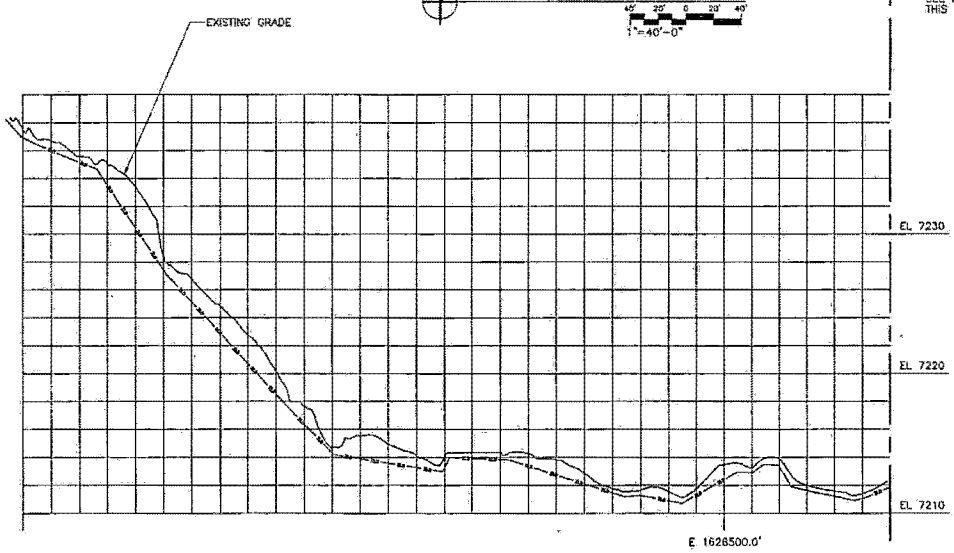


PIPING PROFILE 2–LOOKING EAST

SCALE: HORIZONTAL 1"=40.0'
VERTICAL 1"=4.0'

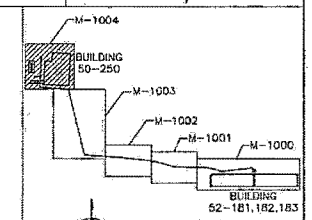


TRANSFER PIPING PLAN 5



PIPING PROFILE 1

SCALE: HORIZONTAL 1"=40.0'
VERTICAL 1"=4.0'



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. MINIMUM BURIAL DEPTH (COVER) OF THE ZLD TRANSFER PIPING SHALL BE 4 FEET.
3. CARE AND HAND EXCAVATION WILL BE REQUIRED NEAR AND WHEN CROSSING UTILITIES OR OTHER PIPELINES WITH THE ZLD TRANSFER PIPING. MAINTAIN AT LEAST THE MINIMUM CLEARANCE NOTED ON THE PIPING PROFILES.
4. FOR ADDITIONAL NOTES SEE SHEET M-1000.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	6/28/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TRANSFER PIPING PLAN & PROFILE 5

BLDG N/A TA-50

DRAWN T. HARPER
DESIGN T. HARPER
CHECKED S. STUHRKE
DATE 09/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-1004
36 OF 88

CLASSIFICATION
REVIEWER EDWARD ARTIGLIA
DATE 8/27/12

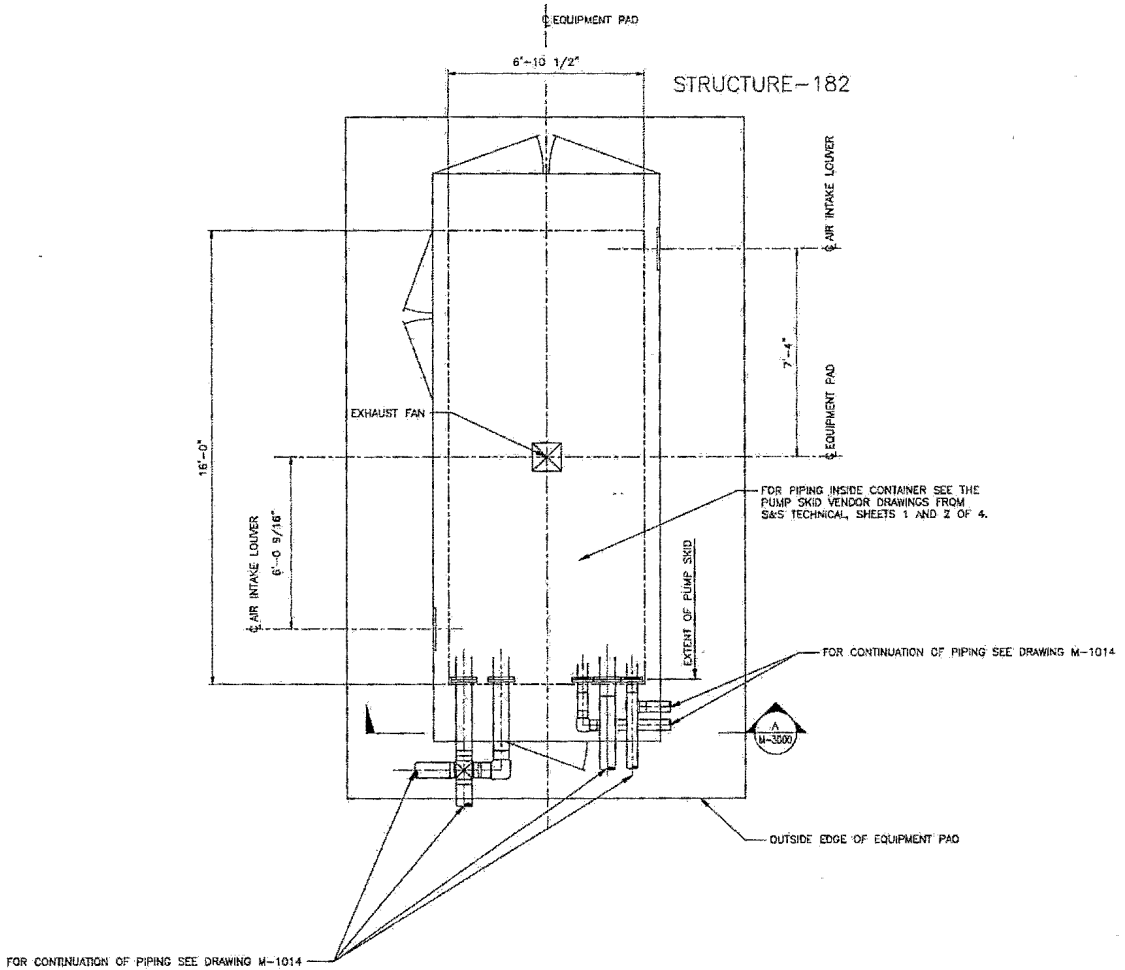
PROJECT ID 100761
DRAWING NO C-55751
REV 1

STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

100761-C55751-M00008

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. FOR EXHAUST FAN, LOUVERS, AND HEATER FOR THE ENCLOSURE, SEE DRAWING M-7002 "MECHANICAL BILL OF MATERIALS".



PUMPS ENCLOSURE ARRANGEMENT AND COMPOSITE PIPING

1" 6" 0 1' 2" 3"
1/2"=1'-0"

KEYED NOTES

(1) PIPING AND EQUIPMENT WITHIN STRUCTURE 182 ARE PART OF THE ENCLOSURE. THE LIMITS OF WORK FOR THE ENCLOSURE SHALL BE WITHIN STRUCTURE 182 AND INCLUDE ALL PIPING ABOVE GROUND TO TO THE SKID PIPING TERMINATIONS. THE ENCLOSURE PACKAGE SHALL BE RESPONSIBLE FOR THE REQUIRED PIPE PENETRATIONS AND WALL SLEEVES FOR THE ENCLOSURES AND THE PROPER SEALING OF THE PENETRATIONS WITH THE USE OF "LINK SEALS" OR THEIR EQUIVALENT. LINK SEALS AND SLEEVES ARE PRODUCTS OF PIPELINE SEAL AND INSULATOR OF HOUSTON, TEXAS. REQUIRED HEAT TRACING FOR FREEZE PROTECTION AS INDICATED ON DRAWINGS M-1014 AND M-6000 SHALL BE PROVIDED BY THE TA-52 EVAPORATION PACKAGE AND COORDINATED WITH THE UNDERGROUND TRANSFER PIPING PACKAGE AND THE ENCLOSURE PACKAGE. HEAT TRACING SHALL BE PROVIDED DOWN TO THE FROST LINE AND INTO STRUCTURE 182. HEAT TRACING SHALL BE PROVIDED IN ACCORDANCE WITH SPECIFICATION 22 0535 "ELECTRIC HEAT TRACING SYSTEMS". TEMPORARY COVERS FOR PIPING TO PREVENT CONTAMINATION AND FOR COMPLETION OF TESTING SHALL BE PROVIDED AS REQUIRED. FINAL CONNECTIONS TO THE PIPING TO AND FROM THE STRUCTURE WILL BE COMPLETED BY THE ENCLOSURE.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	4/25/12			REVISED BASED ON ENCLOSURE DESIGN. DRAWING TITLE, KEYED NOTES, ADDED NOTE 2, DELETED HOLD	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

PUMPS ENCLOSURE ARRANGEMENT AND COMPOSITE PIPING

BLDG: 182 TA-52

DRAWN: T. HARPER
DESIGN: T. HARPER
CHECKED: S. STUHRKE
DATE: 09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH GROPHY

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

SHEET: M-1005
37 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTIOLA
DATE: 8/23/12

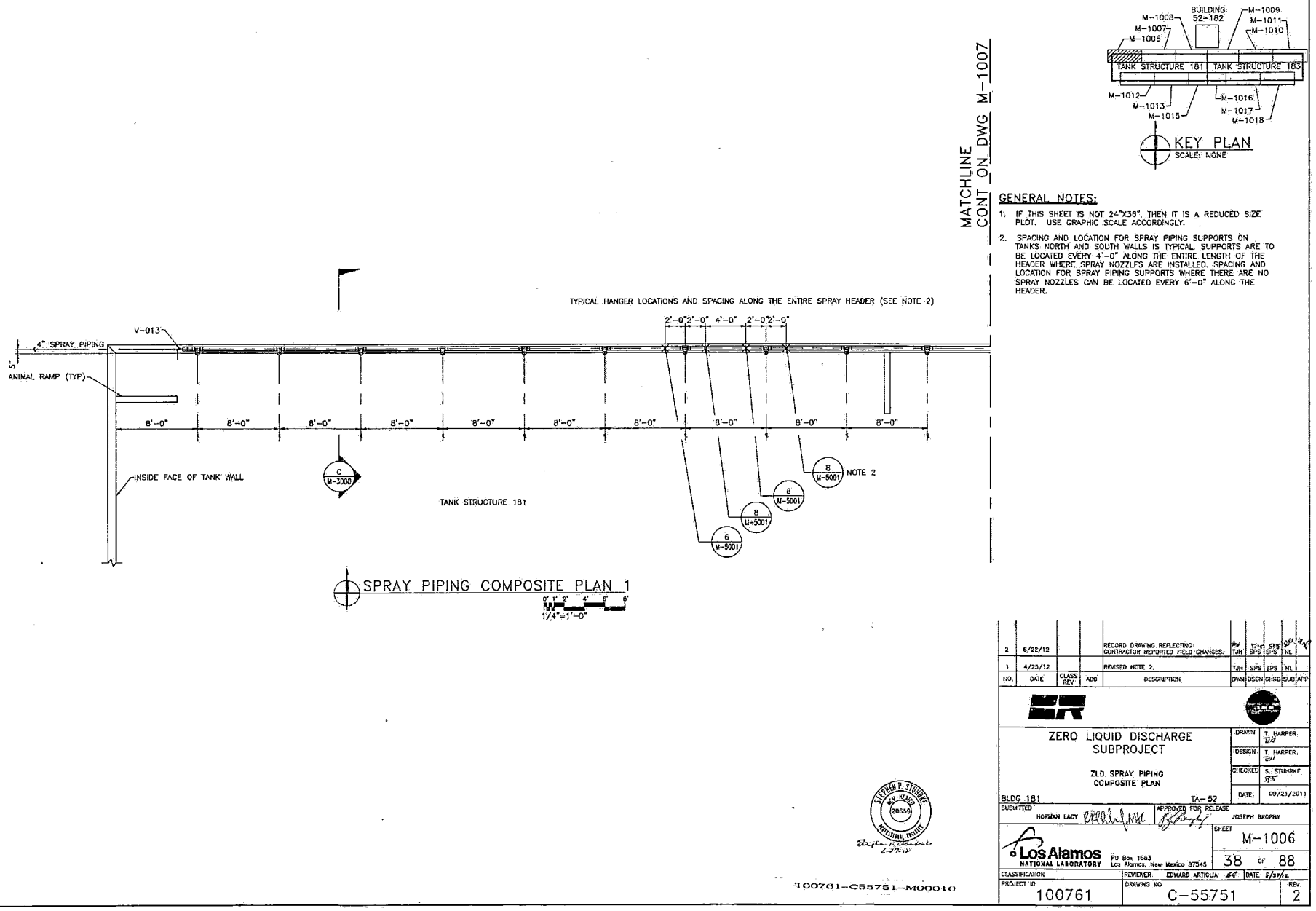
PROJECT ID: 100761
DRAWING NO: C-55751
REV: 3

100761-C55751-M00009

STEPHEN P. STUHRKE N.M. NEW MEXICO 20658 REGISTERED ENGINEER 8.23.12

Plotted By: SWAIN
FILE NAME: C55751-M-1005-R3.DWG
Plot Date: 8/23/2012

LA-UR-12-24809



GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANKS NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.

NO.	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	4/25/12			REVISED NOTE 2.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 181 TA-52

DRAWN: T. HARPER
DESIGN: T. HARPER
CHECKED: S. STUHRKE
DATE: 09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET M-1006
38 OF 88

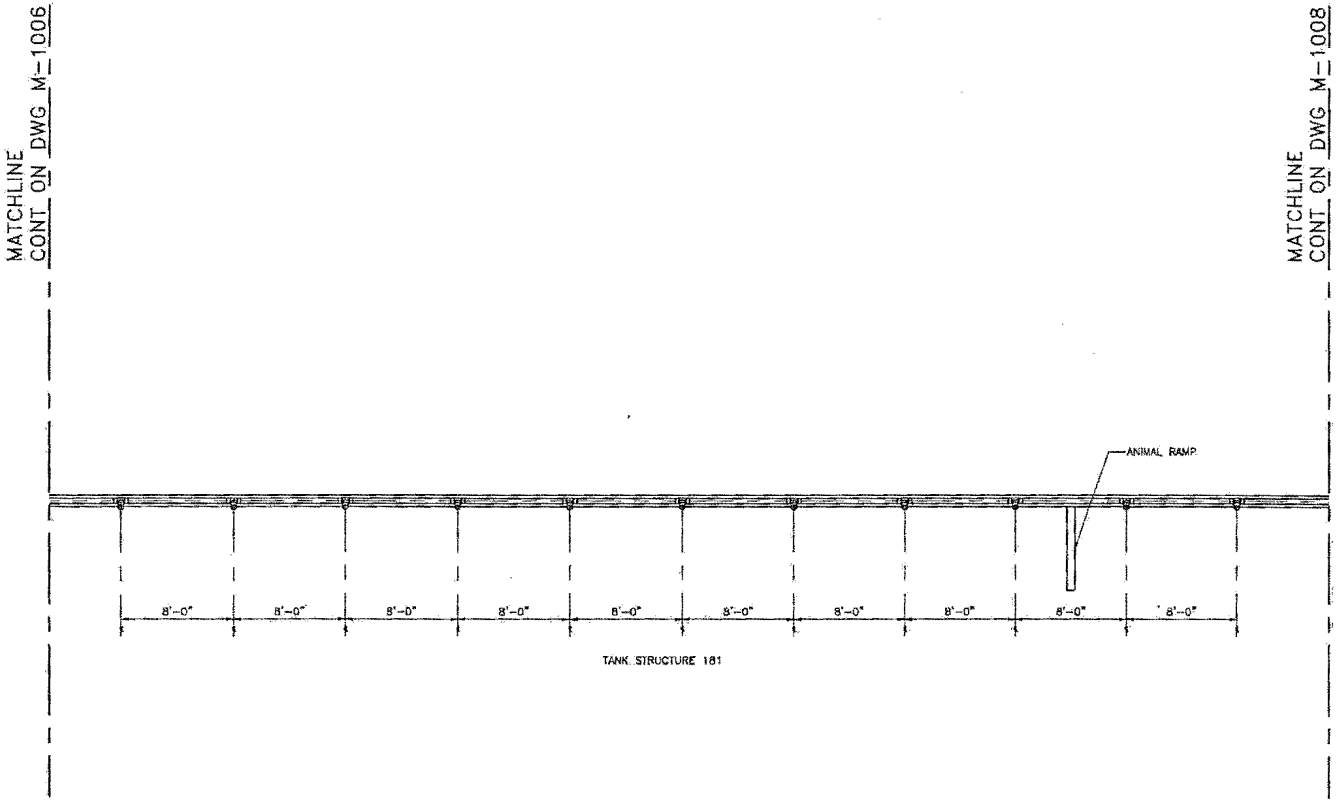
CLASSIFICATION
REVIEWER: EDWARD ARTIGLIA DATE 8/27/12

PROJECT ID	DRAWING NO	REV
100761	C-55751	2

STEPHEN P. STUHRKE NEW MEXICO 20650 PROFESSIONAL ENGINEER

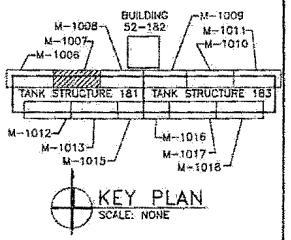
100761-C55751-M00010

C155751



SPRAY PIPING COMPOSITE PLAN 2

1/4"=1'-0"



KEY PLAN

SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANKS NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	4/25/12			REVISED NOTE 2	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 181 TA-52

DRAWN T. HARPER
DESIGN T. HARPER
CHECKED S. STUBBKE
DATE 09/21/2011

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-1007

39 OF 88

CLASSIFICATION REVIEWER EDWARD ARTIGLIA DATE 8/31/12

PROJECT ID 100761

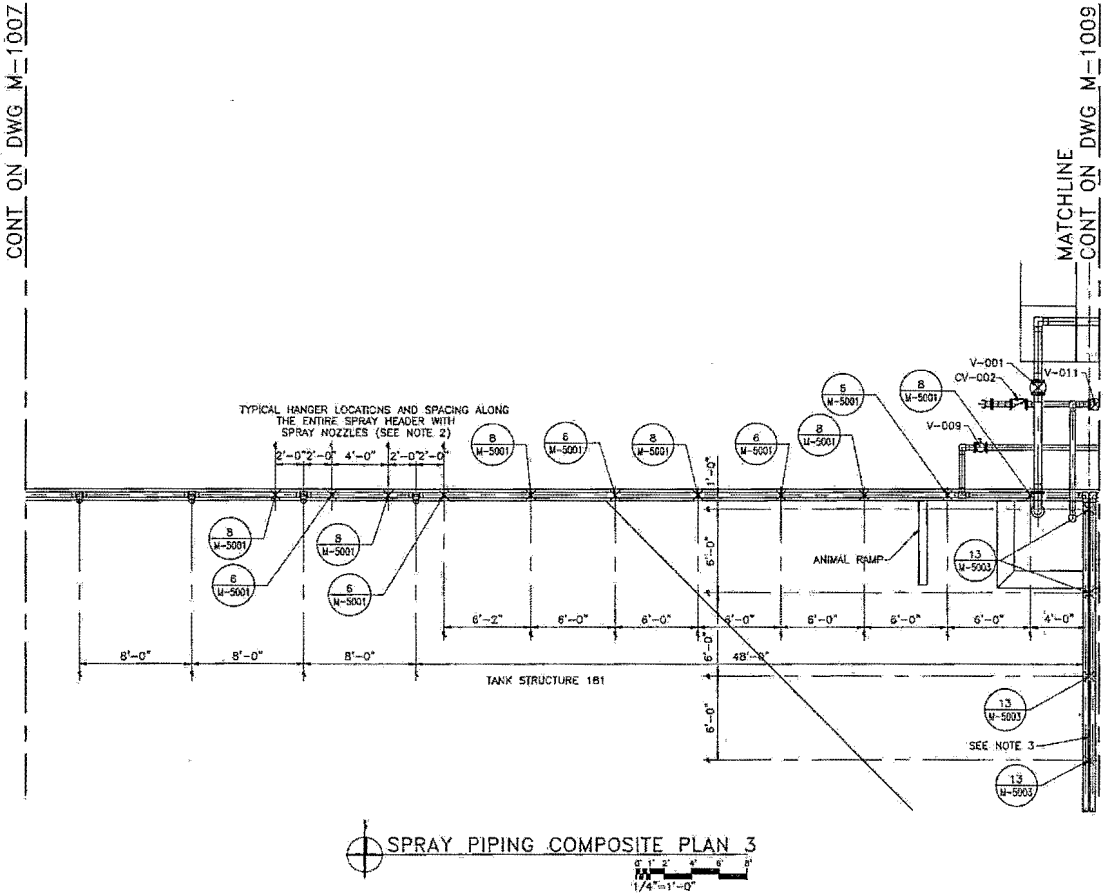
DRAWING NO. C-55751

REV 2

STEPHEN P. STUBBKE NEW MEXICO 20658 PROFESSIONAL ENGINEER

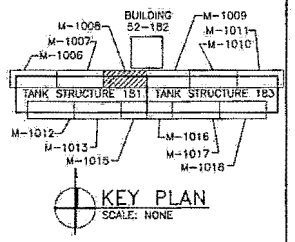
100761-C55751-M00011

D2012 015



SPRAY PIPING COMPOSITE PLAN 3

1/4"=1'-0"



KEY PLAN

SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANK NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.
3. SPACING AND LOCATION FOR ALL SPRAY PIPING SUPPORTS ON THE TANKS CENTER WALL SHALL BE LOCATED EVERY 6'-0" ALONG THE ENTIRE LENGTH. THE FIRST CENTER WALL SUPPORT AT THE NORTH WALL SHALL BE LOCATED WITHIN 1'-0" OF THE CENTERLINE OF THE NORTH WALL AND AS CLOSE TO THE ELBOW AS POSSIBLE. SIMILARLY, THE LAST CENTER WALL SUPPORT AT THE SOUTH WALL SHALL BE LOCATED WITHIN 1'-0" OF THE CENTERLINE OF THE SOUTH WALL AS CLOSE TO THE ELBOW AS POSSIBLE.

NO	DATE	CLASS / REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
4	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
3	5/2/12			ADDED DIMENSION FOR SUPPORT LOCATION	TJH	TJH	SPS	NL	
2	4/26/12			REVISED PIPING	TJH	TJH	SPS	NL	
1	4/25/12			REVISED PIPING AND NOTE 2, ADDED NOTE 3, ADDED SUPPORT LOCATIONS, AND REMOVED HOLD. (FCR NO. 7)	TJH	TJH	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 181 TA- 52

DRAWN: T. HARPER
DESIGN: T. HARPER
CHECKED: S. STURRKE
DATE: 09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

Los Alamos NATIONAL LABORATORY
P.O. Box 1663, Los Alamos, New Mexico 87545

SHEET M-1008
40 OF 88

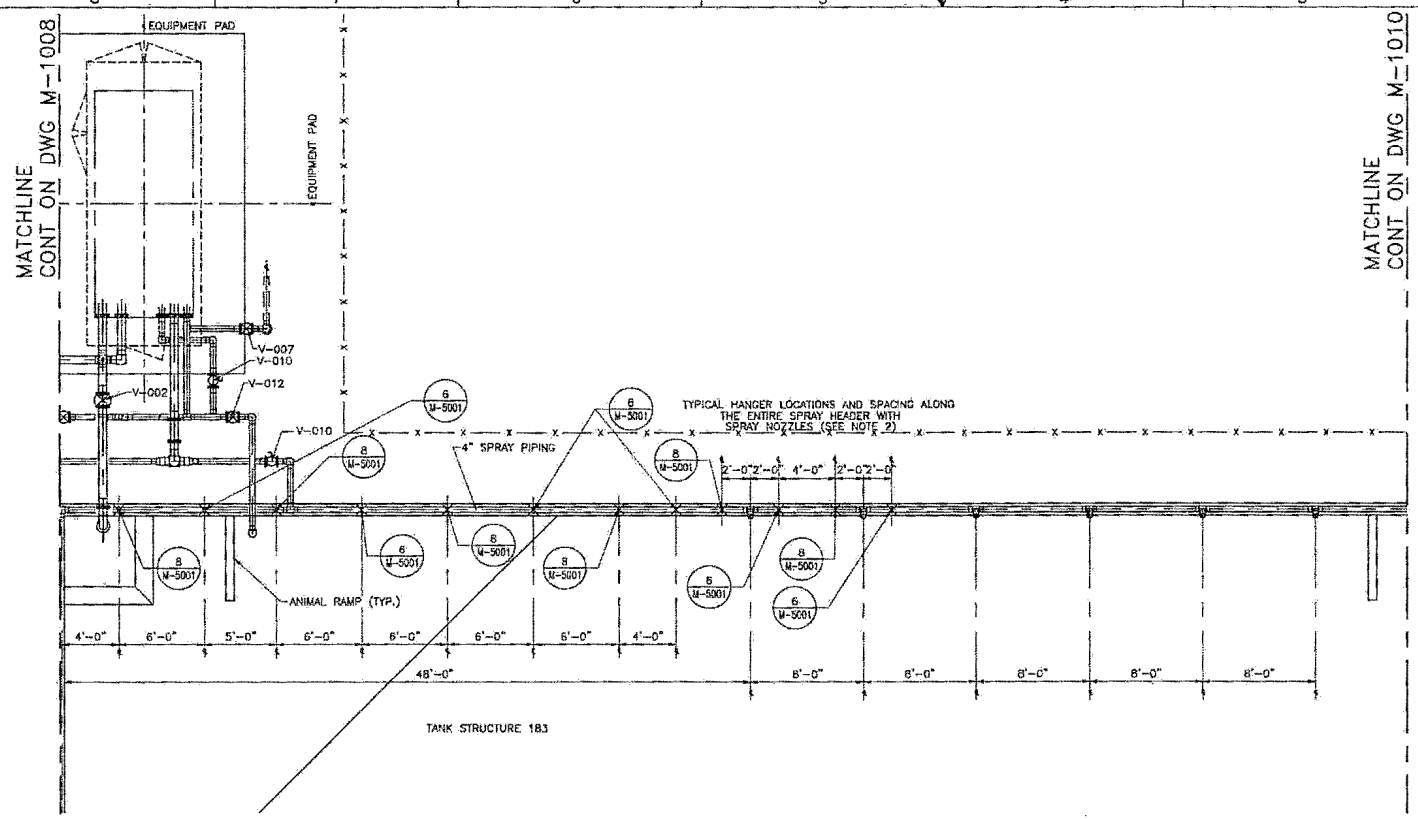
CLASSIFICATION
REVIEWER: EDWARD ARTIGLIA
DATE: 8/30/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 4

STEPHEN D. STURRKE, N.M. REG. 20559, PROFESSIONAL ENGINEER

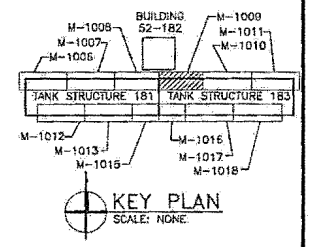
100761-C55751-M00012

C-55751



SPRAY PIPING COMPISTE PLAN 4

1/4"=1'-0"



KEY PLAN

SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANKS NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
5	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
4	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
3	5/2/12			ADDED DIMENSION FOR SUPPORT LOCATION	TJH	TJH	SPS	NL	
2	4/26/12			REVISED PIPING	TJH	TJH	SPS	NL	
1	4/25/12			REVISED PIPING AND NOTE 2, REMOVED HOLD.	TJH	TJH	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 183 TA-52

DRAWN: T. HARPER
DESIGN: T. HARPER
CHECKED: S. STUHRKE
DATE: 09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH SCOPHY

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

SHEET M-1009
41 OF 88

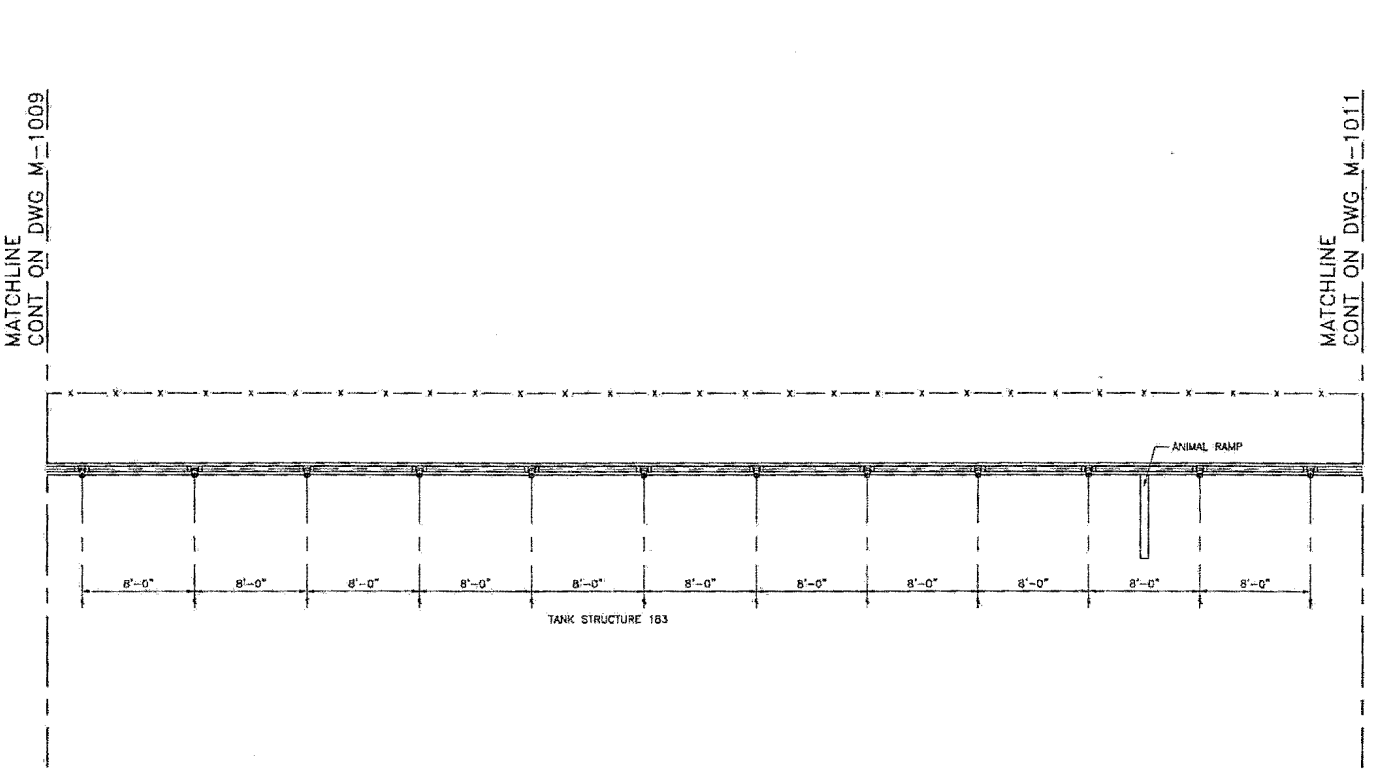
CLASSIFICATION
REVIEWER: EDWARD ARTIGLIA
DATE: 8/22/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 5

STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

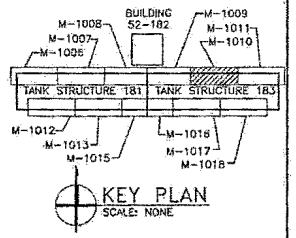
100761-C55751-M00013

Plotted By: SHAWN Plot Date: 8/23/2012
FILE NAME: C55751-M-1009-C55751



SPRAY PIPING COMPOSITE PLAN 5

0" 1' 2' 4' 6' 8'
1/4"=1'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANKS NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	4/25/12			REVISED NOTE 2.	TJH	TJH	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 183 TA-52

DRAWN: T. HARPER
DESIGN: T. HARPER
CHECKED: S. STUHRKE
DATE: 09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET M-1010
42 OF 88

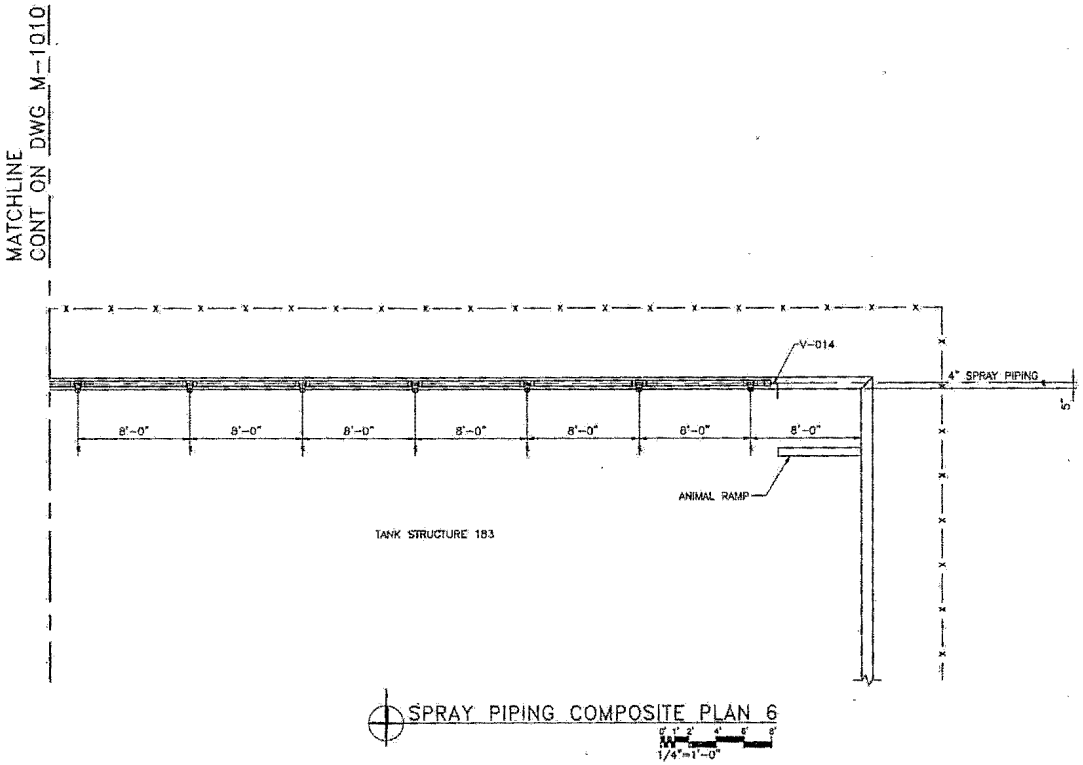
CLASSIFICATION
REVIEWER: EDWARD ARTIGUA DATE: 9/22/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 2

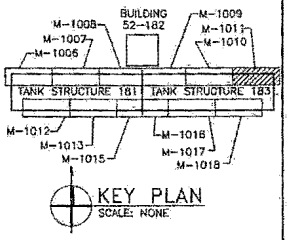
STEPHEN F. STUHRKE NEW MEXICO 10659 MECHANICAL ENGINEER

100761-C55761-M00014

175869



SPRAY PIPING COMPOSITE PLAN 6



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANKS NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	4/25/12			REVISED NOTE 2.	TJH	TJH	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 183 TA-52

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STUHRKE
DATE	09/21/2011

SUBMITTED: HORMAN LACY
APPROVED FOR RELEASE: JOSEPH EROPHY

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

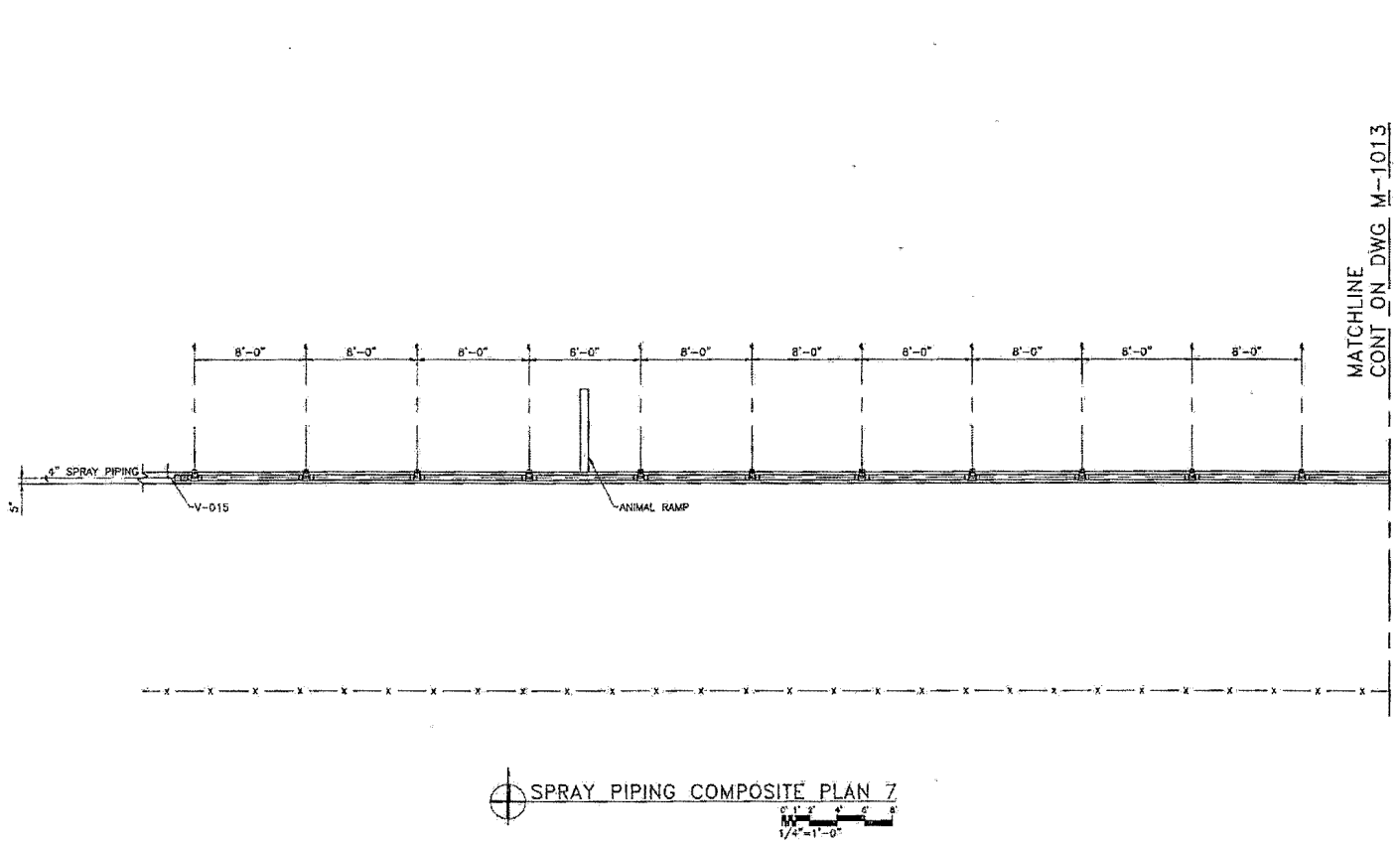
SHEET M-1011
43 OF 88

CLASSIFICATION
REVIEWER EDWARD ARTIGLIA
DATE

PROJECT ID 100761
DRAWING NO C-55751
REV 2

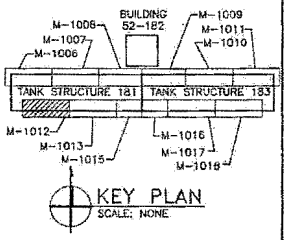
STEPHEN P. STUHRKE
NEW MEXICO
20659
PROFESSIONAL ENGINEER

100761-C55751-M00015



SPRAY PIPING COMPOSITE PLAN 7

1/4"=1'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANKS NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB APP
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	TJH	SPS	SPS NL
1	4/25/12			REVISED NOTE 2.	TJH	TJH	SPS	NL

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 181 TA- 52

DRAWN T. HARPER
DESIGN T. HARPER
CHECKED S. STURKE
DATE 08/21/2012

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

Los Alamos NATIONAL LABORATORY
P.O. Box 1663 Los Alamos, New Mexico 87545

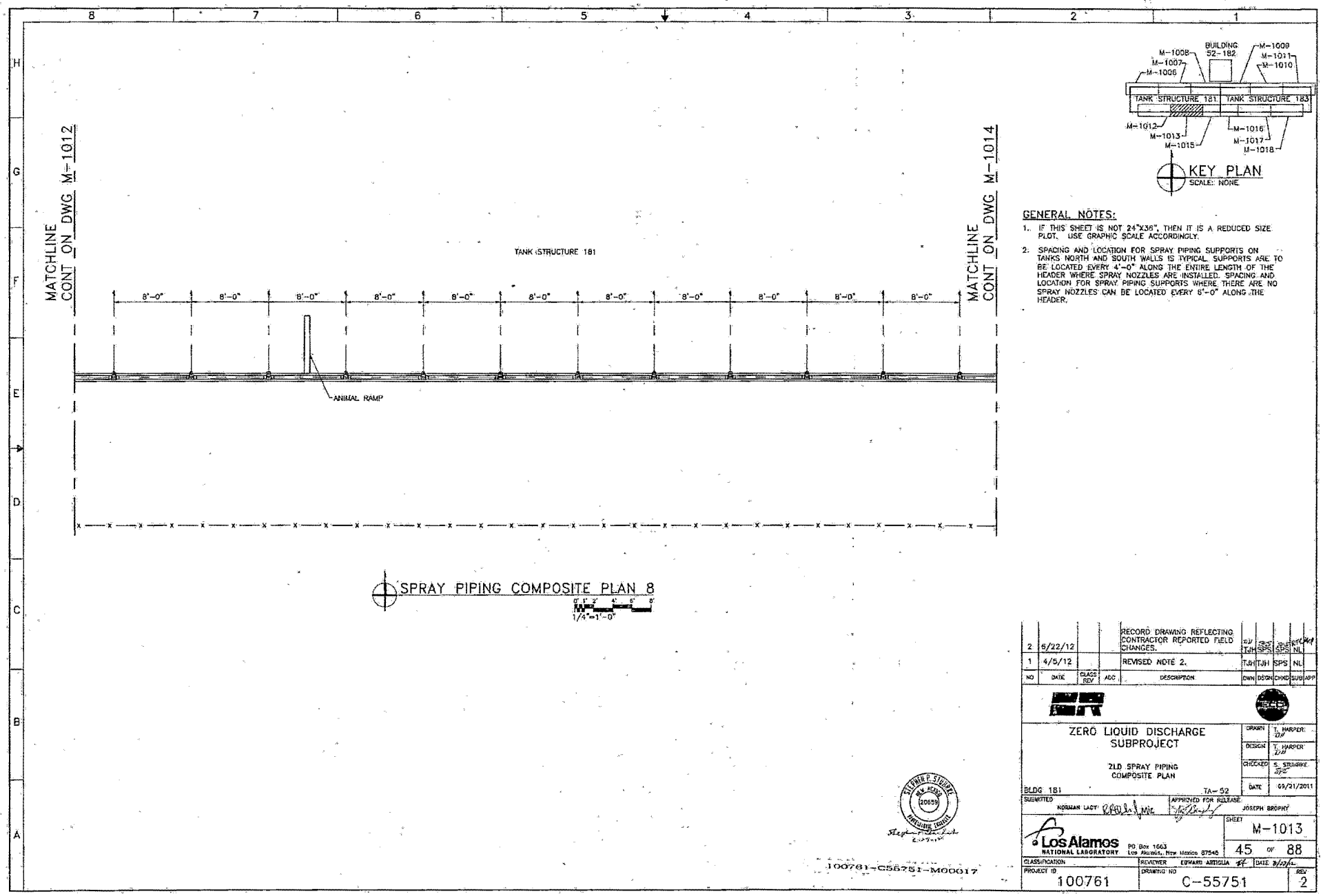
SHEET M-1012
44 OF 88

CLASSIFICATION
REVIEWER EDWARD ARRIOLA DATE 6/29/12

PROJECT ID 100761
DRAWING NO C-55751
REV 2

STEPHEN P. STURKE N.M. MEXICO 20659 REGISTERED PROFESSIONAL ENGINEER

100761-C55751-M00016



SPRAY PIPING COMPOSITE PLAN 8

1/4"=1'-0"

KEY PLAN

SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANKS NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	TJH	SPS	NL	
1	4/5/12			REVISED NOTE 2.	TJH	TJH	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 181 TA-52

DRAWN: T. HARPER
DESIGN: T. HARPER
CHECKED: S. STRIRKE
DATE: 03/21/2011

SUBMITTED: NORMAN LADY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET M-1013
45 OF 88

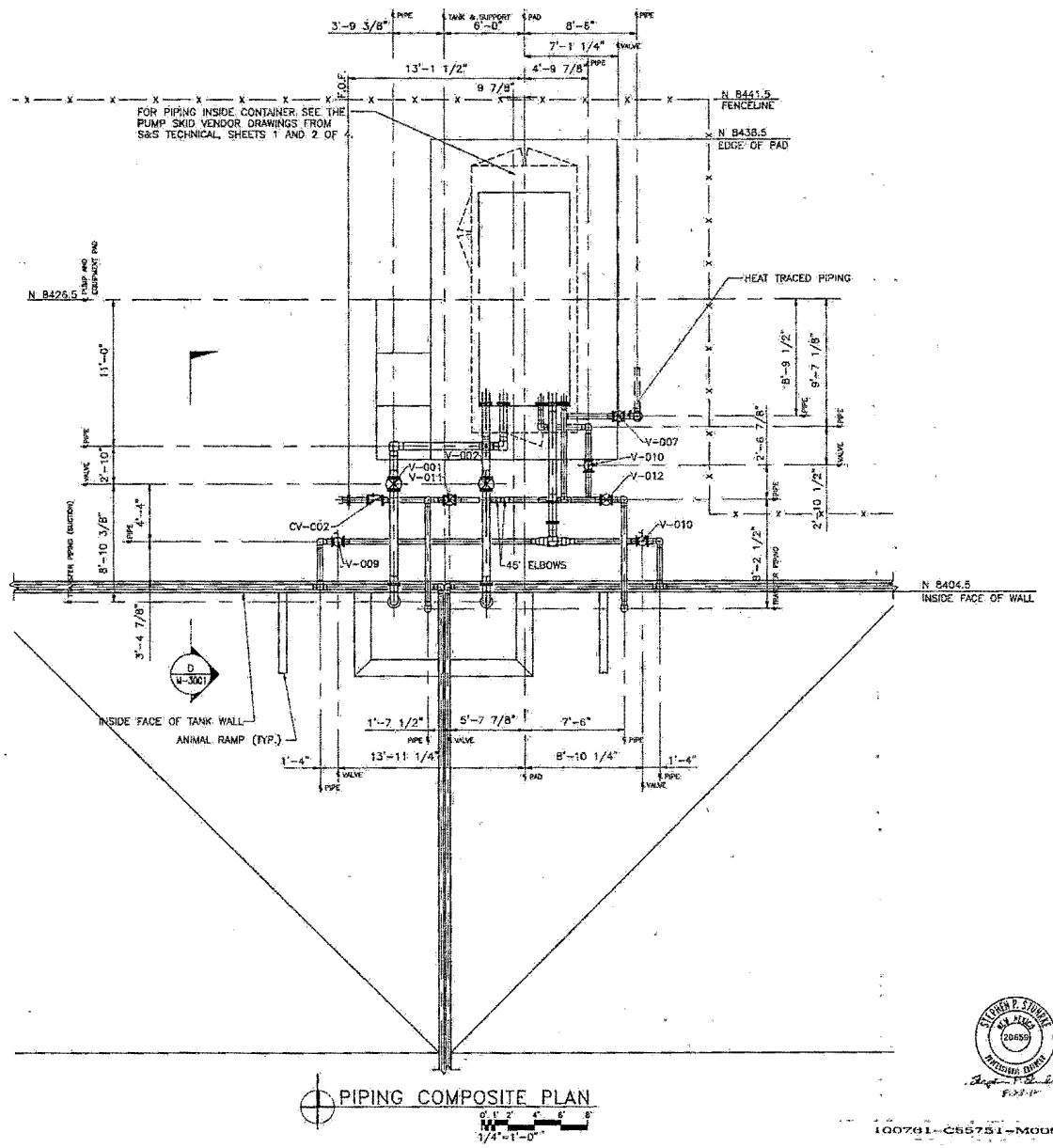
CLASSIFICATION:
REVIEWER: EDWARD ARTIGLIA DATE: 3/22/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 2

STEPHEN P. STRIRKE NEW MEXICO 20659 REGISTERED ENGINEER

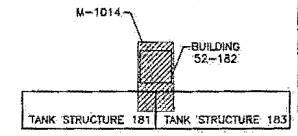
100761-C55751-M00017

55556



PIPING COMPOSITE PLAN

1/4"=1'-0"



KEY PLAN

SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. PROVIDE HEAT TRACING AND INSULATION IN ACCORDANCE WITH PROJECT SPECIFICATIONS AS REQUIRED WHERE INDICATED ON THIS DRAWING FOR FREEZE PROTECTION OF ABOVE GROUND SECTIONS OF PIPING THAT ARE NOT FREE DRAINING. PIPING REQUIRING HEAT TRACING IS ALSO SHOWN ON P&ID DRAWINGS M-6000 AND M-6001. HEAT TRACING SHALL BE IN ACCORDANCE WITH SPECIFICATION 22 0535 "ELECTRIC HEAT TRACING SYSTEMS" AND INSULATION SHALL BE IN ACCORDANCE WITH SPECIFICATION 22 0713.
3. LOCATE CONCRETE PIER (USE 8" SONOTUBE) AT LOCATIONS FOR SUPPORT DETAILS 6 AND 8 AS SHOWN ON THIS DRAWING.
4. INSTALL PIPE SUPPORT TYPICAL DETAILS 6 AND 8 AT LOCATIONS IDENTIFIED AND AS SHOWN ON DRAWING M-5001.
5. FOR PIPE PENETRATIONS AND PIPE SLEEVES INFORMATION SEE THE KEYED NOTES ON DRAWING M-1005.
6. REFER TO DRAWING M-1019 FOR PIPE SUPPORT LOCATIONS.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
4	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
3	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
2	4/24/12			REVISED DRAWING TITLE, PIPING DESIGN, SUPPORT LOCATION, PUMP SKID, ADDED NOTE 5, AND HEAT TRACING LOCATIONS.	TJH	SPS	SPS	NL	
1	12/19/11			DELETED LEAK DETECTION MANHOLES, REMOVED HOLD M-001, ADDED SPRAY PIPING DESIGN LAYOUT TO DRAWING, AND REVISED TRANSFER PIPING DESIGN.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD PIPING COMPOSITE PLAN AT TANKS

BLDG 181,182,183 TA-52

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STUHRKE
DATE	09/21/2011

SUBMITTED: NORMAN LACY

APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET M-1014

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CLASSIFICATION

REVIEWER EDWARD ARTIGLIA DATE 8/27/12

PROJECT ID 100761

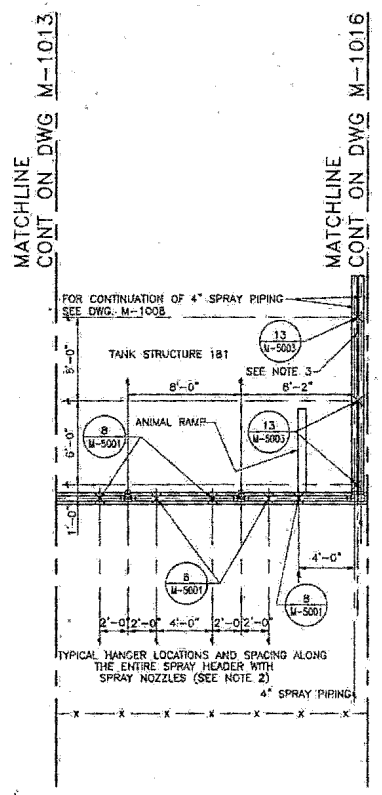
DRAWING NO C-55751

REV 4

100761-C55751-M00018

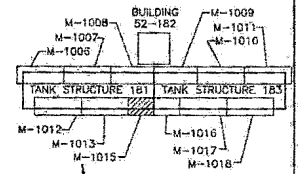
Plotted By: SHAHN Plot Date: 8/23/2012
FILE NAME: C55751-M-1014-R4.DWG

08051



SPRAY PIPING COMPOSITE PLAN 9

1/4"=1'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANK NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.
3. SPACING AND LOCATION FOR ALL SPRAY PIPING SUPPORTS ON TANKS CENTER WALL SHALL BE LOCATED EVERY 6'-0" ALONG THE ENTIRE LENGTH. THE LAST CENTER WALL SUPPORT AT THE SOUTH WALL SHALL BE LOCATED WITHIN 1'-0" OF THE CENTERLINE OF THE SOUTH WALL AS CLOSE TO THE ELBOW AS POSSIBLE. SIMILARLY, THE FIRST CENTER WALL SUPPORT AT THE AT THE NORTH WALL SHALL BE LOCATED WITHIN 1'-0" OF THE CENTERLINE OF THE NORTH WALL AND AS CLOSE TO THE ELBOW AS POSSIBLE.

NO	DATE	CLASS REV	ADD	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
2	5/2/12			ADDED DIMENSION FOR SUPPORT LOCATION	TJH	TJH	SPS	NL	
1	4/25/12			REVISED NOTE 2, ADDED NOTE 3 AND SUPPORT LOCATIONS: (FCR NO. 7)	TJH	TJH	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 181 TA-52

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STUHRKE
DATE	09/21/2011

SUBMITTED: NORMAN LACY

APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET M-1015

47 OF 88

CLASSIFICATION

REVIEWER: EDWARD ARTIGLIA

DATE: 8/31/12

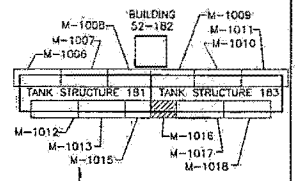
PROJECT ID: 100761

DRAWING NO: C-55751

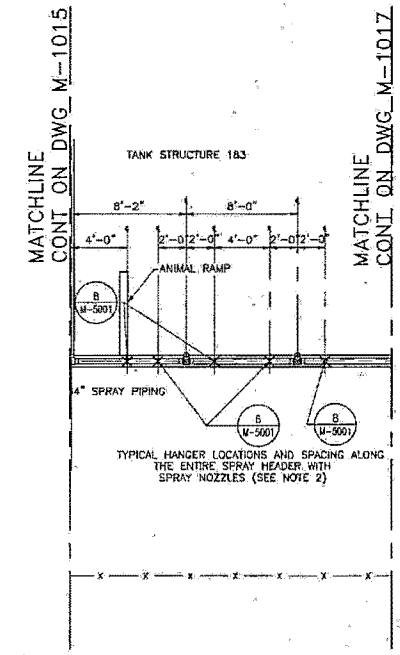
REV: 3

100761-C55751-M00019

08052



KEY PLAN
SCALE: NONE



SPRAY PIPING COMPOSITE PLAN 10
1/4"=1'-0"

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANKS NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
2	5/2/12			ADDED DIMENSION FOR SUPPORT LOCATION	TJH	TJH	SPS	NL	
1	4/25/12			REVISED NOTE 2.	TJH	TJH	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 183 TA-52

DRAWN: T. HARPER
DESIGN: T. HARPER
CHECKED: S. STUHRKE
DATE: 09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

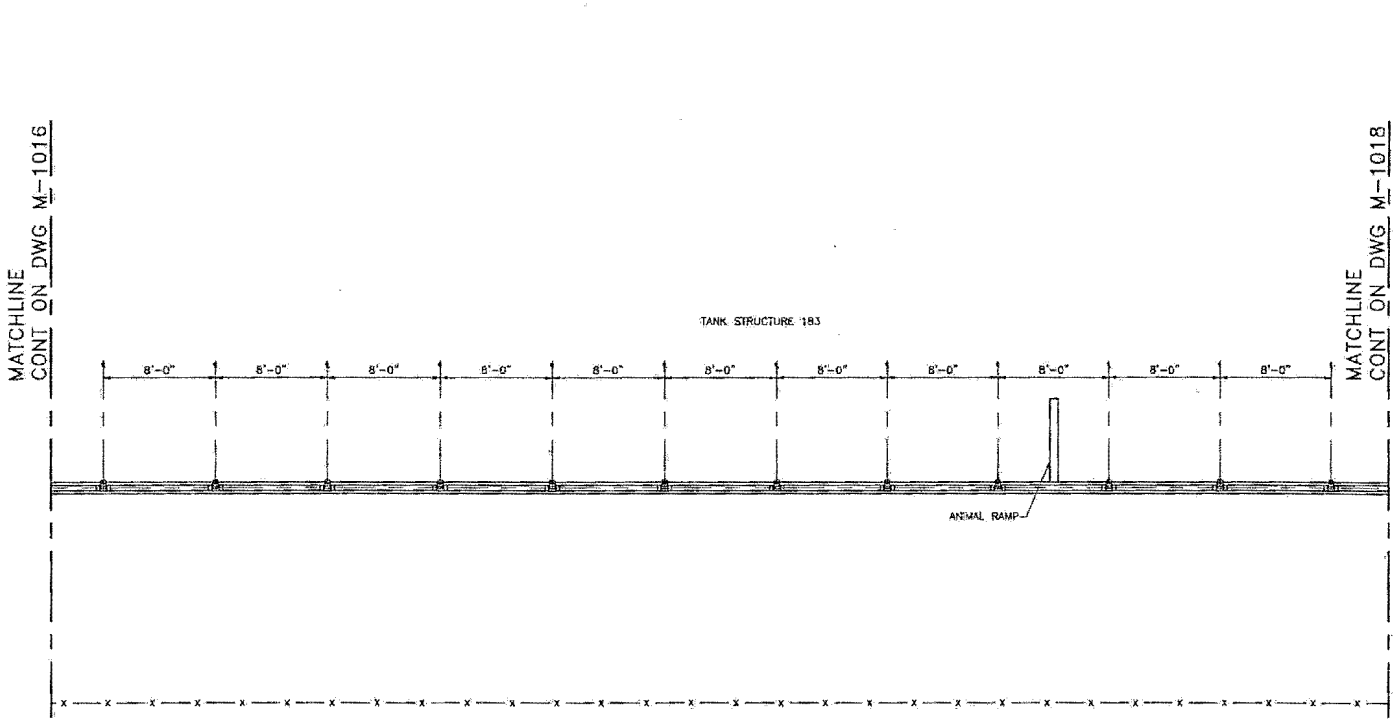
SHEET M-1016
48 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTIGLIA
DATE: 8/23/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 3

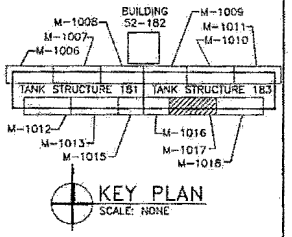
100761-C55751-M00020

08053



SPRAY PIPING COMPOSITE PLAN 11

1/4"=1'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANKS NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	4/25/12			REVISED NOTE 2.	TJH	TJH	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 163 TA-52

DRAWN T. HARPER
DESIGN T. HARPER
CHECKED S. STEINKE
DATE 09/21/2011

SUBMITTED NORMAN LACY APPROVED FOR RELEASE JOSEPH GROMMY

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

SHEET M-1017
49 OF 88

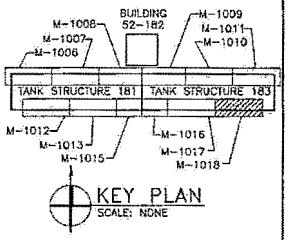
CLASSIFICATION
REVIEWER EDWARD ARTIGLIA DATE 5/29/12

PROJECT ID 100761
DRAWING NO C-55751
REV 2

STEVEN P. STEINKE NEW MEXICO 20630 REGISTERED ENGINEER

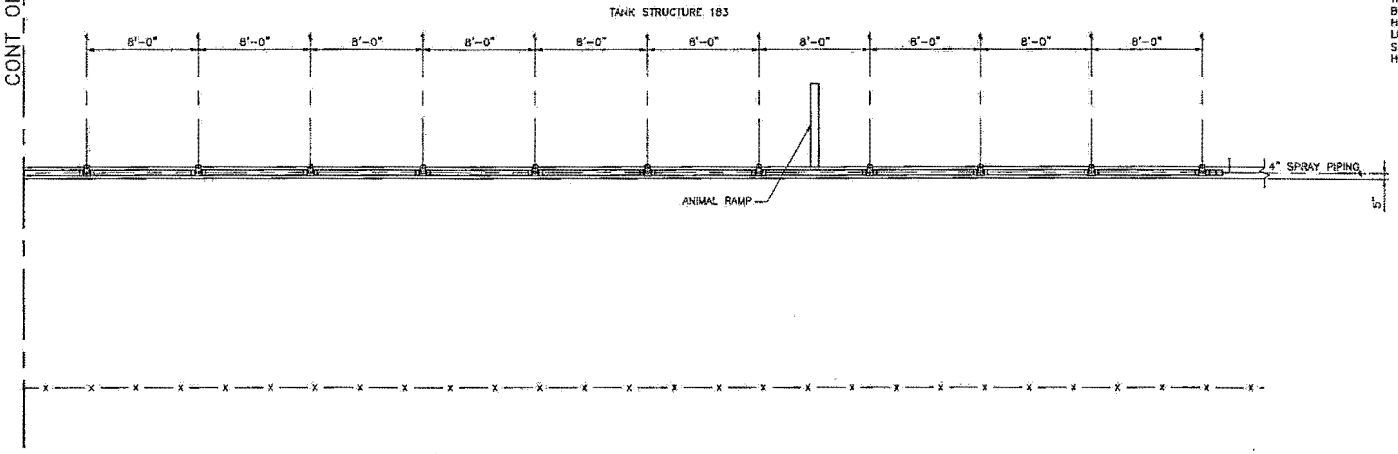
100761-C55751-M00021

C55751



KEY PLAN
SCALE: NONE

MATCHLINE
CONT ON DWG M-1017



SPRAY PIPING COMPOSITE PLAN 12
1/4"=1'-0"

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS ON TANKS NORTH AND SOUTH WALLS IS TYPICAL. SUPPORTS ARE TO BE LOCATED EVERY 4'-0" ALONG THE ENTIRE LENGTH OF THE HEADER WHERE SPRAY NOZZLES ARE INSTALLED. SPACING AND LOCATION FOR SPRAY PIPING SUPPORTS WHERE THERE ARE NO SPRAY NOZZLES CAN BE LOCATED EVERY 6'-0" ALONG THE HEADER.

NO	DATE	CLASS REV	ADD	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	TJH	SPS	SPS	NL
1	4/25/12			REVISED NOTE 2.	TJH	TJH	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

ZLD SPRAY PIPING COMPOSITE PLAN

BLDG 183 TA-52

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STUHRKE
DATE	09/21/2012

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET: M-1018
50 OF 88

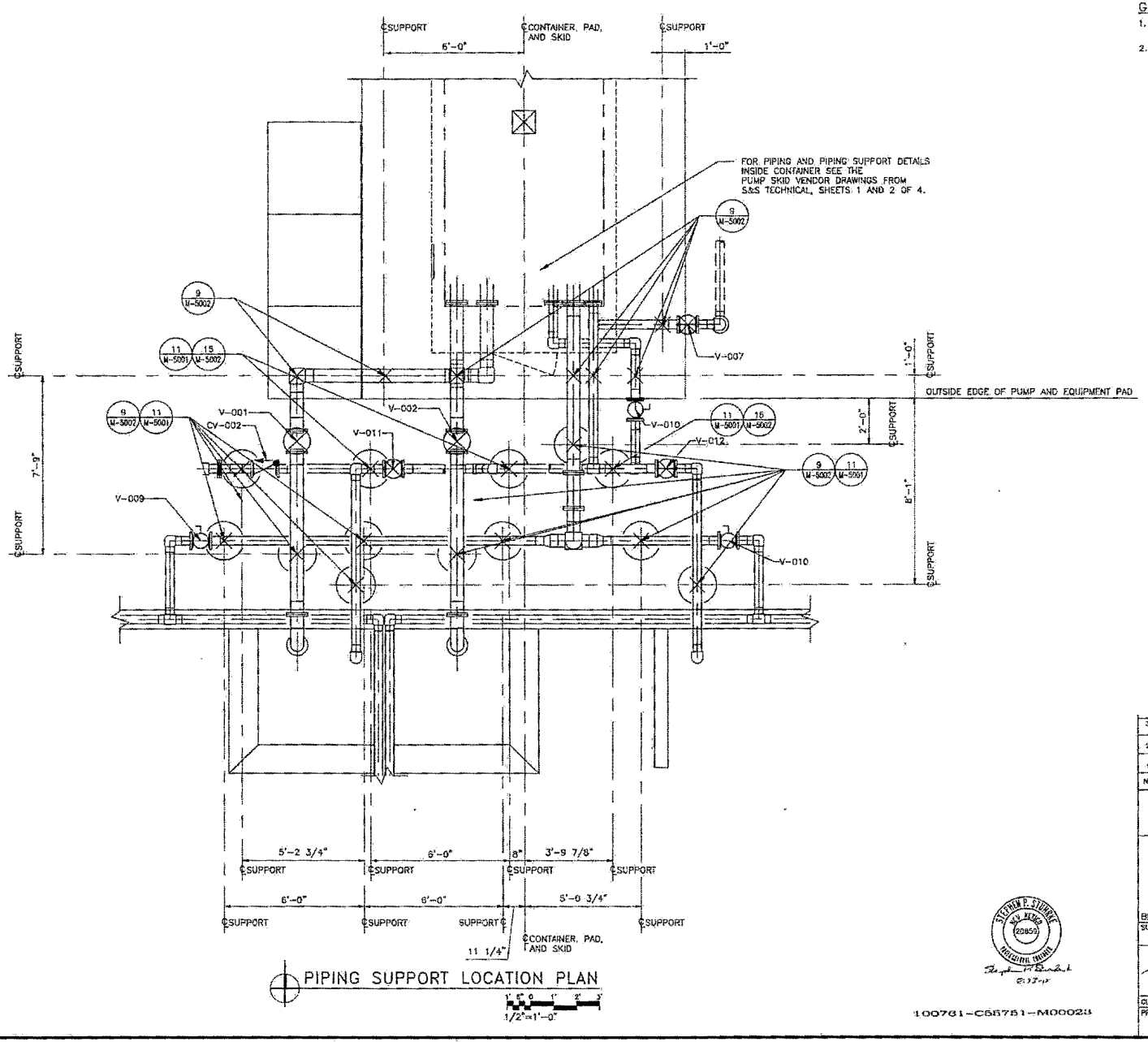
CLASSIFICATION
REVIEWER: EDWARD ARTIOLA DATE: 6/22/12

PROJECT ID	DRAWING NO	REV
100761	C-55751	2

STEPHEN R. STUHRKE N.M. 20659 REGISTERED ENGINEER

100761-C55751-M00022

C55751



GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. THE CENTER OF THE PIPE SUPPORTS LOCATED ON THE EQUIPMENT PAD MUST BE A MINIMUM OF 12" FROM THE EDGE OF THE PAD.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	05/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
2	8/28/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	4/24/12			REVISED PIPING DESIGN SUPPORT LOCATIONS, AND DRAWING TITLE.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

AREA TA-52 PIPING SUPPORT LOCATION PLAN

DRAWN: T. HARPER
DESIGN: T. HARPER
CHECKED: S. STUMBOC
DATE: 09/21/2011

BLDG 182 TA-52

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET: M-1019
51 OF 88

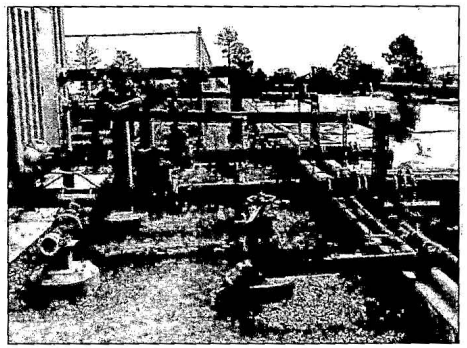
CLASSIFICATION
REVIEWER: EDWARD ARTIGLIA
DATE: 9/28/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 3

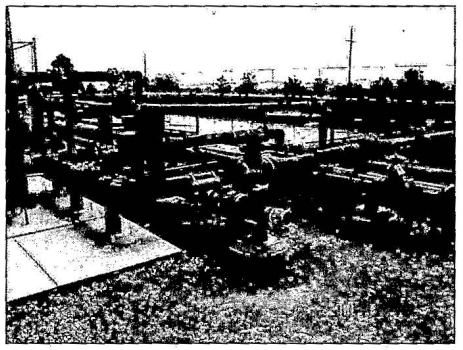
100761-C55751-M00023

Plotted By: SMITH Plot Date: 9/28/2012
FILE NAME: C55751-M-1019-R3.DWG

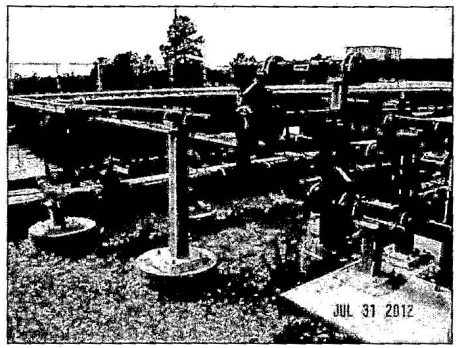
55751



ABOVE GROUND PIPING LOOKING EAST

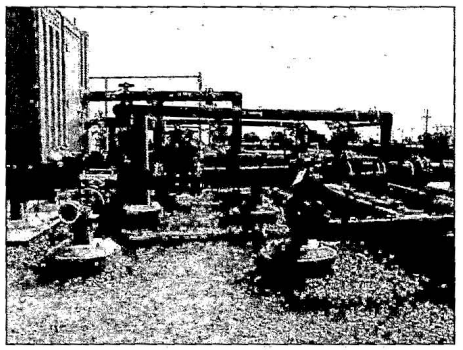


ABOVE GROUND PIPING LOOKING SOUTHEAST

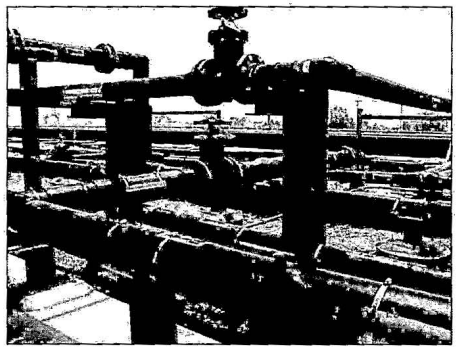


ABOVE GROUND PIPING LOOKING SOUTHWEST

ABOVE GROUND PIPING LOOKING WEST



ABOVE GROUND PIPING LOOKING EAST



ABOVE GROUND PIPING LOOKING SOUTHEAST

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. THE PICTURES ON THIS DRAWING AND DRAWINGS M-1019B, M-1019C AND M-1019D DEPICT THE AS INSTALLED PIPING SYSTEMS AND THE ASSOCIATED SUPPORTS AND THEIR FOUNDATION LOCATIONS FOR THE TRANSFER AND SPRAY PIPING AS SUBMITTED BY THE INSTALLING CONTRACTOR.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

ZERO LIQUID DISCHARGE SUBPROJECT

AREA TA-52 PIPING SUPPORT LOCATION PLAN

BLDG 182 TA-52

DRAWN H. SHAH
DESIGN H. SHAH
CHECKED S. STUHRKE
DATE 08/06/2012

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-1019A
51A OF 88

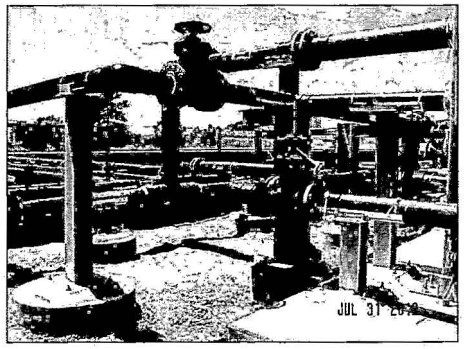
CLASSIFICATION
REVIEWER EDWARD ARTIGLIA DATE 8/27/12
PROJECT ID 100761
DRAWING NO C-55751
REV 0

STEPHEN P. STUHRKE NEW MEXICO 20699 REGISTERED ENGINEER

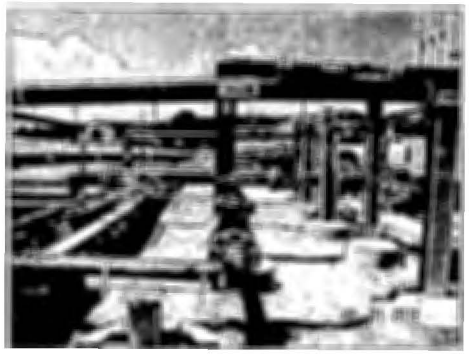
100761-C55751-M00024

Printed By: SHAH Print Date: 8/6/2012
REF MAT: 100761-M-1019A.dwg

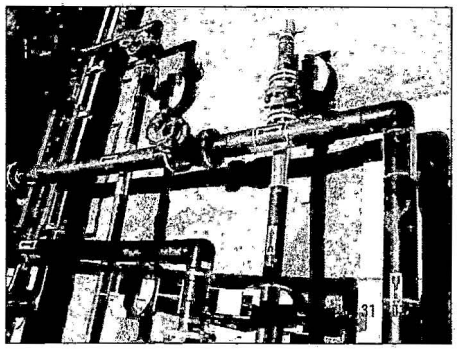
C55751



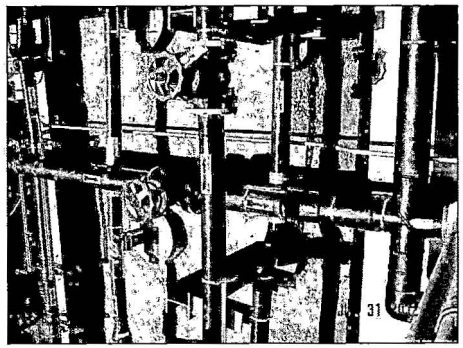
ABOVE GROUND PIPING LOOKING SOUTHWEST



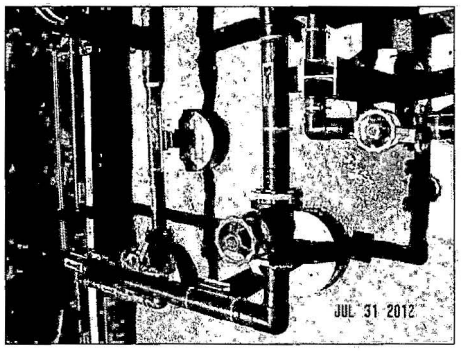
ABOVE GROUND PIPING LOOKING WEST



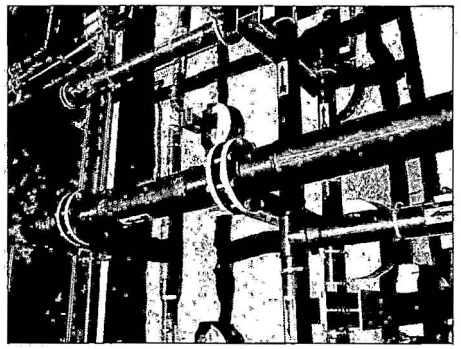
TOP VIEW ABOVE GROUND PIPING WEST SIDE



TOP VIEW ABOVE GROUND PIPING EAST SIDE



TOP VIEW ABOVE GROUND PIPING EAST SIDE



TOP VIEW ABOVE GROUND PIPING EAST SIDE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. THE PICTURES ON THIS DRAWING AND DRAWINGS M-1019A, M-1019C AND M-1019D DEPICT THE AS INSTALLED PIPING SYSTEMS AND THE ASSOCIATED SUPPORTS AND THEIR FOUNDATION LOCATIONS FOR THE TRANSFER AND SPRAY PIPING AS SUBMITTED BY THE INSTALLING CONTRACTOR.

STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

100761-C55751-M00025

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

ZERO LIQUID DISCHARGE SUBPROJECT

AREA TA-52 PIPING SUPPORT LOCATION PLAN

BLDG 182 TA-52

DRAWN	H. SHAH
DESIGN	H. SHAH
CHECKED	S. STUHRKE
DATE	03/08/2012

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-1019B

51B OF 88

CLASSIFICATION

REVIEWER EDWARD ARTIGLIA DATE 8/27/12

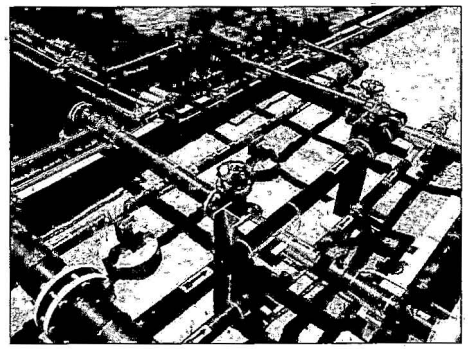
PROJECT ID 100761

DRAWING NO C-55751

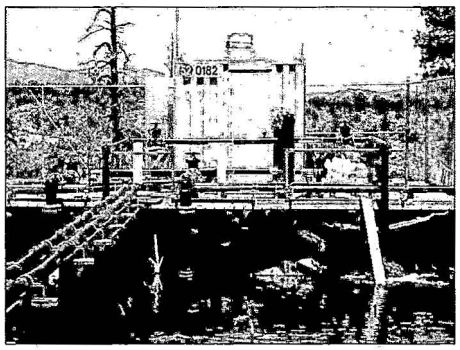
REV 0

Plotted By: SHAHH Plot Date: 8/8/2012
FILE NAME: C55751-M-1019B-R0.DWG

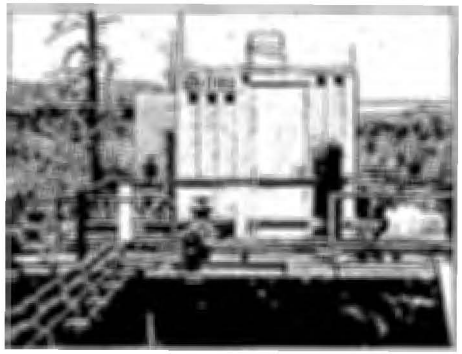
08058



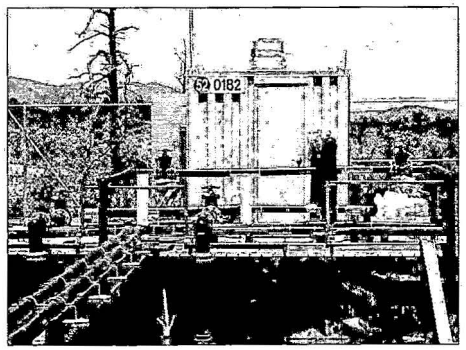
TOP VIEW ABOVE GROUND PIPING CENTER



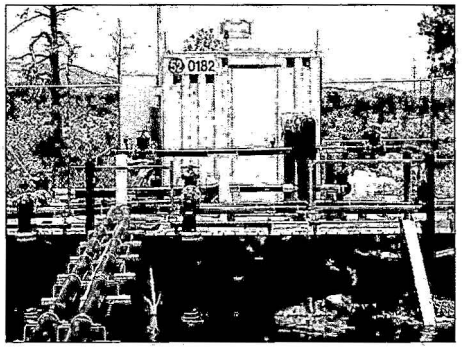
ABOVE GROUND PIPING LOOKING NORTH



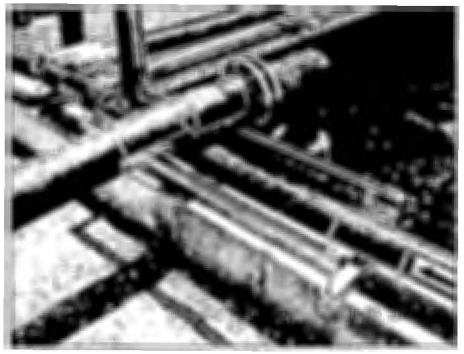
ABOVE GROUND PIPING LOOKING NORTH



ABOVE GROUND PIPING LOOKING NORTH



ABOVE GROUND PIPING LOOKING NORTH



PIPE SUPPORT AT TANK WALL WEST SIDE SUCTION LINE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. THE PICTURES ON THIS DRAWING AND DRAWINGS M-1019A, M-1019B AND M-1019D DEPICT THE AS INSTALLED PIPING SYSTEMS AND THE ASSOCIATED SUPPORTS AND THEIR FOUNDATION LOCATIONS FOR THE TRANSFER AND SPRAY PIPING AS SUBMITTED BY THE INSTALLING CONTRACTOR.

STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

100761-C55751-M00026

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

ZERO LIQUID DISCHARGE SUBPROJECT

AREA TA-52 PIPING SUPPORT LOCATION PLAN

BLDG 182 TA-52

DRAWN	H. SHAH
DESIGN	H. SHAH
CHECKED	S. STUHRKE
DATE	08/08/2012

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-1019C

51C OF 88

CLASSIFICATION

REVIEWER EDWARD ARTIGLIA DATE 8/27/12

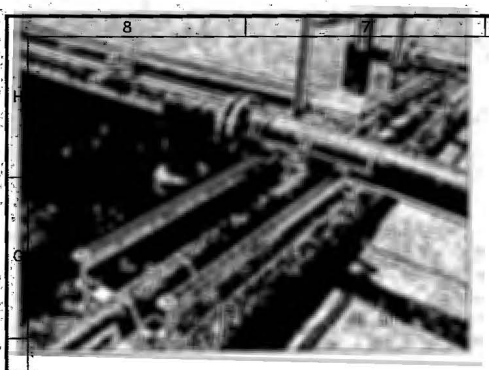
PROJECT ID 100761

DRAWING NO C-55751

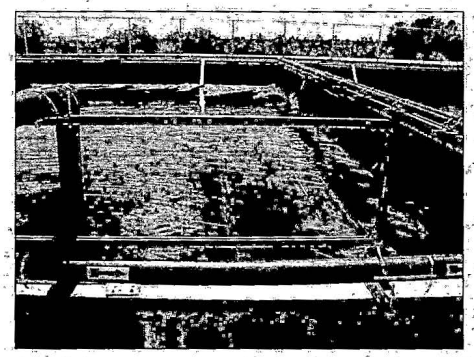
REV 0

Plotted By: SHAH Plot Date: 8/8/2012
FILE NAME: C55751-M-1019C-R0.DWG

C55751



PIPE SUPPORT AT TANK WALL
EAST SIDE SUCTION LINE



PIPE SUPPORT AT TANK WALL
EAST SIDE DISCHARGE LINE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. THE PICTURES ON THIS DRAWING AND DRAWINGS M-1019A, M-1019B AND M-1019C DEPICT THE AS INSTALLED PIPING SYSTEMS AND THE ASSOCIATED SUPPORTS AND THEIR FOUNDATION LOCATIONS FOR THE TRANSFER AND SPRAY PIPING AS SUBMITTED BY THE INSTALLING CONTRACTOR.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

ZERO LIQUID DISCHARGE SUBPROJECT

AREA TA-52 PIPING SUPPORT LOCATION PLAN

BLDG 182 TA-52

DRAWN	H. SHAH
DESIGN	H. SHAH
CHECKED	S. STUHRKE
DATE	08/06/2012

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-1019D

51D OF 88

CLASSIFICATION

REVIEWER EDWARD ARTIGLIA

DATE 8/27/12

PROJECT ID 100761

DRAWING NO C-55751

REV 0

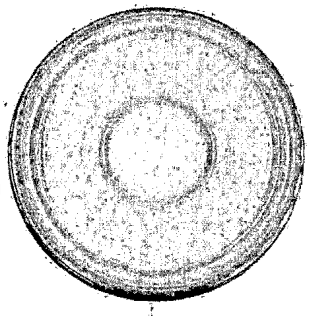
STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

100761-C55751-M00027

Plotted By: SHAHH Plot Date: 8/8/2012
FILE NAME: C55751-M-1019D-R0.DWG

Radioactive Liquid Waste Treatment
Facility Upgrade Project (RLWTF-UP)
Zero Liquid Waste (ZLD)
Subproject – PID 100761

Contents:
ZLD As-Builts
CD 2 of 2 (pgs. 52-88)



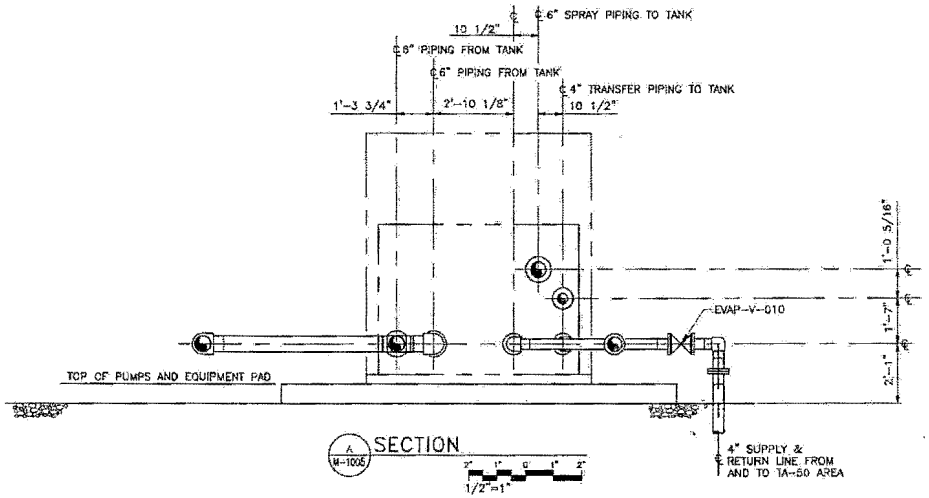
Los Alamos
NATIONAL LABORATORY
Los Alamos NM 87545

ENV-RCRA-12-0244
LAUR-12-25859

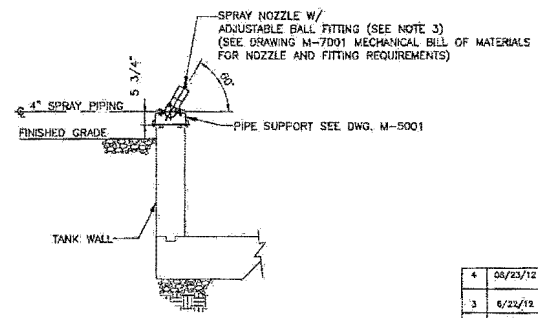
UNCLASSIFIED

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. SPRAY NOZZLE HEADERS ARE TO BE FREE DRAINING. LOCATE ¾" VENT WITH GLOBE VALVE AT HIGH POINT OF SPRAY PIPING AND ¾" DRAINS AS REQUIRED ON SPRAY HEADERS AT LOW POINTS. SPRAY PIPING HIGH POINT SHALL BE LOCATED INSIDE THE PUMP HOUSE.
3. THE ABSOLUTE MINIMUM SPRAY ANGLE WITH RESPECT TO THE HORIZONTAL IS 11 DEGREES AND THE MAXIMUM IS 75 DEGREES FROM THE HORIZONTAL.



A M-1005 SECTION
1/2"=1"



C M-1006 SECTION
1/2"=1"

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
4	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
3	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
2	4/5/12			REVISED SECTION A, DELETED HOLDS, AND SECTION B.	TJH	SPS	SPS	NL	
1	12/18/11			REVISED ELEVATION OF 6" SUCTION PIPING FROM TANK.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

PIPING SECTIONS

BLDG 181,182,183 TA-52

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STUHRKE
DATE	09/21/2011

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-3000

52 OF 88

CLASSIFICATION

REVIEWER EDWARD ARTIOLA DATE 8/27/12

PROJECT ID 100761

DRAWING NO C-55751

REV 4

STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

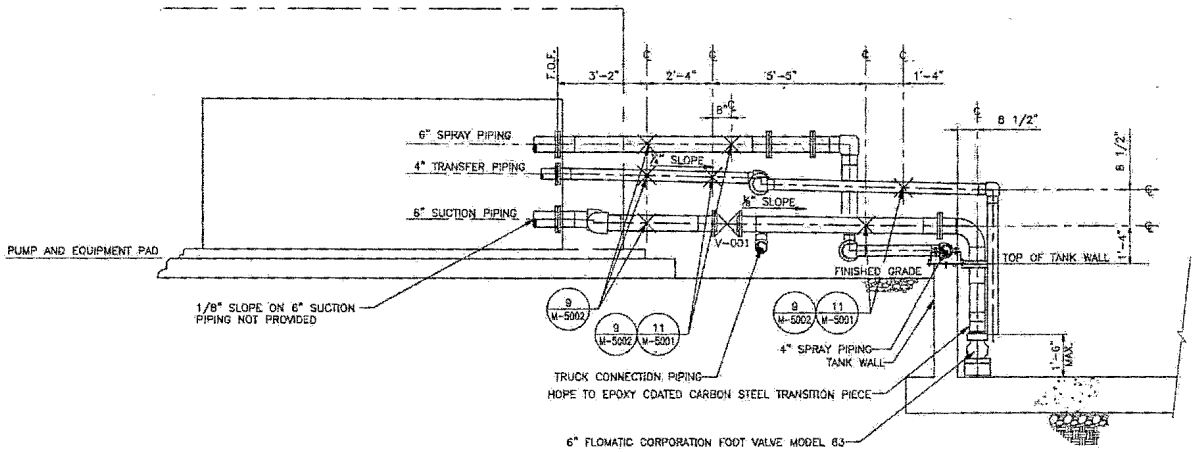
8-28-12

100761-C55751-M00028

Plotted By: SHAHN Plot Date: 8/23/2012
FILE NAME: C55751-M-3000-R4.DWG

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. NOT USED.
3. INSTALL PIPE SUPPORT TYPICAL DETAILS 6 AND 8 AT LOCATIONS IDENTIFIED AND AS SHOWN ON DRAWING M-5001.
4. NOT USE.



D M-1014 SECTION

1/2"=1"

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
4	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
3	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
2	4/25/12			REVISED SECTION D DELETED NOTES 2 AND 4.	TJH	SPS	SPS	NL	
1	12/19/11			REVISED DESIGN OF 6" SUCTION PIPING AND ADDED 6" SPRAY PIPING AND SUPPORTS TO SECTION VIEW.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

PIPING SECTIONS

BLDG 181,182,183 TA-52

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STUHRKE
DATE	09/21/2011

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH GROPHY

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

SHEET M-3001

53 OF 88

CLASSIFICATION

REVIEWER EDWARD ARTIGUA DATE 8/27/12

PROJECT ID 100761

DRAWING NO C-55751

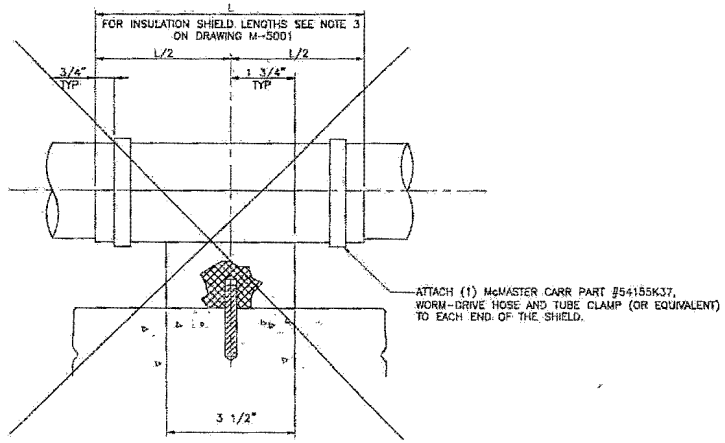
REV 4

STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

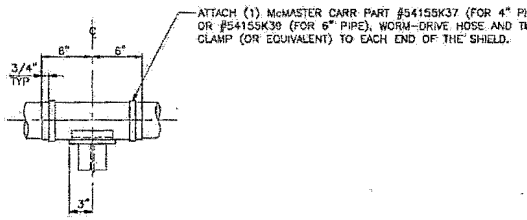
8.23.12

100761-C55751-M00029

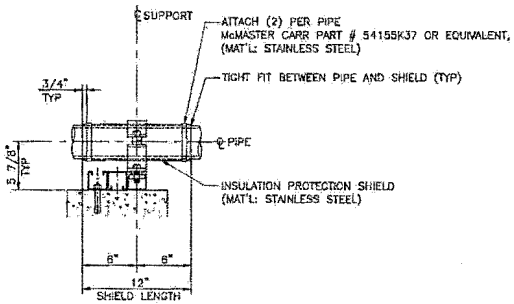
Plotted By: DWHH Plot Date: 8/23/2012
FILE NAME: C55751-M-3001-R4.DWG



F M-5001 SECTION (NOT USED)
SCALE: NONE

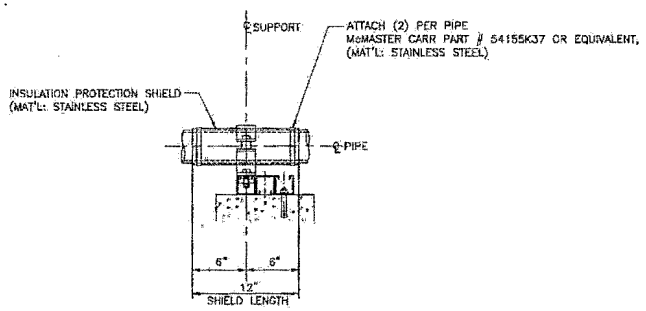


G M-5002 SECTION
SCALE: NONE



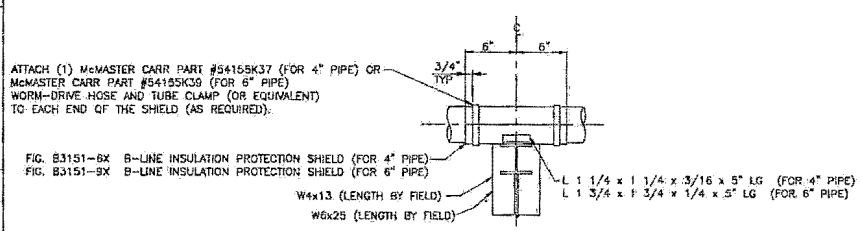
ONLY ONE CLAMP SHOWN FOR CLARITY

H M-5003 SECTION
SCALE: NONE



ONLY ONE CLAMP SHOWN FOR CLARITY

I M-5003 SECTION
SCALE: NONE



J M-5002 SECTION
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
4	09/23/12	-	-	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
3	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
2	4/26/12			ADDED SECTIONS J	TJH	SPS	SPS	NL	
1	4/25/12			REVISED SECTIONS F, H, I, AND J. (FOR NO.7)	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TYPICAL HANGER SECTIONS

BLDG 181,182,183 TA-52

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STUHRKE
DATE	09/21/2011

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-3002

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CLASSIFICATION

REVIEWER EDWARD ARTIGLIA

DATE 8/27/12

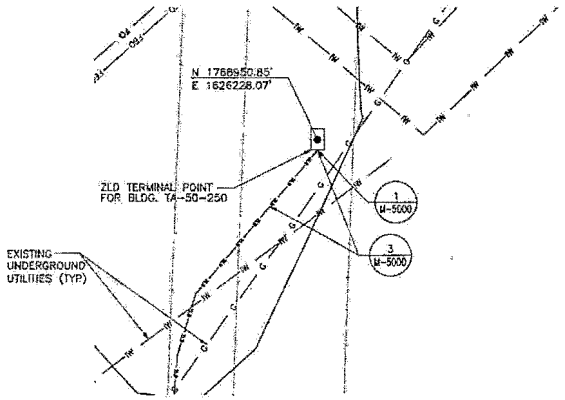
PROJECT ID 100761

DRAWING NO. C-55751

REV 4

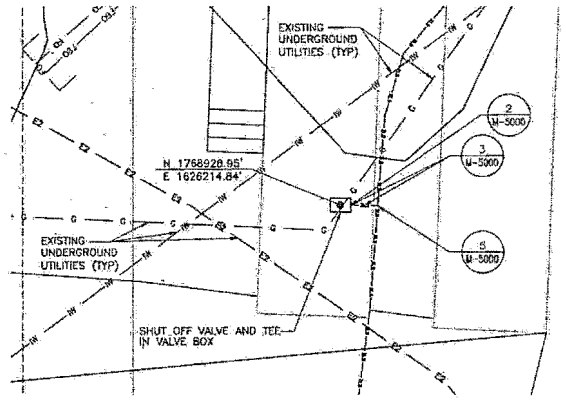
100761-C55751-M00030

Printed By: SNAHH Plot Date: 8/23/2012
FILE NAME: C55751-M-3002-R4.DWG



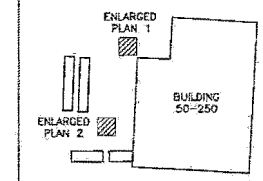
1 M-1004 ENLARGED PLAN VIEW
ZLD TRANSFER PIPING TERMINAL POINT

1/4"=1'-0"



2 M-1004 ENLARGED PLAN VIEW
FUTURE CONNECTION/TIE-IN

1/4"=1'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSCN	CHKD	SUB	APP
1	6/28/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TERMINAL POINTS
ENLARGED PLAN VIEWS

BLDG N/A TA-50

DRAWN	T. HARPER
DESIGN	T. HARPER
CHECKED	S. STURBKE
DATE	09/12/2011

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH GROFHY

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

SHEET M-4000

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CLASSIFICATION

REVIEWER EDWARD ARTIGLIA DATE 8/21/12

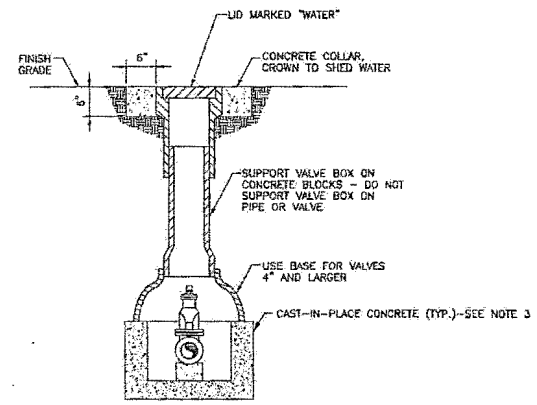
PROJECT ID 100761

DRAWING NO C-55751

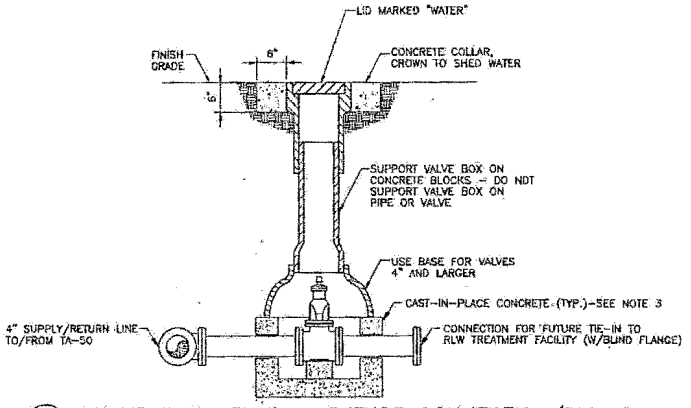
REV 1

STEPHEN P. STURBKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

100761-C55751-M00031



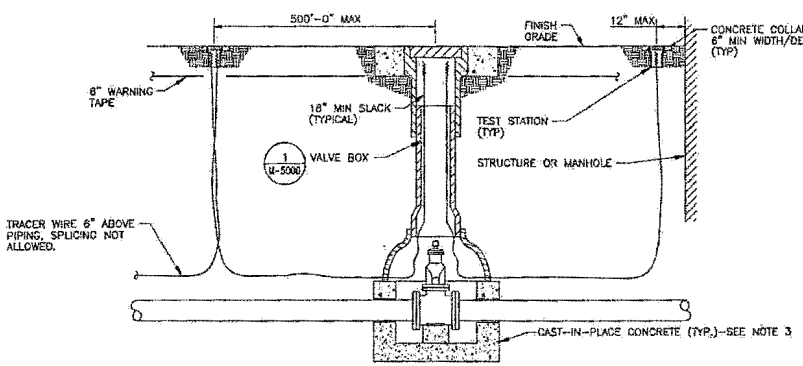
1 M-4000 VALVE BOX DETAIL – TERMINAL POINT
SCALE: NONE



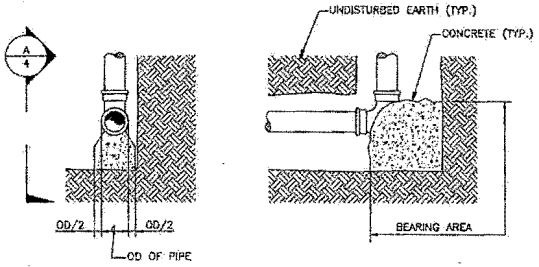
2 M-4000 VALVE BOX DETAIL – FUTURE CONNECTION/TIE-IN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE. PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. TERMINAL POINT AND FUTURE CONNECTION/TIE-IN SHALL INCLUDE BLIND FLANGE.
3. SEE LANL MASTER SPECIFICATION SECTION 03-3053 MISCELLANEOUS CAST-IN-PLACE CONCRETE" AND SECTION 33-1000 "WATER UTILITIES" FOR ADDITIONAL INFORMATION ON VALVE BOX DETAILS AND TIE-INS.



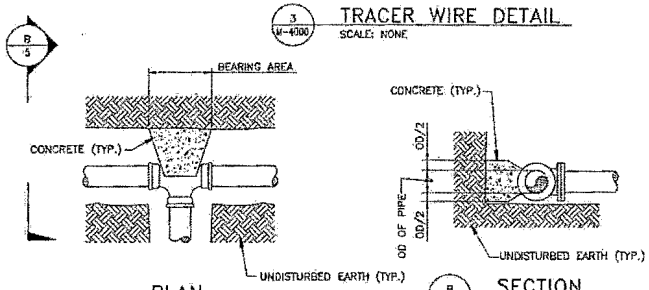
3 M-4000 TRACER WIRE DETAIL
SCALE: NONE



PLAN
SCALE: NONE

4 M-1000 THRUST BLOCK DETAIL
SCALE: NONE

MIN. THRUST BLOCK AREA (SQUARE FEET)			
PIPE DIA.	PLUG TEE	90° BEND	45° BEND
4"	2	2	2
6"	4	5	3



PLAN
SCALE: NONE

B 5 SECTION
SCALE: NONE

MIN. THRUST BLOCK AREA (SQUARE FEET)			
PIPE DIA.	PLUG TEE	90° BEND	45° BEND
4"	2	2	2

5 M-4000 THRUST BLOCK DETAIL
SCALE: NONE

STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER
6-29-11

100761-C55751-M00032

NO.	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	HL	

ZERO LIQUID DISCHARGE SUBPROJECT

TYPICAL DETAILS

TA-50
TA-52
TA-63

BLDG N/A

DRAWN: T. HARPER
DESIGN: T. HARPER
CHECKED: S. STUHRKE
DATE: 09/12/2011

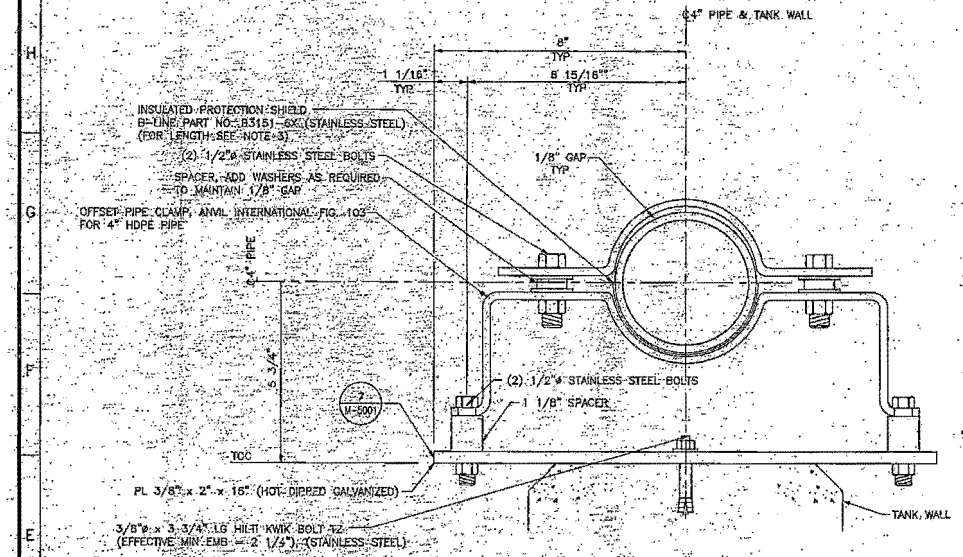
SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

Los Alamos NATIONAL LABORATORY
PO Box 1665 Los Alamos, New Mexico 87545

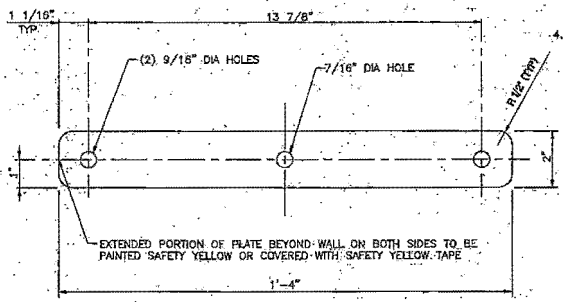
SHEET: M-5000
56 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTIGUA
DATE: 8/27/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 1



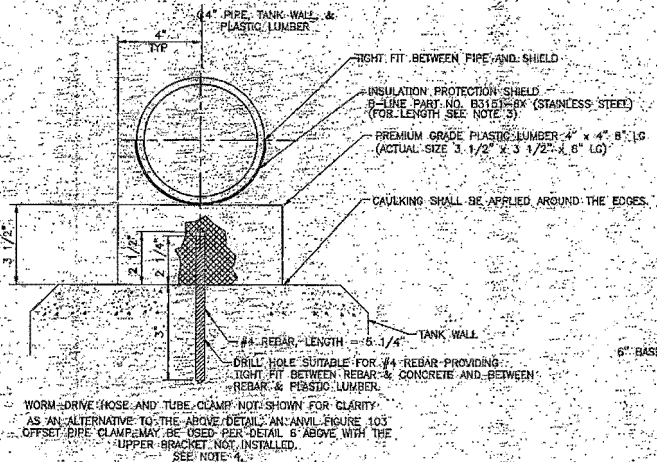
6 M-3001 | 8 M-1014 | 6 M-1005 PIPE SUPPORT DETAIL – ELEVATION VIEW SCALE: NONE



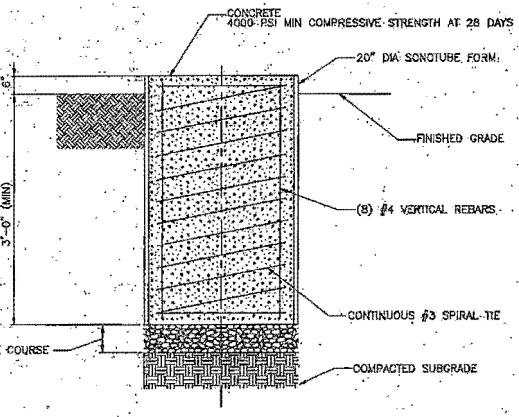
7 M-5001 PIPE SUPPORT PLATE DETAIL SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. POST INSTALLED ANCHORS SHALL BE STAINLESS STEEL OF THE KWIK BOLT TZ SYSTEM AS MANUFACTURED BY HILTI AND INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
3. THE LENGTH OF THE INSULATION PROTECTION SHIELDS FOR THE PIPE SUPPORTS ALONG THE NORTH AND SOUTH WALLS SHALL BE AS FOLLOWS AS MEASURED FROM THE CENTER WALL OF THE TANKS:
   - A. FOR PIPE SUPPORTS LOCATED BETWEEN 0–50 FEET FROM THE CENTER WALL, USE 12" LONG SHIELDS.
   - B. FOR PIPE SUPPORTS LOCATED BETWEEN 51–100 FEET FROM THE CENTER WALL, USE 18" LONG SHIELDS.
   - C. FOR PIPE SUPPORTS LOCATED BETWEEN 101–150 FEET FROM THE CENTER WALL, USE 24" LONG SHIELDS.
   - D. FOR PIPE SUPPORTS LOCATED BETWEEN 151–200 FEET FROM THE CENTER WALL, USE 30" LONG SHIELDS.
   - E. FOR PIPE SUPPORTS LOCATED BETWEEN 201–250 FEET FROM THE CENTER WALL, USE 36" LONG SHIELDS.
4. THE FIRST SUPPORT FROM THE CENTER WALL FOR THE SPRAY PIPING ON THE NORTH AND SOUTH WALLS MUST BE AN UNRESTRAINED SUPPORT AND AN ANVIL FIGURE 103 SHOULD NOT BE USED. THESE FOUR (4) LOCATIONS REQUIRE A DEAD WEIGHT SUPPORT THAT IS NOT RESTRAINED IN ANY DIRECTION.



8 M-3001 | 8 M-1014 | 9 M-1005 PIPE SUPPORT DETAIL – ELEVATION VIEW SCALE: NONE



11 M-1019 SONOTUBE DETAIL – ELEVATION VIEW SCALE: NONE

STEPHEN P. STURRE — N.M. — 20656 — REGISTERED ENGINEER

NO.	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	08/28/12	-	-	ADDITIONAL REPORTED RECORD CHANGES	HG #3	KS 10/5	SPS 10/5	NL 10/5	
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	4/27/12			REVISED DETAIL 6 AND DETAIL 8 FOR SPACER REQUIREMENTS. ADDED DETAIL 11 AND NOTE 3.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TYPICAL HANGER DETAILS

DRAWN: C. HARPER 9/7
DESIGN: C. HARPER 9/7
CHECKED: S. STURRE 9/6
DATE: 09/27/2011

BLDG 181,183 TA-52

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH EROPKIN

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

SHEET M-5001

57 OF 88

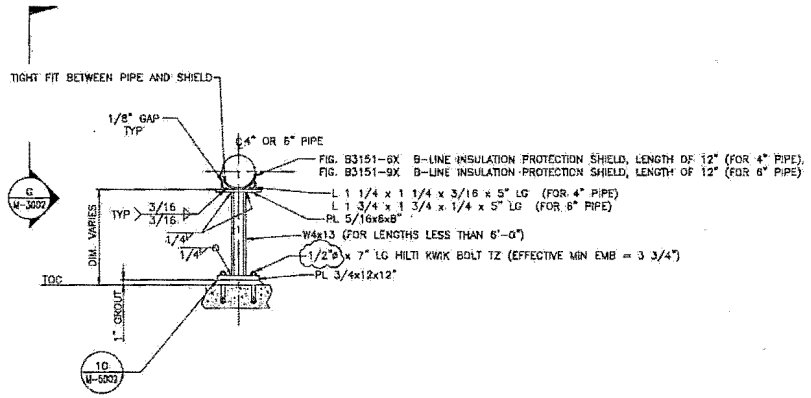
CLASSIFICATION | REVIEWER EDWARD ARTIGLIA | DATE

PROJECT ID 100761 | DRAWING NO C-55751 | REV 3

Plotted By: SHAW
Plot Date: 9/28/2012
P:\ENGR\LASTOL\LA-505-483.dwg

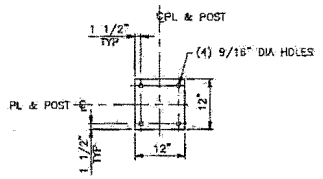
GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.

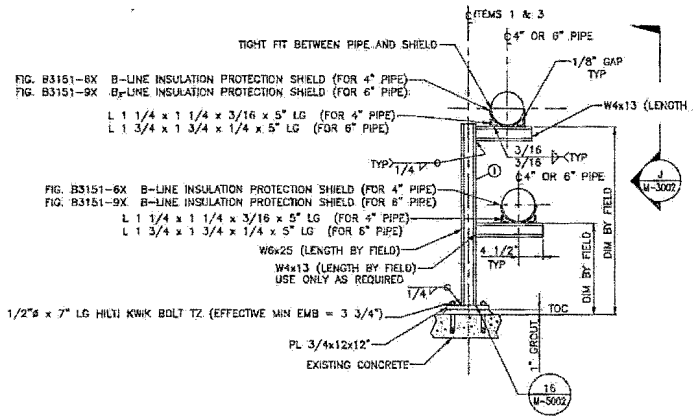


WORM-DRIVE HOSE AND TUBE CLAMP NOT SHOWN FOR CLARITY

9 M-1019 9 M-3001 PIPE SUPPORT DETAIL – ELEVATION VIEW
SCALE: NONE

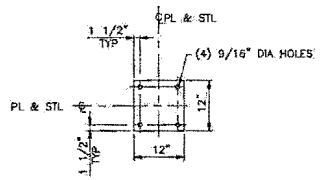


10 M-5002 PIPE SUPPORT PLATE DETAIL
SCALE: NONE



WORM-DRIVE HOSE AND TUBE CLAMP NOT SHOWN FOR CLARITY.
ALL ITEMS TO BE HOT DIPPED GALVANIZED OR SHOP FINISH COATED UNLESS NOTED OTHERWISE.

15 M-1019 15 M-3001 PIPE SUPPORT DETAIL – ELEVATION VIEW
SCALE: NONE



16 M-5002 PIPE SUPPORT PLATE DETAIL
SCALE: NONE

NO	DATE	CLASS REV	ADD	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	8/23/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES	TJH	SPS	SPS	NL	
2	4/25/12			REVISED SUPPORT DETAIL 9 TO DRAWINGS M-1014 AND M-3001, REVISED SUPPORT DETAIL 10 AND SUPPORT DETAIL 11, ADDED DETAILS 15 AND 16.	TJH	SPS	SPS	NL	
1	12/19/11			ADDED SUPPORT DETAIL 11 TO DRAWINGS M-1014 AND M-3001.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TYPICAL HANGER DETAILS

BLDG 182 TA-52

DRAWN T. HARPER
DESIGN T. HARPER
CHECKED S. STURGIS
DATE 09/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

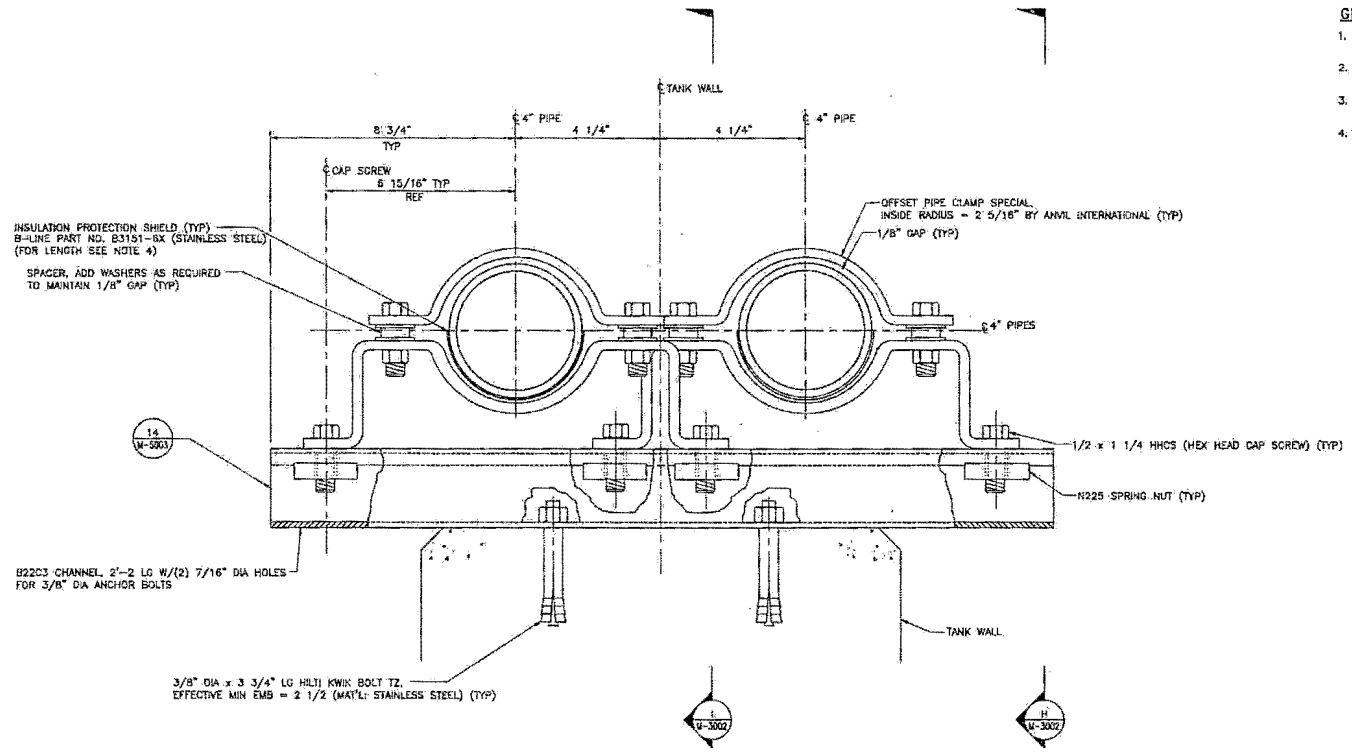
SHEET M-5002
58 OF 88

CLASSIFICATION
REVIEWER EDWARD ARTIGLIA DATE 6/6/12
PROJECT ID 100761
DRAWING NO C-55751
REV 3

100761-C55751-M00034

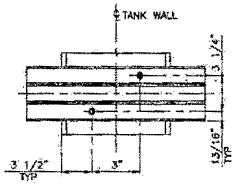
GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. ALL FIGURE NUMBERS ARE B-LINE SYSTEMS INC. OR EQUIVALENT UNLESS NOTED OTHERWISE.
3. ALL ITEMS TO BE HOT DIPPED GALVANIZED OR SHOP FINISH COATED UNLESS NOTED OTHERWISE.
4. THE LENGTH OF THE INSULATION PROTECTION SHIELDS FOR THE SUPPORTS ALONG THE CENTER WALL SHALL BE 12" LONG.



McMASTER CARR PART #54155K37, WORM-DRIVE HOSE AND TUBE CLAMP NOT SHOWN FOR CLARITY

13 M-1008 13 M-1015 PIPE SUPPORT DETAIL – ELEVATION VIEW
SCALE: NONE



14 M-5003 PIPE SUPPORT CHANNEL DETAIL – PLAN VIEW
SCALE: NONE

STEPHEN P. STUHRKE NEW MEXICO 20659 PROFESSIONAL ENGINEER

100761-C55751-M00035

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
2	4/25/12			REVISED SUPPORT DETAILS 13 & 14, ADDED NOTES 2, 3, & 4, AND DELETED SUPPORT DETAILS 15 & 16. (FOR NO. 7)	TJH	TJH	SPS	NL	
1	12/19/11			ADDED SUPPORT DETAIL 15 TO DRAWINGS M-1014 AND M-3001.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

TYPICAL HANGER DETAILS

BLDG 182 TA-52

DRAWN T. HARPER
DESIGN T. HARPER
CHECKED S. STUHRKE
DATE 06/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-5003
59 OF 88

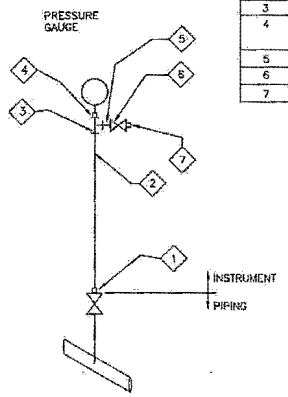
CLASSIFICATION
REVIEWER EDWARD ARTIGLIA
DATE 6/27/12

PROJECT ID 100761
DRAWING NO C-55751
REV 3

Plotted By: HARPERT Plot Date: 7/3/2012
FILE NAME: C55751-M-5003-R3.DWG

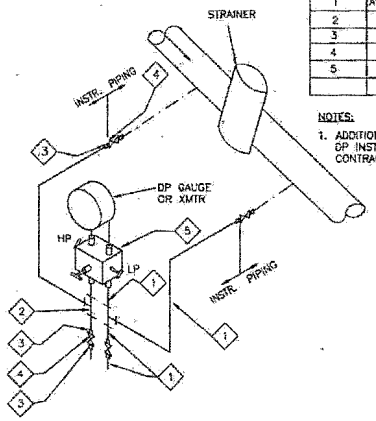
GENERAL NOTES:

1. DETAILS ARE TYPICAL. VARIATIONS DUE TO EQUIPMENT CONFIGURATIONS ARE ALLOWABLE.
2. FOR INSTRUMENT INDEX, SEE DRAWING M-7000.



PART #	QTY.	DESCRIPTION
1	1	3/4"x1/2" PIPE REDUCER INSERT, CS
2	1	1/2" NPT x 3" LENGTH NIPPLE, CS
3	1	1/2"x1/2"x1/2" FNPT PIPE TEE, CS
4	1	1/2"xA/B" ADAPTER, CS (IF GAUGE CONNECTION IS NOT 1/2")
5	1	1/2" NPT x 2" PIPE NIPPLE, CS
6	1	1/2" FNPT BALL VALVE, CS, TEFLON PKG.
7	1	1/2" NPT PLUG, CS

1 M-7000 LOCAL PRESSURE INSTRUMENT
SCALE: NONE

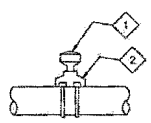


PART #	QTY.	DESCRIPTION
1	AS REQ	1/2" OD x 0.049"W TUBE, SS
2	2	1/2"x1/2"x1/2" UNION TEE, TUBE, SS
3	6	1/2"NPT x 1/2" TUBE MALE CONNECTOR, SS
4	2	1/2" FNPT BALL VALVE, SS, TEFLON PKG.
5	1	3 VALVE MANIFOLD, SS

NOTES:

1. ADDITIONAL FITTINGS MAY BE REQUIRED TO CONNECT MANIFOLD TO DP INSTRUMENT, DEPENDING ON MANIFOLD TYPE SELECTED BY CONTRACTOR.

2 M-7000 LOCAL DIFF PRESSURE INSTRUMENT
SCALE: NONE



PART #	QTY.	DESCRIPTION
1	1	FLOW METER WITH INTEGRAL ASSEMBLY
2	1	PIPE SADDLE MOUNT (FURNISHED W/FLOW INST)

NOTES:

1. FLOW INSTRUMENT ORIENTATION AND PIPE PENETRATION SHALL BE PER MANUFACTURER'S INSTRUCTIONS.

3 M-7000 FLOW METER/SWITCH
SCALE: NONE

STEPHEN P. STOHRER NEW MEXICO 20850 PROFESSIONAL ENGINEER

100761-C55751-M00036

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ZERO LIQUID DISCHARGE SUBPROJECT

MISCELLANEOUS INSTRUMENTS
INSTRUMENT INSTALLATION DETAILS

BLDG 181,182,183 TA-52

DRAWN: I. BARAKA
DESIGN: I. BARAKA
CHECKED: K. COLE
DATE: 09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

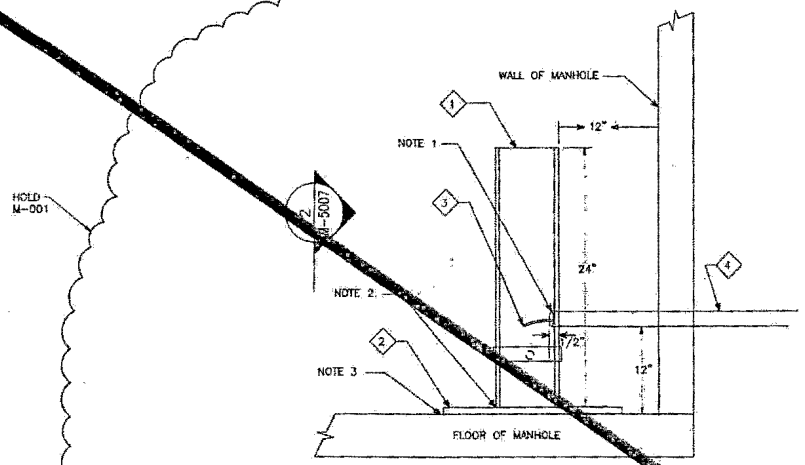
SHEET M-5006
60 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTIGUA
DATE: 5/23/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

GENERAL NOTES:

1. DETAILS ARE TYPICAL. VARIATIONS DUE TO EQUIPMENT CONFIGURATIONS ARE ALLOWABLE.
2. FOR INSTRUMENT INDEX AND BILL OF MATERIALS SEE DWG. M-7000.

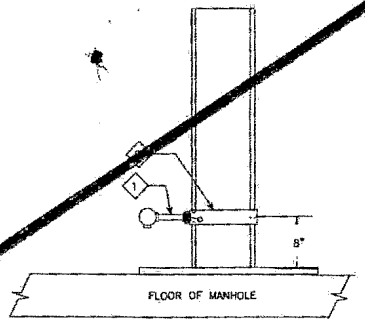


1 M-7000 LEAK DETECTION STANDPIPE
SCALE: NONE

PART #	QTY.	DESCRIPTION
1	1	4" SCHEDULE 40 PVC OR HDPE DR17 PIPE
2	1	12"X12"X1/2" THICK PVC SHEET
3	1	1/4" TEFLON TUBE CUT TO LEAVE 2" EXPOSED (BY MECHANICAL CONTRACTOR)
4	1	2" HDPE DR17 OR PVC SCHEDULE 40 PIPE (BY MECHANICAL CONTRACTOR)

NOTES:

1. DRILL HOLE IN 4" PVC PIPE TO MATCH OD OF 2" PIPE. INSERT 2" PIPE THROUGH HOLE AND SEAL WITH PVC SOLVENT GLUE.
2. ATTACH PVC PIPE TO SHEET USING PVC SOLVENT GLUE.
3. ATTACH PVC SHEET TO FLOOR OF MANHOLE USING CONSTRUCTION ADHESIVE.



2 M-7000 LEAK DETECTION LEVEL SWITCH
SCALE: NONE

PART #	QTY.	DESCRIPTION
1	1	LEVEL SWITCH- DWYER, WE ANDERSON FLOTECT MODEL L6EPS-S-3-0-JCTLH
2	1	PVC OR HDPE PIPE SADDLE CLAMP FOR 4" SCHEDULE 40 PIPE, 1" NPT OUTLET

Not Used For Construction

HOLDS:

M-D01 LEAK DETECTION SYSTEM

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

ZERO LIQUID DISCHARGE SUBPROJECT

LEAK DETECTION LEVEL SWITCH INSTRUMENT INSTALLATION DETAILS

BLDG 181,183 TA-52

DRAWN I. BARAKA
DESIGN I. BARAKA
CHECKED K. COLE
DATE 09/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-5007
61 OF 88

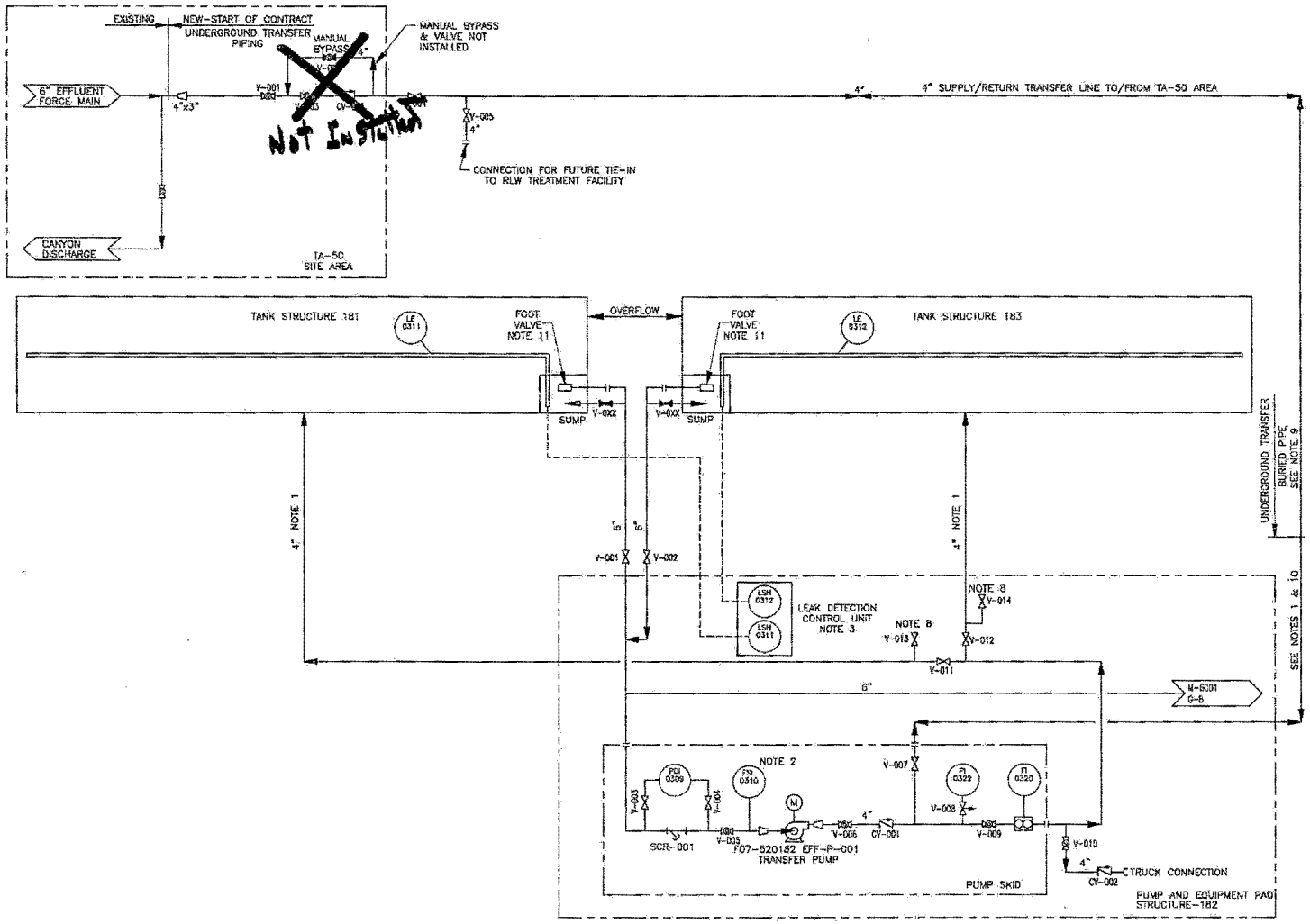
CLASSIFICATION U
REVIEWER EDWARD ARTIGLIA
DATE
PROJECT ID 100761
DRAWING NO C-55751
REV 0

LANL BUILDING OFFICIAL
APPROVED
STEPHEN P. STUHRKE
NEW MEXICO 20659
PROFESSIONAL ENGINEER
9-21-2011

100761-C55751-M00037

Plotted By: HARPERT Plot Date: 9/19/2011
FILE NAME: C55751-M-5007-R0.DWG

08071



TA-52 SITE
ZERO LIQUID DISCHARGE P&ID

SCALE: NONE

GENERAL NOTES:

1. HEAT TRACE ABOVEGROUND PIPING ONLY AS REQUIRED. SEE THIS DRAWING AND DRAWING M-1014. HEAT TRACING OF THE ABOVE GROUND SUPPLY/RETURN TRANSFER LINE TO/FROM TA-50 AREA SHALL BE PROVIDED. HEAT TRACING AND INSULATION SHALL BE PROVIDED DOWN TO THE FROST LINE AND INTO STRUCTURE 182. HEAT TRACING WILL BE FURNISHED AND INSTALLED BY THE PUMP AND EQUIPMENT PACKAGE AND COORDINATED WITH OTHER PACKAGES.
2. LOW FLOW SWITCH WILL CAUSE PUMP TO TRIP IF PUMP FLOW DROPS OR RUNS DRY (AFTER DELAY).
3. LEAK DETECTION ALARMS ARE DIRECTED TO A LOCAL ALARM PANEL, WITH FLASHING BEACON, AT THE PUMPS AND STRUCTURE 182.
4. NOT USED.
5. ALL VALVES ON THIS DRAWING HAVE A PREFIX OF "EFF" (i.e. EFF-V-001).
6. SEE "BILL OF MATERIALS" DRAWINGS M-7000, M-7001 AND M-7003 FOR DETAILS AND REQUIREMENTS FOR EQUIPMENT AND SPECIALTY ITEMS.
7. SEE "VALVE SCHEDULES" DRAWINGS M-7002 AND M-7004 FOR DETAILS AND REQUIREMENTS FOR VALVES.
8. TRANSFER LINES TO TANKS TO BE FREE DRAINING. LOCATE ¾" VENT VALVES (NORMALLY CLOSED) AT HIGH POINT NEAR PUMPS.
9. UNDERGROUND TRANSFER PIPING PACKAGE SHALL TERMINATE THE TRANSFER PIPE ABOVEGROUND AND FIVE (5') FEET AWAY FROM THE PUMPS AND EQUIPMENT PAD. PIPING SHALL BE PROVIDED WITH A TEMPORARY COVER TO PREVENT CONTAMINATION AND FOR COMPLETION OF TESTING. FINAL CONNECTION TO PIPING FROM THE PUMP AND EQUIPMENT SKIDS WILL BE COMPLETED BY THE PUMP AND EQUIPMENT PACKAGE.
10. PUMP AND EQUIPMENT PACKAGE SHALL COMPLETE AND TEST PIPING FROM THE PUMP AND EQUIPMENT SKIDS PRIOR TO MAKING THE FINAL CONNECTION TO THE UNDERGROUND TRANSFER PIPING. PIPING SHALL BE PROVIDED WITH A TEMPORARY COVER TO PREVENT CONTAMINATION AND FOR COMPLETION OF TESTING. REMOVAL OF TEMPORARY COVERS AND THE FINAL CONNECTION TO THE UNDERGROUND TRANSFER PIPING, AS COMPLETED BY THE UNDERGROUND TRANSFER PIPING PACKAGE, SHALL BE MADE BY THE PUMP AND EQUIPMENT PACKAGE.
11. FLOMATIC CORPORATION FOOT VALVE MODEL 63.

SEQUENCE OF OPERATION:

TRANSFER PUMP:
LOW FLOW SWITCH FSL-0310 WILL CAUSE TRANSFER PUMP P-001 TO TRIP IF PUMP FLOW DROPS OR RUNS DRY (AFTER DELAY). WITH PROPER VALVE LINEUPS TANK CONTENTS CAN BE TRANSFERRED FROM ONE TANK TO ANOTHER TANK OR RETURNED TO SOURCE (TA-50 AREA) BY THE TRANSFER PUMP. TO WINTERIZE TRANSFER SYSTEM AND SHUTDOWN THE TRANSFER SYSTEM, MAKE SURE ALL SYSTEM VALVES ARE OPEN INCLUDING NORMALLY CLOSED VENT VALVES EFF-V-013 AND EFF-V-014 TO ALLOW FREE DRAINING OF DISCHARGE HEADERS. OPERATION OF THE TRANSFER PUMP WITH COINCIDENT OPERATION OF THE SPRAY PUMPS IS NOT A SYSTEM REQUIREMENT. THEREFORE, THE TRANSFER PUMP SHOULD NOT BE OPERATED WHEN THE ONE OR BOTH OF THE SPRAY PUMPS ARE OPERATING. DOORS SHALL BE LEFT OPEN DURING OPERATION (RUNNING) OF THE TRANSFER PUMP.

LEAK DETECTION:
LEAK DETECTED BY LSH-0311 OR LSH-0312 ALARMS DIRECTELY TO A LOCAL ALARM PANEL AT THE PUMPS. IN ADDITION, A FLASHING BEACON, VISIBLE FROM THE ROAD, LOCATED ON TOP OF AN EIGHT (8') FOOT HIGH POLE NEAR THE PUMPS, SHALL ALARM AND MONITOR FOR TANK LEAKAGE THROUGH THE LINER.

TRUCK CONNECTION:
A CONNECTION WITH A SHUTOFF AND CHECK VALVE ENDING WITH A BLIND FLANGE HAS BEEN PROVIDED FOR EMERGENCY EMPTYING OR TRANSFER OF A TANK OR TANKS CONTENTS TO A TANKER TRUCK FOR REMOVAL. THE BLIND FLANGE SHALL BE MODIFIED BY OPERATIONS FOR A SUITABLE HOSE CONNECTION COMPATIBLE FOR THE TANKER TRUCKS SERVICING THE FACILITY. REQUIRED HOSE OR TEMPORARY PIPING FROM THE PROVIDED CONNECTION SHALL BE PROVIDED BY OPERATIONS OR AS FURNISHED WITH THE TANKER TRUCKS. THE TRANSFER PUMP CAN BE USED TO FILL THE TANKER TRUCKS WITH THE FILLING RATE CONTROLLED BY GLOBE VALVES EFF-V-009 OR EFF-V-010.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
5	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS PJ	NS JW	SPS SPS	NL NL	
4	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
3	4/25/12			REVISED LOCATION OF VALVES V-001 AND V-002, AND TRANSFER PUMP SEQUENCE OF OPERATION.	TJH	TJH	SPS		

ZERO LIQUID DISCHARGE SUBPROJECT

ZERO LIQUID DISCHARGE TRANSFER SYSTEM P&ID AND SEQUENCE OF OPERATION TA-50 TA-52 TA-63

BLDG 181,182,183

DRAWN T. HARPER
DESIGN S. STUHRKE
CHECKED S. STUHRKE
DATE 09/12/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH GROPPIO

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

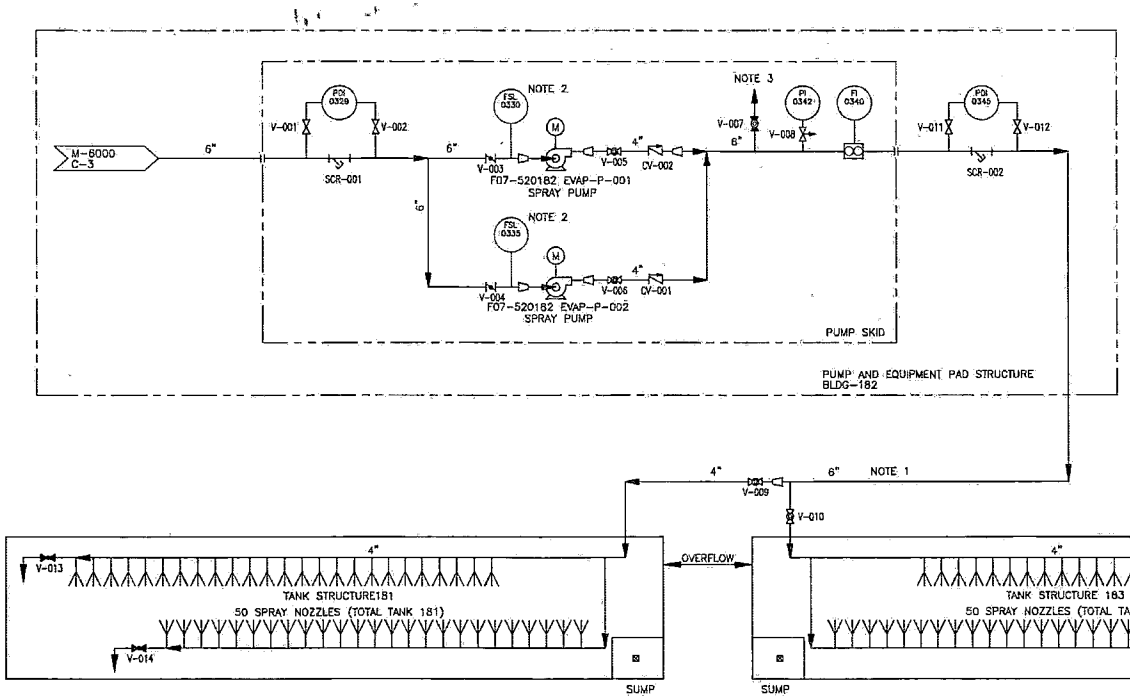
SHEET M-6000
62 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIOLA DATE 8/29/12

PROJECT ID 100761
DRAWING NO C-55751
REV 5

100761-C55751-M00038

Plotted by: SHUHS
File Name: C55751-M-6000-5.dwg
Plot Date: 8/29/2012



TA-52 SITE
SPRAY SYSTEM FOR EVAPORATION TANKS

SCALE: NONE

GENERAL NOTES:

1. HEAT TRACE ABOVE GROUND PIPING ONLY AS REQUIRED. SEE DRAWING M-1014.
2. LOW FLOW SWITCH WILL CAUSE PUMP TO TRIP IF PUMP FLOW DROPS OR RUNS DRY (AFTER DELAY).
3. SPRAY NOZZLE HEADERS ARE TO BE FREE DRAINING. LOCATE 3/4" VENT WITH GLOBE VALVE AT HIGH POINT OF SPRAY PIPING AND 3/4" DRAINS AS REQUIRED ON SPRAY HEADERS AT LOW POINTS. SPRAY PIPING HIGH POINT VENT SHALL BE LOCATED NEAR PUMPS.
4. ALL VALVES ON THIS DRAWING HAVE A PREFIX OF "EVAP" (i.e. EVAP-V-001).
5. SEE "BILL OF MATERIALS" DRAWINGS M-7000 & M-7001 FOR DETAILS AND REQUIREMENTS FOR INSTRUMENTS, EQUIPMENT, & SPECIALTY ITEMS.
6. SEE "VALVE SCHEDULES" DRAWING M-7002 FOR DETAILS AND REQUIREMENTS FOR VALVES.

SEQUENCE OF OPERATION:

NOZZLES:

VEEJET SPRAY (FLAT FAN PATTERN NOZZLES), AS MANUFACTURED BY SPRAYING SYSTEMS. COMPLETE WITH ADJUSTABLE BALL FITTINGS (TOTAL 100 REQUIRED).

SPRAY PUMPS:

LOW FLOW SWITCHES FSL-0330 OR FSL-0335 WILL CAUSE THE PUMP P-001 OR P-002 TO TRIP IF THE RESPECTIVE PUMP FLOW DROPS OR RUNS DRY (AFTER DELAY). MANUAL OPERATION WHEN SPRAYING IS REQUIRED TO ENHANCE EVAPORATION. ONE PUMP WILL BE UTILIZED FOR SPRAYING ONE TANK. EITHER PUMP CAN BE USED FOR EITHER TANK THROUGH VALVE LINE UPS. SYSTEM IS DESIGNED FOR SPRAYING BOTH TANKS SIMULTANEOUSLY. STARTING AND STOPPING OF ONE OR BOTH SPRAY PUMPS IS A MANUAL OPERATION VIA A LOCAL START/STOP PUSH BUTTON. LOW FLOW OR NO FLOW WILL CAUSE A PUMP OR PUMPS TO TRIP IF TANK OR TANKS RUN(S) DRY (AFTER DELAY). TO WINTERIZE SPRAY SYSTEM AND SHUTDOWN THE EVAPORATION SPRAY SYSTEM, MAKE SURE ALL SYSTEM VALVES ARE OPEN, INCLUDING NORMALLY CLOSED VENT VALVE (V-007) AND NORMALLY CLOSED SPRAY HEADER VALVES (V-013, V-014, V-015, AND V-016) TO ALLOW FOR FREE DRAINING OF THE SPRAY HEADERS AND NOZZLES. OPERATION OF THE SPRAY PUMPS WITH COINCIDENT OPERATION OF THE TRANSFER PUMP IS NOT A SYSTEM REQUIREMENT. THEREFORE, THE SPRAY PUMPS SHOULD NOT BE OPERATED WHEN THE TRANSFER PUMP IS OPERATING. DOORS SHALL BE LEFT OPEN DURING OPERATION (RUNNING) OF ONE OR BOTH OF THE SPRAY PUMPS.

NO.	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	SPS	NL
1	4/25/12			REVISED SEQUENCE OF OPERATION FOR SPRAY PUMPS.	TJH	TJH	SPS		

ZERO LIQUID DISCHARGE SUBPROJECT

ZERO LIQUID DISCHARGE EVAPORATION SPRAY SYSTEM P&ID AND SEQUENCE OF OPERATION

TA-50
BLDG 181,182,183 TA-52, TA- 63

DRAWN: T. HARPER
DESIGN: S. STUHRKE
CHECKED: S. STUHRKE
DATE: 09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET: M-6001
63 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTIOLIA DATE: 8/27/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 2

STEPHEN P. STUHRKE
NEW MEXICO
20659
REGISTERED ENGINEER

100761-C55751-M00039

Public

GENERAL NOTES:

1. FOR PROCESS SYMBOLS AND ABBREVIATIONS SEE DRAWINGS M-0001, M-0002, M-0003, M-0004, AND M-0005.
2. CONTRACTOR TO PURCHASE INSTRUMENTS AS LISTED BY MANUFACTURER AND MODEL NUMBER OR EQUIVALENT.

TA	BLDG	SYSTEM	FUNCTION	LOOP	SERVICE DESCRIPTION	TERM DEVICE	P&ID	INSTALLATION DETAIL	MANUFACTURER	MODEL NUMBER
52	181	EVAP	LSH	0311	TK-181 LEAK DETECTION LEVEL HI	JB-1	C54159 M-6000	--	HYDRO-TEMP	EPC 50/32 CONTROL UNIT
52	181	EVAP	PDI	0329	SPRAY P-001/002 INLET PRESS DIFF		C54159 M-6001	C55751-M-5006 DET #2	ASHCROFT	10-5509-S-L-S-04L-L-0/15 PSID
52	181	EVAP	FSL	0330	SPRAY P-001 LOW FLOW SWITCH	JB-1	C54159 M-6001	C55751-M-5006 DET #3	SIGNET	3-2537-3C-P1, IR8S060
52	181	EVAP	FI	0340	SPRAY P-001/002 OUTLET FLOW		C54159 M-6001	C55751-M-5006 DET #3	SIGNET	3-8550-1, 3-8510-P1, 3-8051, IR8S060
52	181	EVAP	PI	0342	SPRAY P-001/002 OUTLET PRESS		C54159 M-6001	C55751-M-5006 DET #1	ASHCROFT	45-1010-S-04L-L-0/160 PSI
52	182	EFF	PDI	0309	XFER P-001 INLET PRESS DIFF		C55751 M-6000	C55751-M-5006 DET #2	ASHCROFT	10-5509-S-L-S-04L-L-0/15 PSID
52	182	EFF	FSL	0310	XFER P-001 LOW FLOW SWITCH	JB-1	C55751 M-6000	C55751-M-5006 DET #3	SIGNET	3-2537-3C-P0, IR8S040
52	182	EFF	FI	0320	XFER P-001 OUTLET FLOW		C54159 M-6000	C55751-M-5006 DET #3	SIGNET	3-8550-1, 3-8510-P0, 3-8051, IR8S040
52	182	EFF	PI	0322	XFER P-001 OUTLET PRESS		C54159 M-6000	C55751-M-5006 DET #1	ASHCROFT	45-1010-S-04L-L-0/160 PSI
52	183	EVAP	LSH	0312	TK-183 LEAK DETECTION LEVEL HI	JB-1	C54159 M-6000	--	HYDRO-TEMP	EPC 50/32 (SAME CONTROL UNIT AS LSH-0311)
52	183	EVAP	FSL	0335	SPRAY P-002 LOW FLOW SWITCH	JB-1	C54159 M-6001	C55751-M-5006 DET #3	SIGNET	3-2537-3C-P1, IR8S060
52	183	EVAP	PDI	0345	SPRAY P-001/002 DOWNSTREAM PRESS DIFF		C54159 M-6001	C55751-M-5006 DET #2	ASHCROFT	10-5509-S-L-S-04L-L-0/15 PSID
52	181	EVAP	LE	0311	TK-181 LEAK DETECTION SENSOR	LDCU	C54159 M-6000	--	HYDRO-TEMP	B-11 LIQ DET TAPE - @ 300 FT (1)
52	183	EVAP	LE	0312	TK-183 LEAK DETECTION SENSOR	LDCU	C54159 M-6000	--	HYDRO-TEMP	B-11 LIQ DET TAPE - @ 300 FT (1)

KEYED NOTES

(1) LIQUID DETECTION TAPE TO BE SPECIAL ORDERED TO OBTAIN 300 FT. LENGTH. STANDARD LENGTH IS 250 FT. DETECTION TAPE MAYBE SPLICED.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	08/23/12	--	--	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	NL	
2	8/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	12/19/11			ADDED LEAK DETECTION SENSOR INFO, KEYED NOTES, AND REVISED MANUFACTURER INFO FOR LEAK DETECTION LEVEL HI.	TJH	KC	KC	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

INSTRUMENT INDEX AND BILL OF MATERIALS

BLDG 181,182,183 TA- 52

DRAWN	L. BARAKA
DESIGN	L. BARAKA
CHECKED	K. COLE
DATE	08/21/2011

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-7000

64 OF 88

CLASSIFICATION

REVIEWER EDWARD ARTIGLIA DATE 8/27/12

PROJECT ID 100761

DRAWING NO C-55751

REV 3

STEPHEN P. STUMPF NEW MEXICO 20859 REGISTERED PROFESSIONAL ENGINEER 8.23.12

100761-C55751-M00040

Plotted By: SNASH
File Name: C55751-M-7000-M0040
Plot Date: 8/23/2012

MECHANICAL BILL OF MATERIAL

THE BILL OF MATERIAL IS INTENDED ONLY AS AN AID IN ESTIMATING AND MATERIAL TAKE-OFF, AND DOES NOT NECESSARILY INCLUDE ALL MATERIAL REQUIRED. UNLESS NOTED, CATALOG NUMBER IS GIVEN AS REFERENCE ONLY, AND APPROVED EQUAL SUBSTITUTION MAY BE MADE. ALL MATERIAL SHALL BE FURNISHED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.

PUMP SCHEDULE

EQUIPMENT NUMBER	LOCATION	MANUFACTURER	TYPE	DESIGN GPM	HEAD FT OF H_2O	PUMP RPM	MOTOR DATA			APPROX WT. (LBS)	REMARKS
							HP	FRAME	ELECTRICAL DATA		
F07-520182-EFF-P-001	TA-52 AREA (OUTDOORS)	GOULDS PUMPS	IN-LINE	150	201	3500	20	256TC	460/3/60	653.5	MODEL: 3996ST SIZE:1.5X3-8, 7.125 in. IMPELLER WITH MECHANICAL SEAL (JOHN CRANE TYPE 1 WITH TAPERBORE BOX – NO FLUSH REQUIRED) MOTOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 26 0700 "INDUCTION MOTORS – 500 HP AND SMALLER"
F07-520182-EVAP-P-001	TA-52 AREA (OUTDOORS)	GOULDS PUMPS	IN-LINE	250	140	1750	25	284TSC	460/3/60	820.5	MODEL: 3996MT SIZE:2X3-13, 12.625 in. IMPELLER WITH MECHANICAL SEAL (JOHN CRANE TYPE 1 WITH TAPERBORE BOX – NO FLUSH REQUIRED) MOTOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 26 0700 "INDUCTION MOTORS – 500 HP AND SMALLER"
F07-520182-EVAP-P-002	TA-52 AREA (OUTDOORS)	GOULDS PUMPS	IN-LINE	250	140	1750	25	284TSC	460/3/60	820.5	MODEL: 3996MT SIZE:2X3-13, 12.625 in. IMPELLER WITH MECHANICAL SEAL (JOHN CRANE TYPE 1 WITH TAPERBORE BOX – NO FLUSH REQUIRED) MOTOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 26 0700 "INDUCTION MOTORS – 500 HP AND SMALLER"

STRAINERS

EQUIPMENT NUMBER	SIZE	MESH	MANUFACTURER/MODEL	CLASS	TYPE	MATERIAL	END CONNECTION	COVER	RATING	END CONNECTION
F07-520182-EFF-SCR-001	6"	40	HAYWARD MODEL 85	125/150	Y STRAINER	IRON (CAST/DUCTILE) OR PLASTIC (HDPE OR PVC)	FLANGED	BOLTED	200 psi @ 150F	COMPRESSED, NON-ASBESTOS, SYNTHETIC FIBER
F07-520182-EVAP-SCR-001	6"	40	HAYWARD MODEL 85	125/150	Y STRAINER	IRON (CAST/DUCTILE) OR PLASTIC (HDPE OR PVC)	FLANGED	BOLTED	200 psi @ 150F	COMPRESSED, NON-ASBESTOS, SYNTHETIC FIBER
F07-520182-EVAP-SCR-002	6"	60	HAYWARD MODEL 85	125/150	Y STRAINER	IRON (CAST/DUCTILE) OR PLASTIC (HDPE OR PVC)	FLANGED	BOLTED	200 psi @ 150F	COMPRESSED, NON-ASBESTOS, SYNTHETIC FIBER

PIPING SCHEDULE

PIPING SCHEDULE	DESIGN PRESSURE (PSIG)	DESIGN TEMPERATURE (F)	PIPE DIMENSIONS AND MANUFACTURING REQUIREMENTS	MATERIAL/ MATERIAL GRADE	CODE OF REFERENCE	SCHEDULE	REMARKS
PS-502F TRANSFER PIPING	85	70	HDPE ASTM F714, ASTM D3035	ASTM D3350/PE3608	B31.3, 2008	DR11 IPS IN 500' PIPE COILS	ALL PIPING FORMULATED WITH A MINIMUM OF 2% CARBON BLACK FOR MAXIMUM PROTECTION AGAINST UV RAYS FOR ADDED ASSURANCE. ALL PIPE FITTINGS SHALL CONFORM TO FITTING REQUIREMENTS OF PS-502F (BUTT FUSION FITTINGS: ASTM D3261, ASTM D1248, PE3408).
PS-502F SPRAY PIPING	65	70	HDPE ASTM F714, ASTM D3035	ASTM D3350/PE3608	B31.3, 2008	DR11 IPS IN 500' PIPE COILS OR IN LENGTHS	ALL PIPING FORMULATED WITH A MINIMUM OF 2% CARBON BLACK FOR MAXIMUM PROTECTION AGAINST UV RAYS FOR ADDED ASSURANCE. ALL PIPE FITTINGS SHALL CONFORM TO FITTING REQUIREMENTS OF PS-502F (BUTT FUSION FITTINGS: ASTM D3261, ASTM D1248, PE3408).

NOTES:

1. ALL PIPE AND FITTINGS SHALL BE FROM THE SAME QUALIFIED AND EXPERIENCED MANUFACTURER.
2. MATERIALS USED FOR THE MANUFACTURE OF HDPE PIPE FITTINGS SHALL BE FROM A PE3408 HIGH DENSITY POLYETHYLENE RESIN COMPOUND MEETING CELL CLASSIFICATION 345434C PER ASTM D3350; AND MEETING TYPE III, CLASS C, CATEGORY 5, GRADE P34 PER ASTM D1238.
3. HDPE PIPE SHALL COMPLY WITH AWWA SPECIFICATION C906.
4. DIMENSIONS AND WORKMANSHIP SHALL BE AS SPECIFIED BY ASTM F714 OR ASTM D3035 HAVING A MINIMUM DENSITY OF 0.955 GRAMS PER CUBIC CENTIMETER.
5. ALL HDPE PIPE AND FITTINGS SHALL HAVE A HYDROSTATIC DESIGN BASIS (HDB) OF 1600 PSI.

SPRAY NOZZLES

EQUIPMENT NUMBER	QUANTITY	MAKE	MODEL	PART NUMBER	TYPE	MATERIAL	INLET DIAMETER	FLOW RATE	PRESSURE	SPRAY HEIGHT	SPRAY DISTANCE	SPRAY WIDTH	FITTING
F07-520182-EVAP-NZL-001	100	SPRAYING SYSTEMS CO	4050	H 1/4 U-4050	VEEJET (FLAT FAN PATTERN)	BRASS	1/4" NPT(M)	5 gpm	40 psi	3 ft	20'-6"	7'-6"	BRASS ADJUSTABLE BALL FITTING, PART NUMBER 36275-1/4"(F)X1/4"(M)

MANUAL VALVES

SIZE	SERVICE	TYPE	MATERIAL	CLASS	END TYPE	OPERATOR	CODE OF REFERENCE	STANDARDS
ALL SIZES	WATER	GATE, GLOBE, CHECK	IRON (CAST/DUCTILE) OR PLASTIC (HDPE, CPVC, PVC)	125/150	FLANGED	MANUAL	B31.3, 2008	ASME B16.34, B16.5, MSS-SP-70,-71,-80, AND-85

GENERAL NOTES:

1. FOR MECHANICAL LEGEND, SYMBOLS & GENERAL NOTES SEE DRAWING M-0001, M-0002 AND M-0003.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	HS	HS	SPS	ML	
2	6/25/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	ML	
1	4/25/12			REVISED PIPING SCHEDULE MATERIAL/MATERIAL GRADE & SCHEDULE, AND DELETED COUPLING SCHEDULE.	TJH	TJH	SPS		

ZERO LIQUID DISCHARGE SUBPROJECT

MECHANICAL BILL OF MATERIALS
SHEET 1
TA-50
TA-52
TA-63
BLDG 181,182,183

DRAWN E. NEMOEK
DESIGN G. DUNN
CHECKED S. STUHRKE
DATE 09/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-7001
65 OF 88

CLASSIFICATION
REVIEWER EDWARD ARTIGLIA DATE 9/27/12

PROJECT ID 100761
DRAWING NO C-55751
REV 3

STEPHEN P. STUHRKE NEW MEXICO 20659 REGISTERED ENGINEER
9.25.12

100761-C55751-M00041

Plotted By: SHAH
Plot Date: 9/25/2012
File Name: C55751-M-7001-(1).DWG

VALVE SCHEDULE FOR EFFLUENT TRANSFER SYSTEM

VALVE TAG NUMBER	SIZE (INCHES)	RATING	CLASS NUMBER	TYPE	DESIGN PRESS (PSIG)	DESIGN TEMP (DEG. F)	OPERATOR TYPE	END CONNECTION	P&ID NO.	MANUFACTURER/MODEL NUMBER	REMARKS
F07-500000-EFF-V-001	4	125/150	125/150	GLOBE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 1	
F07-500000-EFF-V-002	4	125/150	125/150	GLOBE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 1	
F07-500000-EFF-V-003	4	125/150	125/150	GLOBE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 1	
F07-500000-EFF-V-004	4	125/150	125/150	GATE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 2	
F07-500000-EFF-V-005	4	125/150	125/150	GATE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 2	
F07-500000-EFF-CV-001	4	125/150	125/150	CHECK	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 3	
F07-520182-EFF-V-001	6	125/150	125/150	GATE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 5	
F07-520182-EFF-V-002	6	125/150	125/150	GATE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 5	
F07-520182-EFF-V-003	3/4	125/150	125/150	GATE	85	70	MANUAL	THREADED	C55751-M-6000	SEE NOTE 6	
F07-520182-EFF-V-004	3/4	125/150	125/150	GATE	85	70	MANUAL	THREADED	C55751-M-6000	SEE NOTE 6	
F07-520182-EFF-V-005	6	125/150	125/150	GLOBE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 4	
F07-520182-EFF-V-006	4	125/150	125/150	GLOBE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 1	
F07-520182-EFF-V-007	4	125/150	125/150	GATE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 2	
F07-520182-EFF-V-008	3/4	125/150	125/150	GATE	85	70	MANUAL	THREADED	C55751-M-6000	SEE NOTE 6	
F07-520182-EFF-V-009	4	125/150	125/150	GLOBE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 1	
F07-520182-EFF-V-010	4	125/150	125/150	GLOBE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 1	
F07-520182-EFF-V-011	4	125/150	125/150	GATE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 2	
F07-520182-EFF-V-012	4	125/150	125/150	GATE	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 2	
F07-520182-EFF-V-013	3/4	125/150	125/150	GLOBE	85	70	MANUAL	THREADED	C55751-M-6000	SEE NOTE 7	
F07-520182-EFF-V-014	3/4	125/150	125/150	GLOBE	85	70	MANUAL	THREADED	C55751-M-6000	SEE NOTE 7	
F07-520182-EFF-CV-001	4	125/150	125/150	CHECK	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 3	
F07-520182-EFF-CV-002	4	125/150	125/150	CHECK	85	70	MANUAL	FLANGED	C55751-M-6000	SEE NOTE 3	

VALVE SCHEDULE FOR EVAPORATION SPRAY SYSTEM

VALVE TAG NUMBER	SIZE (INCHES)	RATING	CLASS NUMBER	TYPE	DESIGN PRESS (PSIG)	DESIGN TEMP (DEG. F)	OPERATOR TYPE	END CONNECTION	P&ID NO.	MANUFACTURER/MODEL NUMBER	REMARKS
F07-520182-EVAP-V-001	3/4	125/150	125/150	GATE	65	70	MANUAL	THREADED	C55751-M-6001	SEE NOTE 6	
F07-520182-EVAP-V-002	3/4	125/150	125/150	GATE	65	70	MANUAL	THREADED	C55751-M-6001	SEE NOTE 6	
F07-520182-EVAP-V-003	6	125/150	125/150	BUTTERFLY	65	70	MANUAL	FLANGED	C55751-M-6001	SEE NOTE 9	
F07-520182-EVAP-V-004	6	125/150	125/150	BUTTERFLY	65	70	MANUAL	FLANGED	C55751-M-6001	SEE NOTE 9	
F07-520182-EVAP-V-005	4	125/150	125/150	GLOBE	65	70	MANUAL	FLANGED	C55751-M-6001	SEE NOTE 1	
F07-520182-EVAP-V-006	4	125/150	125/150	GLOBE	65	70	MANUAL	FLANGED	C55751-M-6001	SEE NOTE 1	
F07-520182-EVAP-V-007	3/4	125/150	125/150	GLOBE	65	70	MANUAL	THREADED	C55751-M-6001	SEE NOTE 7	
F07-520182-EVAP-V-008	3/4	125/150	125/150	GATE	65	70	MANUAL	THREADED	C55751-M-6001	SEE NOTE 6	
F07-520182-EVAP-V-009	4	125/150	125/150	GLOBE	65	70	MANUAL	FLANGED	C55751-M-6001	SEE NOTE 1	
F07-520182-EVAP-V-010	4	125/150	125/150	GLOBE	65	70	MANUAL	FLANGED	C55751-M-6001	SEE NOTE 1	
F07-520182-EVAP-V-011	3/4	125/150	125/150	GATE	65	70	MANUAL	THREADED	C55751-M-6001	SEE NOTE 6	
F07-520182-EVAP-V-012	3/4	125/150	125/150	GATE	65	70	MANUAL	THREADED	C55751-M-6001	SEE NOTE 6	
F07-520182-EVAP-V-013	3/4	125/150	125/150	GLOBE	65	70	MANUAL	THREADED	C55751-M-6001	SEE NOTE 7	
F07-520182-EVAP-V-014	3/4	125/150	125/150	GLOBE	65	70	MANUAL	THREADED	C55751-M-6001	SEE NOTE 7	
F07-520182-EVAP-V-015	3/4	125/150	125/150	GLOBE	65	70	MANUAL	THREADED	C55751-M-6001	SEE NOTE 7	
F07-520182-EVAP-V-016	3/4	125/150	125/150	GLOBE	65	70	MANUAL	THREADED	C55751-M-6001	SEE NOTE 7	
F07-520182-EVAP-CV-001	4	125/150	125/150	CHECK	65	70	MANUAL	FLANGED	C55751-M-6001	SEE NOTE 3	
F07-520182-EVAP-CV-002	4	125/150	125/150	CHECK	65	70	MANUAL	FLANGED	C55751-M-6001	SEE NOTE 3	

GENERAL NOTES:

1. NIBCO MODEL F-738-31 CLASS 150 DUCTILE IRON BODY, BOLTED BONNET OS&Y, OR U.S. PLASTIC CORP. ASAHI PVC GLOBE VALVE MODEL 21075 (RATED 110 PSI @ 70°F) OR APPROVED EQUAL.
2. MUELLER RESILIENT WEDGE SERIES 2360 MODEL R-2360-6 BOLTED BONNET OS&Y WITH MUELLER PRO-GARD EPOXY COATING, OR U.S. PLASTIC CORP. ASAHI PVC GATE VALVE MODEL 21054 (RATED 150 PSI @ 120°F) OR APPROVED EQUAL.
3. MUELLER GLOBE BODY SILENT CHECK MODEL 105WAP CAST IRON, OR HAYWOOD INDUSTRIAL PRODUCTS (UK) LTD. ALL-PLASTIC SWING CHECK (RATED 225 PSI @ 70°F) CPVC MATERIAL OR APPROVED EQUAL.
4. NIBCO MODEL F-738-31 CLASS 150 DUCTILE IRON BODY, BOLTED BONNET OS&Y (RATED 110 PSI @ 70°F) OR APPROVED EQUAL.
5. MUELLER RESILIENT WEDGE SERIES 2360 MODEL R-2360-6 BOLTED BONNET OS&Y WITH MUELLER PRO-GARD EPOXY COATING, OR U.S. PLASTIC CORP. ASAHI PVC GATE VALVE MODEL 21058 (RATED 150 PSI @ 120°F) OR APPROVED EQUAL.
6. NIBCO, SERIES T-176-A, MSS SP-80, CLASS 125 BRONZE BODY, BRONZE TRIM, NON-RISING STEM, HAND WHEEL, INSIDE SCREW, SOLID WEDGE DISC AND THREADED ENDS.
7. NIBCO, SERIES 111, MSS SP-80, CLASS 125 BRONZE BODY, BRONZE TRIM, HAND WHEEL, AND THREADED ENDS OR U.S. PLASTIC CORP. ASAHI PVC GLOBE MODEL 21062 (RATED 150 PSI @ 70°F).
8. PVC VALVES ARE PREFERRED WHERE AVAILABLE TO MEET THE OVERALL PROJECT SCHEDULE.
9. NIBCO, SERIES 585-70, MSS SP-67, 200 PSI CWP, DUCTILE IRON BODY, ALUMINUM BRONZE DISC, RESILIENT REPLACEABLE EDPM , LUG STYLE, EXTENDED NECK, LEVEL HANDLE, FOR USE BETWEEN ANSI CLASS 125/150 FLANGES.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

VALVE SCHEDULES

BLDG 181,182,183 TA-50 TA-52

DRAWN	E. NEWCEK	
DESIGN	G. GUNN	
CHECKED	S. STURGIS	
DATE	09/21/2011	

SUBMITTED NORMAN LACY APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-7002 66 OF 88

CLASSIFICATION REVIEWER EDWARD ARTIGLIA DATE 9/27/12

PROJECT ID 100761 DRAWING NO C-55751 REV 1

STEPHEN P. STURGIS NEW MEXICO 20659 REGISTERED ENGINEER

100761-C55751-M00042

EP 5 0 5 9

MECHANICAL BILL OF MATERIAL

THE BILL OF MATERIAL IS INTENDED ONLY AS AN AID IN ESTIMATING AND MATERIAL TAKE-OFF, AND DOES NOT NECESSARILY INCLUDE ALL MATERIAL REQUIRED. UNLESS NOTED, CATALOG NUMBER IS GIVEN AS REFERENCE ONLY, AND APPROVED EQUAL SUBSTITUTION MAY BE MADE. ALL MATERIAL SHALL BE FURNISHED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.

GENERAL NOTES:

1. FOR MECHANICAL LEGEND, SYMBOLS & GENERAL NOTES SEE DRAWING M-0001, M-0002 AND M-0003.

PIPING SCHEDULE

PIPING SCHEDULE	DESIGN PRESSURE (PSIG)	DESIGN TEMPERATURE (F)	PIPE DIMENSIONS AND MANUFACTURING REQUIREMENTS	MATERIAL/ MATERIAL GRADE	CODE OF REFERENCE	SCHEDULE	REMARKS
PS-502F TRANSFER PIPING	85	70	HDPE ASTM F714, ASTM D3035	ASTM D3350/PE3608	B31.3, 2008	DR11 IPS IN 500' PIPE COILS OR IN LENGTHS	ALL PIPING FORMULATED WITH A MINIMUM OF 2% CARBON BLACK FOR MAXIMUM PROTECTION AGAINST UV RAYS FOR ADDED ASSURANCE. ALL PIPE FITTINGS SHALL CONFORM TO FITTING REQUIREMENTS OF PS-502F (BUTT FUSION FITTINGS: ASTM D3261, ASTM D1248, PE3408)

NOTES:

1. ALL PIPE AND FITTINGS SHALL BE FROM THE SAME QUALIFIED AND EXPERIENCED MANUFACTURER.
2. MATERIALS USED FOR THE MANUFACTURE OF HDPE PIPE FITTINGS SHALL BE FROM A PE3408 HIGH DENSITY POLYETHYLENE RESIN COMPOUND MEETING CELL CLASSIFICATION 345434C PER ASTM D3350; AND MEETING TYPE III, CLASS C, CATEGORY 5, GRADE P34 PER ASTM D1238.
3. HDPE PIPE SHALL COMPLY WITH AWWA SPECIFICATION C906.
4. DIMENSIONS AND WORKMANSHIP SHALL BE AS SPECIFIED BY ASTM F714 OR ASTM D3035 HAVING A MINIMUM DENSITY OF 0.955 GRAMS PER CUBIC CENTIMETER.
5. ALL HDPE PIPE AND FITTINGS SHALL HAVE A HYDROSTATIC DESIGN BASIS (HDB) OF 1600 PSI.

MANUAL VALVES

SIZE	SERVICE	TYPE	MATERIAL	CLASS	END TYPE	OPERATOR	CODE OF REFERENCE	STANDARDS
ALL SIZES	WATER	GATE, GLOBE, CHECK, BUTTERFLY	IRON (CAST/DUCTILE) OR PLASTIC (HDPE, CPVC, PVC)	125/150	FLANGED	MANUAL	B31.3, 2008	ASME B16.34,16.5, MSS-SP-70,-71,-80, AND-85

EXHAUST FAN SCHEDULE

EQUIPMENT/ TAG NO.	AREA SERVED	LOCATION	MANUFACTURER/ MODEL NO.	FAN TYPE	DESIGN CAPACITY (ACFM)	TOTAL SP. IN W.G.	RPM	DRIVE	MOTOR DATA		ROOF OPENING	APPROX. WEIGHT (lb)	REMARKS
									HP	ELECTRICAL DATA			
FE-001	EVAP. SKID CONTAINER	TA-52 AREA (OUTDOORS)	GREENHECK/SIZE CUE 080-D	CENTRIFUGAL UPBLAST TYPE	376	0.25	1550	DIRECT	1/20	120/1/60	12.5"x12.5"	40	WITH BUILT IN DISCONNECT, INTEGRAL THERMOSTAT, BACKDRAFT DAMPER (10"x10")

LOUVER SCHEDULE

EQUIPMENT/ TAG NO.	AREA SERVED	LOCATION	MANUFACTURER/ MODEL NO.	TYPE	DESIGN CAPACITY (ACFM)	NET FREE AIR VELOCITY (FPM)	SIZE (IN)			FACE AREA (SQ. IN)	TOTAL SP IN W.G.	APPROX. WEIGHT (lb)	REMARKS
							WIDTH	HEIGHT	DEPTH				
GRD-001	EVAP. SKID CONTAINER	TA-52 AREA (OUTDOORS)	RUSKIN/ ELM6375DX	DRAINABLE ADJUSTABLE LOUVER	376	250	18"	24"	6"	432	0.1	10	ELECTRIC ACTUATOR, LOUVER INTERLOCKED TO OPEN WHEN FAN IS OPERATING AND CLOSED IN WINTER WHEN TEMPERATURE FALLS BELOW 50°F
GRD-002	EVAP. SKID CONTAINER	TA-52 AREA (OUTDOORS)	RUSKIN/ ELM6375DX	DRAINABLE ADJUSTABLE LOUVER	376	250	18"	24"	6"	432	0.1	10	ELECTRIC ACTUATOR, LOUVER INTERLOCKED TO OPEN WHEN FAN IS OPERATING AND CLOSED IN WINTER WHEN TEMPERATURE FALLS BELOW 50°F

ELECTRIC UNIT HEAT SCHEDULE

EQUIPMENT/ TAG NO.	AREA SERVED	LOCATION	MANUFACTURER/ MODEL NO.	TYPE	HEATER DATA		FAN DATA			MOTOR DATA			APPROX. WEIGHT (lb)	REMARKS
					kW	BTUH	CFM	APPROX TEMP RISE (°F)	THROW (FT)	HP	RPM	ELECTRICAL DATA		
HUE-001	EVAP. SKID CONTAINER	TA-52 AREA (OUTDOORS)	CHROMALOX/ UB502	HORIZONTAL BLOWER HEATER	5	17,060	405	40	12.5	1/15	1050	208/3/60	43	WITH BUILT IN DISCONNECT AND THERMOSTAT. FOR CONTROLS SEE NOTE 1.
HUE-002	EVAP. SKID CONTAINER	TA-52 AREA (OUTDOORS)	CHROMALOX/ UB502	DRAINABLE ADJUSTABLE LOUVER	5	17,060	405	40	12.5	1/15	1050	208/3/60	43	WITH BUILT IN DISCONNECT AND THERMOSTAT.

NO	DATE	CLASS REV	ADD	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	08/23/12	-	-	ADDITIONAL REPORTED RECORD CHANGES	HO MJ	MS TJS	SPS SPS	NL NL	
2	6/25/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	
1	4/25/12			REVISED DRAWING TITLE, PIPING SCHEDULE MATERIAL/MATERIAL GRADE AND SCHEDULE, ADDED EXHAUST FAN SCHEDULE, LOUVER SCHEDULE, AND ELECTRICAL UNIT HEATER SCHEDULE.	TJH	TJH	SPS		

ZERO LIQUID DISCHARGE SUBPROJECT

MECHANICAL BILL OF MATERIALS SHEET 2

BLDG: 181,182,183 TA-50 TA-52 TA-63

DRAWN: E. REMCEK 9/23/12
DESIGN: D. QUINN 9/23/12
CHECKED: S. STURRKE 9/23/12
DATE: 09/12/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET M-7003
67 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTIGLIA 9/27/12 DATE

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 3

100761-C55751-M00043

STEPHEN P. STURKE N.M. NEMEX 20550 MECHANICAL ENGINEER 9.23.12

Plotted By: BHAH
File Name: C55751-M-7003-03.dwg
Plot Date: 9/23/2012

VALVE SCHEDULE FOR EFFLUENT TRANSFER SYSTEM (UNDERGROUND)

VALVE TAG NUMBER	SIZE (INCHES)	RATING	CLASS NUMBER	TYPE	DESIGN PRESS (PSIG)	DESIGN TEMP (DEG. F)	OPERATOR TYPE	END CONNECTION	P&ID NO.	MANUFACTURER/MODEL NUMBER	REMARKS
F07-500000-EFF-V-001	4	125/150	125/150	GLOBE	85	70	MANUAL	FLANGED	C55751-M-6000	NIBCO MODEL F-738-31 CLASS 150 DUCTILE IRON BODY, BOLTED BONNET OS&Y, OR U.S. PLASTIC CORP. ASAHI PVC GLOBE VALVE MODEL 21075 (RATED 110 PSI @ 70°F) OR APPROVED EQUAL	
F07-500000-EFF-V-002	4	125/150	125/150	GLOBE	85	70	MANUAL	FLANGED	C55751-M-6000	NIBCO MODEL F-738-31 CLASS 150 DUCTILE IRON BODY, BOLTED BONNET OS&Y, OR U.S. PLASTIC CORP. ASAHI PVC GLOBE VALVE MODEL 21075 (RATED 110 PSI @ 70°F) OR APPROVED EQUAL	
F07-500000-EFF-V-003	4	125/150	125/150	GLOBE	85	70	MANUAL	FLANGED	C55751-M-6000	NIBCO MODEL F-738-31 CLASS 150 DUCTILE IRON BODY, BOLTED BONNET OS&Y, OR U.S. PLASTIC CORP. ASAHI PVC GLOBE VALVE MODEL 21075 (RATED 110 PSI @ 70°F) OR APPROVED EQUAL	
F07-500000-EFF-V-004	4	125/150	125/150	GATE	85	70	MANUAL	FLANGED	C55751-M-6000	MUELLER RESILIENT WEDGE SERIES 2360 MODEL R-2360-6 BOLTED BONNET OS&Y WITH MUELLER PRO-GARD EPOXY COATING, OR U.S. PLASTIC CORP. ASAHI PVC GATE VALVE MODEL 21054 (RATED 150 PSI @ 120°F) OR APPROVED EQUAL	
F07-500000-EFF-V-005	4	125/150	125/150	GATE	85	70	MANUAL	FLANGED	C55751-M-6000	MUELLER RESILIENT WEDGE SERIES 2360 MODEL R-2360-6 BOLTED BONNET OS&Y WITH MUELLER PRO-GARD EPOXY COATING, OR U.S. PLASTIC CORP. ASAHI PVC GATE VALVE MODEL 21054 (RATED 150 PSI @ 120°F) OR APPROVED EQUAL	
F07-500000-EFF-CV-001	4	125/150	125/150	CHECK	85	70	MANUAL	FLANGED	C55751-M-6000	MUELLER GLOBE BODY SILENT CHECK MODEL 105MAP CAST IRON, OR HAYWOOD INDUSTRIAL PRODUCTS (UK) LTD. ALL-PLASTIC SWING CHECK (RATED 225 PSI @ 70°F) CPVC MATERIAL OR APPROVED EQUAL	

NOTES:

1. PVC VALVES ARE PREFERRED WHERE AVAILABLE TO MEET THE OVERALL PROJECT SCHEDULE.

STEPHEN P. STUHRKE NEW MEXICO 20659 REGISTERED ENGINEER

100761-C55751-M00044

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	6/22/12			RECORD DRAWING REFLECTING CONTRACTOR REPORTED FIELD CHANGES.	TJH	SPS	SPS	NL	

ZERO LIQUID DISCHARGE SUBPROJECT

VALVE SCHEDULES

BLDG 181,182,183 TA-50 TA-52

DRAWN E. NEWCEK
DESIGN G. DUNN
CHECKED S. STUHRKE
DATE 09/12/2011

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET M-7004

68 OF 88

CLASSIFICATION

REVIEWER EDWARD ARTIGLIA DATE 8/27/12

PROJECT ID 100761

DRAWING NO C-55751

REV 1

SYMBOL LEGEND

(NOT ALL SYMBOLS WILL APPLY TO THIS PROJECT)

SYMBOL	DESCRIPTION
	EXISTING
	REMOVE
	NEW WORK
	HIDDEN OR BURIED
	HOMERUN CONDUIT
	GROUND
	PHASE
	SWITCHED
	NEUTRAL
	ISOLATED GROUND
	FLEXIBLE CONDUIT
	CONDUIT TURNING DOWN
	CONDUIT TURNING UP
	CONDUIT UP AND DOWN
	CONDUIT SEAL
	CONDUIT CAP
480V 600A	BUSWAY WITH DESCRIPTION
G	GROUNDING CONDUCTOR
6 X 24	CABLE TRAY WITH DESCRIPTION
J	CEILING JUNCTION BOX
J	WALL JUNCTION BOX
	DUPLEX RECEPTACLE OUTLET
	SINGLE RECEPTACLE OUTLET
	DOUBLE DUPLEX RECEPTACLE OUTLET
GFCI WP	GROUND FAULT CIRCUIT INTERUPTER DUPLEX OUTLET WITH WEATHERPROOF COVER
	SPLIT WIRED DUPLEX RECEPTACLE
IG	DUPLEX ISOLATED GROUND
A	SPECIAL PURPOSE OUTLET – USE SUBSCRIPT TO IDENTIFY TYPE IN SPECS
A	FLOOR RECEPTACLE OUTLET USE SUBSCRIPT TO IDENTIFY TYPE IN SPECS
	RECEPTACLE RACEWAY
S_a	SINGLE POLE SWITCH – USE SUBSCRIPT TO DESIGNATE CONTROL OF PARTICULAR OUTLETS
S_2	DOUBLE POLE SWITCH
S_3	THREE-WAY SWITCH
S_4	FOUR-WAY SWITCH
S_{WP}	WEATHERPROOF SWITCH
S_K	KEY OPERATED SWITCH
600	DIMMER SWITCH – NUMBER INDICATES WATTAGE
M	OCCUPANCY SENSING SWITCH
P	PHOTOCELL
6 30	REMOTE CONTROL SWITCH 6 POLE, 30 AMPS
A 1, b	FLUORESCENT LUMINAIRE A=FIXTURE TYPE 1=CIRCUIT NUMBER b=SWITCH CONTROLLING FIXTURE
	FLUORESCENT STRIP LUMINAIRE
	WALL MOUNTED FLUORESCENT LUMINAIRE
	CEILING MOUNTED LUMINAIRE
	WALL MOUNTED LUMINAIRE
	EMERGENCY LUMINAIRE
	LIGHT POLE WITH LUMINAIRE

SYMBOL	DESCRIPTION
	EMERGENCY LIGHTING UNIT
	CEILING MOUNTED EXIT SIGN – ARROW AS INDICATED
	TWO FACED EXIT SIGN
	WALL MOUNTED EXIT SIGN
	SWITCHBOARD, POWER PANELBOARD
LP–XX	LIGHTING PANELBOARD
T	TRANSFORMER
30	NON–FUSIBLE SAFETY SWITCH (NUMBER INDICATES SWITCH SIZE)
40/60	FUSED SAFETY SWITCH (NUMBERS INDICATE FUSE/SWITCH SIZES)
20	COMBINATION MAGNETIC STARTER AND CIRCUIT BREAKER 2 – INDICATES NEMA STARTER SIZE 20 – INDICATES CIRCUIT BREAKER TRIP
	MAGNETIC STARTER
ASD	ADJUSTABLE SPEED DRIVE
3	MOTOR (NUMBER INDICATES HP)
	BELL
H	HORN "H" OR SIREN "S"
	BUZZER
	PUSHBUTTON
F	MANUAL PULL STATION
V	FIRE ALARM HORN (V=VISUAL SIGNAL)
P	PHOTOELECTRIC SMOKE DETECTOR
I	IONIZATION SMOKE DETECTOR
T	THERMAL DETECTOR
F D	DUCT SMOKE DETECTOR (PHOTOELECTRIC)
DH	MAGNETIC DOOR HOLDER
PS	PRESSURE SWITCH
FS	FLOW SWITCH
S	VALVE SUPERVISORY SWITCH
FACP	FIRE ALARM CONTROL PANEL
F	FIRE ALARM RACEWAY
S	CEILING SPEAKER
S	WALL SPEAKER
	TELECOMMUNICATIONS OUTLET
	FLOOR MOUNTED TELECOMMUNICATIONS OUTLET
	INTERCOM OUTLET
T	TELECOMMUNICATIONS RACEWAY
D	PROTECTED TRANSMISSION SYSTEM (PTS) DATA TERMINAL CONNECTION
TV	TELEVISION OUTLET
CR	CARD READER
ES	ELECTRIC DOOR STRIKE
DC	DOOR CONTACTS
RAP	REMOTE ACCESS PANEL
HG	HAND GEOMETRY UNIT
MD	MOTION DETECTOR
C	CLOSED CIRCUIT TV CAMERA
7	ALARM BEACON

SYMBOL	DESCRIPTION
100/3	MEDIUM VOLTAGE DISCONNECT SWITCH
600	MEDIUM VOLTAGE DRAWOUT CIRCUIT BREAKER
480V Δ – Y 500 KVA 208Y/ 120V	TRANSFORMER (DELTA–WYE CONN.)
	SHIELDED TRANSFORMER
1000 1600	DRAWOUT CIRCUIT BREAKER (TRIP / FRAME)
300 400 GFI	CIRCUIT BREAKER (TRIP / FRAME) WITH GROUND FAULT INTERRUPTER
7 MCP	MOTOR CIRCUIT PROTECTOR
36 MCP	MOTOR CONTROL CENTER STARTER UNIT
	FUSE
	GROUND
G	GENERATOR
300D/5 3	CURRENT TRANSFORMER (NUMBERS INDICATE RATIO AND QUANTITY)
3	POTENTIAL TRANSFORMER (NUMBER INDICATES QUANTITY)
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
V	VOLTMETER
A	AMMETER
KW	KILOWATT METER
Ne E L	TRANSFER SWITCH
K_1	KEY INTERLOCK #1
	BATTERY
	NORMALLY CLOSED CONTACT
	NORMALLY OPEN CONTACT
	PROTECTIVE RELAY, SOLENOID COIL
	THERMAL OVERLOAD
	CONNECTION
	CROSS, NO CONNECTION
	SURGE ARRESTOR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
	CAPACITOR
CR_1	CONTROL RELAY #1
	BUS PLUG CIRCUIT BREAKER
T	THERMOSTAT
1	KEYED NOTE DESIGNATION
3	ELECTRICAL EQUIPMENT DESIGNATION (SEE SCHEDULE)
7	NAMEPLATE DESIGNATION (SEE SCHEDULE)
WP	WEATHERPROOF
AFF	ABOVE FINISH FLOOR

GENERAL NOTES

1. PERFORM INSTALLATION IN ACCORDANCE WITH THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODE (NEC). THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA), AND APPLICABLE DOE ORDERS. EQUIPMENT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).
2. PROVIDE AND MAINTAIN A CLEAR WORKING SPACE ABOUT ELECTRIC EQUIPMENT (SWITCHBOARDS,PANELBOARDS, ETC.) IN ACCORDANCE WITH NEC ARTICLES 110.26 AND 110.34.
3. USE 600 VAC CIRCUIT BREAKERS IN 480V AND 480Y/277V SWITCHBOARDS, PANELBOARDS AND STARTERS.
4. PROVIDE CIRCUIT BREAKERS WITH UL LISTED INTERRUPTING RATING (RMS SYMMETRICAL AMPERES) GREATER THAN THE AVAILABLE FAULT CURRENT SHOWN ON THE ELECTRICAL ONE–LINE DIAGRAM.
5. PROVIDE PADLOCKING PROVISIONS FOR EACH TWO– AND THREE–POLE CIRCUIT BREAKER.
6. BOND RACEWAYS AND THE FRAMES AND ENCLOSURES OF MOTORS, BREAKERS, SWITCHES, AND OTHER ELECTRICAL EQUIPMENT TO THE BUILDING GROUNDING SYSTEM. INSTALL AN INSULATED EQUIPMENT GROUND CONDUCTOR IN EACH RACEWAY OR CONDUIT. SIZE EQUIPMENT GROUND CONDUCTOR IN ACCORDANCE WITH NEC TABLE 250.122.
7. IDENTIFY NEW BRANCH CIRCUITS AT THE PANEL AND AT THE LOAD OUTLET, RECEPTACLE AND SWITCH. IDENTIFY THE PURPOSE OF INDIVIDUAL CIRCUIT BREAKERS, SAFETY SWITCHES AND MOTOR STARTERS BY MEANS OF NAMEPLATES AS INDICATED.
8. ROUTE CONDUITS TO SUIT EQUIPMENT AND STRUCTURE. USE INTERMEDIATE METAL CONDUIT (IMC) OR RIGID GALVANIZED STEEL CONDUIT (RGS) FOR WORK EMBEDDED IN CONCRETE OR EXPOSED TO PHYSICAL DAMAGE. USE MINIMUM 3/4 INCH CONDUIT EXCEPT AS FOLLOWS: 1/2" CONDUIT MAY BE USED FOR 20 AMP GENERAL LIGHT AND POWER CIRCUITS FOR CONTROL CIRCUITS. USE LIQUID TIGHT FLEXIBLE METAL CONDUIT FOR FLEXIBLE CONNECTIONS TO EQUIPMENT OUTDOORS.
9. SEAL AROUND CONDUIT PENETRATIONS THROUGH INTERIOR WALLS AND FLOORS SEPARATING AREAS TO RESTORE ORIGINAL FIRE RATING; USE A UL CLASSIFIED FIRE SEALANT. SEAL PENETRATIONS THROUGH ROOF AND EXTERIOR WALLS TO MAKE WATERPROOF. REQUEST INSPECTION OF FIRE SEALS BY ELECTRICAL INSPECTOR FROM AUTHORITY HAVING JURISDICTION BEFORE AND AFTER PLACEMENT OF FIRE SEAL MATERIALS.
10. USE 12 AWG OR LARGER CONDUCTORS FOR POWER WIRING. USE 14 AWG STRANDED CONDUCTORS FOR CONTROL WIRING UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS.
11. USE ONLY COPPER CONDUCTORS ON CIRCUITS 600V AND LESS. CONDUCTORS 10 AWG AND SMALLER SHALL BE SOLID AND 8 AWG AND LARGER AWG SHALL BE STRANDED. PROVIDE TYPE THHN/THWN WIRE INSULATION; XHHW INSULATION MAY BE USED FOR 1 AWG AND LARGER.
12. USE THE FOLLOWING CONDUCTOR COLOR CODES:

	208Y/120 VOLT	480Y/277 VOLT
PHASE A	BLACK	BROWN
PHASE B	RED	ORANGE
PHASE C	BLUE	YELLOW
NEUTRAL	WHITE	GRAY
EQUIP. GROUND	GREEN	GREEN

13. ARRANGE CONNECTIONS FOR SINGLE PHASE CIRCUITS TO ACHIEVE THREE PHASE LOAD BALANCE WITHIN 20% OF THE AVERAGE PHASE LOAD CURRENT. UNGROUNDED CONDUCTORS USING A COMMON NEUTRAL MUST ORIGINATE FROM DIFFERENT PHASES.
14. INSTALL OUTDOOR EQUIPMENT TO BE WEATHERPROOF AND TO EXCLUDE BIRDS AND RODENTS WITH MAXIMUM 1/2" DIAMETER UNPROTECTED OPENINGS IN ENCLOSURES.
15. ITEMS DESIGNATED BY A NUMBER IN A HEXAGON ARE DESCRIBED IN THE ELECTRICAL EQUIPMENT LIST. ITEMS DESIGNATED BY A NUMBER IN A DIAMOND ARE DESCRIBED IN THE MECHANICAL EQUIPMENT LIST. NAMEPLATES ARE DESIGNATED BY A NUMBER IN A RECTANGLE AND ARE DESCRIBED IN THE NAMEPLATE SCHEDULE.
16. PROVIDE LIGHTNING PROTECTION IN ACCORDANCE WITH NFPA 780. PROVIDE MATERIAL THAT IS UL LABELED FOR LIGHTNING PROTECTION SERVICE. THE LIGHTNING PROTECTION SYSTEM DESIGN AND INSTALLATION SHALL FOLLOW THAT SHOWN ON THE DRAWINGS.
17. TEST CONDUCTORS FOR CONTINUITY AND FREEDOM FROM SHORTS AND UNINTENTIONAL GROUNDS.
18. ELECTRICAL EQUIPMENT SPECIFIED IN THIS DOCUMENT SHALL BE ACCEPTANCE TESTED AND INSPECTED IN ACCORDANCE WITH NETA ATS BY THE LANL MSS.
19. ELECTRICAL MATERIALS AND CONSTRUCTION SHALL CONFORM TO LOS ALAMOS NATIONAL LABORATORY STANDARD CONSTRUCTION SPECIFICATIONS WHERE APPLICABLE.
20. DISPOSE OF ITEMS REMOVED AS DIRECTED BY THE LANL–STR INSPECTOR.
21. REPAIR AREAS DAMAGED DURING CONSTRUCTION TO MATCH ADJACENT AREAS WITH RESPECT TO BOTH COLOR AND FINISH.
22. KEEP JOB SITE IN AN ORDERLY CONDITION AND AT PROJECT COMPLETION, REMOVE ALL WASTE. LEAVE THE JOB SITE IN A CONDITION ACCEPTABLE TO THE LANL–STR INSPECTOR.
23. IF A CONFLICT ARISES BETWEEN THE FIELD CONDITIONS AND THESE GENERAL ELECTRICAL REQUIREMENTS, CONTACT THE LANL–STR FOR DIRECTIONS.
24. TIE–INS TO EXISTING POWER SYSTEMS WILL BE PERFORMED BY LANL–MSS.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	PD	PD	ATP	AR	MH

IAN W. CURTIS, NEW MEXICO, 20579, PROFESSIONAL ENGINEER

ZERO LIQUID DISCHARGE SUBPROJECT

ELECTRICAL SYMBOL LEGEND AND GENERAL NOTES

BLDG 181, 182, 183 TA–52

DRAWN M.MUNTEANU
DESIGN A.DROZDOWSKI
CHECKED P.DONATO
DATE 03/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

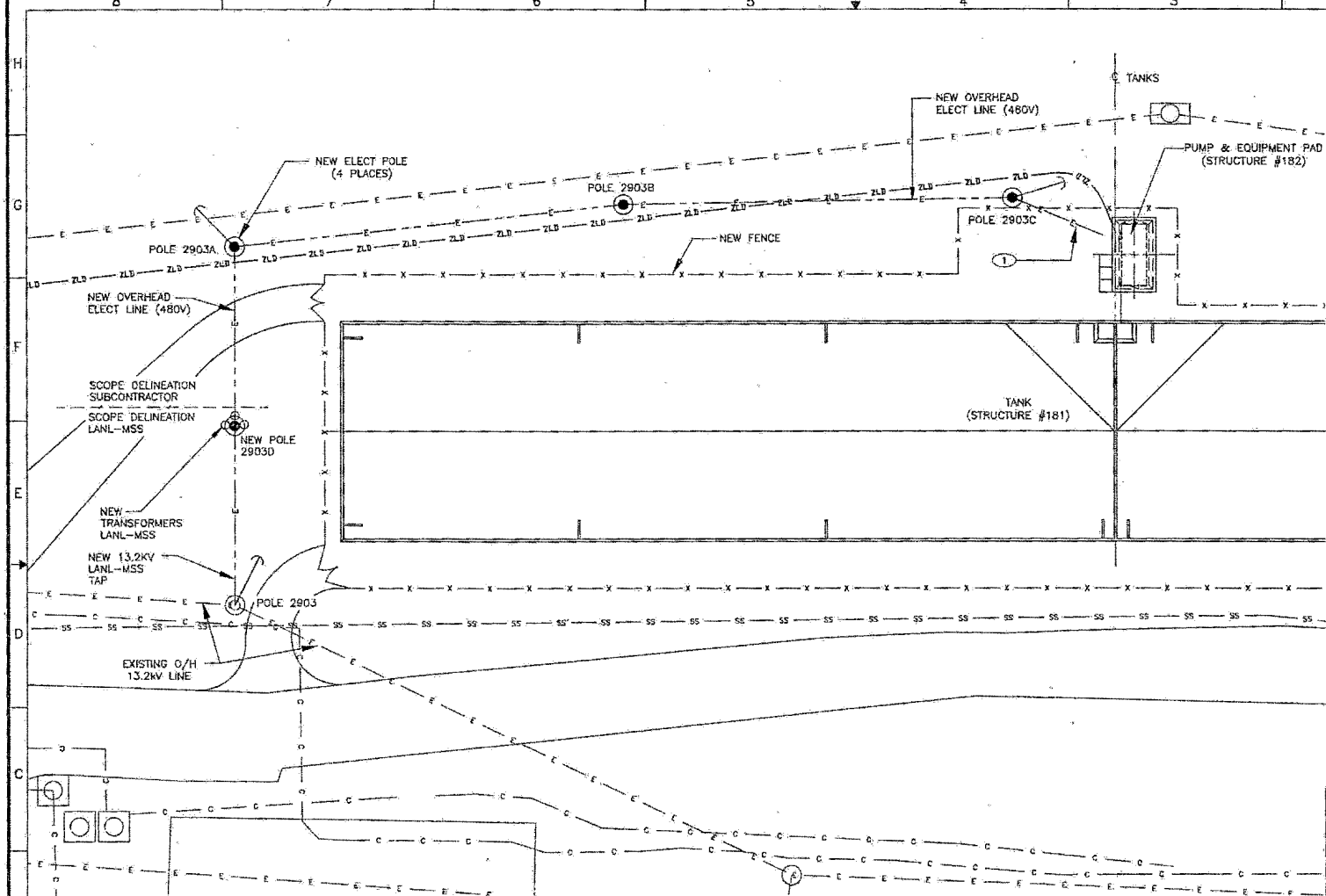
SHEET E–0001
69 OF 88

CLASSIFICATION REVIEWER EDWARD ARTIGLIA DATE 5/21/12

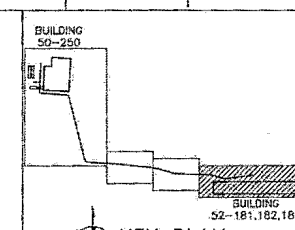
PROJECT ID	DRAWING NO	REV
100761	C–55751	1

100761–C55751–E00001

Project Ref: SWMM Plot Date: 7/5/2012
FILE NAME: C55751–E–0001–181.DWG



POLE PLAN
1/16"=1'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.

KEYED NOTES

1. LIMITS OF WORK FOR THE OVERHEAD ELECTRICAL DISTRIBUTION LINES (ZLD) SHALL BE FROM THE TERMINATION POINT NEAR POLE 2903D TO WEATHERHEAD LOCATED ON EVAPORATOR ENCLOSURE, FOR CONTINUATION TO SERVICE ENTRANCE VIA SPLICE.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	PD	PD	ATP	RC	MAD

ZERO LIQUID DISCHARGE SUBPROJECT

TANK AREA POLE PLAN

BLDG 181, 182, 183 TA-52

DRAWN M.MUNTEANU
DESIGN A.DROZDOWSKI
CHECKED P.DONATO
DATE 09/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

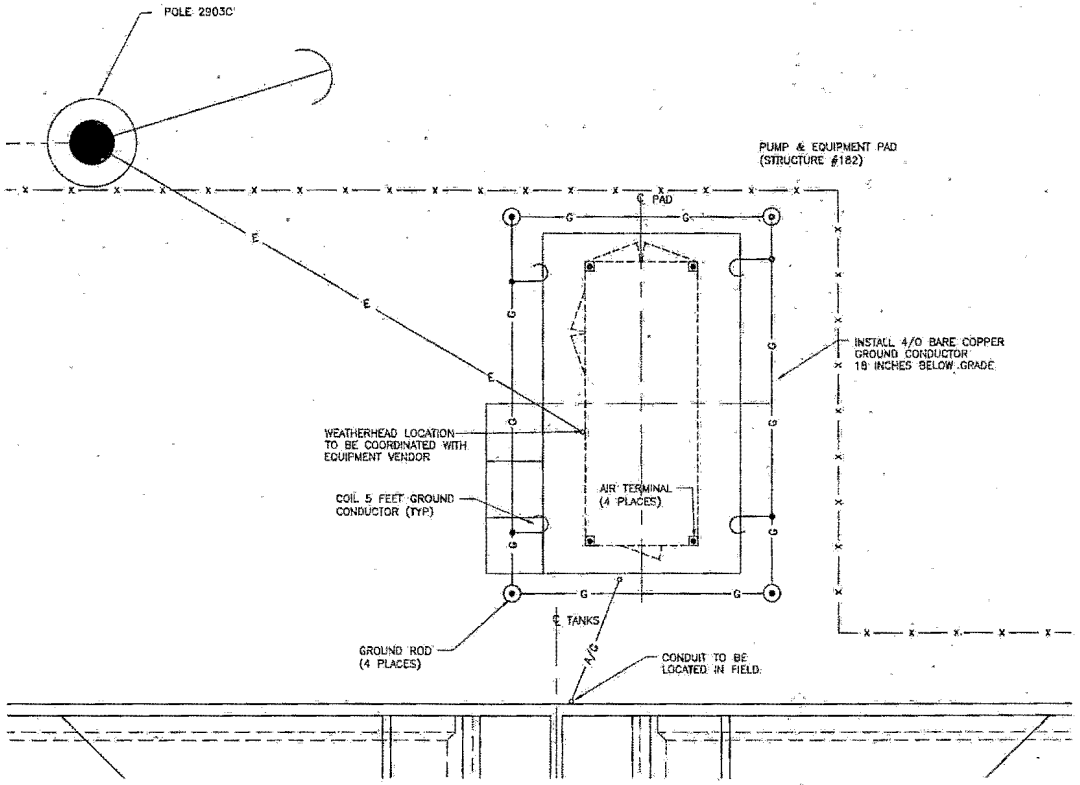
SHEET E-1000
70 OF 88

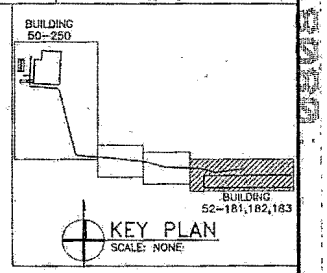
CLASSIFICATION
REVIEWER EDWARD ARTIGLIA DATE 8/17/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

100761-C55751-R00002

Plotted By: SHNEH Plot Date: 7/5/2012
FILE NAME: C55751-E-1000-R1.DWG





GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	08/23/12	–	–	ADDITIONAL REPORTED RECORD CHANGES	PD	PD	ATP	RC	
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	PD	PD	ATP	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

PUMP & EQUIPMENT PAD
U/G CONDUIT AND GROUNDING PLAN

BLDG 181, 182, 183 TA-52

DRAWN	P. DONATO
DESIGN	P. DONATO
CHECKED	A. PRESLER
DATE	06/27/12

SUBMITTED NORMAN LACY APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET E-1001
71 of 88

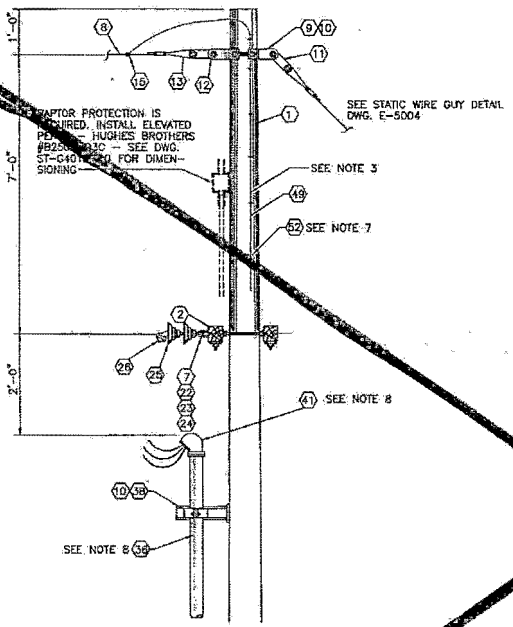
CLASSIFICATION REVIEWER EDWARD ARTIGLIA DATE 8/22/12

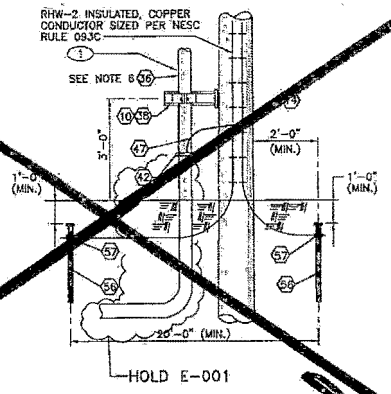
PROJECT ID 100761 DRAWING NO C-55751 REV 2

IAN W. AUSTIN NEW MEXICO 20579 REGISTERED ENGINEER

100761-C55751-E00003

Plotted By: SWAN File Date: 9/23/2012
File Name: 20579-E-1001-2.DGN





NEW DEADEND POLE 2903C WITH UNDERGROUND SECONDARY DETAIL

SCALE: NONE

GENERAL NOTES:

1. CONSTRUCTION FOR WIRE SIZE #4/0 ACSR (6/1).
2. CONDUCTOR SIZES AND OTHER PARAMETERS SHALL BE CONFIRMED BY LANL ES-UI POWER ENGINEER FOR COMPATIBILITY TO EXISTING SYSTEM.
3. GROUND OVERHEAD STATIC CONDUCTOR AT EVERY POLE. WILDLIFE/RAPTOR PROTECTION IS REQUIRED, GROUNDING DOWN CONDUCTOR SHALL BE INSULATED FROM OVERHEAD SHIELD WIRE TO 3'-0" BELOW TRANSFORMERS.
4. WILDLIFE/RAPTOR PROTECTION IS REQUIRED, USE 600V. INSULATED
5. WILDLIFE/RAPTOR PROTECTION IS REQUIRED, PROVIDE BUSHING COVERS SIMILAR TO PREFORMED LINE PRODUCTS #WP-10T.
6. WILDLIFE/RAPTOR PROTECTION IS REQUIRED, USE HUBBELL/OHIO BRASS #7325 MOUNTING BRACKET WITH PROTECTIVE CAPS IN LIEU OF #7224 MOUNTING BRACKET.
7. STAPLE ON GROUND WIRE SHALL BE 2'-0" APART EXCEPT FOR A DISTANCE OF 8'-0" ABOVE GROUND AND 8'-0" FROM TOP OF POLE WHERE THEY SHALL BE 6" APART.
8. SUBCONTRACTOR INSTALLS ALL SECONDARY CONDUIT & CONDUCTORS TO THE FIRST DISCONNECT DEVICE.
9. EQUIPMENT ITEM NUMBERS ((1)) REFER TO EQUIPMENT NUMBERS IN LANL MSS MASTER BILL OF MATERIALS. ONLY THOSE NUMBERS USED ARE ON THIS DRAWING ARE SHOWN.
10. FOR BILL OF MATERIALS SEE DWG E-7003.

KEYED NOTES

(1) LIMITS OF WORK FOR THE OVERHEAD ELECTRICAL DISTRIBUTION LINES (ZLD) SHALL BE FROM THE TERMINATION POINT NEAR POLE 2903D TO UNDERGROUND CONDUIT IN THE TA-52 EVAPORATION TANK AREA AS INDICATED. POLE LINE CONTRACTOR SHALL TERMINATE THE ELECTRICAL CABLE ABOVEGROUND AT POLE 2903C. CABLING SHALL BE PROVIDED WITH A TEMPORARY COVER TO PREVENT CONTAMINATION AND FOR COMPLETION OF TESTING. FINAL CONNECTION TO CABLING FROM THE PUMP AND EQUIPMENT PAD WILL BE COMPLETED BY THE TA-52 EVAPORATION AREA CONTRACTOR.

HOLD E-001: FOR LOCATION, SIZE AND DETAILS OF PUMP AND EQUIPMENT PAD AND LEAK DETECTION SYSTEM

Not Used For Construction

LANL BUILDING OFFICIAL
10/19/11
10-6-11
11-6-092
APPROVED

JOHN M. RUSTAD
NEW MEXICO
20578
INDUSTRIAL ENGINEER

100761-C55751-E00004

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

ZERO LIQUID DISCHARGE SUBPROJECT

NEW DEADEND POLE 2903C WITH UNDERGROUND SECONDARY DETAIL

BLDG 151, 182, 183 — TA-52

DRAWN	M.MURTEANU
DESIGN	A.ORDZEWSKI
CHECKED	P.DONATO
DATE	09/21/2011

SUBMITTED: NORMAN LAGY — APPROVED FOR RELEASE: JOSEPH BRIGHT

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

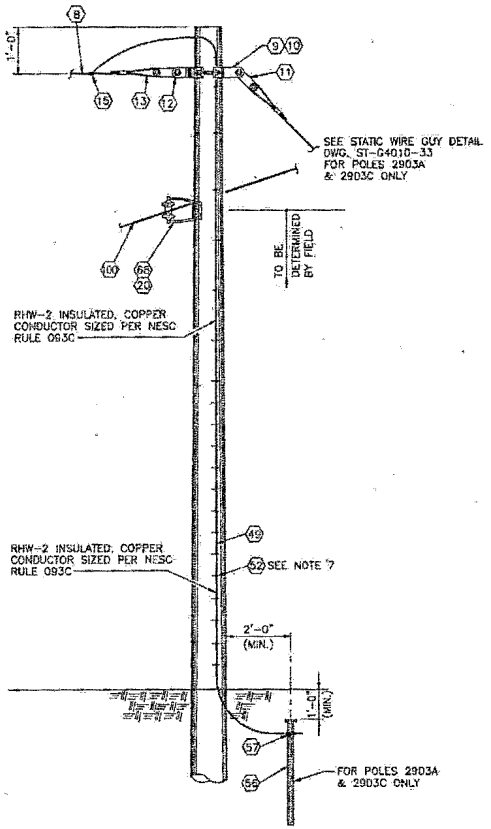
SHEET E-5000 — 72 OF 88

CLASSIFICATION U — REVIEWER EDWARD ARTIGLIA — DATE

PROJECT ID 100761 — DRAWING NO C-55751 — 0

Plotted By: DONATO Plot Date: 9/22/2011
FILE NAME: C55751-E-5000-BUILDING

2885



POLE DETAIL – FOR CLEVIS MOUNTED CABLE FOR POLES 2903A; 2903B; 2903C

SCALE: NONE

GENERAL NOTES:

1. CONDUCTOR SIZES AND OTHER PARAMETERS SHALL BE CONFIRMED BY LANL ES-UI POWER ENGINEER FOR COMPATIBILITY TO EXISTING SYSTEM.
2. STAPLES ON GROUND WIRE SHALL BE 2'-0" APART EXCEPT FOR A DISTANCE OF 8'-0" ABOVE GROUND AND 8'-0" FROM TOP OF POLE WHERE THEY SHALL BE 6" APART.
3. FOR BILL OF MATERIALS, SEE DWG. E-7003.
4. EQUIPMENT ITEM NUMBERS (1) REFER TO EQUIPMENT NUMBERS IN LANL MSS MASTER BILL OF MATERIALS. ONLY THOSE NUMBERS USED ON THIS DRAWING ARE SHOWN.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	PD	PD	ATP	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

DISTRIBUTION
POLE DETAIL FOR CLEVIS MOUNTED CABLE

BLDG 181, 182, 183 TA-52

DRAWN: M.MUNTEANU
DESIGN: A.DROZDOWSKI
CHECKED: P.DONATO
DATE: 09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

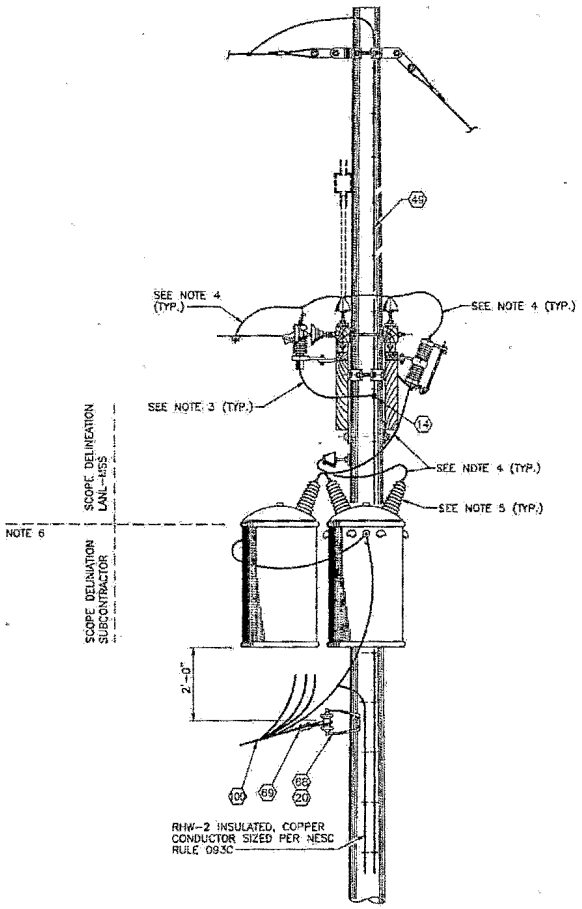
SHEET E-5001
73 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTIGLIA
DATE: 8/27/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 1

100761-C55751-E00005

Plotted By: SHANH Plot Date: 7/5/2012
FILE NAME: C55751-E-5001-R1.DWG



NEW 3-PHASE TRANSFORMER BANK ON DEADEND POLE 2903D WITH OVERHEAD SECONDARY DETAIL

SCALE: NONE

GENERAL NOTES:

1. CONSTRUCTION FOR WIRE SIZE #4/0 ACSR (6/1).
2. CONDUCTOR SIZES AND OTHER PARAMETERS SHALL BE CONFIRMED BY LANL ES-UI POWER ENGINEER FOR COMPATIBILITY TO EXISTING SYSTEM.
3. WILDLIFE/RAPTOR PROTECTION IS REQUIRED. USE 600V, INSULATED WIRE.
4. WILDLIFE/RAPTOR PROTECTION IS REQUIRED. USE HUBBELL/OHIO BRASS #7325 MOUNTING BRACKET WITH PROTECTIVE CAPS IN LIEU OF #7224 MOUNTING BRACKET.
5. EQUIPMENT ITEM NUMBERS (1) REFER TO EQUIPMENT NUMBERS IN LANL MSS MASTER BILL OF MATERIALS. ONLY THOSE NUMBERS USED ON THIS DRAWING ARE SHOWN.
6. OVERHEAD 13.2KV FEEDER AND POLE INSTALLATION BY LANL-MSS AND FROM POLE MOUNTED 480V TRANSFORMER SECONDARY ONWARD BY SUBCONTRACTOR.
7. FOR BILL OF MATERIALS, SEE DRAWING E-7006.

NO.	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	PD	PD	ATP	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

NEW 3 PHASE TRANSFORMER BANK ON DEADEND POLE 2903D WITH SECONDARY DETAIL

BLDG 181, 182, 183 TA-52

DRAWN: M.MUNTEANU
DESIGN: A.DROZDOWSKI
CHECKED: P.DONATO
DATE: 09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET E-5002
74 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTIGLIA
DATE: 8/27/12

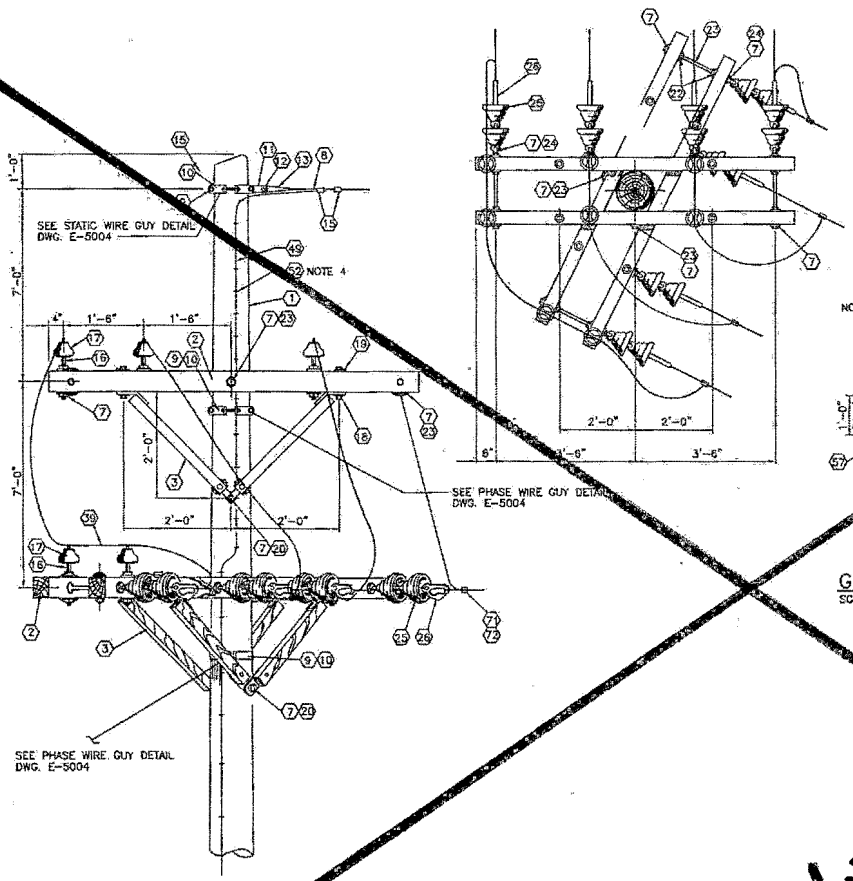
PROJECT ID: 100761
DRAWING NO: C-55751
REV: 1

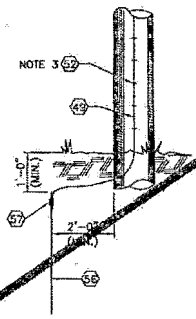
100761-C55751-E00006

Plotted By: SHAHI Plot Date: 7/5/2012
FILE NAME: C55751-E-5002-R1.DWG

GENERAL NOTES:

1. CONSTRUCTION FOR WIRE SIZE #4/0 ACSR (6/1).
2. CONDUCTOR SIZES AND OTHER PARAMETERS SHALL BE CONFIRMED BY LANL ES-UI POWER ENGINEER FOR COMPATIBILITY TO EXISTING SYSTEM.
3. GROUND OVERHEAD STATIC CONDUCTOR AT EVERY POLE (SEE GROUNDING DETAIL).
4. STAPLES ON GROUND WIRE SHALL BE 2'-0" APART EXCEPT FOR A DISTANCE OF 8'-0" ABOVE GROUND AND 8'-0" FROM TOP OF POLE WHERE THEY SHALL BE 6" APART.
5. FOR BILL OF MATERIALS, SEE DWG. E-7005.
6. EQUIPMENT ITEM NUMBERS (1) REFER TO EQUIPMENT NUMBERS IN LANL MSS MASTER BILL OF MATERIALS; ONLY THOSE NUMBERS USED ON THIS DRAWING ARE SHOWN.





GROUNDING DETAIL
SCALE: NONE

60°-90° ANGLE STRUCTURE DETAIL POLE 2903A
SCALE: NONE

Not Used For Construction

100761-C55751-E00007

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

ZERO LIQUID DISCHARGE SUBPROJECT

DISTRIBUTION
60°-90° ANGLE POLE 2903A DETAIL

BLDG 181, 182, 183 TA-52

DRAWN	M.M. MAUNTEANU
DESIGN	A.DROZDOWSKI
CHECKED	PD P.DONATO
DATE	09/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET E-5003
75 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIGLIA
PROJECT ID 100761
DRAWING NO C-55751
REV 0

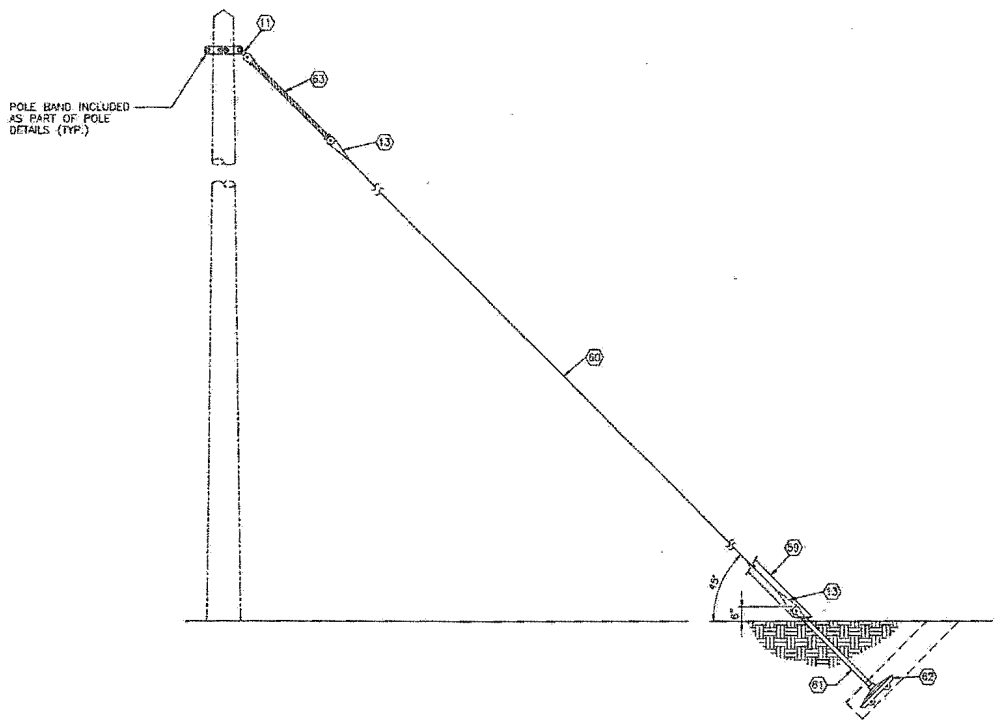
Plotted By: DONATOP
FILE NAME: C55751-E-5003-00.DWG
Plot Date: 9/22/2011

BILL OF MATERIALS

ITEM	DESCRIPTION	QTY	MFR. CATALOG No.
(11)	CONNECTING LINK	1	HUGHES #3170
(13)	GUY GRIP DEAD END, "B" COAT, 3/8" SIZE, GALVANIZED	2	PREFORMED #CDE3115
(59)	GUY GUARD, POLYETHYLELE	1	JOSLYN #J26520-BY
(60)	GALVANIZED GUY WIRE, 7 STRAND, 6,850#, 3/8"	AS REQ'D	
(61)	ANCHOR ROD, TWIN EYE, 3/4" x 8'	1	JOSLYN #J7528
(62)	ANCHOR, 8-WAY EXPANDING	1	JOSLYN #J8135
(63)	FIBERGLASS STRAIN INSULATOR, 15,000#	1	JOSLYN #150-78

GENERAL NOTES:

1. EQUIPMENT ITEM NUMBERS ((1)) REFER TO EQUIPMENT NUMBERS IN LANL MSS MASTER BILL OF MATERIALS. ONLY THOSE NUMBERS USED ON THIS DRAWING ARE SHOWN.



PHASE WIRE GUY DETAIL
NOTE: CONSTRUCTION FOR WIRE #4/0 ACSR (6/1)

GUY DETAILS
SCALE: NONE

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	RD	PD	ATP	RP	

ZERO LIQUID DISCHARGE SUBPROJECT

GUY POLE DETAILS

BLDG 181, 182, 183 TA-52

DRAWN: M.MUNTEANU
DESIGN: A.DROZDOWSKI
CHECKED: P.DONATO
DATE: 05/31/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

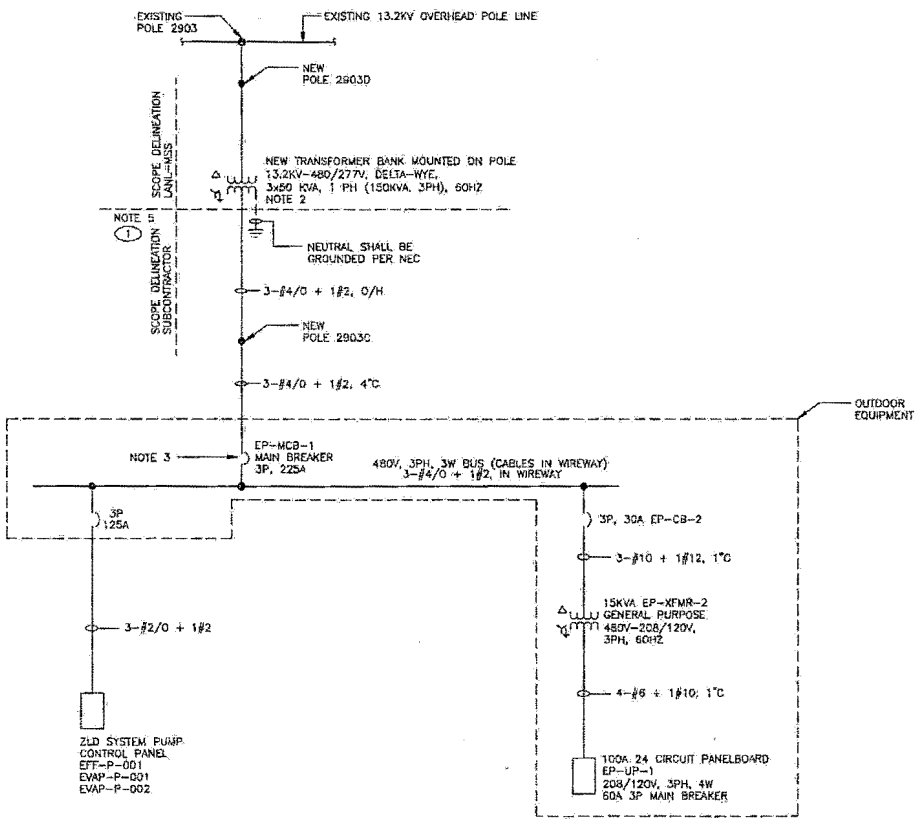
SHEET: E-5004
76 OF 88

CLASSIFICATION | REVIEWER: EDWARD ARTIOLA | DATE: 8/22/12

PROJECT ID: 100761 | DRAWING NO: C-55751 | REV: 1

100761-C55751-E00008

Plotted By: SHAW Plot Date: 7/9/2012
File Name: C55751-E-M004-181.dwg



ONE LINE DIAGRAM

SCALE: NONE

GENERAL NOTES:

1. FOR ELECTRICAL SYMBOLS LEGEND AND GENERAL NOTES SEE DRAWING E-0001.
2. 225A SERVICE TO ZLD SYSTEM PUMP & EQUIPMENT PAD STRUCTURE #182.
3. MAIN BREAKER (3P, 225A, 480V) SHALL BE RATED AT 600V AND SUITABLE FOR USE AS SERVICE EQUIPMENT.
4. MAIN BREAKER AND ALL MOTOR CIRCUIT PROTECTORS SHALL BE RATED MINIMUM 20KA SYM I.C.
5. OVERHEAD 13.2KV FEEDER AND POLE INSTALLATION BY LANL-MSS, AND FROM POLE MOUNTED 480V TRANSFORMER SECONDARY ONWARD BY ECC ELECTRICAL SUBCONTRACTOR.
6. TO COMPENSATE FOR THE 7500-FT ELEVATION ALL SWITCHBOARDS, POWER PANELBOARDS, AND CIRCUIT BREAKERS SHALL BE RATED AT 600 VAC ON 480V OR 480Y/277V SYSTEMS.

KEYED NOTES

1. LIMITS OF WORK FOR THE OVERHEAD ELECTRICAL DISTRIBUTION LINES (ZLD) SHALL BE FROM THE TERMINATION POINT NEAR POLE 2903D TO UNDERGROUND CONDUIT IN THE TA-52 EVAPORATION TANK AREA AS INDICATED. POLE LINE CONTRACTOR SHALL TERMINATE THE ELECTRICAL CABLE ABOVEGROUND AT POLE 2903C. CABLING SHALL BE PROVIDED WITH A TEMPORARY COVER TO PREVENT CONTAMINATION AND FOR COMPLETION OF TESTING. FINAL CONNECTION TO CABLING FROM THE PUMP AND EQUIPMENT PAD WILL BE COMPLETED BY THE TA-52 EVAPORATION AREA CONTRACTOR.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	PD	PD	ATP	RC	MAR

ZERO LIQUID DISCHARGE SUBPROJECT

ZERO LIQUID DISCHARGE SYSTEM
ELECTRICAL ONE LINE DIAGRAM

BLDG 181, 182, 183 TA-52

DRAWN M.MUNTEANU
DESIGN A.DROZDOWSKI
CHECKED P.DONATO
DATE 09/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

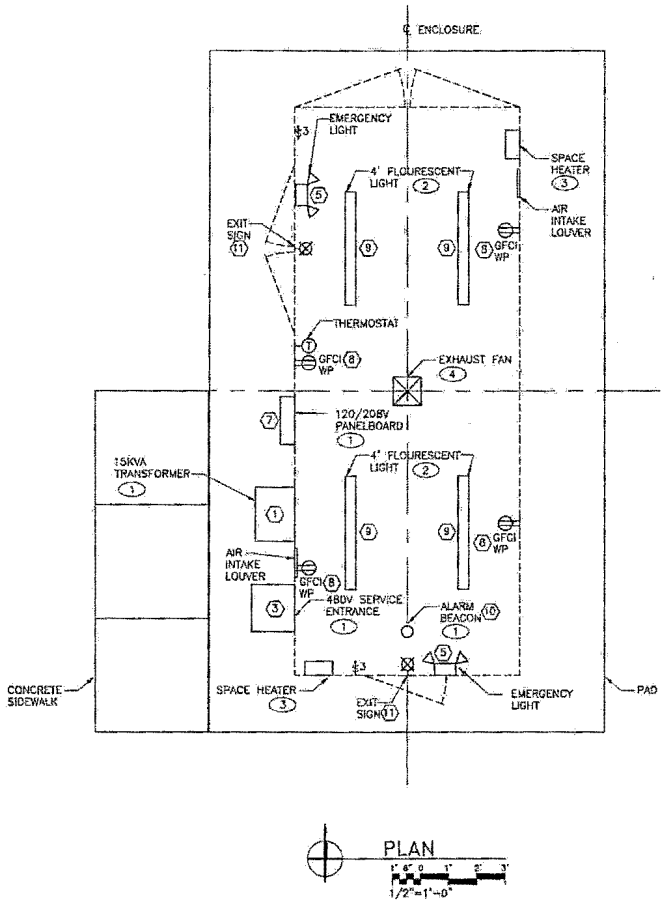
Los Alamos NATIONAL LABORATORY PO Box 1663 Los Alamos, New Mexico 87545

SHEET E-6000
77 OF 88

CLASSIFICATION
REVIEWER EDWARD ARTIGLIA DATE 8/27/12
PROJECT ID 100761
DRAWING NO C-55751
REV 1

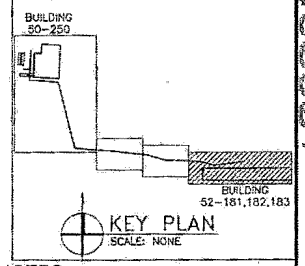
100761-C55751-E00009

Plotted By: SHAPH Plot Date: 7/5/2012
FILE NAME: C55751-E-6000-R1.DWG



PLAN

1/2"=1'-0"



KEY PLAN
SCALE: NONE

GENERAL NOTES:

1. IF THIS SHEET IS NOT 24"X36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
2. FOR BILL OF MATERIALS, SEE DWG. E-7002.
3. EQUIPMENT ITEM NUMBERS ((1)) REFER TO EQUIPMENT NUMBERS IN LANL MSS MASTER BILL OF MATERIALS. ONLY THOSE NUMBERS USED ON THIS DRAWING ARE SHOWN.
4. EQUIPMENT LOCATIONS ARE APPROXIMATE. EQUIPMENT SHALL BE LOCATED BY SUBCONTRACTOR IN FIELD.
5. MOTORIZED AIR INTAKE LOUVER: TWO (2) – 18" X 24" (INTERLOCKED TO OPEN WHEN FAN IS OPERATING) TO BE LOCATED DIAGONALLY OPPOSITE ON EITHER SIDE OF THE CONTAINER. BOTTOM OF INTAKE TO BE 4'0" FROM GRADE.
6. OPENINGS CUT INTO CONTAINER FOR CONDUIT AND EQUIPMENT SHALL NOT CUT INTO ANY OF THE CONTAINER STRUCTURAL MEMBERS.

KEYED NOTES

(1) EQUIPMENT LOCATIONS ARE APPROXIMATE.

(2) LIGHTS TO BE FLUSH MOUNTED TO CEILING.

(3) SPACE HEATERS SHALL BE RATED FOR A TOTAL OF 10KW (34,120 BTU, 5KW EACH) AND BE THERMOSTATICALLY CONTROLLED TO MAINTAIN A MINIMUM TEMPERATURE OF 50°F LOCATED APPROXIMATELY 4'-0" FROM GRADE.

(4) FAN SELECTION
0.25" STATIC PRESSURE
APPROX.= 350 TO 400 CFM
GRAVITY/BACKDRAFT DAMPER
INTEGRAL THERMOSTAT TO BE SET TO TURN ON FAN AT 100°F AND SHUT OFF AT 85°F
METAL BUILDING / STEEL DECK INSTALLATION THEREFORE PROPER SEALING REQUIRED.
SUGGESTED FAN – GREENHECK FAN MODEL: ROOF UPBLAST
TYPE – DIRECT DRIVE
MODEL SIZE: 080-D; CUE
EXHAUST AIRFLOW: 376 CFM
ROOF OPENING : 12.5" X 12.5"
DAMPER SIZE : 10" X 10"
MOTOR HP: 1/20
FAN RPM : 1550

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	PD	PD	ATP	PD	AA

ZERO LIQUID DISCHARGE SUBPROJECT

PUMP & EQUIPMENT PAD ELECTRICAL EQUIPMENT PLAN

BLDG 181, 182, 183 TA-52

DRAWN	P. DONATO
DESIGN	P. DONATO
CHECKED	A. PREISLER
DATE	06/27/12

SUBMITTED NORMAN LACY APPROVED FOR RELEASE JOSEPH BRODNAX

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

SHEET E-1002 78 OF 88

CLASSIFICATION REVIEWER EDWARD ARTIOLIA DATE 6/27/12

PROJECT ID	DRAWING NO	REV.
100761	C-55751	1

100761-C55751-E00010

Plotted By: SHAH Plot Date: 7/5/2012
File Name: C55751-E-1002-R1.DWG

TA-52, BLDG. 182 — EP-UP-1

SERVED BY	REF. DWG.	208Y/120V,3ø,4W	
15KVA TRANSFORMER	E-6000	60A MCB	10000A RMS SYMETRICAL

CKT.	SUPPLIES	(VA) LOAD A	(VA) LOAD B	(VA) LOAD C	BREAKER AMP	BREAKER AMP	(VA) LOAD C	(VA) LOAD B	(VA) LOAD A	SUPPLIES	CKT.
1	RECEPTS	720			20 GFCI	20			40	ALARM BEACON PWR	2
3	EMERG BATTERY PACK & EXIT LTG.		40		20	20		120		EXHAUST FAN	4
5	LF INTLK RELAY JB1			20	20	20	240			INTERIOR LIGHTING	6
7		1668							1668		8
9	UNIT HEATER 1		1668		3P/20	3P/20		1668		UNIT HEATER 2	10
11				1668			1668				12
13	FREEZE PROTECTION	120			20	20				SPARE	14
15	SPACE									SPACE	16
17	SPACE									SPACE	18
19	SPACE									SPACE	20
21	SPACE									SPACE	22
23	SPACE									SPACE	24
	SUBTOTAL CONNECTED LOAD	2508	1708	1688			1908	1788	1708	SUBTOTAL CONNECTED LOAD	
	TOTAL CONNECTED LOAD /ø	4216	3494	3596				11306		TOTAL CONNECTED VA	

CONNECTED

TOTAL LIGHTING LOAD:	240 VA
TOTAL RECEPT. LOAD:	720 VA
TOTAL POWER LOAD:	10346 VA
TOTAL CONNECTED LOAD:	11306 VA
	31.42 AMPS

DESIGN

LIGHTING LOAD @ 125%:	288 VA
RECEPTACLES PER NEC 220-44:	720 VA
POWER LOADS @ 100%:	10346 VA
20% SPARES @ DESIGN LOAD:	2271 VA
TOTAL DESIGN LOAD:	13625 VA
	38 AMPS

GENERAL NOTES:

1. FOR ELECTRICAL SYMBOLS LEGEND AND GENERAL NOTES SEE DRAWING E-0001.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	PD	PD	ATP	RC	MAP

ZERO LIQUID DISCHARGE SUBPROJECT

ZERO LIQUID DISCHARGE SYSTEM PUMP HOUSE ELECTRICAL PANEL SCHEDULE

BLDG 181, 182, 183 — TA-52

DRAWN: P.DONATO
DESIGN: P.DONATO
CHECKED: A. PREISLER
DATE: 06/27/2012

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET E-7000 — 82 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTIGLIA — DATE 8/27/12

PROJECT ID: 100761 — DRAWING NO: C-55751 — REV: 1

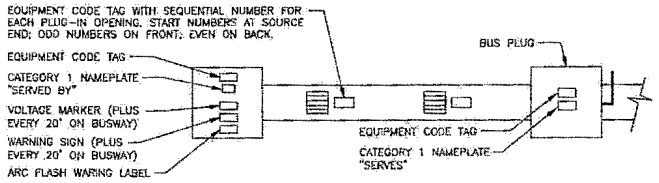
100761-C55751-E00011

Plotted By: SHAHI Plot Date: 7/5/2012
FILE NAME: C55751-E-7000-R1.DWG

NAMEPLATE SCHEDULE

NAMEPLATES SHALL BE SUPPLIED BY THE SUBCONTRACTOR. NAMEPLATES SHALL BE 0.0625" THICK LAMINATED PHENOLIC. BLACK WITH WHITE CORE LETTERS 0.1250" HIGH ATTACH TO EQUIPMENT WITH SCREWS:

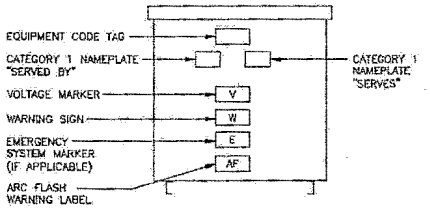
SYMBOL	DESIGNATION	QTY
1	EQUIPMENT CODE: EP-MCB-1 SERVED BY:EP-XFMR-1 VOLTAGE: 480V LOCATION: BLDG 182	1
2	EQUIPMENT CODE: EP-STR-1 SERVES: P-3001A VOLTAGE: 480V LOCATION: BLDG 182	1
3	EQUIPMENT CODE: EP-STR-2 SERVES: P-3002A VOLTAGE: 480V LOCATION: BLDG 182	1
4	EQUIPMENT CODE: EP-STR-3 SERVED BY: P-3002B VOLTAGE: 480V LOCATION: BLDG 182	1
5	EQUIPMENT CODE: EP-CB-2 SERVES: EP-XFMR-2 VOLTAGE: 480V/277V LOCATION: BLDG 182	1
6	EQUIPMENT CODE: EP-XFMR-2 SERVED BY: EP-CB 2 VOLTAGE: 480V LOCATION: BLDG 182	1
7	EQUIPMENT CODE: EP-UP-1 SERVES: UTILITIES BLDG 182 VOLTAGE: 208V/120V LOCATION: BLDG 182	1
8	EQUIPMENT CODE: SERVED BY: VOLTAGE: LOCATION:	0
9	EQUIPMENT CODE: SERVED BY: VOLTAGE: LOCATION:	0
10	EQUIPMENT CODE: SERVED BY: VOLTAGE: LOCATION:	0
11	EQUIPMENT CODE: SERVED BY: VOLTAGE: LOCATION:	0
12	EQUIPMENT CODE: SERVED BY: VOLTAGE: LOCATION:	0
13	EQUIPMENT CODE: SERVED BY: VOLTAGE: LOCATION:	0
14	EQUIPMENT CODE: SERVED BY: VOLTAGE: LOCATION:	0
15	EQUIPMENT CODE: SERVED BY: VOLTAGE: LOCATION:	0
16	EQUIPMENT CODE: SERVES: VOLTAGE: LOCATION:	0
17	EQUIPMENT CODE: SERVES: VOLTAGE: LOCATION:	0
18	EQUIPMENT CODE: SERVES: VOLTAGE: LOCATION:	0
19	EQUIPMENT CODE: SERVED BY: VOLTAGE: LOCATION:	0
20	EQUIPMENT CODE: SERVES: VOLTAGE: LOCATION:	0



1. INSTALL EQUIPMENT CODE TAGS AT 25' INTERVALS ALONG THE LENGTH OF THE BUSDUCT.
2. INDIVIDUAL FEEDER BREAKERS WILL HAVE CATEGORY 1 NAMEPLATES INSTALLED ON THEM.

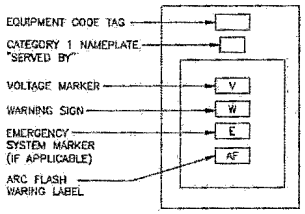
ELECTRICAL IDENTIFICATION: BUSDUCT

SCALE: NONE



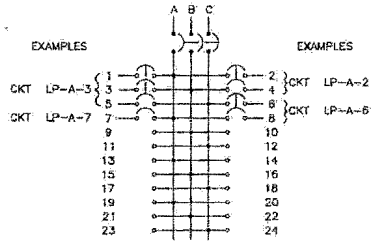
ELECTRICAL IDENTIFICATION: TRANSFORMER

SCALE: NONE



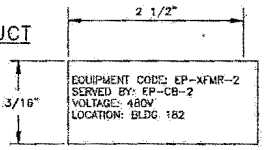
ELECTRICAL IDENTIFICATION: PANELBOARD

SCALE: NONE

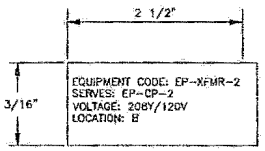


1. NUMBER POLES WITH ODD NUMBERS ON LEFT AND EVEN NUMBERS ON RIGHT.
2. FOR A MULTIPLE POLE DEVICE, UTILIZE ONLY ONE OF THE MULTIPLE NUMBERS WHICH IT COVERS AS A CIRCUIT NUMBER. PREFERABLE NUMBERS ARE TOP POLE NUMBERS ON TWO POLE AND MIDDLE NUMBER ON 3 POLE DEVICES.

CIRCUIT DESIGNATIONS: PANELBOARD



"SERVED BY" (EXAMPLE FOR 6)

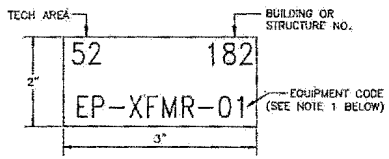


"SERVES" (EXAMPLE FOR 5)

ALL LETTERING SIZE = 10 PT.

CATEGORY 1 NAMEPLATES

SCALE: NONE



ALL LETTERING SIZE = 48 PT.

1. CREATE EQUIPMENT CODE TAG(S) FOR EACH PEICE OF EQUIPMENT IN ACCORDANCE WITH SPECIFICTION 26 0553. USE THE "EQUIPMENT CODE" DESIGNATION IN THE NAMEPLATE SCHEDULE FOR THE EQUIPMENT.

EQUIPMENT CODE TAG

SCALE: NONE

GENERAL NOTES:

1. FOR LEGEND SYMBOLS AND GENERAL NOTES SEE DRAWING E-0001.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	BD	BD	AP	RE	MM

ZERO LIQUID DISCHARGE SUBPROJECT

NAMEPLATE SCHEDULE
SHEET 1

BLDG 181, 182, 183 TA-52

DRAWN MM
DESIGN BD
CHECKED AP
DATE 06/28/2012

SUBMITTED NORMAN LACY APPROVED FOR RELEASE JOSEPH DROPIK

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

SHEET E-7001
83 OF 88

CLASSIFICATION REVIEWER EDWARD ARTIGUA DATE 6/27/12

PROJECT ID 100761 DRAWING NO C-55751 REV 1

100761-C55751-E00012

Plotted By: SHAWN
Plot Date: 7/5/2012
File Name: C55751-E-7001-AP.DWG

ELECTRICAL BILL OF MATERIAL

THE BILL OF MATERIAL IS INTENDED ONLY AS AN AID IN ESTIMATING AND MATERIAL TAKE-OFF, AND DOES NOT NECESSARILY INCLUDE ALL MATERIAL REQUIRED. UNLESS NOTED, CATALOG NUMBER IS GIVEN AS REFERENCE ONLY, AND APPROVED EQUAL SUBSTITUTION MAY BE MADE. ALL MATERIAL SHALL BE FURNISHED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.

ITEM NO.	QTY.	DESCRIPTION	NOTE
1	1	DRY TYPE TRANSFORMER: 15KVA, 480V-208Y/120V, 3PH, 4W, 60HZ, DELTA PRIMARY, GROUNDED Y SECONDARY, IN NEMA-3R ENCLOSURE WITH RODENT PROOFING	SQUARE D TYPE "EE"
2	1	CIRCUIT BREAKER 30A, 600V RATED, 3P, 3W, 20KA IN NEMA-3R ENCLOSURE	SQUARE D "CLASS 610"
3	1	CIRCUIT BREAKER: 225A, 600V, 3 POLE, 3W, 20KA IN NEMA-3R ENCLOSURE	SQUARE D "CLASS 610"
4	1	CIRCUIT BREAKER: 125A, 600V, 3 POLE, 3W, 20KA IN NEMA-3R ENCLOSURE	SQUARE D "CLASS 610"
5	2	EMERGENCY LIGHT: UNIT WITH 2-T5 (6V) LAMP HEADS, 120VAC, 3W LINE CORD, SELF-TEST/DIAGNOSTIC ELECTRONICS	CHLORIDE "6MF25WJ762-AD"
6	AS REQ'D	WIREWAY: 4"X4" RAINTIGHT	SQUARE D "SQUARE DUCT"
7	1	CIRCUIT BREAKER PANELBOARD: 60A MAIN BKR, 250V, SURFACE MOUNTED, 24 CKT, 3PH, 4W, 10KA IC RATING, WITH 100% NEUTRAL AND GROUND BUSES, NEMA-3R ENCLOSURE	SQUARE "NQ"
8	4	DUPLEX RECEPTACLE: 20A, 125VAC, 2P, 3W, GFCI, SURFACE MOUNTED WITH STAINLESS STEEL WALLPLATE	HUBBELL "GFR5352"
9	AS REQ'D	SURFACE-MOUNT FIXTURE: LOW PROFILE WRAP-AROUND FLUORESCENT WITH 2-32W T8 TUBES, MULTIVOLTAGE PROGRAMED START ELECTRONIC BALLAST	LITHONIA SERIES DMW CAT#DMW 232120GEB10RS
10	1	ALARM BEACON: RED 120VAC NEMA 3R	FEDERAL SIGNAL SERIES LP3
11	2	EXIT SIGN: 120V, RED, SINGLE SIDE	DUAL-LITE "SESOWNEI"

GENERAL NOTES:

1. FOR ELECTRICAL LEGEND, SYMBOLS & GENERAL NOTES SEE DRAWING E-0001.
2. EQUIPMENT ITEM NUMBERS (1) REFER TO EQUIPMENT NUMBERS IN LANL MSS MASTER BILL OF MATERIALS. ONLY THOSE NUMBERS USED ON DRAWING E-1002.
3. SEE VENDOR BILL OF MATERIAL FOR PUMP SKID PACKAGE.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	07/20/12	–	–	PROJECT RECORD DRAWINGS	PD	PD	ATP	RC	
1	07/16/12	–	–	REVISED ITEM 7	PD	PD	ATP	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

ELECTRICAL BILL OF MATERIALS SHEET 1

BLDG 181, 182, 183 TA-52

DRAWN P.DONATO
DESIGN P.DONATO
CHECKED A. PREISLER
DATE 05/27/2012

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BRIDPHY

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

SHEET E-7002
84 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIGLIA
DATE 8/27/12
PROJECT ID 100761
DRAWING NO C-55751
REV 2

100761-C55751-E00013

Plotted By: SHAHI Plot Date: 8/1/2012
FILE NAME: C55751-E-7002-R2.DWG

BILL OF MATERIALS

ITEM	DESCRIPTION	QTY	MFR. CATALOG No.
9	POLE BAND, 4-WAY, FOR 7 1/2" TO 12" DIA.	2	HUGHES #1111
10	LAG SCREW, 1/2" X 4"	2	JOSLYN #J6784
11	CONNECTING LINK	2	HUGHES #3170
12	GUY ROLLER, WHEEL TYPE, WITH 3/4" X 2" BOLT	2	HUGHES #28082
13	GUY GRIP DEAD END, "B" COAT, 3/8" SIZE, GALVANIZED	1	PREFORMED #CDE3115
15	CRIMP CONNECTOR	3	HYTAP
20	MACHINE BOLT, 5/8" X 14"	1	JOSLYN #J8814
49	NO. 1/0 BARE COPPER WIRE, 7 STRAND	AS REQ'D	
52	GROUND WIRE STAPLE, 2"	AS REQ'D	JOSLYN #J6655
56	GROUND ROD, 3/4" X 8'	1	JOSLYN #J5338
57	GROUND ROD CLAMP, HEX HEAD, 3/4"	1	JOSLYN #J8493
68	CLEVIS, WITH INSULATOR	1	JOSLYN #J0342/J101
100	SERVICE DROP CABLE, QUADRUPLEX	AS REQ'D	SELECT BASED ON TRANS-FORMER SIZE

GENERAL NOTES:

1. THIS BILL OF MATERIALS APPLIES TO DRAWING E-5000.
2. EQUIPMENT ITEM NUMBERS (1) REFER TO EQUIPMENT NUMBERS IN LANL MSS MASTER BILL OF MATERIALS. ONLY THOSE NUMBERS USED ON DRAWING E-5000.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	-	-	PROJECT RECORD DRAWINGS	PD	PD	ATP	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

POLES 2903A, 2903B & 2903C
BILL OF MATERIALS

BLDG 181, 182, 183 TA-52

DRAWN M.MUNTEANU
DESIGN A.BROZDOWSKI
CHECKED P.DONATO
DATE 09/21/2011

SUBMITTED NORMAN LACY
APPROVED FOR RELEASE JOSEPH BROPHY

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

SHEET E-7003
85 OF 88

CLASSIFICATION
REVIEWER EDWARD ARTIGLIA DATE 8/27/12

PROJECT ID 100761
DRAWING NO C-55751
REV 1

100761-C55751-E00014

Plotted By: SNMH Plot Date: 7/5/2012
FILE NAME: C55751-E-7003-R1.DWG

BILL OF MATERIALS

ITEM	DESCRIPTION	QTY	MFR. CATALOG No.
(1)	WOOD POLE, DF, 45', CLASS 3	1	
(2)	CROSS ARM, WOOD, 3 1/2" X 4 1/2" X 8'-0", 4 PIN	1	HUGHES #2202C
(3)	CROSS ARM BRACE, 1 [illegible]/16" X 2 11/16" X 48" SPAN	2	BROOKS #446-48-24
(4)	RIDGE IRON, SHIELD WIRE TYPE	1	HUGHES #1155
(5)	SUSPENSION CLAMP	1	HUBBELL/ANDERSON #MS-46-N
(6)	MACHINE BOLT, 5/8" X 12"	2	JOSLYN #J8812
(7)	SPRING WASHER, 5/8" SIZE	8	JOSLYN #J177
(8)	WIRE, 3/8" (7#8) H.S. STATIC, 30% COND.	AS REQ'D	COPPERWELD
(15)	CRIMP CONNECTOR	1	HYTAP
(16)	LOW VOLTAGE STEEL PIN, 5/8", 6" HEIGHT	4	JOSLYN #J207Z
(17)	PIN INSULATOR, ANSI CLASS 55-5	4	VICTOR #9R
(18)	MACHINE BOLT, 1/2" X 6"	2	JOSLYN #J8706
(19)	SPRING WASHER, 1/2" SIZE	2	JOSLYN #J[illegible]
(20)	MACHINE BOLT, 5/8" X 14"	1	JOSLYN #J8814
(21)	MACHINE BOLT, 5/8" X 18"	1	JOSLYN #J8818
(22)	SQUARE WASHER, 5/8" SIZE	1	JOSLYN #J1074
(39)	DIST. TIES FOR 4/0 ACSR (6/1)	3	PREFORMED #UTF-1208
(49)	NO. 1/0 BARE COPPER WIRE, 7 STRAND	AS REQ'D	
(52)	GROUND WIRE STAPLES, 2"	AS REQ'D	JOSLYN #J6655
(56)	GROUND ROD, 3/4" X 8'	1	JOSLYN #J5338
(57)	GROUND ROD CLAMP, HEX HEAD, 3/4"	1	JOSLYN #J8493
	DIST. TIE FOR #2 ACSR (6/1)	1	PREFORMED #UTF-1204

GENERAL NOTES:

1. THIS BILL OF MATERIALS APPLIES TO DRAWING E-5001.
2. EQUIPMENT ITEM NUMBERS ((1)) REFER TO EQUIPMENT NUMBERS IN LANL MSS MASTER BILL OF MATERIALS. ONLY THOSE NUMBERS USED ON DRAWING E-5001 ARE SHOWN.

Not Used For Construction

LANL BUILDING OFFICIAL APPROVED 11-9-12 11-0092

IAN V. HUBLER NEW MEXICO 20579 REGISTERED ENGINEER

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUP	APP

ZERO LIQUID DISCHARGE SUBPROJECT

DISTRIBUTION – SINGLE ARM POLE 29038 BILL OF MATERIALS

BLDG 181, 182, 183 TA-52

SUBMITTED NORMAN LACY

APPROVED FOR RELEASE JOSEPH BROPHY

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

DRAWN	M.MUNTEANU
DESIGN	A.BROSOSKE
CHECKED	P.DONATO
DATE	09/21/2011
SHEET	E-7004
OF	88
CLASSIFICATION	U
REVIEWER	EDWARD ANTOLIA
PROJECT ID	100761
DRAWING NO	C-55751
REV	6

100761-C55751-E00015

Plotted By: DONATOP Plot Date: 9/23/2011
FILE NAME: C55751-E-7004-R6.DWG

5005

BILL OF MATERIALS

ITEM	DESCRIPTION	QTY	MFR. CATALOG No.
1	WOOD POLE, DF, 45', CLASS 3	1	
2	CROSS ARM, WOOD, 3 1/2" X 4 1/2" X 8'-0", 4 PIN	2	HUGHES #2202C
3	CROSS ARM BRACE, 1 11/16" X 2 11/16" X 48" SPAN	2	BROOKS #446-48-24
7	SPRING WASHER, 5/8" SIZE	16	JOSLYN #J177
8	WIRE, 3/8" (7#8) H.S. STATIC, 30K COND.	AS REQ'D	COPPERWELD
9	POLE BAND, 4-WAY, FOR 7 1/2" TO 12" DIA.	2	HUGHES #1111
10	LAG SCREW, 1/2" X 4"	2	JOSLYN #J8784
11	CONNECTING LINK	2	HUGHES #3170
12	GUY ROLLER, WHEEL TYPE, WITH 3/4" X 2" BOLT	2	HUGHES #28082
13	GUY GRIP DEAD END, "B" COAT, 3/8" SIZE, GALVANIZED	2	PREFORMED #CDE3115
15	CRIMP CONNECTOR		HYTAP
16	LOW VOLTAGE STEEL PIN, 5/8", 6" HEIGHT	8	JOSLYN #J207Z
17	PIN INSULATOR, ANSI CLASS 55-5	8	VICTOR #[illegible]
18	MACHINE BOLT, 1/2" X 6"	4	JOSLYN #J8706
19	SPRING WASHER, 1/2" SIZE	4	JOSLYN #J176
20	MACHINE BOLT, 5/8" X 14"	1	JOSLYN #J8814
22	SQUARE WASHER, 5/8" SIZE	4	JOSLYN #J1074
23	DOUBLE ARMING BOLT, 5/8" X 22"	3	JOSLYN #J8872
24	EYE NUT, 5/8" SIZE	14	JOSLYN #J1092
25	SUSPENSION INSULATOR, POLYMER	16	LAPP #151001A
26	STRAIN CLAMP, DEADEND	8	HUBBELL/ANDERSON #GDW-2040
39	DIST. TIES FOR 4/0 ACSR (6/1)	6	PREFORMED #UTF-1208
49	NO. 1/0 BARE COPPER WIRE, 7 STRAND	AS REQ'D	
52	GROUND WIRE STAPLES, 2"	AS REQ'D	JOSLYN #J6655
56	GROUND ROD, 3/4" X 8'	1	JOSLYN #J5338
57	GROUND ROD CLAMP, HEX HEAD, 3/4"	1	JOSLYN #J8493
71	LINE TAP CRIMPITS, COPPER YC-C	7	FCI-BURNCY #YC26C26
72	LINE TAP CRIMPITS, ACST YP-U	7	

GENERAL NOTES:

1. THIS BILL OF MATERIALS APPLIES TO DRAWING E-5003.
2. EQUIPMENT ITEM NUMBERS (1) REFER TO EQUIPMENT NUMBERS IN LANL MSS. MASTER BILL OF MATERIALS. ONLY THESE NUMBERS USED ON DRAWING E-5003 ARE SHOWN.

Not Used For Construction

LANL BUILDING OFFICIAL
11/9/13
10-6-11
11-0062
APPROVED

IRA M. ROBIN
NEW MEXICO
20579
PROFESSIONAL ENGINEER

100761-C55751-E00016

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

ZERO LIQUID DISCHARGE SUBPROJECT

DISTRIBUTION – 60 [illegible] ANGLE POLE 2903A
BILL OF MATERIALS

BLDG 181, 182, 183 TA-52

DRAWN	M.M. M.MUNTEANU
DESIGN	A.DROZDOWSKI
CHECKED	P.DONATO
DATE	09/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH BROPHY

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

SHEET E-7005 OF 88

CLASSIFICATION U
REVIEWER EDWARD ARTIGLIA
PROJECT ID 100761
DRAWING NO. C-55751
REV

Plotted By: DONATOP Plot Date: 9/22/2011
FILE NAME: C55751-E-7005-RD.DWG

BILL OF MATERIALS

ITEM	DESCRIPTION	QTY	MFR. CATALOG No.
20	MACHINE BOLT, 5/8" X 14"	2	JOSLYN #J8814
68	CLEVIS, WITH INSULATOR	1	JOSLYN #J0342/J101
69	SERVICE WEDGE CLAMP	1	THOMAS & BETTS/BLACKBURN #W62-1
100	SERVICE DROP CABLE, QUADRUPLEX	AS REQ'D	4/0

GENERAL NOTES:

1. THIS BILL OF MATERIALS APPLIES TO DRAWING E-5002.
2. EQUIPMENT ITEM NUMBERS (1) REFER TO EQUIPMENT NUMBERS IN LANL MSS MASTER BILL OF MATERIALS. ONLY THOSE NUMBERS USED ON DRAWING E-5002.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
1	07/12/12	–	–	PROJECT RECORD DRAWINGS	PD	PD	ATP	RC	

ZERO LIQUID DISCHARGE SUBPROJECT

NEW 3 PHASE TRANSFORMER BANK ON DEADEND POLE 2903D WITH SECONDARY BILL OF MATERIALS

BLDG 181, 182, 183 TA-52

DRAWN: M.MUNTEANU
DESIGN: A.DROZDOWSKI
CHECKED: P.DONATO
DATE: 05/21/2011

SUBMITTED: NORMAN LACY
APPROVED FOR RELEASE: JOSEPH SROPHY

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

SHEET E-7006
88 OF 88

CLASSIFICATION
REVIEWER: EDWARD ARTIGLIA
DATE: 8/22/12

PROJECT ID: 100761
DRAWING NO: C-55751
REV: 1

100761-C55751-E00017

Plotted By: SWAHN Plot Date: 7/5/2012
FILE NAME: C55751-E-7006-R1.DWG

Fullam Docs 030714 / airloads / LANL / DP1132 TA-50 RLWTF / DP1132 emails

Fullam, Jennifer, NMENV

From: Beers, Robert S <bbeers@lanl.gov>
Sent: Tuesday, February 28, 2012 1:11 PM
To: Fullam, Jennifer, NMENV
Cc: George, Robert, NMENV; Saladen, Michael T; Winsemius, Shellie L; Signore, John Del C
Subject: Discharge Permit DP-1132 Application_Revised Lat/Long

Dear Ms. Fullam,

During our telephone conversation this morning (Tuesday, February 28, 2012) you asked me to verify the RLWTF Mechanical Evaporator's Latitude/Longitude as provided in Table A-9 of the February 2012 Discharge Permit DP-1132 Application.

The Lat/Long listed in above referenced application is incorrect; please note the correct coordinates presented below:

A-9. Discharge Locations.

Components	Township	Range	Section(s)	Latitude	Longitude
RLWTF Mechanical Evaporator (50-257)	19N	6E	22	~~35° 51' 58.3"~~ 35° 51' 43.4124"	~~-106° 17' 48.5"~~ -106° 17' 51.8346"
NPDES Outfall #051 (NM0028355)	19N	6E	22	35° 51' 54"	-106° 17' 52"
TA-52 Zero Liquid Discharge Solar Evaporation Tanks (currently under construction)	19N	6E	22	35° 51' 36"	-106° 17' 12"

Thank you for bringing this error to my attention.

Sincerely,

Bob Beers
Water Quality & RCRA Group
Los Alamos National Security, LLC

: 08097

New Mexico E—ronment Department
Ground Water Quality Bureau

Memorandum of Meeting or Phone Conversation

Memorandum of Meeting or Phone Conversation

☑ Telephone ☐ Meeting	Time: 941	Date: 02.28.12

Individuals Involved

Jennifer Fullam, NMED GWQB	☐ called ☑ was called by ☐ other:	Name: Bob Beers Affiliation: Contract DP: 1132 Site Name: RLWTF (LANL) Phone Number: 505. 667. 7969

Subject: location of Evaporators

Discussion: Beers called Fullam to discuss 1793 supplemental information (see phone log for DP-1793).
Fullam asked Beers if the physical location for the RLWTF mechanical evaporators could be reassessed as it appears to be incorrect
Beers will look into location
Fullam also requested the location for the solar evaporative tanks be verified as the original NOI is not consistant with the application
Beers will also check
03.02.12 @ 244 Beers called Fullam with corrected location for mechanical evaporators and requested all other information be submitted through e-mail or letter.

Conclusions:

Distribution:

Initialed JF

: 08099

Fullam, Jennifer, NMENV

From: Knutson, Gerald, NMENV
Sent: Wednesday, February 29, 2012 3:52 PM
To: Schoeppner, Jerry, NMENV; Marshall, Clint, NMENV; George, Robert, NMENV; Fullam, Jennifer, NMENV
Subject: FW: NMED Inspection of LANL

FYI for the March 20, 2012 inspection.

From: Beers, Robert S [mailto:bbeers@lanl.gov]
Sent: Wednesday, February 29, 2012 3:35 PM
To: Knutson, Gerald, NMENV
Cc: Saladen, Michael T; Barnett, Charles H; Artiglia, Edward W
Subject: NMED Inspection of LANL

Dear Mr. Knutson,

Regarding the NMED Ground Water Quality Bureau's scheduled inspection of the Laboratory's Sanitary Effluent Reclamation Facility (SERF) and the TA-52 ZLD Solar Evaporation Tanks on March 20, 2012.

Both the SERF and the ZLD Evaporation Tanks are active construction sites. Therefore, the following Personal Protective Equipment (PPE) is required for all visitors:

1. hard hat
2. safety shoes
3. safety glasses with side shields
4. safety vest

Please instruct all personnel from the NMED GWQB who are participating in the March 20th inspection to bring with them the required PPE.

The Laboratory can supplement any missing PPE, with the exception of safety shoes, as needed.

Sincerely,

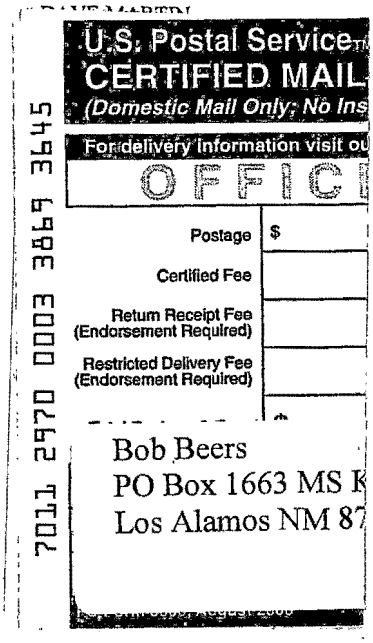
Bob Beers
Water Quality & RCRA Group
Los Alamos National Security, LLC

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

1190 St. Francis Drive
P.O. Box 5469, Santa Fe, NM 87502
Phone (505) 827-2918 Fax (505) 827-2965
www.nmenv.state.nm.us



CERTIFIED MAIL – RETURN RECEIPT REQUESTED

March 2, 2012

Kevin Smith, Manager
National Nuclear Security Administration
3747 West Jemez Road
Los Alamos, NM 87545

Alison Dorries, Division Leader
Los Alamos National Security, LLC(LANS)
P.O. Box 1663, MS K491
Los Alamos, NM 87545

RE: Administrative Completeness Determination and Applicant's Public Notice Requirements, DP-1132, Los Alamos National Laboratory

Dear Ms. Dorries and Mr. Smith:

The New Mexico Environment Department (NMED) received a Ground Water Discharge Permit Application for the above referenced facility on February 16, 2012. Pursuant to Section 20.6.2.3108 NMAC of the New Mexico Water Quality Control Commission Regulations (20.6.2 NMAC), NMED determined on February 23, 2012 that your application is administratively complete.

Within 30 days of the date when the US Postal Service first makes notice to you of its possession of this letter, you must provide public notice. Instructions and materials needed to complete the public notice are enclosed.

After NMED receives the completed proof of public notice, a technical reviewer will contact you if additional information is needed to process your application. If you have a deadline of concern in the interim or any questions, please call the Ground Water Quality Bureau at (505) 827-2900.

Sincerely,

for Jerry Schoeppner, Chief
Ground Water Quality Bureau

enc: Instructions for Completing Public Notice Requirements
Affidavit
Public Notice Flyer
Text for Newspaper Display Ad
Public Notice Sign
Invoice ($15 fee per printed sign) if not attached, the invoice will be mailed separately

cc: Bob Beers, Water Quality & RCRA Group, LANS, PO Box 1663 MS K490, Los Alamos NM 87545

INSTRUCTIONS FOR COMPLETING PUBLIC NOTICE REQUIREMENTS

Discharge Permit DP- 1132 ☑ New ☐ Modification ☐ Renewal & Modification

Within 30 days of the date NMED deemed your Discharge Permit application administratively complete, you must provide public notice as follows:

1. **Post sign(s) at the facility.**
   Enclosed is a sign 2 x 3 feet in size (or multiple signs if required) which must be posted **at or near the facility** in a conspicuous location approved by NMED. An invoice for the sign(s) is enclosed. NMED approves the following sign posting location(s):

   5 locations: entrance to TA-50 RLWTF; entrance to Vehicle Access Control Station; intersection of Pajarito Rd & Diamond Dr.; intersection of Embudo Rd & Diamond Dr.; Park & Ride Bus Stop at intersection of Diamond Dr. & West Jemez Rd.

2. **Post a public notice flyer off-site.**
   The enclosed public notice flyer which must be posted **off-site** at a location conspicuous to the public and approved by NMED. NMED approves the following flyer posting location:

   LANL Public Reading Room @ J. Robert Oppenheimer Study Center and Research Library

3. **Mail a public notice flyer to property owners within 1/3 mile.**
   A copy of the enclosed public notice flyer must be sent by 1st class mail to the owners of record of all properties within 1/3 mile from the boundary of the property where the discharge site is located. If there are no properties within 1/3 mile other than properties owned by the applicant, then the flyer must be mailed to the owners of record of the nearest adjacent properties.

   The names and addresses of property owners can be obtained from the county tax assessor's office. The list of property owners' names and addresses must be submitted to NMED.

4. **Mail a public notice flyer to the owner of the discharge site.**
   A copy of the enclosed flyer must be sent via certified mail, return receipt requested, to the owner(s) of the discharge site(s), if the applicant is not the owner. The list of owners' names and addresses and the certified mail receipts must be submitted to NMED.

5. **Place a display ad in the newspaper.**
   A display ad 3 x 4 inches in size must be published for one day in a newspaper of general circulation in the location of the proposed discharge. The ad may **not** be placed in the classified or legal section. The text for the ad is enclosed. NMED approves publishing the ad in the following newspaper:

   Los Alamos Monitor

PROOF OF NOTICE. Within 15 days of completing the above requirements, the applicant must submit the following items as proof of notice to NMED:

- ✓ Affidavit regarding the sign posting and mailing (form enclosed).
- ✓ List of names and addresses to whom the public notice flyer was mailed.
- ✓ List of names and addresses of owners of discharge sites.
- ✓ Certified mail receipts for mailing to discharge site owner(s), if required.
- ✓ Copy of newspaper ad.

Send to NMED Ground Water Quality Bureau, PO Box 5469, Santa Fe, NM 87502.

Reviewer's Initials and Date BH 2/24/12

PUBLIC NOTICE
Discharge Permit Application

Los Alamos National Laboratory - Radioactive Liquid Waste Treatment Facility, DP-1132

DP-1132, Los Alamos National Laboratory - Radioactive Liquid Waste Treatment Facility, Kevin Smith, Manager of the National Nuclear Security Administration, and Alison Dorries, Division Leader of Los Alamos National Security, LLC, proposes to discharge up to 40,000 gallons per day of industrial wastewater to a collection, treatment and disposal system. This facility also discharges under a National Pollutant Discharge Elimination System permit (NM0028355) issued by the U.S. Environmental Protection Agency pursuant to the federal Clean Water Act. Potential contaminants from this type of discharge include radioactivity, total dissolved solids, organic compounds and metals. The treatment and disposal facility is located within Los Alamos National Laboratory, in Section 22, T19N, R06E. The wastewater collection system is located in Sections 16, 17, 20, 21 and 22, T19N, R06E, Los Alamos County. Ground water beneath the site is at a depth of <1 foot below ground surface in the alluvial aquifer and approximately 1,306 feet below ground surface in the regional aquifer. Ground water has a total dissolved solids concentration of approximately 162 - 255 milligrams per liter.

The applicant is seeking a Discharge Permit for the proposed discharge. Provided the applicant has met applicable requirements, the New Mexico Environment Department (NMED) will propose a Discharge Permit containing limitations, monitoring requirements, and other conditions intended to protect ground water quality for present and potential future use. Information in this public notice was provided by the applicant and will be verified by the New Mexico Environment Department during the permit application review process. NMED will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices.

You may send comments or statements of interest to:

Jennifer Fullam, DP-1132
Ground Water Quality Bureau
PO Box 5469
Santa Fe, NM 87502.

For additional information, please call:
505-827-2900

Applicant(s):

Kevin Smith, Manager
National Nuclear Security Administration
3747 West Jemez Road
Los Alamos, NM 87545

Alison Dorries, Division Leader
Los Alamos National Security, LLC(LANS)
P.O. Box 1663, MS K491
Los Alamos, NM 87545

Public Notice Synopsis, DP-1132
(for sign and newspaper display ad)

Newspaper display ad must be at least 3 inches by 4 inches in size and must be published for at least one day in a section other than the classifieds or legals.

PUBLIC NOTICE / NOTICIA PÚBLICA

Discharge Permit Application / Aplicación para Permiso de Descargue: For up to 40,000 gallons per day of industrial wastewater to a collection, treatment and disposal system / Para un máximo de 40.000 galones por día de aguas residuales industriales a un sistema de colección, tratamiento y disposición

Applicant & Discharge Location / Solicitante & Sitio de Descarga: Los Alamos National Laboratory, P.O. Box 1663 Mail Stop K491, Los Alamos

For More Information / Para Más Información (DP-1132):
Ground Water Quality Bureau / Sección de Agua Subterránea
NM Environment Department / Departamento del Medio Ambiente

(505) 827-2900 www.nmenv.state.nm.us (public notices)

Information in this public notice was provided by the applicants and will be verified by NMED during the permit application review process.

Notice is hereby given pursuant to 20.6.2.3108 NMAC, the following proposed Ground Water Discharge Permit applications have been submitted to the New Mexico Environment Department (NMED) for review.

DP #	Facility/Applicant	Closest City	County	Notice	NMED Permit Contact
1275	Reserve (Village of) - Wastewater Treatment Plant Constance Wehrheim Mayor Village of Reserve-WWTP PO Box 587 Reserve, NM 87830	Reserve	Catron	Reserve (Village of) -Wastewater Treatment Plant, Constance Wehrheim, Mayor, proposes to renew the Discharge Permit for the discharge of up to 75,000 gallons per day of domestic wastewater from a Municipality to a treatment and disposal system. Potential contaminants from this type of discharge include nitrogen compounds. The facility is located at 17 Plant Street, Reserve, in Section 12, T07S, R19W, Catron County. Ground water beneath the site is at a depth of approximately 13.5 feet and has a total dissolved solids concentration of approximately 317 milligrams per liter.	Robert George
167	River Valley Dairy Bruce Bonestroo, Owner River Valley Dairy PO Box 1929 Anthony, NM 88021	Mesquite	Dona Ana	River Valley Dairy, Bruce Bonestroo, Owner, proposes to renew the Discharge Permit for the discharge of up to 35,000 gallons per day of agricultural wastewater to a treatment and disposal system. Potential contaminants from this type of discharge include nitrogen compounds. The facility is located at 1400 Lechuga Rd, Mesquite, in Section 28, T25S, R03E, Dona Ana County. Ground water beneath the site is at a depth of approximately 13 feet and has a total dissolved solids concentration of approximately 1519 milligrams per liter.	Kim Kirby
950	Santa Fe Ingredients Company Henry Rodriguez President SF Ingredients Co. 1448 Hwy 338 Animas, NM 88020	Animas	Hidalgo	Santa Fe Ingredients Company, Henry Rodriguez, President, proposes to renew the Discharge Permit for the discharge of up to 150,000 gallons per day of agricultural wastewater to a treatment and disposal system. Potential contaminants from this type of discharge include nitrogen compounds and total dissolved solids. The facility is located at 1448 Hwy 338, Animas, in Section 3, T26S, R20W, Hidalgo County. Ground water beneath the site is at a depth of approximately 150 feet and has a total dissolved solids concentration of approximately 500 milligrams per liter.	John Rebar

1796	JUT Demo-JUT Demonstration Plant John Ward, Vice President JUT Demo-Plant 18 Crosby Drive Bedford, MA 01730	Hobbs	Lea	JUT Demo-JUT Demonstration Plant, John Ward, Vice President of Production, proposes to discharge up to 7,279,811 gallons per year of industrial wastewater from a renewable fuels facility to a treatment and disposal system. Potential contaminants from this type of discharge include total dissolved solids and metals. The facility is located at 1020 S NM Highway 483, Hobbs, in Section 33, T18S, R36E, Lea County. Ground water beneath the site is at a depth of approximately 75 feet and has a total dissolved solids concentration of approximately 410 milligrams per liter.	Russell Isaac
1132	Los Alamos National Laboratory-Radioactive Liquid Waste Treatment Facility Kevin Smith, Manager National Nuclear Security Administration 3747 W. Jemez Rd. Los Alamos, NM 87545 Alison Dorries, Division Leader Los Alamos National Security LLC(LANS) P.O. Box 1663, MS K491 Los Alamos, NM 87545	Los Alamos	Los Alamos	Los Alamos National Laboratory-Radioactive Liquid Waste Treatment Facility, Kevin Smith, Manager of the National Nuclear Security Administration, and Alison Dorries, Division Leader of Los Alamos National Security, LLC, proposes to discharge up to 40,000 gallons per day of industrial wastewater to a collection, treatment and disposal system. This facility also discharges under a National Pollutant Discharge Elimination System permit (NM0028355) issued by the U.S. Environmental Protection Agency pursuant to the federal Clean Water Act. Potential contaminants from this type of discharge include radioactivity, total dissolved solids, organic compounds and metals. The treatment and disposal facility is located within Los Alamos National Laboratory, in Section 22, T19N, R06E. The wastewater collection system is located in Sections 16, 17, 20, 21 and 22, T19N, R06E, Los Alamos County. Ground water beneath the site is at a depth of <1 foot below ground surface in the alluvial aquifer and approximately 1,306 feet below ground surface in the regional aquifer. Ground water has a total dissolved solids concentration of approximately 162-255 milligrams per liter.	Jennifer Fullam
1501	Kamp Kiwanis Sara Mortenson, Manager Kamp Kiwanis PO Box 177 Vanderwagen, NM 87326	Vanderwagen	McKinley	Kamp Kiwanis, Sara Mortenson, Manager, proposes to renew the Discharge Permit for the discharge of up to 4,000 gallons per day of domestic wastewater to a treatment and disposal system. Potential contaminants from this type of discharge include nitrogen compounds. The facility is located at 20 A Cousins Rd, Vanderwagen, in Section 20, T12N, R18W, McKinley County. Ground water beneath the site is at a depth of approximately 85 feet and has a total dissolved solids concentration of approximately 318 milligrams per liter.	Naomi Davidson

640	Mora Wastewater Treatment Plant Elauterio Trujillo, President Mora MDWC & MSWA-WWTP PO Box 304 Mora, NM 87732	Mora	Mora	Mora Wastewater Treatment Plant, Elauterio Trujillo, President of the Mora Mutual Domestic Water Consumers & Mutual Sewer Works Association, proposes to discharge up to 100,000 gallons per day of domestic wastewater to a treatment and disposal system. Potential contaminants from this type of discharge include nitrogen compounds. The treatment facility is located at approximately 1.5 miles east of the intersection of NM 518 and NM 94, Mora, at latitude 35°58'64"N, longitude 105°18'92"W and the disposal system is located nearby at latitude 35°58'27"N, longitude 105°18'00"W, Mora County. Ground water beneath the site is at a depth of approximately 48 feet and has a total dissolved solids concentration of approximately 386-480 milligrams per liter.	Steve Pedro
114	Sacramento Methodist Assembly Bill McCraig, Executive Director Sacramento Methodist Assembly P.O. Box 8 Sacramento, NM 88347	Sacramento	Otero	Sacramento Methodist Assembly, Bill McCraig, Executive Director, proposes to renew the Discharge Permit for the discharge of up to 15,000 gallons per day of domestic wastewater to a treatment and disposal system. Potential contaminants from this type of discharge include nitrogen compounds. The facility is located at 106 Assembly Circle, Sacramento, in Section 36, T17S, R13E, Otero County. Ground water beneath the site is at a depth of approximately 70 feet and has a total dissolved solids concentration of approximately 380 milligrams per liter.	Russell Isaac
1472	Brackish Groundwater National Desalination Research Facility (BGNDRF) Mike Hamman, Area Manager, (BGNDRF) US Bureau of Reclamation- Albuquerque Area Office 555 Broadway Blvd., NE, Ste. 100 Albuquerque, NM 87102-2357	Alamogordo	Otero	Brackish Groundwater National Desalination Research Facility (BGNDRF), Mike Hamman, Area Manager, proposes to renew the Discharge Permit for the discharge of up to 107,000 gallons per day of industrial wastewater to a treatment and disposal system. Potential contaminants from this type of discharge include total dissolved solids and metals. The facility is located in Alamogordo, Section 36, T16S, R09E, Otero County. Ground water beneath the site is at a depth of approximately 54 feet and has a total dissolved solids concentration of approximately 4,110 milligrams per liter.	Brad Reid

1666	Ute Lake Ranch Water Reclamation Facility Nolan Donley, Treasurer Ute Lake Ranch Water Reclamation Facility 188 Inverness Dr. W Ste. 150 Englewood, CO 80112	Logan	Quay	Ute Lake Ranch Water Reclamation Facility, Nolan Donley, Treasurer, proposes to renew and modify the Discharge Permit for the discharge of up to 333,000 gallons per day of domestic wastewater to two treatment and disposal systems. Potential contaminants from this type of discharge include nitrogen compounds. The facility is located 3.7 miles north of the intersection of Hwy 54 and Mine Canyon Rd , Logan, in Sections 23, 24 and 25, T13N, R32E, Quay County. Ground water beneath the site is at a depth of approximately 40-62 feet and has a total dissolved solids concentration of approximately 35,000 milligrams per liter.	Jennifer Fullam
83	Cielo Lindo Mobile Home Park Tom Cordova, Owner Cielo Lindo-MHP 439 Louise Los Alamos, NM 87544	Santa Fe	Santa Fe	Cielo Lindo Mobile Home Park, Tom Cordova, Owner, proposes to renew the Discharge Permit for the discharge of up to 6,000 gallons per day of domestic wastewater to a treatment and disposal system. Potential contaminants from this type of discharge include nitrogen compounds. The facility is located at 1736 State Rd 502, Santa Fe, in Section 12, T19N, R08E, Santa Fe County. Ground water beneath the site is at a depth of approximately 19 feet and has a total dissolved solids concentration of approximately 175 milligrams per liter.	Steven Pedro
944	Las Campanas Sewer Cooperative Phil Nowlin, CFO/General Manager Las Campanas Sewer Cooperative 366 Las Campanas Dr. Santa Fe, NM 87506	Santa Fe	Santa Fe	Las Campanas Sewer Cooperative, Phil Nowlin, CFO and General Manager, proposes to renew and modify the Discharge Permit for the discharge of up to 1,500,000 gallons per day of reclaimed domestic wastewater received from the City of Santa Fe wastewater treatment facility and from Las Campanas' own treatment system to impoundments and for golf course irrigation.. Potential contaminants from this type of discharge include nitrogen compounds. The facility is located at 428 Las Campanas Drive, Santa Fe, in Sections 10, 11, 12, 13, 14 and 15, T17N, R08E, Santa Fe County. Ground water beneath the site is at a depth of approximately 278 feet and has a total dissolved solids concentration of approximately 274 milligrams per liter.	Jennifer Fullam

705	AA Chile Dennis Alberson,Vice President AA Chile PO Box 660 Hatch, NM 87937	Arrey	Sierra	AA Chile, Dennis Alberson, Vice President, proposes to renew and modify the Discharge Permit for the discharge of up to 2,500 gallons per day of agricultural wastewater to a treatment and disposal system. Potential contaminants from this type of discharge include nitrogen compounds. The facility is located at 13578 N Hwy 187, Arrey, in Section 14, T17S, R05W, Sierra County. Ground water beneath the site is at a depth of approximately 55 feet and has a total dissolved solids concentration of approximately 269 milligrams per liter.	Kathie Deal
690	Torrance County Correctional Facility Tim DeBuse, Acting Vice President of Real Estate Correction Corporation of America Torrance County Correctional Facility 10 Burton Hills Blvd. Nashville, TN 37215	Estancia	Torrance	Torrance County Correctional Facility, Tim DeBuse, Acting Vice President of Real Estate for Correction Corporation of America, proposes to renew and modify the Discharge Permit for the discharge of up to 150,000 gallons per day of domestic wastewater to a treatment and disposal system. Potential contaminants from this type of discharge include nitrogen compounds. The facility is located at 209 Allen Ayers Blvd, Estancia, in Section 8, T06N, R09E, Torrance County. Ground water beneath the site is at a depth of approximately 25 feet and has a total dissolved solids concentration of approximately 1,300-1,700 milligrams per liter.	Kathie Deal

Provided the applicant has met applicable requirements, the New Mexico Environment Department (NMED) will propose for approval a Discharge Permit containing limitations, monitoring requirements, and other conditions intended to protect ground water quality for present and potential future use. Information in this public notice was provided by the applicants and will be verified by NMED during the permit application review process. NMED will accept comments and statements of interest regarding applications and will create facility-specific mailing lists for persons who wish to receive future notices. Questions, comments or statements of interest should be directed to the NMED permit contact at (505) 827-2900 or at the following address: Ground Water Quality Bureau, PO Box 5469, Santa Fe, NM 87502-5469.

To view this and other public notices issued by the Ground Water Quality Bureau on-line, go to:
http://www.nmenv.state.nm.us/gwb/NMED-GWQB-PublicNotice.htm

Memorandum of Meeting or Phone Conversation

☑ Telephone ☐ Meeting	Time: 853	Date: 03.16.12

Individuals Involved

Jennifer Fullam, NMED GWQB	☐ called ☑ was called by ☐ other:	Name: Bart Vanden Plas Affiliation: Interested Party DP: 1132, 1793 Site Name: LANL RLWTF/LANL GW Phone Number: 505. 771.6757

Subject: Interested Party

Discussion: Vanden Plas left message for Fullam 03.19.12 @ 1032 Fullam called Vanden Plas who requested to be placed on the interested party list.

BART VANDEN PLAS, WATER QUALITY SCIENTIST
SANTA ANA PUEBLO
2 DOVE ROAD
PUEBLO OF SANTA ANA, NM 87004
bart.vandenplas@santaana-nsn.gov
505. 771. 6757

Conclusions:

Distribution:

Initialed JF

Memorandum of Meeting or Phone Conversation

☑ Telephone ☐ Meeting	Time: 400	Date: 03.19.12

Individuals Involved

Jennifer Fullam, NMED GWQB	☐ called ☑ was called by ☐ other:	Name: Michael Chacon Affiliation: San Ildefonso Pueblo DP: 1132 Site Name: LANL RLWTF Phone Number: 505.455.4122

Subject: Interested Party

Discussion: Chacon called Fullam regarding the PN-1 for DP-1132. Chacon asked if the facility ever had a Discharge Permit and the timeline estimated before a draft would be sent out for review. Fullam stated that a DP had never been issued but it was hopeful that a draft would be written sometime this summer. Chacon did not request to be on the interested party list do all correspondence should be continued to be routed through the Governor of San Ildefonso (already should be on list)

Conclusions:

Distribution:

Initialed JF

New Mexico Environment Department
Ground Water Quality Bureau

Memorandum of Meeting or Phone Conversation

Memorandum of Meeting or Phone Conversation

☑ Telephone ☐ Meeting	Time: 1254	Date: 03.20.12

Individuals Involved

Jennifer Fullam, NMED GWQB	☐ called ☑ was called by ☐ other:	Name: Rachel Affiliation: Amigos Bravos DP: 1132 Site Name: LANL - RLWTF Phone Number: 575. 758. 3874

Subject: Interested Party

Discussion: Rachel left message for Jullam requesting to remain on interested party list. Rachel requested information regarding the timelines for the draft as they are planning to submit comment.

03.26.12 @ 100 Jullam left message for Rachel

Conclusions:

Distribution:

Initialed JF

0810

New Mexico Environment Department
Ground Water Quality Bureau

Inspection Report

Inspection Date:	03.20.12	**DP #:**	1132
		Facility Name:	Los Alamos National Laboratory (LANL)-Radioactive Liquid Waste Treatment Facility (RLWTF)

Facility Contact Information – Scheduling Inspection

☑ **Scheduled Inspection - provide contact information** ☐ **Unannounced Inspection**

Person Contacted: Bob Beers

Phone Number: 505.667.7969

Facility Description

Waste Type: Other

Directions to Facility: North on 84/285 to SR502 Exit to Los Alamos. Continue through Los Alamos (west) and bear left on to SR501 across bridge. Bear left and then take first right onto West Jemez Rd. Make left at first light onto Diamond Drive. Continue south until Pajarito Road and turn left. Technical Area (TA) 59 (meeting location) will be on right.

Inspection Information

Start Time: 9:00 am **End Time:** 12:00 pm

NMED Inspector(s): See attendees list (attached)

Verify that NMED identification was presented: ☑ Yes ☐ No

Facility Representative(s) present during the Inspection/Discussion: See attendees list (attached)

Reason for Inspection: other

Routine inspection pre-permit discussion

Discussion, Observations and Information Obtained

Representatives from LANL and NMED met at TA-59 for a pre-inspection briefing. Introductions were made by both entities and an agenda for the inspection was reviewed. The RLWTF processes both caustic and acidic transuranic waste (TRU) as well as radioactive low-level waste (RLW) from various areas within the Laboratory.

Representatives from LANL escorted NMED to the RLWTF located at TA-50 for a walk-through of the facility. NMED conducted a walk-through inspection of Building 1, the Emergency influent storage facility (WMRM) located within TA-50 and the Solar Evaporation Tanks located within TA-52. LANL stated that influent collection lines span approximately four miles throughout several Technical Areas (TAs). The TRU lines are separate from the RLW lines; all of which are constructed with double containment and accessible inspection vaults with leak detection systems.

Fullam requested clarification regarding the processes for treating the RLW. LANL explained that all RLW

goes first to TK-13 for neutralization prior to being sent to one of several influent holding tanks (75,000 gallon, 100,000 gallon or 17,000 gallon) from this point the neutralized wastewater is then treated through a number of treatment processes. LANL stated that the 75,000 gallon tank is the default for all neutralized RLW coming into the facility.

Fullam inquired about the fate of the reject water from the primary reverse osmosis units (PRO). Representatives from LANL stated the concentrate from the PRO (reject wastewater) is sent to the secondary reverse osmosis (SRO) unit for further treatment and disposal. The SRO is not in service yet but is planned to be within a week.

LANL explained that the perchlorate ion exchange (PIE) columns can be bypassed and the copper/zinc ion exchange units are only implemented if a planned discharge to the United States Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System (NPDES) outfall is expected. LANL stated that there are various processes in the treatment system can be bypassed if needed and not all the processes are used at all times.

LANL has not discharged to the NPDES outfall for over a year and they are not intending to discharge due to the difficulty in treating the effluent to meet the NPDES copper limitations. Currently, the facility has been mechanically evaporating all effluent. The mechanical evaporators were determined not to require an Air Quality Permit.

At the time of inspection, LANL was nearing completion of the uncovered Solar Evaporative Tanks (SET). All treated effluent from the RLWTF will be discharged via a 3,500 foot single-lined gravity fed conveyance pipe (with welds every 500 feet) to the SET. LANL is anticipating having the as-built drawings for the SET completed by mid-May and would be looking at placing the SET on-line and commencing discharge approximately 3-4 months after that.

Fullam noted that the tank does not stand on-ground (as LANL had originally described) but rather is constructed so that the majority of the tank is set below grade and the maximum height of approximately 6" above the surrounding topography. Beers explained that although it is set below grade it is still constructed as a tank with man-made materials as a free-standing unit (as is defined under 40 CFR §264) as opposed to an impoundment which is dependent on earthen materials for structural support. Fullam explained that although LANL is asserting the unit to be defined as a tank under 40 CFR 264, the condition language for the Discharge Permit will be based primarily on 20.6.2. NMAC for the protection of ground water and human health and may differ substantially from what is required under 40 CFR 264, as it pertains to the definition of tank.

The system consists of a single unit with two cells (orientated east and west) which share a center partitioned wall with an emergency overflow outlet at the top of the wall. The discharge to each cell can be controlled manually or through the overflow valve on the shared wall. Fullam noted that the total volume of the SET was not as described in the application. The cells were to have a total depth of 4 feet but upon inspection, it was noted they are only 3.5 feet. Each of the cells has an independent synthetic liner. The synthetic liner is constructed of two sealed sheets of HDPE liner (40 mil and 60 mil from concrete to exposed layer respectively) with an interstitial layer of geo-mesh. The liner is set in a concrete structure with an intermediate layer of geo-net to protect the liner from the concrete. Representatives from LANL explained that the concrete structure was not sealed. There is a leak detection system within the synthetic liner which consists of a single conductive tape. The gradient on the concrete slopes towards the center and then to the north corner. At the time of inspection, LANL was uncertain on the sensor system, Beers stated he would follow-up and provide NMED with additional information. The SET is designed to have a misting system on the north and south sides of each cell to aid in evaporation. The misting system is controlled by individual cell and not by orientation to prevailing winds. NMED expressed concerns with being able to contain the misting during times of high southwest prevailing winds. LANL stated that the fencing (proposed to be 7 feet chainlink fencing with wind slats) will be constructed to minimize overtopping due to wind waves and the misting system could be turned off entirely if

there were issues.

Upon completion of the field inspection, representatives from LANL and NMED met for a de-briefing discussion. NMED stated they have been working on the application for the RLWTF and would probably be sending a Request for Additional Information on technical items which require clarification. NMED also explained that the language for specific condition requirements is still be drafted and further discussions with LANL would be appropriate at a later time. LANL and NMED discussed the leak detection system for the SET. There are some concerns that there is no ability to test or inspect the system as it is sealed, nor is there the ability to test the constituents should a leak be detected within the interstitial space of the liner to ensure it is not a result of a failure in the system. The concrete containment has not been treated or sealed and there may be concerns of infiltration from the bottom into the intermediate space between the concrete and the synthetic liner. Some of these issues may be addressed as conditions in the draft Discharge Permit, but NMED will follow-up with questions in the request for additional information.

Photographic Documentation

Photos Taken? ☐ Yes - see attached ☑ No

Sample Information

Samples Collected? ☐ Yes ☑ No

Monitoring Well Camera Inspection

Monitoring well camera inspection conducted? ☐ Yes - see attached report(s)
☑ No

Initials of Report Preparer: JF

Water Quality & RCRA Group (ENV-RCRA)

Meeting Topic: NMED GWQB INSPECTION OF DP-1132 & DP-857 FACILITIES

Meeting Date: TUESDAY, MARCH 20, 2012

Place: LOS ALAMOS NATIONAL LABORATORY

Meeting Called By: NMED GWQB

Name	Org	Phone	EMAIL
JENNIFER FULLAM	NMED-GWQB	505.827.2909	jennifer.fullam@state.nm.us
CLINT MARSHALL	NMED-GWQB	505-690-4102	clint.marshall@state.nm.us
Gerald Knutson	NMED-GWQB	505-827-2996	gerald.knutson@state.nm.us
GERARD A. SCHOEPPNER	NMED-GWQB	505-827-2919	jerry.schoeppner@...
Alison Dorries	LANL ENV-DO	505-699-1979	adories@lanl.gov
Scotty Jones	ENV-DO	500 2077	SJones
Edward Artiglia	ES-TE	505-664-0351	eartiglia@lanl.gov
CHRIS DEL SIGNORE	TA-SORLWTF	665-5956	jcds@lanl.gov
CLIFF KIRKLAND	TA-SO RLWTF	606-0576	cwkirk@lanl.gov
JOHN NARANJO	TA-[illegible] SWMU	665-8507	johnn@lanl.gov
MARK TRUJILLO	SERF	667-4693	trujillo_mark@lanl.gov
RICK CONNER	MANAGER of ~~ED Project~~	665-3091	rpconner@lanl.gov

Meeting Agenda Items and Topics

BOB BEERS	ENV-RCRA	667-7969	bbeers@lanl.gov
ROBERT GEORGE	NMED-GWQB	476-3648	robert.george@state.nm.us
STEVE HANSON	TA-SO RLWTF	665-6511	hanson@lanl.gov
GENE TURNER	DOE/LASO	667-5794	gturner@doeal.gov

091214

New Mexico E[illegible]ronment Department
Ground Water Quality Bureau

Memorandum of Meeting or Phone Conversation

Memorandum of Meeting or Phone Conversation

☑ Telephone ☐ Meeting	Time: 1421	Date: 03.26.12

Individuals Involved

Jennifer Fullam, NMED GWQB	☐ called ☑ was called by ☐ other:	Name: Rachel Conn, Amigos Bravos Affiliation: Interested Party DP: 1132 Site Name: LANL - RLWTF Phone Number: 575.758.3874

Subject: Interested Party

Discussion: Conn called Fullam and requested she as well as the attorney for Amigos Bravos be placed on the IP list. The individual already on the IP list for Amigos Bravos should also remain. Conns e-mail is rconn@amigosbravos.org. The attorneys contact is:

Mr. Douglas Meiklejohn
dmeiklejohn@nmelc.org
1405 Luisa St.
Suite 5
Santa Fe, NM 87505
505.989.9022

~~Conclusions~~: Conn requested a copy of the application. Fullam referred Conn to the request for public information form. Conn inquired for the timeline for a draft. Fullam anticipates July at the ~~date~~ earliest. Conn requested Fullam review the previous comments.

Distribution: Initialed JF

: 08126

Fullam Docs 0307141 / Case Loads / LANL / LANL emails

Fullam, Jennifer, NMENV

From: Beers, Robert S <bbeers@lanl.gov>
Sent: Tuesday, March 27, 2012 11:13 AM
To: Fullam, Jennifer, NMENV
Cc: Saladen, Michael T
Subject: Particpant List_NMED Inspection of LANL Facilities
Attachments: NMED Inspection_DP-1132_-857_3-20-12_particpant list.pdf

Hi Jennifer,

Per your request, attached is a participant list from the NMED's March 20, 2012, inspection of DP-1132 and DP-857 facilities at Los Alamos National Laboratory.

Please let me know if you have questions.

Sincerely,

Bob Beers
Water Quality & RCRA Group
Los Alamos National Security, LLV
505-667-7969

: 08130

Water Quality & RCRA Group (ENV-RCRA)

Meeting Topic: NMED GWQB INSPECTION OF DP-1132 & DP-857 FACILITIES

Meeting Date: TUESDAY, MARCH 20, 2012

Place: LOS ALAMOS NATIONAL LABORATORY

Meeting Called By: NMED GWQB

Name	Org	Phone	EMAIL
JENNIFER FULLAM	NMED-GWQB	505.827.2909	jennifer.fullam@state.nm.us
CLINT MARSHALL	NMED-GWQB	505-690-4102	clint.marshall@state.nm.us
Gerald Knutson	NMED-GWQB	505-827-2996	gerald.knutson@state.nn.us
GERARD A. SCHOEPPNER	NMED-GWQB	505-827-2919	jerry.schoeppner@...
Alison Dorries	LANL ENV-DO	505-699-1979	adories@lanl.gov
Scotty Jones	ENV-DO	500 2077	SJones
Edward Artiglia	ES-PE	505-664-0351	eartiglia@lanl.gov
CHRIS DEL SIGNORE	TA-50 RLWTF	665-5956	jcds@lanl.gov
CLIFF KIRKLAND	TA-50 RLWTF	606-0576	cwkirk@lanl.gov
JOHN NARANJO	TA-46 SWMS	665-8507	johnn@lanl.gov
MARK TRUJILLO	SERF	667-4643	trujillo_mark@lanl.gov
RICK CONNER	MANAGER of ~~ED Project~~	665-3091	rpconner@lanl.gov

Meeting Agenda Items and Topics

BOB BEERS	ENV-RCRA	667-7969	bbeers@lanl.gov
ROBERT GEORGE	NMED-GWQB	476-3648	robert.george@state.nm.us
STEVE HANSON	TA-50 RLWTF	665-6511	hanson@lanl.gov
GENE TURNER	DOE/LASO	667-5794	gturner@doeal.gov

13150

Fullam Docs 030714 / Caseloads / LANL / LANL emails

Fullam, Jennifer, NMENV

From: Beers, Robert S <bbeers@lanl.gov>
Sent: Tuesday, March 27, 2012 11:19 AM
To: Fullam, Jennifer, NMENV
Cc: George, Robert, NMENV; Saladen, Michael T
Subject: NMED-GWQB Inspection_March 20, 2012

Dear Ms. Fullam,

Los Alamos National Security, LLC requests a copy of the inspection report from the March 20, 2012, inspection of the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF), the TA-52 ZLD Solar Evaporation Tanks, the TA-46 SWWS Plant, the TA-3 SERF, and the Sigma Mesa SERF Evaporation Basins by the NMED GWQB.

Sincerely,

Bob Beers
Water Quality & RCRA Group
Los Alamos National Security, LLC
505-667-7969

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DP-1132
Blue File

GROUND WATER

APR 02 2012

BUREAU

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Safety & Health
Environmental Protection Division
P.O. Box 1663, K491
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National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: APR 02 2012
Refer To: ENV-DO-12-0019
LAUR: 12-20151

Mr. Jerry Schoeppner, Acting Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2261
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Dear Mr. Schoeppner:

SUBJECT: SUPPLEMENTAL INFORMATION FOR DISCHARGE PERMIT APPLICATION DP-1132

On November 18, 2011, the New Mexico Environment Department (NMED) notified the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) that a comprehensive, up-to-date application for the Technical Area 50 (TA-50) Radioactive Liquid Waste Treatment Facility (RLWTF) and the TA-52 Zero Liquid Discharge (ZLD) Solar Evaporation Tanks was required. On January 17, 2012, DOE/LANS submitted a request to NMED for a 45-day extension to submit information on the following three specific items of the application:

- Proposed processes for the operation, inspection, and maintenance for the facility as it pertains to collection lines, treatment units, and effluent-storage disposal units
- Procedures and corrective actions for addressing acute failures and long-term maintenance issues at the facility
- Proposed groundwater monitoring locations for groundwater sources most likely to be impacted by intentional or unintentional discharges from the RLWTF

In correspondence dated January 27, 2012, the NMED granted the requested 45-day extension.

The Discharge Permit DP-1132 application submitted by DOE/LANS on February 16, 2012 (ENV-DO-12-0005) for the TA-50 RLWTF and the TA-52 ZLD Solar Evaporation Tanks did not include the three

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specific items referenced above. Enclosures 1, 2, and 3 to this letter provide the information excluded from the above-referenced application and thereby completes the required submission of a comprehensive application.

Please contact Bob Beers at (505) 667-7969 of the Water Quality and RCRA Group (ENV-RCRA) if you have questions.

Sincerely,

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Laboratory

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
Department of Energy

AMD:GET:BB/lm

Enclosures: (1) Table of Revised Requested Information from the November 18, 2011, NMED letter.
(2) Supplemental Information, Discharge Permit Application DP-1132, B-7 – B-18.
(3) Supplemental Information, Discharge Permit Application DP-1132, Appendix G, Contingency Plan.

Cy: Joni Arends, Concerned Citizens for Nuclear Safety, Santa Fe, NM, w/enc.
Jonathan M. Block, New Mexico Environmental Law Center, Santa Fe, NM, w/enc.
James Bearzi, NMED/SWQB, Santa Fe, NM, w/enc.
John Kieling, NMED/HWB, Santa Fe, NM, w/enc.
Hai Shen, LASO-EPO, w/enc., A316, (E-File)
Kevin W. Smith, LASO-OOM, w/o enc., A316, (E-File)
Gene Turner, LASO-EPO, w/enc., A316, (E-File)
Steve Yanicak, LASO-GOV, w/enc., M894, (E-File)
Carl A. Beard, PADOPS, w/o enc., A102, (E-File)
Michael T. Brandt, ADESH, w/o enc., K491, (E-File)
Alison M. Dorries, ENV-DO, w/o enc., K491, (E-File)
Scotty Jones, ENV-DO, w/o enc., K491, (E-File)
Mike Saladen, ENV-RCRA, w/enc., K490, (E-File)
Bob Beers, ENV-RCRA, w/enc., K490
Bob Mason, TA-55 DO, w/o enc., E583, (E-File)
Cliff Kirkland, TA-55-RLW, w/enc., E505, (E-File)
Chris del Signore, TA-55-RLW, w/enc., E518, (E-File)
Victor Salazar, TA-55-RLW, w/o enc., E518, (E-File)
Randy Johnson, ENV-ES, w/enc., E500
Taylor Valdez, ENV-DO, w/o enc., K404, (E-File)
Linda Salazar, ADESH, w/o enc., K491, (E-File)
ENV-RCRA File, w/enc., M704
IRM-RMMSO, (U1200204), w/enc., A150, (E-File)

Revised Requested Information

In response to the November 18, 2011 letter from NMED (See Appendix A), the requested items are addressed in the following locations:

1.	The estimated volumes, sources (technical area and building) and wastestream characteristics of all influent wastewater that LANL receives, or intends to receive, at the RLWTF.	A-8, A-10, B-1, Appendix B
2.	A description of the conveyance methods used to transport wastewater to the RLWTF for each source.	A-8, B-1, Appendix B
3.	A description of waste characterization and metering systems used to determine influent wastestream characteristics and volumes entering the RLWTF.	B-12
4.	A description of the review and amendment process for LANL's internal Waste Acceptance Criteria (WAC) for all incoming wastewater received at the RLWTF. This should include LANL's process for ensuring the WAC relates to the current treatment technologies and processes.	The amendment and review process for changes to LANL's Waste Acceptance Criteria (WAC) involves several reviews. A WAC facilitator distributes proposed WAC attachments to owners and reviewers, including regulatory Subject Matter Experts (SMEs). The facilitator will assist the owners to ensure that revisions are complete and that technical content is correct. Once revisions are agreed to, LANL's policy office conducts a final review, completes specific paperwork, and issues final WAC amendments. At RLWTF, the type of review will depend on the proposed WAC amendment, and can include review of the quality of treated wastewaters, revisions to state or federal discharge standards, the treatment process, including planned changes to process equipment, and administrative review.
5.	A description of operational procedures for receiving wastes from each generator.	B-7
6.	A schematic of the treatment process in its entirety for each wastestream (from collection to final disposal).	Appendix B
7.	Descriptions, locations, construction materials and sizing for each component of the treatment processes for each type of wastestream being treated at the RLWTF.	B-6, Appendix B
8.	Descriptions, locations and designs for all secondary storage and auxillary emergency units intended to receive, treat or store wastewater received at the facility.	B-6, Appendix B
9.	Proposed processes for the operation, inspection and maintenance for the facility as it pertains to the collection lines, treatment units and effluent storage disposal units.	B-7, B-8

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10.	Procedures and corrective actions for addressing acute failures at the facility.	B-16, B-18
11.	Procedures and corrective actions for addressing long-term maintenance issues at the facility.	B-16, B-18
12.	Record drawings for all components of the facility, if available.	B-5
13.	Construction plans and specifications for all components of the facility which are under construction or are proposed for construction.	B-5
14.	A proposed effluent monitoring plan, identifying analytes and sample locations/frequency. The proposal should consider discharge frequencies, incoming waste characteristics and the constituents listed under 20.6.2.3103 NMAC and Subsection WW of 20.6.2.7 NMAC.	B-13
15.	Proposed flow and metering systems used to determine effluent discharge volumes for each of the discharge locations.	B-12
16.	Proposed ground water monitoring locations for ground water sources most likely to be impacted by intentional and unintentional discharges from the RLWTF. The proposal should identify geohydrology of the potentially impacted areas, existing monitoring well locations and construction.	B-14
17.	Actions which LANL would implement should partial or full closure of the facility occur.	B-19
18.	A scaled facility plan showing the facility's components including influent collection lines, storage units, major treatment units and disposal units.	Appendix B
19.	All other information sought in NMED's application for Discharge Permit Sections A through C. Please note that for the purposes of public notification, the "discharge site" as it relates to this facility encompasses the central collection system lines, the treatment and storage facilities and all discharge locations for the treated effluent.	See Attached Application

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B-7. Operational Plan. Attach a detailed description of how you operate your processing, treatment, storage and/or disposal system.

Animal feeding operations: include stormwater management, nutrient management plans, method for mixing irrigation and wastewater.

Domestic wastewater treatment facilities: include pre-treatment, solids management, vegetation management for land application.

Facilities using reclaimed domestic wastewater above ground: include proposed water quality classification(s), effluent monitoring, setbacks, irrigation schedules, etc. that will result in protection of public health and the environment. Please refer to *NMED Ground Water Quality Bureau Guidance: Above-Ground Use of Reclaimed Domestic Wastewater* for further information. A copy of the guidance document is available on the NMED website www.nmenv.state.nm.us under "Ground Water Quality".

The process description and schematic of the Facility are located in Appendix B (February 16, 2012 Discharge Permit Application for the TA-50 RLWTF). Waste streams are characterized by RLW generators using acceptable EPA characterization methods (sampling and analysis, acceptable knowledge, or both); this characterization data is entered by the generator onto a Waste Profile Form (WPF). The WPF is reviewed by a Waste Management Coordinator, a RCRA subject-matter expert, and RLWTF staff. The waste stream is acceptable for discharge to and treatment at the RLWTF if reviewers approve the WPF.

Influent samples are periodically collected and analyzed at the RLWTF for inorganic and radioactive constituents, as a waste characterization overcheck. Samples of low-level RLW influent are also periodically submitted to an outside chemistry laboratory for analysis of organic constituents.

Generators of low-level RLW prepare and submit a WPF. Once the WPF is approved, the generator is approved to discharge the RLW as generated via the low-level collection system.

If the low-level RLW is to be sent to the RLWTF via truck, the generator must also prepare and submit a Waste Disposal Request form. The Waste Disposal Request is reviewed by a Waste Management Coordinator, transportation, and RLWTF personnel. The shipment is acceptable for transport to the RLWTF if reviewers approve the Waste Disposal Request.

Generators of transuranic RLW also prepare and submit a WPF. In this case, the generator must sample and analyze each batch of transuranic RLW, then submit a request to the RLWTF to transfer that batch to the RLWTF. If analytical results are acceptable, a date and time for transfer is agreed upon. The transfer is controlled by RLWTF personnel who direct TA-55 personnel when to unlock and open the transfer valves; they monitor the level of the acid

waste or caustic waste tank as the transfer is in progress. The TA-55 personnel are directed when to close and lock transfer valves. Transfer valves remain closed and locked until authorized by RLWTF to be opened.

Detailed operating procedures are required for each treatment unit. Procedures are drafted by operators and engineers, then reviewed and approved by safety personnel and management. Before becoming effective, procedures must also be walked down and verified by operators (e.g., valve numbers and sequences). Approved procedures are controlled documents, available at a controlled document website.

Detailed operating procedures follow a mandatory outline, which currently has the following required topics:

- safety and controls
- prerequisite actions (prior to startup)
- detailed operating instructions
- administrative sections such as introduction, definitions, acronyms, references, and record keeping

Detailed operating sections provide step-by-step instructions for operating the treatment equipment, and identify valves by valve number (valves within the facility are labeled), electrical switches by number (electrical components are labeled), and the sequence for opening and closing valves and starting and stopping equipment (e.g., mixers, pumps).

The table below lists procedures currently used for treatment operations at the RLWTF. (The list varies over time, but procedures always exist for each unit operation.)

Operators also inspect equipment each operating day, both informally (as they operate equipment) and formally (as documented on daily inspection round sheets). Inspections include tank level checks, pump operability, alarm tests (horns and lights), leak inspections, levels of combustibles and wastes, and other items. Results of the formal inspections are reviewed with and signed off by management, and corrective maintenance work orders are initiated for deficiencies.

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RLWTF Detailed Operating Procedures

Unit Operation	Detailed Operating Procedures
Main Treatment:	
M1 Collection System	Annual Inspection of the RLW Collection System Vaults
M2 Influent Storage	RLWTF Tank Management Sampling at the RLWTF
M3 Emergency Influent Storage	WMRM Facility Status Change WMRM System Alignment Checklist Sampling WMRM Tanks Transferring RLW Form WMRM to RLWTF
M4 Clarifiers	Clarifiers, Gravity Filter, and Gravity Filter Bypass Clarifier Chemicals and NaOH Operations
M5 Gravity Filter	Clarifiers, Gravity Filter, and Gravity Filter Bypass
M6 Pressure Filters	Pressure Filter Operations System Alignment Checklist for Pressure Filter Operations
M7 Perchlorate Ion Exchange	Re-Configure Flow Path through the IX Columns in Room 16
M8 Primary Reverse Osmosis	Reverse Osmosis Clean-in-Place System Membrane Maintenance
M9 Polishing Ion Exchange	System Alignment Checklist for RLWTF Effluent Disposition Ion Exchange Treatment of RLWTF Effluent
M10 Effluent Storage	System Alignment Checklist for RLWTF Effluent Disposition
M11 Solar Evaporation at TA-52	ZLD Facility Status Change Transferring Effluent from RLW to ZLD Tanks Sampling ZLD Tanks Transferring Effluent from ZLD Tanks to WMRM
M11 Outfall #051	Frac Tank Operations and Discharge of TK38 TK38 Operations

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Transuranic:	
T1 Collection System	WM-201/66/107 System Alignment Checklist Transuranic RLW Transfers from TA-55 to TA-50
T2 Influent Storage	Sampling of the WM66 Influent Tanks
T3 Treatment	Room 60/60A System Alignment Checklist Acid Waste Treatment Caustic Waste Treatment Operations Back flushing the Pressure Filter
T4 Drum Tumbling	Sampling TK-7A, Sludge Mixing, and Sludge Rinsing Water Addition to TK-7A Drum Tumbler Operations
T5 Effluent Storage	Transferring Material from TK3 to the 3K Tank
Secondary Treatment:	
S1 Secondary Reverse Osmosis	Secondary RO Operations Secondary RO Cleaning and Maintenance
S2 Rotary Vacuum Filter	Vacuum Filter System
S3 Bottoms Storage	Sampling TK-SE Loading Evaporator Bottoms into a Tanker

☐ Operational plan is attached.

☐ Operational plan was previously submitted. Submittal date(s): _____

B-8. **System Maintenance**. Attach a description of the operations and maintenance procedures which ensure that your processing, treatment and disposal system functions properly; e.g., inspections, pumping schedules, equipment maintenance, etc.

In addition to the procedures referenced in B-7, the RLWTF utilizes the following process for system maintenance. RLWTF management assesses equipment and facility condition both informally (on an on-going, day-to- day basis) and formally (scheduled meetings and discussions, and/or condition assessment projects). Assessment findings are captured and prioritized, typically on an annual basis, in the form of a three-year maintenance plan. That plan documents major facility and equipment needs, and provides focus for major replacement and refurbishment projects.

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For fiscal year 2011, for example, the three-year plan prioritized the need to replace the tubular ultrafilter, restore Clarifier #1 to full service, install an effluent evaporator, and repair eight collection system alarms. All of those actions were accomplished.

☐ O & M procedures are attached.

☐ O & M procedures were previously submitted. Submittal date(s): _____

B-14. Ground Water Quality Monitoring. Discharge Permits typically require that ground water samples be collected quarterly from properly constructed monitoring wells located downgradient from discharge locations. The samples must be analyzed for contaminants of concern. For most domestic and agricultural Discharge Permits, the typical contaminants of concern are total Kjeldahl nitrogen (TKN), nitrate-nitrogen (NO_3-N), total dissolved solids (TDS) and chloride.

Optional: In the space below (or as an attachment), you may propose revisions or additions to the standard ground water monitoring requirements. If you do, provide the rationale for your proposal.

Groundwater monitoring will be conducted in Mortandad Canyon at four alluvial groundwater monitoring wells (MCO-3, MCO-4b, MCO-6, and MCO-7), three intermediate-depth wells (MCOI-4, MCOI-5, and MCOI-6), and two regional aquifer wells (R-1 and R-15) (For well locations, see Map #1, Appendix J, February 16, 2012 Discharge Permit Application for the TA-50 RLWTF). These nine wells are all downgradient of the discharge point, NPDES Outfall #051. Monitoring will be conducted in the alluvial wells quarterly because of the potential for a shorter response time to discharges from TA-50 RLWTF. Monitoring in the intermediate-depth and regional wells will be conducted annually to document changes to existing conditions in those zones as well as to monitor the long-term water quality associated with effluent releases that occur under this Discharge Permit. The table below presents the proposed monitoring plan for Mortandad Canyon groundwater.

Proposed Monitoring Plan for Mortandad Canyon Groundwater.

LOCATION	PARAMETERS	NOTES	FREQUENCY
Alluvial Wells			
MCO-3	Total N, TDS, F, ClO4	1	Quarterly
MCO-4B	Total N, TDS, F, ClO4	1	Quarterly
MCO-6	Total N, TDS, F, ClO4	1	Quarterly
MCO-7	Total N, TDS, F, ClO4	1	Quarterly
Intermediate Wells			
MCOI-4	Total N, Metals, Inorganics, Organics	1, 2, 3, 4, 5, 6	Annual
MCOI-5	Total N, Metals, Inorganics, Organics	1, 2, 3, 4, 5, 6	Annual
MCOI-6	Total N, Metals, Inorganics, Organics	1, 2, 3, 4, 5, 6	Annual
Regional Wells			
R-1	Total N, Metals, Inorganics	1, 2, 3, 4, 6	Annual
R-15	Total N, Metals, Inorganics	1, 2, 3, 4, 6	Annual

**North & South Frac Tanks or TK38

NOTES:

1. Total Nitrogen (N): TKN, Ammonia, NO3+NO2-N
2. Human Health Standards (20.6.2.3103A): Ag, As, Ba, Cd, CN, Cr, F, Hg, NO3-N, Pb, Se, U
3. Domestic Water Supply Standards (20.6.2.3103B): Cl, CU, Fe, Mn, SO4, Zn, TDS, pH
4. Irrigation Standards (20.6.2.3103C): Al, B, Co, Mo, Ni
5. Volatile & Semivolatile Organics (20.6.2.7WW, 20.6.2.3103) by EPA Methods 624 and 625.
6. Perchlorate (ClO4)

See the DOE/LANS February 16, 2012, submittal for information pertaining to the well logs and well survey.

Additional monitoring may be conducted in coordination with the NMED Ground Water Quality Bureau.

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B-15. Other Monitoring. In addition to discharge volumes, discharge quality monitoring and ground water sampling, Discharge Permits typically require the following monitoring, depending on the type of facility:

- inspection and pumping of septic tanks, grease tanks, lift stations
- inspection of leachfields
- inspection of lagoons
- process testing for treatment plants
- land application data sheets (LADS)
- tracking of chemical fertilizer applications to land application areas
- soil sampling (agricultural and selected other facilities land applying wastewater)
- harvested plant material testing (agricultural facilities)

Optional: In the space below (or as an attachment), you may propose revisions or additions to the other standard monitoring requirements for your type of facility. If you do, provide the rationale for your proposal.

The TA-52 Zero Liquid Discharge Solar Evaporation Tanks are two, free-standing, reinforced concrete tanks (concrete walls and floor) with two synthetic liners and a leak detection system. The depth to groundwater below the TA-52 Zero Liquid Discharge Solar Evaporation Tanks is approximately 1260 feet below ground surface. The leak collection system consists of a lineal leak water detector tape (HYDRO-TEMP™) between the primary and secondary synthetic liners; when activated by liquid, the tape will trigger a visual (red light) alarm. Operators will monitor the alarm weekly.

B-16. System Failure. Describe your contingency plan in the event there is a failure of your wastewater or discharge system (e.g., wastewater back-up, pump failure, pipe breaks, tank overflow, leachfield failure, saturated fields etc.)

See the RLWTF Contingency Plan – Appendix G.

B-18. Other Contingencies. Discharge Permits typically contain standard contingencies to address:

- exceeding wastewater quality limits
- violation of ground water or surface water standards
- spills or illegal releases of wastewater
- migration of soil nitrogen
- loading nitrogen above limit

Propose additional contingency plans, if appropriate:

See the RLWTF Contingency Plan – Appendix G.

APPENDIX G

TA-50 RLWTF

TA-52 ZLD Solar Evaporation Tanks

DP-1132

CONTINGENCY PLAN

Enclosure 3

April 2, 2012
LA-UR-12-20151
ENV-DO-12-0019

CONTINGENCY PLAN (DP-1132)

This Attachment represents contingency measures applicable at the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) and the TA-52 Zero Liquid Discharge (ZLD) Solar Evaporation Tanks when there is a failure of the wastewater or discharge system resulting in an exceedance of Discharge Permit effluent limits, ground water quality standards, spills or releases of wastewater, and other applicable circumstances set forth in NMAC 20.6.2.3107.A . The Permittees shall implement the provisions of this Plan as described below:

I. Exceedance of Discharge Permit Effluent Limits (NPDES Outfall #051)

1. In the event that validated analytical results from a quarterly or annually monitored treated wastewater sample exceeds the limitations set forth in this Discharge Permit, the Permittees shall collect and analyze a second sample ("confirmatory sample") within 30 days of the initial sample to verify the initial results. If the validated confirmatory sample results indicate that the limitation for a constituent is continuing to be exceeded, the following contingency plan shall be enacted:

   a) Within 30 days of the validated confirmatory sample analysis date indicating that the limitation is continuing to be exceeded, the Permittees shall:

      i. Notify NMED that the contingency plan is being enacted, and
      ii. Submit a copy of the validated initial and confirmatory analytical results indicating an exceedance to NMED.

   b) The Permittees shall increase the frequency of sampling and analysis of treated wastewater for the constituent to the next two batch discharges.

   c) The Permittees shall examine the operation and maintenance log, required by the Record Keeping conditions of this Discharge Permit, for improper operational procedures.

   d) The Permittees shall conduct a physical inspection of the treatment system to detect and correct abnormalities.

   e) Within 90 days of the validated confirmatory sample analysis date, the Permittees shall submit a corrective action plan for NMED approval to address any operational procedures that require modification, correct abnormalities and/or to upgrade treatment processes as necessary to meet the effluent limits. The plan shall be enacted upon NMED approval.

   f) When analytical results from the validated confirmatory results from two consecutive batch discharges of wastewater sampling do not exceed the limitation, the Permittees are authorized to return to either quarterly or annual monitory frequency as required by this Permit. [NMSA 1978, § 74-6-5.D, Subsection B of 20.6.2.3109 NMAC, Subsection A of 20.6.2.3107 NMAC]

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II. Exceedance of Ground Water Standards

1. Operational Period

In the event a validated ground water monitoring sample indicates that a ground water quality standard identified in Section 20.6.2.3103 NMAC is exceeded, the Permittees shall collect and analyze a confirmatory sample within 30 days of the initial validated sample analysis date to verify the initial results. In the event the validated confirmatory sample results indicate that the standard for a constituent is continuing to be exceeded, the following contingency plan shall be enacted:

a) Within 30 days of the validated confirmatory sample analysis date, the Permittees shall:

i. notify NMED that the contingency plan is being enacted, and

ii. Submit a copy of the validated initial and confirmatory ground water sample results to NMED.

b) Within 90 days of the validated confirmatory sample analysis date, the Permittees shall propose measures to ensure that the exceedance of the standard will be mitigated by submitting a corrective action plan to NMED for approval. The corrective action plan shall include a description of the proposed actions to control the source and an associated completion schedule. The plan shall be enacted upon NMED approval.

c) Once invoked (whether during the term of this Discharge Permit; or after the term of this Discharge Permit and prior to the completion of the Discharge Permit closure plan requirements), this condition shall apply until the Permittees have fulfilled the requirements of this condition and ground water monitoring confirms for a minimum of two years of consecutive ground water sampling events that the standards of Section 20.6.2.3103 NMAC are not exceeded.

The Permittees may be required to abate water pollution pursuant to Sections 20.6.2.4000 though 20.6.2.4115 NMAC, should the corrective action plan not result in compliance with the standards and requirements set forth in Section 20.6.2.4103 NMAC within 180 days of confirmed ground water contamination. [NMSA 1978, § 74-6-5.D, Subsection B of 20.6.2.3109 NMAC, Subsection A of 20.6.2.3107 NMAC]

2. Closure or Post-Closure Period

In the event a validated ground water monitoring sample indicates that one or more of the ground water standards of Section 20.6.2.3103 NMAC are violated as a result of the permitted discharge during the term of this Discharge Permit, upon closure of the facility or during post-closure monitoring, the Permittees shall collect a confirmatory sample from the monitoring well(s) within 30 days of the initial validated sample analysis date to verify the initial results. In the event the validated confirmatory sample results verify the exceedance of one or more

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ground water standard of Section 20.6.2.3103 NMAC the following contingency plan shall be enacted:

a) Within 30 days of the validated confirmatory sample analysis date, the permittees shall:

i. Notify NMED that the contingency plan is being enacted, and

ii. Submit a copy of the validated initial and confirmatory ground water sample results to NMED.

b) Within 90 days of the validated confirmatory sample analysis date, the Permittees shall submit a corrective action plan for NMED approval that proposes measures to mitigate damage from the discharge including, at a minimum, source control measures and an implementation schedule. The plan shall be enacted upon NMED's approval. The Permittees may be required to abate water pollution pursuant to Sections 20.6.2.4000 though 20.6.2.4115 NMAC, if the corrective action plan will not result in compliance with the standards and requirements set forth in Section 20.6.2.4103 NMAC within 180 days of confirmed ground water contamination. [20.6.2.1203 NMAC, 20.6.2.4105.A(8) NMAC]

III. Spills

1. In the event that a release (commonly known as a "spill") occurs that is not authorized under this Discharge Permit in violation of 20.6.2.3104, the Permittees shall take measures to mitigate damage from the unauthorized discharge and initiate the notifications and corrective actions required in Section 20.6.2.1203 NMAC and summarized below.

Within 24 hours following discovery of the unauthorized discharge, the Permittees shall verbally notify NMED and provide the following information:

a) The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility.

b) The name and address of the facility.

c) The date, time, location, and duration of the unauthorized discharge.

d) The source and cause of unauthorized discharge.

e) A description of the unauthorized discharge, including its estimated chemical composition.

f) The estimated volume of the unauthorized discharge.

g) Any actions taken to mitigate immediate damage from the unauthorized discharge.

2. In the event of a release, corrective measures to mitigate damage shall require, as applicable, the following:

   a) Immediate correction action to contain and clean up the spill as necessary to prevent further release;

   b) Inspection of the treatment system to detect any abnormalities; and

   c) Repair or replacement of failed components, tanks, or equipment as soon as possible.

3. Within 14 days following discovery of the discharge, the Permittees shall submit written report to NMED verifying the oral notification with the information listed above under III.1 and 2, along with any pertinent updates.

4. Within 30 days following discovery of the discharge, the Permittees shall submit a corrective action report/plan for NMED approval describing any corrective actions taken and/or to be taken relative to the unauthorized discharge that includes the following:

   a) A description of proposed actions to mitigate damage from the unauthorized discharge.

   b) A description of proposed actions to prevent future unauthorized discharges of this nature.

   c) A schedule for completion of proposed actions.

5. In the event that the unauthorized discharge causes or may with reasonable probability cause water pollution in excess of the standards and requirements of Section 20.6.2.4103 NMAC, and the water pollution will not be abated within 180 days after notice is required to be given pursuant to Paragraph (1) of Subsection A of 20.6.2.1203 NMAC, the Permittees may be required to abate water pollution pursuant to Sections 20.6.2.4000 though 20.6.2.4115 NMAC. Nothing in this condition shall be construed as relieving the Permittees of the obligation to comply with all requirements of Section 20.6.2.1203 NMAC. [NMSA 1978, § 74-6-5.D, Subsection B of 20.6.2.3109 NMAC, 20.6.2.1203 NMAC]

IV. Other Conditions

1. Any liquid detected in any of the leak detections systems associated with RLWTF treatment systems (including the collection system and structures at TA-50), shall be removed, sampled, and characterized to determine the source of a liquid. Based on analysis of the sample, if the liquid appears to result from a leak in the leak detection system, the Permittees shall investigate the source of the leak and submit a corrective action plan to NMED within 30 days of discovery. All analytical results of liquid samples shall be provided to NMED for review. [20.6.2.1203 NMAC]

2. In the event that an inspection reveals a failure of the RLWTF collection lines, treatment units, zero liquid discharge tanks and tank system that may adversely

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impact the environment, the Permittees shall enact the following contingency plan:

a) Within 24 hours of the discovered failure, the Permittees shall notify NMED of the failure.

b) Within 30 days the Permittees shall submit a corrective action plan for NMED approval to address the failure and propose methods of correction. The corrective action plan shall be implemented immediately upon NMED approval. [20.6.2.3107 NMAC, 20.6.2.3109 NMAC]

3. In the event that information available to NMED indicates that a well(s) is no longer able to provide representative data because of new physical problems or because of other conditions indicative of degradation in the well(s), the Permittees shall submit to the NMED a corrective action plan for well replacement or rehabilitation. The corrective action plan shall be approved by NMED prior to the initiation of corrective actions by the Permittees. If a new well is installed, construction and lithologic logs shall be submitted to NMED within 30 days of well completion. Upon completion of the replacement monitoring well(s), the monitoring well(s) requiring replacement shall be properly plugged and abandoned. The well(s) shall be plugged and abandoned in accordance with the abandonment details in the attachment titled *Ground Water Discharge Permit Monitoring Well Construction and Abandonment Conditions*, Revision 1.1, March 2011, and any applicable local, state, and federal regulations. Documentation describing the plugging and abandonment procedures, including photographic documentation, shall be submitted to NMED within 30 days of completed well abandonment. [20.6.2.3107 NMAC]

4. If a facility is required to enact the contingency plan more than two times in a 12-month period, the Permittees shall propose to modify operational procedures and/or upgrade the treatment process to achieve consistent compliance with effluent limitations by submitting a corrective action plan for NMED approval. The plan shall include a schedule for completion of corrective actions and shall be submitted within 60 days following the second sample analysis date. The plan shall be enacted upon NMED approval. [NMSA 1978, § 74-6-5.D, Subsections B and C of 20.6.2.3109 NMAC, Subsection A of 20.6.2.3107 NMAC]

5. In the event NMED or the Permittees identifies any other failures of the discharge plan or system not specifically noted herein, NMED may require the Permittees to develop for NMED approval contingency plans and schedules to cope with the failures. [20.6.2.3107(A)10 NMAC]

Memorandum of Meeting or Phone Conversation

☑ Telephone ☐ Meeting	Time:	Date:

Individuals Involved

Jennifer Fullam, NMED GWQB	☑ called ☐ was called by ☐ other:	Name: Selina Hower Affiliation: Interested Party DP: 1132 Site Name: LANL - RLWTF Phone Number: 505.665.3588

Subject: Interested Party

Discussion: Fullam left message for Hower requesting information if Hower wished to be put on the interested parties list for the facility

Conclusions:

Distribution:

Initialed JF

DP-1132
BLUE FILE

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: MAY 17 2012
Refer To: ENV-RCRA-12-0109
LAUR: 12-20967

Mr. Jerry Schoeppner, Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2250
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

GROUND WATER
MAY 31 2012
BUREAU

Dear Mr. Schoeppner:

SUBJECT: AFFIDAVIT OF PUBLIC NOTICE COMPLETION, DISCHARGE PERMIT APPLICATION DP-1132, TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY AND TA-52 ZERO LIQUID DISCHARGE SOLAR EVAPORATION TANKS

In accordance with Section 20.6.2.3108 NMAC and the public notice requirements specified in your March 2, 2012 (Enclosure 1) letter, the US Department of Energy and Los Alamos National Security, LLC (DOE/LANS) completed public notice for Discharge Permit Application DP-1132 on May 7, 2012. This letter provides your agency with the Proof of Public Notice required within 15 days of completing public notice. Accordingly, the following documents are enclosed:

1. A signed *Affidavit of Public Notice Completion* form (Enclosure 2)
2. A copy of the *Los Alamos Monitor* newspaper advertisement (Enclosure 3)
3. Mailing list of property owners within 1/3 mile of Los Alamos National Laboratory (Enclosure 4)
4. Bottom portion of invoice and a $75.00 check for the poster fee (Enclosure 5)

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Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this information.

Sincerely,

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Security, LLC

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
U.S. Department of Energy

AMD:GET:BB/lm

Enclosures:

1. March 2, 2012, letter from the NMED regarding public notice requirements
2. A signed *Affidavit of Public Notice Completion* form
3. A copy of the *Los Alamos Monitor* newspaper advertisement
4. Mailing list of property owners within 1/3 mile of Los Alamos National Laboratory
5. Bottom portion of invoice and a $75.00 check for the poster fee

Cy: James P. Bearzi, NMED/SWQB, Santa Fe, NM, w/enc.
John E. Kieling, NMED/HWB, Santa Fe, NM, w/enc.
Steve M. Yanicak, NMED/DOE/OB, w/enc., M894
George Rael, LASO-NSM, w/o enc., A316
Hai Shen, LASO-EPO, w/enc., A316
Gene E. Turner, LASO-EPO, w/enc., A316
Carl A. Beard, PADOPS, w/o enc., A102
Michael T. Brandt, ADESH, w/o enc., K491, (E-File)
Alison M. Dorries, ENV-DO, w/o enc., K491, (E-File)
Randall S. Johnson, ENV-ES, w/enc., E500, (E-File)
Michael T. Saladen, ENV-RCRA, w/enc., K490, (E-File)
Robert S. Beers, ENV-RCRA, w/enc., K490
Robert C. Mason, TA55-DO, w/enc., E583, (E-File)
Clifford W. Kirkland, TA-55 RLW, w/enc., J910, (E-File)
Victor J. Salazar, TA-55 RLW, w/enc., E518, (E-File)
John C. Del Signore, TA-55 RLW, w/enc., E518, (E-File)
Taylor Valdez, ENV-DO, w/o enc., K404, (E-File)
Linda Salazar, ADESH, w/o enc., K491, (E-File)
IRM-RMMSO, w/enc., A150, (E-File)
ENV-RCRA Correspondence File, w/enc., K490

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ENCLOSURE 1

March 2, 2012, letter from the NMED regarding public notice requirements

ENV-RCRA-12-0109

LAUR-12-20967

Date: MAY 17 2012

ENCLOSURE 4

Mailing list of property owners within 1/3 mile of Los Alamos National Laboratory

ENV-RCRA-12-0109

LAUR-12-20967

Date: MAY 17 2012

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
155 R & T LLC	4314 MARINA CITY DR #1018	MARINA DEL REY	CA	90292
3177 NICKEL CONDOMINIUM	3177 NICKEL ST	LOS ALAMOS	NM	87544
3303 ORANGE STREET, A CONDOMINIUM	3303 ORANGE ST	LOS ALAMOS	NM	87544
510 CENTRAL AVENUE CONDOMINIUM	510 CENTRAL AVE	LOS ALAMOS	NM	87544
999 CENTRAL CONDOMINIUM	236 MAPLE DR	LOS ALAMOS	NM	87544
ABERNATHEY JAMES P	81 MESA VERDE DR	LOS ALAMOS	NM	87544
ABERNATHEY ROBERT M & ESTHER R REVOC TR	120 MONTE REY DR N	LOS ALAMOS	NM	87544
ACLA INC	127 EAST GATE DR B	LOS ALAMOS	NM	87544
ACOMB FAMILY REVOCABLE TRUST	20 STATE ROAD 4	LOS ALAMOS	NM	87544
ACOMB JH & IC / ACOMB TH & AG	20 STATE ROAD 4	LOS ALAMOS	NM	87544
ACOMB JOHN H & INA C	20 STATE ROAD 4	LOS ALAMOS	NM	87544
ACOMB JOHN H & INA C & JOHN L	20 STATE ROAD 4	LOS ALAMOS	NM	87544
ADKINS PROPERTIES LLC	10004 SAND VERBENA	ALBUQUERQUE	NM	87122
AHRENS JAMES P & CHRISTINE M REV TR	933 TEWA LOOP	LOS ALAMOS	NM	87544
AKHADOV ELSHAN A & VALIDA V D REVOC TRUST	718 43RD ST	LOS ALAMOS	NM	87544
ALEXANDER IAN J & LINDSAY D	4756 TRINITY DR	LOS ALAMOS	NM	87544
ALEXANDER IAN J & LINDSAY D	4756 TRINITY DR	LOS ALAMOS	NM	87544-1860
ALLEN SHARON E	926 TEWA LOOP	LOS ALAMOS	NM	87544
ALLIE PROPERTIES LLC	P O BOX 591	LOS ALAMOS	NM	87544
ALWIN JENNIFER LOUISE	4091 TRINITY DR	LOS ALAMOS	NM	87544
AMERICAN LEGION (FRAINIER F G)	1325 TRINITY DR	LOS ALAMOS	NM	87544
AMETHYST LAND CO. INC.	PO BOX 1219	MORIARTY	NM	87035
ANDERSON BRODIE G & KATHERINE F	3288 ORANGE ST	LOS ALAMOS	NM	87544
ANDERSON CHARLES A & LINDA Q	102 LA SENDA ROAD	LOS ALAMOS	NM	87544
ANDERSON PAUL & CHERYL	752 46TH ST	LOS ALAMOS	NM	87544
ANDERSON PAUL A & SANDY JEAN	4469 A FAIRWAY	LOS ALAMOS	NM	87544
ANDERSON PAUL ARTHUR & SANDY JEAN	4469 FAIRWAY DR A	LOS ALAMOS	NM	87544
ANDERSON PHARMACY	PO BOX 1243	LOS ALAMOS	NM	87544
ANDERSON RICHARD EUGENE	6 LOS ARBOLES DR	LOS ALAMOS	NM	87544
ANDRADE ANTONIO & ROSE MARIE	8 KAREN CIRCLE	LOS ALAMOS	NM	87544
ANDREWS WILLIAM W & VIRGINIA	432 ESTANTE WAY	LOS ALAMOS	NM	87544
ANGELO JAMES W & LADONNA L	34 SHORT DR	LOS ALAMOS	NM	87544
APODACA JOE B	948 SANTA CLARA PL	LOS ALAMOS	NM	87544
APODACA ROBERT & LILLIAN	4282 FAIRWAY DR	LOS ALAMOS	NM	87544
APP LIVING TRUST	143 MONTE REY DR S	LOS ALAMOS	NM	87544
ARCHULETA LEO P	972 NAMBE LOOP	LOS ALAMOS	NM	87544
ARCHULETA VIDELIO	1090 MYRTLE ST	LOS ALAMOS	NM	87544
ARCML06 LLC	2025 E JEMEZ RD #126 (OFFICE)	LOS ALAMOS	NM	87544
ARNONE MARY E	448 OPPENHEIMER DR	LOS ALAMOS	NM	87544
ASH CONDOMINUMS	20 ARROYO LANE	LOS ALAMOS	NM	87544
ASHLEY KENNETH R & GLENDA L	80 CANYON RD	LOS ALAMOS	NM	87544
ASPEN, A CONDOMINIUM	10 ARROYO LANE	LOS ALAMOS	NM	87544
ATKINSON CHARLES W	4563 FAIRWAY DR	LOS ALAMOS	NM	87544
ATOMIC CITY LTD	770 LOWER RESERVATION RD	HARPER	TX	78631
ATWOOD GINGER & MATAVOSIAN ROBERT	166 MONTE REY DR S	LOS ALAMOS	NM	87544
AUER LAWRENCE H & KATHLYN H	1202 7TH ST	LOS ALAMOS	NM	87544
AUSTIN MICHELLE	1460 MYRTLE	LOS ALAMOS	NM	87544
AVILES-RAMOS CUAUTHEMOC	4759 SOLECITO WAY	SANTA FE	NM	87507
BABICH SIGNE JUNE	95 MESA VERDE DR	LOS ALAMOS	NM	87544
BAGGETT DAVID T	24 SHORT DR	LOS ALAMOS	NM	87544
BAGGETT FAMILY TRUST	996 NAMBE PLACE	LOS ALAMOS	NM	87544
BAILEY MICHAEL GLENN	744 44TH ST	LOS ALAMOS	NM	87544
BAKER G A JR & THOMAS C TRU	115 LA SENDA ROAD	LOS ALAMOS	NM	87544
BALOG JOHN A & DEBORAH W REVOC TRUST	4 ERIE LANE	LOS ALAMOS	NM	87544
BANDELIER NATIONAL MONUMENT	STATE ROAD 4	LOS ALAMOS	NM	87544
BANKS CHARLES B & CAROL A TRUST	108 LA SENDA ROAD	LOS ALAMOS	NM	87544-3820
BANQUEST FIRST NAT'L BK S F	P O BOX 609	SANTA FE	NM	87504-0609
BARBER JANICE A & FRANKLIN I	24 GRAND CANYON DR	LOS ALAMOS	NM	87544
BARBER RONALD L & BARBARA A	810 46TH ST	LOS ALAMOS	NM	87544
BARBER STEDE	PO BOX 771	MEDANALES	NM	87548
BARD FAMILY TRUST	975 NAMBE LOOP	LOS ALAMOS	NM	87544
BARD JONATHAN E & ANNIE E	113 LA SENDA ROAD B	LOS ALAMOS	NM	87544
BAREFIELD JAMES E & EMMA C	111 LA VISTA DR	LOS ALAMOS	NM	87544
BARKER GV LLC	1929 ALTIVO	HENDERSON	NV	89074
BARNES JOHN W & NEDRA M TRUST	5270 SADDLE MOUNTAIN RD	LAS CRUCES	NM	88012

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PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
BARTLIT JOHN R & NANCY R	113 MONTE REY DR N	LOS ALAMOS	NM	87544
BATEMAN ALFRED C	41 GRAND CANYON DR	LOS ALAMOS	NM	87544
BEARD TIMOTHY V & MARY ANNE D	318 POTRILLO	LOS ALAMOS	NM	87544
BEARD TIMOTHY V & MARY ANNE D	318 POTRILLO DR	LOS ALAMOS	NM	87544
BECK JAMES B & JILL A	416 ESTANTE WAY	LOS ALAMOS	NM	87544
BEEBE KEMP C & NANCEE A	4233 TRINITY DR	LOS ALAMOS	NM	87544
BEEBE LEONARD G & JACKIE A	1 QUEMAZON PLACE	LOS ALAMOS	NM	87544
BELL GEORGE I & VIRGINIA REV TRUST	794 43RD ST	LOS ALAMOS	NM	87544
BELLRIGHT INVESTMENTS	3807 GOLD ST #10	LOS ALAMOS	NM	87544
BELOOUSSOV ANDREI V & OLGA N BELOOUSSOVA	1201 SAN ILDEFONSO RD	LOS ALAMOS	NM	87544-2854
BEMENT ROBERT W & DENNIS STEPHANIE H	60 CANYON VIEW DR	LOS ALAMOS	NM	87544
BEMENT THOMAS R & JUDITH J TRUST	5 LOS ARBOLES DR	LOS ALAMOS	NM	87544
BENNETT ROBERT C & KATHRYN D	156 MONTE REY DR S	LOS ALAMOS	NM	87544
BERNDT MARKUS & WEEM ANNE MARIE PEETERS	123 PIEDRA LOOP	LOS ALAMOS	NM	87544
BILLEN JAMES H & MARY D LIVING TRUST	905 CIRCLE DR	LOS ALAMOS	NM	87544
BINGHAM CECIL E	1309 47TH ST	LOS ALAMOS	NM	87544
BLAGOEV KRASTAN B & E JULIANA PARE-	602 JERRY LN NW	VIENNA	VA	22180-4137
BLAIR STEPHEN G & BARBARA B	115 LA VISTA DR	LOS ALAMOS	NM	87544
BLISS JOHN & NANCY	74 LA PALOMA DR	LOS ALAMOS	NM	87544
BLUHM ELIZABETH A	4429 TRINITY DR	LOS ALAMOS	NM	87544
BOETTGER JONATHAN C & VANOUDENHAEGEN D	23 KAREN CIRCLE	LOS ALAMOS	NM	87544
BOGGS STEVEN L & MARSHA J	330 POTRILLO DR	LOS ALAMOS	NM	87544
BOHACHEVSKY IHOR	3 LOMA VISTA DR	LOS ALAMOS	NM	87544
BOHN RICHARD F & ROSSEN BETTE	1317 AVENIDA RINCON	SANTA FE	NM	87506
BONE CANDIACE M	811 46TH ST	LOS ALAMOS	NM	87544
BOOMTOWN LLC	4441 ANAHEIM AVE NE	ALBUQUERQUE	NM	87113
BOONE F STEPHEN & CYNTHIA L	660 CAMINO ENCANTAD	LOS ALAMOS	NM	87544
BOONE ZENAS J & IRENE U	135 MONTE REY DR S	LOS ALAMOS	NM	87544
BOOTH BRIAN P & PATRICIA A VIGIL-	719 41ST ST	LOS ALAMOS	NM	87544
BORDENET SCOTT K	4949 TRINITY DR	LOS ALAMOS	NM	87544
BORGES LOUIS A	431 ESTANTE WAY	LOS ALAMOS	NM	87544
BOROVINA DAN & KAREN	32 SHORT DR	LOS ALAMOS	NM	87544
BOROVINA DAN L & KAREN G	3056 MONTE SERENO DR	SANTA FE	NM	87506
BORUP ROD & ELLEN G	103 LA VISTA DR	LOS ALAMOS	NM	87544
BOUQUIN ERIN JONES & DAVID H	148 MANHATTAN LOOP	LOS ALAMOS	NM	87544
BOWERS RICHARD L & JAN R	3312 ORANGE ST	LOS ALAMOS	NM	87544
BOWERS RICHARD L & JN R S	1216 9TH ST	LOS ALAMOS	NM	87544
BOYD VIRGINIA M	6 MAYA LANE	LOS ALAMOS	NM	87544
BOYER BRIAN D & JOSEPHINE S	1060 49TH ST A	LOS ALAMOS	NM	87544
BRADSHAW FREDERIC W & KELCH LESLIE	163 MONTE REY DR S	LOS ALAMOS	NM	87544
BRAKE RICHARD & JUDY	107 LA VISTA DR	LOS ALAMOS	NM	87544
BRAMBLE JAMES J	4525 TRINITY DR	LOS ALAMOS	NM	87544
BRAND HOLMANN V REVOCABLE TRUST	3948 TRINITY DR	LOS ALAMOS	NM	87544
BRANDENBERGER ANN M	3987 TRINITY DR B	LOS ALAMOS	NM	87544
BRASIER ROBERT I & ROBERTA C	1292 45TH ST	LOS ALAMOS	NM	87544
BRENER MATHIEU W	460 OPPENHEIMER DR	LOS ALAMOS	NM	87544
BRENT ROY W JR & DIANE L	59 LA PALOMA DR	LOS ALAMOS	NM	87544
BRESHEARS W DALE	1240 2ND ST	LOS ALAMOS	NM	87544
BREWER ROBERT J & REBECCA D REV TR	1337 43RD ST	LOS ALAMOS	NM	87544
BRIDGE RICHARD A & SHEIR E	30 MANHATTAN LOOP	LOS ALAMOS	NM	87544
BRIDGE RICHARD A & SHERI E	30 MANHATTAN LOOP	LOS ALAMOS	NM	87544
BRIDGEWATER JON S & KATHERINE K	776 47TH ST	LOS ALAMOS	NM	87544
BROOKS GEORGE H & DEANNA	1394 43RD ST	LOS ALAMOS	NM	87544
BROOKS JAMES K	700 47TH ST	LOS ALAMOS	NM	87544
BROOKS PHYLLIS JEAN	3987 TRINITY DR A	LOS ALAMOS	NM	87544
BROUGHTON JAMES M	3007 WESTMORELAND CIR	IDAHO FALLS	ID	83402-4611
BROWN ARTHUR G & DAWN	861 43RD ST	LOS ALAMOS	NM	87544
BROWN EDNA DELLA	4201 TRINITY DR	LOS ALAMOS	NM	87544
BROWN FOREST B & CHRISTINE H	1210 MYRTLE ST	LOS ALAMOS	NM	87544
BROWN JAY T	16 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
BROWN JOSEPH E	4321 FAIRWAY DR B	LOS ALAMOS	NM	87544
BROWN PAUL III & MEREDITH	101 MONTE REY DR N	LOS ALAMOS	NM	87544
BROWNE JOHN C & MARTI M REVOC TRUST	2410 WEST ENTRADA	SAINT GEORGE	UT	84770
BROWNE MICHAEL C & SCOVEL CHRISTINA A	123 MONTE VISTA DR	LOS ALAMOS	NM	87544
BROXTON DAVID & PATRICIA	1237 45TH ST	LOS ALAMOS	NM	87544

: 08182

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
BRUEGGEMAN FRED A & JEAN J	19 LOS ARBOLES DR	LOS ALAMOS	NM	87544
BRUNELLE DANA P	45 CANYON VIEW DR	LOS ALAMOS	NM	87544
BRYCE AVENUE PRESBYTERIAN CH	118 LA VISTA DR	LOS ALAMOS	NM	87544
BUCHHOLZ JERRY R & MARY ANN REVOC TRUST	316 POTRILLO DR	LOS ALAMOS	NM	87544
BUCK STEVEN E	2557 45TH ST	LOS ALAMOS	NM	87544
BUCKLEY KEVIN J & REZMER JENNIFER J	4419 SW FINDLAY ST	SEATTLE	WA	98136
BUDGE KEN GRIMMETT & CINDY LOU	16 KAREN CIRCLE	LOS ALAMOS	NM	87544
BUEHRER BURTON F	694 45TH ST	LOS ALAMOS	NM	87544
BULEY REX D & VICKI	1 LOS ARBOLES DR	LOS ALAMOS	NM	87544
BUNCH PAUL C & LO REE	5 KAREN CIRCLE	LOS ALAMOS	NM	87544
BUNKER REVOCABLE TRUST	114 YOSEMITE DR	LOS ALAMOS	NM	87544
BURGARDT PAUL & MCHOSE DIANE	31 GRAND CANYON DR	LOS ALAMOS	NM	87544
BURGESS ENID K	794 46TH ST B	LOS ALAMOS	NM	87544
BURNSIDE NATHAN & PATRICIA	681 43RD ST	LOS ALAMOS	NM	87544
BURROWS GORDON R JR & TERESA L	1451 OAKWOOD LOOP	LOS ALAMOS	NM	87544
BUSH EDGAR D JR & CAROLYN J REV TRUST	915 CIRCLE DR	LOS ALAMOS	NM	87544
BUTLER DEBORAH E	774 45TH ST	LOS ALAMOS	NM	87544
C DE BACA ELMO REVOC TRUST	P O BOX 269	LOS ALAMOS	NM	87544
C.B. & FOX INC	P O BOX 1119	LOS ALAMOS	NM	87544
C1C2 INVEST & L A CENTRAL AVENUE LLC	122 TULANE NE,	ALBUQUERQUE	NM	32114
C1C2 INVESTMENTS LLC	126 W INTERNATIONAL WAY	DAYTONA BEACH	FL	32114
CABILDO CARLOS Z & REBECCA LEE	1191 1ST ST	LOS ALAMOS	NM	87544
CABRAL WILLIAM L	999 CENTRAL AVE STE 150	LOS ALAMOS	NM	87544
CABRAL WILLIAM L	999 CENTRAL AVE STE 150	LOS ALAMOS	NM	87544
CALEF CHARLES & BARBARA	4777 SANDIA DR	LOS ALAMOS	NM	87544
CAMPBELL EVELYN W	423 ESTANTE WAY	LOS ALAMOS	NM	87544
CAMPBELL JAMES C & CATHERINE	1395 43RD ST	LOS ALAMOS	NM	87544
CAMPBELL ULRIKE B	1060 49TH ST B	LOS ALAMOS	NM	87544
CANAVAN GREGORY H & BARBARA ANN REV TR	22 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
CANYON RIM TERRACE LTD PARTN	P O BOX 250	LOS ALAMOS	NM	87544
CANYON VISTA TOWNHOUSE	50 VERDE RIDGE ST APT A	LOS ALAMOS	NM	87544-3255
CAPELLI CINDY SUE	921 TEWA LOOP	LOS ALAMOS	NM	87544
CAPELLI JEAN MARIE LIVING TRUST	PO BOX 1353	LOS ALAMOS	NM	87544
CARBONE LIVING TRUST	27 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
CARDIEL DEMETRIO M	1050 MYRTLE ST	LOS ALAMOS	NM	87544-3129
CARLOS ROBERT & BARBARA REVOC TRUST	1233 2ND ST	LOS ALAMOS	NM	87544
CARLSON JOYCE A & GEORGE H REV LI TRUST	122 CANYON VISTA DR	LOS ALAMOS	NM	87544
CARLSON RANDOLPH L & BETTY J	114 LA VISTA DR	LOS ALAMOS	NM	87544
CARMEN BEVERLY	695 44TH ST	LOS ALAMOS	NM	87544
CARNEY DARYA	126 REESE ST	LAKE ODESSA	MI	48849
CARRENO JOSE L & ROANNA R	937 TEWA LOOP	LOS ALAMOS	NM	87544
CARROLL DAVID W & JANICE	43 LA PALOMA DR	LOS ALAMOS	NM	87544
CARROLL JACQUELINE T	710 41ST ST A	LOS ALAMOS	NM	87544
CARTELLI ANGELO R	4340 FAIRWAY DR B	LOS ALAMOS	NM	87544
CARTER ALICE S REVOC TRUST	255 RIO BRAVO DR	LOS ALAMOS	NM	87544
CARVER FAMILY TRUST	10 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
CASH DAN J	52 GRAND CANYON DR	LOS ALAMOS	NM	87544
CASSEL JUSTIN & DENISE REVOC TRUST	51 GRAND CANYON DR	LOS ALAMOS	NM	87544
CASTILLE R DANIEL & STACEY A	4960 SANDIA DR	LOS ALAMOS	NM	87544
CC&F LOS ALAMOS INVEST CO %NATIONAL TAX	125 SUMMER ST	BOSTON	MA	2110
CEM ENTERPRISES INC	201 KNECHT ST	LOS ALAMOS	NM	87544
CENTRAL PARK CONDOMINIUM	802 9TH ST	LOS ALAMOS	NM	87544
CENTRAL PARK SQUARE LLC	130 CENTRAL PARK SQUARE	LOS ALAMOS	NM	87544
CENTRAL PARKING LOT CORP	CENTRAL AVE	LOS ALAMOS	NM	87544
CHALMERS KEVIN M & MARY E REV TR	56 CANYON VISTA DR	LOS ALAMOS	NM	87544
CHAMISA PLACE, LLC	351 ANDANADA	LOS ALAMOS	NM	87544
CHANDLER GEORGE I II & CHRISTINE	1208 9TH ST	LOS ALAMOS	NM	87544-2477
CHASE WILLIAM R & SARAH C	4498 FAIRWAY DR A	LOS ALAMOS	NM	87544
CHAVARRIA RENE & SUSANA T	1409 MYRTLE ST	LOS ALAMOS	NM	87544-3166
CHAVEZ MARK ANTHONY	1402 TAOS ST	SANTA FE	NM	87501
CHITANVIS SHIRISH & JACQUELINE	336 POTRILLO DR	LOS ALAMOS	NM	87544
CHRISTMAN RONALD D & CORINE TRUST	31 CANYON VIEW	LOS ALAMOS	NM	87544
CHURCH ESTHER MRS	686 42ND ST	LOS ALAMOS	NM	87544
CHURCH OF THE NAZARENE	15 GRAND CANYON DR	LOS ALAMOS	NM	87544
CLANTON ROBERT C	53 SHORT DR	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
CLARK DAVID S & BRENDA B	PO BOX 765	LOS ALAMOS	NM	87544-0765
CLARKE STEVEN A & MARGENE B	120 SIERRA VISTA DR	LOS ALAMOS	NM	87544
CLAY MARGARET M	1377 41ST ST	LOS ALAMOS	NM	87544
CLAY STREET CAPITAL INC	550 MONTGOMERY ST	SAN FRANCISCO	CA	94111
CLAYTON JANET V	4397 TRINITY DR	LOS ALAMOS	NM	87544
CLAYTON STEVEN & ROBLES ZOE	621 47TH ST	LOS ALAMOS	NM	87544
CLENDENEN FAMILY TRUST	2181 LOMA LINDA DR	LOS ALAMOS	NM	87544
CLEVENGER MIKE	530 KIVA ST	LOS ALAMOS	NM	87544
CLIFTON LIVING TRUST	1189 4TH ST	LOS ALAMOS	NM	87544
CLINTON DAVID D	110 MONTE REY DR N	LOS ALAMOS	NM	87544
COATES LEIGHTON	11631 LANESBOROUGH	KNOXVILLE	TN	37924
COE JAMES H & GLORIA P REVOCABLE TRUST-A	929 CIRCLE DR	LOS ALAMOS	NM	87544
COFFELT KERRY P & LORI J	99 LA VISTA DR	LOS ALAMOS	NM	87544
COLGATE S A & R W TRUST	422 ESTANTE WAY	LOS ALAMOS	NM	87544
COLLIER JIMMY W & NERITA F	112 LOS PUEBLOS	LOS ALAMOS	NM	87544
COLLIER JIMMY W & NERITA F REVOC TRUST	112 LOS PUEBLOS	LOS ALAMOS	NM	87544
COLLINS GREGORY A & SHARON L	417 ESTANTE WAY	LOS ALAMOS	NM	87544
COLUMBIAN CLUB	P.O. BOX 605	LOS ALAMOS	NM	87544
COMBS PATRICIA	5 HOPI LANE	LOS ALAMOS	NM	87544
CONLEY GREGORY S & LYNN E	592 KIVA ST	LOS ALAMOS	NM	87544
CONNER REVOCABLE TRUST	245 RIO BRAVO DR	LOS ALAMOS	NM	87544
CONRADSON STEVEN D & LEILANI	9 LOS ARBOLES DR	LOS ALAMOS	NM	87544
CONTARINO JOAN SCHAFFNER	984 NAMBE LOOP	LOS ALAMOS	NM	87544
COOK KELLY L & MAGALI H	1330 45TH ST	LOS ALAMOS	NM	87544
COONS JAMES E & ELIZABETH A	820 47TH ST	LOS ALAMOS	NM	87544
COOPER DANIEL I	5 LOMA VISTA DR	LOS ALAMOS	NM	87544
COOPER GARY MARK	1472 OAKWOOD LOOP	LOS ALAMOS	NM	87544
COOPER RICHARD K & L VALERIE	P.O. BOX 1347	LOS ALAMOS	NM	87544
COSTA DAVID A & CINDY L	122 MONTE VISTA DR	LOS ALAMOS	NM	87544
COSTELLO ALISON L	963 OTOWI PLACE	LOS ALAMOS	NM	87544
COSTIGAN STEPHEN A & KEELEY R	713 46TH ST A	LOS ALAMOS	NM	87544
COURNOYER MICHAEL & CATHERINE	86 MESA VERDE DR	LOS ALAMOS	NM	87544
COURT DONALD B	56 LA PALOMA DR	LOS ALAMOS	NM	87544
COURTRIGHT W C & CABBELL J W	2197 LOMA LINDA DR	LOS ALAMOS	NM	87544
COURTRIGHT W C & M L TRUST	2197 LOMA LINDA DR	LOS ALAMOS	NM	87544
COURTRIGHT W C & MARY L	2197 LOMA LINDA DR	LOS ALAMOS	NM	87544
COURTRIGHT W C & MARY L TRUST	2197 LOMA LINDA DR	LOS ALAMOS	NM	87544
COURTRIGHT W CLARENCE & MARY	2197 LOMA LINDA DR	LOS ALAMOS	NM	87544
COURTRIGHT WC & ML TRUST	2197 LOMA LINDA DR	LOS ALAMOS	NM	87544
COURTWRIGHT WALTER & MARY REVOC TRUST	2197 LOMA LINDA DR	LOS ALAMOS	NM	87544-2770
COUSINS BG & ME & BETTS S & REBECCA	954 SANTA CLARA PL	LOS ALAMOS	NM	87544
COWAN GEORGE A & HELEN DUNHAM TRUSTEES	738 43RD ST	LOS ALAMOS	NM	87544
COWAN GERALD S	4493 TRINITY DR	LOS ALAMOS	NM	87544
COWAN REVOCABLE TRUST	721 42ND ST	LOS ALAMOS	NM	87544
COX ARTHUR N & JOAN REVOCABLE TRUST	1001 OPPENHEIMER DR # 401	LOS ALAMOS	NM	87544
COX CLARICE W	781 45TH ST	LOS ALAMOS	NM	87544
COX SUMMERS H & JOANNE L	1 HOPI LANE	LOS ALAMOS	NM	87544
COX WILLIAM A	616 43RD ST A	LOS ALAMOS	NM	87544
COY JAMES D & HEATHER J REVOC TRUST	968 NAMBE LOOP	LOS ALAMOS	NM	87544
CRANE DAVID & NADINE	42 LOS ARBOLES DR	LOS ALAMOS	NM	87544
CRISCUOLO FAMILY TRUST	60 GRAND CANYON DR	LOS ALAMOS	NM	87544
CROSS SHELLY L & MATEVIA TROY A	3338 ORANGE ST	LOS ALAMOS	NM	87544
CROSSROADS BIBLE CHURCH	97 EAST ROAD	LOS ALAMOS	NM	87544
CROWELL MICHAEL W & PAGE KATHARINE L	982 NAMBE LOOP	LOS ALAMOS	NM	87544
CRUZ CARLA M	4364 FAIRWAY DR B	LOS ALAMOS	NM	87544
CRUZ MARGARET R	4364 FAIRWAY DR A	LOS ALAMOS	NM	87544
CUMMINGS EDITH B	4 CHEROKEE LANE	LOS ALAMOS	NM	87544
CUMMINS LISA M & BRETT C	119 MONTE VISTA DR	LOS ALAMOS	NM	87544
CUNNINGHAM LESLIE J	424 OPPENHEIMER DR	LOS ALAMOS	NM	87544
CUNNINGHAM ROBERT P	1325 45TH ST A	LOS ALAMOS	NM	87544
CUSTER DANIEL & KAVE GILDA	947 SANTA CLARA PL	LOS ALAMOS	NM	87544
CYPRESS, CONDOMINUMS	30 ARROYO LN	LOS ALAMOS	NM	87544
DALE LESLIE & MICHAEL	1307 45TH ST	LOS ALAMOS	NM	87544
DALTON DEBRA L	990 NAMBE PLACE	LOS ALAMOS	NM	87544
DALY GEORGE M REVOCABLE TRUST	18 TIMBER RIDGE RD	LOS ALAMOS	NM	87544

: 08184

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
DALY PAUL C & LINDA K	428 ESTANTE WAY	LOS ALAMOS	NM	87544
D'ANDREA VICTOR B & DANA R	22 KAREN CIRCLE	LOS ALAMOS	NM	87544
DANNA JOSEPH A & CRANE CATHERINE M	39 LOS ARBOLES DRIVE	LOS ALAMOS	NM	87544
DAUELSBERG LORI R REVOC TRUST	39 CANYON VIEW DR	LOS ALAMOS	NM	87544
DAVIS BENJAMIN L & DALE TARAKA T	4679 FAIRWAY DR	LOS ALAMOS	NM	87544
DAVIS MARK C & CHRISTINA N	1280 3RD ST	LOS ALAMOS	NM	87544
DAVIS WILLIAM C	693 46TH ST	LOS ALAMOS	NM	87544
DAY ROBERT DEAN & PATTY A	555 MYRTLE ST	LOS ALAMOS	NM	87544
DAY THERESA P	1213 6TH ST	LOS ALAMOS	NM	87544
DAYMON LIZBETH L	1306 47TH ST A	LOS ALAMOS	NM	87544
DEAL FAMILY LLC	2610 TRINITY DR SUITE 4	LOS ALAMOS	NM	87544
DEARHOLT WILLIAM RAVIN	919 TEWA LOOP	LOS ALAMOS	NM	87544
DEAVER FAMILY ENTERPRISES LLC	3311 STANFORD DR NE	ALBUQUERQUE	NM	87107
DECKER DEBORAH A	37 LOS ARBOLES DR	LOS ALAMOS	NM	87544
DEL NORTE CREDIT UNION	P O BOX 1180	LOS ALAMOS	NM	87544
DELAMATER NORMAN D & YVONNE REV TR	960 OTOWI PLACE	LOS ALAMOS	NM	87544
DELANO DAVID R & SUSANA F	845 45TH ST	LOS ALAMOS	NM	87544
DEMUTH RUTH & SANDFORD THOMAS	1277 47TH ST	LOS ALAMOS	NM	87544
DEPARTMENT OF ENERGY	PO BOX 1663	LOS ALAMOS	NM	87544
DERRICK ROBERT M & SIMONS ELEANOR E	483 KIVA ST	LOS ALAMOS	NM	87544
DESAI NEHAL & INDOO REVOC TRUST	517 MARYLAND ST	EL SEGUNDO	CA	90245-3137
DESERT GOLD LLC	11 CALLE MEDIO #6	SANTA FE	NM	87505
DEVANEY KATHLEEN ANN	4353 LOMA HERMOSA DR	EL PASO	TX	79934-3746
DEVRIES LAMBERT H & MARY P	36 GRAND CANYON DR	LOS ALAMOS	NM	87544
DICK DENNIS S & KERRY L	34 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
DICK DENNIS SCOTT & KERRY L REV TRUST	34 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
DICKERSON ROBERT M & PATRICIA	924 CIRCLE DR	LOS ALAMOS	NM	87544
DIDIER MARK A & LAURA L	1871 APPLE VALLEY ROAD	BOLINGBROOK	IL	60440
DIMARION JENNIFER D	4138 TRINITY DR B	LOS ALAMOS	NM	87544
DIMITRUCK NATALIE	915 TEWA LOOP	LOS ALAMOS	NM	87544
DIMITRUCK NATALIE A	945 SANTA CLARA PL	LOS ALAMOS	NM	87544
DINGLER ROBERT D	110 LA SENDA ROAD	LOS ALAMOS	NM	87544
DOHLELMAN STEVEN E & EMILIE B	21 CANYON VIEW DR	LOS ALAMOS	NM	87544
DOPULOS GREGORY G	11701 EAGLE ROCK NE	ALBUQUERQUE	NM	87122
DORS ERIC E & KRISTEN M REV TRUST	1219 MYRTLE ST	LOS ALAMOS	NM	87544
DOSS JAMES DANIEL & MARTHA TRUST	905 TEWA LOOP	LOS ALAMOS	NM	87544
DOUGHERTY BRIAN L & JULIA M	798 47TH ST	LOS ALAMOS	NM	87544
DOUGLAS MELISSA	1295 41ST ST	LOS ALAMOS	NM	87544
DOWNS JAMES H	137 SOUTH MONTE REY	LOS ALAMOS	NM	87544
DOYLE TIMOTHY O & CHRISTINE L	4244 RIDGEWAY DR	LOS ALAMOS	NM	87544
DRYJA ROBERT A & SUSAN	707 45TH ST	LOS ALAMOS	NM	87544
DUNI BRADLEY L	PO BOX 5371	SANTA FE	NM	87502
DUNNING DONALD N REV TRUST	41 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
DUPRE DIANE C ROUSSEL	739 42ND ST	LOS ALAMOS	NM	87544
DURAN EDDIE & MONICA C	909 TEWA LOOP	LOS ALAMOS	NM	87544
EAST PARK POOL ASSOCIATION I	P O BOX 781	LOS ALAMOS	NM	87544
EAST ROAD CORPORATION	P O BOX 250	LOS ALAMOS	NM	87544
EATON ROB A & REBECCA C	1385 42ND ST	LOS ALAMOS	NM	87544
EBERHART CRAIG F & BARBARA L REV TRUST	955 49TH ST	LOS ALAMOS	NM	87544
EDDLEMAN JOHN C	105 PIEDRA LOOP	LOS ALAMOS	NM	87544
EDDLEMAN RICHARD C	4541 FAIRWAY DR	LOS ALAMOS	NM	87544
EDEN LEO	37 TIMBER RIDGE	LOS ALAMOS	NM	87544
EGLIN JUDITH LYNNE	809 47TH ST	LOS ALAMOS	NM	87544
EHLEN MARK A & GILL LISA M	12901 CEDARBROOK AVE NE	ALBUQUERQUE	NM	87111-3015
EILERS DONALD D	105 LA VISTA DR	LOS ALAMOS	NM	87544
ELDER JOHN C & JEAN C IRREV SURV TR	77 LOMA VISTA DR	LOS ALAMOS	NM	87544
ELKINS EDGAR P	671 44TH ST	LOS ALAMOS	NM	87544
ELLIOT ROBERT J & NELLE R & VAUGHN NANCY	936 TEWA LOOP	LOS ALAMOS	NM	87544
ELLIOTT KARENE F TRUST	23 LOS ARBOLES DR	LOS ALAMOS	NM	87544
ELLIOTT LESLIE D CARSON- & JOHN W	23 GRAND CANYON DR	LOS ALAMOS	NM	87544
ELLIOTT PATRICIA R	103 PIEDRA LOOP	LOS ALAMOS	NM	87544
ELLIS KIMBERLY K	5467 S. FOREST HILL ST.	LITTLETON	CO	80120
ELLIS LIVING TRUST	704 47TH ST	LOS ALAMOS	NM	87544
ELM, CONDOMINUMS	15 VERDE RIDGE	LOS ALAMOS	NM	87544
ENGELHARDT MICHAEL B	12 LOMA VISTA DR	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
ENGELKE RAYMOND P	113A LA SENDA ROAD	LOS ALAMOS	NM	87544
ERICKSON GEORGE F REVOC LIVING TRUST	1010 SOMBRILLO CT APT 316	LOS ALAMOS	NM	87544-4206
ESPINOZA BRENT F REV TR	1390 44TH ST A	LOS ALAMOS	NM	87544
EUBANK JOHN H & JANET R	10619 W LOMA BLANCA DR	SUN CITY	AZ	85351
EVANS BARBARA	41 LOS ARBOLES DR	LOS ALAMOS	NM	87544
EVERETT DOLORES	1334 43RD ST	LOS ALAMOS	NM	87544
FAIR MATTHEW B & JULIA SHARPE	17 LOMA VISTA DR	LOS ALAMOS	NM	87544
FAIRBANKS THOMAS & ELIZABETH TRUST	767 42ND ST	LOS ALAMOS	NM	87544
FARINHOLT KEVIN M & VICKI L REVOC TRUST	1190 5TH ST	LOS ALAMOS	NM	87544
FARISH THOMAS J & MARY A	34 GRAND CANYON DR	LOS ALAMOS	NM	87544
FARLEY PERRY DWAIN & GAY ANNE	683 47TH ST	LOS ALAMOS	NM	87544
FARR DOUGLAS JOHN & JACOBSON LINDA	113 LA VISTA DR	LOS ALAMOS	NM	87544
FARSHCHI JAMIL & ERIN	6 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
FAULKNER GEORGE E & BEVERLY	3 ERIE LANE	LOS ALAMOS	NM	87544
FEHLAU PAUL E	533 MYRTLE ST	LOS ALAMOS	NM	87544
FELLERS JOHN & SALLY	1421 GALISTEO	SANTA FE	NM	87505
FERENBAUGH CHARLES R & LINDA L	1029 48TH ST	LOS ALAMOS	NM	87544
FERENBAUGH ROGER W	46 LA PALOMA DR	LOS ALAMOS	NM	87544
FERRELL JEAN	970 49TH ST	LOS ALAMOS	NM	87544
FERRELL PAUL S & SHANNON G	575 MYRTLE ST	LOS ALAMOS	NM	87544
FICHTEL MICHAEL D II & STEFANI E	35 GRAND CANYON DR	LOS ALAMOS	NM	87544
FICKETT WILDON & CHRISTENSEN	9 KAREN CIRCLE	LOS ALAMOS	NM	87544
FIFE TIMOTHY T & JUDITH	112 LA SENDA ROAD	LOS ALAMOS	NM	87544
FIR, CONDOMINUMS	25 VERDE RIDGE	LOS ALAMOS	NM	87544
FIRST UNITED METHODIST CHURCH	P O BOX 299	LOS ALAMOS	NM	87544
FISHER HENRY N & KAY J	434 ESTANTE WAY	LOS ALAMOS	NM	87544
FISHER KANE J & KATHI A	21 GRAND CANYON DR	LOS ALAMOS	NM	87544
FITZGIBBON NANCY SCOTT TRUST	1445 OAKWOOD LOOP	LOS ALAMOS	NM	87544
FLEMMING JOHN F JR & BARBARA	133 MONTE REY DR S	LOS ALAMOS	NM	87544
FLESNER R & F FAMILY TRUST	13011 AZALEA WOODS WAY	HERNDON	VA	20171
FLYNN PAULINE	3705 TRINITY DR	LOS ALAMOS	NM	87544
FOR SAGE, CONDOMINUMS	10 VERDE RIDGE	LOS ALAMOS	NM	87544
FOSTER RICHARD & MARILYN TRUST	3 MAYA LANE	LOS ALAMOS	NM	87544
FOX ELLEN	125 MONTE VISTA DR	LOS ALAMOS	NM	87544
FRANK DAVID F	54 SHORT DR	LOS ALAMOS	NM	87544
FRANK RICHARD B & CATE TRACY ROY	153 MONTE REY DR S	LOS ALAMOS	NM	87544
FRAUENGLASS MARK	4340 A FAIRWAY	LOS ALAMOS	NM	87544
FRAZER ROBERT W	11 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
FREED J ARTHUR REVOC TRUST	33 LOS ARBOLES DR	LOS ALAMOS	NM	87544
FROSTENSON JOHN C & CANDACE TRUST	1351 42ND ST	LOS ALAMOS	NM	87544
FUEHRER ROBERT G & MARILEE E	43 GRAND CANYON DR	LOS ALAMOS	NM	87544
FULLBRIGHT SARAH STEPHENSON TRUST	2 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
G/S CORP	191 EL GANCHO	LOS ALAMOS	NM	87544
GAFFNEY GUY & JENNIFER	1310 MYRTLE ST	LOS ALAMOS	NM	87544
GALKE WARREN A & JACQUELYN A	1111 1ST ST	LOS ALAMOS	NM	87544
GAMMEL J TINKA	1047 49TH ST	LOS ALAMOS	NM	87544
GAMMEL J TINKA	1047 49TH ST	LOS ALAMOS	NM	87544
GANG XIE & HUIWEN HSU	2311 CANYON GLEN	LOS ALAMOS	NM	87544
GARCIA ANTHONY ROLAND & ESTHER R	17707 GLOBE THEATRE DR	OLNEY	MD	20832
GARCIA EDUARDO	4940 SANDIA DR	LOS ALAMOS	NM	87544
GARTZ DAVID R & GARTZ STACEY K	4 ACOMA LANE	LOS ALAMOS	NM	87544
GAULER ALLEN L	922 TEWA LOOP	LOS ALAMOS	NM	87544
GENTRY JENNIFER C	1366 41ST ST	LOS ALAMOS	NM	87544
GEOFFRION ANGELIQUE & GREG	3125 NICKEL ST	LOS ALAMOS	NM	87544
GEOFFRION GREGORY L & ANGELIQUE M	1348 42ND ST A	LOS ALAMOS	NM	87544
GEORGE THOMAS W & RENITA R	104 LA VISTA DR	LOS ALAMOS	NM	87544
GIBSON WILLIAM K	962 OTOWI PLACE	LOS ALAMOS	NM	87544
GIGER AUDREY L TRUST	4643 FAIRWAY DR	LOS ALAMOS	NM	87544
GILL ROBERT V & CARMEN N	39 GRAND CANYON DR	LOS ALAMOS	NM	87544
GILL ROBERT V & MICHAEL R	942 TEWA LOOP	LOS ALAMOS	NM	87544
GILLESPIE CM & KB REVOC TR	427 ESTANTE WAY	LOS ALAMOS	NM	87544
GILMORE JAMES S & ELEANOR TRUST	1250 41ST ST	LOS ALAMOS	NM	87544
GIRON SAMUEL G JR & EVELYN S	3931 TRINITY DR A	LOS ALAMOS	NM	87544
GLESTOS EVANGELOS & TAYLOR JESSICA	1049 48TH ST	LOS ALAMOS	NM	87544
GODEL LAURA	1396 40TH ST, APT A	LOS ALAMOS	NM	87544-2174

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
GOETTEE JEFFREY D & CONSETTA	57 VALLE VISTA DR	LOS ALAMOS	NM	87544
GOGGIN DAVID & JUDITH	979 NAMBE LOOP	LOS ALAMOS	NM	87544
GOLDMAN JACK TERRANCE & BERNADINE Z	1232 41ST ST	LOS ALAMOS	NM	87544
GOLDMAN SANFORD R	106 SIERRA VISTA DR	LOS ALAMOS	NM	87544
GOODWIN J MICHAEL	P O BOX 958	LOS ALAMOS	NM	87544
GOODWIN PETER & LYNNE	4259 TRINITY DR	LOS ALAMOS	NM	87544
GOULD THOMAS E & ABIGAIL R	6776 AUGUSTA HILLS DR NE	RIO RANCHO	NM	87144
GOURDOUX JAMES R & MORRIS INGRID REVOC TRUST	433 ESTANTE WAY	LOS ALAMOS	NM	87544
GRAHAM PAUL S & SAMARA D	760 42ND ST	LOS ALAMOS	NM	87544
GRAM PETER E M & MURPHY SUSAN	4873 TRINITY DR	LOS ALAMOS	NM	87544
GRASTATARO CATHLEEN I & BARBARA I	17 TIMBER RIDGE	LOS ALAMOS	NM	87544
GRAY ALTON JAMES & COLLIER KAREN H	124 CANYON VISTA DR	LOS ALAMOS	NM	87544
GREINER N ROY	9 LOMA VISTA DR	LOS ALAMOS	NM	87544
GRIEGGS ANTHONY R & ALISON B	107 PIEDRA LOOP	LOS ALAMOS	NM	87544
GRIEGO DAVID	935 TEWA LOOP	LOS ALAMOS	NM	87544
GRIFFITH PRENTIS REID & MARLA F	19 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
GRILLY EDWARD R	2461 HILLSIDE RD	INDEPENDENCE	OH	44131-4432
GRITZO RUSSEL E & DEBORAH N	77 MESA VERDE DR	LOS ALAMOS	NM	87544
GROFF ROBERT H	709 47TH ST A	LOS ALAMOS	NM	87544
GRONDALSKI JOHN P	53 CANYON VIEW DR	LOS ALAMOS	NM	87544
GRUNAU DARYL W & SHANA L	964 OTOWI PLACE	LOS ALAMOS	NM	87544
GURROLA GAL JAVIER & CHRISTINE J	31 LOS ARBOLES DR	LOS ALAMOS	NM	87544
GUTHORMSEN LAY REVOC TRUST	795 46TH ST	LOS ALAMOS	NM	87544
GUTIERREZ BENJAMIN S & ALICE R REV TR	9 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
H & M PROPERTIES LLC	214 THREE OAKS CT	SWANSBORO	NC	28584
HAERTLING C L & CARMER CRAIG	665 45TH ST	LOS ALAMOS	NM	87544
HAHN TERRY R	184 PIEDRA LOOP	LOS ALAMOS	NM	87544
HAHN THAD W	32 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
HALL MICHAEL L & MARY E	1325 43RD ST	LOS ALAMOS	NM	87544
HALL W STANLEY & GEORGIA A	3773 TRINITY DR	LOS ALAMOS	NM	87544
HALLADAY BRIAN	1260 MYRTLE ST	LOS ALAMOS	NM	87544
HALLADAY JERRY B REVOCABLE TRUST	1457 OAKWOOD LOOP	LOS ALAMOS	NM	87544
HAMILTON & MARTIN	4987 TRINITY DR	LOS ALAMOS	NM	87544
HAMPEL FRED G & TERESA A	413 ESTANTE WAY	LOS ALAMOS	NM	87544
HAND ROBERT LLC	127 EAST GATE DR	LOS ALAMOS	NM	87544
HANLON J A & C A REVOC TRUST	911 CIRCLE DR	LOS ALAMOS	NM	87544
HANNA LOUISE & KRAUS R JR	122 LA VISTA DR	LOS ALAMOS	NM	87544
HANSEN RICHARD WAYNE & LESLIE A	105 MONTE REY DR N	LOS ALAMOS	NM	87544
HANSON D L & M TRUST	118 MONTE REY DR N	LOS ALAMOS	NM	87544
HANSON JILL O	6809 COUNTRY GLEN CT NW	ALBUQUERQUE	NM	87114-4387
HARBUR DELBERT R	83 MESA VERDE DR	LOS ALAMOS	NM	87544
HARDEKOPF ROBERT A & PRISCILLA REV LIV T	119 LA VISTA DR	LOS ALAMOS	NM	87544
HARLOW BOBBIE J	1203 7TH ST	LOS ALAMOS	NM	87544
HARLOW FRANCIS H JR & PATRICIA	1407 11TH ST	LOS ALAMOS	NM	87544
HARPER PAIGE R	143 MAPLE DR	LOS ALAMOS	NM	87544-1574
HARPER RONNIE W & MCKEE RUTH	672 46TH ST	LOS ALAMOS	NM	87544
HARRIS DALE W & TROY D	175 CENTER RD	MADISONVILLE	TN	37354
HARRIS REVOCABLE TRUST	1016 49TH ST	LOS ALAMOS	NM	87544
HARRISON ALAN K & DALE W	58 VALLE VISTA DR	LOS ALAMOS	NM	87544
HARRISON GEORGE A & CHERRY K	4860 W 102ND AVE.	WESTMINSTER	CO	80031-2317
HARTIN JOHN R & INA M	103 MONTE REY DR N	LOS ALAMOS	NM	87544
HATCHER DOROTHY MCLAURIN	517 JOHNSON LANE	SANTA FE	NM	87505
HAUGEN JAMES & BLEIFUSS DONNA	894 43RD ST	LOS ALAMOS	NM	87544
HAYES J S JR & WEAVER K E REVOC TRUST	911 TEWA LOOP	LOS ALAMOS	NM	87544
HAYNES MARY J & WILLIAM B REV LIV TR	5 ACOMA LANE	LOS ALAMOS	NM	87544-3801
HAYTER URSULA M & LINDE JANET M	11800 HOLIDAY AVE. NE	ALBUQUERQUE	NM	87111
HEIBERGER CLARE ANN	6711 MUIRFIELD DR	RAPID CITY	SD	57702
HEINEMAN JOHN R & KIMBER REVOCABLE TRUST	124 MONTE VISTA DR	LOS ALAMOS	NM	87544
HEISEL C E & SULTEMEIER S A	P O BOX 250	LOS ALAMOS	NM	87544
HEMSING WILLARD	626 47TH ST	LOS ALAMOS	NM	87544
HENDERSON MICHAEL G	920 TEWA LOOP	LOS ALAMOS	NM	87544
HENDRICKS JOHN & MARGARET LIVING TRUST	102 LOMA DEL ESCOLAR	LOS ALAMOS	NM	87544
HENDRICKS JOHN S	102 LOMA DEL ESCOLAR	LOS ALAMOS	NM	87544
HENDRICKSON KARIN M	6 TIMBER RIDGE	LOS ALAMOS	NM	87544
HERRERA WILLIAM DONALD REVOC TRUST	4122 FAIRWAY DR	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
HICKS WILLIAM F	76 MESA VERDE DR	LOS ALAMOS	NM	87544
HILKO ROBERT A & CLAUDIA D	1038 49TH ST	LOS ALAMOS	NM	87544
HILL INVESTORS	865 LOS PUEBLOS	LOS ALAMOS	NM	87544-2651
HILL THOMAS R	54 LA PALOMA DR	LOS ALAMOS	NM	87544
HILL VENDING SERVICE INC	272 DP ROAD	LOS ALAMOS	NM	87544
HILLTOP HOUSE LLC	2 AGILA CT	LOS ALAMOS	NM	87544
HINOJOSA HECTOR C	4297 FAIRWAY DR	LOS ALAMOS	NM	87544
HITEMAN MARIA AURELIA	956 SANTA CLARA PL	LOS ALAMOS	NM	87544
HJELM REX & HAWLEY MARILYN	415 ESTANTE WAY	LOS ALAMOS	NM	87544
HJELVIK KARL I & MARIA EA PAN-SOY	113 YOSEMITE DR	LOS ALAMOS	NM	87544
HOARD DONALD E & DOROTHY J	11 LOS ARBOLES DR	LOS ALAMOS	NM	87544
HODGE EVANGELINE M REV TRUST	925 CIRCLE DR	LOS ALAMOS	NM	87544
HODGSON WILLIAM M & MARY SUSAN	114 LA SENDA ROAD	LOS ALAMOS	NM	87544
HOFFMAN GORDON J	109 YOSEMITE DR	LOS ALAMOS	NM	87544
HOFFMAN MARVIN & DARLEANE TR	2277 MANZANITA DR	OAKLAND	CA	94611
HOFFMAN NELSON M	776 41ST ST	LOS ALAMOS	NM	87544
HOGAN BILLY M & KIM E	1149 5TH ST	LOS ALAMOS	NM	87544
HOGAN GARY E	8 LOMA VISTA DR	LOS ALAMOS	NM	87544
HOISIE SILVIA & ADOLFY	2831 HAWKSTONE CT	RICHLAND	WA	99354
HOLCOMB LILIA	4206 FAIRWAY DR	LOS ALAMOS	NM	87544
HONES EDWARD W JR & VIRGINIA H REV TR	922 CIRCLE DR	LOS ALAMOS	NM	87544
HONG JUNG PYO	109 PIEDRA LOOP	LOS ALAMOS	NM	87544
HONNELL RICHARD E & ANNABELLE L REV TR	37 GRAND CANYON DR	LOS ALAMOS	NM	87544
HOOG MICHAEL J	1196 45TH ST	LOS ALAMOS	NM	87544
HOOGTERP J C & M L REVOC TRUST	1265 45TH ST	LOS ALAMOS	NM	87544
HOOVER CAROL L	729 45TH ST B	LOS ALAMOS	NM	87544
HOPKINS JOHN & ADELE TRUST	1251 41ST ST A	LOS ALAMOS	NM	87544
HOPKINS JOHN G & ANN TRUST	3220 ORANGE ST B	LOS ALAMOS	NM	87544
HOPWOOD MICHAEL B & COBURN SHANNON A	122 YOSEMITE DR	LOS ALAMOS	NM	87544
HORN DIST CO % COLOMEX STOP-N-GO	1221 PASEO DE ONATE	ESPANOLA	NM	87532
HOSFORD SARAH	75 MESA VERDE	LOS ALAMOS	NM	87544
HOUGHTELING PA & WD REVOC LIVING TRUST	1229 41ST ST	LOS ALAMOS	NM	87544
HOUGHTELING PENELOPE B REV LI TR	716 44TH ST	LOS ALAMOS	NM	87544
HOUSING SOLUTIONS LLC	1720 Louisiana Blvd NE, Ste 402	ALBUQUERQUE	NM	87110
HOVERSON KATHLEEN	921 CIRCLE DR	LOS ALAMOS	NM	87544
HOVERSON MARK D	1251 2ND ST	LOS ALAMOS	NM	87544
HOWE STEVEN D & MICKIE S	211 LOST TRAIL PL	IDAHO FALLS	ID	83404-8432
HSU HSIAO HUA & FLORENCE M	31 RIM ROAD	LOS ALAMOS	NM	87544
HSU HSIAO-HUA & FLORENCE M & HSU ALBERT	131 RIM RD	LOS ALAMOS	NM	87544
HUBER ANN & SHIRLEY	1360 MYRTLE ST	LOS ALAMOS	NM	87544
HUDSON WILLIAM A & MAUREEN R	90 MANHATTAN LOOP	LOS ALAMOS	NM	87544
HUDSPETH BRENT & KATHERINE BRAY	1211 7TH ST	LOS ALAMOS	NM	87544
HUDSTON JONATHAN & LISA	332 POTRILLO DR	LOS ALAMOS	NM	87544
HUEBNER WALTER F	8000 DONORE PL APT 27	SAN ANTONIO	TX	78229-2601
HUGHES WILLIAM M LIVING TRUST	1362 DON KIRK ST	LOS ALTOS	CA	94024-6121
HUNSINGER MARK W & REBECCA R	32 GRAND CANYON DR	LOS ALAMOS	NM	87544
HUNT ERICA LAI-HAR	1446 OAKWOOD LOOP	LOS ALAMOS	NM	87544
HURFORD JEANNE M LIVING TRUST	710 41ST ST B	LOS ALAMOS	NM	87544
ICKES TIM & PEGGY	1445 35TH ST	LOS ALAMOS	NM	87544
ILG THOMAS A & WENDY E	70 LA PALOMA DR	LOS ALAMOS	NM	87544
IMMACULATE HEART OF MARY	4000 ST JOSEPH PLACE NW	ALBUQUERQUE	NM	87120
IMTEC REAL ESTATE LLC	333 W MAIN ST, SUITE 270	ARDMORE	OK	73401-6330
INCORPORATED COUNTY OF LOS ALAMOS	P.O. BOX 30	LOS ALAMOS	NM	87544
INGRAM ZEKE D & KAY M	780 37TH ST	LOS ALAMOS	NM	87544
INKRET WILLIAM C	74 MESA VERDE DR	LOS ALAMOS	NM	87544
IRELAND JOHN R & JUDITH A TRUST	18 KAREN CIRCLE	LOS ALAMOS	NM	87544
IRELAND TRAVIS R & MELISSA R	121 MONTE VISTA DR	LOS ALAMOS	NM	87544
IRIS STREET CONDOMINIUMS	1300 IRIS ST	LOS ALAMOS	NM	87544
IRVING GERI E & MICHAEL S	762 45TH ST	LOS ALAMOS	NM	87544
J.B. SHERR CO INC	PO BOX 33681	SANTA FE	NM	87594
JACOB ELIZABETH	1374 40TH ST B	LOS ALAMOS	NM	87544
JAEGERS PETER J & LISA A	115 PIEDRA LOOP	LOS ALAMOS	NM	87544
JAIN MAHAVIR & JOANN M REVOC TRUST	1368 35TH ST	LOS ALAMOS	NM	87544
JAMES LORETTA BEE KEMBLE & CHARLES R	4797 SANDIA DR B	LOS ALAMOS	NM	87544
JAMES MICHAEL & ERIN	27 GRAND CANYON DR	LOS ALAMOS	NM	87544

: 08188

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
JANKE JEFFERY E & CHRISTINE I	763 45TH ST	LOS ALAMOS	NM	87544
JARMIE NELSON & ROGERS FRAN J	107 CARDINAL DR	MURPHYSBORO	IL	62966-5255
JE RUNYAN FAMILY TRUST	3149 NICKEL ST	LOS ALAMOS	NM	87544
JENSEN REED J & NANCY TRUST	121 LA VISTA DR	LOS ALAMOS	NM	87544
JEWETT PHILLIP & SHARON	1447 OAKWOOD LOOP	LOS ALAMOS	NM	87544
JOHNS RUSSELL C & SHARON K	3325 ORANGE	LOS ALAMOS	NM	87544
JOHNSON JEFF & SCHILLACI SUSAN	1143 45TH ST	LOS ALAMOS	NM	87544
JOHNSON KENNETH J & SANDRA K	101 PIEDRA LOOP	LOS ALAMOS	NM	87544
JOHNSON MIKKEL B & LYNNE M REVOC TRUST	118 PIEDRA LOOP	LOS ALAMOS	NM	87544
JOHNSON PAUL D	3376 ORANGE ST A	LOS ALAMOS	NM	87544
JOHNSON ROGER W & V DIANE REV LIV TR	106 LA VISTA DR	LOS ALAMOS	NM	87544
JONES ROLLIN T & REBECCA N	44 LA PALOMA	LOS ALAMOS	NM	87544
JONES RONDA M	729 45TH ST A	LOS ALAMOS	NM	87544
JOSEPH ELIZABETH	112 LA VISTA DR	LOS ALAMOS	NM	87544
JUNIPER, CONDOMINUMS	35 VERDE RIDGE	LOS ALAMOS	NM	87544
JUVELAND CHRISTINE E	1061 4TH ST	LOS ALAMOS	NM	87544
JUVELAND OMAR A	484 KIVA ST	LOS ALAMOS	NM	87544
KAIN TERRY & ANNE	114 MONTE REY DR N	LOS ALAMOS	NM	87544
KAMMERMAN ALAN B & ROSALIE E	907 TEWA LOOP	LOS ALAMOS	NM	87544
KAPPLE SHARON A	4404 FAIRWAY DR	LOS ALAMOS	NM	87544
KARPIUS PETER J	985 NAMBE LOOP	LOS ALAMOS	NM	87544
KASUNIC CONDOMINUM OWNERS ASSOCIATION	1348 42ND ST	LOS ALAMOS	NM	87544
KATKO MARK J & MARTHA L	48 MANHATTAN LOOP	LOS ALAMOS	NM	87544
KEELER LARISA LYN	4439 FAIRWAY DR B	LOS ALAMOS	NM	87544
KEILERS CHARLES H JR & MARJORIE MADSEN	2 ACOMA LANE	LOS ALAMOS	NM	87544
KELLEY CYNTHIA	1289 MYRTLE ST	LOS ALAMOS	NM	87544
KELLUM MERVYN & JANET	4709 TRINITY DR B	LOS ALAMOS	NM	87544
KELLUM MERVYN J & JANET SUE	4709 TRINITY DR B	LOS ALAMOS	NM	87544
KENDALL KAREN B	22 SHORT DR	LOS ALAMOS	NM	87544
KERMAN BEN & KERMAN ENID	41 CANYON VISTA DR	LOS ALAMOS	NM	87544
KERN KRISTEN T & THERESA L	751 46TH ST	LOS ALAMOS	NM	87544
KEWALRAMANI AVINASH R	10188 TELESIS CT SUITE 100	SAN DIEGO	CA	92121
KING DANIEL E Y KIM R	4168 TRINITY DR	LOS ALAMOS	NM	87544
KING FAMILY TRUST	913 CIRCLE DR	LOS ALAMOS	NM	87544
KING JAMES D & CHERYL L	35 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
KING SUSANNE D	904 TEWA LOOP	LOS ALAMOS	NM	87544
KISSLINGER MARGARET V	4785 WILLINGFORD ST	PITTSBURGH	PA	15213
KORNREICH DREW E & ALEXANDRA V	4925 TRINITY DR	LOS ALAMOS	NM	87544
KORZEKWA DAVID A & DENIECE R	1191 5TH ST	LOS ALAMOS	NM	87544
KRAUSE RAY & YVONNE	161 MONTE REY DR S	LOS ALAMOS	NM	87544
KSZE LLC	175 EL GANCHO	LOS ALAMOS	NM	87544
KUIPER ADAM	4004 TRINITY DR B	LOS ALAMOS	NM	87544
KUNSBERG PHILIP	2701 PINTO LANE	LAS VEGAS	NV	89107
KUNSBERG PHILIP & BERNADETTE	251 RIO BRAVO	LOS ALAMOS	NM	87544
KUNSBERG PHILIP & JOY TRUST	2701 PINTO LANE	LAS VEGAS	NV	89107
KUNSBERG PHILIP H	2701 PINTO LANE	LAS VEGAS	NM	89107
KURNATH NANCY P	715 36TH ST	LOS ALAMOS	NM	87544
KWEI LAWRENCE K & GELSTON DENISE C	906 CIRCLE DR	LOS ALAMOS	NM	87544
L & T ENTERPRISES INC	1731 TRINITY DR	LOS ALAMOS	NM	87544
L A QUIK WASH LLC	1221 PASEO DE ONATE	ESPANOLA	NM	87532
LA HOUSING SOLUTIONS LTD	1720 Louisiana Blvd NE, Ste 402	ALBUQUERQUE	NM	87110
LA HOUSING SOLUTIONS LTD	P.O. BOX 68002	ALBUQUERQUE	NM	87193-8002
LABERGE FAMILY TRUST	4 MAYA LANE	LOS ALAMOS	NM	87544
LADACH MICHAEL J & JACQUELINE	89 MESA VERDE DR	LOS ALAMOS	NM	87544
LADELFE PETER C & CAROL M	600 LOS PUEBLOS	LOS ALAMOS	NM	87544
LAMBERT LINDA	15 LOMA VISTA DR	LOS ALAMOS	NM	87544
LANG PHILLIP M	72 LA PALOMA DR	LOS ALAMOS	NM	87544
LANGAN PAUL & MARION J	764 43RD ST	LOS ALAMOS	NM	87544
LANGLOIS DAVID A	53 GRAND CANYON DR	LOS ALAMOS	NM	87544
LATAILLE JANE I	1110 MYRTLE ST	LOS ALAMOS	NM	87544
LAWTON CINDY M	4122 FAIRWAY DR B	LOS ALAMOS	NM	87544
LAWTON CINDY M	84 LOMA DEL ESCOLAR	LOS ALAMOS	NM	87544
LEACH KAREN & JAMES	1320 3RD ST	LOS ALAMOS	NM	87544
LEBRUN DONALD & STACY	108 MONTE REY DR N	LOS ALAMOS	NM	87544
LEE STEPHEN R & MARY BETH	159 MONTE REY DR S	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
LEHMAN MARJORIE W & BARBARA J	76-6246 ALII DR #414	KAILUA KONA	HI	96740
LEHMAN MARYLEE B & LELAND S	1453 OAKWOOD LOOP	LOS ALAMOS	NM	87544
LEMONS LUCILLE B	4653 TRINITY DR	LOS ALAMOS	NM	87544
LEON JENNIFER D	1163 45TH ST	LOS ALAMOS	NM	87544
LEONARD ZACHARY A	712 42ND ST	LOS ALAMOS	NM	87544
LEPAGE BILLIE ANN	4060 TRINITY DR B	LOS ALAMOS	NM	87544
LIER DOUGLAS W & RUTH H TRUST	923 CIRCLE DR	LOS ALAMOS	NM	87544
LIER KARI	45 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
LILAC, CONDOMINUMS	45 VERDE RIDGE	LOS ALAMOS	NM	87544
LILES LAURA A	62 LA PALOMA DR	LOS ALAMOS	NM	87544
LILLEY JOHN R	2 CHEROKEE LANE	LOS ALAMOS	NM	87544
LIM LA SEI REVOC TRUST	50 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
LINDBERG PETER J & MARY E REV TRUST	421 ESTANTE WAY	LOS ALAMOS	NM	87544
LINDBLOM G N & NORINE B	116 YOSEMITE DR	LOS ALAMOS	NM	87544
LINDEN ANTHONY & NATALIA A E	3900 NORTH CHARLES ST #815	BALTIMORE	MD	21218
LINNEBUR ELDON & A CAROLYN	4 DAKOTA LANE	LOS ALAMOS	NM	87544
LINNEBUR ELDON J	4 DAKOTA LANE	LOS ALAMOS	NM	87544
LITTLE JAMES & MARGARET TRUST	951 SANTA CLARA PL	LOS ALAMOS	NM	87544
LITTLEJOHN DONNA W	21 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
LITTLETON THOMAS & JANICE	108 AZURE AVE	LOS ALAMOS	NM	87544
LITTLETON THOMAS R & JANICE	108 AZURE AVE	LOS ALAMOS	NM	87544
LO CHIEN-CHI & TSAI HAN-JU	4220 B TRINITY DR	LOS ALAMOS	NM	87544
LOCUST, CONDOMINUMS	55 VERDE RIDGE	LOS ALAMOS	NM	87544
LODWIG SIEGFRIED N & DORIS	79 MESA VERDE DR	LOS ALAMOS	NM	87544
LOFTIN DORIS M	42 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
LOGAN PHILLIP J & DORIS JUNE	730 44TH ST	LOS ALAMOS	NM	87544
LOMA VIST HOMEOWNERS ASSO INC	7 LOMA LINDA DR	LOS ALAMOS	NM	87544-2772
LOMA VISTA CONDOMINUMS	LOMA VISTA DR	LOS ALAMOS	NM	85744
LOS ALAMOS BUSINESS CENTER	800 WILSHIRE BLVD	SANTA MONICA	CA	90401
LOS ALAMOS CANYON COMPOUND LLC	P O BOX 6786	SANTA FE	NM	87502
LOS ALAMOS COMMERCE CORP	C/O GRUBB & ELLIS	ALBUQUERQUE	NM	87110
LOS ALAMOS ELKS LODGE NO 2083	1601 TRINITY DR	LOS ALAMOS	NM	87544
LOS ALAMOS HOME IMPROVEMENT CO	232 DP ROAD	LOS ALAMOS	NM	87544
LOS ALAMOS HOSPITALITY INC	8809 SCARLET KNIGHT	ALBUQUERQUE	NM	87122
LOS ALAMOS LODGING LLC	2301 8TH AVENUE NE STE 230	ABERDEEN	SD	57401
LOS ALAMOS NATIONAL BANK	P O BOX 60	LOS ALAMOS	NM	87544
LOS ALAMOS NATIONAL BANK (TRUSTEE)	P O BOX 60	LOS ALAMOS	NM	87544
LOS ALAMOS PLAZA LLC & CANDLES DELIGHT	330 WILSHIRE BLVD	SANTA MONICA	CA	90401
LOS ALAMOS PROF INVEST PARTNER	P.O. BOX 9146	SANTA FE	NM	87504
LOS ALAMOS PUBLIC SCHOOLS	2075 TRINTIY DR	LOS ALAMOS	NM	87544
LOS ALAMOS PUBLISHING (MONITOR)	P O BOX 549	SHELBYVILLE	KY	40065
LOS ALAMOS SCHOOL BOARD	751 TRINITY DR	LOS ALAMOS	NM	87544
LOS ALAMOS SHRINE CLUB	P O BOX 111	LOS ALAMOS	NM	87544
LOS ARBOLES CONDOMINUMS	LOS ARBOLES DR	LOS ALAMOS	NM	87544
LOS PINONES II LIMITED PARTNERSHIP	P.O. BOX 1219	MORIARTY	NM	87035
LOT 139 WA1	818 43RD ST	LOS ALAMOS	NM	87544
LOYA GENEVIEVE D	929 TEWA LOOP	LOS ALAMOS	NM	87544
LUCIDO SCOTT & ELIZABETH	944 SANTA CLARA PL	LOS ALAMOS	NM	87544
LUTES CHRISTOPHER E & MARY E	27 LOS ARBOLES DR	LOS ALAMOS	NM	87544
LXFL LLC	P O BOX 430	LOS ALAMOS	NM	87544
MABRY MIKE & EILEEN LLC	875 PASEO DEL SUR	SANTA FE	NM	87501
MACDONALD ELIZABETH A	844 43RD ST B	LOS ALAMOS	NM	87544
MACHEN DONALD R & JUDITH TRUST	1110 1ST ST	LOS ALAMOS	NM	87544
MACKINNON MARY D REVOC TRUST	1390 44TH ST B	LOS ALAMOS	NM	87544
MAESTAS RICHARD & ROSEMARY E	1208 6TH ST	LOS ALAMOS	NM	87544
MAGGIORE CARL J & LIEB E TRUST	4596 FAIRWAY DR	LOS ALAMOS	NM	87544
MAIN GATE, LLC	236 MAPLE DR	LOS ALAMOS	NM	87544
MAJERUS LIVING TRUST	1357 43RD ST	LOS ALAMOS	NM	87544
MALONE FAMILY TRUST	1179 45TH ST	LOS ALAMOS	NM	87544
MANN DAVID A & ANTOINETTE BEAUCHAMP-	92 MESA VERDE DR	LOS ALAMOS	NM	87544
MANSELL LESLIE	47 LA PALOMA DR	LOS ALAMOS	NM	87544
MAPLE, CONDOMINUMS	50 VERDE RIDGE	LOS ALAMOS	NM	87544
MAQUEDA RICARDO & APREA C	30 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
MAREK LARRY J & ELEANOR J	837 43RD ST	LOS ALAMOS	NM	87544
MARIAM FESSEHA	49 SHORT DR	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
MARINER JOE A & MARY L & RONALD	334 POTRILLO DR	LOS ALAMOS	NM	87544
MARSDEN CHANDRA SAVAGE & GEORGE B	992 NAMBE PLACE	LOS ALAMOS	NM	87544
MARTIN PAUL	108 YOSEMITE DR	LOS ALAMOS	NM	87544
MARTINEZ AARON M	1364 42ND ST	LOS ALAMOS	NM	87544
MARTINEZ KENNETH & REBECCA	23 MANHATTAN LOOP	LOS ALAMOS	NM	87544
MARTINEZ MARK L & DIANA L	20 MANHATTAN LOOP	LOS ALAMOS	NM	87544
MARTINEZ PAUL A	PO BOX 212	LOS ALAMOS	NM	87544
MARTZ HARRY F & CAROL ANN	29 LOS ARBOLES DR	LOS ALAMOS	NM	87544
MASON RICHARD E & EMMA K	1217 1ST ST	LOS ALAMOS	NM	87544
MASON RICHARD E & EMMA KAYE	1190 1ST ST	LOS ALAMOS	NM	87544
MAUPIN RYAN D & JESSICA M	50 SHORT DR	LOS ALAMOS	NM	87544
MAURO MICHAEL E & TRUJILLO ANGELINA M	1 ACOMA LANE	LOS ALAMOS	NM	87544-3801
MAYANJALI LLC	13 LOMA VISTA DR	LOS ALAMOS	NM	87544
MAYDEW BARBARA A & BUESCHER K L	47 GRAND CANYON DR	LOS ALAMOS	NM	87544
MCCALISTER MARY G REVOC TRUST	165 MONTE REY DR S	LOS ALAMOS	NM	87544
MCCLELLAN JOHATHAN & KRISTIE	121 PIEDRA LOOP	LOS ALAMOS	NM	87544
MCDONALD'S OF L A 023-30	PO BOX 4500	SANTA FE	NM	87502
MCGAVRAN HARRY G JR & LAURE	323 POTRILLO DR	LOS ALAMOS	NM	87544
MCINTEER BERTHUS & CARLOTTA	329 POTRILLO DR	LOS ALAMOS	NM	87544
MCINTYRE RICHARD A & DEVENNEY MARGARET S	40 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
MCKAY MICHAEL D JR	69 MANHATTAN LOOP	LOS ALAMOS	NM	87544
MCKERLEY BILL J & JENNIFER	700 MEADOW LANE	LOS ALAMOS	NM	87544
MCLEOD FAMILY TRUST	5 MAYA LANE	LOS ALAMOS	NM	87544
MCNEEL JOHN W	51 CANYON VIEW DR	LOS ALAMOS	NM	87544
MCQUILLAN DENNIS M & MICHAEL J & JAMES A	105 JARDIN DE MER PL	JAX BEACH	FL	32250-8609
MCWHORTER SHAWN F	1360 B 43RD ST	LOS ALAMOS	NM	87544
MEAD NORMAN J LIVING TRUST	794 46TH ST A	LOS ALAMOS	NM	87544
MEDRICK CHARLES G & GAIL P	42 LA PALOMA DR	LOS ALAMOS	NM	87544
MELTON SHEILA G	3 CHEROKEE LANE	LOS ALAMOS	NM	87544
MENIKOFF RALPH S	912 CIRCLE DR	LOS ALAMOS	NM	87544
MERL VALERIE K & ROBERT B	4309 FAIRWAY DR	LOS ALAMOS	NM	87544
MERRITT JAMES/BOBBY & BETTY	750 N 17TH	LAS CRUCES	NM	88005
MESA MEADOW POOL INC	P O BOX 174	LOS ALAMOS	NM	87544
METCALF MARY M & ROBERT A	731 44TH ST	LOS ALAMOS	NM	87544
METCALF ROBERT A & MARY M	731 44TH ST	LOS ALAMOS	NM	87544
MICHALAK SARAH ELLEN	PO BOX 1154	LOS ALAMOS	NM	87544
MICHEL GLENN ALAN	P.O. BOX 222	LOS ALAMOS	NM	87544
MICHEL KAMA C & GLENN ALAN	1343 47TH ST	LOS ALAMOS	NM	87544
MIKO DAVID K	927 TEWA LOOP	LOS ALAMOS	NM	87544
MILDER MARTIN LEE & BARBARA E TRUST	2 ERIE LANE	LOS ALAMOS	NM	87544
MILDER ML & BE TRUST MILDER K H	2 ERIE LANE	LOS ALAMOS	NM	87544
MILES MATTHEW O & FISHER SUZANNE ZOE	1201 6TH ST	LOS ALAMOS	NM	87544
MILICH GERALDINE A TRUST AGREEMENT	21 LOS ARBOLES DR	LOS ALAMOS	NM	87544
MILLER GUTHERIE	509 CAMINO LEJO	SANTA FE	NM	87505
MILLER JANICE N REVOC TRUST	P O BOX 4668	LOS ALAMOS	NM	87544
MILLER JEFFREY L	44 SHORT DR	LOS ALAMOS	NM	87544
MILLER JUDITH M	5 ERIE LANE	LOS ALAMOS	NM	87544
MILLER MAURA DYLAN	977 NAMBE LOOP	LOS ALAMOS	NM	87544
MILLER RUSSELL	36 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
MILLIGAN DONALD FARRELL & SALLY E	414 ESTANTE WAY	LOS ALAMOS	NM	87544
MILLS CHARLES A & RUBY N TRUST	400 OAKRIDGE PASS	CEDAR PARK	TX	78613
MILLS CINDY JOY	4178 FAIRWAY DR A	LOS ALAMOS	NM	87544
MILONNI PETER W & MEI-LI SHIH	104 SIERRA VISTA DR	LOS ALAMOS	NM	87544
MITCHELL REBECCA R & FURGUSON JAMES L	29 SHORT DR	LOS ALAMOS	NM	87544
MOLLER PETER	P.O. BOX 1440	LOS ALAMOS	NM	87544
MONTOYA ARTHUR B & MARILYN	164 MONTE REY DR S	LOS ALAMOS	NM	87544
MONTOYA FRANK	817 45TH ST	LOS ALAMOS	NM	87544
MONTOYA JOANN & JOHN R	692 43RD ST B	LOS ALAMOS	NM	87544
MONTOYA PATRICK R LIVING TRUST	PO BOX 879	ESPANOLA	NM	87532
MOORE MURRAY E & PATRICIA	661 43RD ST	LOS ALAMOS	NM	87544
MORGENSTERN HOWARD A	4120 GLEN CANYON RD NE	ALBUQUERQUE	NM	87111-4192
MORIN TAHITIA & MARIO	49 LA PALOMA DR	LOS ALAMOS	NM	87544
MORRIS JOHN S & MELINDA B	91 MESA VERDE DR	LOS ALAMOS	NM	87544
MORRIS TERESA LYNN	1450 OAKWOOD LOOP	LOS ALAMOS	NM	87544-2960
MORRISON ROBERT E & DEE	1238 46TH ST	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
MORSE RICHARD LEE & ANDERSON PENNY D	1350 BATHTUB ROW	LOS ALAMOS	NM	87544
MORTENSEN KRISTIN M	25 GRAND CANYON DR	LOS ALAMOS	NM	87544
MOSES DOROTHEA H	P O BOX 660	LOS ALAMOS	NM	87544
MOSES RONALD W JR & JEAN E REVOC TRUST	734 46TH ST	LOS ALAMOS	NM	87544
MOTTERSHEAD CHARLES T	2465 SE CLOVER CT	HILLSBORO	OR	97123
MOTTERSHEAD CHARLES T & MARY	2465 SE CLOVER CT.	HILLSBORO	OR	97123
MOUNTAIN VILLAGE CONDOMINUM	CANYON VIEW DR	LOS ALAMOS	NM	87544
MOUNTAIN VILLAGE VENTURES LLC	P O BOX 6786	SANTA FE	NM	87502
MUENCHAUSEN ROSS E & BONIE M	1365 41ST ST	LOS ALAMOS	NM	87544
MUIR LEWIS A & JANICE P REVOC TRUST	4395 FAIRWAY DR	LOS ALAMOS	NM	87544
MULFORD ROBERT N	1235 46TH ST	LOS ALAMOS	NM	87544
MULFORD ROBERTA N & SWIFT DAMIAN C	1934 REGULUS CT	LIVERMORE	CA	94550-6368
MUSEUM PARK INC	P O BOX 250	LOS ALAMOS	NM	87544
MUSGRAVE JOHN A & BARBARA J	3405 ORANGE ST	LOS ALAMOS	NM	87544
MUSGRAVE SUSAN V	13231 DESERT ROSE AVE NE	ALBUQUERQUE	NM	87111-7113
MYERS STEVEN C & KELLY SMITH REVOC TRUST	1234 45TH ST	LOS ALAMOS	NM	87544
MYERS WES & GAYLA FAMILY TRUST	928 CIRCLE DR	LOS ALAMOS	NM	87544
MYERS WILLIAM M & BETTY TRUST	3406 ORANGE ST A	LOS ALAMOS	NM	87544
NADLER BRETT R	9188 REGENTS RD APT D	LA JOLLA	CA	92037-1443
NAFFZIGER MARY FRANCES THOMPSON	1 MAYA LANE	LOS ALAMOS	NM	87544
NAGLE PATRICIA G & DARRAGH J	51GRAND CANYON	LOS ALAMOS	NM	87544
NAIVAR FRANKLIN J & ALOMA M	407 HINSHAW DR	CREEDE	CO	81130
NAKAOKA RONALD K & APRIL D AB LIVING TRUST	118 MONTE VISTA	LOS ALAMOS	NM	87544
NARANJO FIDEL J L	2155 TRINITY DR	LOS ALAMOS	NM	87544
NARANJO FIDEL J L	2155 TRINITY DR	LOS ALAMOS	NM	87544
NARANJO GILBERT R & MARIA M & MARK D	1206 7TH ST	LOS ALAMOS	NM	87544
NARANJO KELLY R & RICHARD M	64 LA PALOMA DR	LOS ALAMOS	NM	87544
NARANJO RICHARD M & KELLY R	58 LA PALOMA DR	LOS ALAMOS	NM	87544
NEELY KAREN S	29 GRAND CANYON	LOS ALAMOS	NM	87544
NEHER KATHLEEN	108 AGATE ST	LOS ALAMOS	NM	87544
NEILL ADAM TALMAGE	4552 FAIRWAY DR	LOS ALAMOS	NM	87544
NEKIMKEN JUDY M & HOWARD L REV TRUST	4355 TRINITY DR	LOS ALAMOS	NM	87544
NELSON ERIC M & LAI T	118 SIERRA VISTA DR	LOS ALAMOS	NM	87544
NELSON RONALD O & MERRELL S FAMILY TR	2916 CUTLER AVE NE	ALBUQUERQUE	NM	87106
NELSON WADE & MELODIE KIM	110 YOSEMITE DR	LOS ALAMOS	NM	87544
NESTOR ESTHER CORNELIA	641 43RD ST B	LOS ALAMOS	NM	87544
NEVERETT WILLIAM J	1200 DOUGH ST APT 14F	SAN FRANCISCO	CA	94019
NEW BEGINNINGS FELLOWSHIP ASSEMBLY OF GO	112 EAST ROAD	LOS ALAMOS	NM	87544
NEW COREY STEVEN REVOC TRUST	75 LOMA VISTA DR	LOS ALAMOS	NM	87544
NEWELL DENNIS L JR.	805 46TH ST	LOS ALAMOS	NM	87544
NEWELL MATTHEW R & TERRI J	969 NAMBE LOOP	LOS ALAMOS	NM	87544
NEWMAN MAX G	822 45TH ST	LOS ALAMOS	NM	87544
NEWNAM BRIAN E & KAY E	4585 FAIRWAY DR	LOS ALAMOS	NM	87544
NEWTON ROBERT R & BRENDA L REV TRUST	125 CANYON VISTA DR	LOS ALAMOS	NM	87544
NEWTON THOMAS W & JANE E REV TR	4589 TRINITY DR	LOS ALAMOS	NM	87544
NGUYEN THANH XUAN & MELISSA SCHAUM	1278 41ST B 41ST	LOS ALAMOS	NM	87544
NICHOLS SARA ANN	828 47TH ST	LOS ALAMOS	NM	87544
NIETO MICHAEL M & MERETE REV TR	1291 45TH ST	LOS ALAMOS	NM	87544
NIKLASSON ANDERS & SIOBHAN	1034 48TH ST A	LOS ALAMOS	NM	87544
NINTH STREET CONDOMINIUMS LLC	579 CAMINO MERCADO #513	ARROYO GRANDE	CA	93420
NMC HOLDINGS LLC	4200 WEST JEMEZ RD, SUITE 301	LOS ALAMOS	NM	87544
NOLL PHILLIP D & MONICA D	114 PIEDRA LOOP	LOS ALAMOS	NM	87544
NORMAN BRUCE	PO BOX 1372	LOS ALAMOS	NM	87544
NORMAN RICHARD A & LORI D	119 CANYON VISTA DR	LOS ALAMOS	NM	87544
NORWOOD JOHN BREMER III & MAGDALENA	986 NAMBE LOOP	LOS ALAMOS	NM	87544
NOVAK ALAN M	111 YOSEMITE DR	LOS ALAMOS	NM	87544
NOVAK JEFFREY G	97 MESA VERDE DR	LOS ALAMOS	NM	87544
NYE DONALD E & LONDON SANDRA	7 LOS ARBOLES DR	LOS ALAMOS	NM	87544
O DONNELL JAMES P & KATE D & QUALI TERM	2610 TRINITY DR #4	LOS ALAMOS	NM	87544
OAK, CONDOMINUMS	40 VERDE RIDGE	LOS ALAMOS	NM	87544
OBERMEYER DEAN D & DENISE R	1072 48TH ST	LOS ALAMOS	NM	87544
O'BRIEN REVOC TRUST	107 LA SENDA ROAD	LOS ALAMOS	NM	87544
OBST ANDREW W	5 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
O'CONNOR EDMUND T	789 43RD ST	LOS ALAMOS	NM	87544
OCONNOR ROSEMARY HUGHES TRUST	4798 TRINITY DR	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
O'DONNELL JAMES P & KATE L	2610 TRINITY DR SUITE 4	LOS ALAMOS	NM	87544
OLINGER BARTON W & COLLEEN C	1964 JUNIPER ST	LOS ALAMOS	NM	87544
OLINGER CHAD T & TAMMY LU	117 LA VISTA DR	LOS ALAMOS	NM	87544
OLINGER MILES WILLIAM & BECKY DIANE	1999 JUNIPER ST	LOS ALAMOS	NM	87544
OLIVER & WITHERELL TRUST	411 WALNUT ST #4656	GREEN COVE	FL	32043
OLIVER WILLIAM B JR & WITHERELL DEIDRE A	411 WALNUT ST #4656	GREEN COVE	FL	32043
OLSHER RICHARD H & LESLEY R	20 GRAND CANYON DR	LOS ALAMOS	NM	87544
OOTHOUDT MICHAEL A & MARY LR	87 MESA VERDE DR	LOS ALAMOS	NM	87544
OPPENHEIMER PLACE CONDO ASSOC INC	1001 OPPENHEIMER DR 410	LOS ALAMOS	NM	87544
ORLER BRUCE E	14 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
ORNDOFF FAMILY TRUST	715 HIGHLAND	HELENA	MT	59601
O'ROURKE PETER J & JANIE P REVOC TRUST	926 CIRCLE DR	LOS ALAMOS	NM	87544
ORTEGA MARK D & KIMBERLY S	112 SIERRA VISTA DR	LOS ALAMOS	NM	87544
OSCHWALD DONALD L A & KATHLEEN TRUST	4930 SANDIA DR	LOS ALAMOS	NM	87544
OSTIC JAMES K & KATHRYN A	24 KAREN CIRCLE	LOS ALAMOS	NM	87544
OVERTON MURIEL A	1297 47TH ST	LOS ALAMOS	NM	87544
OWENS CHARLES T & SAMMI DIANE	115 MONTE REY DR N	LOS ALAMOS	NM	87544
OYER/AMES 2000 TRUST	351 WADSWORTH DRIVE	MAYSVILLE	KY	41056
PACHECO RAYMOND D & MARY LOUISE	1459 MYRTLE ST	LOS ALAMOS	NM	87544
PACIOTTI MICHAEL A	340 POTRILLO DR	LOS ALAMOS	NM	87544
PAINTER JAMES WALTER& ALICE RISHER REV T	958 OTOWI PLACE	LOS ALAMOS	NM	87544
PAN FENG & MIKA HIRAI	51 SHORT DR	LOS ALAMOS	NM	87544
PANAITESCU ALIN D & CISLARU IRINA M	17 GRAND CANYON	LOS ALAMOS	NM	87544
PANTON DON R & SISK SUSAN D	1020 48TH ST	LOS ALAMOS	NM	87544
PARKER A MARGERY	23 TIMBER RIDGE	LOS ALAMOS	NM	87544
PARKER BRADLEY E & KELLY L JOINT LIV TRT	1 KAREN CIRCLE	LOS ALAMOS	NM	87544
PARKER ROBERT & REBECCA	1 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
PARKS STEVEN R & ANNA L	120 LA VISTA DR	LOS ALAMOS	NM	87544
PARTCH JOSEPH T & CAROL J	4709 TRINITY DR A	LOS ALAMOS	NM	87544
PARTRIDGE FAMILY TRUST	141 SAN ILDEFONSO	LOS ALAMOS	NM	87544
PATCHETT JOHN M & RITA L	1209 6TH ST	LOS ALAMOS	NM	87544
PATERNOSTER RICHARD R REVOC TR	4981 TRINITY DR	LOS ALAMOS	NM	87544
PATTERSON BRIAN M & CHRISTY MECHEL-	4 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
PATTILLO JAMES A	979 48TH ST	LOS ALAMOS	NM	87544
PAYNE EDWIN L & SHARON L	505 OPPENHEIMER DR 906	LOS ALAMOS	NM	87544
PEDERSON DUSTIN L & SPENGLER DIANE J	429 ESTANTE WAY	LOS ALAMOS	NM	87544
PEGG KENT J	PO BOX 36	LOS ALAMOS	NM	87544-0036
PELLETTE PHILIP R & MARGOT I	104 MONTE REY DR N	LOS ALAMOS	NM	87544
PENDERGAST PEGGY	149 MANHATTEN LOOP	LOS ALAMOS	NM	87544
PERERA BRINTON C & KERRYA	1154 45TH ST A	LOS ALAMOS	NM	87544
PETER WILLIAM K REVOC TRUST	5710 KINGSWOOD ROAD	BETHESDA	MD	20814
PETERSEN FAMILY REVOCABLE TRUST	47 MANHATTAN LOOP	LOS ALAMOS	NM	87544
PETERSEN MARK R & KIMBERLY D	784 45TH ST A	LOS ALAMOS	NM	87544
PETERSON ROBYN A REVOC TRUST	602 47TH ST A	LOS ALAMOS	NM	87544
PETRANTO JOSEPH J REVOC TRUST	1200 2ND ST	LOS ALAMOS	NM	87544
PETSCHEK MARILYN A	122 PIEDRA LOOP	LOS ALAMOS	NM	87544
PHELPS FAMILY REVOCABLE TRUST	119 PIEDRA LOOP	LOS ALAMOS	NM	87544
PHILLIPS RANDY & CARRIE M	967 NAMBE LOOP	LOS ALAMOS	NM	87544
PIERRE-YVES DOMINIQUE LE BAS	1483 35TH ST	LOS ALAMOS	NM	87544
PILAT JOSEPH & BILBREY MELINDA REV TR	1308 41ST ST	LOS ALAMOS	NM	87544
PIMBLEY GEORGE H JR & PATRICIA MURRAY TR	145 MONTE REY DR S	LOS ALAMOS	NM	87544
PINE, CONDOMINUMS	30 VERDE RIDGE	LOS ALAMOS	NM	87544
PINON, CONDOMINUMS	20 VERDE RIDGE	LOS ALAMOS	NM	87544
PITCHER ERIC J & PATRICIA A	24 BOUQUET LANE	SANTA FE	NM	87501
PITCHKOLAN EDWARD & DEBRA LYNN	904 CIRCLE DR	LOS ALAMOS	NM	87544-2110
PO E LI	26 SHORT DRIVE	LOS ALAMOS	NM	87544
PODLESAK DAVID W & ANN R	138 MONTE REY S	LOS ALAMOS	NM	87544
POLING MICHELE M	917 TEWA LOOP	LOS ALAMOS	NM	87544
POLK JT PROPERTIES LTD	1221 PASEO DE ONATE	ESPANOLA	NM	87532
PONGRATZ MORRIS & CHERYL O	900 CIRCLE DR	LOS ALAMOS	NM	87544
POPE MICHAEL P	966 NAMBE LOOP	LOS ALAMOS	NM	87544
PORTER STEVEN C & MILLER MARLENE	1374 A 40TH ST	LOS ALAMOS	NM	87544
POTOCKI MARK L & TSUGIKO	105 LA SENDA ROAD	LOS ALAMOS	NM	87544
POWELL DENNIS R & MOORE LESLIE M	154 MONTE REY DR S	LOS ALAMOS	NM	87544
PRIMAK BUILDERS INC	1391 A 44TH ST	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
PRIMAK STAN & JOAN	1391 B 44TH ST	LOS ALAMOS	NM	87544
PRIMAK STANLEY & JOAN	1391 44TH ST B	LOS ALAMOS	NM	87544
PRIMAK STANLEY D & JOAN M	1391 B 44TH ST	LOS ALAMOS	NM	87544
PRIME MICHAEL B & WARAPHA S	10 LOS ARBOLES DR	LOS ALAMOS	NM	87544
PRZYBYSKI MARTY L & ANNE L	749 41ST ST	LOS ALAMOS	NM	87544
PURTYMUN KEVIN D & BEVERLY A	1278 41ST ST A	LOS ALAMOS	NM	87544
PYLE JON M P & KRISTEN G	4388 FAIRWAY DR	LOS ALAMOS	NM	87544
QWEST CORPORATION	1801 CALIFORNIA, SUITE 2500	DENVER	CO	80202
R & T CORPORATION	P O BOX 269	LOS ALAMOS	NM	87544
RADOVICH DOUGLAS E & VICKIE L	49 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
RAHN THOMAS A & JULIANNA E. FESSENDEN-	4874 SANDIA DR	LOS ALAMOS	NM	87544
RAMSAY JOHN & BARBARA REVOC LIVING TRUST	6 ERIE LANE	LOS ALAMOS	NM	87544
RAND JOHN L & VIRGINIA L	959 OTOWI PLACE	LOS ALAMOS	NM	87544
RANKEN DOUGLAS M & TERRI A	96 LOMA DEL ESCOLAR	LOS ALAMOS	NM	87544-2524
RATHBONE PATRICIA M	1148 5TH ST	LOS ALAMOS	NM	87544
RATLIFF GILBERT E & HSIEH LINDA	858 45TH ST	LOS ALAMOS	NM	87544
RAUCHFUSS EDWARD H & VERA L	946 SANTA CLARA PL	LOS ALAMOS	NM	87544
READ GARY W & LAURA L REV TRUST	101 LA VISTA DR	LOS ALAMOS	NM	87544
REAL DEAL THEATER LLC	2610 TRINITY DR SUITE 4	LOS ALAMOS	NM	87544
REASS DAVID & SUSAN	53 LA PALOMA	LOS ALAMOS	NM	87544
REDMAN WILLIAM T & SHIRLEY R	1640 16TH ST	LOS ALAMOS	NM	87544
REDMOND WILLIAM T & SHIRLEY R	1640 16TH ST	LOS ALAMOS	NM	87544
REEDY ROBERT	152 MONTE REY DR S	LOS ALAMOS	NM	87544
REEVES AMY BRUMBAUGH	1210 46TH ST	LOS ALAMOS	NM	87544
REEVES FRANK JR & MARGARET	120 CANYON VISTA DR	LOS ALAMOS	NM	87544
REEVES GARY A & CAROL F	474 SEDILLO RD	TIJERAS	NM	87059
REID KEVIN D & SALLAZ RAMEY M	1254 45TH ST	LOS ALAMOS	NM	87544
REILLY DOROTHY J	148 MONTE REY DR S	LOS ALAMOS	NM	87544
REILLY SEAN DOUGLAS	31 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
REIMUS PAUL W & MARY ANN H	117 MONTE REY DR N	LOS ALAMOS	NM	87544
REINOVSKY FAMILY TRUST	77 LA PALOMA DR	LOS ALAMOS	NM	87544
REMELIUS DENNIS K	107 YOSEMITE DR	LOS ALAMOS	NM	87544
RENEAU STEVEN L & MARGARET R REVOC TRUST	12 KAREN CIRCLE	LOS ALAMOS	NM	87544
RENSE CHARLES E C	P O BOX 337	LOS ALAMOS	NM	87544
RESNICK IRVING GARY & MIDGLEY LEONORA P	314 POTRILLO DR	LOS ALAMOS	NM	87544
RETSHOP LLC	3253 B WALNUT ST	LOS ALAMOS	NM	87544
REYNOLDS RICHARD J & WILLIAMS BERNICE	15 KAREN CIRCLE	LOS ALAMOS	NM	87544
RICHARDSON JOSEPH B & DONNA H	1268 46TH ST	LOS ALAMOS	NM	87544
RICHERSON HOWARD O & CARMEN	4469 FAIRWAY DR B	LOS ALAMOS	NM	87544
RICHERSON HOWARD O & CARMEN E	4469 B FAIRWAY	LOS ALAMOS	NM	87544
RICHINS MICHAEL W & M JOYCE	4727 TRINITY DR	LOS ALAMOS	NM	87544
RICKEL DWIGHT G	1205 6TH ST	LOS ALAMOS	NM	87544
RIDGE PARK LUXURY CONDOMINIUMS	505 OPPENHEIMER DR	LOS ALAMOS	NM	87544
RIDGEVIEW VETERINARY HOSPITAL LLC	194 EAST ROAD	LOS ALAMOS	NM	87544
RIVENBURGH REID & TAPIA ROXANNE	71 LOMA VISTA DR	LOS ALAMOS	NM	87544
RIVERA MANUEL E	3976 TRINITY DR A	LOS ALAMOS	NM	87544
RIVERA PHILLIP D & DEBORAH N REVOC TRUST	4438 FAIRWAY DR	LOS ALAMOS	NM	87544
ROBACK ROBERT C & REBECCA J COEL-	4900 SANDIA DR	LOS ALAMOS	NM	87544-1850
ROBERTSON JOHNNY D & VALVERDE ANNE	47 TIMBER RIDGE	LOS ALAMOS	NM	87544
ROBINSON MARK A & CARLA S	45 GRAND CANYON DR	LOS ALAMOS	NM	87544
ROCKSMITH PROPERTIES LLC	170 EAST GATE DR	LOS ALAMOS	NM	87544
RODGERS WILLIAM J & RISLEY PAMELA	48 LA PALOMA	LOS ALAMOS	NM	87544
RODRIGUEZ AMADA G (MOLLIE) GARCIA	1452 OAKWOOD LOOP	LOS ALAMOS	NM	87544
ROKOP KATHLEEN S	961 OTAWI PLACE	LOS ALAMOS	NM	87544
ROMERO JEFFREY M & RENEE M	4077 TRINITY DR	LOS ALAMOS	NM	87544
ROSE DONALD G REVOCABLE TRUST	301GRIFFIN ST	SANTA FE	NM	87501
ROSEN TERRY LEE & HARDY AMBRY MICHELLE	850 WEST 8TH AVENUE DR	BROOMFIELD	CO	80020
ROSHNI VENTURES LLC	646 CERRILLOS ROAD	SANTA FE	NM	87501
ROSHNI VENTURES LLC	646 CERRILLOS ROAD	SANTA FE	NM	87501
ROSS INEZ A & ROSS LYNETTE	614 47TH ST	LOS ALAMOS	NM	87544
ROTH JAMES ROBERT & CHERYL C	22 GRAND CANYON DR	LOS ALAMOS	NM	87544
ROTHROCK RICHARD B & LISA G	102 MONTE REY DR N	LOS ALAMOS	NM	87544
ROYBAL RONALD J & LOUELLA C REV TRUST	981 NAMBE LOOP	LOS ALAMOS	NM	87544
RUDY CLIFFORD R & MICHELLE M	916 CIRCLE DR	LOS ALAMOS	NM	87544
RUSS NIDA E	4911 TRINITY DR	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
RUSSELL JAMES B & ANNETTE E	678 44TH ST	LOS ALAMOS	NM	87544
RUSSELL ROBBY D	7 KAREN CIRCLE	LOS ALAMOS	NM	87544
S & J DEVELOPMENT LLC	940 LOS PUEBLOS	LOS ALAMOS	NM	87544
S & J DEVELOPMENT LLC	90 LOS PUEBLOS	LOS ALAMOS	NM	87544
SADLER COLLIN P & SHARON E	1449 OAKWOOD LOOP	LOS ALAMOS	NM	87544
SAENZ JASON	46 SHORT DR	LOS ALAMOS	NM	87544
SALAZ YVONNE MARIE	761 43RD ST	LOS ALAMOS	NM	87544
SALGADO PETER G	109 MONTE REY DR N	LOS ALAMOS	NM	87544
SALIMI BEHZAD	112 MONTE REY DR N	LOS ALAMOS	NM	87544
SALZMAN GARY C & JOAN C	108 SIERRA VISTA DR	LOS ALAMOS	NM	87544
SALZMAN SONJA L	11 KAREN CIRCLE	LOS ALAMOS	NM	87544
SANCHEZ THOMAS	508 KIVA ST	LOS ALAMOS	NM	87544
SANDER ROBERT K & MULKA LINDA	27609 RANCHO SAWATCH	BUENA VISTA	CO	81211-9509
SANDERS ROBERT S & CLAIRE K	1 CHEROKEE LANE	LOS ALAMOS	NM	87544
SANDERS STEPHEN & FRANCINE	22 CAMINO ESPEJO	SANTA FE	NM	87507
SANDFORD MAXWELL II & TALLEY J	160 MONTE REY DR S	LOS ALAMOS	NM	87544
SANDFORD T A & DEMUTH R B	1277 47TH ST	LOS ALAMOS	NM	87544
SANDOVAL ANTHONY B & MARY D REV TR	4967 TRINITY DR	LOS ALAMOS	NM	87544
SANDOVAL MARK S & PATRICIA C	1378 41ST ST	LOS ALAMOS	NM	87544
SANDOVAL SECUNDINO	4461 TRINITY DR	LOS ALAMOS	NM	87544
SANTA FE NATIONAL FOREST	PO BOX 1689	SANTA FE	NM	87505
SANTORO LOUIS S & PATRICIA A REV TRUST	914 CIRCLE DR	LOS ALAMOS	NM	87544
SAPIR FAMILY TRUST	698 46TH ST	LOS ALAMOS	NM	87544
SAUER JEREMY ALLEN & SELENA Z	728 42ND ST	LOS ALAMOS	NM	87544
SCAMMON RICHARD J	25 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
SCANNAPIECO ANTHONY J	4080 WEST ROAD	LOS ALAMOS	NM	87544
SCANNAPIECO BEATRIZ C REVOC TRUST	2252 ESPEJO PL	SANTA FE	NM	87505
SCHALLER EDWARD & CATHLEEN	3363 ORANGE ST	LOS ALAMOS	NM	87544
SCHAUMBERG JOSEPH B	3745 TRINITY DR	LOS ALAMOS	NM	87544
SCHEMBRI PHILIP E & HEIDI M	8 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
SCHICK MICHAEL O & NANCY K	111 LA SENDA RD	LOS ALAMOS	NM	87544-3819
SCHILLING SCOTT A & LORI D	1294 46TH ST A	LOS ALAMOS	NM	87544
SCHMIDT JOSEPH H & ROIG LISA C	1212 9TH ST	LOS ALAMOS	NM	87544
SCHMITT FRANK W	110 W LLANO DR	HOBBS	NM	88240-3914
SCHMITT MARK J & PAULA A REVOC TRUST	4851 TRINITY DR	LOS ALAMOS	NM	87544
SCHNEDLER DAVE & MARY ANN	1340 LA MIRADA CIRCLE	LOS ALAMOS	NM	87544
SCHNEDLER DAVE A & MARY ANN	1340 LA MIRADA CIRCLE	LOS ALAMOS	NM	87544
SCHOLZ JOACHIM J & RACHEL A	3 DAKOTA LANE	LOS ALAMOS	NM	87544
SCHOLZ MATTHEW B & JEANNA M	687 45TH ST	LOS ALAMOS	NM	87544
SCHREIBER STEPHEN B & ARLEEN	2 KAREN CIRCLE	LOS ALAMOS	NM	87544
SCHROEDER/SMITH LIVING TRUST	1274 46TH ST	LOS ALAMOS	NM	87544
SCHULTE LANA R	745 44TH ST	LOS ALAMOS	NM	87544
SCHWENGEL GERALD G & ROXANN	572 KIVA ST	LOS ALAMOS	NM	87544
SCOGGINS WAYNE A & ROBIN L	15 LOS ARBOLES DR	LOS ALAMOS	NM	87544
SCOTT PAMELA & ADAM	4763 TRINITY DR	LOS ALAMOS	NM	87544
SEDLACEK WM A	P.O. BOX 1040	DUBOIS	WY	82513
SEMELSBERGER TROY A & KATHY A	4165 TRINITY DR B	LOS ALAMOS	NM	87544
SHAFER BARRY P	113 PIEDRA LOOP	LOS ALAMOS	NM	87544
SHALEK FAMILY REVOC TRUST	901 CIRCLE DR	LOS ALAMOS	NM	87544
SHANNON CORPORATION INC	P O BOX 269	LOS ALAMOS	NM	87544
SHAO XUAN-MIN & YAN MEILIN REV TR	1327 SAN ILDEFONSO RD	LOS ALAMOS	NM	87544
SHAW STEVEN G	4321 FAIRWAY DR A	LOS ALAMOS	NM	87544
SHAW STEVEN R & ROBERTA J REV TR	4920 SANDIA DR	LOS ALAMOS	NM	87544
SHEPARD MARLAN L & HELEN	106 MONTE REY DR N	LOS ALAMOS	NM	87544
SHERMAN RUTH J	1207 7TH ST	LOS ALAMOS	NM	87544
SHERWOOD JANE C	43 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
SHIMADA TSUTOMU & YUIKO	140 MONTE REY DR S	LOS ALAMOS	NM	87544
SHIN LISA & DAVIS HEATH R	637 47TH ST	LOS ALAMOS	NM	87544
SHORT DYANNE	3 PIEDRA COURT	LOS ALAMOS	NM	87544
SHORT KERMIT M	60 LA PALOMA DR	LOS ALAMOS	NM	87544
SHORT MARK & AUDRA J	117 PIEDRA LOOP	LOS ALAMOS	NM	87544
SHULL CHARLES A & BILLIE B REV TRUST	472 OPPENHEIMER DR	LOS ALAMOS	NM	87544
SHURTER ROGER P	4112 FAIRWAY DR	LOS ALAMOS	NM	87544
SIBBITT RANDY R& DEBORAH & SIBBITT TINA	702 MADISON	HELENA	MT	59601
SIBBITT WILMER L JR & RANDY R & JOHN H	3509 PLANNETT NE	ALBUQUERQUE	NM	87106-1666

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
SIMI OLIVER R REVOC TRUST	943 SANTA CLARA PL	LOS ALAMOS	NM	87544
SIMS FAMILY REVOCABLE TRUST	114 SIERRA VISTA DR	LOS ALAMOS	NM	87544
SINGLETON JOHN & CLAIRE M.W.	4377 FAIRWAY DR	LOS ALAMOS	NM	87544
SIRANOSIAN ANTRANIK ANTONIO & JENNIFER N	47 CANYON VIEW DR	LOS ALAMOS	NM	87544
SKOUG RUTH & EBEY PETER	758 47TH ST	LOS ALAMOS	NM	87544
SLATTERY WAYNE L & PHYLLIS C	3267 ORANGE ST B	LOS ALAMOS	NM	87544
SLATTERY WAYNE L & PHYLLIS C REV LIV TR	3267 ORANGE ST A	LOS ALAMOS	NM	87544
SMITH BARHAM W & MARILYN K	116 PIEDRA LOOP	LOS ALAMOS	NM	87544
SMITH CHROSTOPHER H & NATALIE K	980 NAMBE LOOP	LOS ALAMOS	NM	87544
SMITH DARRYL L	103 LA SENDA ROAD	LOS ALAMOS	NM	87544
SMITH HEATHER L	68 LA PALOMA DR	LOS ALAMOS	NM	87544
SMITH J ALLYN & ODERMANN JEANNE M	1030 HAGGARD DR	CLARKSVILLE	TN	37043-5643
SMITH JAMES P & WATTS ELIZABETH K	685 42ND ST	LOS ALAMOS	NM	87544
SMITH LLOYD E & JOYCE MARIE REV TR	24 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
SMITH MICHAEL L	910 CIRCLE DR	LOS ALAMOS	NM	87544-2110
SMITH PAUL D & FREDRICA E	P O BOX 321	LOS ALAMOS	NM	87544
SMITH UNA & SZINGER JAMES JOSEPH	72 MANHATTAN LOOP	LOS ALAMOS	NM	87544
SMITHS FOOD & DRUG CENTERS INC	1014 VINE ST	CINCINNATI	OH	45202
SNELL CHARLES M	436 ESTANTE WAY	LOS ALAMOS	NM	87544
SNIDER GARRICK W	931 TEWA LOOP	LOS ALAMOS	NM	87544
SODERQUIST PETER R & VICKI C	25 LOS ARBOLES DR	LOS ALAMOS	NM	87544
SOENKE EDWARD H & GAIL M	PO BOX 100	LOS ALAMOS	NM	87544
SOENKE EDWARD H & GAIL M(EHS ENTERPRISES	PO BOX 100	LOS ALAMOS	NM	87544
SOHN HOON	505 OPPENHIEMER DR 101	LOS ALAMOS	NM	87544
SONDREAL GERALD & ALMA M	505 OPPENHEIMER DR 513	LOS ALAMOS	NM	87544
SPENCE ANDREA E	1154 45TH ST B	LOS ALAMOS	NM	87544
SPRINKLE JAMES K JR & JENIFER JONES	11326 25TH AVE NE, APT D	SEATTLE	WA	98125-6673
SRIVILLIPUTHUR SRINIVASAN G & SHEELA M	2100 HOLLYHILL LN	DENTON	TX	76205-8202
STACY HOWARD L & ESTEFANITA	3494 PUEBLO DR	LOS ALAMOS	NM	87544
STAFURIK JOHN W	902 CIRCLE DR	LOS ALAMOS	NM	87544
STAM JOHN G JR & VERLENE J	1160 MYRTLE ST	LOS ALAMOS	NM	87544-3130
STAPLES WENDY ANN REV TRUST	3071 NICKEL ST	LOS ALAMOS	NM	87544
STAPP JAMES & SUZANNE TRUST	93 MESA VERDE DR	LOS ALAMOS	NM	87544
STARK WALTER A JR	918 CIRCLE DR	LOS ALAMOS	NM	87544
STARKENBURG SHAWN R & DIANE A	4138 TRINITY DR A	LOS ALAMOS	NM	87544
STARKEY PATRICIA L	110 PIEDRA LOOP	LOS ALAMOS	NM	87544
STARLING HELEN JOHNANN REV TR	55 GRAND CANYON DR	LOS ALAMOS	NM	87544
STATON CAROL C	4417 FAIRWAY DR	LOS ALAMOS	NM	87544
STAUDHAMMER KARL P & JOSEFINA	419 ESTANTE WAY	LOS ALAMOS	NM	87544
STEARNS FRANCES TRUST	908 CIRCLE DR	LOS ALAMOS	NM	87544
STEELE DANIEL G	11 SUNSET TERRACE	HALF MOON BAY	CA	94019
STEIN STUART C	1354 47TH ST	LOS ALAMOS	NM	87544
STEINBERG JOHN T & CATHERINE F REVOC TRUST	1341 44TH ST	LOS ALAMOS	NM	87544
STEINHAUS KURT A & JO BETH	903 CIRCLE DR	LOS ALAMOS	NM	87544
STELZER JAMES E	3055 TRINITY VILLAGE	LOS ALAMOS	NM	87544
STEPHENS CHRISTOPHER J & CAREN A	1344 44TH ST	LOS ALAMOS	NM	87544
STETTLER MATTHEW W & ANNE M	4621 TRINITY DR	LOS ALAMOS	NM	87544
STEWARD THOMAS S & CAROLE A	62 GRAND CANYON DR	LOS ALAMOS	NM	87544
STEWART CAROLYN L	673 46TH ST	LOS ALAMOS	NM	87544
STEWART ELIZABETH	111 PIEDRA LOOP	LOS ALAMOS	NM	87544
STEWART MICHAEL A	4053 TRINITY DR B	LOS ALAMOS	NM	87544
STILLMAN DANNY B & RUTH	425 ESTANTE WAY	LOS ALAMOS	NM	87544
STINE JAMES R & GABRIELA	144 MONTE REY DR S	LOS ALAMOS	NM	87544
STOCKTON THOMAS B JR & MARGIE	110 LA VISTA DR	LOS ALAMOS	NM	87544
STODDARD STEPHEN D & BARBARA L	4557 TRINITY DR	LOS ALAMOS	NM	87544
STOKES DEAVEN HELEN K & STOKES WILLIAM N	1204 9TH ST	LOS ALAMOS	NM	87544
STORMS STEVEN A & DEBORAH J	67 LA PALOMA DR	LOS ALAMOS	NM	87544
STOUT MICHAEL G % MANUEL LOVATO	P.O. BOX 1702	ESPANOLA	NM	87532
STRAATE DAVID E & HEINS DANIELLE E	59 VALLE VISTA DR	LOS ALAMOS	NM	87544
STRADLING GARY L & REBECCA G	123 CANYON VISTA DR	LOS ALAMOS	NM	87544
STRATTON THOMAS F & ELAINE	315 POTRILLO DR	LOS ALAMOS	NM	87544
STRIETELMEIER BETTY A TRUST	13 LEBANON ARC	LAS CRUCES	NM	88005-3749
STRINGFIELD RANDAL W & LISA P	4990 TRINITY DR	LOS ALAMOS	NM	87544
STRINGFIELD RAY M	950 SANTA CLARA PL	LOS ALAMOS	NM	87544
STUBBS KENNETH J & LORETTA B	983 NAMBE LOOP	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
STUMP MICHELLE S	P.O. BOX 115	LOS ALAMOS	NM	87544
STUP WANDA	505 OPPENHEIMER DR 602	LOS ALAMOS	NM	87544
SULLIVAN JOHN & MOHINI W	333 POTRILLO DR	LOS ALAMOS	NM	87544
SUMMERS RICHARD & DAWN	PO BOX 24	LOS ALAMOS	NM	87544
SUMMERS RICHARD DAVID & DAWN MICHELLE	125 LA VISTA DR	LOS ALAMOS	NM	87544
SUTPHIN IRMA L	940 TEWA LOOP	LOS ALAMOS	NM	87544
SWADENER KAY S	754 43RD ST	LOS ALAMOS	NM	87544
SWANSON AUGUST A & JANE LIN	1199 45TH ST	LOS ALAMOS	NM	87544
SWART PIETER J & ALETTA H	146 MONTE REY DR S	LOS ALAMOS	NM	87544
SWAVELY DAVID K & COLLEEN A	151 MONTE REY DR S	LOS ALAMOS	NM	87544
SWIFT ROBERT P & MINETTE M TRUST	438 ESTANTE WAY	LOS ALAMOS	NM	87544
SYDORIAK FAMILY TRUST	909 CIRCLE DR	LOS ALAMOS	NM	87544
SYDORIAK STEPHANIE	909 CIRCLE DRIVE	LOS ALAMOS	NM	87544-2431
SYLVIA STEVEN M	101 LA SENDA ROAD	LOS ALAMOS	NM	87544
SZPOTKO-GREENE JANINA M	505 OPPENHEIMER DR 1305	LOS ALAMOS	NM	87544
TABOR CAROLINA E	941 TEWA LOOP	LOS ALAMOS	NM	87544
TALLARICO ANTONIA	1075 NUGGET ST	LOS ALAMOS	NM	87544
TALLEY BRENT M & NANCY A	823 47TH ST	LOS ALAMOS	NM	87544
TAMASHIRO MICHAEL R & KATHLEEN A MUSSACK-	121 CANYON VISTA ST	LOS ALAMOS	NM	87544
TAUXE JOHN & KATIE	550 KIVA ST	LOS ALAMOS	NM	87544
TAYLOR CRAIG M V & LINDA J	359 CHERYL AVE	LOS ALAMOS	NM	87544-3637
TAYLOR JAMES F & FRANCES A	P O BOX 126	LOS ALAMOS	NM	87544
TAYLOR JESSE H & SHARI K	1329 47TH ST	LOS ALAMOS	NM	87544
TAYLOR JOHN W	341 POTRILLO DR	LOS ALAMOS	NM	87544
TAYLOR PROPERTIES LLC	PO BOX 651	LOS ALAMOS	NM	87544
TAYLOR STUART & LAURA	1369 35TH ST	LOS ALAMOS	NM	87544
TEEL VICTORIA LEE	28 TIMBER RIDGE ST.	LOS ALAMOS	NM	87544-2317
TEMPLE BRIAN A & KIMBERLY	50 LA PALOMA DR	LOS ALAMOS	NM	87544
TERRICH PARTNERSHIP	P.O. BOX 250	LOS ALAMOS	NM	87544
TESSMAR NANCY D	112 YOSEMITE DR	LOS ALAMOS	NM	87544
THACKER DOUGLAS J	45 LA PALOMA	LOS ALAMOS	NM	87544
THAYER DOUGLAS R	338 POTRILLO DR	LOS ALAMOS	NM	87544
THAYER MARILYN M	505 OPPENHEIMER DR 810	LOS ALAMOS	NM	87544
THAYER NINA N	919 CIRCLE DR	LOS ALAMOS	NM	87544
THE CHRISTIAN CHURCH OF LA	92 EAST ROAD	LOS ALAMOS	NM	87544
THE UNITED CHURCH OF LA	P O BOX 1286	LOS ALAMOS	NM	87544
THERRIEN SUSAN MELISSA	808 47TH ST	LOS ALAMOS	NM	87544
THOMAS ANGELA A & KARL	132 MONTE REY DR S	LOS ALAMOS	NM	87544
THOMPSON RICHARD T JR & DARLA GRAFF	4295 TRINITY DR	LOS ALAMOS	NM	87544
THOMPSON THOMAS K	118 YOSEMITE DR	LOS ALAMOS	NM	87544
THOMSEN DAVIS R & ROBERT J & MICHELLE F	1335 41ST ST	LOS ALAMOS	NM	87544
THORNE JAY DOUGLAS & LORI D	4829 TRINITY DR	LOS ALAMOS	NM	87544
THORP DONALD T & JEANETTE S METZGER-	10 KAREN CIRCLE	LOS ALAMOS	NM	87544
THRASHER JAMES THOMAS REVOC TRUST	505 OPPENHEIMER DR 1104	LOS ALAMOS	NM	87544
THURGOOD BRAD L & MELISSA S	605 47TH ST	LOS ALAMOS	NM	87544
THURSTON RODNEY S & DIANE P	5 DAKOTA LANE	LOS ALAMOS	NM	87544
THWAITS JAMES D & KATHRYN S	33 SHORT DR	LOS ALAMOS	NM	87544
TIMBER RIDGE PROPERTY OWNERS	P O BOX 30	LOS ALAMOS	NM	87544
TINGEY JAMES L	46 LOS ARBOLES DR	LOS ALAMOS	NM	87544
TINKLE GRETCHEN FAITH PRASHER	7720 BAXTER DR	BELLEVILLE	IL	6223-2663
TIREY ROBERT W & KATHLEEN M	73 LOMA VISTA DR	LOS ALAMOS	NM	87544
TISINGER FAMILY TRUST	3 HOPI LANE	LOS ALAMOS	NM	87544
TONELLI ROBERT & LESLIE	1085 NUGGET ST	LOS ALAMOS	NM	87544
TORRES FAMILY TRUST	120 YOSEMITE DR	LOS ALAMOS	NM	87544
TOWERS MARK & LYNDA FAMILY TRUST	2405 MOURNING WARBLER AVE	N LAS VEGAS	NV	89084-3753
TRAPP TURNER J & WEBB MARY DIANA	960 BAISLEY TRAIL	THE VILLAGES	FL	32162
TRAVELER HOLDING LLC	124 MONTE VISTA DR	LOS ALAMOS	NM	87544
TRAVIS ROBERT D & ALICE A	88 MESA VERDE DR	LOS ALAMOS	NM	87544
TREASTER BYRON L/GRAY JANE L	P O BOX 9570	SANTA FE	NM	87504-9570
TRES CASITAS LLC	PO BOX 1372	LOS ALAMOS	NM	87544
TRES CASITAS LLC	PO BOX 1372	LOS ALAMOS	NM	87544
TRINITY GROUP HOLDINGS LLC	3491 TRINITY DR	LOS ALAMOS	NM	87544
TRINITY MIDTOWN LLC	P.O. BOX 6786	SANTA FE	NM	87502
TRINITY ON THE HILL PARISH	3900 TRINITY DR	LOS ALAMOS	NM	87544
TRINTY VILLAGE CONDOMINUMS	3055 TRINITY DR	LOS ALAMSO	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
TRIPLETT LAURIE A & RICHARD	1217 45TH ST	LOS ALAMOS	NM	87544
TRIPP JUSTIN L & MEGAN	717 44TH ST	LOS ALAMOS	NM	87544
TRUJILLO EPIFANIO & EILEEN	79 LOMA VISTA DR	LOS ALAMOS	NM	87544
TRUJILLO GENEVA	3717 TRINITY DR	LOS ALAMOS	NM	87544
TRUJILLO RD & EJ REVOC TRUST	4234 FAIRWAY DR A	LOS ALAMOS	NM	87544
TRUJILLO ROBERT & DEBRA L	505 OPPENHEIMER DR 605	LOS ALAMOS	NM	87544
TRUJILLO VICENTE J & JENNIFER R VENTURA-	25 KAREN CIRCLE	LOS ALAMOS	NM	87544
TRUST H OF THE FARRELL REVOCABLE TRUST	7 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
TRYBOSKI LAURA JANE	PO BOX 2103	BRISBANE	CA	94005-2103
TRYBOSKI LAURA JANE	PO BOX 2103	BRISBANE	CA	94005-2103
TURNER BROOKE D & THOMAS P REV LI TRUST	14 KAREN CIRCLE	LOS ALAMOS	NM	87544
TURNER CAMERON J	2010 WASHINGTON CIRCLE	GOLDEN	CO	80401
TURNER ROBERT W & VIRGINIA F REVOC TRUS	301 GRIFFIN ST	SANTA FE	NM	87501
UHER JOSEPH L & BARBARA R	1006 S INDIAN BAND DR	PUEBLO WEST	CO	81007
ULIBARRI ERNEST L	61 VALLE VISTA DR	LOS ALAMOS	NM	87544
UNIVERSAL PROPERTIES	4395 FAIRWAY DR	LOS ALAMOS	NM	87544
US POST OFFICE DEPARTMENT	199 CENTRAL AVE	LOS ALAMOS	NM	87544
VALICENTI RAYMOND A & MONA N	505 OPPENHEIMER DR 903	LOS ALAMOS	NM	87544
VAN DE WATER RICHARD & MONICA	110 SIERRA VISTA DR	LOS ALAMOS	NM	87544
VAN LYSSEL R M INC	2591 TRINITY DR	LOS ALAMOS	NM	87544
VAN LYSSEL R M INC	2591 TRINITY DR	LOS ALAMOS	NM	87544
VAN PELT CRAIG E & PENNY K	106 LA SENDA ROAD	LOS ALAMOS	NM	87544
VAN RIPER KENNETH A	P O BOX 4729	LOS ALAMOS	NM	87544
VAN SLOUN CAMILLA P TRUST	10 LOMA VISTA DR	LOS ALAMOS	NM	87544
VAN VESSEM ALAN & CAROL	775 47TH ST	LOS ALAMOS	NM	87544
VANLYSSEL RON	2591 TRINITY DR	LOS ALAMOS	NM	87544
VEESER LYNN R & VESSTE BETSEY A	57 GRAND CANYON DR	LOS ALAMOS	NM	87544
VFW CLUB	P O BOX 388	LOS ALAMOS	NM	87544
VIGIL KEVIN J & STEPHANIE R	63 LA PALOMA	LOS ALAMOS	NM	87544
VISEL ROBERT A	1336 41ST ST	LOS ALAMOS	NM	87544
VISSCHER WILLIAM M & JEAN D REV TRUST	907 CIRCLE DR	LOS ALAMOS	NM	87544
VIVES EDWARDT & CRAWFORD PAULA J	16 GRAND CANYON	LOS ALAMOS	NM	87544
VON NIEDA GEORGE E & RUTH ANN	14 LOMA VISTA DR	LOS ALAMOS	NM	87544
VOSBURGH DAVID D & LINDA	3 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
VRUGT JASPER ALEXANDER	25 CANYON VIEW DR	LOS ALAMOS	NM	87544
WAGNER GREGORY L	977 49TH ST	LOS ALAMOS	NM	87544
WALLER STEVEN R	147 MONTE REY DR S	LOS ALAMOS	NM	87544
WALSH ROBERT & KATHLEEN C	1165 41ST ST	LOS ALAMOS	NM	87544
WALTERS MICHAEL D & SANDRA K CHRISTENSEN	1210 7TH ST	LOS ALAMOS	NM	87544
WALTHERS LIVING TRUST	44 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
WALTON RODDY B	141 MONTE REY DR S	LOS ALAMOS	NM	87544
WANG TAI-SEN/CHEN LING-LING	1772 CAMINO UVA	LOS ALAMOS	NM	87544
WANGEN LAWRENCE E & JUDITH M	404 3RD AVE SOUTH A102	EDMONDS	WA	98020
WARD RALPH C & EVELYN REV TRUS	324 POTRILLO DR	LOS ALAMOS	NM	87544
WARNER BENJAMIN & MCBEE ELLE	903 TEWA LOOP	LOS ALAMOS	NM	87544
WARNER BENJAMIN PETER & MCBEE ELLEN K	903 TEWA LOOP	LOS ALAMOS	NM	87544
WASHBURN GERRY C & AUDREY N	1147 4TH ST	LOS ALAMOS	NM	87544
WATERBURY JOHN A & SUE	908 TEWA LOOP	LOS ALAMOS	NM	87544
WATKINS BRIAN L & CAROLINE J REVOC TRUST	625 47TH ST	LOS ALAMOS	NM	87544
WATKINS RICHARD S & DEBORAH J	27 CANYON VIEW DR	LOS ALAMOS	NM	87544
WEATHERBIE DAVID L & SUSAN M	825 46TH ST	LOS ALAMOS	NM	87544
WEAVER ROBERT P & LESLIE E REVOC TRUST	20 KAREN CIRCLE	LOS ALAMOS	NM	87544
WEBB CLINTON B & SHIRLEY A	13 KAREN CIRCLE	LOS ALAMOS	NM	87544
WEBER FAMILY REVOC TRUST	1303 46TH ST A	LOS ALAMOS	NM	87544
WEBSTER ROBERT B & ROXANNE M	337 POTRILLO DR	LOS ALAMOS	NM	87544
WEINACHT DANIEL J	505 OPPENHEIMER DR 1304	LOS ALAMOS	NM	87544
WEINMAN JIMMY S & KATHY A	795 RIM ROAD	LOS ALAMOS	NM	87544
WEINMAN JIMMY S & KATHY A	795 RIM ROAD	LOS ALAMOS	NM	87544
WEINTRAUB FAMILY TRUST	PO BOX 27712	ALBUQUERQUE	NM	87125-7712
WELBORN NANCY H	4032 TRINITY DR	LOS ALAMOS	NM	87544
WENDROFF BURTON & KJELLMAN S	793 45TH ST	LOS ALAMOS	NM	87544
WENTZ KIP G & LIA C	3 KAREN CIRCLE	LOS ALAMOS	NM	87544
WESTLEY DARIN T & CATHY JOY REV TRUST	876 43RD ST	LOS ALAMOS	NM	87544
WHICKER JEFFREY J & PATRICIA K	844 43RD ST A	LOS ALAMOS	NM	87544
WHITCOMB MARK A	900 TEWA LOOP	LOS ALAMOS	NM	87544

PROPERTY OWNER NAME	ADDRESS	CITY	STATE	ZIPCODE
WHITE ROCK BAPTIST CHURCH	80 LA PALOMA DR	LOS ALAMOS	NM	87544
WHITE STEPHEN S & BAUCOM PATTIE C	1220 46TH ST	LOS ALAMOS	NM	87544
WHITTAKER MARILYN L	116 MONTE VISTA DR	LOS ALAMOS	NM	87544
WHYTE KENT & HELENA & MOZDEN	505 OPPENHEIMER DR 504	LOS ALAMOS	NM	87544
WIENS KYLE C & JULIE A	1116 PINNACLE VIEW DR NE	ALBUQUERQUE	NM	87112
WILDE BERNHARD H & PATRICIA H	1338 47TH ST	LOS ALAMOS	NM	87544
WILDS WILLIAM A	505 OPPENHEIMER DR 514	LOS ALAMOS	NM	87544
WILHELM RICHARD C & MAURA T	1402 35TH ST	LOS ALAMOS	NM	87544
WILKE MARK D & DIANE M REVOC TRUST	940 49TH ST A	LOS ALAMOS	NM	87544
WILLIAMS GARETT W & STEPHANIE N REVOC TRUST	994 NAMBE PLACE	LOS ALAMOS	NM	87544
WILLIAMS JERRY D	1 DAKOTA LANE	LOS ALAMOS	NM	87544
WILLIAMS ROBERT A & BUCKINGHAM	1063 48TH ST	LOS ALAMOS	NM	87544
WILLIAMSON RUTH S	917 CIRCLE DR	LOS ALAMOS	NM	87544
WILLMS WILDA J	1201 2ND ST	LOS ALAMOS	NM	87544
WILSON DORA	952 SANTA CLARA PL	LOS ALAMOS	NM	87544
WILSON DOROTHY B REVOC TRUST	157 MONTE REY DR S	LOS ALAMOS	NM	87544
WILSON FAMILY TRUST	676 47TH ST	LOS ALAMOS	NM	87544
WILSON KENNETH J & MARJORIE	920 CIRCLE DR	LOS ALAMOS	NM	87544
WILSON MAHLON S & THERESA A	85 MESA VERDE DR	LOS ALAMOS	NM	87544
WILSON SANDRA E	674 45TH ST	LOS ALAMOS	NM	87544
WINGATE MEGHAN	1345 44TH ST	LOS ALAMOS	NM	87544
WINKEL ROBERT G & CREEK KATHRYN L	913 TEWA LOOP	LOS ALAMOS	NM	87544
WINKLER KARL-HEINZ A & ELKE	162 MONTE REY DR S	LOS ALAMOS	NM	87544
WISEHART SHANE K & KIMBERLY D	35 BONNIE VIEW DR	LOS ALAMOS	NM	87544
WISMER MICHAEL E & LISA J	13 TIMBER RIDGE RD	LOS ALAMOS	NM	87544
WOHLETZ KENNETH & ANN BARKER	4 KAREN CIRCLE	LOS ALAMOS	NM	87544
WOOD C PHILIP & DEBORAH M FAMILY TRUST	248 RIO BRAVO DR	LOS ALAMOS	NM	87544
WOODWELL GLENN A & JOSEPHINE	4220 TRINITY DR	LOS ALAMOS	NM	87544
WOOLSEY PAUL A & MCHUGH KAREN J	33 GRAND CANYON	LOS ALAMOS	NM	87544
WURDEN GLEN A & NANCY J	410 ESTANTE WAY	LOS ALAMOS	NM	87544
WYMAN MICHAEL & SONDRA	746 41ST ST	LOS ALAMOS	NM	87544
XIE GANG & HSU HUI-WEN	37 SHORT DR	LOS ALAMOS	NM	87544
YANG ELENA A LIVING TRUST	49 GRAND CANYON DR	LOS ALAMOS	NM	87544
YEAMANS D ANDREW & BARBARA H LIVING TR	404 ESTANTE WAY	LOS ALAMOS	NM	87544
YEAMANS LIVING TRUST	404 ESTANTE WAY	LOS ALAMOS	NM	87544
YORK CLAUDIA V	4341 TRINITY DR B	LOS ALAMOS	NM	87544
YORK DERALD R & HERON REVA L	19 GRAND CANYON DR	LOS ALAMOS	NM	87544
YORK MARVIN F	4422 FAIRWAY DR	LOS ALAMOS	NM	87544
YORK SHARON J	104 LA SENDA ROAD	LOS ALAMOS	NM	87544
YOUNG DANIEL L & KAREN ANN REVOC AB TRUS	6 KAREN CIRCLE	LOS ALAMOS	NM	87544
YOUNG FAMILY REVOCABLE TRUST	4 CREE LANE	LOS ALAMOS	NM	87544
ZAELKE TRUST	56 VALLE VISTA DR	LOS ALAMOS	NM	87544
ZAKAR GEORGE S & GLORIA E REV TRUST	17 KAREN CIRCLE	LOS ALAMOS	NM	87544
ZEYTUN AHMET	505 OPPENHEIMER DR 415	LOS ALAMOS	NM	87544
ZHAO XINXIN & SHAOPING CHU	191 PIEDRA LOOP	LOS ALAMOS	NM	87544
ZIA CREDIT UNION	P O BOX 490	LOS ALAMOS	NM	87544
ZINN JOHN & RENATE M	249 RIO BRAVO DR	LOS ALAMOS	NM	87544
ZIRKLE REID E & JANET C	116 LA VISTA DR	LOS ALAMOS	NM	87544
ZOU NAN D & YING XIONG	120 MONTE VISTA DR	LOS ALAMOS	NM	87544
ZOU QISU & HOU SHULING	78 MESA VERDE DR	LOS ALAMOS	NM	87544

ENCLOSURE 5

Bottom portion of invoice and a $75.00 check for the poster fee

ENV-RCRA-12-0109

LAUR-12-20967

Date: MAY 17 2012

GROUND WATER
MAY 31 2012
BUREAU

GROUND WATER
MAY 31 2012
BUREAU

Primary Billing Party:
Alison M Dorries
PO Box 1663
MS K491
Los Alamos, NM 87545
DP-1132 Astrea Fee (jf)

Agency Interest:
856 - Los Alamos National Laboratory
PO Box 1663
MS K490
Los Alamos, NM 87545

INVOICE ID: 95604
Invoice Amount: $75.00

INVOICE DUE DATE: 03/30/2012
Amount Enclosed $75.00

Please make checks payable to:
Mail payments to:
NMED Federal Tax ID#: 85-6000565

New Mexico Environment Department
Ground Water Quality Bureau
PO Box 5469
Santa Fe, NM 87502-5469
Telephone: (505) 827-2905 **Fax:** (505) 827-2965

THE FACE OF THIS CHECK IS PRINTED BLUE - THE BACK CONTAINS A SIMULATED WATERMARK

WELLS FARGO BANK OHIO, N.A.
115 Hospital Drive
Van Wert, Ohio 45891

LOS ALAMOS NATIONAL LABORATORY
PO BOX 1663, MS P240
LOS ALAMOS, NM 87545

254830

PLEASE CASH PROMPTLY
SUBJECT TO CANCELLATION
NINETY (90) DAYS AFTER DATE

MO DAY YR
04/04/12

56-382
412

COPY

PAY Seventy Five and 00/100 Dollars

$ ********75.00

TO THE ORDER OF
NEW MEXICO ENVIRONMENTAL DEPT
GROUND WATER QUALITY BUREAU
PO BOX 5469
SANTA FE, NM 87502

Authorized Signature

⑈00254830⑈ ⑆041203824⑆ 9600078684⑈

: 08201

DP-1132 BWE FILE

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

1190 St. Francis Drive
P.O. Box 5469, Santa Fe, NM 87502
Phone (505) 827-2918 Fax (505) 827-2965
www.nmenv.state.nm.us

SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

DAVE MARTIN
Secretary
BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

March 2, 2012

Kevin Smith, Manager
National Nuclear Security Administration
3747 West Jemez Road
Los Alamos, NM 87545

GROUND WATER
MAY 31 2012
BUREAU

Alison Dorries, Division Leader
Los Alamos National Security, LLC(LANS)
P.O. Box 1663, MS K491
Los Alamos, NM 87545

RE: Administrative Completeness Determination and Applicant's Public Notice Requirements, DP-1132, Los Alamos National Laboratory

Dear Ms. Dorries and Mr. Smith:

The New Mexico Environment Department (NMED) received a Ground Water Discharge Permit Application for the above referenced facility on February 16, 2012. Pursuant to Section 20.6.2.3108 NMAC of the New Mexico Water Quality Control Commission Regulations (20.6.2 NMAC), NMED determined on February 23, 2012 that your application is administratively complete.

Within 30 days of the date when the US Postal Service first makes notice to you of its possession of this letter, you must provide public notice. Instructions and materials needed to complete the public notice are enclosed.

After NMED receives the completed proof of public notice, a technical reviewer will contact you if additional information is needed to process your application. If you have a deadline of concern in the interim or any questions, please call the Ground Water Quality Bureau at (505) 827-2900.

: 08203

Sincerely,

for Jerry Schoeppner, Chief
Ground Water Quality Bureau

enc: Instructions for Completing Public Notice Requirements
Affidavit
Public Notice Flyer
Text for Newspaper Display Ad
Public Notice Sign
Invoice ($15 fee per printed sign) if not attached, the invoice will be mailed separately

cc: Bob Beers, Water Quality & RCRA Group, LANS, PO Box 1663 MS K490, Los Alamos NM 87545

INSTRUCTIONS FOR COMPLETING PUBLIC NOTICE REQUIREMENTS

Discharge Permit DP- 1132 ☑ New ☐ Modification ☐ Renewal & Modification

Within 30 days of the date NMED deemed your Discharge Permit application administratively complete, you must provide public notice as follows:

1. **Post sign(s) at the facility.**
   Enclosed is a sign 2 x 3 feet in size (or multiple signs if required) which must be posted **at or near the facility** in a conspicuous location approved by NMED. An invoice for the sign(s) is enclosed. NMED approves the following sign posting location(s):

   5 locations: entrance to TA-50 RLWTF; entrance to Vehicle Access Control Station; intersection of Pajarito Rd & Diamond Dr.; intersection of Embudo Rd & Diamond Dr.; Park & Ride Bus Stop at intersection of Diamond Dr. & West Jemez Rd.

2. **Post a public notice flyer off-site.**
   The enclosed public notice flyer which must be posted **off-site** at a location conspicuous to the public and approved by NMED. NMED approves the following flyer posting location:

   LANL Public Reading Room @ J. Robert Oppenheimer Study Center and Research Library

3. **Mail a public notice flyer to property owners within 1/3 mile.**
   A copy of the enclosed public notice flyer must be sent by 1st class mail to the owners of record of all properties within 1/3 mile from the boundary of the property where the discharge site is located. If there are no properties within 1/3 mile other than properties owned by the applicant, then the flyer must be mailed to the owners of record of the nearest adjacent properties.

   The names and addresses of property owners can be obtained from the county tax assessor's office. The list of property owners' names and addresses must be submitted to NMED.

4. **Mail a public notice flyer to the owner of the discharge site.**
   A copy of the enclosed flyer must be sent via certified mail, return receipt requested, to the owner(s) of the discharge site(s), if the applicant is not the owner. The list of owners' names and addresses and the certified mail receipts must be submitted to NMED.

5. **Place a display ad in the newspaper.**
   A display ad 3 x 4 inches in size must be published for one day in a newspaper of general circulation in the location of the proposed discharge. The ad may **not** be placed in the classified or legal section. The text for the ad is enclosed. NMED approves publishing the ad in the following newspaper:

   Los Alamos Monitor

PROOF OF NOTICE. Within 15 days of completing the above requirements, the applicant must submit the following items as proof of notice to NMED:

- ✓ Affidavit regarding the sign posting and mailing (form enclosed).
- ✓ List of names and addresses to whom the public notice flyer was mailed.
- ✓ List of names and addresses of owners of discharge sites.
- ✓ Certified mail receipts for mailing to discharge site owner(s), if required.
- ✓ Copy of newspaper ad.

Send to NMED Ground Water Quality Bureau, PO Box 5469, Santa Fe, NM 87502.

Reviewer's Initials and Date BH 2/24/12

AFFIDAVIT OF PUBLIC NOTICE COMPLETION
New Permit or Permit Modification

DP-1132

I certify, under penalty of law, that I have fulfilled the Ground Water Discharge Permit public notice requirements of Section 20.6.2.3108(B) NMAC.

- ✓ I posted a sign for 30 days displaying a synopsis of the public notice in English and in Spanish at or near the proposed facility in a conspicuous public location (or multiple locations) approved by NMED.
- ✓ I posted a public notice flyer at a conspicuous off-site location approved by NMED.
- ✓ I placed a synopsis of the public notice in English and in Spanish in a newspaper approved by NMED. A copy of the newspaper page containing the synopsis is enclosed.
- ✓ I sent the public notice flyer via 1st class mail to *(check box)*:
  - ☐ owners of all properties within a 1/3 mile of the boundary of the property of the proposed discharge locations – mailing list is enclosed.
  - ☐ owners of all adjacent property (if applicant owns all property within 1/3 mile) – mailing list is enclosed.
  - ☐ owner of the property of the proposed discharge locations (if applicant is not the owner) – mailing address is enclosed.

I am aware that there are significant penalties for false certification including the possibility of fines.

Signature of Applicant	*Printed Name*
Title	*Date*

***REMINDER:** Please remit the bottom portion of the poster fee invoice and a check ($75) for the poster fee with this affidavit.*

PUBLIC NOTICE

Discharge Permit Application

Los Alamos National Laboratory - Radioactive Liquid Waste Treatment Facility, DP-1132

DP-1132, Los Alamos National Laboratory - Radioactive Liquid Waste Treatment Facility, Kevin Smith, Manager of the National Nuclear Security Administration, and Alison Dorries, Division Leader of Los Alamos National Security, LLC, proposes to discharge up to 40,000 gallons per day of industrial wastewater to a collection, treatment and disposal system. This facility also discharges under a National Pollutant Discharge Elimination System permit (NM0028355) issued by the U.S. Environmental Protection Agency pursuant to the federal Clean Water Act. Potential contaminants from this type of discharge include radioactivity, total dissolved solids, organic compounds and metals. The treatment and disposal facility is located within Los Alamos National Laboratory, in Section 22, T19N, R06E. The wastewater collection system is located in Sections 16, 17, 20, 21 and 22, T19N, R06E, Los Alamos County. Ground water beneath the site is at a depth of <1 foot below ground surface in the alluvial aquifer and approximately 1,306 feet below ground surface in the regional aquifer. Ground water has a total dissolved solids concentration of approximately 162 - 255 milligrams per liter.

The applicant is seeking a Discharge Permit for the proposed discharge. Provided the applicant has met applicable requirements, the New Mexico Environment Department (NMED) will propose a Discharge Permit containing limitations, monitoring requirements, and other conditions intended to protect ground water quality for present and potential future use. Information in this public notice was provided by the applicant and will be verified by the New Mexico Environment Department during the permit application review process. NMED will accept comments and statements of interest regarding the application and will create a facility specific mailing list for persons who wish to receive future notices.

You may send comments or statements of interest to:

Jennifer Fullam, DP-1132
Ground Water Quality Bureau
PO Box 5469
Santa Fe, NM 87502.

For additional information, please call:
505-827-2900

Applicant(s):

Kevin Smith, Manager
National Nuclear Security Administration
3747 West Jemez Road
Los Alamos, NM 87545

Alison Dorries, Division Leader
Los Alamos National Security, LLC(LANS)
P.O. Box 1663, MS K491
Los Alamos, NM 87545

Public Notice Synopsis, DP-1132
(for sign and newspaper display ad)

Newspaper display ad must be at least 3 inches by 4 inches in size and must be published for at least one day in a section other than the classifieds or legals.

PUBLIC NOTICE / NOTICIA PÚBLICA

Discharge Permit Application / Aplicación para Permiso de Descargue: For up to 40,000 gallons per day of industrial wastewater to a collection, treatment and disposal system / Para un máximo de 40.000 galones por día de aguas residuales industriales a un sistema de colección, tratamiento y disposición

Applicant & Discharge Location / Solicitante & Sitio de Descarga: Los Alamos National Laboratory, P.O. Box 1663 Mail Stop K491, Los Alamos

For More Information / Para Más Información (DP-1132):
Ground Water Quality Bureau / Sección de Agua Subterránea
NM Environment Department / Departamento del Medio Ambiente

(505) 827-2900 www.nmenv.state.nm.us (public notices)

Information in this public notice was provided by the applicants and will be verified by NMED during the permit application review process.

: 08208

ENCLOSURE 2

Signed *Affidavit of Public Notice Completion* form

ENV-RCRA-12-0109

LAUR-12-20967

MAY 17 2012

Date:_____

GROUND WATER
MAY 31 2012
BUREAU

AFFIDAVIT OF PUBLIC NOTICE COMPLETION
New Permit or Permit Modification

DP-1132

I certify, under penalty of law, that I have fulfilled the Ground Water Discharge Permit public notice requirements of Section 20.6.2.3108(B) NMAC.

- ✓ I posted a sign for 30 days displaying a synopsis of the public notice in English and in Spanish at or near the proposed facility in a conspicuous public location (or multiple locations) approved by NMED.
- ✓ I posted a public notice flyer at a conspicuous off-site location approved by NMED.
- ✓ I placed a synopsis of the public notice in English and in Spanish in a newspaper approved by NMED. A copy of the newspaper page containing the synopsis is enclosed.
- ✓ I sent the public notice flyer via 1st class mail to *(check box)*:
  - ☒ owners of all properties within a 1/3 mile of the boundary of the property of the proposed discharge locations – mailing list is enclosed.
  - ☐ owners of all adjacent property (if applicant owns all property within 1/3 mile) – mailing list is enclosed.
  - ☐ owner of the property of the proposed discharge locations (if applicant is not the owner) – mailing address is enclosed.

I am aware that there are significant penalties for false certification including the possibility of fines.

5/8/12		Alison M. Dorries	ENV Division Leader
Signature of Applicant	*Date*	*Printed Name*	*Title*
5/17/12 BDT		Kevin W. Smith	Los Alamos Site Office Manager
Signature of Applicant	*Date*	*Printed Name*	*Title*

REMINDER: *Please remit the bottom portion of the poster fee invoice and a check ($75) for the poster fee with this affidavit.*

: 08210

ENCLOSURE 3

Copy of the *Los Alamos Monitor* newspaper advertisement

ENV-RCRA-12-0109

LAUR-12-20967

Date: MAY 17 2012

Obituary

PATRICIA EVANS

Patricia Flynn Evans, age 79, of Sugar Land TX passed away peacefully surrounded by family on April 2, 2012.

Pat was born June 16, 1932 in Brooklyn, N.Y. to Francis and Louise Flynn. She is survived by her loving husband of 56 years Albert E. Evans; her children Keith Evans, Andrea Evans Beck and Hilary Evans; and grandchildren Corbin and Shannon Smith, and Alexis and Shelby Evans. She is preceded in death by her daughter Leslie Evans Smith.

Pat was born and raised in Brooklyn, N.Y., and remained a New Yorker at heart throughout her life. She graduated with a Bachelor of Arts degree in Political Science from The Ohio State University in 1954. While at Ohio State she met Albert Evans, a graduate student in Physics. They were married on May 12, 1956. They lived in Dayton, Ohio until December 1956, and then moved to Baltimore, MD in March 1957. They then moved to Tacoma Park, MD, where they lived from 1958 to 1967. In May of 1967 the family moved to Los Alamos where they lived and raised their children for 19 years. They then returned to the East Coast in 1986 to live in Gaithersburg, MD where they lived until 2000. When her husband Albert retired from the U.S. Department of Energy in 2000, they retired to Sugar Land, TX, to be closer to their family.

Pat dedicated her life to raising her children. While living in Los Alamos, she worked in the Montessori school, and later became a realtor. She remained active with her college sorority, Zeta Tau Alpha, as well as the American Association of University Women and the Daughters of the American Revolution. She had a great love of animals, particularly Cocker Spaniels which were her constant companions. Her hobbies included watching sports, especially baseball, taking care of animals and reading. She also loved spending time with her family, and took great joy in being part of her grandchildren's lives.

A memorial service will be held on Thursday, April 12 at 4:00 pm at Holy Cross Episcopal Church in Sugar Land.

in lieu of flowers, you are invited to make donations to your local chapter of the Humane Society of the United States.

DOCTOR

From Page 1

Jung said he gave Mourachov several commands to turn the vehicle off to no avail. The driver then allegedly reversed the vehicle in the direction of the officers and then back into the garage.

At that point, Mourachov attempted to close the garage door with Jung inside - Jung disengaged the door by pulling on the emergency release lever.

Officers then pulled Mourachov from the vehicle and placed him in police custody.

Once in custody, a medic was dispatched to the scene to evaluate Mourachov. He refused treatment and when asked if he was taking any medication stated "none that you need to know about."

Jung noticed that Mourachov's speech was allegedly slow and his actions lethargic. The officer said Mourachov's eyes were also allegedly watery and bloodshot. Mourachov consented to a field sobriety test.

After performing the Walk-and-Turn test, he allegedly said that he did not feel comfortable performing the test stating that he was "anxious" and "still worked up" over the incident at home. Ten minutes later, Mourachov allegedly said he was willing to attempt the tests.

But based on Mourachov's performance of the Walk-and-Turn and One-Leg Stand, Jung opined that he was under the influence of drugs.

No alcohol was found at the scene, Cpt. Randy Foster said.

Police Chief Wayne Torpy said even though Mourachov was on his own property when he was allegedly driving under the influence; state law requires that a driver only be behind the wheel and operating the vehicle to be charged under the statute.

Foster said police searched the vehicle and no weapons were found. The house was not searched.

Mourachov was then placed under arrest and transported to Los Alamos County Jail.

As of Friday morning, Mourachov had not seen the judge and no bond had been posted for his release. Foster said Mourachov will likely go in front of a judge this afternoon.

Getting tanked

Kwik Lube Service Center, located at 2155 Trinity Drive, will remain open despite a huge hole on its property. Business owner Fidel Naranjo said gas tanks are being pulled in front and in back of his business. "We are trying to stay open and that is why we are doing this during spring break. This used to be a gas station and the state has wanted me to get those tanks out of here," Naranjo said. JOHN SEVERANCE/MONITOR

PUBLIC NOTICE / NOTICIA PÚBLICA

Discharge Permit Application / Aplicación para Permiso de Descargue: For up to 40,000 gallons per day of industrial wastewater to a collection, treatment and disposal system / Para un máximo de 40.000 galones por día de aguas residuales industriales a un sistema de colección, tratamiento y disposición

Applicant & Discharge Location / Solicitante & Sitio de Descarga: Los Alamos National Laboratory, P.O. Box 1663 Mail Stop K491, Los Alamos

For More Information / Para Más Información (DP-1132): Ground Water Quality Bureau / Sección de Agua Subterránea NM Environment Department / Departamento del Medio Ambiente

(505) 827-2900 www.nmenv.state.nm.us (public notices)

Information in this public notice was provided by the applicants and will be verified by NMED during the permit application review process.

1132

Community News

E-mail Community News stories/ photos to lacommunity @lamonitor.com.

Got Questions
about your 401k rollover

Concerned
about having enough income during retirement

Contact Tre Panagos, Financial Adviser with Edward Jones for a free consultation concerning Rollovers, IRAs or other financial questions.

1-800-564-3699
Santa Fe - 983-3699

Edward Jones
MAKING SENSE OF INVESTING
Member SIPC

Today's Weather

Local 3-Day Forecast

Sat 4/7	Sun 4/8	Mon 4/9
65/43	66/50	67/53
Partly cloudy skies in the morning will give way to cloudy skies during the...	Partly cloudy, chance of a thunderstorm.	Isolated thunderstorms. Highs in the upper 60s and lows in the low 50s.
Sunrise 6:42 AM Sunset 7:32 PM	Sunrise 6:41 AM Sunset 7:33 PM	Sunrise 6:39 AM Sunset 7:34 PM

American Profile — We Celebrate Hometown Life

New Mexico At A Glance

Moon Phases

Full Apr 6; Last Apr 13; New Apr 21; First Apr 29

UV Index

Sat	4/7	8	Very High
Sun	4/8	8	Very High
Mon	4/9	7	High

The UV Index is measured on a 0-11 number scale, with a higher UV Index showing the need for greater skin protection. 0 11

Area Cities

City	Hi	Lo	Cond	City	Hi	Lo	Cond	City	Hi	Lo	Cond
Alamogordo	84	50	pt sunny	Grants	67	35	pt sunny	Santa Fe	65	37	pt sunny
Albuquerque	74	46	pt sunny	Guymon, OK	70	42	pt sunny	Santa Rosa	75	45	pt sunny
Carlsbad	86	56	t-storm	Hobbs	86	54	t-storm	Silver City	71	57	pt sunny
Chama	57	29	pt sunny	Las Cruces	80	53	pt sunny	Socorro	78	46	pt sunny
Clovis	72	47	pt sunny	Las Vegas	65	36	pt sunny	St. Johns, AZ	75	37	cloudy
Deming	83	49	pt sunny	Lordsburg	65	48	pt sunny	Taos	68	28	pt sunny
El Paso, TX	87	57	pt sunny	Lubbock, TX	77	49	t-storm	Trinidad, CO	67	38	pt sunny
Espanola	84	50	pt sunny	Odessa, TX	86	59	t-storm	Truth or Conseq.	81	51	pt sunny
Farmington	71	34	pt sunny	Raton	67	34	pt sunny	Tucson, AZ	87	54	pt sunny
Gallup	67	31	pt sunny	Roswell	82	60	pt sunny	Tucumcari	71	44	pt sunny

National Cities

City	Hi	Lo	Cond	City	Hi	Lo	Cond	City	Hi	Lo	Cond
Atlanta	75	60	mst sunny	Houston	84	64	mst sunny	Phoenix	86	66	mst sunny
Boston	53	37	pt sunny	Los Angeles	78	63	sunny	San Francisco	64	48	pt sunny
Chicago	45	44	mst sunny	Miami	80	67	pt sunny	Seattle	64	46	pt sunny
Dallas	81	64	pt sunny	Minneapolis	62	38	rain	St. Louis	72	49	mst sunny
Denver	64	39	sunny	New York	61	41	sunny	Washington, DC	66	44	sunny

©2010 American Profile Hometown Content Service

You Live Near The 2011 Wild Fires!

GOT ASH?

Your home has most likely been contaminated by smoke, soot and ash emitted by the fires and carried over by the winds. These particles of soot and ash are fine, often smaller than human hair, and can be everywhere: on your walls, carpets, ceilings, in your pool filters and air conditioning ducts. They will remain there until professionally removed. Even if you've cleaned your home, you may still have a substantial claim.

All homeowners near the wildfires are likely damaged and may be entitled to compensation. Damage can be unseen and difficult to identify. We have helped hundreds of property owners just like you recover money to restore their homes and property.

If you're reading this, you could have UNSEEN damage to your home. even if you have already cleaned!

Soot and ash damage may entitle you to thousands of dollars for a full cleaning of your home.

Our average recovery is between $15,000-$25,000
Call today to find out if you're entitled to clean up money!

Actual Cash Recoveries:
D.G. $23,409.86
K.F. $23,240.66
B.N. $23,698.60
R.S. $20,602.78

We are not a cleaning company. We simply recover the most money possible to restore your home and property.

Mention this ad for a **FREE** INSPECTION to determine if you qualify

Prior results do not guarantee a similar outcome in future cases

Loss Recovery Services, LLC.
www.lossrecoveryservices.com
New Mexico License # 283180 • Arizona License #970700 • Hablamos Español
888-882-6264
We Recover or You Pay Nothing!
CLAIMS ARE PROCESSED IN THE ORDER RECEIVED

New Mexico Environment Department
Ground Water Quality Bureau

Acknowledgement of Receipt

reviewer's initials ☐

I, Mannie Chávez hereby acknowledge receipt of
Check No. 254838, **dated** 4-4-12
received in the **amount of $** 75.00; or
cash received in the **amount of $** _____
from Los Alamos National Lab.
Facility Name: Los Alamos National Lab
DP #: 1132 **AI ID:** 836
Activity ID Number: PRD_____

GWQB – Date of Receipt

GROUND WATER
MAY 31 2012
BUREAU

Administrative Fees

☐ $100.00 application filing fee

Permit Fees

☐ new facility
☐ renewal or renewal/modification
☐ modification fee = $_____

Other Fees

☒ $15.00 per poster: (5 Posters)
poster(s)_____ x $15.00 = $_____
☐ $150.00 temporary permission
☐ Other: $_____
Explain: _____

THE FACE OF THIS CHECK IS PRINTED BLUE; THE BACK CONTAINS A SIMULATED WATERMARK

WELLS FARGO BANK OHIO, N.A.
115 Hospital Drive
Van Wert, Ohio 45891

LOS ALAMOS NATIONAL LABORATORY
PO BOX 1663, MS P240
LOS ALAMOS, NM 87545

254830

PLEASE CASH PROMPTLY
SUBJECT TO CANCELLATION
NINETY (90) DAYS AFTER DATE

MO DAY YR
04/04/12

56-382
412

PAY Seventy Five and 00/100 Dollars

$ ********75.00

TO THE ORDER OF

NEW MEXICO ENVIRONMENTAL DEPT
GROUND WATER QUALITY BUREAU
PO BOX 5469
SANTA FE, NM 87502

Authorized Signature

⑈00254830⑈ ⑆041203824⑆ 9600078684⑈

GROUND WATER

MAY 31 2012

BUREAU

Primary Billing Party:
Alison M Dorries
PO Box 1663
MS K491
Los Alamos, NM 87545
DP-1132 Astrev Fee (jf)

Agency Interest:
856 - Los Alamos National Laboratory
PO Box 1663
MS K490
Los Alamos, NM 87545

INVOICE ID: 95604
Invoice Amount: $75.00

INVOICE DUE DATE: 03/30/2012
Amount Enclosed $75.00

Please make checks payable to:
Mail payments to:
NMED Federal Tax ID#: 85-6000565

New Mexico Environment Department
Ground Water Quality Bureau
PO Box 5469
Santa Fe, NM 87502-5469
Telephone: (505) 827-2905 **Fax:** (505) 827-2965

THE FACE OF THIS CHECK IS PRINTED BLUE - THE BACK CONTAINS A SIMULATED WATERMARK

WELLS FARGO BANK OHIO, N.A.
115 Hospital Drive
Van Wert, Ohio 45891

LOS ALAMOS NATIONAL LABORATORY
PO BOX 1663, MS P240
LOS ALAMOS, NM 87545

254830

56-382
412

PLEASE CASH PROMPTLY.
SUBJECT TO CANCELLATION
NINETY (90) DAYS AFTER DATE

MO DAY YR
04/04/12

COPY

PAY Seventy Five and 00/100 Dollars

$ ********75.00

TO THE ORDER OF
NEW MEXICO ENVIRONMENTAL DEPT
GROUND WATER QUALITY BUREAU
PO BOX 5469
SANTA FE, NM 87502

Authorized Signature

⑈00254830⑈ ⑆041203824⑆ 9600078684⑈

: 08214

DP-1132 BLUE FILE
MRS

GROUND WATER
APR 26 2012
BUREAU

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: APR 26 2012
Refer To: ENV-RCRA-12-0096
LAUR: 12-20577

Mr. Jerry Schoeppner, Acting Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2261
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Dear Mr. Schoeppner:

SUBJECT: DISCHARGE PLAN DP-1132 QUARTERLY REPORT, FIRST QUARTER 2012, TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY

This letter from the U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) is the first quarter 2012 Discharge Plan DP-1132 report for the Technical Area (TA)-50 Radioactive Liquid Waste Treatment Facility (RLWTF). Since the first quarter of 1999, DOE/LANS have provided the New Mexico Environment Department (NMED) with voluntary quarterly reports containing analytical results from effluent and groundwater monitoring.

During the first quarter of 2012, no effluent was discharged by the TA-50 RLWTF through National Pollutant Discharge Elimination System (NPDES) Outfall 051to Mortandad Canyon; all effluent was evaporated on-site at the effluent evaporator.

: 08216

Quarterly Monitoring Results, Mortandad Canyon Alluvial Groundwater Wells

Table 1.0 presents the analytical results from sampling conducted at Mortandad Canyon alluvial wells MCO-6 and MCO-7 during the first quarter of 2012. No samples were collected from alluvial wells MCO-3 and MCO-4B; MCO-3 was unsafe to sample because of snow and ice at the well site and there was insufficient water present for sample collection at MCO-4B. Samples from MCO-6 and MCO-7 were submitted to GEL Laboratories LLC (GEL) for analysis. All of the analytical results were below the New Mexico Water Quality Control Commission (NMWQCC) 3103 standards for nitrate-nitrogen (NO_3-N), fluoride (F), and total dissolved solids (TDS). Analytical results from the sampling of intermediate and regional aquifer wells in Mortandad Canyon can be accessed online at the Intellus New Mexico environmental monitoring data web site (http://www.intellusnmdata.com).

TA-50 RLWTF Effluent Monitoring Results

Table 2.0 reports the analytical results from the weekly composite sampling of RLWTF effluent discharged through NPDES Outfall 051 to Mortandad Canyon. The final weekly composite (FWC) samples are flow-proportioned composite samples prepared from each tank of effluent discharged to Mortandad Canyon during a 7-day period. Samples are submitted to GEL for analysis. No FWC samples were collected during the first quarter of 2012 because no RLWTF effluent was discharged to Mortandad Canyon.

Table 3.0 reports the final monthly composite (FMC) sample results for NO_3-N, ClO_4, F, and TDS for the first quarter of 2012. No FMC samples were collected during the first quarter of 2012 because no effluent was discharged to Mortandad Canyon.

Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this report.

Sincerely,

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Security, LLC

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
U.S. Department of Energy

AMD:GET:BB/lm

Cy: James P. Bearzi, NMED/SWQB, Santa Fe, NM, w/enc.
John E. Kieling, NMED/HWB, Santa Fe, NM, w/enc.
Steve M. Yanicak, NMED/DOE/OB, w/enc., M894

: 08217

Cy (continued):
Hai Shen, LASO-EPO, w/enc., A316
Gene E. Turner, LASO-EPO, w/enc., A316
Carl A. Beard, PADOPS, w/o enc., A102
Michael T. Brandt, ADESH, w/o enc., K491, (E-File)
Alison M. Dorries, ENV-DO, w/o enc., K491, (E-File)
Randall S. Johnson, ENV-ES, E500, (E-File)
Michael T. Saladen, ENV-RCRA, K490, (E-File)
Robert S. Beers, ENV-RCRA, K490
Robert C. Mason, TA55-DO, E583, (E-File)
Clifford W. Kirkland, TA-55 RLW, J910, (E-File)
Victor J. Salazar, TA-55 RLW, E518, (E-File)
John C. Del Signore, TA-55 RLW, E518, (E-File)
IRM-RMMSO, w/enc., A150, locatesteam@lanl.gov
ENV-RCRA Correspondence File, w/enc., K490

Table 1.0. Mortandad Canyon Alluvial Well Sampling, 1st Quarter, 2012.

Sampling Location	Sample Field Prep (F/UF)[1]	Sample Date	Perchlorate (ug/L)	NO_3+NO_2-N (mg/L)	TKN[2] (mg/L)	NH3-N (mg/L)	TDS (mg/L)	F (mg/L)
MCO-3	F	Ice[4]	Ice[4]	Ice[4]	Ice[4]	Ice[4]	Ice[4]	Ice[4]
MCO-4B	F	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]
MCO-6	F	3/23/2012	4.15	0.83	0.14	0.06	241	0.97
MCO-7	F	3/22/2012	7.47	1.2	0.25	0.04	281	0.94
NMWQCC 3103 Groundwater Standards			*NA*[2]	*10 mg/L*[3]	*NA*[2]	*NA*[2]	*1000 mg/L*	*1.6 mg/L*

Notes:

[1]All samples filtered with the exception of TKN.

[2]NA means that there is no NMWQCC 3103 standard for this analyte.

[3]The NMWQCC 3103 Groundwater Standard is for NO_3-N.

[4]Ice means that ice and snow blocked safe access to the well.

[5]Dry means that there was insufficient water in the well for sampling.

J- means that the reported value is expected to be more uncertain than usual with a potential negative bias.

J+ means that the reported value is expected to be more uncertain than usual with a potential positive bias.

J means the reported value is greater than the Method Detection Limit (MDL) but less than the Reporting Limit (RL).

09216

Table 2.0. RLWTF Final Weekly Composite (FWC) Effluent Sampling, 1st Quarter, 2012.

			Analysis by RLWTF[1]		Analysis by General Engineering Laboratories, Inc.			
Monitoring Period	Sample Composite Date	Sample ID#	NO_3-N (mg/L)	NO_2-N (mg/L)	NO_3+NO_2-N (mg/L)	Perchlorate (ug/L)	Fluoride (mg/L)	TDS (mg/L)
January	1/2/12	No Discharge[2]	-----	-----	-----	-----	-----	-----
	1/9/12	No Discharge	-----	-----	-----	-----	-----	-----
	1/16/12	No Discharge	-----	-----	-----	-----	-----	-----
	1/23/12	No Discharge	-----	-----	-----	-----	-----	-----
	1/30/12							
February	2/6/12	No Discharge	-----	-----	-----	-----	-----	-----
	2/13/12	No Discharge	-----	-----	-----	-----	-----	-----
	2/20/12	No Discharge	-----	-----	-----	-----	-----	-----
	2/27/12	No Discharge	-----	-----	-----	-----	-----	-----
March	3/5/12	No Discharge						
	3/12/12	No Discharge	-----	-----	-----	-----	-----	-----
	3/19/12	No Discharge	-----	-----	-----	-----	-----	-----
	3/26/12	No Discharge	-----	-----	-----	-----	-----	-----
1st Quarter 2012 Averages[3]			-----	-----	-----	-----	-----	-----
NMWQCC 3103 Groundwater Standards			*10 mg/L*	*NA*[5]	*10 mg/L*[4]	*NA*[5]	*1.6 mg/L*	*1000 mg/L*

Notes:

[1]Analysis by the TA-50 Radioactive Liquid Waste Treatment Facility's analytical laboratory.

[2]No Discharge means the RLWTF did not discharge effluent through NPDES Outfall 051 during the 7-day period preceding the composite date.

[3]1st quarter 2012 averages include the results from December 2011, if applicable.

[4]The NMWQCC Regulation 3103 groundwater standard is for nitrate (NO_3-N).

[5]NA means that there is no NMWQCC 3103 groundwater standard for this analyte.

Table 3.0. RLWTF Final Monthly Composite (FMC) Effluent Sampling, 1st Quarter, 2012.

Monitoring Period	RLWTF FMC Results[1]			
	NO_3-N (mg/L)	Perchlorate by IC[2] (ug/L)	TDS (mg/L)	F (mg/L)
January 2012	---- No Discharges ----			
February 2012	---- No Discharges ----			
March 2012	---- No Discharges ----			
NMWQCC 3103 Groundwater Standards	*10 mg/L*	*NA*[3]	*1000 mg/L*	*1.6 mg/L*

Notes:

[1]Analysis by the TA-50 Radioactive Liquid Waste Treatment Facility's analytical laboratory.

[2]IC means EPA Method 314.0, perchlorate analysis by Ion Chromatography.

[3]NA means that there is no NM WQCC 3103 standard for this analyte.

DP-1132
Blue File

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

GROUND WATER
JUL 16 2012
BUREAU

Date: JUL 10 2012
Refer To: ENV-RCRA-12-0151
LAUR: 12-21679

Mr. Jerry Schoeppner, Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2250
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Dear Mr. Schoeppner:

SUBJECT: RESPONSE TO NMED GWQB INSPECTION REPORT, DP-1132

The U.S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) are in receipt of the Inspection Report (Enclosure 1) from the New Mexico Environment Department (NMED) Ground Water Quality Bureau's March 20, 2012, inspection of the Technical Area (TA)-50 Radioactive Liquid Waste Treatment Facility (RLWTF) and the TA-52 Zero Liquid Discharge (ZLD) Solar Evaporation Tanks. Upon review, DOE/LANS found both incorrect and incomplete statements that require correction because the report is part of the administrative record for DP-1132. Enclosure 2 contains seven review comments from DOE/LANS.

: 88223

Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this information.

Sincerely,

A R Grieggs for A. Dorries

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Security, LLC

Sincerely,

Peter Maggiore for

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
U.S. Department of Energy

AMD:GET:BB/lm

Enclosures:

1. NMED GWQB Inspection Report
2. DOE/LANS Review Comments on NMED Inspection Report

Cy: James Hogan, NMED/SWQB, Santa Fe, NM, w/enc.
John Kieling, NMED/HWB, Santa Fe, NM, w/enc.
Hai Shen, LASO-EPO, w/enc., A316, (E-File)
Steve Yanicak, NMED/DOE-OB, w/enc., M894, (E-File)
Gene E. Turner, LASO-EPO, w/enc., A316, (E-File)
Carl A. Beard, PADOPS, w/o enc., A102
Michael T. Brandt, ADESH, w/o enc., K491, (E-File)
Alison M. Dorries, ENV-DO, w/o enc., K491, (E-File)
Randall S. Johnson, ENV-ES, w/enc., E500, (E-File)
Michael T. Saladen, ENV-RCRA, w/o enc., K490, (E-File)
Robert S. Beers, ENV-RCRA, w/enc., K490
Robert C. Mason, TA55-DO, w/enc., E583, (E-File)
Clifford W. Kirkland, TA-55-RLW, w/enc., E505, (E-File)
Victor J. Salazar, TA-55-RLW, w/enc., E518, (E-File)
John C. Del Signore, TA-55-RLW, w/enc., E518, (E-File)
IRM-RMMSO, w/enc., A150, (E-File)
ENV-RCRA Correspondence File, w/enc., K490

: 08224

ENCLOSURE 1

NMED Inspection Report

ENV-RCRA-12-0151

LAUR-12-21679

JUL 1 0 2012

Date: _____

New Mexico Environment Department
Ground Water Quality Bureau

Inspection Report

Inspection Date:	03.20.12	**DP #:**	1132
		Facility Name:	Los Alamos National Laboratory (LANL)-Radioactive Liquid Waste Treatment Facility (RLWTF)

Facility Contact Information – Scheduling Inspection

☑ **Scheduled Inspection - provide contact information** ☐ **Unannounced Inspection**

Person Contacted: Bob Beers

Phone Number: 505.667.7969

Facility Description

Waste Type: Other

Directions to Facility: North on 84/285 to SR502 Exit to Los Alamos. Continue through Los Alamos (west) and bear left on to SR501 across bridge. Bear left and then take first right onto West Jemez Rd. Make left at first light onto Diamond Drive. Continue south until Pajarito Road and turn left. Technical Area (TA) 59 (meeting location) will be on right.

Inspection Information

Start Time: 9:00 am **End Time:** 12:00 pm

NMED Inspector(s): See attendees list (attached)

Verify that NMED identification was presented: ☑ Yes ☐ No

Facility Representative(s) present during the Inspection/Discussion: See attendees list (attached)

Reason for Inspection: other

Routine inspection pre-permit discussion

Discussion, Observations and Information Obtained

Representatives from LANL and NMED met at TA-59 for a pre-inspection briefing. Introductions were made by both entities and an agenda for the inspection was reviewed. The RLWTF processes both caustic and acidic transuranic waste (TRU) as well as radioactive low-level waste (RLW) from various areas within the Laboratory.

Representatives from LANL escorted NMED to the RLWTF located at TA-50 for a walk-through of the facility. NMED conducted a walk-through inspection of Building 1, the Emergency influent storage facility (WMRM) located within TA-50 and the Solar Evaporation Tanks located within TA-52. LANL stated that influent collection lines span approximately four miles throughout several Technical Areas (TAs). The TRU lines are separate from the RLW lines; all of which are constructed with double containment and accessible inspection vaults with leak detection systems.

Fullam requested clarification regarding the processes for treating the RLW. LANL explained that all RLW

New Mexico Environment Department
Ground Water Quality Bureau

Inspection Report

goes first to TK-13 for neutralization prior to being sent to one of several influent holding tanks (75,000 gallon, 100,000 gallon or 17,000 gallon) from this point the neutralized wastewater is then treated through a number of treatment processes. LANL stated that the 75,000 gallon tank is the default for all neutralized RLW coming into the facility.

Fullam inquired about the fate of the reject water from the primary reverse osmosis units (PRO). Representatives from LANL stated the concentrate from the PRO (reject wastewater) is sent to the secondary reverse osmosis (SRO) unit for further treatment and disposal. The SRO is not in service yet but is planned to be within a week.

LANL explained that the perchlorate ion exchange (PIE) columns can be bypassed and the copper/zinc ion exchange units are only implemented if a planned discharge to the United States Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System (NPDES) outfall is expected. LANL stated that there are various processes in the treatment system can be bypassed if needed and not all the processes are used at all times.

LANL has not discharged to the NPDES outfall for over a year and they are not intending to discharge due to the difficulty in treating the effluent to meet the NPDES copper limitations. Currently, the facility has been mechanically evaporating all effluent. The mechanical evaporators were determined not to require an Air Quality Permit.

At the time of inspection, LANL was nearing completion of the uncovered Solar Evaporative Tanks (SET). All treated effluent from the RLWTF will be discharged via a 3,500 foot single-lined gravity fed conveyance pipe (with welds every 500 feet) to the SET. LANL is anticipating having the as-built drawings for the SET completed by mid-May and would be looking at placing the SET on-line and commencing discharge approximately 3-4 months after that.

Fullam noted that the tank does not stand on-ground (as LANL had originally described) but rather is constructed so that the majority of the tank is set below grade and the maximum height of approximately 6" above the surrounding topography. Beers explained that although it is set below grade it is still constructed as a tank with man-made materials as a free-standing unit (as is defined under 40 CFR §264) as opposed to an impoundment which is dependent on earthen materials for structural support. Fullam explained that although LANL is asserting the unit to be defined as a tank under 40 CFR 264, the condition language for the Discharge Permit will be based primarily on 20.6.2. NMAC for the protection of ground water and human health and may differ substantially from what is required under 40 CFR 264, as it pertains to the definition of tank.

The system consists of a single unit with two cells (orientated east and west) which share a center partitioned wall with an emergency overflow outlet at the top of the wall. The discharge to each cell can be controlled manually or through the overflow valve on the shared wall. Fullam noted that the total volume of the SET was not as described in the application. The cells were to have a total depth of 4 feet but upon inspection, it was noted they are only 3.5 feet. Each of the cells has an independent synthetic liner. The synthetic liner is constructed of two sealed sheets of HDPE liner (40 mil and 60 mil from concrete to exposed layer respectively) with an interstitial layer of geo-mesh. The liner is set in a concrete structure with an intermediate layer of geo-net to protect the liner from the concrete. Representatives from LANL explained that the concrete structure was not sealed. There is a leak detection system within the synthetic liner which consists of a single conductive tape. The gradient on the concrete slopes towards the center and then to the north corner. At the time of inspection, LANL was uncertain on the sensor system, Beers stated he would follow-up and provide NMED with additional information. The SET is designed to have a misting system on the north and south sides of each cell to aid in evaporation. The misting system is controlled by individual cell and not by orientation to prevailing winds. NMED expressed concerns with being able to contain the misting during times of high southwest prevailing winds. LANL stated that the fencing (proposed to be 7 feet chainlink fencing with wind slats) will be constructed to minimize overtopping due to wind waves and the misting system could be turned off entirely if

New Mexico Environment Department
Ground Water Quality Bureau

Inspection Report

there were issues.

Upon completion of the field inspection, representatives from LANL and NMED met for a de-briefing discussion. NMED stated they have been working on the application for the RLWTF and would probably be sending a Request for Additional Information on technical items which require clarification. NMED also explained that the language for specific condition requirements is still be drafted and further discussions with LANL would be appropriate at a later time. LANL and NMED discussed the leak detection system for the SET. There are some concerns that there is no ability to test or inspect the system as it is sealed, nor is there the ability to test the constituents should a leak be detected within the interstitial space of the liner to ensure it is not a result of a failure in the system. The concrete containment has not been treated or sealed and there may be concerns of infiltration from the bottom into the intermediate space between the concrete and the synthetic liner. Some of these issues may be addressed as conditions in the draft Discharge Permit, but NMED will follow-up with questions in the request for additional information.

Photographic Documentation

Photos Taken? ☐ Yes - see attached ☑ No

Sample Information

Samples Collected? ☐ Yes ☑ No

Monitoring Well Camera Inspection

Monitoring well camera inspection conducted? ☐ Yes - see attached report(s)
☑ No

Initials of Report Preparer: JF

Water Quality & RCRA Group (ENV-RCRA)

Meeting Topic: NMED GWQB INSPECTION OF DP-1132 & DP-857 FACILITIES

Meeting Date: TUESDAY, MARCH 20, 2012

Place: LOS ALAMOS NATIONAL LABORATORY

Meeting Called By: NMED GWQB

Name	Org	Phone	EMAIL
JENNIFER FULLAM	NMED-GWQB	505.827.2909	jennifer.fullam@state.nm.us
CLINT MARSHALL	NMED-GWQB	505-690-4102	clint.marshall@state.nm.us
Gerald Knutson	NMED-GWQB	505-827-2996	gerald.knutson@state.nm.us
GELARD A. SCHOEPPNER	NMED-GWQB	505-827-2919	jerry.schoeppner@...
Alison Dorries	LANL ENV-DO	505-699-1979	adorrie@lanl.gov
Scotty Jones	ENV-DO	500 2077	SJones
Edward Artiglia	ES-PE	505-664-0351	eartiglia@lanl.gov
CHRIS DEL SIGNORE	TA-50 RLWTF	665-5956	jcds@lanl.gov
CLIFF KIRKLAND	TA-50 RLWTF	606-0576	cwkirk@lanl.gov
JOHN NARANJO	TA-[illegible] SWMU	665-8507	johnn@lanl.gov
MARK TRUJILLO	SERF	667-4693	trujillo_mark@lanl.gov
RICK CONNER	MANAGER of ~~ED Project~~	665-3091	rpconner@lanl.gov

Meeting Agenda Items and Topics

~~BOB BEERS~~	~~ENV-RCRA~~	667-7969	bbeers@lanl.gov
ROBERT GEORGE	NMED-GWQB	476-3648	robert.george@state.nm.us
STEVE HANSON	TA-50 RLWTF	665-6511	hanson@lanl.gov
GENE TURNER	DOE/LASO	667-5794	gturner@doeal.gov

ENV-RCRA-12-0151
ENCLOSURE 1
LAUR-12-21679
082260

ENCLOSURE 2

Comments From DOE/LANS Review of the NMED Inspection Report

ENV-RCRA-12-0151

LAUR-12-21679

Date: JUL 1 0 2012

US Department of Energy/Los Alamos National Security, LLC
Review Comments on the NMED's Inspection Report for DP-1132
From the March 20, 2012, Inspection of the TA-50 RLWTF

1. **NMED Statement:** *LANL has not discharged to the NPDES outfall for over a year and they are not intending to discharge due to the difficulty in treating the effluent to meet the NPDES copper limitations.*

   DOE/ LANS Comment: Discharging treated effluent to the NPDES outfall is one of the following three options available to the US Department of Energy/Los Alamos National Security, LLC (DOE/LANS) for managing treated effluent from the RLWTF: (1) NPDES outfall 001 in Mortandad Canyon, (2) mechanical (thermal) evaporator at TA-50, and (3) TA-52 ZLD Solar Evaporation Tanks. The strategic plan for DOE/LANS is to maintain all three effluent management options, including the capability of treating radioactive liquid waste to meet all NPDES limitations.

   As a result of discussions with representatives of the Environmental Protection Agency (EPA), Region 6, DOE/LANS are conducting tests to determine the effect of restoring hardness to treated water prior to discharge to the environment. If tests demonstrate that restoring hardness enables discharges to meet the Whole Effluent Toxicity (WET) bioassay, the National Pollutant Discharge Elimination System (NPDES) discharge limits for copper and zinc may be modified. This modification will allow DOE/LANS to resume discharges via the NPDES outfall. (Tests have thus far demonstrated that restoring hardness reduces the toxicity of the resulting effluent allowing treated water to pass the WET bioassay.)

2. **NMED Statement:** *.....it is still constructed as a tank with man-made materials as a free-standing unit (as is defined under 40 CFR §264).*

   DOE/ LANS Comment: The definition of a tank is found in 40 CFR §260.10, not 40 CFR §264.

3. **NMED Statement:** *LANL is anticipating having the as-built drawings for the SET (Solar Evaporation Tanks) completed by mid-May and would be looking at placing the SET on-line and commencing discharge approximately 3-4 months after that.*

   DOE/ LANS Comment: As-built drawings will not be available until July 2012.

4. **NMED Statement:** *Fullam noted that the total volume of the SET was not described in the application.*

   DOE/ LANS Comment: The capacity, at a depth of 3-feet, of the TA-52 Solar Evaporation Tanks is 762,000 gallons.

5. **NMED Statement:** *The cells were to have a total depth of 4 ft but upon inspection, it was noted that they are only 3.5 ft.*

   DOE/ LANS Comment: The total depth of each tank is 4 ft; the maximum operating height is 3 ft with an allowance for a 1 ft freeboard.

6. **NMED Statement:** *At the time of the inspection, LANL was uncertain on the sensor system, Beers stated that he would follow-up and provide NMED with additional information.*

   DOE/ LANS Comment: When representatives from DOE/LANS and NMED met for a post-inspection de-briefing Ed Artiglia—the SET Project Engineer—attended to provide the NMED with additional information on the leak detection sensor system. Mr. Artiglia explained that the interstitial spaces between (1) the concrete floor/walls and secondary liner and (2) between the primary and secondary liners cannot be accessed for sampling. DOE/LANS are not currently aware if there are additional unanswered questions by the NMED concerning the liner/sensor systems.

7. **NMED Statement**: *LANL stated that the fencing (proposed to be 7 feet chain link fencing with wind slats) will be constructed to minimize overtopping due to wind waves and the misting system could be turned off entirely if there were issues.*

   DOE/LANS Comment: The NMED was given incorrect information during the field inspection of the SET. An 8-foot chain link fence has been installed around the SET and there are no current plans to install wind slats on the chain link fence.

DP-1132
Blue File MRs

GROUND WATER
JUL 20 2012
BUREAU

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, K490
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Date: JUL 17 2012
Refer To: ENV-RCRA-12-0159
LAUR: 12-22775

Mr. Jerry Schoeppner, Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2261
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Dear Mr. Schoeppner:

SUBJECT: DISCHARGE PLAN DP-1132 QUARTERLY REPORT, SECOND QUARTER 2012, TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY

This letter from the U.S. Department of Energy and Los Alamos National Security LLC (DOE/LANS) is the second quarter 2012 Discharge Plan DP-1132 report for the Technical Area (TA)-50 Radioactive Liquid Waste Treatment Facility (RLWTF). Since the first quarter of 1999, DOE/LANS have provided the New Mexico Environment Department (NMED) with voluntary quarterly reports containing analytical results from effluent and groundwater monitoring.

During the second quarter of 2012, no effluent was discharged by the TA-50 RLWTF through National Pollutant Discharge Elimination System (NPDES) Outfall 051 to Mortandad Canyon; all effluent was evaporated on-site by the facility's effluent evaporator.

Quarterly Monitoring Results, Mortandad Canyon Alluvial Groundwater Wells

Table 1.0 presents the analytical results from sampling conducted at Mortandad Canyon alluvial wells MCO-3, MCO-6, and MCO-7 during the second quarter of 2012. No samples were collected from alluvial well MCO-4B because there was insufficient water present. Samples from MCO-3, MCO-6, and MCO-7 were submitted to GEL Laboratories LLC (GEL) for analysis. All of the

: 08236

analytical results were below the New Mexico Water Quality Control Commission (NMWQCC) 3103 standards for nitrate-nitrogen (NO_3-N), fluoride (F), and total dissolved solids (TDS). Analytical results from the sampling of intermediate and regional aquifer wells in Mortandad Canyon can be accessed online at the Intellus New Mexico environmental monitoring data web site (http://www.intellusnmdata.com).

TA-50 RLWTF Effluent Monitoring Results

Table 2.0 reports the analytical results from the weekly composite sampling of RLWTF effluent discharged through NPDES Outfall 051 to Mortandad Canyon. The final weekly composite (FWC) samples are flow-proportioned composite samples prepared from each tank of effluent discharged to Mortandad Canyon during a 7-day period. No FWC samples were collected during the second quarter of 2012 because no effluent was discharged to Mortandad Canyon.

Table 3.0 reports the final monthly composite (FMC) sample results for NO_3-N, perchlorate (ClO_4), F, and TDS for the second quarter of 2012. No FMC samples were collected during the second quarter of 2012 because no effluent was discharged to Mortandad Canyon.

Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this report.

Sincerely,

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Security LLC

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
U.S. Department of Energy

AMD:GET:RSB/lm

Cy: James Hogan, NMED/SWQB, Santa Fe, NM
John E. Kieling, NMED/HWB, Santa Fe, NM
Steve W. Yanicak, NMED/DOE/OB, M894, (E-File)
Hai Shen, LASO-EPO, A316, (E-File)
Gene E. Turner, LASO-EPO, A316, (E-File)
Carl A. Beard, PADOPS, A102,
Michael T. Brandt, ADESH, K491, (E-File)
Alison M. Dorries, ENV-DO, K491, (E-File)

Cy (continued):
Randall S. Johnson, E500, (E-File)
Michael T. Saladen, ENV-RCRA, K490, (E-File)
Robert S. Beers, ENV-RCRA, K490
Robert C. Mason, TA55-DO, E583, (E-File)
Clifford W. Kirkland, TA-55 RLW, J910, (E-File)
Victor J. Salazar, TA-55 RLW, E518, (E-File)
John C. Del Signore, TA-55 RLW, E518, (E-File)
IRM-RMMSO, w/enc., A150, (E-File)
ENV-RCRA Correspondence File, w/enc., K490

Table 1.0. Mortandad Canyon Alluvial Well Sampling, 2nd Quarter, 2012.

Sampling Location	Sample Field Prep (F/UF)[1]	Sample Date	Perchlorate (ug/L)	NO_3+NO_2-N (mg/L)	TKN (mg/L)	NH3-N (mg/L)	TDS (mg/L)	F (mg/L)
MCO-3	F	5/21/2012	0.37	0.35	0.26	0.12	306	0.35
MCO-4B	F	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]
MCO-6	F	5/22/2012	3.2	0.84	0.15	0.12	260	0.99
MCO-7	F	5/29/2012	7.1	1.2	0.17	0.045J	286	1.1
NM WQCC 3103 Groundwater Standards			*NA*[2]	*10 mg/L*[3]	*NA*[2]	*NA*[2]	*1000 mg/L*	*1.6 mg/L*

Notes:

[1]All samples filtered.

[2]NA means that there is no NM WQCC 3103 standard for this analyte.

[3]The NM WQCC 3103 Groundwater Standard is for NO_3-N.

[4]Ice means that ice and snow blocked safe access to the well.

[5]Dry means that there was insufficient water in the well for sampling.

J- means that the reported value is expected to be more uncertain than usual with a potential negative bias.

J+ means that the reported value is expected to be more uncertain than usual with a potential positive bias.

J means the reported value is greater than the Method Detection Limit (MDL) but less than the Reporting Limit (RL).

Table 2.0. RLWTF Final Weekly Composite (FWC) Effluent Sampling, 2nd Quarter, 2012.

			Analysis by RLWTF[1]		Analysis by General Engineering Laboratories, Inc.			
Monitoring Period	Sample Composite Date	Sample ID#	NO_3-N (mg/L)	NO_2-N (mg/L)	NO_3+NO_2-N (mg/L)	Perchlorate (ug/L)	Fluoride (mg/L)	TDS (mg/L)
April	4/2/12	No Discharge[2]	-----	-----	-----	-----	-----	-----
	4/9/12	No Discharge	-----	-----	-----	-----	-----	-----
	4/16/12	No Discharge	-----	-----	-----	-----	-----	-----
	4/23/12	No Discharge	-----	-----	-----	-----	-----	-----
	4/30/12							
May	5/7/12	No Discharge	-----	-----	-----	-----	-----	-----
	5/14/12	No Discharge	-----	-----	-----	-----	-----	-----
	5/21/12	No Discharge	-----	-----	-----	-----	-----	-----
	5/28/12	No Discharge	-----	-----	-----	-----	-----	-----
June	6/4/12	No Discharge						
	6/11/12	No Discharge	-----	-----	-----	-----	-----	-----
	6/18/12	No Discharge	-----	-----	-----	-----	-----	-----
	6/25/12	No Discharge	-----	-----	-----	-----	-----	-----
2nd Quarter 2012 Averages[3]			-----	-----	-----	-----	-----	-----
NMWQCC 3103 Groundwater Standards			***10 mg/L***	***NA[5]***	***10 mg/L[4]***	***NA[5]***	***1.6 mg/L***	***1000 mg/L***

Notes:

[1]Analysis by the TA-50 Radioactive Liquid Waste Treatment Facility's analytical laboratory.

[2]No Discharge means the RLWTF did not discharge effluent through NPDES Outfall 051 during the 7-day period preceding the composite date.

[3]2nd quarter 2012 averages include the results from March 2012, if applicable.

[4]The NMWQCC Regulation 3103 groundwater standard is for nitrate (NO_3-N).

[5]NA means that there is no NMWQCC 3103 groundwater standard for this analyte.

Table 3.0. RLWTF Final Monthly Composite (FMC) Effluent Sampling, 2nd Quarter, 2012.

Monitoring Period	RLWTF FMC Results[1]			
	NO_3-N (mg/L)	Perchlorate by IC[2] (ug/L)	TDS (mg/L)	F (mg/L)
April 2012	---- No Discharges ----			
May 2012	---- No Discharges ----			
June 2012	---- No Discharges ----			
NMWQCC 3103 Groundwater Standards	*10 mg/L*	*NA*[3]	*1000 mg/L*	*1.6 mg/L*

Notes:

[1]Analysis by the TA-50 Radioactive Liquid Waste Treatment Facility's analytical laboratory.

[2]IC means EPA Method 314.0, perchlorate analysis by Ion Chromatography.

[3]NA means that there is no NM WQCC 3103 standard for this analyte.

09214

Fullam VOCs 030714/ caseloads/LANL/OP 1132 TA-50 RLWTF/OP 1132 emails

Fullam, Jennifer, NMENV

From: Beers, Bob <bbeers@lanl.gov>
Sent: Wednesday, July 25, 2012 9:52 AM
To: George, Robert, NMENV
Cc: Saladen, Michael T; Turner, Gene E.; Marshall, Clint, NMENV; Schoeppner, Jerry, NMENV; Fullam, Jennifer, NMENV; Dorries, Alison M; Grieggs, Tony
Subject: DOE/LANS/NMED GWQB Mtg RE: ZLD Evaporation Tanks

Hi Robert,

As we discussed on the telephone yesterday, the US Department of Energy and Los Alamos National Security LLC would like to meet with you and your management at the NMED Ground Water Quality Bureau regarding operation of the soon-to-be-completed TA-52 Zero Liquid Discharge (ZLD) Solar Evaporation Tanks. As you know, these tanks are being constructed to evaporate treated effluent from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF).

The meeting date and time you recommended, **Friday, August 3, 2012, at 1:00 pm**, is convenient for us.

Please confirm that this date/time is still an acceptable to you and your associates.

Sincerely,

Bob Beers
Water Quality & RCRA Group
Los Alamos National Security, LLC

Los Alamos
NATIONAL LABORATORY
EST.1943

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: AUG 1 0 2012
Refer To: ENV-RCRA-12-0173
LAUR: 12-21591

GROUND WATER

AUG 1 0 2012

BUREAU

Mr. Jerry Schoeppner, Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2261
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Dear Mr. Schoeppner:

SUBJECT: SUPPLEMENTAL INFORMATION FOR DISCHARGE PERMIT APPLICATION DP-1132, RADIOACTIVE LIQUID WASTE TREATMENT FACILITY (RLWTF) AND ZERO LIQUID DISCHARGE (ZLD) SOLAR EVAPORATION TANKS

On November 18, 2011, the New Mexico Environment Department (NMED) notified the U. S. Department of Energy and Los Alamos National Security, LLC (DOE/LANS) that a comprehensive, up-to-date application was required to issue Discharge Permit (DP)-1132 for the Technical Area 50 (TA-50) Radioactive Liquid Waste Treatment Facility and the TA-52 Zero Liquid Discharge Solar Evaporation Tanks. A Discharge Permit application (ENV-DO-12-0005) and supplement (ENV-DO-12-0019) were submitted to NMED by DOE/LANS on February 16, 2012, and April 2, 2012, respectively. After the above-referenced application and supplement were submitted, DOE/LANS confirmed that they could replace seven vessels at the TA-50 RLWTF with two new storage tank systems with leak detection capability located at the TA-50 Waste Mitigation and Risk Management (WMRM) Facility. This significant and improved change requires DOE/LANS to submit the enclosed supplement and modification to its existing permit application.

: 08269

The table below lists the seven vessels DOE/LANS propose to remove from service and the corresponding replacement vessels. These modifications will also remove from service a single-wall pipe that connects the 75,000-gal. influent tank to the clarifiers. Engineering design is currently underway to affect the above-referenced modifications to the TA-50 RLWTF. In the interim, wastewater storage and treatment processes at the TA-50 RLWTF will be conducted in accordance with processes and units described in the DP-1132 permit application and supplement submitted on February 16, 2012, and April 2, 2012, respectively.

Existing Vessel				Replacement Vessel		
Location	Vessel	Vessel Use	Volume (gal.)	Location	Vessel	Volume (gal.)
TA-50-02	75K tank	Influent storage	75,000	TA-50-250	WMRM Tanks (2)	50,000[1]
TA-50-02	WM2-North	Effluent storage	25,000	na	na	na
TA-50-02	WM2-South	Effluent storage	25,000	na	na	na
TA-50-01	Clarifier #1	Chemical precipitation	20,000	TA-50-01	TK71	10,000
TA-50-01	Clarifier #2	Chemical precipitation	20,000	TA-50-01	TK72	10,000
TA-50-01	Gravity Filter	Solids separation	7,000	TA-50-01	filter/sludge/clean[2]	40/500/200[1]
TA-50-90	100K Tank	Influent storage	100,000	na	na	na

[1]Capacity is for each tank.
[2]Microfilter

Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this information.

Sincerely,

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Security, LLC

Sincerely,

Peter Maggiore for

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
U.S. Department of Energy

AMD:GET:RSB/lm

Enclosures:

1. Supplemental Information, DP-1132 Application, Revised Sections A-8, A-9, and B-12.
2. Supplemental Information, DP-1132 Application, Revised Section B-7.
3. Supplemental Information, DP-1132 Application, Revised RLWTF Processes and Units—Appendix B.
4. Supplemental Information, DP-1132 Application, Revised Process Schematic—Appendix B.
5. Supplemental Information, DP-1132 Application, Revised Scaled Floor Plan—Appendix B.

Cy: Joni Arends, Concerned Citizens for Nuclear Safety, Santa Fe, NM, w/enc.
Jonathan M. Block, New Mexico Environmental Law Center, Santa Fe, NM, w/enc.
James Hogan, NMED/SWQB, Santa Fe, NM, w/enc.
John E. Kieling, NMED/HWB, Santa Fe, NM, w/enc.
Stephen M.Yanicak, NMED/DOE/OB, w/enc., (E-File)
Kevin W. Smith, LASO-OOM, w/enc., A316
Gene E. Turner, LASO-EPO, w/enc., (E-File)
Hai Shen, LASO-EPO, w/enc., (E-File)
Carl A. Beard, PADOPS, w/enc., A102
Michael T. Brandt, ADESH, w/enc., (E-File)
Alison M. Dorries, ENV-DO, w/enc., (E-File)
Michael T. Saladen, ENV-RCRA, w/enc., (E-File)
Robert S. Beers, ENV-RCRA, w/enc., K490
Robert C. Mason, TA55 DO, w/enc., (E-File)
Clifford W. Kirkland, TA-55-RLW, w/enc., (E-File)
Chris Del Signore, TA-55-RLW, w/enc., (E-File)
Victor J. Salazar, TA-55-RLW, w/enc., (E-File)
Randal S. Johnson, ENV-ES, w/enc., (E-File)
IRM-RMMSO, w/enc., (E-File)
ENV-RCRA Correspondence File, w/enc., K490

098271

ENCLOSURE 1

Supplemental Information, DP-1132 Application

Revised Sections A-8, A-9, and B-12 – Redline
Revised Sections A-8, A-9, and B-12 – Final

ENV-RCRA-12-0173

LAUR-12-21591

Date: AUG 1 0 2012

: 08273

A-8. Processing, Treatment, Storage and Disposal System. Briefly describe how wastewater, sludge, etc. is processed, treated, stored, and/or disposed of at your facility. See Supplemental Instructions for examples of system components.

The Radioactive Liquid Waste Treatment Facility (RLWTF) consists of (a) an underground collection system that conveys water to Technical Area (TA) 50 from generators at LANL, (b) structures at TA-50, and (c) Zero Liquid Discharge Solar Evaporation Tanks at TA- 52. At Technical Area 50, Building 50-01 is the primary structure; it houses treatment equipment, process tanks, analytical laboratories, and offices. Adjacent TA-50 structures primarily provide for additional water storage: ~~50-02 (influent),~~ 50-66 (influent), ~~50- 90 (influent),~~ 50-248 (secondary waters), and 50-250 (influent and emergency).

The RLWTF receives and treats radioactive liquid waste (RLW) from generators at Los Alamos National Laboratory. RLW includes small volumes, less than one percent of total influent, that are also characteristically hazardous for corrosivity, which are treated using elementary neutralization. The RLWTF has (1) a main treatment process for low-level RLW, (2) a process for treating transuranic RLW, and (3) a secondary treatment process for waste streams from both the low-level and transuranic processes.

1) The main treatment process consists of influent collection and storage, the treatment of low-level RLW, and the discharge of treated water to the environment. ~~Treatment~~ Process steps include treatment with chemicals in a reaction tank, ~~clarification~~, filtration, ion exchange, and reverse osmosis. Discharge to the environment is via NPDES Outfall #051, solar evaporation at the TA-52 Zero Liquid Discharge (ZLD) Solar Evaporation Tanks, or ~~mechanical~~ evaporation using natural gas at TA-50-257. Two secondary streams are generated by primary treatment, sludge and reverse osmosis concentrate; they are sent to the secondary treatment process.

2) Transuranic RLW treatment consists of influent collection and storage, treatment of the transuranic RLW, and sludge treatment. Treated water is not discharged; it either receives additional treatment (secondary reverse osmosis) or is sent to storage tanks in Building 50-248 for disposition as bottoms. Sludge from the treatment process is concentrated, solidified with cement, and shipped to the Waste Isolation Pilot Plant as a solid transuranic waste.

3) The secondary treatment process treats wastes from the primary and transuranic treatment lines. It consists of a rotary vacuum filter to treat sludge from the main treatment process, secondary reverse osmosis to treat reverse osmosis concentrate from the main process and/or effluent from the transuranic process, and a bottoms disposal step. Wastes from the secondary treatment process are disposed as low-level radioactive solid waste.

A-9. **Discharge Locations.** List the locations of your facility and of all components of your processing, treatment, storage and/or disposal system. Examples of components include septic tanks, lagoons, leachfields, irrigation sites, mine stockpiles, etc. Additional examples are listed in the Supplemental Instructions. Latitude and longitude are optional unless township, range and section are not available.

Components	Township	Range	Section(s)	Latitude	Longitude
~~RLWTF Mechanical~~ Natural Gas Evaporator (50-257)	19N	6E	22	35° 51' 58.3" 35° 51' 43.4"	-106° 17' 48.5" -106° 17' 51.8"
NPDES Outfall #051 (NM0028355)	19N	6E	22	35° 51' 54"	-106° 17' 52"
TA-52 Zero Liquid Discharge Solar Evaporation Tanks (currently under construction)	19N	6E	22	35° 51' 36"	-106° 17' 12"

B-12. **Discharge Volumes.** Describe how and where the monthly discharge volume at your facility will be. For all measuring devices, provide type, location, and units of measure including multipliers (e.g., gallons, gallons x 100, acre-ft, etc.) See Supplemental Instructions. Attach additional pages, if necessary.

Discharges of treated water to the environment are measured by the following methods:

- Low-level influent: ~~Low-level RLW influent volumes are determined by daily water balance. The levels of process vessels and tanks are continuously monitored with information transmitted electronically to the RLWTF control room. Level changes are converted to volume changes, which are summed daily. Influent is determined as the sum of tank volume changes plus volumes of water discharged to the environment and water removed as sludge. Tank level and other volume information is reviewed daily to assure activities and tank level changes agree with actual plant operations.~~
  Low-level RLW influent volumes will be determined by monitoring and recording the change in level of Tank 5 and Tank 6 in the Waste Management and Risk Mitigation (WMRM) Facility. While radioactive liquid waste (RLW) is being fed to the treatment process from one of these two influent tanks (e.g., Tank 5), fresh influent will be received in the other influent tank (e.g., Tank 6). In this illustration, the change in level of Tank 6 from one day to the next will reflect the volume of the influent received.
- Transuranic influent: Transuranic influent is received in batches from TA-55, with influent collected in either the acid tank or caustic tank in Building 50-66. Level probes for these tanks are linked electronically to the RLWTF control room. Operators monitor and record tank level changes during each influent batch transfer. Influent volumes are calculated from the difference between beginning and ending tank levels.

- Discharge to the environment by ~~mechanical~~ evaporation using natural gas at 50-257: Treated water is fed to the evaporator from the effluent Frac tanks in Room 34B; water is typically fed continuously during the normal work week, including overnight. Volumes are read in gallons from a water meter on the evaporator feed line.

- Discharge to the environment by solar evaporation: Treated water is discharged to the TA-52 Zero Liquid Discharge Solar Evaporation Tanks from either of the effluent Frac tanks in Room 34B, or from TK38 in Room 38. Discharges occur in batches. The volume, in gallons, of each discharge is calculated from the change in tank level. If discharges are from the effluent Frac tanks, which are horizontal tanks, before- and after-discharge tank volumes are determined from a table that correlates tank level and volume of water in the tank. If discharges are from TK38, pre and post discharge tank volumes are read directly from markings on this translucent vertical tank.

- Discharge to the environment via NPDES Outfall #051: Treated water is discharged from either of the effluent Frac tanks in Room 34B, or from TK38 in Room 38. Discharges occur in batches. The volume, in gallons, of each discharge is calculated from the change in tank level. If discharges are from the effluent Frac tanks, which are horizontal tanks, before- and after-discharge tank volumes are determined from a table that correlates tank level and volume of water in the tank. If discharges are from TK38, pre and post discharge tank volumes are read directly from markings on this translucent vertical tank.

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2) Transuranic RLW treatment consists of influent collection and storage, treatment of the transuranic RLW, and sludge treatment. Treated water is not discharged; it either receives additional treatment (secondary reverse osmosis) or is sent to storage tanks in Building 50-248 for disposition as bottoms. Sludge from the treatment process is concentrated, solidified with cement, and shipped to the Waste Isolation Pilot Plant as a solid transuranic waste.

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TA-52 Zero Liquid Discharge Solar Evaporation Tanks (currently under construction)	19N	6E	22	35° 51' 36"	-106° 17' 12"

B-12. Discharge Volumes. Describe how and where the monthly discharge volume at your facility will be. For all measuring devices, provide type, location, and units of measure including multipliers (e.g., gallons, gallons x 100, acre-ft, etc.) See Supplemental Instructions. Attach additional pages, if necessary.

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- **Transuranic influent:** Transuranic influent is received in batches from TA-55, with influent collected in either the acid tank or caustic tank in Building 50-66. Level probes for these tanks are linked electronically to the RLWTF control room. Operators monitor and record tank level changes during each influent batch transfer. Influent volumes are calculated from the difference between beginning and ending tank levels.

- **Discharge to the environment by evaporation using natural gas at 50-257**: Treated water is fed to the evaporator from the effluent Frac tanks in Room 34B; water is typically fed continuously during the normal work week, including overnight. Volumes are read in gallons from a water meter on the evaporator feed line.

- **Discharge to the environment by solar evaporation**: Treated water is discharged to the TA-52 Zero Liquid Discharge Solar Evaporation Tanks from either of the effluent Frac tanks in Room 34B, or from TK38 in Room 38. Discharges occur in batches. The volume, in gallons, of each discharge is calculated from the change in tank level. If discharges are from the effluent Frac tanks, which are horizontal tanks, before- and after-discharge tank volumes are determined from a table that correlates tank level and volume of water in the tank. If discharges are from TK38, pre and post discharge tank volumes are read directly from markings on this translucent vertical tank.

- **Discharge to the environment via NPDES Outfall #051:** Treated water is discharged from either of the effluent Frac tanks in Room 34B, or from TK38 in Room 38. Discharges occur in batches. The volume, in gallons, of each discharge is calculated from the change in tank level. If discharges are from the effluent Frac tanks, which are horizontal tanks, before- and after-discharge tank volumes are determined from a table that correlates tank level and volume of water in the tank. If discharges are from TK38, pre and post discharge tank volumes are read directly from markings on this translucent vertical tank.

ENCLOSURE 2

Supplemental Information, DP-1132 Application

Revised Section B-7 – Redline

Revised Section B-7 – Final

ENV-RCRA-12-0173

LAUR-12-21591

Date: AUG 1 0 2012

: 08280

B-7. Operational Plan. Attach a detailed description of how you operate your processing, treatment, storage and/or disposal system.

Animal feeding operations: include stormwater management, nutrient management plans, method for mixing irrigation and wastewater.

Domestic wastewater treatment facilities: include pre-treatment, solids management, vegetation management for land application.

Facilities using reclaimed domestic wastewater above ground: include proposed water quality classification(s), effluent monitoring, setbacks, irrigation schedules, etc. that will result in protection of public health and the environment. Please refer to *NMED Ground Water Quality Bureau Guidance: Above-Ground Use of Reclaimed Domestic Wastewater* for further information. A copy of the guidance document is available on the NMED website www.nmenv.state.nm.us under "Ground Water Quality".

The process description and schematic of the Facility are located in Appendix B (February 16, 2012 Discharge Permit Application for the TA-50 RLWTF). Waste streams are characterized by RLW generators using acceptable EPA characterization methods (sampling and analysis, acceptable knowledge, or both); this characterization data is entered by the generator onto a Waste Profile Form (WPF). The WPF is reviewed by a Waste Management Coordinator, a RCRA subject-matter expert, and RLWTF staff. The waste stream is acceptable for discharge to and treatment at the RLWTF if reviewers approve the WPF.

Influent samples are periodically collected and analyzed at the RLWTF for inorganic and radioactive constituents, as a waste characterization overcheck. Samples of low-level RLW influent are also periodically submitted to an outside chemistry laboratory for analysis of organic constituents.

Generators of low-level RLW prepare and submit a WPF. Once the WPF is approved, the generator is approved to discharge the RLW as generated via the low-level collection system.

If the low-level RLW is to be sent to the RLWTF via truck, the generator must also prepare and submit a Waste Disposal Request form. The Waste Disposal Request is reviewed by a Waste Management Coordinator, transportation, and RLWTF personnel. The shipment is acceptable for transport to the RLWTF if reviewers approve the Waste Disposal Request.

Generators of transuranic RLW also prepare and submit a WPF. In this case, the generator must sample and analyze each batch of transuranic RLW, then submit a request to the RLWTF to transfer that batch to the RLWTF. If analytical results are acceptable, a date and time for transfer is agreed upon. The transfer is controlled by RLWTF personnel who direct TA-55 personnel when to unlock and open the transfer valves; they monitor the level of the acid

waste or caustic waste tank as the transfer is in progress. The TA-55 personnel are directed when to close and lock transfer valves. Transfer valves remain closed and locked until authorized by RLWTF to be opened.

Detailed operating procedures are required for each treatment unit. Procedures are drafted by operators and engineers, then reviewed and approved by safety personnel and management. Before becoming effective, procedures must also be walked down and verified by operators (e.g., valve numbers and sequences). Approved procedures are controlled documents, available at a controlled document website.

Detailed operating procedures follow a mandatory outline, which currently has the following required topics:

- safety and controls
- prerequisite actions (prior to startup)
- detailed operating instructions
- administrative sections such as introduction, definitions, acronyms, references, and record keeping

Detailed operating sections provide step-by-step instructions for operating the treatment equipment, and identify valves by valve number (valves within the facility are labeled), electrical switches by number (electrical components are labeled), and the sequence for opening and closing valves and starting and stopping equipment (e.g., mixers, pumps).

The table below lists procedures currently used for treatment operations at the RLWTF. (The list varies over time, but procedures always exist for each unit operation.)

Operators also inspect equipment each operating day, both informally (as they operate equipment) and formally (as documented on daily inspection round sheets). Inspections include tank level checks, pump operability, alarm tests (horns and lights), leak inspections, levels of combustibles and wastes, and other items. Results of the formal inspections are reviewed with and signed off by management, and corrective maintenance work orders are initiated for deficiencies.

RLWTF Detailed Operating Procedures

Unit Operation	Detailed Operating Procedures
Main Treatment:	
M1 Collection System	Annual Inspection of the RLW Collection System Vaults
M2 Influent Storage	RLWTF Tank Management Sampling at the RLWTF
M3 Emergency Influent Storage	WMRM Facility Status Change WMRM System Alignment Checklist Sampling WMRM Tanks Transferring RLW Form WMRM to RLWTF
M4 Reaction Tanks ~~Clarifiers~~	TK71 Operations TK72 Operations System Alignment Checklist for Reaction Tanks ~~Clarifiers, Gravity Filter, and Gravity Filter Bypass~~ ~~Clarifier Chemicals and NaOH Operations~~
M5 Microfilter ~~Gravity Filter~~	Microfilter Operations System Alignment Checklist for the Microfilter ~~Clarifiers, Gravity Filter, and Gravity Filter Bypass~~
M6 Pressure Filters	Pressure Filter Operations System Alignment Checklist for Pressure Filter Operations
M7 Perchlorate Ion Exchange	Re-Configure Flow Path through the IX Columns in Room 16
M8 Primary Reverse Osmosis	Reverse Osmosis Clean-in-Place System Membrane Maintenance
M9 Polishing Ion Exchange	System Alignment Checklist for RLWTF Effluent Disposition Ion Exchange Treatment of RLWTF Effluent
M10 Effluent Storage	System Alignment Checklist for RLWTF Effluent Disposition
M11 Solar Evaporation at TA-52	ZLD Facility Status Change Transferring Effluent: RLW to ZLD Tanks Sampling ZLD Tanks Transferring Effluent: ZLD Tanks to WMRM

: 08283

M11 Outfall #051	Frac Tank Operations and Discharge of TK38 TK38 Operations
Transuranic:	
T1 Collection System	WM-201/66/107 System Alignment Checklist Transuranic RLW Transfers from TA-55 to TA-50
T2 Influent Storage	Sampling of the WM66 Influent Tanks
T3 Treatment	Room 60/60A System Alignment Checklist Acid Waste Treatment Caustic Waste Treatment Operations Back flushing the Pressure Filter
T4 Drum Tumbling	Sampling TK-7A, Sludge Mixing, and Sludge Rinsing Water Addition to TK-7A Drum Tumbler Operations
T5 Effluent Storage	Transferring Material from TK3 to the 3K Tank
Secondary Treatment:	
S1 Secondary Reverse Osmosis	Secondary RO Operations Secondary RO Cleaning and Maintenance
S2 Rotary Vacuum Filter	Vacuum Filter System
S3 Bottoms Storage	Sampling TK-SE Loading Evaporator Bottoms into a Tanker

☐ Operational plan is attached.

☐ Operational plan was previously submitted. Submittal date(s): _____

B-7. **Operational Plan.** Attach a detailed description of how you operate your processing, treatment, storage and/or disposal system.

Animal feeding operations: include stormwater management, nutrient management plans, method for mixing irrigation and wastewater.

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waste or caustic waste tank as the transfer is in progress. The TA-55 personnel are directed when to close and lock transfer valves. Transfer valves remain closed and locked until authorized by RLWTF to be opened.

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- administrative sections such as introduction, definitions, acronyms, references, and record keeping

Detailed operating sections provide step-by-step instructions for operating the treatment equipment, and identify valves by valve number (valves within the facility are labeled), electrical switches by number (electrical components are labeled), and the sequence for opening and closing valves and starting and stopping equipment (e.g., mixers, pumps).

The table below lists procedures currently used for treatment operations at the RLWTF. (The list varies over time, but procedures always exist for each unit operation.)

Operators also inspect equipment each operating day, both informally (as they operate equipment) and formally (as documented on daily inspection round sheets). Inspections include tank level checks, pump operability, alarm tests (horns and lights), leak inspections, levels of combustibles and wastes, and other items. Results of the formal inspections are reviewed with and signed off by management, and corrective maintenance work orders are initiated for deficiencies.

RLWTF Detailed Operating Procedures

Unit Operation	Detailed Operating Procedures
Main Treatment:	
M1 Collection System	Annual Inspection of the RLW Collection System Vaults
M2 Influent Storage	RLWTF Tank Management Sampling at the RLWTF
M3 Emergency Influent Storage	WMRM Facility Status Change WMRM System Alignment Checklist Sampling WMRM Tanks Transferring RLW Form WMRM to RLWTF
M4 Reaction Tanks	TK71 Operations TK72 Operations System Alignment Checklist for Reaction Tanks
M5 Microfilter	Microfilter Operations System Alignment Checklist for the Microfilter
M6 Pressure Filters	Pressure Filter Operations System Alignment Checklist for Pressure Filter Operations
M7 Perchlorate Ion Exchange	Re-Configure Flow Path through the IX Columns in Room 16
M8 Primary Reverse Osmosis	Reverse Osmosis Clean-in-Place System Membrane Maintenance
M9 Polishing Ion Exchange	System Alignment Checklist for RLWTF Effluent Disposition Ion Exchange Treatment of RLWTF Effluent
M10 Effluent Storage	System Alignment Checklist for RLWTF Effluent Disposition
M11 Solar Evaporation at TA-52	ZLD Facility Status Change Transferring Effluent: RLW to ZLD Tanks Sampling ZLD Tanks Transferring Effluent: ZLD Tanks to WMRM
M11 Outfall #051	Frac Tank Operations and Discharge of TK38 TK38 Operations

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Transuranic:	
T1 Collection System	WM-201/66/107 System Alignment Checklist Transuranic RLW Transfers from TA-55 to TA-50
T2 Influent Storage	Sampling of the WM66 Influent Tanks
T3 Treatment	Room 60/60A System Alignment Checklist Acid Waste Treatment Caustic Waste Treatment Operations Back flushing the Pressure Filter
T4 Drum Tumbling	Sampling TK-7A, Sludge Mixing, and Sludge Rinsing Water Addition to TK-7A Drum Tumbler Operations
T5 Effluent Storage	Transferring Material from TK3 to the 3K Tank
Secondary Treatment:	
S1 Secondary Reverse Osmosis	Secondary RO Operations Secondary RO Cleaning and Maintenance
S2 Rotary Vacuum Filter	Vacuum Filter System
S3 Bottoms Storage	Sampling TK-SE Loading Evaporator Bottoms into a Tanker

☐ Operational plan is attached.

☐ Operational plan was previously submitted. Submittal date(s): _____

ENCLOSURE 3

Supplemental Information, DP-1132 Application

Revised RLWTF Processes and Units—Appendix B – Redline

Revised RLWTF Processes and Units—Appendix B – Final

ENV-RCRA-12-0173

LAUR-12-21591

Date: AUG 1 0 2012

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Appendix B – TA-50 RLWTF Processes and Units

The Radioactive Liquid Waste Treatment Facility (RLWTF) consists of: (a) an underground collection system that conveys water to Technical Area (TA) 50 from generators at LANL, (b) structures at TA-50, and (c) the Zero Liquid Discharge Solar Evaporation Tanks at TA-52. At TA- 50, Building 50-01 is the primary structure; it houses treatment equipment, process tanks, analytical laboratories, and offices. Adjacent TA-50 structures primarily provide for additional water storage: ~~50-02 (influent),~~ 50-66 (influent), ~~50-90 (influent)~~, 50-248 (secondary waters), and 50-250 (influent and emergency~~emergency~~).

The RLWTF receives and treats radioactive liquid waste (RLW) from generators at Los Alamos National Laboratory. RLW includes small volumes, less than one percent of total influent, that are also characteristically hazardous for corrosivity, which are treated using elementary neutralization. The RLWTF has (1) a main treatment process for low-level RLW, (2) a process for treating transuranic RLW, and (3) a secondary treatment process for waste streams from both the low-level and transuranic processes. The units within each of these process lines are summarized in Table 1 and described in the paragraphs that follow. Table 2 provides additional information for each unit operation, including location, treatment and storage vessels, construction materials, and sizes.

Table 1: Summary of RLWTF Treatment Units

Unit Operation	Location
Main Treatment:	
M1 Collection System	TA-03, 35, 48, 50, 55, 59
M2 Influent Storage	~~50-02, 50-90~~ TA-50-250
M3 Emergency Influent Storage	50-250
M4 Reaction Tanks ~~Clarifiers~~	50-01
M5 Microfilter ~~Gravity Filter~~	50-01
M6 Pressure Filters	50-01
M7 Perchlorate Ion Exchange	50-01
M8 Primary Reverse Osmosis	50-01
M9 ~~Polishing~~ Cu-Zn Ion Exchange	50-01
M10 Effluent Storage	50-01, ~~50-02~~
M11 Effluent Evaporator	50-257
M11 ~~Zero Liquid Discharge~~ Solar Evaporation ~~Tanks~~	TA-52
M11 NPDES Outfall #051	Mortandad Canyon
Transuranic:	
T1 Collection System	TA-50, TA-55
T2 Influent Storage	50-66
T3 Treatment	50-01
T4 Drum Tumbling	50-01
T5 Effluent Storage	50-01
Secondary Treatment:	
S1 Secondary Reverse Osmosis	50-01
S2 Rotary Vacuum Filter	50-01
S3 Bottoms Disposal	50-248

MAIN TREATMENT PROCESS

The main treatment process consists of influent collection and storage, the treatment of low-level RLW, and the discharge of treated water to the environment. ~~Treatment~~ Process steps include treatment with chemicals in a reaction tank ~~clarification~~, filtration, ion exchange, and reverse osmosis. Discharge to the environment is via NPDES Outfall #051, solar evaporation at the TA-52 Zero Liquid Discharge (ZLD) Solar Evaporation Tanks, or ~~mechanical~~ evaporation using natural gas at TA-50-257. Two secondary streams are generated by primary treatment, sludge and reverse osmosis concentrate; they are sent to the secondary treatment process.

M1. Radioactive Liquid Waste Collection System

The majority of RLW is transferred by direct pipeline between generator facilities and the RLWTF. The remaining RLW, typically less than 1,000 gallons per month, is transferred from small generators via truck. The pipeline system, installed in 1982, connects the TA-50 RLWTF to buildings in six TAs using approximately four miles of underground piping. Piping is essentially an underground pipeline within a pipeline. Primary piping is six- or eight-inch-diameter polyethylene encased within 10- or 12-inch polyethylene secondary piping. The primary piping transitions to stainless steel in each of the 62 underground valve stations (also referred to as vaults), then back to polyethylene. ~~Underground v~~Vaults are equipped with leak detection sensors that are linked electronically to the RLWTF control room.

M2. Influent Storage

Influent flows from vault 50-72 through an underground, double-walled pipe, into two influent storage tanks in ~~the neutralization tank (TK-13) in Room 16 of TA-50-01, and then beneath the RLWTF into the influent tanks at~~ the basement of the Waste Management and Risk Mitigation (WMRM) Facility (50-250) ~~building 50-02~~. ~~There are two influent tanks, an in-ground concrete vessel with a capacity of 75,000 gallons, and a 17,000-galllon steel vessel set within a below-grade concrete containment vault.~~ Both are fiberglass, and each has a capacity of 50,000 gallons. ~~Influent may also be stored in Structure 50-90, which is an above-ground steel vessel with secondary containment and a capacity of 100,000 gallons. Low-level influent may be subjected to pH adjustment and/or oxidation. Typically, sodium hydroxide (25% solution) is used to adjust the influent pH; chemicals such as sodium permanganate may be used for oxidation. These two steps may be carried out in the neutralization tank, or the chemicals may be added directly to the influent tanks.~~ Influent is fed to the low-level treatment process in Building 50-01 via another underground, double-walled pipe.

M3. Emergency Influent Storage

Building 50-250, the Waste Management and Risk Mitigation (WMRM) facility, is located about 50 meters southeast of Building 50-01. WMRM houses six ~~emergency~~ influent storage tanks with a capacity of 50,000 gallons each; four of these are held in reserve for use in emergency situations. ~~Low-level influent can be shunted to these fiberglass tanks at vault 50-72, upstream of the 17K and 75K influent storage~~

~~tanks.~~ WMRM is a steel frame structure designed to withstand seismic, wind, and snow load criteria. The concrete basement houses the two influent and six emergency storage tanks, and acts as secondary containment. Tanks would receive influent by gravity flow from WM-72.

M4. Reaction Tanks ~~Clarifiers~~

Influent is mixed with treatment chemicals in the reaction tanks, TK71 and TK72, to remove insoluble constituents, including more than 90% of the radioactivity. There are two reaction tanks. Both are above-grade, carbon-steel vessels, ~10,000 gallons each. Influent and chemicals enter from above; the tank mixer brings the streams into contact. Chemicals such as sodium hydroxide, ferric sulfate, and magnesium sulfate are typically added to adjust pH, precipitate metals, and promote particle growth. Contaminants precipitate as sludge, which is kept in suspension by the tank mixer. The sludge-water mixture is fed to the next treatment step, the microfilter. ~~The clarifier acts as the workhorse of the Main Treatment Plant, removing insoluble constituents, including more than 90% of the radioactivity. There are two concrete clarifiers. Each is 20 feet in diameter with a working volume of about 20,000 gallons, and each is designed to operate at 120 gallons per minute. Influent and chemicals enter from above through a flash mixer into a center well. (Chemicals such as ferric sulfate and magnesium sulfate are added at the clarifier, to promote particle growth and to adjust pH.) Contaminants precipitate as sludge, which settles to the bottom of the clarifier. Treated waters flow to the bottom of the center well, rise in the outer portion of the clarifier, and overflow to the gravity filter. Sludge is periodically removed to TK8 for subsequent treatment in the rotary vacuum filter.~~

M5. Microfilter ~~Gravity~~ Filter

From the reaction tanks, treated influent is pumped to a microfilter to separate sludge from water. The microfilter employs polyvinylidene fluoride, or PVDF, membranes to separate solids from water. The membranes can withstand pH ranges from 0-14, are non-plugging, and are chlorine resistant; they remove particles as small as 0.1 micron, and can handle feed streams with up to 5% solids. A fully automatic backpulse of air periodically sends a reverse flow of filtrate across the membrane, dislodging contaminants and moving solids to the sludge tank. A clean-in-place system enables the periodic cleaning of membranes using acids, bases, or bleach.

Filtrate from the microfilter is fed to TK9, and from TK9 to either perchlorate ion exchange or the primary reverse osmosis unit. Sludge from the microfilter is periodically removed to TK8 for subsequent treatment in the rotary vacuum filter.

~~The dual media gravity filter is used to remove suspended solids in overflow water from the clarifier. The gravity filter contains two filtration cells of 45 square feet each. The filter bed consists of layers of anthracite, sand, and gravel resting on an underdrain grate. Water flows by gravity into the top and exits at the bottom of the bed. Backwashing is needed periodically to remove solids and to reconstitute the~~

~~bed. When properly maintained and operated, the gravity filter removes particles down to 10 microns in size. The gravity filter is sized to process up to 250 gallons of water per minute.~~

M6. Pressure Filters

Three pressure media filters, which operate in parallel or singly, can be used to remove suspended solids in water in the reaction tanks ~~from either the clarifier or the gravity filter~~. Water is pumped from either ~~two feed tanks,~~ TK71 or ~~and~~ TK72, through the media in an enclosed steel vessel at a pressure of about 30 psig. ~~Feed tanks are above-grade, carbon-steel vessels, ~10,000 gallons each~~. Pressure filters are 30 inches in diameter and ~five feet high, and are constructed of carbon steel lined with plasite (an epoxy). The media in the pressure filter consists of coarse and fine sized particles of sand, garnet, coal, and gravel. Backwashing is needed periodically to remove solids and to reconstitute the bed. Each filter can process up to 50 gallons per minute.

M7. Perchlorate Ion Exchange

Ion-exchange columns located in Room 16 are used to remove perchlorates. Six of the 12 fiberglass reinforced plastic (FRP) ion exchange vessels are typically in service. Vessels range in size to nine cubic feet of ion exchange resin, and can treat up to 60 gallons of water per minute. The columns are installed downstream of TK9, and prior to treatment by the Reverse Osmosis. TK9 is a 9000-gallon, carbon-steel, above-grade vessel located in Room 61. Resins are not re-generated. Instead, columns are drained of water, then disposed as solid radioactive waste.

M8. Primary Reverse Osmosis

The Reverse Osmosis unit removes soluble contaminants, and produces a high quality effluent that approaches and sometimes meets EPA primary drinking water standards. The Reverse Osmosis unit uses commercially available high-rejection membranes, typically rated at nominal NaCl rejection of 90-99%. The unit has three 8-inch-diameter pressure vessels, and operates at pressures of about 400 psig. Each pressure vessel contains four membranes in series; each membrane is 40 inches in length. The Reverse Osmosis is a two-stage membrane unit; the third pressure vessel receives reject from the first two. Feed may first be pH-adjusted at the perchlorate ion exchange feed tank, TK-9. Permeate is sent to storage tanks in Room 34B; concentrate is ~~either recycled to the 75K influent storage tank, or~~ is processed through the secondary Reverse Osmosis unit. The primary Reverse Osmosis has a capacity up to 60 gallons per minute.

M9. Copper-Zinc Ion Exchange

NPDES Permit effluent limits for the discharge of treated water to NPDES Outfall #051 in Mortandad Canyon became more restrictive on 08-01-2010. As a result of acute aquatic life water quality standards being applied to ephemeral streams, discharge limits for copper and zinc were decreased to levels more than 2,000 times lower than EPA's secondary drinking water standards. In order to meet these new effluent limits, an ion exchange system was installed to polish permeate from the primary Reverse

Osmosis unit. The system consists of two banks; each bank has five 3.5-cubic foot fiberglass. The ion exchange system draws water from one of the Frac tanks that holds Reverse Osmosis permeate, pumps the water through one, or if needed, both ion exchange banks, and then into TK38. Resins are not re-generated. Instead, columns are drained of water, then disposed as solid radioactive waste.

M10. Effluent Storage

~~Five~~Three tanks are available for the storage of treated water. Two Frac tanks (north tank and south tank) receive permeate from the primary reverse osmosis unit. Frac tanks are horizontal carbon steel tanks located in Room 34B; each has a capacity of ~20,000 gallons. Water that receives post-Reverse Osmosis treatment (i.e., copper-zinc ion exchange) is collected in a 1000-gallon tank, TK38 in Room 38.~~,~~ TK38 is constructed of high-density polyethylene. ~~Two additional storage tanks (WM2-N and WM2-S) are located in Building 50-02. These are below-grade concrete tanks with a nominal capacity of 25,000 gallons each.~~

M11. Discharge of Treated Water to the Environment

11a. Discharge Via ~~Mechanical~~ Effluent Evaporator ~~at TA-50-257~~ Using Natural Gas

Treated water may be discharged to the environment via an effluent ~~thermal~~ evaporator located outside Room 34 of Building 50-01. Water is heated using natural gas in a 4.5 million Btu/hr low NOx gas burner that can evaporate up to 400 gallons of water per hour. The unit is constructed of stainless steel, and has received a No Permit Required Determination from the NMED Air Quality Bureau.

11b. Discharge Via ~~Zero Liquid Discharge~~ Solar Evaporation ~~Tanks at TA52~~

Zero-Liquid-Discharge Solar Evaporation Tanks for solar evaporation of treated water are currently being constructed. The tanks are located on a site of approximately one acre, about two-thirds of a mile from the TA-50 RLWTF within TA-52 at LANL. The Zero Liquid Discharge Solar Evaporation Tanks have concrete walls approximately four feet high, and have a double liner with leak detection; each is approximately 70' x 250' in size, with a usable capacity of about 380,000 gallons. The pump house has the capability of returning the contents of the tanks to the TA-50 RLWTF for storage and retreatment, if necessary. Approximately 3500 feet of high-density polyethylene (HDPE) transfer piping connect the Zero Liquid Discharge Solar Evaporation Tanks and the TA-50 RLWTF.

11c. Discharge Via NPDES Outfall #051

Treated water that meets NPDES and DOE discharge standards can be discharged to the environment via NPDES Permitted Outfall #051 in Mortandad Canyon. Water is pumped to the outfall through approximately 1400 feet of three-inch-diameter, carbon steel pipe. NPDES samples are collected at TA-50 while water is discharging to the canyon.

TRANSURANIC TREATMENT PROCESS

Transuranic RLW treatment consists of influent collection and storage, treatment of the transuranic RLW, and sludge treatment. Treated water is not discharged; it either receives additional treatment (secondary reverse osmosis) or is sent to storage tanks in Building 50-248 for disposition as bottoms. Sludge from the treatment process is concentrated, solidified with cement, and shipped to the Waste Isolation Pilot Plant (WIPP) as a solid transuranic waste.

T1. Transuranic Collection System

The transuranic collection system runs from Building 55-04 through below-grade, double-contained transfer lines, through a valve pit ~~and vault~~ at 50-201, and into influent storage tanks at Building 50-66. One transfer line is dedicated for acid waste, and a second for caustic waste. Both are two-inch-diameter pipes. The acid waste lines are constructed of polyvinylidene fluoride (PVDF); the caustic lines are constructed of polypropylene (PP).

~~TRU wastewater is not freely drained to the RLWTF. Instead,~~ TA55 and RLWTF personnel coordinate batch wastewater transfers in advance. Once a transfer is coordinated, a batch of known volume, typically less than 100 gallons, is discharged through the system by gravity to the TRU influent storage tanks in Building 50-66. Transuranic influent is not trucked.

T2. Transuranic Influent Storage

Two influent storage tanks are located in Building 50-66, one for acid waste (~3900 gallons) and the other for caustic waste (~3000 gallons). Each tank has enough capacity to hold more than ~~two~~ one years of transuranic influent. Both tanks are cylindrical, cone-bottomed tanks, and each has a mixer~~,~~ and a HEPA-filtered vent. The sump in Building 50-66 has a leak detector that is linked to the RLWTF control room.

T3. Transuranic Treatment

Acid waste is pumped from Building 50-66 into TK1 in Room 60. The acid waste is neutralized by mixing it with liquid sodium hydroxide (nominal 25%). ~~C~~Other chemicals (ferric sulfate or polymer) may be added to promote particle growth. Solids that form in the neutralized waste settle, and are then pumped to the sludge tank, TK-7A. Clear liquid is pumped through a pressure filter into a receiving tank, TK3.

Caustic waste is pumped from Building 50-66 to Tank TK1 in Room 60, and then into the sludge-settling tank, TK-7A. The treated caustic waste is allowed to stand in the tank, which allows most of the solid particles to deposit on the bottom of the tank as sludge. In order to facilitate particle growth, TK-7A may be seeded with sludge left over from the previous treatment campaign. Chemicals (lime, ferric sulfate, or polymer) may also be added to TK-7A for this purpose.

T4. Transuranic Sludge

Sludge collects in TK-7A, a 900-gallon carbon-steel tank in Room 60. Excess water is decanted from TK-7A, then transferred to the effluent storage tank, TK3. The sludge itself is added to cement and sodium silicate, then tumbled and allowed to cure. After curing, drums of cemented sludge are transported to TA-54 to await shipment to and disposal at the Waste Isolation Pilot Plant as a solid transuranic waste.

T5. Transuranic Effluent

Effluent from the transuranic treatment process is collected in TK3 in Room 60, a 1000-gallon, horizontal fiberglass tank. Having been treated, effluent is no longer transuranic waste. The effluent either receives additional treatment (secondary reverse osmosis) or is sent to storage tanks in Building 50-248 for disposition as bottoms.

SECONDARY TREATMENT PROCESSES

The secondary treatment process treats wastes from the primary and transuranic treatment lines. It consists of a rotary vacuum filter to treat sludge from main process, secondary reverse osmosis to treat reverse osmosis concentrate from the main process and/or effluent from the transuranic process, and a bottoms disposal step. Wastes from the secondary treatment process are disposed as low-level radioactive solid waste.

S1. Secondary Reverse Osmosis

These two Reverse Osmosis units, each with a capacity of up to five gallons per minute, recover much of the concentrate from the primary Reverse Osmosis unit, thereby reducing the volume of bottoms that must be disposed of. Effluent from the transuranic process may also be treated. Secondary Reverse Osmosis units use commercially available high-rejection membranes, typically rated at nominal NaCl rejection of 90-99%. The units have two 4-inch-diameter pressure vessels, and operate at pressures of about ~~3~~200 psig. Each pressure vessel has a single membrane 40 inches in length. They are two-stage membrane units; the second pressure vessel receives reject from the first. Concentrate from the primary Reverse Osmosis unit is collected in TK73 (3700 gallons, lined steel), then fed to a smaller feed tank (300 gallons, polyethylene) in Room 24, adjacent to the secondary Reverse Osmosis (SRO) units. Permeate from the SRO is sent to the feed tank for the perchlorate ion exchange system (TK9), for re-treatment through the MTP. Reject is sent to storage tanks in Building 50-248 to await shipment as bottoms.

S2. Rotary Vacuum Filter

Solids ~~that settle to the bottom of the MTP clarifier~~ frm the microfilter (or pressure filters) are separated from water and then disposed as low-level radioactive solid waste. This sludge treatment operation includes the TK8 storage tank (capacity of 8,000 gallons) in Room 61 and the rotary vacuum filter in

Room 116. Low-level sludge contains more than 90% of the radioactivity present in low-level influent; it does not contain hazardous chemical constituents above RCRA limits, and is not a mixed waste.

S3. Bottoms ~~Disposal~~Storage

RLWTF bottoms are stored in tanks in Building 50-248 until shipped to a commercial waste treatment facility using a commercial tanker truck; shipments typically range from 4,000 to 5,000 gallons each. The commercial waste treatment facility processes bottoms to a solid form, and disposes of the solids as low-level radioactive waste at a Department of Energy or commercial disposal site.

Table 2: Vessel Information for RLWTF Treatment Units

Unit Operation	Vessel	Capacity (gallons)	Material	Above (A) Below (B)	Secondary Containment	Note
Main Treatment:						
M1 Collection System	Piping	----	Polyethylene	B	Polyethylene	
	Vaults (62)	----	Concrete	B	----	x
M2 Influent Storage	~~W5~~WMRM Tanks (2)	50,000	Fiberglass	B	Concrete	z
	~~TK13~~	~~400~~	~~Stainless Steel~~			
	~~W6~~	~~50,000~~	~~Fiberglass~~	~~B~~	~~Concrete~~	
	~~17K tank~~	~~17,000~~	~~Steel~~			
	~~75K tank~~	~~75,000~~	~~Concrete~~	B	----	
	~~100K tank~~	~~100,000~~	~~Steel~~	A	Concrete	
M3 Emergency Influent Storage	WMRM tanks (4~~,~~ 6)	50,000	Fiberglass	B	Concrete	z
M4 Reaction Tanks	TK71, TK72	10,000	Steel	A	Concrete-w	~~v,~~ z
~~Clarifiers~~	~~Clarifiers (2)~~	~~26,000~~	~~Concrete~~			
M5 Microfilter	Filter	40	Steel	A	Concrete-w	
~~Gravity Filter~~	Sludge tank	500	Polyethylene	A	Concrete-w	
	Cleaning tanks	200	Polyethylene	A	Concrete-w	z,
	~~Gravity Filter~~	~~7,000~~	~~Concrete~~	~~A~~	~~Concrete~~	v
M6 Pressure Filters	Filters (3)	100	Lined Steel	A	Concrete-w	z
	TK71, TK72	10,000	Steel	A	Concrete-w	z
M7 Perchlorate Ion Exchange	Ion Exchange Vessels(12)	50	Fiberglass	A	Concrete-w	z
	TK09	10,000	Steel	A	Concrete-w	
M8 Primary Reverse Osmosis	RO Vessel	40	Steel	A	Concrete-w	
M9 ~~Polishing~~ Cu-Zn Ion Exchange	Ion Exchange Columns (10)	200	Fiberglass	A	Concrete-w	
M10 Effluent Storage	N. Frac, S. Frac	20,000	Steel	A	Concrete-w	z
	TK-38	1,000	HDPE	A	Concrete-w	
	~~WM2-N, WM2-S~~	~~25,000~~	~~Concrete~~	~~B~~	~~----~~	~~z~~
M11 Effluent Evaporator	----	1,200	Stainless Steel	A	Hypalon, Asphalt	
M11 Solar Evaporation ~~at TA-52~~	E. Tank, W. Tank	380,000	HDPE	A	HDPE, Concrete	z
M12 NPDES Outfall #051	----	----	----	B	----	y

Notes:

v: Two concrete bottom slabs, with compacted tuff between.

w: Floor of Building 50-01, with floor drains, provides secondary containment.

x: Vaults provide secondary containment.

y: Pipe is below grade; the outfall is at the surface.

z: Capacity is for each vessel.

Table 2: Vessel Information for RLWTF Treatment Units (Continued)

Unit Operation	Vessel	Capacity (gallons)	Material	Above (A) Below (B)	Secondary Containment	Note
Transuranic:						
T1 Collection System	Piping	----	PVDF , PP	B	PVDF, PP	
T2 Influent Storage	Acid Tank	3,900	Steel	B	Concrete	
	Caustic Tank	3,000	Steel	B	Concrete	
T3 Treatment	TK1	900	Steel	A	Concrete-w	
	TK2	800	Fiberglass	A	Concrete-w	
T4 Drum Tumbling	TK-7A	900	Steel	A	Concrete-w	
T5 Effluent Storage	TK3	1,000	Fiberglass	A	Concrete-w	
Secondary Treatment:						
S1 Secondary Reverse Osmosis	RO Vessel	10	Fiberglass	A	Concrete-w	
	~~TK2401~~ TK25	300	Polyethylene	A	Concrete-w	
	TK73	3,700	Steel	A	Concrete-w	
S2 Rotary Vacuum Filter	Rotary Vacuum Filter	900	Stainless Steel	A	Concrete-w	
	TK8	8,000	Steel	A	Concrete-w	
S3 Bottoms Storage	TK-NE, SE, SW, NW	20,000	Steel	A	Concrete	z
	3K tank	3,000	Steel	A	Concrete	
	17k tank	17,000	Steel	A	Concrete	

Notes:

w: Floor of Building 50-01, with floor drains, provides secondary containment.

Z: Capacity is for each vessel.

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Appendix B – TA-50 RLWTF Processes and Units

The Radioactive Liquid Waste Treatment Facility (RLWTF) consists of: (a) an underground collection system that conveys water to Technical Area (TA) 50 from generators at LANL, (b) structures at TA-50, and (c) the Zero Liquid Discharge Solar Evaporation Tanks at TA-52. At TA- 50, Building 50-01 is the primary structure; it houses treatment equipment, process tanks, analytical laboratories, and offices. Adjacent TA-50 structures primarily provide for additional water storage: 50-66 (influent), 50-248 (secondary waters), and 50-250 (influent and emergency).

The RLWTF receives and treats radioactive liquid waste (RLW) from generators at Los Alamos National Laboratory. RLW includes small volumes, less than one percent of total influent, that are also characteristically hazardous for corrosivity, which are treated using elementary neutralization. The RLWTF has (1) a main treatment process for low-level RLW, (2) a process for treating transuranic RLW, and (3) a secondary treatment process for waste streams from both the low-level and transuranic processes. The units within each of these process lines are summarized in Table 1 and described in the paragraphs that follow. Table 2 provides additional information for each unit operation, including location, treatment and storage vessels, construction materials, and sizes.

Table 1: Summary of RLWTF Treatment Units

Unit Operation		Location
Main Treatment:		
M1	Collection System	TA-03, 35, 48, 50, 55, 59
M2	Influent Storage	TA-50-250
M3	Emergency Influent Storage	50-250
M4	Reaction Tanks	50-01
M5	Microfilter	50-01
M6	Pressure Filters	50-01
M7	Perchlorate Ion Exchange	50-01
M8	Primary Reverse Osmosis	50-01
M9	Cu-Zn Ion Exchange	50-01
M10	Effluent Storage	50-01,
M11	Effluent Evaporator	50-257
M11	Solar Evaporation	TA-52
M11	NPDES Outfall #051	Mortandad Canyon
Transuranic:		
T1	Collection System	TA-50, TA-55
T2	Influent Storage	50-66
T3	Treatment	50-01
T4	Drum Tumbling	50-01
T5	Effluent Storage	50-01
Secondary Treatment:		
S1	Secondary Reverse Osmosis	50-01
S2	Rotary Vacuum Filter	50-01
S3	Bottoms Disposal	50-248

MAIN TREATMENT PROCESS

The main treatment process consists of influent collection and storage, the treatment of low-level RLW, and the discharge of treated water to the environment. Process steps include treatment with chemicals in a reaction tank, filtration, ion exchange, and reverse osmosis. Discharge to the environment is via NPDES Outfall #051, solar evaporation at the TA-52 Zero Liquid Discharge (ZLD) Solar Evaporation Tanks, or evaporation using natural gas at TA-50-257. Two secondary streams are generated by primary treatment, sludge and reverse osmosis concentrate; they are sent to the secondary treatment process.

M1. Radioactive Liquid Waste Collection System

The majority of RLW is transferred by direct pipeline between generator facilities and the RLWTF. The remaining RLW, typically less than 1,000 gallons per month, is transferred from small generators via truck. The pipeline system, installed in 1982, connects the TA-50 RLWTF to buildings in six TAs using approximately four miles of underground piping. Piping is essentially an underground pipeline within a pipeline. Primary piping is six- or eight-inch-diameter polyethylene encased within 10- or 12-inch polyethylene secondary piping. The primary piping transitions to stainless steel in each of the 62 underground valve stations (also referred to as vaults), then back to polyethylene. Vaults are equipped with leak detection sensors that are linked electronically to the RLWTF control room.

M2. Influent Storage

Influent flows from vault 50-72 through an underground, double-walled pipe, into two influent storage tanks in the basement of the Waste Management and Risk Mitigation (WMRM) Facility (50-250). Both are fiberglass, and each has a capacity of 50,000 gallons. Influent is fed to the low-level treatment process in Building 50-01 via another underground, double-walled pipe.

M3. Emergency Influent Storage

Building 50-250, the Waste Management and Risk Mitigation (WMRM) facility, is located about 50 meters southeast of Building 50-01. WMRM houses six influent storage tanks with a capacity of 50,000 gallons each; four of these are held in reserve for use in emergency situations. WMRM is a steel frame structure designed to withstand seismic, wind, and snow load criteria. The concrete basement houses the two influent and six emergency storage tanks, and acts as secondary containment. Tanks would receive influent by gravity flow from WM-72.

M4. Reaction Tanks

Influent is mixed with treatment chemicals in the reaction tanks, TK71 and TK72, to remove insoluble constituents, including more than 90% of the radioactivity. There are two reaction tanks. Both are above-grade, carbon-steel vessels, ~10,000 gallons each. Influent and chemicals enter from above; the tank mixer brings the streams into contact. Chemicals such as sodium hydroxide, ferric sulfate, and magnesium sulfate are typically added to adjust pH, precipitate metals, and promote particle growth. Contaminants precipitate as sludge, which is kept in suspension by the tank mixer. The sludge-water mixture is fed to the next treatment step, the microfilter.

M5. Microfilter Filter

From the reaction tanks, treated influent is pumped to a microfilter to separate sludge from water. The microfilter employs polyvinylidene fluoride, or PVDF, membranes to separate solids from water. The membranes can withstand pH ranges from 0-14, are non-plugging, and are chlorine resistant; they remove particles as small as 0.1 micron, and can handle feed streams with up to 5% solids. A fully automatic backpulse of air periodically sends a reverse flow of filtrate across the membrane, dislodging contaminants and moving solids to the sludge tank. A clean-in-place system enables the periodic cleaning of membranes using acids, bases, or bleach.

Filtrate from the microfilter is fed to TK9, and then from TK9 to either perchlorate ion exchange or the primary reverse osmosis unit. Sludge from the microfilter is periodically removed to TK8 for subsequent treatment in the rotary vacuum filter.

M6. Pressure Filters

Three pressure media filters, which operate in parallel or singly, can be used to remove suspended solids in water in the reaction tanks. Water is pumped from either TK71 or TK72, through the media in an enclosed steel vessel at a pressure of about 30 psig. Pressure filters are 30 inches in diameter and ~five feet high, and are constructed of carbon steel lined with plasite (an epoxy). The media in the pressure filter consists of coarse and fine sized particles of sand, garnet, coal, and gravel. Backwashing is needed periodically to remove solids and to reconstitute the bed. Each filter can process up to 50 gallons per minute.

M7. Perchlorate Ion Exchange

Ion-exchange columns located in Room 16 are used to remove perchlorates. Six of the 12 fiberglass reinforced plastic (FRP) ion exchange vessels are typically in service. Vessels range in size to nine cubic feet of ion exchange resin, and can treat up to 60 gallons of water per minute. The columns are installed downstream of TK9, and prior to treatment by the Reverse Osmosis. TK9 is a 9000-gallon, carbon-steel, above-grade vessel located in Room 61. Resins are not re-generated. Instead, columns are drained of water, then disposed as solid radioactive waste.

M8. Primary Reverse Osmosis

The Reverse Osmosis unit removes soluble contaminants, and produces a high quality effluent that approaches and sometimes meets EPA primary drinking water standards. The Reverse Osmosis unit uses commercially available high-rejection membranes, typically rated at nominal NaCl rejection of 90-99%. The unit has three 8-inch-diameter pressure vessels, and operates at pressures of about 400 psig. Each pressure vessel contains four membranes in series; each membrane is 40 inches in length. The Reverse Osmosis is a two-stage membrane unit; the third pressure vessel receives reject from the first two. Feed may first be pH-adjusted at the perchlorate ion exchange feed tank, TK-9. Permeate is sent to storage tanks in Room 34B; concentrate is processed through the secondary Reverse Osmosis (SRO) unit. The primary Reverse Osmosis has a capacity up to 60 gallons per minute.

M9. Copper-Zinc Ion Exchange

NPDES Permit effluent limits for the discharge of treated water to NPDES Outfall #051 in Mortandad Canyon became more restrictive on 08-01-2010. As a result of acute aquatic life water quality standards being applied to ephemeral streams, discharge limits for copper and zinc were decreased to levels more than 2,000 times lower than EPA's secondary drinking water standards. In order to meet these new effluent limits, an ion exchange system was installed to polish permeate from the primary Reverse Osmosis unit. The system consists of two banks; each bank has five 3.5-cubic foot fiberglass. The ion exchange system draws water from one of the Frac tanks that holds Reverse Osmosis permeate, pumps the water through one, or if needed, both ion exchange banks, and then into TK38. Resins are not re-generated. Instead, columns are drained of water, then disposed as solid radioactive waste.

M10. Effluent Storage

Three tanks are available for the storage of treated water. Two Frac tanks (north tank and south tank) receive permeate from the primary reverse osmosis unit. Frac tanks are horizontal carbon steel tanks located in Room 34B; each has a capacity of ~20,000 gallons. Water that receives post-Reverse Osmosis treatment (i.e., copper-zinc ion exchange) is collected in a 1000-gallon tank, TK38 in Room 38. TK38 is constructed of high-density polyethylene.

M11. Discharge of Treated Water to the Environment

11a. Discharge Via Effluent Evaporator Using Natural Gas

Treated water may be discharged to the environment via an effluent evaporator located outside Room 34 of Building 50-01. Water is heated using natural gas in a 4.5 million Btu/hr low NOx gas burner that can evaporate up to 400 gallons of water per hour. The unit is constructed of stainless steel, and has received a No Permit Required Determination from the NMED Air Quality Bureau.

11b. Discharge Via Solar Evaporation

Zero-Liquid-Discharge Solar Evaporation Tanks for solar evaporation of treated water are currently being constructed. The tanks are located on a site of approximately one acre, about two-thirds of a mile from the TA-50 RLWTF within TA-52 at LANL. The Zero Liquid Discharge Solar Evaporation Tanks have concrete walls approximately four feet high, and have a double liner with leak detection; each is approximately 70' x 250' in size, with a usable capacity of about 380,000 gallons. The pump house has the capability of returning the contents of the tanks to the TA-50 RLWTF for storage and retreatment, if necessary. Approximately 3500 feet of high-density polyethylene (HDPE) transfer piping connect the Zero Liquid Discharge Solar Evaporation Tanks and the TA-50 RLWTF.

11c. Discharge Via NPDES Outfall #051

Treated water that meets NPDES and DOE discharge standards can be discharged to the environment via NPDES Permitted Outfall #051 in Mortandad Canyon. Water is pumped to the outfall through approximately 1400 feet of three-inch-diameter, carbon steel pipe. NPDES samples are collected at TA-50 while water is discharging to the canyon.

TRANSURANIC TREATMENT PROCESS

Transuranic RLW treatment consists of influent collection and storage, treatment of the transuranic RLW, and sludge treatment. Treated water is not discharged; it either receives additional treatment (secondary reverse osmosis) or is sent to storage tanks in Building 50-248 for disposition as bottoms. Sludge from the treatment process is concentrated, solidified with cement, and shipped to the Waste Isolation Pilot Plant (WIPP) as a solid transuranic waste.

T1. Transuranic Collection System

The transuranic collection system runs from Building 55-04 through below-grade, double-contained transfer lines, through a valve pit at 50-201, and into influent storage tanks at Building 50-66. One transfer line is dedicated for acid waste, and a second for caustic waste. Both are two-inch-diameter pipes. The acid waste lines are constructed of polyvinylidene fluoride (PVDF); the caustic lines are constructed of polypropylene (PP).

TA55 and RLWTF personnel coordinate batch wastewater transfers in advance. Once a transfer is coordinated, a batch of known volume, typically less than 100 gallons, is discharged through the system by gravity to the TRU influent storage tanks in Building 50-66. Transuranic influent is not trucked.

T2. Transuranic Influent Storage

Two influent storage tanks are located in Building 50-66, one for acid waste (~3900 gallons) and the other for caustic waste (~3000 gallons). Each tank has enough capacity to hold more than one year of transuranic influent. Both tanks are cylindrical, cone-bottomed tanks, and each has a mixer and a HEPA-filtered vent. The sump in Building 50-66 has a leak detector that is linked to the RLWTF control room.

T3. Transuranic Treatment

Acid waste is pumped from Building 50-66 into TK1 in Room 60. The acid waste is neutralized by mixing it with liquid sodium hydroxide (nominal 25%). Other chemicals (ferric sulfate or polymer) may be added to promote particle growth. Solids that form in the neutralized waste settle, and are then pumped to the sludge tank, TK-7A. Clear liquid is pumped through a pressure filter into a receiving tank, TK3.

Caustic waste is pumped from Building 50-66 to Tank TK1 in Room 60, and then into the sludge-settling tank, TK-7A. The treated caustic waste is allowed to stand in the tank, which allows most of the solid particles to deposit on the bottom of the tank as sludge. In order to facilitate particle growth, TK-7A may

be seeded with sludge left over from the previous treatment campaign. Chemicals (lime, ferric sulfate, or polymer) may also be added to TK-7A for this purpose.

T4. Transuranic Sludge

Sludge collects in TK-7A, a 900-gallon carbon-steel tank in Room 60. Excess water is decanted from TK-7A, then transferred to the effluent storage tank, TK3. The sludge itself is added to cement and sodium silicate, then tumbled and allowed to cure. After curing, drums of cemented sludge are transported to TA-54 to await shipment to and disposal at the Waste Isolation Pilot Plant as a solid transuranic waste.

T5. Transuranic Effluent

Effluent from the transuranic treatment process is collected in TK3 in Room 60, a 1000-gallon, horizontal fiberglass tank. Having been treated, effluent is no longer transuranic waste. The effluent either receives additional treatment (secondary reverse osmosis) or is sent to storage tanks in Building 50-248 for disposition as bottoms.

SECONDARY TREATMENT PROCESSES

The secondary treatment process treats wastes from the primary and transuranic treatment lines. It consists of a rotary vacuum filter to treat sludge from main process, secondary reverse osmosis to treat reverse osmosis concentrate from the main process and/or effluent from the transuranic process, and a bottoms disposal step. Wastes from the secondary treatment process are disposed as low-level radioactive solid waste.

S1. Secondary Reverse Osmosis

These two Reverse Osmosis units, each with a capacity of up to five gallons per minute, recover much of the concentrate from the primary Reverse Osmosis unit, thereby reducing the volume of bottoms that must be disposed of. Effluent from the transuranic process may also be treated. Secondary Reverse Osmosis units use commercially available high-rejection membranes, typically rated at nominal NaCl rejection of 90-99%. The units have two 4-inch-diameter pressure vessels, and operate at pressures of about 200 psig. Each pressure vessel has a single membrane 40 inches in length. They are two-stage membrane units; the second pressure vessel receives reject from the first. Concentrate from the primary Reverse Osmosis unit is collected in TK73 (3700 gallons, lined steel), then fed to a smaller feed tank (300 gallons, polyethylene) in Room 24, adjacent to the secondary Reverse Osmosis (SRO) units. Permeate

from the SRO is sent to the feed tank for the perchlorate ion exchange system (TK9), for re-treatment through the MTP. Reject is sent to storage tanks in Building 50-248 to await shipment as bottoms.

S2. Rotary Vacuum Filter

Solids from the microfilter (or pressure filters) are separated from water and then disposed as low-level radioactive solid waste. This sludge treatment operation includes the TK8 storage tank (capacity of 8,000 gallons) in Room 61 and the rotary vacuum filter in Room 116. Low-level sludge contains more than 90% of the radioactivity present in low-level influent; it does not contain hazardous chemical constituents above RCRA limits, and is not a mixed waste.

S3. Bottoms Storage

RLWTF bottoms are stored in tanks in Building 50-248 until shipped to a commercial waste treatment facility using a commercial tanker truck; shipments typically range from 4,000 to 5,000 gallons each. The commercial waste treatment facility processes bottoms to a solid form, and disposes of the solids as low-level radioactive waste at a Department of Energy or commercial disposal site.

Table 2: Vessel Information for RLWTF Treatment Units

Unit Operation	Vessel	Capacity (gallons)	Material	Above (A) Below (B)	Secondary Containment	Note
Main Treatment:						
M1 Collection System	Piping	----	Polyethylene	B	Polyethylene	
	Vaults (62)	----	Concrete	B	----	x
M2 Influent Storage	WMRM Tanks (2)	50,000	Fiberglass	B	Concrete	z
M3 Emergency Influent Storage	WMRM tanks (4)	50,000	Fiberglass	B	Concrete	z
M4 Reaction Tanks	TK71, TK72	10,000	Steel	A	Concrete-w	z
M5 Microfilter	Filter	40	Steel	A	Concrete-w	
	Sludge tank	500	Polyethylene	A	Concrete-w	
	Cleaning tanks	200	Polyethylene	A	Concrete-w	z
M6 Pressure Filters	Filters (3)	100	Lined Steel	A	Concrete-w	z
	TK71, TK72	10,000	Steel	A	Concrete-w	z
M7 Perchlorate Ion Exchange	Ion Exchange Vessels (12)	50	Fiberglass	A	Concrete-w	z
	TK09	10,000	Steel	A	Concrete-w	
M8 Primary Reverse Osmosis	RO Vessel	40	Steel	A	Concrete-w	
M9 Cu-Zn Ion Exchange	Ion Exchange Columns (10)	200	Fiberglass	A	Concrete-w	
M10 Effluent Storage	N. Frac, S. Frac	20,000	Steel	A	Concrete-w	z
	TK-38	1,000	HDPE	A	Concrete-w	
M11 Effluent Evaporator	----	1,200	Stainless Steel	A	Hypalon, Asphalt	
M11 Solar Evaporation	E. Tank, W. Tank	380,000	HDPE	A	HDPE, Concrete	z
M12 NPDES Outfall #051	----	----	----	B	----	y

Notes:

v: Two concrete bottom slabs, with compacted tuff between.

w: Floor of Building 50-01, with floor drains, provides secondary containment.

x: Vaults provide secondary containment.

y: Pipe is below grade; the outfall is at the surface.

z: Capacity is for each vessel.

Table 2: Vessel Information for RLWTF Treatment Units (Continued)

Unit Operation	Vessel	Capacity (gallons)	Material	Above (A) Below (B)	Secondary Containment	Note
Transuranic:						
T1 Collection System	Piping	----	PVDF , PP	B	PVDF, PP	
T2 Influent Storage	Acid Tank	3,900	Steel	B	Concrete	
	Caustic Tank	3,000	Steel	B	Concrete	
T3 Treatment	TK1	900	Steel	A	Concrete-w	
	TK2	800	Fiberglass	A	Concrete-w	
T4 Drum Tumbling	TK-7A	900	Steel	A	Concrete-w	
T5 Effluent Storage	TK3	1,000	Fiberglass	A	Concrete-w	
Secondary Treatment:						
S1 Secondary Reverse Osmosis	RO Vessel	10	Fiberglass	A	Concrete-w	
	TK25	300	Polyethylene	A	Concrete-w	
	TK73	3,700	Steel	A	Concrete-w	
S2 Rotary Vacuum Filter	Rotary Vacuum Filter	900	Stainless Steel	A	Concrete-w	
	TK8	8,000	Steel	A	Concrete-w	
S3 Bottoms Storage	TK-NE, SE, SW, NW	20,000	Steel	A	Concrete	z
	3K tank	3,000	Steel	A	Concrete	
	17k tank	17,000	Steel	A	Concrete	

Notes:

w: Floor of Building 50-01, with floor drains, provides secondary containment.

Z: Capacity is for each vessel.

ENCLOSURE 4

Supplemental Information, DP-1132 Application

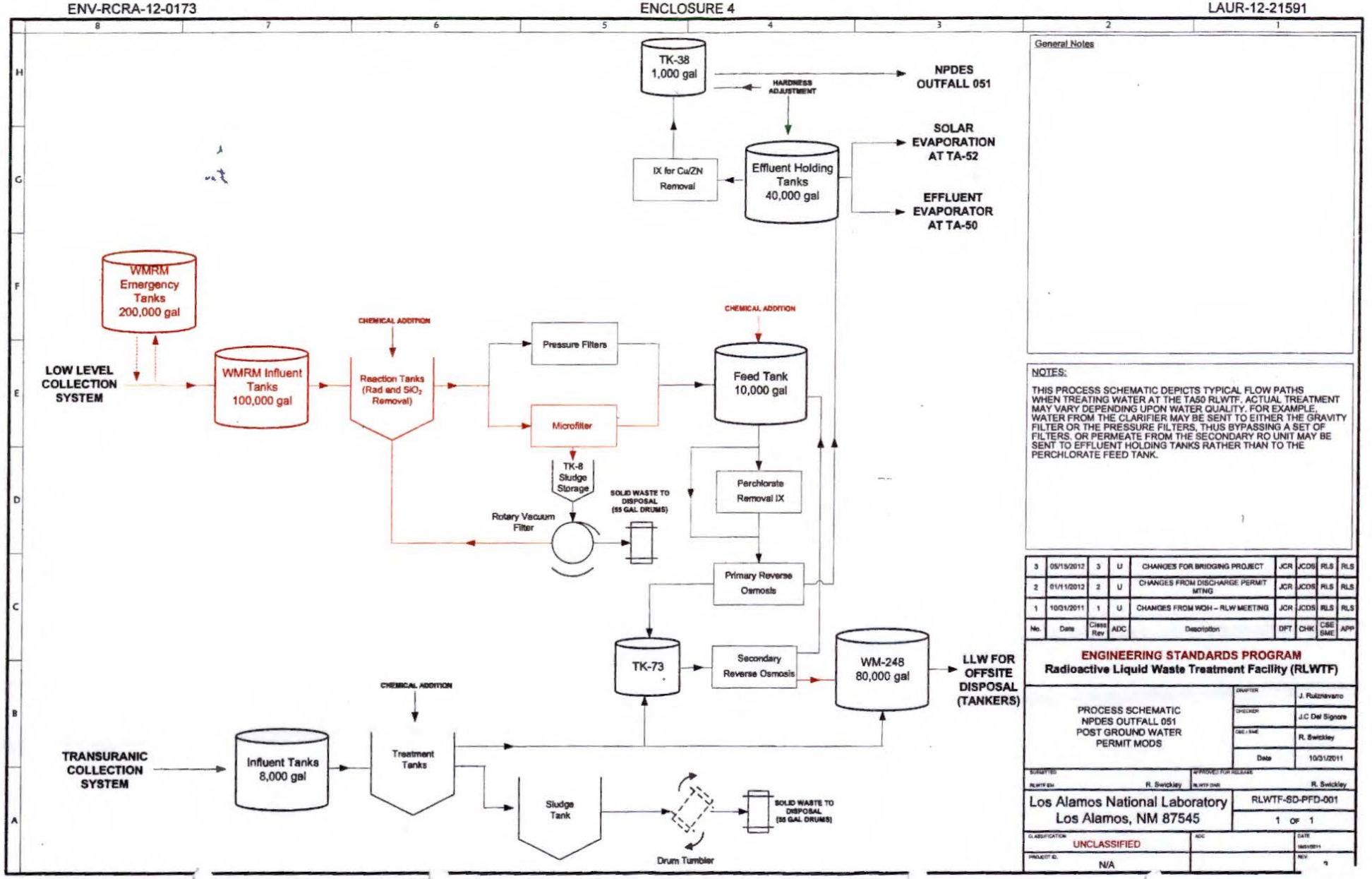
Revised Process Schematic—Appendix B

ENV-RCRA-12-0173

LAUR-12-21591

Date: AUG 1 0 2012

: 08310



General Notes

NOTES:

THIS PROCESS SCHEMATIC DEPICTS TYPICAL FLOW PATHS WHEN TREATING WATER AT THE TA50 RLWTF. ACTUAL TREATMENT MAY VARY DEPENDING UPON WATER QUALITY. FOR EXAMPLE, WATER FROM THE CLARIFIER MAY BE SENT TO EITHER THE GRAVITY FILTER OR THE PRESSURE FILTERS, THUS BYPASSING A SET OF FILTERS. OR PERMEATE FROM THE SECONDARY RO UNIT MAY BE SENT TO EFFLUENT HOLDING TANKS RATHER THAN TO THE PERCHLORATE FEED TANK.

No.	Date	Class Rev	ADC	Description	DFT	CHK	CSE SME	APP
3	05/15/2012	3	U	CHANGES FOR BRIDGING PROJECT	JCR	JCDS	RLS	RLS
2	01/11/2012	2	U	CHANGES FROM DISCHARGE PERMIT MTNG	JCR	JCDS	RLS	RLS
1	10/31/2011	1	U	CHANGES FROM WQH – RLW MEETING	JCR	JCDS	RLS	RLS

ENGINEERING STANDARDS PROGRAM
Radioactive Liquid Waste Treatment Facility (RLWTF)

PROCESS SCHEMATIC
NPDES OUTFALL 051
POST GROUND WATER
PERMIT MODS

DRAFTER: J. Ruiznevarro
CHECKER: J.C Del Signore
CSE / SME: R. Swickley
Date: 10/31/2011

SUBMITTED RLWTF EM: R. Swickley
APPROVED FOR RELEASE RLWTF DWD: R. Swickley

Los Alamos National Laboratory
Los Alamos, NM 87545

RLWTF-SD-PFD-001
1 OF 1

CLASSIFICATION: UNCLASSIFIED
ADC:
DATE: 10/31/2011
PROJECT ID: N/A
REV: 1

08311

ENCLOSURE 5

Supplemental Information, DP-1132 Application

Revised Scaled Floor Plan—Appendix B

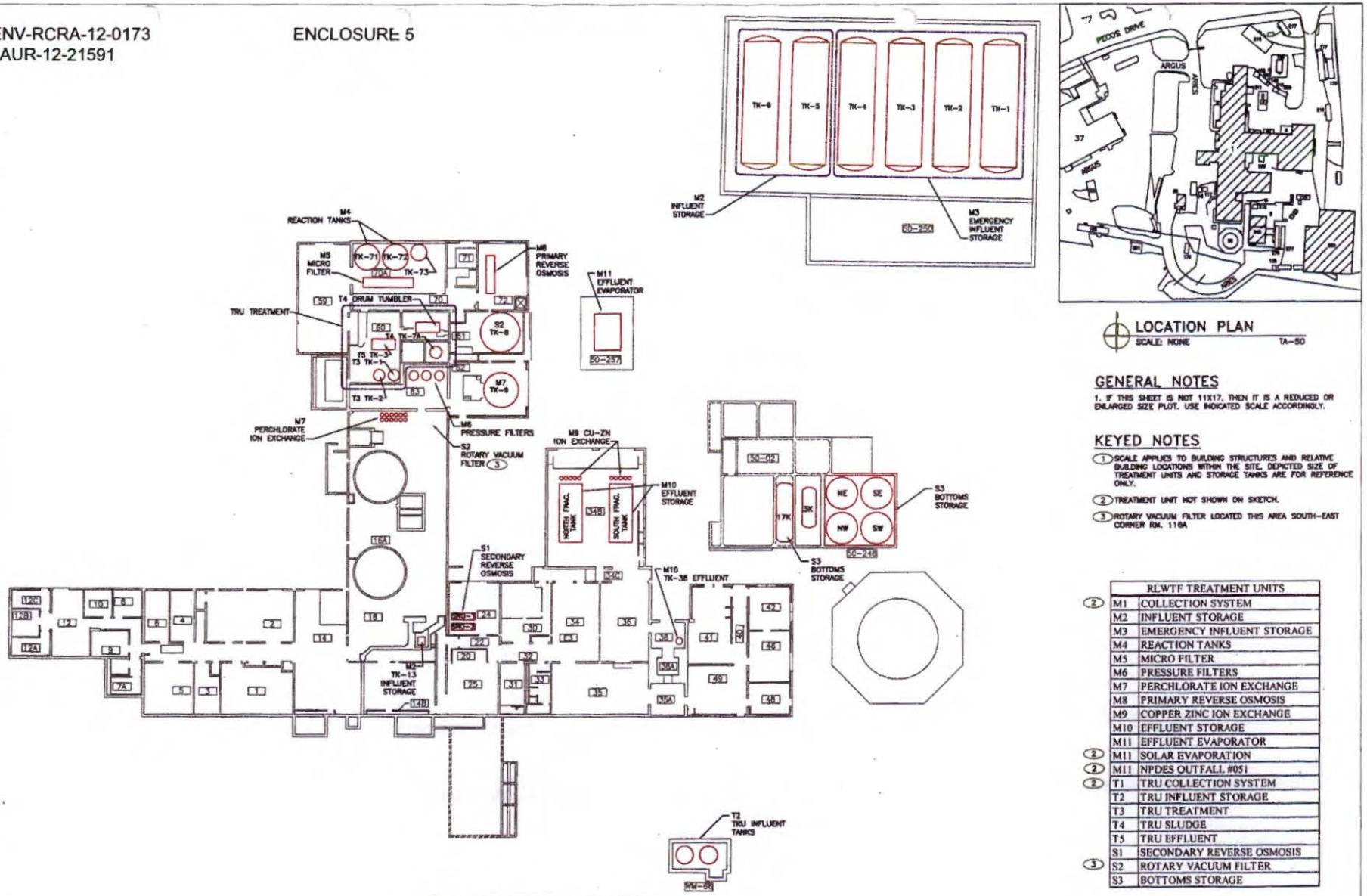
ENV-RCRA-12-0173

LAUR-12-21591

Date: AUG 1 0 2012

ENV-RCRA-12-0173
LAUR-12-21591

ENCLOSURE 5



LOCATION PLAN
SCALE: NONE
TA-50

N RLWTF TREATMENT UNITS
SCALE: 1/8" = 1'-0" (1)

GENERAL NOTES

1. IF THIS SHEET IS NOT 11X17, THEN IT IS A REDUCED OR ENLARGED SIZE PLOT. USE INDICATED SCALE ACCORDINGLY.

KEYED NOTES

(1) SCALE APPLIES TO BUILDING STRUCTURES AND RELATIVE BUILDING LOCATIONS WITHIN THE SITE. DEPICTED SIZE OF TREATMENT UNITS AND STORAGE TANKS ARE FOR REFERENCE ONLY.

(2) TREATMENT UNIT NOT SHOWN ON SKETCH.

(3) ROTARY VACUUM FILTER LOCATED THIS AREA SOUTH-EAST CORNER RM. 116A

	RLWTF TREATMENT UNITS	
(2)	M1	COLLECTION SYSTEM
	M2	INFLUENT STORAGE
	M3	EMERGENCY INFLUENT STORAGE
	M4	REACTION TANKS
	M5	MICRO FILTER
	M6	PRESSURE FILTERS
	M7	PERCHLORATE ION EXCHANGE
	M8	PRIMARY REVERSE OSMOSIS
	M9	COPPER ZINC ION EXCHANGE
	M10	EFFLUENT STORAGE
	M11	EFFLUENT EVAPORATOR
(2)	M11	SOLAR EVAPORATION
(2)	M11	NPDES OUTFALL #051
(2)	T1	TRU COLLECTION SYSTEM
	T2	TRU INFLUENT STORAGE
	T3	TRU TREATMENT
	T4	TRU SLUDGE
	T5	TRU EFFLUENT
	S1	SECONDARY REVERSE OSMOSIS
(3)	S2	ROTARY VACUUM FILTER
	S3	BOTTOMS STORAGE

08313

Fullam, Jennifer, NMENV

From: Beers, Bob [bbeers@lanl.gov]
Sent: Wednesday, August 22, 2012 3:13 PM
To: George, Robert, NMENV; Fullam, Jennifer, NMENV; Marshall, Clint, NMENV; Davis, Jim, NMENV
Cc: Saladen, Michael T; Turner, Gene E.; Maggiore, Peter; Artiglia, Edward W; Dorries, Alison M; Kirkland, Clifford W
Subject: Correction Notice RE: LANL ZLD Evaporation Tanks

All—

On August 3, 2012, you met with the US Department of Energy and Los Alamos National Security LLC regarding the Technical Area (TA)-52 Zero Liquid Discharge Evaporation Tanks.

At the meeting Los Alamos National Security LLC stated incorrectly that the operating pressure of the evaporation system (sprayers) was 45 psi.

The correct operating pressure is 65 psi.

My regrets for the incorrect information.

Sincerely,

Bob Beers
Water Quality & RCRA Group
Los Alamos National Security LLC
505-667-7969

08315

DP-1132
Blue file
MRS

GROUND WATER
OCT 30 2012
BUREAU

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: OCT 29 2012
Refer To: ENV-RCRA-12-0240
LAUR: 12-25671

Mr. Jerry Schoeppner, Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2250
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Dear Mr. Schoeppner:

SUBJECT: DISCHARGE PLAN DP-1132 QUARTERLY REPORT, THIRD QUARTER 2012, TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY

This letter from the U.S. Department of Energy and Los Alamos National Security LLC (DOE/LANS) is the third quarter 2012 Discharge Plan DP-1132 report for the Technical Area (TA)-50 Radioactive Liquid Waste Treatment Facility (RLWTF). Since the first quarter of 1999, DOE/LANS have provided the New Mexico Environment Department (NMED) with voluntary quarterly reports containing analytical results from effluent and groundwater monitoring.

During the third quarter of 2012, no effluent was discharged by the TA-50 RLWTF through National Pollutant Discharge Elimination System (NPDES) Outfall 051 to Mortandad Canyon; all effluent was evaporated on-site at the effluent evaporator.

Quarterly Monitoring Results, Mortandad Canyon Alluvial Groundwater Wells

Table 1.0 presents the analytical results from sampling conducted at Mortandad Canyon alluvial wells MCO-6 and MCO-7 during the third quarter of 2012. No samples were collected from alluvial wells MCO-3 and MCO-4B because there was insufficient water present. Samples from MCO-6 and MCO-7 were submitted to GEL Laboratories LLC (GEL) for analysis. All of the analytical results

: 08324

were below the New Mexico Water Quality Control Commission (NMWQCC) 3103 standards for nitrate-nitrogen (NO_3-N), fluoride (F), and total dissolved solids (TDS). Analytical results from the sampling of intermediate and regional aquifer wells in Mortandad Canyon can be accessed online at the Intellus New Mexico environmental monitoring data web site (http://www.intellusnmdata.com).

TA-50 RLWTF Effluent Monitoring Results

Table 2.0 reports the analytical results from the weekly composite sampling of RLWTF effluent discharged through NPDES Outfall 051 to Mortandad Canyon. The final weekly composite (FWC) samples are flow-proportioned composite samples prepared from each tank of effluent discharged to Mortandad Canyon during a 7-day period. Samples are submitted to GEL for analysis. No FWC samples were collected during the third quarter of 2012 because no RLWTF effluent was discharged to Mortandad Canyon.

Table 3.0 reports the final monthly composite (FMC) sample results for NO_3-N, perchlorate (ClO_4), F, and TDS for the third quarter of 2012. No FMC samples were collected during the third quarter of 2012 because no effluent was discharged to Mortandad Canyon.

Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this report.

Sincerely,

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Security, LLC

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
U.S. Department of Energy

AMD:GET:RSB/lm

Cy: James Hogan, NMED/SWQB, Santa Fe, NM
John Kieling, NMED/HWB, Santa Fe, NM
Steve Yanicak, NMED/DOE/OB, (E-File)
Hai Shen, LASO-EPO, (E-File)
Gene E. Turner, LASO-EPO, (E-File)
Carl A. Beard, PADOPS, A102
Michael T. Brandt, ADESH, (E-File)
Alison M. Dorries, ENV-DO, (E-File)

Cy (continued):
Randall S. Johnson, ENV-ES, (E-File)
Michael T. Saladen, ENV-RCRA, (E-File)
Robert S. Beers, ENV-RCRA, K490
Robert C. Mason, TA55-DO, (E-File)
Clifford W. Kirkland, TA-55 RLW, (E-File)
John C. Del Signore, TA-55 RLW, (E-File)
Taylor Valdez, ENV-DO, (E-File)
Linda Salazar, ADESH, (E-File)
IRM-RMMSO File, (E-File)
ENV-RCRA Correspondence File, K490

: 0832R

Table 1.0. Mortandad Canyon Alluvial Well Sampling, 3rd Quarter, 2012.

Sampling Location	Sample Field Prep (F/UF)[1]	Sample Date	Perchlorate (ug/L)	NO_3+NO_2-N (mg/L)	TKN (mg/L)	NH3-N (mg/L)	TDS (mg/L)	F (mg/L)
MCO-3	F	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]
MCO-4B	F	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]
MCO-6	F	8/15/2012	4.4	1.2	0.05	0.04	271	0.88
MCO-7	F	8/14/2012	6.2	1.4	0.04	0.08	257	0.98
NM WQCC 3103 Groundwater Standards			*NA*[2]	*10 mg/L*[3]	*NA*[2]	*NA*[2]	*1000 mg/L*	*1.6 mg/L*

Notes:

[1]All samples filtered.

[2]NA means that there is no NM WQCC 3103 standard for this analyte.

[3]The NM WQCC 3103 Groundwater Standard is for NO_3-N.

[4]Ice means that ice and snow blocked safe access to the well.

[5]Dry means that there was insufficient water in the well for sampling.

J- means that the reported value is expected to be more uncertain than usual with a potential negative bias.

J+ means that the reported value is expected to be more uncertain than usual with a potential positive bias.

J means the reported value is greater than the Method Detection Limit (MDL) but less than the Reporting Limit (RL).

Table 2.0. RLWTF Final Weekly Composite (FWC) Effluent Sampling, 3rd Quarter, 2012.

			Analysis by RLWTF[1]		Analysis by General Engineering Laboratories, Inc.			
Monitoring Period	Sample Composite Date	Sample ID#	NO_3-N (mg/L)	NO_2-N (mg/L)	NO_3+NO_2-N (mg/L)	Perchlorate (ug/L)	Fluoride (mg/L)	TDS (mg/L)
July	7/2/12	No Discharge[2]	-----	-----	-----	-----	-----	-----
	7/9/12	No Discharge	-----	-----	-----	-----	-----	-----
	7/16/12	No Discharge	-----	-----	-----	-----	-----	-----
	7/23/12	No Discharge	-----	-----	-----	-----	-----	-----
	7/30/12							
August	8/6/12	No Discharge	-----	-----	-----	-----	-----	-----
	8/13/12	No Discharge	-----	-----	-----	-----	-----	-----
	8/20/12	No Discharge	-----	-----	-----	-----	-----	-----
	8/27/12	No Discharge	-----	-----	-----	-----	-----	-----
September	9/3/12	No Discharge						
	9/10/12	No Discharge	-----	-----	-----	-----	-----	-----
	9/17/12	No Discharge	-----	-----	-----	-----	-----	-----
	9/24/12	No Discharge	-----	-----	-----	-----	-----	-----
3rd Quarter 2012 Averages[3]			-----	-----	-----	-----	-----	-----
NMWQCC 3103 Groundwater Standards			*10 mg/L*	*NA*[5]	*10 mg/L*[4]	*NA*[5]	*1.6 mg/L*	*1000 mg/L*

Notes:

[1]Analysis by the TA-50 Radioactive Liquid Waste Treatment Facility's analytical laboratory.

[2]No Discharge means the RLWTF did not discharge effluent through NPDES Outfall 051 during the 7-day period preceding the composite date.

[4]The NMWQCC Regulation 3103 groundwater standard is for nitrate (NO_3-N).

[5]NA means that there is no NMWQCC 3103 groundwater standard for this analyte.

Table 3.0. RLWTF Final Monthly Composite (FMC) Effluent Sampling, 3rd Quarter, 2012.

Monitoring Period	RLWTF FMC Results[1]			
	NO_3-N (mg/L)	Perchlorate by IC[2] (ug/L)	TDS (mg/L)	F (mg/L)
July 2012	---- No Discharges ----			
August 2012	---- No Discharges ----			
September 2012	---- No Discharges ----			
NMWQCC 3103 Groundwater Standards	*10 mg/L*	*NA*[3]	*1000 mg/L*	*1.6 mg/L*

Notes:

[1]Analysis by the TA-50 Radioactive Liquid Waste Treatment Facility's analytical laboratory.

[2]IC means EPA Method 314.0, perchlorate analysis by Ion Chromatography.

[3]NA means that there is no NM WQCC 3103 standard for this analyte.

DP-1132 Blue File
MCS

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: JAN 3 0 2013
Refer To: ENV-RCRA-13-0021
LAUR: 13-20422

Mr. Jerry Schoeppner, Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2261
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

GROUND WATER
JAN 3 0 2013
BUREAU

Dear Mr. Schoeppner:

SUBJECT: DISCHARGE PLAN DP-1132 QUARTERLY REPORT, FOURTH QUARTER 2012, TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY

This letter from the U.S. Department of Energy and Los Alamos National Security LLC (DOE/LANS) is the fourth quarter 2012 Discharge Plan DP-1132 report for the Technical Area (TA)-50 Radioactive Liquid Waste Treatment Facility (RLWTF). Since the first quarter of 1999, DOE/LANS have provided the New Mexico Environment Department (NMED) with voluntary quarterly reports containing analytical results from effluent and groundwater monitoring.

During the fourth quarter of 2012, no effluent was discharged to either the National Pollutant Discharge Elimination System (NPDES) Outfall 051 or to the recently constructed solar evaporation tanks (SET) at Technical Area (TA)-52; all effluent was evaporated on-site at the effluent evaporator.

Quarterly Monitoring Results, Mortandad Canyon Alluvial Groundwater Wells

Table 1.0 presents the analytical results from sampling conducted at Mortandad Canyon alluvial well MCO-3 during the fourth quarter of 2012. No samples were collected from alluvial wells MCO-4B, MCO-6, and MCO-7 because there was insufficient water present. A sample from MCO-3 was submitted to GEL Laboratories LLC (GEL) for analysis. All of the analytical results were below the

New Mexico Water Quality Control Commission (NMWQCC) 3103 standards for nitrate-nitrogen (NO_3-N), fluoride (F), and total dissolved solids (TDS). Analytical results from the sampling of intermediate and regional aquifer wells in Mortandad Canyon can be accessed online at the Intellus New Mexico environmental monitoring data web site (http://www.intellusnmdata.com).

TA-50 RLWTF Effluent Monitoring Results

No final weekly composite (FWC) samples were collected during the fourth quarter of 2012 because no effluent was discharged to Mortandad Canyon.

No final monthly composite (FMC) samples were collected during the fourth quarter of 2012 because no effluent was discharged to Mortandad Canyon.

Please contact Robert S. Beers by telephone at (505) 667-7969 or by email at bbeers@lanl.gov if you have questions regarding this report.

Sincerely,

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Security, LLC

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
U.S. Department of Energy

AMD:GET:BB/lm

Cy: James Hogan, NMED/SWQB, Santa Fe, NM
John Kieling, NMED/HWB, Santa Fe, NM
Stephen M. Yanicak, NMED/DOE/OB, (E-File)
Hai Shen, LASO-EPO, (E-File)
Gene E. Turner, LASO-EPO, (E-File)
Carl A. Beard, PADOPS, A102
Michael T. Brandt, ADESH, (E-File)
Alison M. Dorries, ENV-DO, (E-File)
Randall S. Johnson, ENV-ES, (E-File)
Michael T. Saladen, ENV-RCRA, (E-File)
Robert S. Beers, ENV-RCRA, K490
Robert C. Mason, TA55-DO, (E-File)
Clifford W. Kirkland, TA-55-RLW, (E-File)
Victor J. Salazar, TA-55 RLW, (E-File)
John C. Del Signore, TA-55-RLW, E518, (E-File)
LASOmailbox@nnsa.doe.gov, LASO, (E-File)
IRM-RMMSO, (E-File)
ENV-RCRA Correspondence File, K490

: 05331

Table 1.0. Mortandad Canyon Alluvial Well Sampling, 4th Quarter, 2012.

Sampling Location	Sample Field Prep (F/UF)[1]	Sample Date	Perchlorate (ug/L)	NO_3+NO_2-N (mg/L)	TKN (mg/L)	NH3-N (mg/L)	TDS (mg/L)	F (mg/L)
MCO-3	F	11/7/2012	1.66	0.99	0.29	0.13	406	0.36
MCO-4B	F	10/29/2012	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]
MCO-6	F	10/29/2012	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]
MCO-7	F	11/7/2012	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]	Dry[5]
NM WQCC 3103 Groundwater Standards			*NA*[2]	*10 mg/L*[3]	*NA*[2]	*NA*[2]	*1000 mg/L*	*1.6 mg/L*

Notes:

[1]All samples filtered.

[2]NA means that there is no NM WQCC 3103 standard for this analyte.

[3]The NM WQCC 3103 Groundwater Standard is for NO_3-N.

[4]Ice means that ice and snow blocked safe access to the well.

[5]Dry means that there was insufficient water in the well for sampling.

J- means that the reported value is expected to be more uncertain than usual with a potential negative bias.

J+ means that the reported value is expected to be more uncertain than usual with a potential positive bias.

J means the reported value is greater than the Method Detection Limit (MDL) but less than the Reporting Limit (RL).

DP-1132
Blue File
GROUND WATER
NOV 15 2012
BUREAU

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: NOV 14 2012
Refer To: ENV-RCRA-12-0244
LAUR: 12-25859

Mr. Jerry Schoeppner, Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2250
1190 St. Francis Drive
P.O. Box 5469
Santa Fe, NM 87502

Dear Mr. Schoeppner:

SUBJECT: SUPPLEMENTAL INFORMATION FOR DISCHARGE PERMIT APPLICATION DP-1132, ZERO LIQUID DISCHARGE (ZLD) SOLAR EVAPORATION TANKS, AS-BUILT DRAWINGS

The enclosed compact discs (2) contain as-built drawings for the Technical Area (TA)-52 Zero Liquid Discharge (ZLD) Solar Evaporation Tanks. The drawings are provided as supplemental application information for DP-1132 and are intended to replace the 60% design drawings that were submitted to your office on August 11, 2011. Construction of the ZLD Solar Evaporation Tanks was completed on September 28, 2012.

: 08334

ROUND
NOV 15 2012
EAU

ENCLOSURE 1

Two Compact Discs – Radioactive Liquid Waste Treatment Facility Upgrade Project (RLWTF-UP) Zero Liquid Discharge (ZLD) Solar Evaporation Tanks As-Built Drawings

ENV-RCRA-12-0244

LAUR-12-25859

Date: NOV 14 2012

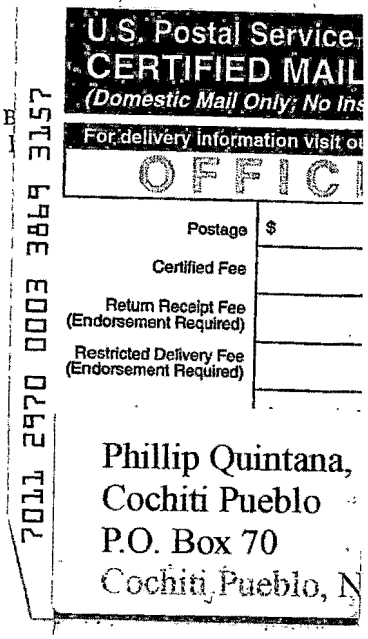
NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

Harold Runnels Building
1190 St. Francis Drive
P.O. Box 5469, Santa Fe, NM 87502-5469
Phone (505) 827-2918 Fax (505) 827-2965
www.nmenv.state.nm.us



CERTIFIED MAIL – RETURN RECEIPT REQUESTED

November 16, 2012

Governor Phillip Quintana
Pueblo de Cochiti
P.O. Box 70
Cochiti Pueblo, NM 87072

RE: Notification of Proposed Ground Water Discharge Permit for Los Alamos National Laboratory-Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Governor Quintana:

The purpose of this letter is to inform you that the New Mexico Environment Department (NMED) received an updated application for a Ground Water Discharge Permit for the above referenced facility on February 16, 2012.

NMED's Ground Water Quality Bureau issues discharge permits for the purpose of protecting all ground water of the state of New Mexico for present and potential future use as a domestic and agricultural water supply. **You are receiving this particular notice because ground water near the boundaries of the Pueblo de Cochiti may have the potential to be affected by the proposed discharge.**

The submitted application proposes to treat and discharge of up to 40,000 gallons per day of industrial wastewater to a series of disposal systems. The facility is located within Los Alamos National Laboratory, approximately 1.5 miles south of Los Alamos, in Sections 16, 17, 20, 21, 22, Township 19N, Range 06E, Los Alamos County. Ground water beneath the facility is at a depth of approximately one to 1,306 feet and has a total dissolved solids concentration of approximately 162 to 255 milligrams per liter.

The applicant and NMED have provided the first of two public notices (Public Notice 1). NMED has performed a technical review of the application and will be proposing a draft

Discharge Permit for approval. NMED will then publish notice of the proposal or denial in a newspaper(s) with State and local circulation, and post the notice on the Department's website (www.nmenv.state.nm.us). This second of two public notices (Public Notice 2) will allow for comments and/or hearing requests on the draft Discharge Permit to be submitted to NMED for a period of 30 days following publication. If comments and/or hearing requests are not received during the 30-day comment period, the draft Discharge Permit will be finalized.

The Pueblo de Cochiti is currently listed on the facility-specific interested parties list for DP-1132, and therefore will receive direct notice of Public Notice 2. Additionally, the Pueblo de Cochiti has the right to initiate informal consultation with NMED's technical staff and the Tribe's Environmental Director, or formal Tribal Consultation at any time by contacting NMED.

Should you have any questions or concerns regarding this proposed Ground Water Discharge Permit, please contact Clint Marshall, Program Manager of the Pollution Prevention Section, at (505) 827-0027 or Jennifer Fullam at (505) 827-2909.

Sincerely,

Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS: JF

cc: Director, Pueblo de Cochiti Dept of Natural Resources and Conservation, PO Box 70, 255 Cochiti Street, Cochiti Pueblo 87072
Jennifer Fullam, GWQB Tribal Contact
Charles Lundstrom, NMED Mining & Tribal Liaison, 515 West High Street, Grants, NM 87020

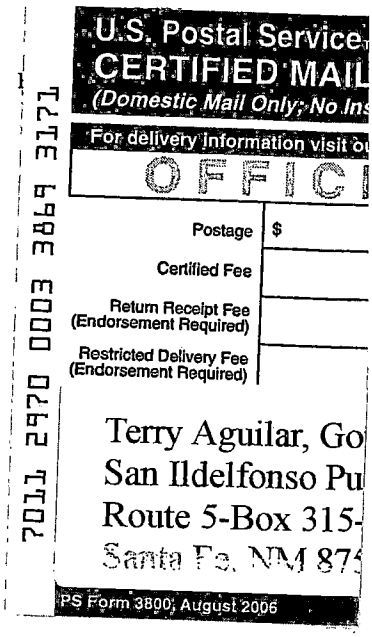
NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

Harold Runnels Building
1190 St. Francis Drive
P.O. Box 5469, Santa Fe, NM 87502-5469
Phone (505) 827-2918 Fax (505) 827-2965
www.nmenv.state.nm.us



CERTIFIED MAIL – RETURN RECEIPT REQUESTED

November 16, 2012

Governor Terry Aguilar
Pueblo of San Ildefonso
Route 5 Box 315-A
Santa Fe, NM 87506

RE: Notification of Proposed Ground Water Discharge Permit for Los Alamos National Laboratory-Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Governor Aguilar:

The purpose of this letter is to inform you that the New Mexico Environment Department (NMED) received an updated application for a Ground Water Discharge Permit for the above referenced facility on February 16, 2012.

NMED's Ground Water Quality Bureau issues discharge permits for the purpose of protecting all ground water of the state of New Mexico for present and potential future use as a domestic and agricultural water supply. **You are receiving this particular notice because ground water near the boundaries of the Pueblo of San Ildefonso may have the potential to be affected by the proposed discharge.**

The submitted application proposes to treat and discharge of up to 40,000 gallons per day of industrial wastewater to a series of disposal systems. The facility is located within Los Alamos National Laboratory, approximately 1.5 miles south of Los Alamos, in Sections 16, 17, 20, 21, 22, Township 19N, Range 06E, Los Alamos County. Ground water beneath the facility is at a depth of approximately one to 1,306 feet and has a total dissolved solids concentration of approximately 162 to 255 milligrams per liter.

The applicant and NMED have provided the first of two public notices (Public Notice 1). NMED has performed a technical review of the application and will be proposing a draft

Discharge Permit for approval. NMED will then publish notice of the proposal or denial in a newspaper(s) with State and local circulation, and post the notice on the Department's website (www.nmenv.state.nm.us). This second of two public notices (Public Notice 2) will allow for comments and/or hearing requests on the draft Discharge Permit to be submitted to NMED for a period of 30 days following publication. If comments and/or hearing requests are not received during the 30-day comment period, the draft Discharge Permit will be finalized.

The Pueblo of San Ildefonso is currently listed on the facility-specific interested parties list for DP-1132, and therefore will receive direct notice of Public Notice 2. Additionally, the Pueblo of San Ildefonso has the right to initiate informal consultation with NMED's technical staff and the Tribe's Environmental Director, or formal Tribal Consultation at any time by contacting NMED.

Should you have any questions or concerns regarding this proposed Ground Water Discharge Permit, please contact Clint Marshall, Program Manager of the Pollution Prevention Section, at (505) 827-0027 or Jennifer Fullam at (505) 827-2909.

Sincerely,

Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS: JF

cc: Director, Department of Environmental and Cultural Preservation, Pueblo of San Ildefonso, Rt. 5 Box 315-A, Santa Fe, NM 87506
Jennifer Fullam, GWQB Tribal Contact
Charles Lundstrom, NMED Mining & Tribal Liaison, 515 West High Street, Grants, NM 87020

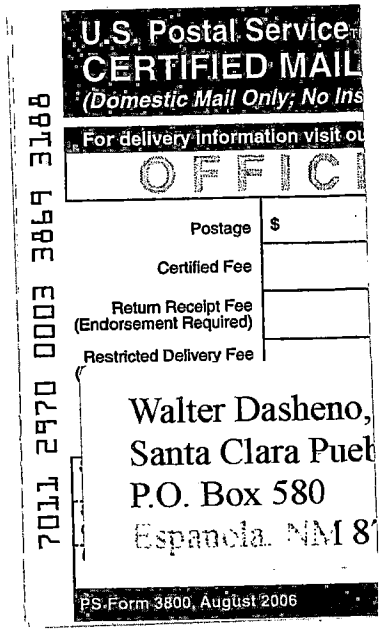
NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

Harold Runnels Building
1190 St. Francis Drive
P.O. Box 5469, Santa Fe, NM 87502-5469
Phone (505) 827-2918 Fax (505) 827-2965
www.nmenv.state.nm.us



CERTIFIED MAIL – RETURN RECEIPT REQUESTED

November 16, 2012

Governor Walter Dasheno
Pueblo of Santa Clara
P.O. Box 580
Espanola, NM 87532

RE: Notification of Proposed Ground Water Discharge Permit for Los Alamos National Laboratory-Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Governor Dasheno:

The purpose of this letter is to inform you that the New Mexico Environment Department (NMED) received an updated application for a Ground Water Discharge Permit for the above referenced facility on February 16, 2012.

NMED's Ground Water Quality Bureau issues discharge permits for the purpose of protecting all ground water of the state of New Mexico for present and potential future use as a domestic and agricultural water supply. **You are receiving this particular notice because ground water near the boundaries of Santa Clara Pueblo may have the potential to be affected by the proposed discharge.**

The submitted application proposes to treat and discharge of up to 40,000 gallons per day of industrial wastewater to a series of disposal systems. The facility is located within Los Alamos National Laboratory, approximately 1.5 miles south of Los Alamos, in Sections 16, 17, 20, 21, 22, Township 19N, Range 06E, Los Alamos County. Ground water beneath the facility is at a depth of approximately one to 1,306 feet and has a total dissolved solids concentration of approximately 162 to 255 milligrams per liter.

The applicant and NMED have provided the first of two public notices (Public Notice 1). NMED has performed a technical review of the application and will be proposing a draft

Discharge Permit for approval. NMED will then publish notice of the proposal or denial in a newspaper(s) with State and local circulation, and post the notice on the Department's website (www.nmenv.state.nm.us). This second of two public notices (Public Notice 2) will allow for comments and/or hearing requests on the draft Discharge Permit to be submitted to NMED for a period of 30 days following publication. If comments and/or hearing requests are not received during the 30-day comment period, the draft Discharge Permit will be finalized.

Santa Clara Pueblo is currently listed on the facility-specific interested parties list for DP-1132, and therefore will receive direct notice of Public Notice 2. Additionally, Santa Clara Pueblo has the right to initiate informal consultation with NMED's technical staff and the Tribe's Environmental Director, or formal Tribal Consultation at any time by contacting NMED.

Should you have any questions or concerns regarding this proposed Ground Water Discharge Permit, please contact Clint Marshall, Program Manager of the Pollution Prevention Section, at (505) 827-0027 or Jennifer Fullam at (505) 827-2909.

Sincerely,

Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS: JF

cc: Director, Office of Environmental Affairs, Santa Clara Pueblo, P.O. Box 580, Espanola, NM 87532
Jennifer Fullam, GWQB Tribal Contact
Charles Lundstrom, NMED Mining & Tribal Liaison, 515 West High Street, Grants, NM 87020

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

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Phone (505) 827-2918 Fax (505) 827-2965
www.nmenv.state.nm.us

DAVE MARTIN
Secretary
BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

November 16, 2012

Governor Walter Dasheno
Pueblo of Santa Clara
P.O. Box 580
Espanola, NM 87532

RE: Notification of Proposed Ground Water Discharge Permit for Los Alamos National Laboratory-Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Governor Dasheno:

The purpose of this letter is to inform you that the New Mexico Environment Department (NMED) received an updated application for a Ground Water Discharge Permit for the above referenced facility on February 16, 2012.

NMED's Ground Water Quality Bureau issues discharge permits for the purpose of protecting all ground water of the state of New Mexico for present and potential future use as a domestic and agricultural water supply. **You are receiving this particular notice because ground water near the boundaries of Santa Clara Pueblo may have the potential to be affected by the proposed discharge.**

The submitted application proposes to treat and discharge of up to 40,000 gallons per day of industrial wastewater to a series of disposal systems. The facility is located within Los Alamos National Laboratory, approximately 1.5 miles south of Los Alamos, in Sections 16, 17, 20, 21, 22, Township 19N, Range 06E, Los Alamos County. Ground water beneath the facility is at a depth of approximately one to 1,306 feet and has a total dissolved solids concentration of approximately 162 to 255 milligrams per liter.

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Santa Clara Pueblo is currently listed on the facility-specific interested parties list for DP-1132, and therefore will receive direct notice of Public Notice 2. Additionally, Santa Clara Pueblo has the right to initiate informal consultation with NMED's technical staff and the Tribe's Environmental Director, or formal Tribal Consultation at any time by contacting NMED.

Should you have any questions or concerns regarding this proposed Ground Water Discharge Permit, please contact Clint Marshall, Program Manager of the Pollution Prevention Section, at (505) 827-0027 or Jennifer Fullam at (505) 827-2909.

Sincerely,

Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS: JF

cc: Director, Office of Environmental Affairs, Santa Clara Pueblo, P.O. Box 580, Espanola, NM 87532
Jennifer Fullam, GWQB Tribal Contact
Charles Lundstrom, NMED Mining & Tribal Liaison, 515 West High Street, Grants, NM 87020

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

SUSANA MARTINEZ
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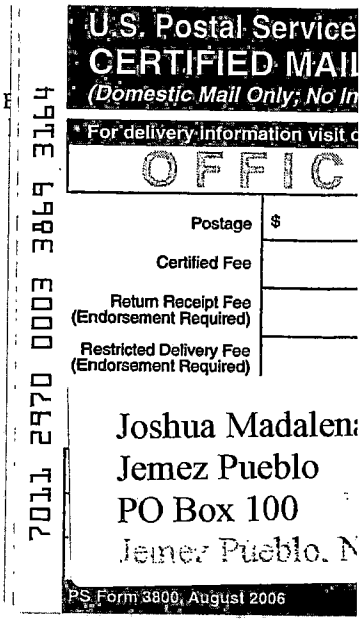

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

November 16, 2012

Governor Joshua Madalena
Pueblo of Jemez
P.O. Box 100
Jemez Pueblo, NM 87024

RE: Notification of Proposed Ground Water Discharge Permit for Los Alamos National Laboratory-Radioactive Liquid Waste Treatment Facility, DP-1132

Dear Governor Madalena:

The purpose of this letter is to inform you that the New Mexico Environment Department (NMED) received an updated application for a Ground Water Discharge Permit for the above referenced facility on February 16, 2012.

NMED's Ground Water Quality Bureau issues discharge permits for the purpose of protecting all ground water of the state of New Mexico for present and potential future use as a domestic and agricultural water supply. **You are receiving this particular notice because ground water near the boundaries of Jemez Pueblo may have the potential to be affected by the proposed discharge.**

The submitted application proposes to treat and discharge of up to 40,000 gallons per day of industrial wastewater to a series of disposal systems. The facility is located within Los Alamos National Laboratory, approximately 1.5 miles south of Los Alamos, in Sections 16, 17, 20, 21, 22, Township 19N, Range 06E, Los Alamos County. Ground water beneath the facility is at a depth of approximately one to 1,306 feet and has a total dissolved solids concentration of approximately 162 to 255 milligrams per liter.

The applicant and NMED have provided the first of two public notices (Public Notice 1). NMED has performed a technical review of the application and will be proposing a draft

Discharge Permit for approval. NMED will then publish notice of the proposal or denial in a newspaper(s) with State and local circulation, and post the notice on the Department's website (www.nmenv.state.nm.us). This second of two public notices (Public Notice 2) will allow for comments and/or hearing requests on the draft Discharge Permit to be submitted to NMED for a period of 30 days following publication. If comments and/or hearing requests are not received during the 30-day comment period, the draft Discharge Permit will be finalized.

Jemez Pueblo is currently listed on the facility-specific interested parties list for DP-1132, and therefore will receive direct notice of Public Notice 2. Additionally, Jemez Pueblo has the right to initiate informal consultation with NMED's technical staff and the Tribe's Environmental Director, or formal Tribal Consultation at any time by contacting NMED.

Should you have any questions or concerns regarding this proposed Ground Water Discharge Permit, please contact Clint Marshall, Program Manager of the Pollution Prevention Section, at (505) 827-0027 or Jennifer Fullam at (505) 827-2909.

Sincerely,

Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS: JF

cc: Director, Department of Resource Protection, Jemez Pueblo, P.O. Box 100, Jemez Pueblo, NM 87024
Jennifer Fullam, GWQB Tribal Contact
Charles Lundstrom, NMED Mining & Tribal Liaison, 515 West High Street, Grants, NM 87020