

Kirtland Air Force Base Pilot System Control Panel

Albuquerque, New Mexico

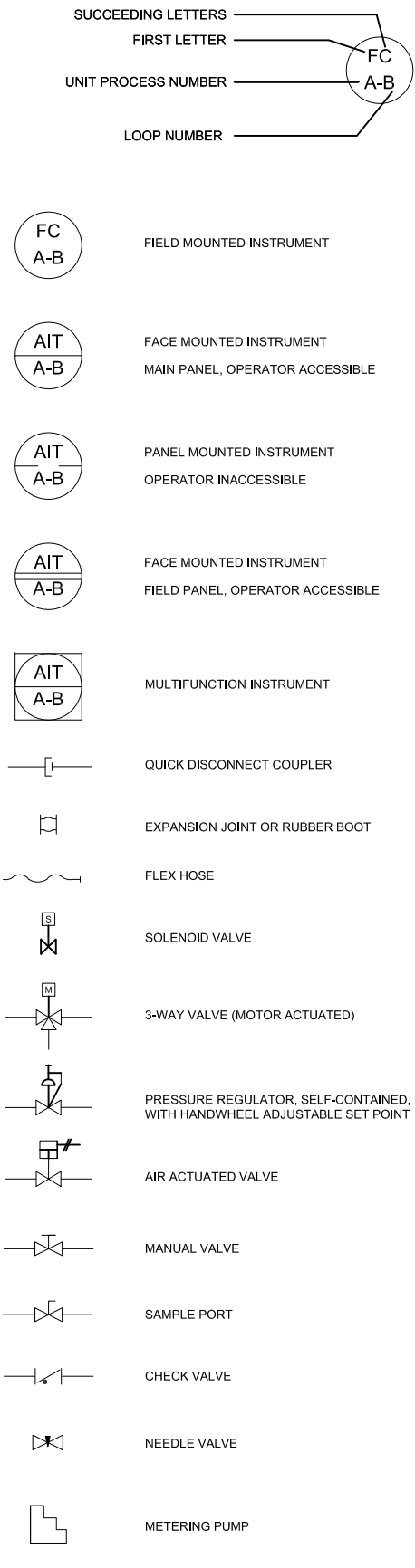
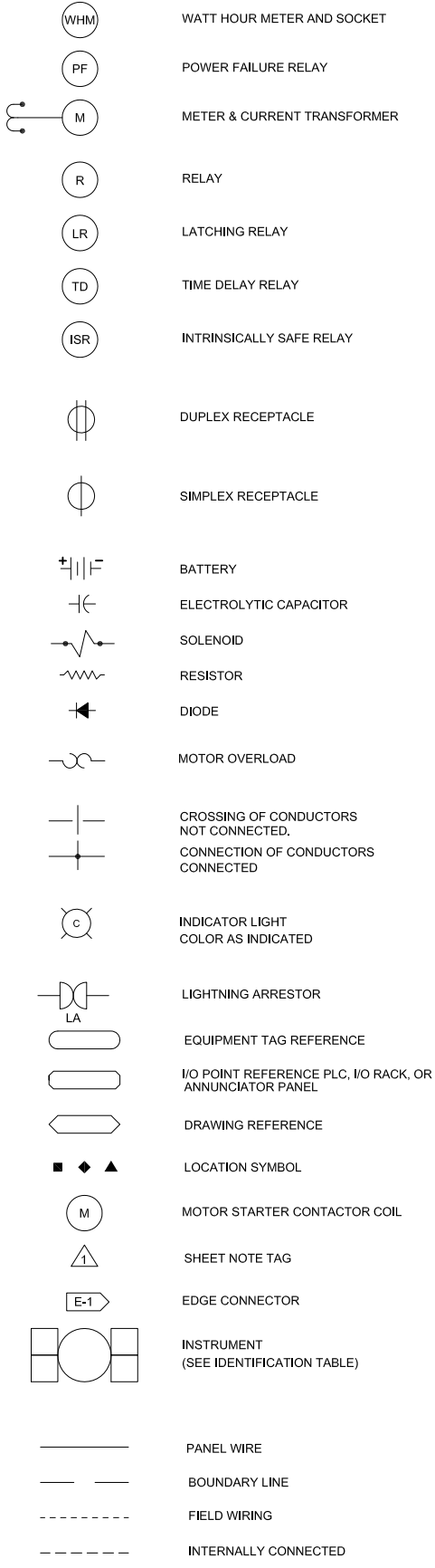
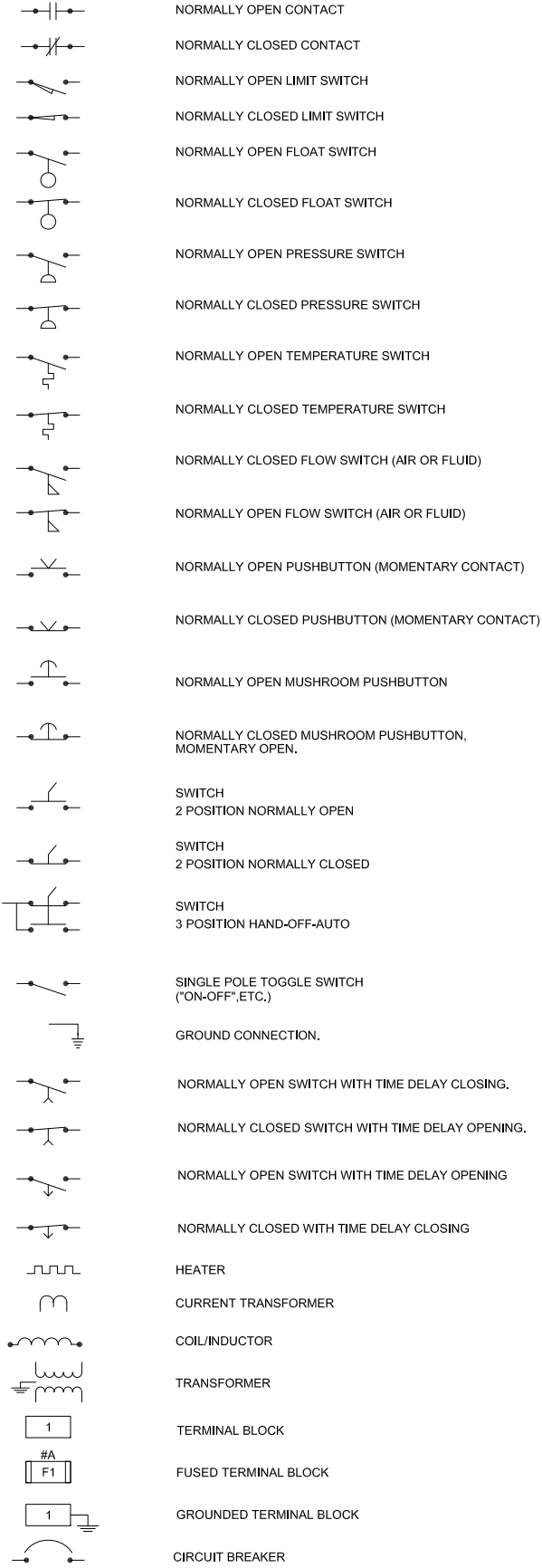
DRAWING INDEX

PILOT SYSTEM CONTROL PANEL

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				 CALCON SYSTEMS <i>Automation & Process Control Specialists</i> CALCON SYSTEMS, INC. 12919 ALCOSTA BLVD, SUITE 9 SAN RAMON, CA 94583 TEL: 925-277-0665 WWW.CALCON.COM	DRAWN	JU	07/14/16	CLIENT: KIRTLAND AFB	TITLE: KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL SHEET INDEX		
					DESIGN	JD	07/14/16			JOB: 11765	
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REV	DESCRIPTION	DATE	NAME		FILE: 11765_1000.DWG						

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	First Letter		Succeeding letters		
	Measured or Initiating Variable	Modifier	Readout or Passive Function	Output Function	Modifier
A	Analysis		Alarm		
B	Burner, Combustion				
C				Control	
D		Differential			
E	Voltage		Sensor		
F	Flow Rate	Ratio			
G			Glass		
H	Hand				High
I	Current (Electrical)		Indicate		
J	Power	Scan			
K	Time, Schedule	Time, Rate of Change		Control Station	
L	Level		Light		Low
M		Momentary			Middle, Intermediate
N					
O			Orifice, Restriction		
P	Pressure	Integrate	Point Connection		
Q	Quantity				
R	Radiation		Record		
S	Speed, Frequency	Safety		Switch	
T	Temperature			Transmit	
U	MultiVariable		MultiFunction	MultiFunction	MultiFunction
V	Vibration			Valve, Damper, Louver	
W	Weight, Force		Well		
X		X Axis			
Y	Even, State, Presence	Y Axis		Relay, Compute, Convert	
Z	Position, Dimension	Z Axis		Driver, Actuator	

Abbreviations							
A	AMPERES	DPST	DOUBLE POLE SINGLE THROW	M	MOTOR	SPDT	SINGLE POLE DOUBLE THROW
AC	ALTERNATING CURRENT	DWG	DRAWING	MOV	MOTOR OPERATED VALVE	SPST	SINGLE POLE SINGLE THROW
ATS	AUTOMATIC TRANSFER SWITCH	E	EXISTING	N	NEUTRAL	STL	STEEL
AUX	AUXILIARY	FDR	FEEDER	NC	NORMALLY CLOSED	STP	SHIELDED TWISTED PAIR
AUTO	AUTOMATIC	FIN	FINISHED	NEC	NATIOAL ELECTRIC CODE	SOV	SOLENOID VALVE
AWG	AMERICAN WIRE GAUGE	FLA	FULL LOAD AMPS	NO	NORMALLY OPEN	SW	SWITCH
BC	BARE COPPER	FLEX	FLEXIBLE	NTS	NOT TO SCALE	TB	TERMINAL BLOCK
BKR	BREAKER	GFI	GROUND FAULT INTERRUPT	NV	NEEDLE VALVE	TD	TIME DELAY
C	CONDUIT	GND	GROUND	OT	OVERTEMP	TEMP	TEMPERATURE
CB	CIRCUIT BREAKER	HOA	HAND-OFF-AUTO	PR	PRESSURE REGULATOR	TERM	TERMINAL
COND	CONDUCTOR	IN	INCHES	PLC	PROGRAMMABLE CONTROLLER	T	TEMPERATURE SWITCH
CONTD	CONTINUED	JB	JUNCTION BOX	PNL	PANEL	TYP	TYPICAL
CP	CONTROL PANEL	KVA	KILOVOLT-AMPERES	POS	POSITION	UG	UNDERGROUND
CT	CURRENT TRANSFORMER	KW	KILOWATT	RCP	RECEPTACLE	V	VOLTS
CR	CONTROL RELAY	LM	LIMIT	RTU	REMOTE TERMINAL UNIT	VFD	VARIABLE FREQUENCY DRIVE
CV	CHECK VALVE	MA	MILLIAMPERES	SEL	SELECTOR	W	WATTS
DC	DIRECT CURRENT	MCC	MOTOR CONTROL CENTER	SPEC	SPECIFICATION	W/	WITH
DPDT	DOUBLE POLE SINGLE THROW	MIN	MINUTES OR MINIMUM	SS	STAINLESS STEEL	W/O	WITHOUT

1	INITIAL RELEASE	07/14/16	JU
REV	DESCRIPTION	DATE	NAME



CALCON SYSTEMS, INC.
12919 ALCOSTA BLVD, SUITE 9
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TEL: 925-277-0665
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DRAWN	JU	07/14/16	CLIENT: KIRTLAND AFB	TITLE: KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL			
DESIGN	JD	07/14/16					
CHECKED	JD	07/14/16	JOB: 11765	ELECTRICAL SYMBOLS AND ABBREVIATIONS			
APPROVED	JD	07/14/16	LOCATION: ALBUQUERQUE, NEW MEXICO				
FILE: 11765_1000-A.DWG			DRAWING NO. 1000-A		REV 1	SHEET 2 OF 15	

1. ENTIRE CONTAINER INSULATED: R13 UNDER ACX PLYWOOD.



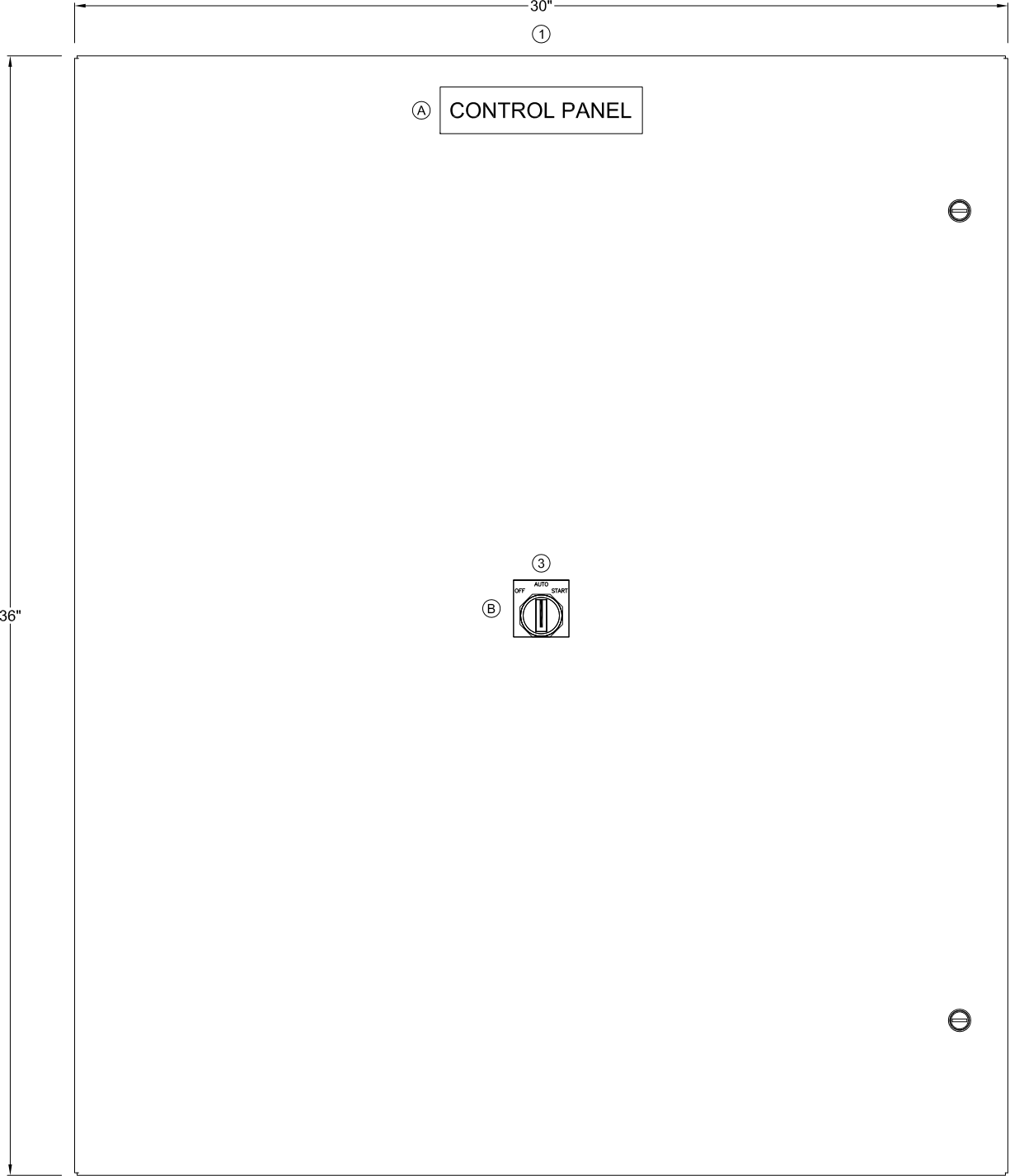
				 CALCON SYSTEMS <i>Automation & Process Control Specialists</i> CALCON SYSTEMS, INC. 12919 ALCOSTA BLVD, SUITE 9 SAN RAMON, CA 94583 TEL: 925-277-0665 WWW.CALCON.COM	DRAWN	JU	07/14/16	CLIENT:	KIRTLAND AFB		TITLE: KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL CONTAINER LAYOUT		
					DESIGN	JD	07/14/16	JOB:					
					CHECKED	JD	07/14/16	LOCATION:	ALBUQUERQUE, NEW MEXICO				
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REV	DESCRIPTION	DATE	NAME					FILE: 11765_1001.DWG		1001	1	3 OF 15	

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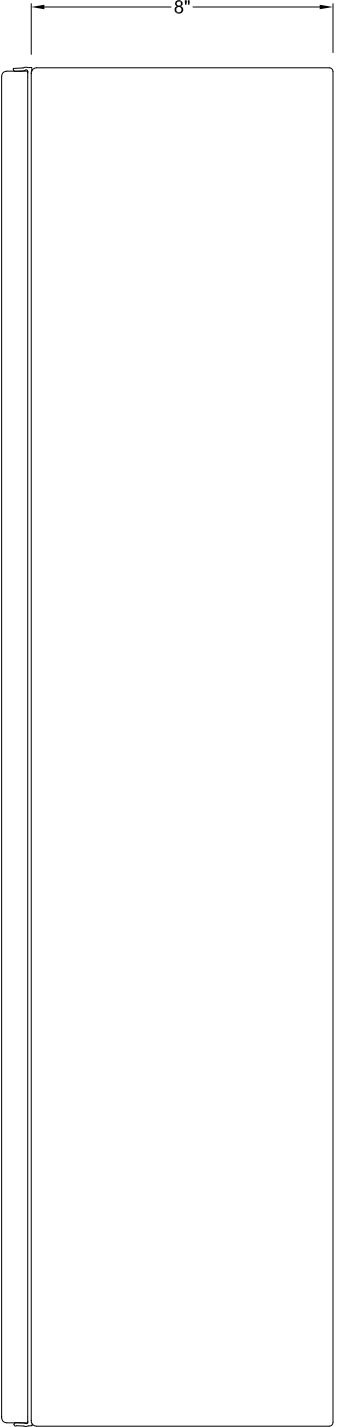
PLACE HOLDER

				 CALCON SYSTEMS, INC. 12919 ALCOSTA BLVD, SUITE 9 SAN RAMON, CA 94583 TEL: 925-277-0665 WWW.CALCON.COM	DRAWN	JU	07/14/16	CLIENT: KIRTLAND AFB	TITLE: KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL SINGLE LINE DIAGRAM		
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					CHECKED	JD	07/14/16	11765			
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PILOT SYSTEM CONTROL PANEL ENCLOSURE ELEVATION - FRONT VIEW



PILOT SYSTEM CONTROL PANEL ENCLOSURE ELEVATION - SIDE VIEW

LEGEND PLATE LIST				
P1 = 1.50" x 6.50" Plate R = Ring Type Legend Plate White Text w/ Black Background				
Tag #	Qty	Type	Engraving	Letter Size
A	1	P1	CONTROL PANEL	1/4"
B	1	R	OFF-AUTO-START	3/16"

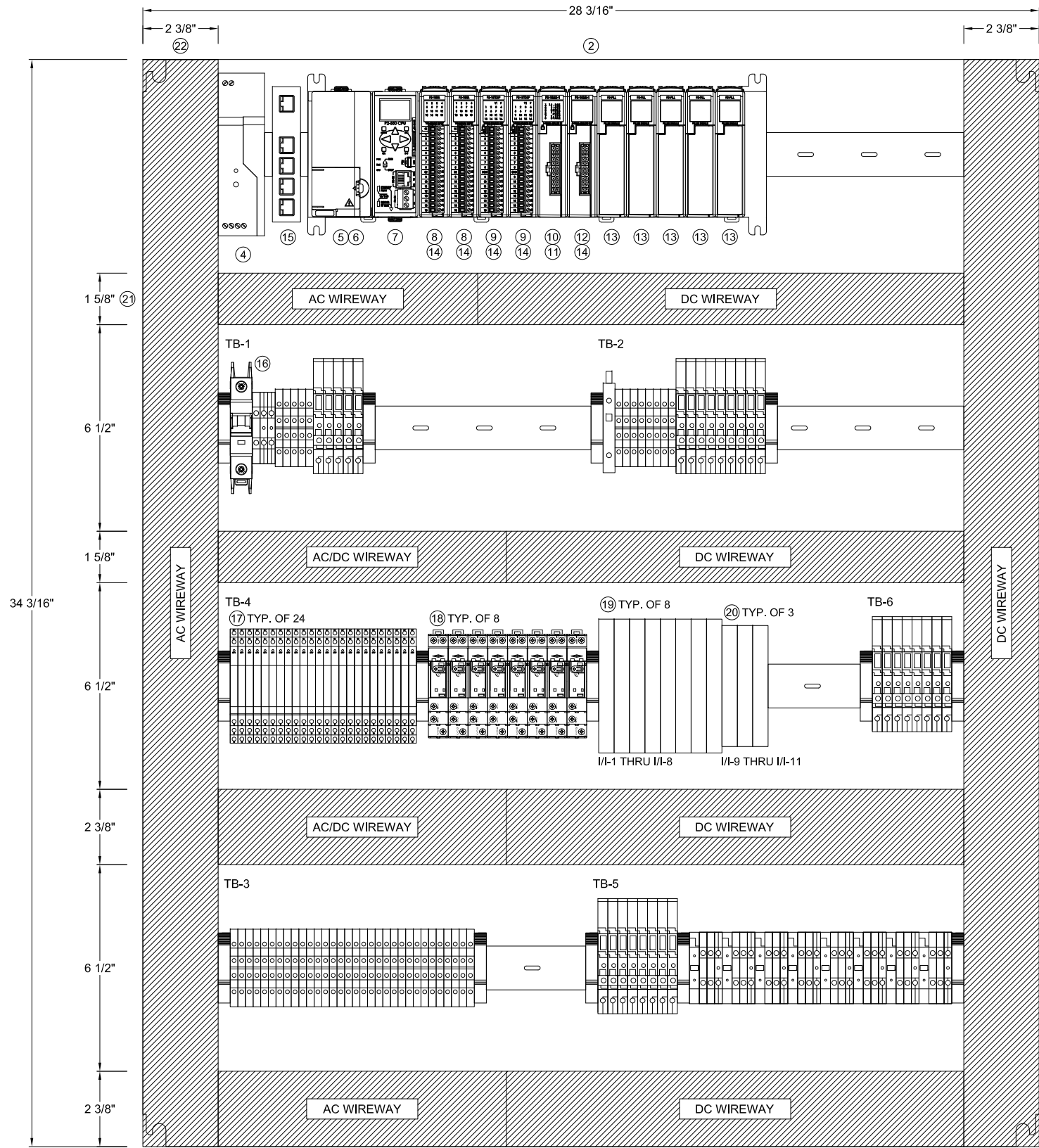
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REV	DESCRIPTION	DATE	NAME



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DRAWN	JU	07/14/16	CLIENT: KIRTLAND AFB	TITLE: KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL ENCLOSURE LAYOUT		
DESIGN	JD	07/14/16				
CHECKED	JD	07/14/16	JOB: 11765			
APPROVED	JD	07/14/16	LOCATION: ALBUQUERQUE, NEW MEXICO			
FILE: 11765_1010.DWG			DRAWING NO. 1010	REV 1	SHEET 5 OF 15	

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PILOT SYSTEM CONTROL PANEL BACKPLATE ELEVATION - FRONT VIEW

BILL OF MATERIALS					
ITEM #	QTY	PART NO.	MANUFACTURER	DESCRIPTION	SHOWN ON DWG. #
1	1	CSD36308	HOFFMAN	ENCLOSURE, 36"(H) x 24.25"(W) x 10"(D), WALL MOUNT, QUICK-RELEASE LATCH, TYPE 4X	1010
2	1	CP3630	HOFFMAN	BACKPLATE, 34.2"(H) x 28.2" (W), WHITE	1011
3	1	800H-JR5A	ALLEN-BRADLEY	SELECTOR SWITCH, 3-POSITION, SPRING RTN FROM RIGHT	1010
4	1	2904376	PHOENIX CONTACT	24VDC POWER SUPPLY, 6.25A OUTPUT, 100-240VAC INPUT	1011
5	1	P2-11B	AUTOMATION DIRECT	PLC 11-SLOT BASE	1011
6	1	P2-01AC	AUTOMATION DIRECT	PLC POWER SUPPLY, 100-240VAC INPUT PWR	1011
7	1	P2-550	AUTOMATION DIRECT	PLC CPU, ETHERNET, USB, RS232	1011
8	2	P2-16ND3	AUTOMATION DIRECT	16 PT DC INPUT MODULE, 100-240VAC INPUTS	1011
9	2	P2-16TD2P	AUTOMATION DIRECT	16 PT 24VDC OUTPUT MODULE	1011
10	1	P2-16AD-1	AUTOMATION DIRECT	16-CH CURRENT ANALOG INPUT MODULE, 0-20mA, 16 BIT	1011
11	1	ZL-P2-CBL24-2P	AUTOMATION DIRECT	ZIPLINK I/O CABLE, 24 PIN TO PIGTAIL, 6.6FT	1011
12	1	P2-08DA-1	AUTOMATION DIRECT	8-CH CURRENT ANALOG OUTPUT MODULE, 0-20mA, 16 BIT	1011
13	5	P2-FILL	AUTOMATION DIRECT	FILLER MODULE	1011
14	5	P2-R2B	AUTOMATION DIRECT	MODULE CONNECTOR, 18-PIN, SCREW	1011
15	1	32025-8	CONTROL	ETHERNET SWITCH, 5-PORT, UNMANAGED, 24VDC INPUT PWR	1011
16	1	FAZ-D15-1-NA-SP	EATON	CIRCUIT BREAKER, 15A, 1-POLE, D-CURVE	1011
17	24	38.51.7.024.0050	FINDER	38 SERIES RELAY, 24VDC COIL, SPDT, 6A	1011
18	8	4C.01.9.024.0050	FINDER	4C SERIES RELAY, 24VDC COIL, SPDT, 15A	1011
19	8	KCD2-STC-EX1	PEPPERL+FUCHS	INTRINSICALLY SAFE BARRIER, ANALOG INPUT, 24VDC INPUT PWR	1011
20	3	2865434	PHOENIX CONTACT	INTRINSICALLY SAFE BARRIER, DIGITAL INPUT, 24VDC INPUT PWR	1011
21	LOT	T1E-1540W	IBOCO	WIREWAY, 1.5" (W) x 4.0" (D), WHITE	1011
22	LOT	T1E-2240W	IBOCO	WIREWAY, 2.25" (W) x 4.0" (D), WHITE	1011

REV	DESCRIPTION	DATE	NAME
1	INITIAL RELEASE	07/14/16	JU

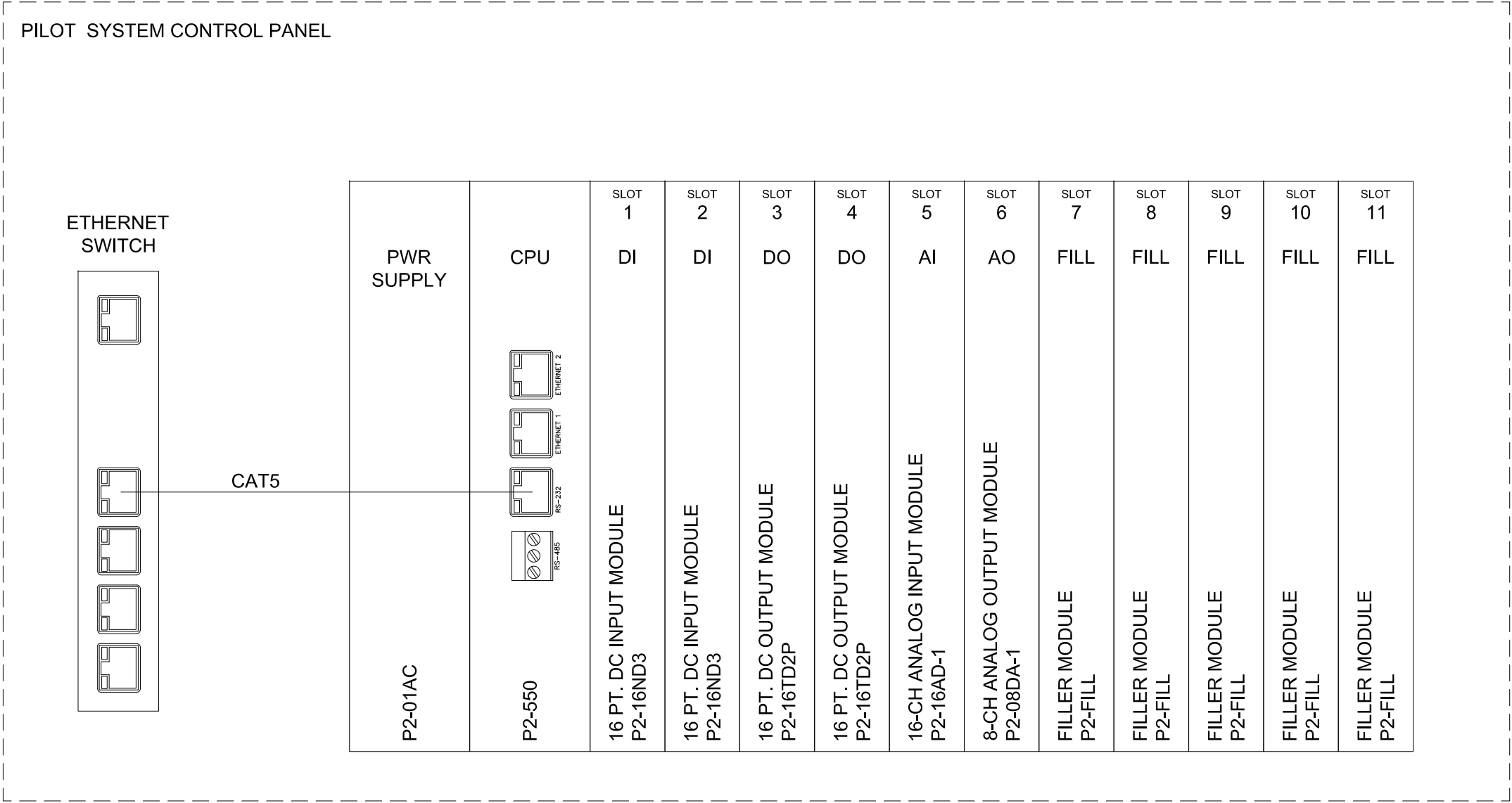


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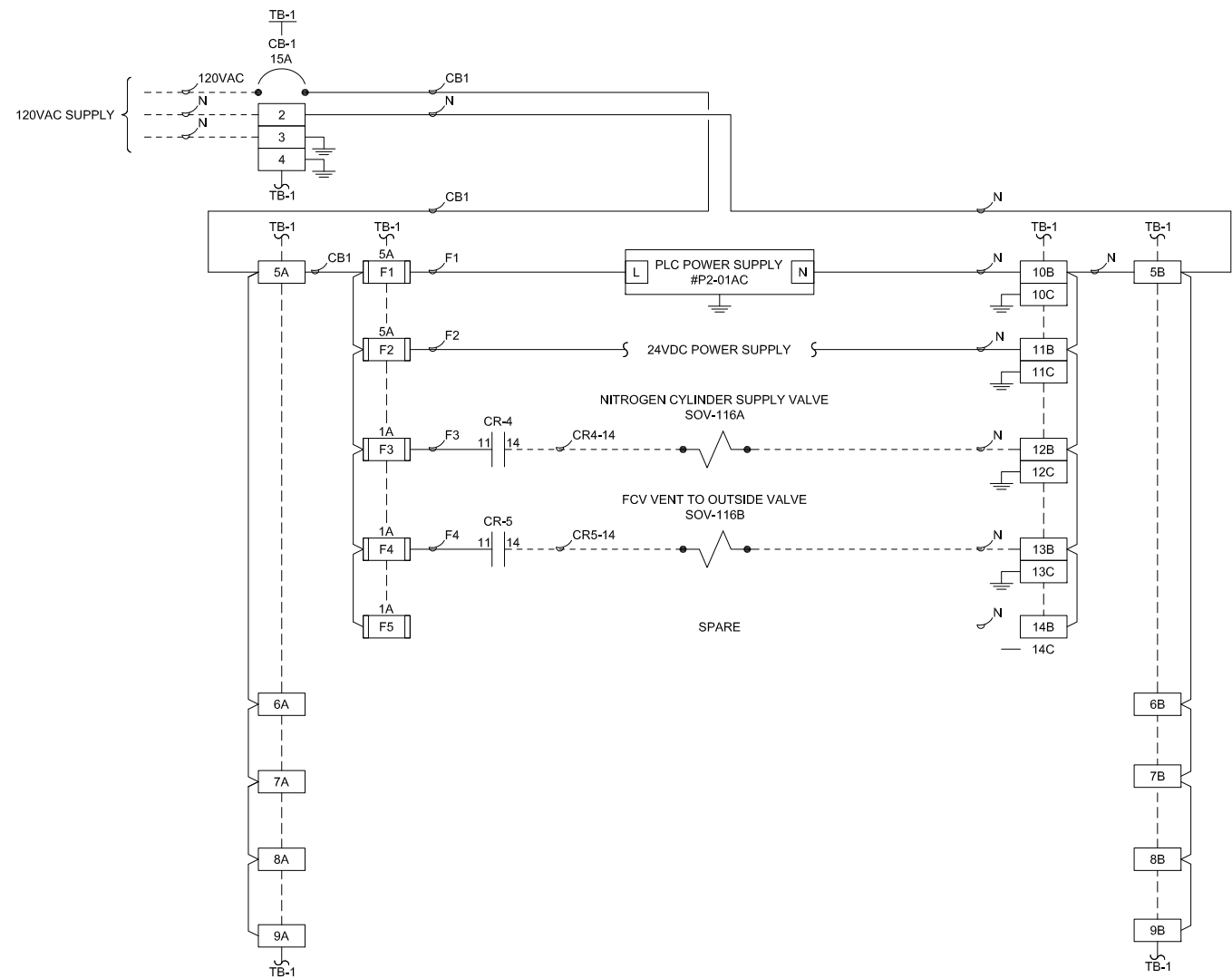
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APPROVED	JD	07/14/16	FILE: 11765_1010.DWG			1	SHEET
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1	INITIAL RELEASE	07/14/16	JU				
REV	DESCRIPTION	DATE	NAME				



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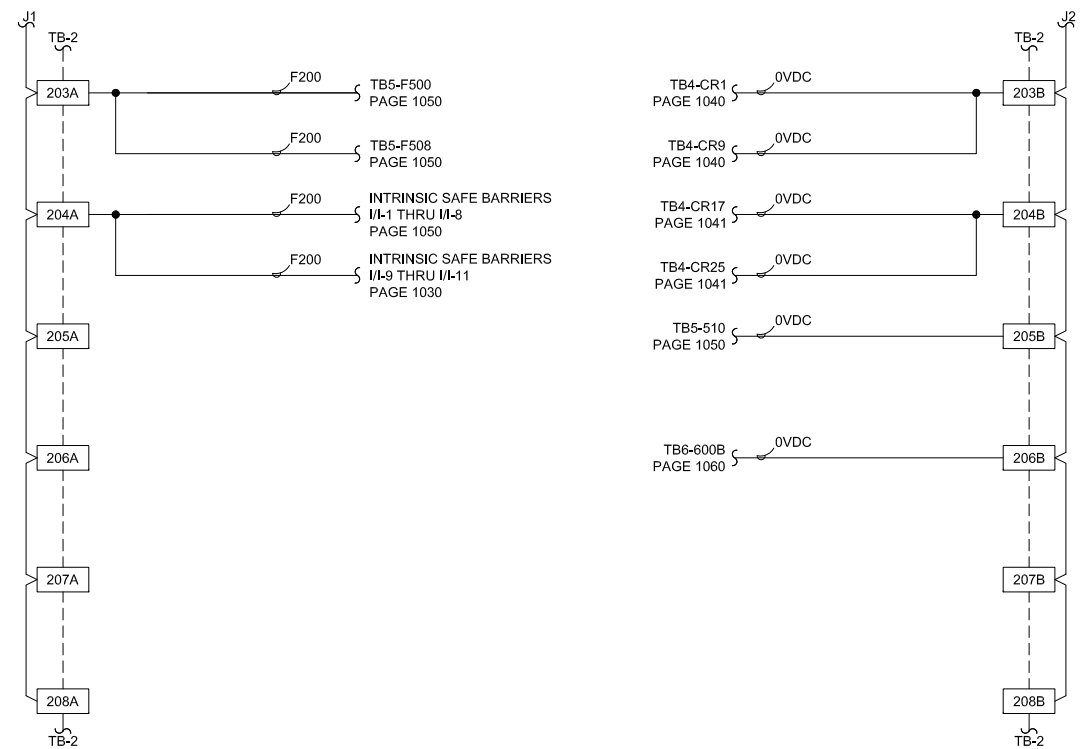
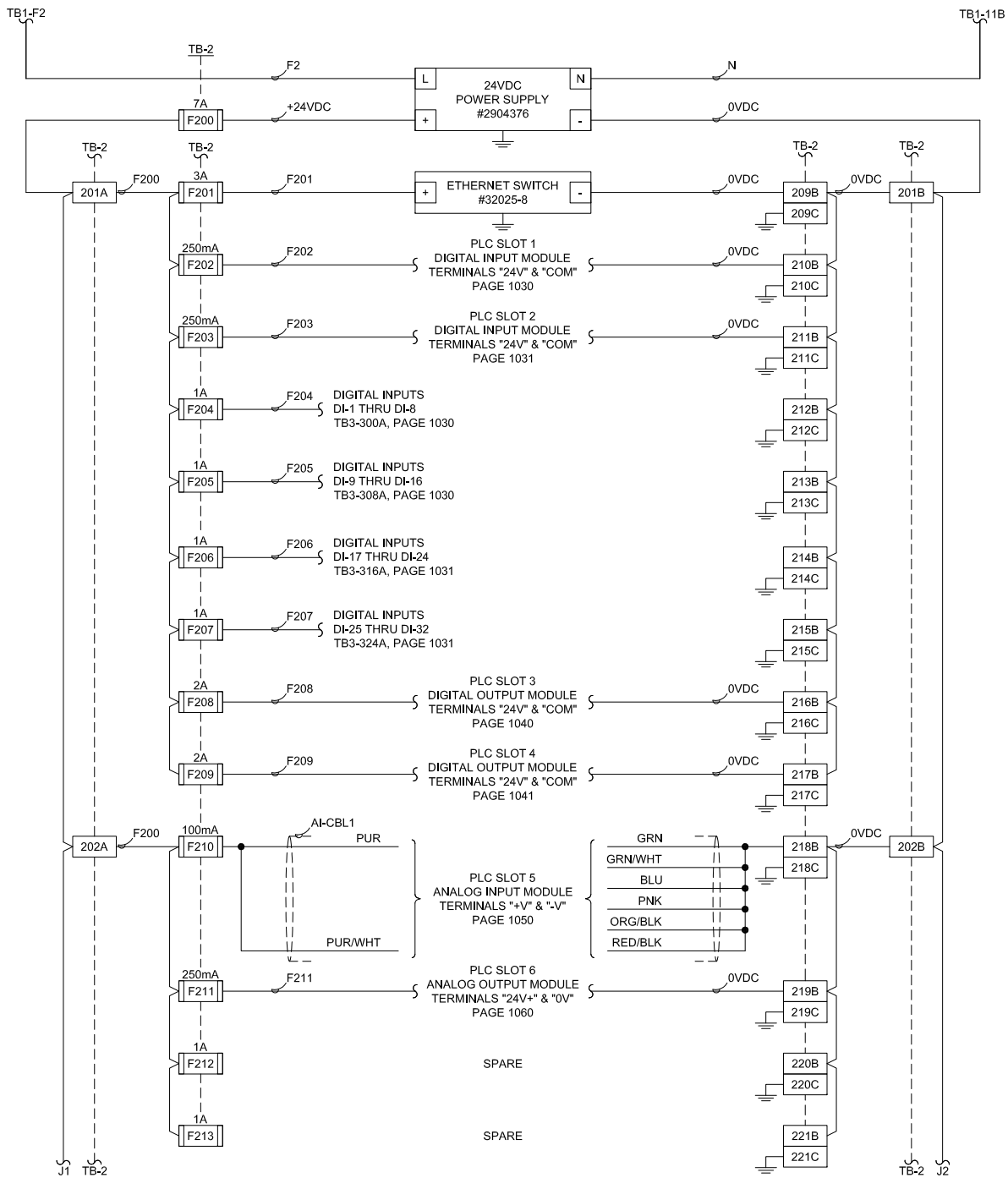
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REV	DESCRIPTION	DATE	NAME



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DRAWN	JU	07/14/16	CLIENT:	KIRTLAND AFB	TITLE: KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL 120VAC POWER DISTRIBUTION		
DESIGN	JD	07/14/16	JOB:	11765			
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APPROVED	JD	07/14/16				1	SHEET
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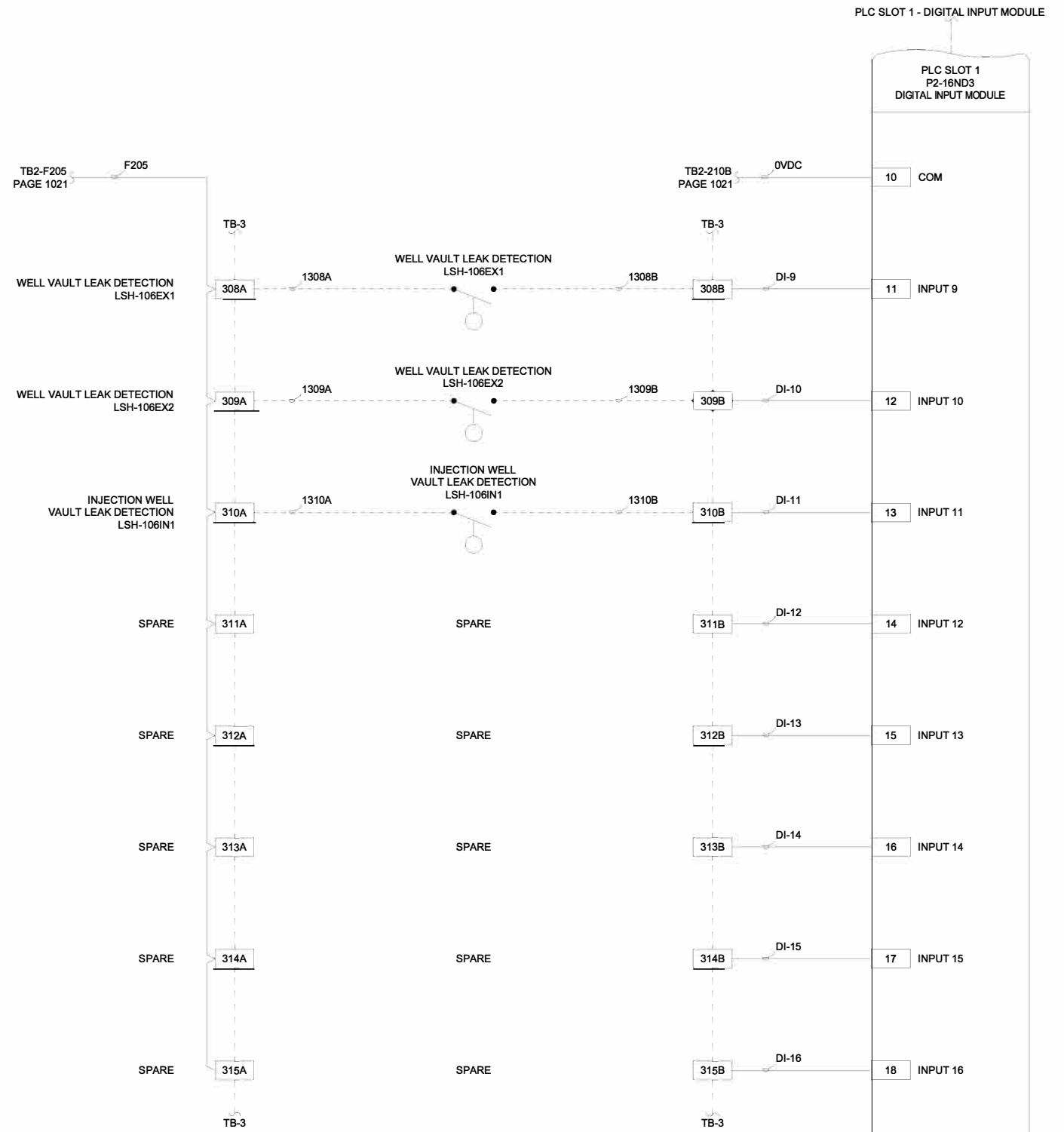
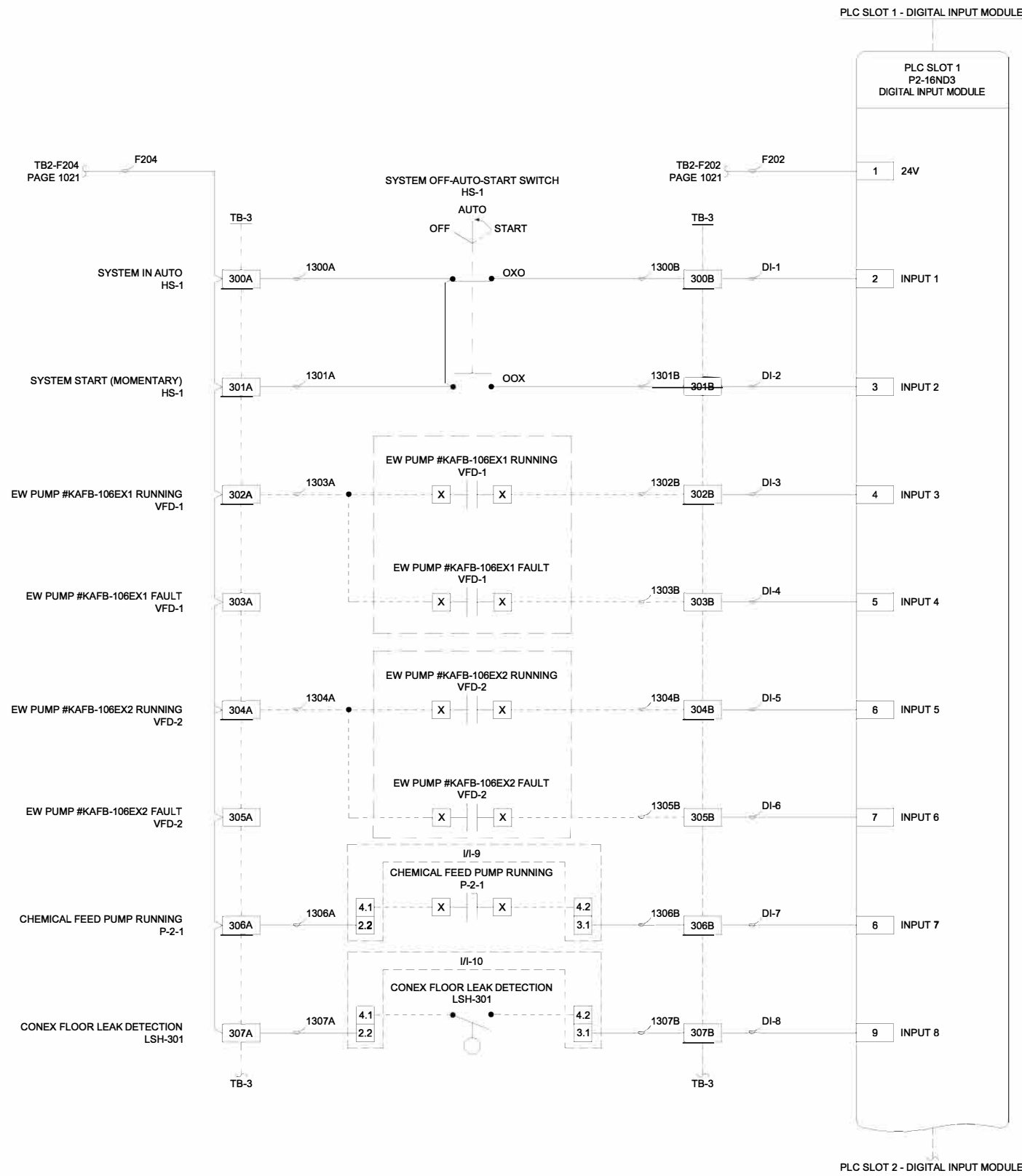
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1	INITIAL RELEASE	07/14/16	JU



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DRAWN	JU	07/14/16	CLIENT:	KIRTLAND AFB	TITLE:	KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL
DESIGN	JD	07/14/16	JOB:	11765		
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APPROVED	JD	07/14/16			REV	1
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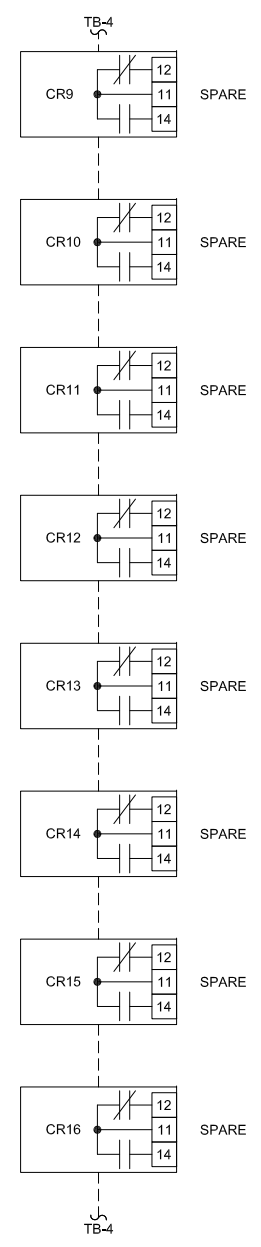
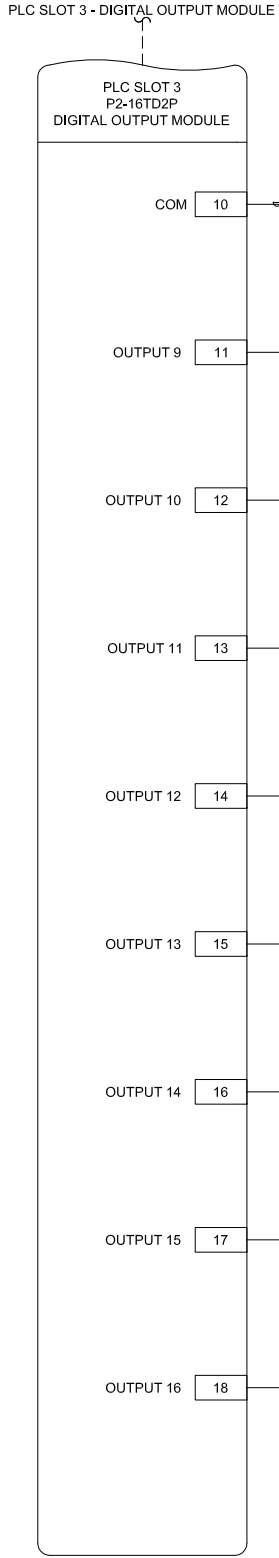
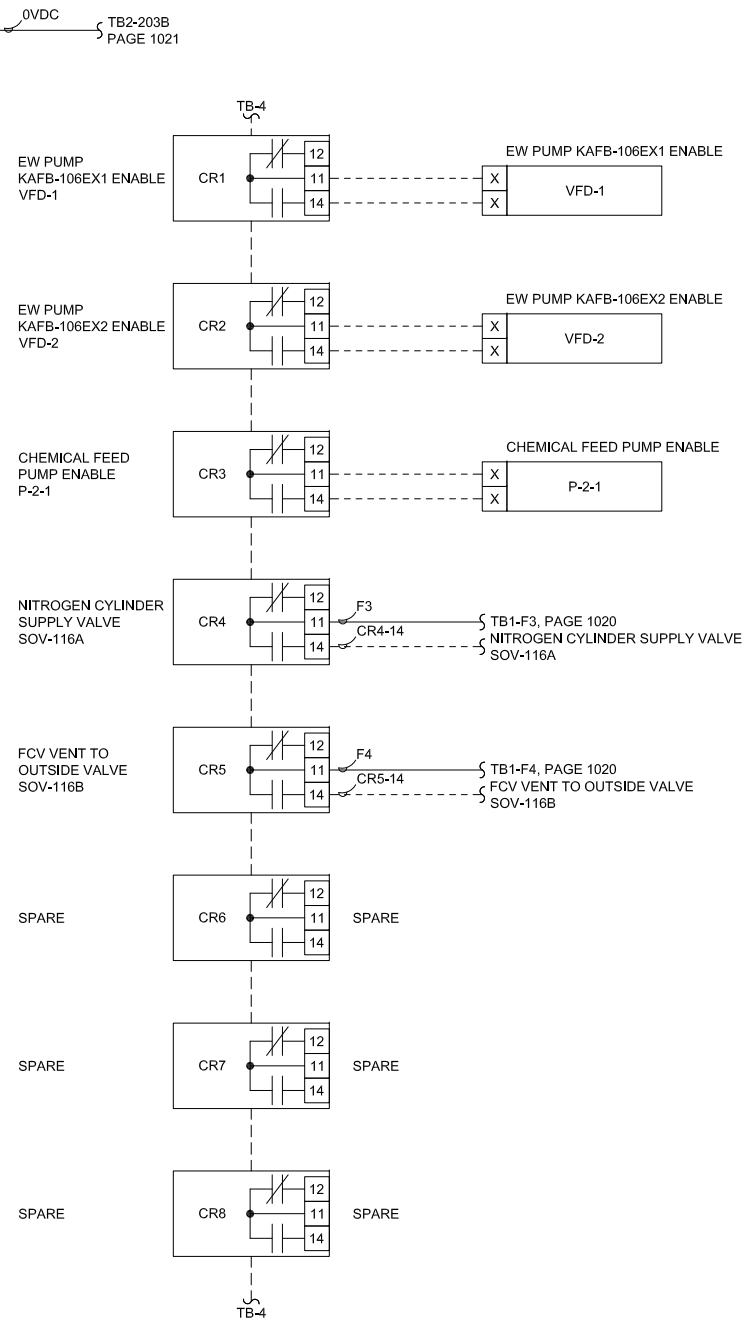
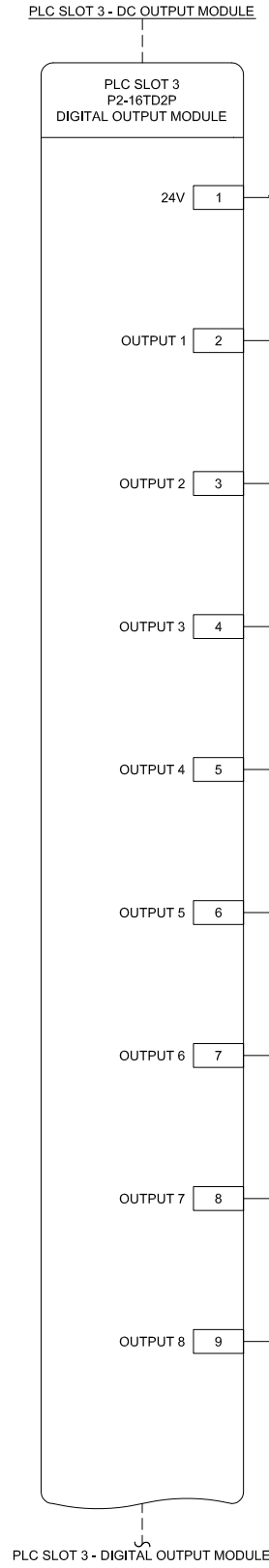


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DRAWN	JU	07/14/16	CLIENT:	KIRTLAND AFB	TITLE:	KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL
DESIGN	JD	07/14/16	JOB:	11765	PLC SLOT 1 - 24VDC DIGITAL INPUT MODULE WIRING DIAGRAM	
CHECKED	JD	07/14/16	LOCATION:	ALBUQUERQUE, NEW MEXICO	DRAWING NO.	1030
APPROVED	JD	07/14/16	FILE: 11765_1030.DWG		REV	1
					SHEET	10 OF 15

				 CALCON SYSTEMS, INC. 12919 ALCOSTA BLVD, SUITE 9 SAN RAMON, CA 94583 TEL: 925-277-0665 WWW.CALCON.COM Automation & Process Control Specialists	<table><tr><td>DRAWN</td><td>JU</td><td>07/14/16</td><td rowspan="2">CLIENT: KIRTLAND AFB</td><td rowspan="4">TITLE: KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL PLC SLOT 2 - 24VDC DIGITAL INPUT MODULE WIRING DIAGRAM</td></tr><tr><td>DESIGN</td><td>JD</td><td>07/14/16</td></tr><tr><td>CHECKED</td><td>JD</td><td>07/14/16</td><td>JOB: 11765</td></tr><tr><td>APPROVED</td><td>JD</td><td>07/14/16</td><td>LOCATION: ALBUQUERQUE, NEW MEXICO</td></tr><tr><td colspan="3">FILE: 11765_1030.DWG</td><td></td><td></td></tr></table>	DRAWN	JU	07/14/16	CLIENT: KIRTLAND AFB	TITLE: KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL PLC SLOT 2 - 24VDC DIGITAL INPUT MODULE WIRING DIAGRAM	DESIGN	JD	07/14/16	CHECKED	JD	07/14/16	JOB: 11765	APPROVED	JD	07/14/16	LOCATION: ALBUQUERQUE, NEW MEXICO	FILE: 11765_1030.DWG				
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DESIGN	JD	07/14/16																								
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REV	DESCRIPTION	DATE	NAME																							

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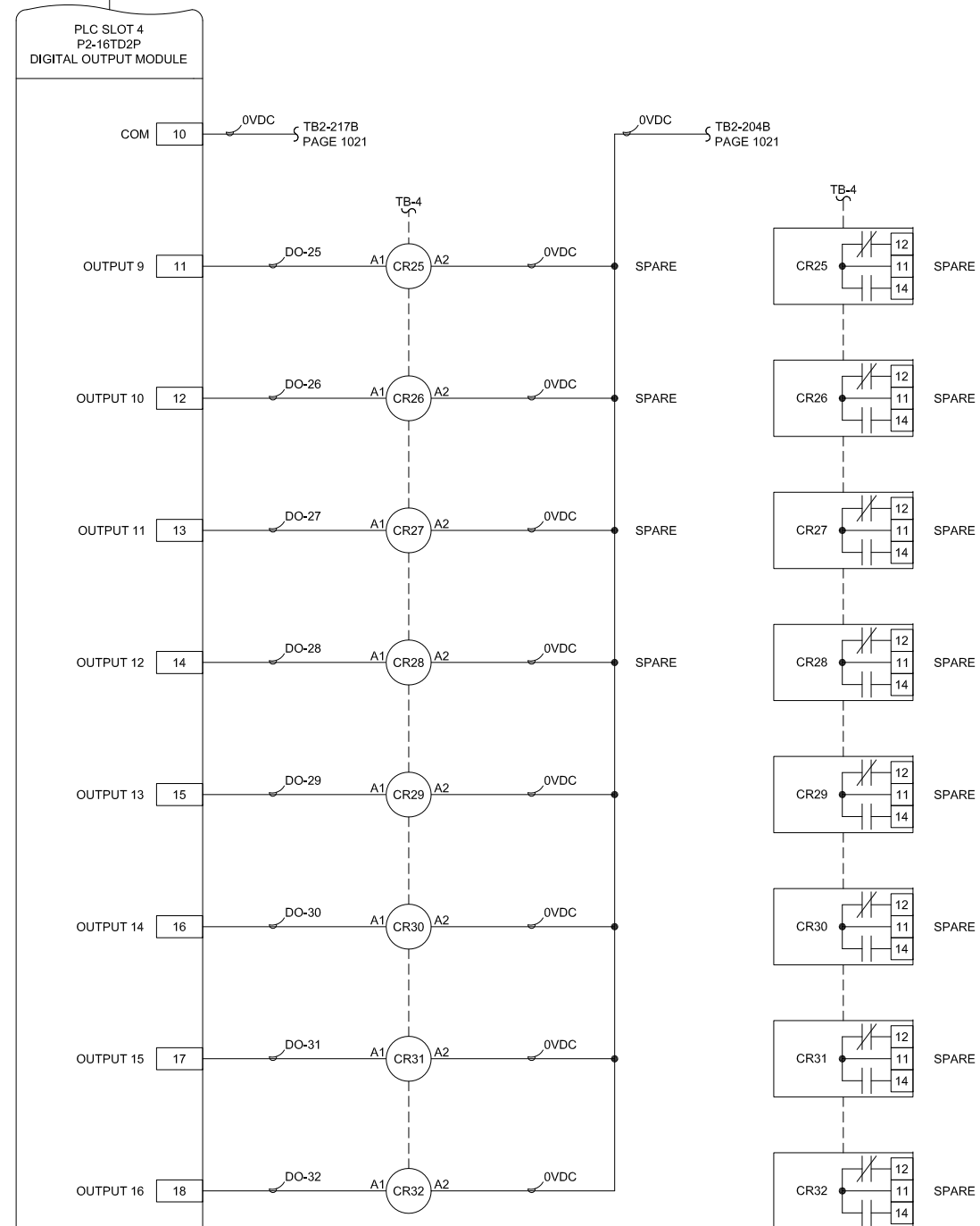


REV	DESCRIPTION	DATE	NAME
1	INITIAL RELEASE	07/14/16	JU



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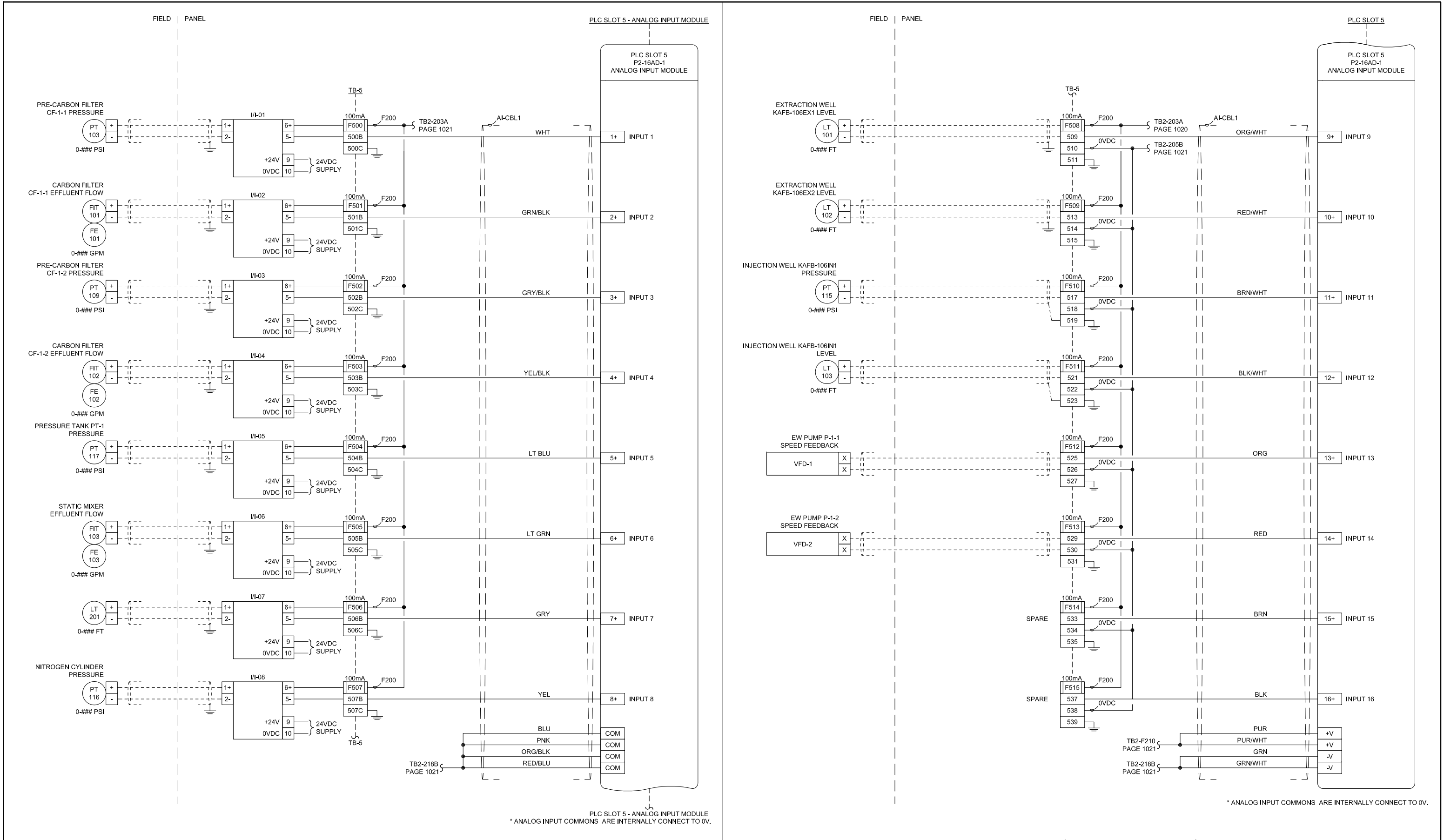
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CHECKED	JD	07/14/16	LOCATION:	ALBUQUERQUE, NEW MEXICO	DRAWING NO.	1040	REV
APPROVED	JD	07/14/16	FILE: 11765_1040.DWG				1
						SHEET	12 OF 15



DRAWN	JU	07/14/16
DESIGN	JD	07/14/16
CHECKED	JD	07/14/16
APPROVED	JD	07/14/16
FILE: 11765_1040.DWG		

TITLE: KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL		
PLC SLOT 4 - DIGITAL OUTPUT MODULE WIRING DIAGRAM		
DRAWING NO. 1041	REV 1	SHEET 13 OF 15

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				 CALCON SYSTEMS Automation & Process Control Specialists CALCON SYSTEMS, INC. 12919 ALCOSTA BLVD, SUITE 9 SAN RAMON, CA 94583 TEL: 925-277-0665 WWW.CALCON.COM	DRAWN	JU	07/14/16	CLIENT:	KIRTLAND AFB		TITLE:	KIRTLAND AIR FORCE BASE PILOT SYSTEM CONTROL PANEL	
					DESIGN	JD	07/14/16	JOB:			PLC SLOT 5 – ANALOG INPUT MODULE WIRING DIAGRAM		
					CHECKED	JD	07/14/16	11765					
1	INITIAL RELEASE	07/14/16	JU		APPROVED	JD	07/14/16	LOCATION:	ALBUQUERQUE, NEW MEXICO		DRAWING NO.	REV	SHEET
REV	DESCRIPTION	DATE	NAME		FILE: 11765_1050.DWG					1050	1	14 OF 15	

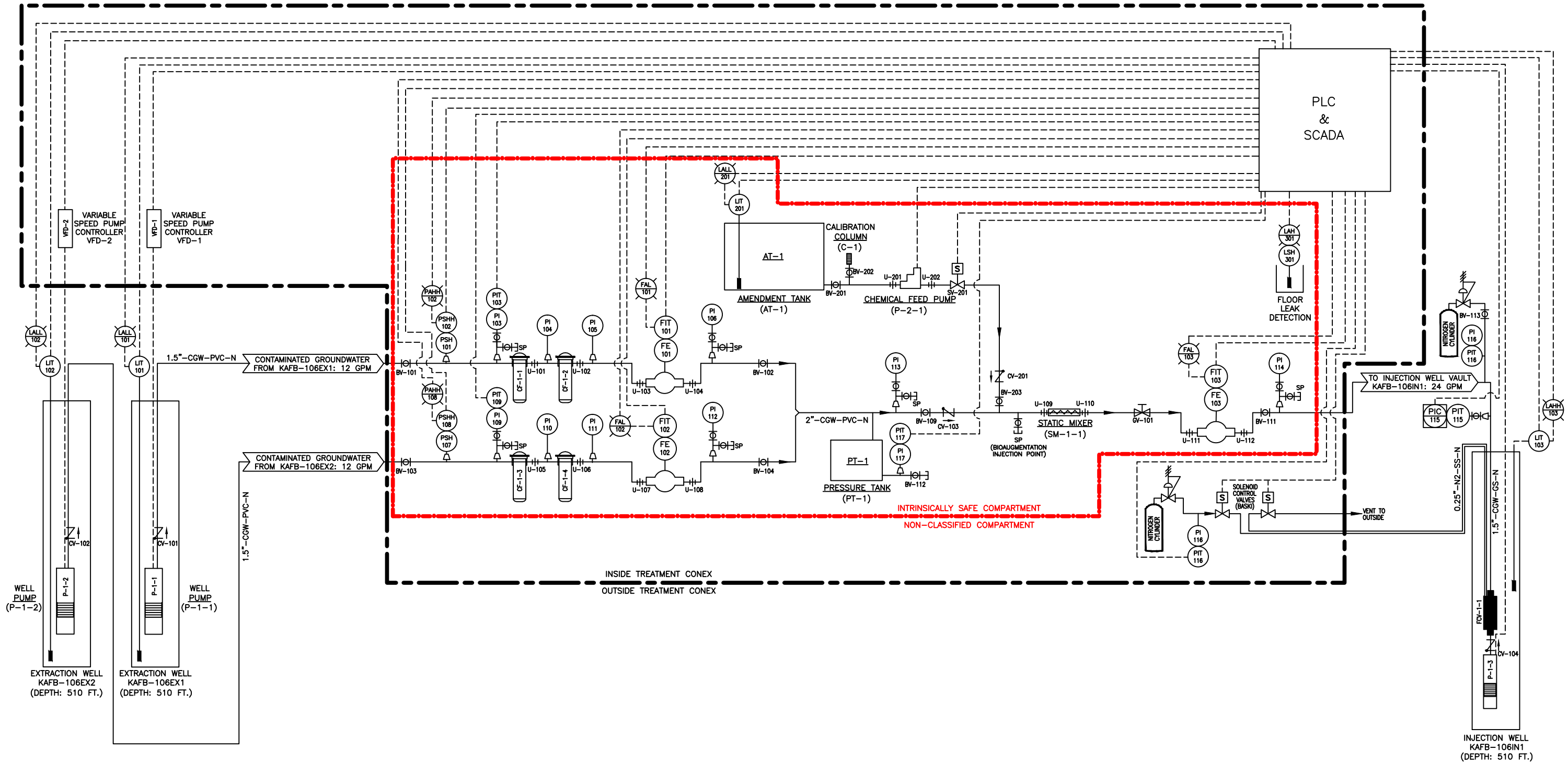


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DRAWN	JU	07/14/16	CLIENT:	TITLE:		
DESIGN	JD	07/14/16	KIRTLAND AFB	KIRTLAND AIR FORCE BASE		
CHECKED	JD	07/14/16	JOB:	PILOT SYSTEM CONTROL PANEL		
APPROVED	JD	07/14/16	11765	PLC SLOT 6 - ANALOG OUTPUT MODULE WIRING DIAGRAM		
FILE: 11765_1060.DWG			LOCATION:	DRAWING NO.	REV	SHEET
			ALBUQUERQUE, NEW MEXICO	1060	1	15 OF 15

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Plot Date/Time: Apr 17, 2017 - 9:15am
Plotted By: zeke.corpio

OFFICE	DATE	DESIGNED BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Lawrenceville, NJ	9/7/16	G.Lavargna	S.Shealy	P.KostermanGroos	500433-D1



P-1-1, P-1-2 EXTRACTION WELL PUMP	VFD-1, VFD-2 PUMP CONTROLLER	FIQ-101, FIQ-102, FIQ-103 FLOW METER	PT-1 PRESSURE TANK	AT-1 AMENDMENT TANK	P-2-1 CHEMICAL FEED PUMP	PIT-111 PRESSURE TRANSMITTER	FCV-1-1 FLOW CONTROL VALVE	P-1-3 INJECTION WELL PUMP
TYPE: SUBMERSIBLE FLOW: 15GPM@575' MOTOR: FRANKLIN, 5HP, 460V, 3PH MODEL: 25SS0-26 (Teflon) MFR: GRUNDFOS	TYPE: 60HZ FREQ CONVERTER ENCLOSURE: IP55, A5 ELECTRIC: 3X440-500V MODEL: CUE (part#91136938) MFR: GRUNDFOS	TYPE: ELECTROMAGNETIC INLET PIPE SIZE: 1" FLANGE MODEL: M-3000 SERIES SERIAL: MFR: BADGER METER INC.	TYPE: DIAPHRAGM TANK VOLUME: 31.8 GAL PRE-CHARGE: 12 PSI INLET: 1" NPTF MODEL: V100 MFR: GOULDS	TYPE: VERTICAL POLY TANK DIMENSIONS: 52"x66", 550GAL OUTLET: 2" BULKHEAD MODEL: NTO (VTO550-52) MFR: ACE ROTO-MOLD	TYPE: ELECTRONIC METERING CAPACITY: 2.5 GPH, 150 PSI VOLTAGE: 120 VAC MODEL: E71 MFR: LMI	TYPE: INTRINSICALLY SAFE RANGE: 1-30 PSI SETPOINT: 5-10 PSI MODEL: 2088 MFR: ROSEMOUNT	TYPE: PNEUMATIC SIZE: 4" OD MODEL: INFLEX FCV MFR: BASKI INCLUDES CONTROL PANEL WITH NITROGEN REGULATOR	TYPE: SUBMERSIBLE FLOW: 3GPM@550' MOTOR: 1HP, 230V, 8.1A MODEL: 5SQE10-410 (Teflon) MFR: GRUNDFOS



CB&I Federal Services
17 Princess Road
Lawrenceville, New Jersey 08648

U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
OMAHA, NEBRASKA

APPENDIX A
RECIRCULATION AND AMENDMENT SYSTEM
PIPING AND INSTRUMENTATION DIAGRAM
IN-SITU EDB BIOREMEDIATION PILOT TEST
KIRTLAND AFB, NEW MEXICO

VALVE AND PIPING SYMBOLS

	GLOBE VALVE		EXPANSION JOINT
	GATE VALVE		BASKET TYPE STRAINER
	BUTTERFLY VALVE		Y-TYPE STRAINER
	SPRING CHECK VALVE		STEAM TRAP
	CHECK VALVE		DUPLEX STRAINER
	PLUG VALVE		SLEEVE COUPLING (SC)
	3-WAY VALVE		FLOOR DRAIN
	ANGLE VALVE		EQUIPMENT DRAIN
	RELIEF OR SAFETY VALVE		CLEANOUT (CO)
	DIAPHRAGM VALVE		REMOVABLE PLUG
	BALL VALVE NC		REMOVABLE CAP
	BALL VALVE NO		BLIND FLANGE
	GLOBE VALVE		EXHAUST TO ATMOSPHERE (INSIDE)
	SELF-CONTAINED PRESSURE REGULATING VALVE W/RELIEF		EXHAUST TO ATMOSPHERE (OUTSIDE)
	SELF-CONTAINED PRESSURE REGULATING VALVE AND FILTER W/RELIEF		REDUCER
	FILTER		UNION
	KNIFE GATE VALVE		QUICK DISCONNECT COUPLING
	FLOAT VENT VALVE		GAUGE SEAL
	BACKFLOW PREVENTER		DAMPER
	SAMPLE PORT		SILENCER
	FLEXIBLE HOSE		

VALVE OPERATOR SYMBOLS

	SOLENOID		DIAPHRAGM WITH POSITIONER
	MOTOR, ELECTRIC		HANDWHEEL OR LEVER

PRIMARY ELEMENT SYMBOLS - FLOW

	ORIFICE PLATE		POSITIVE DISPLACEMENT FLOW METER
	PITOT TUBE		WEIR
	AVERAGING PITOT TUBE		TURBINE OR PROPELLER TYPE METER
	SIGHT TUBE		MAGNETIC FLOW METER
	TOTALIZING FLOWMETER		ROTAMETER

GENERAL INSTRUMENT SYMBOLS

	FIELD MOUNTED		TWO INSTRUMENTS PHYSICALLY CONNECTED
	PANEL MOUNTED		INTERNAL PLC INSTRUMENT OR FUNCTION
	REAR-OF-PANEL MOUNTED		INDICATOR LIGHT
	INTERLOCK (WHERE N = INTERLOCK NUMBER)		PISTON ACTUATOR
	PURGE		TIMER

LINE SYMBOLS

	PROCESS PIPES OR CHANNELS
	ELECTRICAL SIGNAL
	ELECTRICAL INTERCONNECTION
	PNEUMATIC SIGNAL

SERVICE ABBREVIATIONS

AIR	AIR, ATMOSPHERIC PRESSURE
ASP	AIR SPARGE
BW	BACKWASH
CA	COMPRESSED AIR
CGW	CONTAMINATED GROUNDWATER
CDS	CONDENSATE
D	DRAIN
EFF	EFFLUENT
EXH	EXHAUST
GW	GROUNDWATER
NPW	NON-POTABLE WATER
P	PRODUCT (LNAPL)
PW	POTABLE WATER
S	SANITARY
SC	SECONDARY CONTAINMENT
SL	SLUDGE
SMC	STEAM MIGRATION CONTROL
SP	SAMPLE PORT
SS	STORM SEWER
STM	STEAM
SVE	SOIL VAPOR EXTRACTION
TF	TOTAL FLUIDS
V	VENT
VAP	VAPOR

PIPING MATERIAL IDENTIFICATION

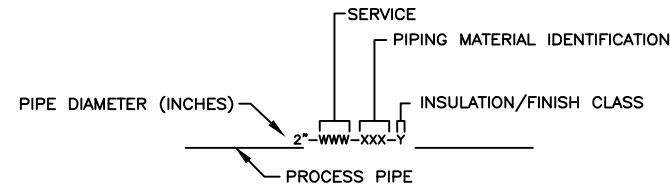
CPVC	CHLORINATED POLYVINYL CHLORIDE
CSP	CARBON STEEL PIPE
COP	COPPER
CMP	CORRUGATED METAL PIPE
CIP	CAST IRON PIPE
DIP	DUCTILE IRON PIPE
GAL	GALVANIZED STEEL PIPE
PE	POLYETHYLENE PIPE
PP	POLYPROPYLENE PIPE
PVC	POLYVINYL CHLORIDE PIPE
PVCH	POLYVINYL CHLORIDE HOSE
RCP	REINFORCED CONCRETE PIPE
RUB	RUBBER HOSE
SS	STAINLESS STEEL PIPE
VCP	VITRIFIED CLAY PIPE

INSULATION/FINISH CLASS

EQUIPMENT SYMBOLS

	SUBMERSIBLE PUMP		BLOWER
	PUMP		AIR COMPRESSOR
	PNEUMATIC DOUBLE DIAPHRAGM PUMP		CHEMICAL FEED PUMP
	FCV (FLOW CONTROL VALVE)		WELL PUMP

PROCESS PIPING IDENTIFICATION



INSTRUMENT IDENTIFICATION

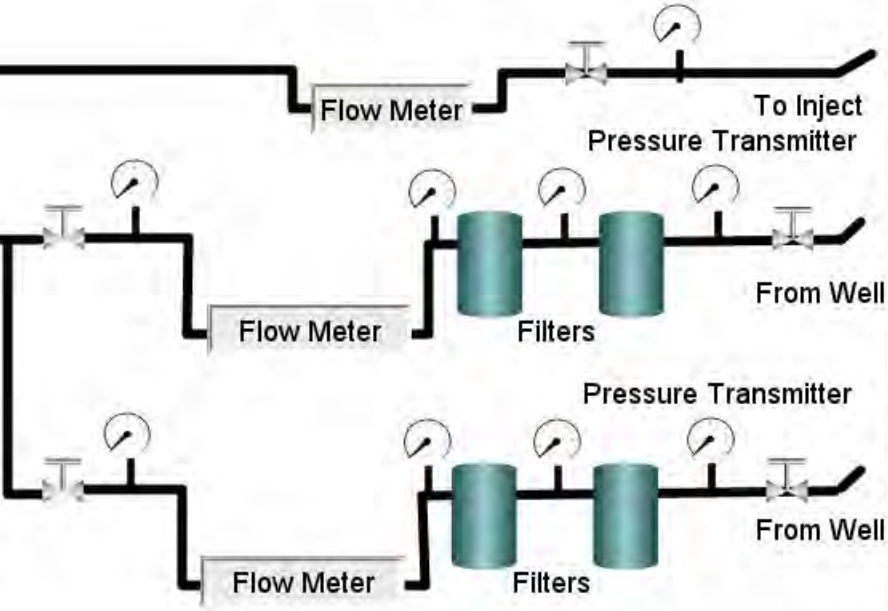
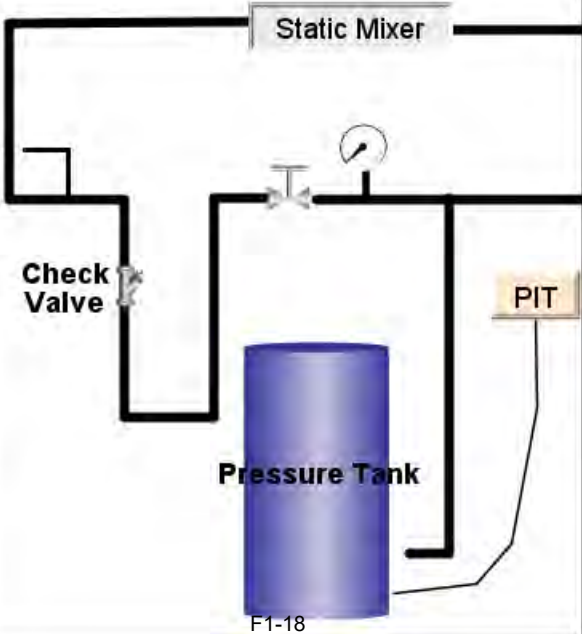
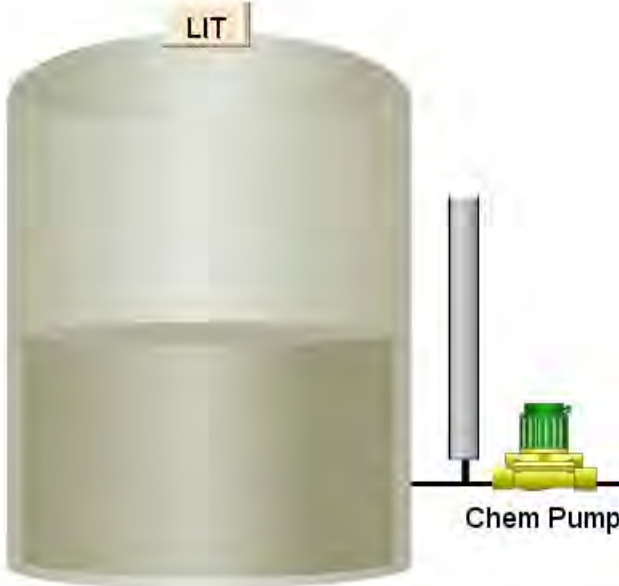
The diagram shows a symbol consisting of a circle with the text "FIT 1-100" inside. To the right of the symbol, there are three lines extending from the symbol's boundary. The top line is labeled "LOOP NUMBER", the middle line is labeled "AREA NUMBER", and the bottom line is labeled "SEE BELOW".

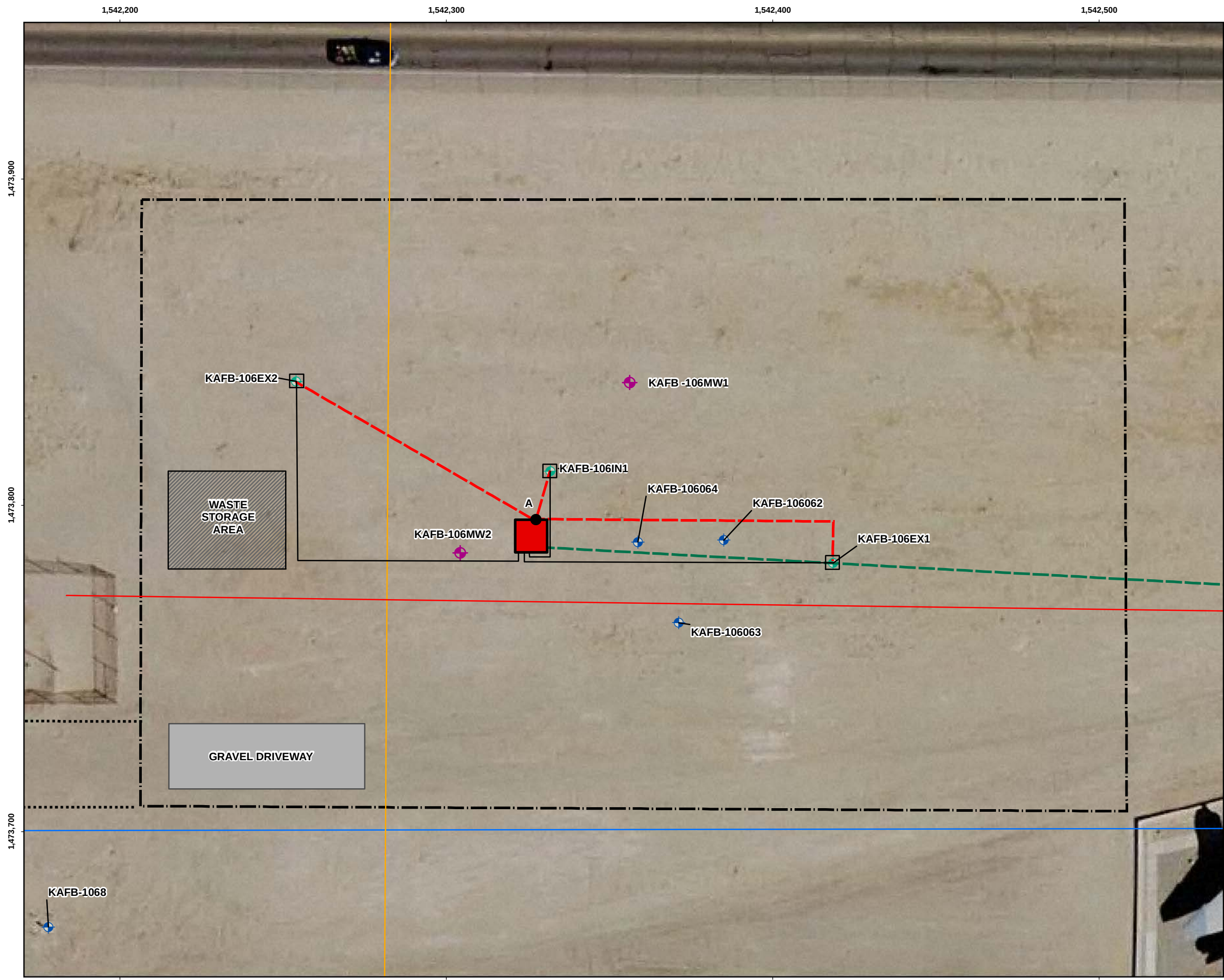
F	FILTER	LSHH	LEVEL SWITCH HIGH-HIGH
FAL	FLOW ALARM LOW	LT	RUN LIGHT
FE	FLOW ELEMENT	MV	MOTORIZED VALVE
FI	FLOW INDICATOR	OCA	OPEN(MOMENTARY)-CLOSE-AUTO
FIT	FLOW INDICATOR AND TRANSMITTER	PAH	PRESSURE ALARM HIGH
FIQ	FLOW INDICATOR AND TOTALIZER	PCV	PRESSURE CONTROL VALVE
FN	FAN	PI	PRESSURE INDICATOR
FQ	FLOW TOTALIZER	PIT	PRESSURE INDICATOR AND TRANSMITTER
FR	FILTER REGULATOR	PSH	PRESSURE SWITCH HIGH
FSL	FLOW SWITCH LOW	RV	RELIEF VALVE
HOA	HAND-OFF-AUTOMATIC	SV	SOLENOID VALVE
HS	HAND SWITCH	TA	TEMPERATURE ANALYZER
KY	TIMER	TE	TEMPERATURE ELEMENT
LAH	LEVEL ALARM HIGH	TI	TEMPERATURE INDICATOR
LAHH	LEVEL ALARM HIGH-HIGH	TSH	TEMPERATURE SWITCH HIGH
LAL	LEVEL ALARM LOW	TT	TEMPERATURE TRANSMITTER
LALL	LEVEL ALARM LOW-LOW		
LEL	LOWER EXPLOSIVE LIMIT		
LI	LEVEL INDICATOR		
LSH	LEVEL SWITCH HIGH		

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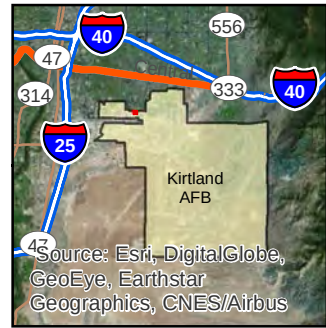
U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
OMAHA, NEBRASKA

APPENDIX A
RECIRCULATION AND AMENDMENT SYSTEM
PIPING AND INSTRUMENTATION
DIAGRAM LEGEND
IN-SITU EDB BIOREMEDIATION PILOT TEST
KIRTLAND AFB, NEW MEXICO

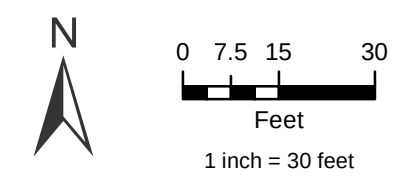




- Legend**
- Existing Monitoring Well
 - Pilot Test Monitoring Well
 - Pilot Test Injection/Extraction Well
 - Natural Gas Utility Line
 - Wastewater Utility Line
 - Water Utility Line
 - Electrical Cable Utility Line
 - Construction Fence Area
 - Truck Exit Route
 - Proposed Electrical to Well Heads
 - Proposed Electrical Service Line
 - Proposed Conveyance Piping
 - Pilot Test System Location



SITE LOCATION

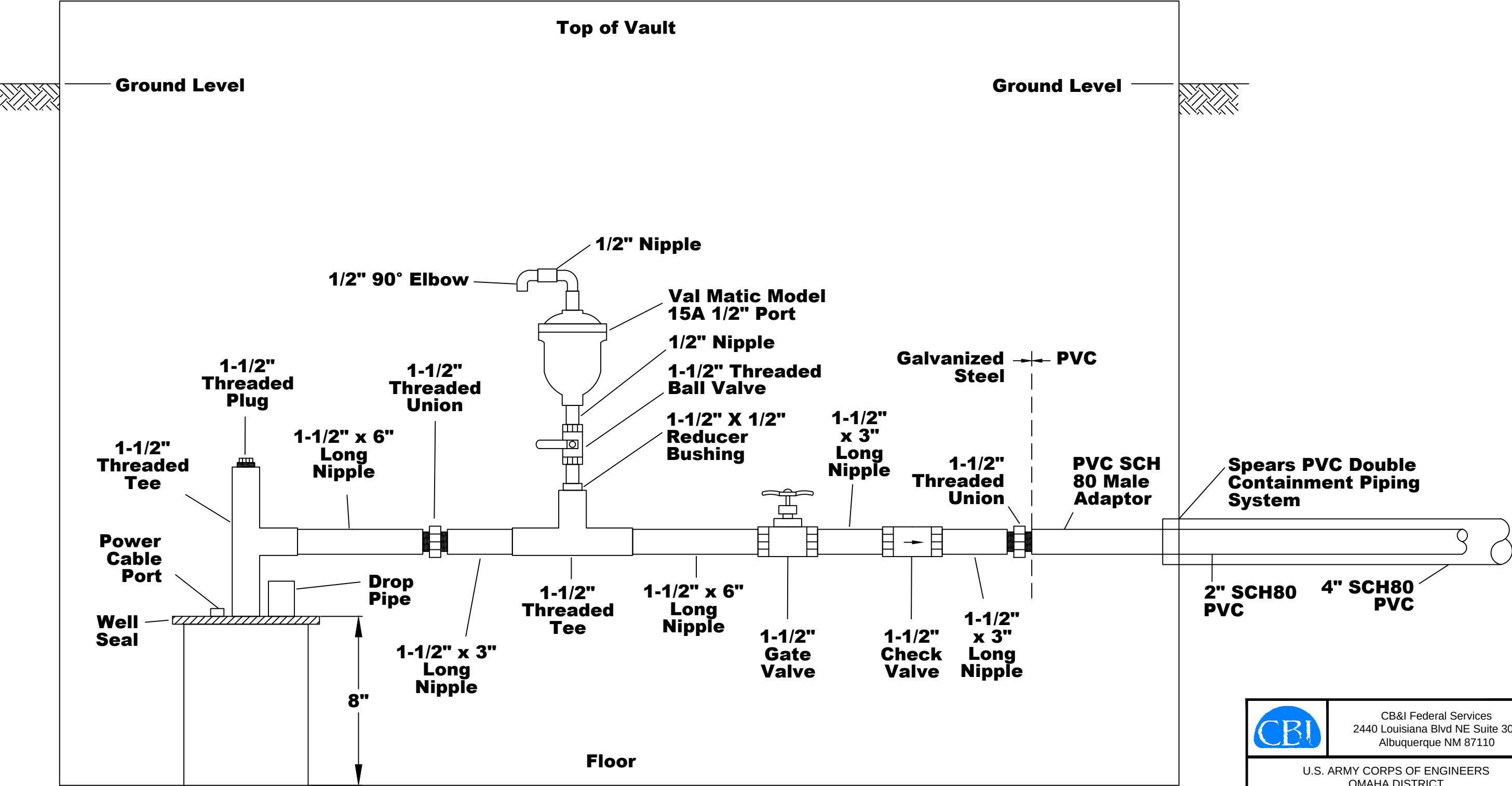


Revision Date: 03/22/17

Projection : NAD83 State Plane New Mexico Central FIPS3002 Feet

EDB IN SITU BIODEGRADATION
PILOT TEST WELL AND PIPE LOCATIONS

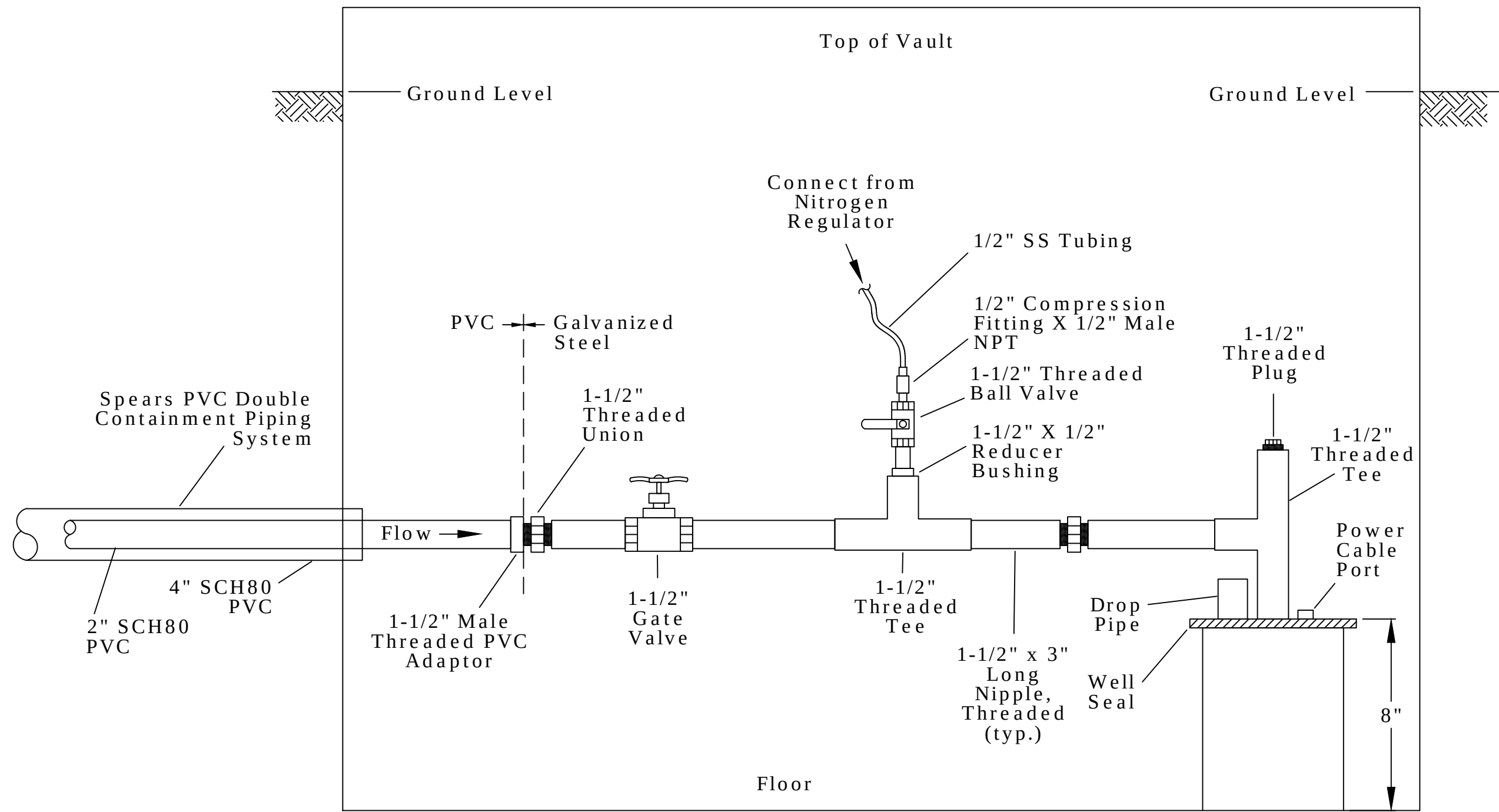
EXTRACTION WELL HEAD AND VAULT PIPING FOR KAFB-106EX1 AND KAFB-106EX2



	CB&I Federal Services 2440 Louisiana Blvd NE Suite 300 Albuquerque NM 87110
	U.S. ARMY CORPS OF ENGINEERS OMAHA DISTRICT OMAHA, NEBRASKA
	EXTRACTION WELL VAULT DESIGN AND WELL HEAD IN-SITU EDB BIOREMEDIATION PILOT TEST KIRTLAND AFB, NEW MEXICO

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INJECTION WELL HEAD AND VAULT PIPING FOR KAFB-106EX1 AND KAFB-106EX2



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500433-EXTRACTION WELL PIPING

	CB&I Federal Services 2440 Louisiana Blvd NE Suite 300 Albuquerque NM 87110
	U.S. ARMY CORPS OF ENGINEERS OMAHA DISTRICT OMAHA, NEBRASKA
	INJECTION WELL VAULT DESIGN AND WELL HEAD IN-SITU EDB BIOREMEDIATION PILOT TEST KIRTLAND AFB, NEW MEXICO

CONCEPT™, TYPE 4 AND 12



INDUSTRY STANDARDS

Wall-mounting brackets required to maintain UL/CSA external mounting requirement.

CONCEPT solid single-door, door with window and flush-mount models

UL 508A Listed; Type 4, 12; File No. E61997
cUL Listed per CSA C22.2 No. 94; Type 4, 12; File No. E61997

NEMA/EEMAC Type 4, 12, 13
CSA, File No. 42186; Type 4, 12
VDE IP66
IEC 60529, IP66

CONCEPT two-door models

UL 508A Listed; Type 12; File No. E61997
cUL Listed per CSA C22.2 No. 94; Type 12; File No. E61997

NEMA/EEMAC Type 12
CSA, File No. 42186, Type 12
VDE IP 55
IEC 60529, IP55

APPLICATION

CONCEPT™ Enclosures are ideal for machine control applications. With streamlined styling, flush quarter-turn latches and an attractive, durable finish. Available in solid or window single-door and two-door landscape, flush-mount and sloped-top versions for application and mounting flexibility. Two-door landscape models provide full-width access and easy panel installation.

SPECIFICATIONS

- 14, 16 or 18 gauge steel (see table)
- Seams continuously welded and ground smooth
- Corner-formed doors
- Simple easy-to-remove and install hinge pins with built-in captivation clip
- High-torque threadless studs and fasteners on door
- Minimum-width body flange provides maximum door opening (210 degrees)
- External formed body flange
- Panel mounting studs fit optional CONCEPT panels and other accessories
- Mounting holes in back of body for optional external wall-mount brackets
- Hidden hinges
- Doors are interchangeable and easily removed by pulling clip-style hinge pins
- Seamless foam-in-place gasket
- Quarter-turn slotted latch(es)
- Door alignment device on doors wider than 30 in.
- Four hinges on 60-in.-high enclosures
- Grounding stud on body; bonding provision on door (except window-door models)
- Provisions for thermoplastic data pocket (right-hand hinged door on two-door models)
- Hardware kit with panel mounting nuts, panel grounding hardware and sealing washers
- Single-door enclosures have a three-point latch system on enclosures where A is equal to or greater than 42-in. with quarter-turn, slotted latch
- Window-door enclosures have a clear polycarbonate window flush with door surface
- Mounting frame on flush-mount enclosures extends completely around enclosure
- Two-door enclosures have a overlapping door design which provides full-width access
- Two door enclosures have a three-point latch system on right-hand hinged door furnished with flush slotted insert
- Illustrated instruction sheet

FINISH

Two standard finishes are available: ANSI 61 gray or RAL 7035 textured light-gray polyester powder paint inside and out.

ACCESSORIES

Door Stop Kit
Handles
Lock Inserts
CONCEPT™ Panels
Mounting-Bracket Kits

MODIFICATION AND CUSTOMIZATION

Hoffman excels at modifying and customizing products to your specifications. Contact your local Hoffman sales office or distributor for complete information.

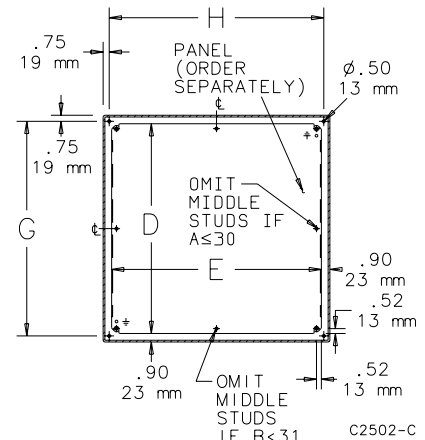
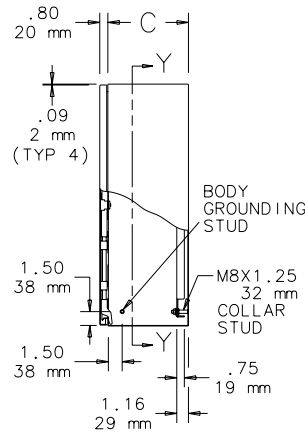
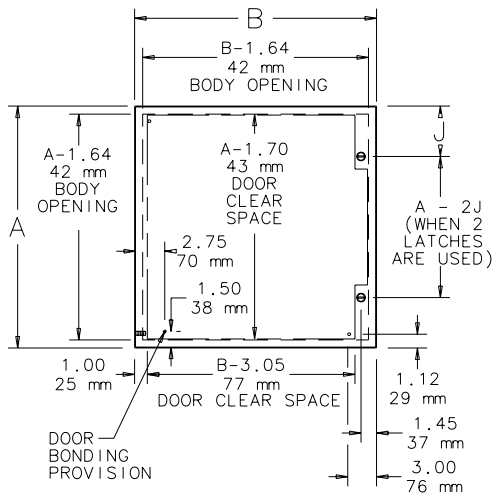
BULLETIN: CW1

Catalog Number	AxBxC in./mm	Finish	Door Ga.	Body Ga.	CONCEPT Panel	Conductive CONCEPT Panel	Panel Size D x E in./mm	Mounting G x H in./mm	Latches qty.	Latches style	J in./mm
CSD30208	30.00 x 20.00 x 8.00 762 x 508 x 203	ANSI 61 Gray	14	16	CP3020	CP3020G	28.20 x 18.20 716 x 462	28.50 x 18.50 724 x 470	2	Quarter-turn	5.00 127
CSD30208LG	30.00 x 20.00 x 8.00 762 x 508 x 203	RAL 7035 Lt. Gray	14	16	CP3020	CP3020G	28.20 x 18.20 716 x 462	28.50 x 18.50 724 x 470	2	Quarter-turn	5.00 127
CSD30248	30.00 x 24.00 x 8.00 762 x 610 x 203	ANSI 61 Gray	14	14	CP3024	CP3024G	28.20 x 22.20 716 x 564	28.50 x 22.50 724 x 572	2	Quarter-turn	5.00 127
CSD30248LG	30.00 x 24.00 x 8.00 762 x 610 x 203	RAL 7035 Lt. Gray	14	14	CP3024	CP3024G	28.20 x 22.20 716 x 564	28.50 x 22.50 724 x 572	2	Quarter-turn	5.00 127
CSD30308	30.00 x 30.00 x 8.00 762 x 762 x 203	ANSI 61 Gray	14	14	CP3030	CP3030G	28.20 x 28.20 716 x 716	28.50 x 28.50 724 x 724	2	Quarter-turn	5.00 127
CSD30308LG	30.00 x 30.00 x 8.00 762 x 762 x 203	RAL 7035 Lt. Gray	14	14	CP3030	CP3030G	28.20 x 28.20 716 x 716	28.50 x 28.50 724 x 724	2	Quarter-turn	5.00 127
CSD36248	36.00 x 24.00 x 8.00 914 x 610 x 203	ANSI 61 Gray	14	16	CP3624	CP3624G	34.20 x 22.20 869 x 564	34.50 x 22.50 876 x 572	2	Quarter-turn	5.00 127
CSD36248LG	36.00 x 24.00 x 8.00 914 x 610 x 203	RAL 7035 Lt. Gray	14	16	CP3624	CP3624G	34.20 x 22.20 869 x 564	34.50 x 22.50 876 x 572	2	Quarter-turn	5.00 127
CSD36308	36.00 x 30.00 x 8.00 914 x 762 x 203	ANSI 61 Gray	14	14	CP3630	CP3630G	34.20 x 28.20 869 x 716	34.50 x 28.50 876 x 724	2	Quarter-turn	5.00 127
CSD36308LG	36.00 x 30.00 x 8.00 914 x 762 x 203	RAL 7035 Lt. Gray	14	14	CP3630	CP3630G	34.20 x 28.20 869 x 716	34.50 x 28.50 876 x 724	2	Quarter-turn	5.00 127
CSD36368	36.00 x 36.00 x 8.00 914 x 914 x 203	ANSI 61 Gray	14	14	CP3636	CP3636G	34.20 x 34.20 869 x 869	34.50 x 34.50 876 x 876	2	Quarter-turn	5.00 127
CSD36368LG	36.00 x 36.00 x 8.00 914 x 914 x 203	RAL 7035 Lt. Gray	14	14	CP3636	CP3636G	34.20 x 34.20 869 x 869	34.50 x 34.50 876 x 876	2	Quarter-turn	5.00 127
CSD161210	16.00 x 12.00 x 10.00 406 x 305 x 254	ANSI 61 Gray	16	18	CP1612	CP1612G	14.20 x 10.20 361 x 259	14.50 x 10.50 368 x 267	1	Quarter-turn	8.00 203
CSD161210LG	16.00 x 12.00 x 10.00 406 x 305 x 254	ANSI 61 Gray	16	18	CP1612	CP1612G	14.20 x 10.20 361 x 259	14.50 x 10.50 368 x 267	1	Quarter-turn	8.00 203
CSD161610	16.00 x 16.00 x 10.00 406 x 406 x 254	RAL 7035 Lt. Gray	16	18	CP1616	CP1616G	14.20 x 14.20 361 x 361	14.50 x 14.50 368 x 368	1	Quarter-turn	8.00 203
CSD161610LG	16.00 x 16.00 x 10.00 406 x 406 x 254	RAL 7035 Lt. Gray	16	18	CP1616	CP1616G	14.20 x 14.20 361 x 361	14.50 x 14.50 368 x 368	1	Quarter-turn	8.00 203
CSD162010	16.00 x 20.00 x 10.00 406 x 508 x 254	ANSI 61 Gray	16	18	CP2016	CP2016G	18.20 x 14.20 462 x 361	14.50 x 18.50 368 x 470	1	Quarter-turn	8.00 203
CSD162010LG	16.00 x 20.00 x 10.00 406 x 508 x 254	RAL 7035 Lt. Gray	16	18	CP2016	CP2016G	18.20 x 14.20 462 x 361	14.50 x 18.50 368 x 470	1	Quarter-turn	8.00 203
CSD201610	20.00 x 16.00 x 10.00 508 x 406 x 254	ANSI 61 Gray	16	18	CP2016	CP2016G	18.20 x 14.20 462 x 361	18.50 x 14.50 470 x 368	1	Quarter-turn	10.00 254
CSD201610LG	20.00 x 16.00 x 10.00 508 x 406 x 254	RAL 7035 Lt. Gray	16	18	CP2016	CP2016G	18.20 x 14.20 462 x 361	18.50 x 14.50 470 x 368	1	Quarter-turn	10.00 254
CSD202010	20.00 x 20.00 x 10.00 508 x 508 x 254	ANSI 61 Gray	16	18	CP2020	CP2020G	18.20 x 18.20 462 x 462	18.50 x 18.50 470 x 470	1	Quarter-turn	10.00 254
CSD202010LG	20.00 x 20.00 x 10.00 508 x 508 x 254	RAL 7035 Lt. Gray	16	18	CP2020	CP2020G	18.20 x 18.20 462 x 462	18.50 x 18.50 470 x 470	1	Quarter-turn	10.00 254
CSD202410	20.00 x 24.00 x 10.00 508 x 610 x 254	ANSI 61 Gray	16	18	CP2420	CP2420G	22.20 x 18.20 564 x 462	18.50 x 22.50 470 x 572	1	Quarter-turn	10.00 254
CSD202410LG	20.00 x 24.00 x 10.00 508 x 610 x 254	RAL 7035 Lt. Gray	16	18	CP2420	CP2420G	22.20 x 18.20 564 x 462	18.50 x 22.50 470 x 572	1	Quarter-turn	10.00 254
CSD241610	24.00 x 16.00 x 10.00 610 x 406 x 254	ANSI 61 Gray	16	18	CP2416	CP2416G	22.20 x 14.20 564 x 361	22.50 x 14.50 572 x 368	1	Quarter-turn	12.00 305
CSD241610LG	24.00 x 16.00 x 10.00 610 x 406 x 254	RAL 7035 Lt. Gray	16	18	CP2416	CP2416G	22.20 x 14.20 564 x 361	22.50 x 14.50 572 x 368	1	Quarter-turn	12.00 305
CSD242010	24.00 x 20.00 x 10.00 610 x 508 x 254	ANSI 61 Gray	16	18	CP2420	CP2420G	22.20 x 18.20 564 x 462	22.50 x 18.50 572 x 470	1	Quarter-turn	12.00 305
CSD242010LG	24.00 x 20.00 x 10.00 610 x 508 x 254	RAL 7035 Lt. Gray	16	18	CP2420	CP2420G	22.20 x 18.20 564 x 462	22.50 x 18.50 572 x 470	1	Quarter-turn	12.00 305
CSD242410	24.00 x 24.00 x 10.00 610 x 610 x 254	ANSI 61 Gray	14	16	CP2424	CP2424G	22.20 x 22.20 564 x 564	22.50 x 22.50 572 x 572	2	Quarter-turn	5.00 127
CSD242410LG	24.00 x 24.00 x 10.00 610 x 610 x 254	RAL 7035 Lt. Gray	14	16	CP2424	CP2424G	22.20 x 22.20 564 x 564	22.50 x 22.50 572 x 572	2	Quarter-turn	5.00 127
CSD243010	24.00 x 30.00 x 10.00 610 x 762 x 254	ANSI 61 Gray	14	16	CP3024	CP3024G	28.20 x 22.20 716 x 564	22.50 x 28.50 572 x 724	2	Quarter-turn	5.00 127
CSD243010LG	24.00 x 30.00 x 10.00 610 x 762 x 254	RAL 7035 Lt. Gray	14	16	CP3024	CP3024G	28.20 x 22.20 716 x 564	22.50 x 28.50 572 x 724	2	Quarter-turn	5.00 127
CSD302010	30.00 x 20.00 x 10.00 762 x 508 x 254	ANSI 61 Gray	14	16	CP3020	CP3020G	28.20 x 18.20 716 x 462	28.50 x 18.50 724 x 470	2	Quarter-turn	5.00 127
CSD302010LG	30.00 x 20.00 x 10.00 762 x 508 x 254	RAL 7035 Lt. Gray	14	16	CP3020	CP3020G	28.20 x 18.20 716 x 462	28.50 x 18.50 724 x 470	2	Quarter-turn	5.00 127
CSD302410	30.00 x 24.00 x 10.00 762 x 610 x 254	ANSI 61 Gray	14	16	CP3024	CP3024G	28.20 x 22.20 716 x 564	28.50 x 22.50 724 x 572	2	Quarter-turn	5.00 127
CSD302410LG	30.00 x 24.00 x 10.00 762 x 610 x 254	RAL 7035 Lt. Gray	14	16	CP3024	CP3024G	28.20 x 22.20 716 x 564	28.50 x 22.50 724 x 572	2	Quarter-turn	5.00 127
CSD303010	30.00 x 30.00 x 10.00 762 x 762 x 254	ANSI 61 Gray	14	14	CP3030	CP3030G	28.20 x 28.20 716 x 716	28.50 x 28.50 724 x 724	2	Quarter-turn	5.00 127
CSD303010LG	30.00 x 30.00 x 10.00 762 x 762 x 254	RAL 7035 Lt. Gray	14	14	CP3030	CP3030G	28.20 x 28.20 716 x 716	28.50 x 28.50 724 x 724	2	Quarter-turn	5.00 127
CSD362410	36.00 x 24.00 x 10.00 914 x 610 x 254	ANSI 61 Gray	14	16	CP3624	CP3624G	34.20 x 22.20 869 x 564	34.50 x 22.50 876 x 572	2	Quarter-turn	5.00 127

Catalog Number	AxBxC in./mm	Finish	Door Ga.	Body Ga.	CONCEPT Panel	Conductive CONCEPT Panel	Panel Size D x E in./mm	Mounting G x H in./mm	Latches qty.	Latches style	J in./mm
CSD363016	36.00 x 30.00 x 16.00 914 x 762 x 406	ANSI 61 Gray	14	14	CP3630	CP3630G	34.20 x 28.20 869 x 716	34.50 x 28.50 876 x 724	2	Quarter-turn	5.00 127
CSD363016LG	36.00 x 30.00 x 16.00 914 x 762 x 406	RAL 7035 Lt. Gray	14	14	CP3630	CP3630G	34.20 x 28.20 869 x 716	34.50 x 28.50 876 x 724	2	Quarter-turn	5.00 127
CSD483616	48.00 x 36.00 x 16.00 1219 x 914 x 406	ANSI 61 Gray	14	14	CP4836	CP4836G	46.20 x 34.20 1173 x 869	46.50 x 34.50 1181 x 876	1	3-point	24.00 610
CSD483616LG	48.00 x 36.00 x 16.00 1219 x 914 x 406	RAL 7035 Lt. Gray	14	14	CP4836	CP4836G	46.20 x 34.20 1173 x 869	46.50 x 34.50 1181 x 876	1	3-point	24.00 610
CSD242420	24.00 x 24.00 x 20.00 610 x 610 x 508	ANSI 61 Gray	14	14	CP2424	CP2424G	22.20 x 22.20 564 x 564	22.50 x 22.50 572 x 572	2	Quarter-turn	5.00 127
CSD242420LG	24.00 x 24.00 x 20.00 610 x 610 x 508	RAL 7035 Lt. Gray	14	14	CP2424	CP2424G	22.20 x 22.20 564 x 564	22.50 x 22.50 572 x 572	2	Quarter-turn	5.00 127
CSD302420	30.00 x 24.00 x 20.00 762 x 610 x 508	ANSI 61 Gray	14	14	CP3024	CP3024G	28.20 x 22.20 716 x 564	28.50 x 22.50 724 x 572	2	Quarter-turn	5.00 127
CSD302420LG	30.00 x 24.00 x 20.00 762 x 610 x 508	RAL 7035 Lt. Gray	14	14	CP3024	CP3024G	28.20 x 22.20 716 x 564	28.50 x 22.50 724 x 572	2	Quarter-turn	5.00 127
CSD363020	36.00 x 30.00 x 20.00 914 x 762 x 508	ANSI 61 Gray	14	14	CP3630	CP3630G	34.20 x 28.20 869 x 716	34.50 x 28.50 876 x 724	2	Quarter-turn	5.00 127
CSD363020LG	36.00 x 30.00 x 20.00 914 x 762 x 508	RAL 7035 Lt. Gray	14	14	CP3630	CP3630G	34.20 x 28.20 869 x 716	34.50 x 28.50 876 x 724	2	Quarter-turn	5.00 127

Purchase panels separately.

Optional NEMA-size panels require conversion kit Catalog Number CCPM4.

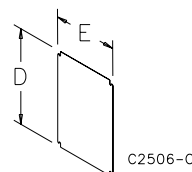


CONCEPT™ PANELS

These panels are taller and wider than corresponding NEMA-size panels. Panels are 14 or 12 gauge steel and painted white or have a conductive finish.

Panels have a formed flange along any side that is longer than 22.20 in. (564 mm). CP2420 and CP2424 have a flange on all four sides.

BULLETIN: CWP, CWY, DWDH2



Catalog Number	Panel Type	Panel Size D x E (in.)	Panel Size D x E (mm)	Gauge
CP1212	Painted steel	10.20 x 10.20	259 x 259	14
CP1212G	Conductive	10.20 x 10.20	259 x 259	14
CP1612	Painted steel	14.20 x 10.20	361 x 259	14
CP1612G	Conductive	14.20 x 10.20	361 x 259	14
CP1616	Painted steel	14.20 x 14.20	361 x 361	12
CP1616G	Conductive	14.20 x 14.20	361 x 361	12
CP2016	Painted steel	18.20 x 14.20	462 x 361	12
CP2016G	Conductive	18.20 x 14.20	462 x 361	12
CP2014	Painted steel	18.20 x 12.20	462 x 310	14
CP2014G	Conductive	18.20 x 14.20	462 x 310	14
CP2416	Painted steel	22.20 x 14.20	564 x 361	12
CP2416G	Conductive	22.20 x 14.20	564 x 361	12
CP2020	Painted steel	18.20 x 18.20	462 x 462	12
CP2020G	Conductive	18.20 x 18.20	462 x 462	12
CP2420	Painted steel	22.20 x 18.20	564 x 462	12
CP2420G	Conductive	22.20 x 18.20	564 x 462	12
CP3020	Painted steel	28.20 x 18.20	716 x 462	12
CP3020G	Conductive	28.20 x 18.20	716 x 462	12
CP3220	Painted steel	30.20 x 18.20	762 x 462	12
CP4420	Painted steel	42.20 x 18.20	1072 x 462	12
CP5620	Painted steel	53.20 x 18.20	1351 x 462	12
CP2424	Painted steel	22.20 x 22.20	564 x 564	12
CP2424G	Conductive	22.20 x 22.20	564 x 564	12
CP3024	Painted steel	28.20 x 22.20	716 x 564	12
CP3024G	Conductive	28.20 x 22.20	716 x 564	12
CP3624	Painted steel	34.20 x 22.20	869 x 564	12
CP3624G	Conductive	34.20 x 22.20	869 x 564	12
CP4824	Painted steel	46.20 x 22.20	1173 x 564	12
CP4824G	Conductive	46.20 x 22.20	1173 x 564	12
CP3030	Painted steel	28.20 x 28.20	716 x 716	12
CP3030G	Conductive	28.20 x 28.20	716 x 716	12
→ CP3630	Painted steel	34.20 x 28.20	869 x 716	12
CP3630G	Conductive	34.20 x 28.20	869 x 716	12
CP4230	Painted steel	40.20 x 28.20	1021 x 716	12
CP4230G	Conductive	40.20 x 28.20	1021 x 716	12
CP3636	Painted steel	34.20 x 34.20	869 x 869	12
CP3636G	Conductive	34.20 x 34.20	869 x 869	12
CP4236	Painted steel	40.20 x 34.20	1021 x 869	12
CP4236G	Conductive	40.20 x 34.20	1021 x 869	12
CP4836	Painted steel	46.20 x 34.20	1173 x 869	12
CP4836G	Conductive	46.20 x 34.20	1173 x 869	12
CP6036	Painted steel	58.20 x 34.20	1478 x 869	12
CP6036G	Conductive	58.20 x 34.20	1478 x 869	12
CP2442	Painted steel	22.20 x 40.20	564 x 1021	12
CP2442G	Conductive	22.20 x 40.20	564 x 1021	12
CP3048	Painted steel	28.20 x 46.20	716 x 1173	12
CP3048G	Conductive	28.20 x 46.20	716 x 1173	12
CP3060	Painted steel	28.20 x 58.20	716 x 1478	12
CP3060G	Conductive	28.20 x 58.20	716 x 1478	12
CP7236	Painted steel	70.20 x 34.20	1783 x 869	12

Catalog number CP4230 is used on CONCEPT disconnect enclosures.

30.5 mm Push Buttons

- Bulletin 800T/800H **Page 10-2**

22.5 mm Push Buttons

- Bulletin 800F **Page 10-66**
- Bulletin 800FC Configured Pendant Stations **Page 10-127**
- Bulletin 800FD Monolithic **Page 10-140**
- Bulletin 800M **Web†**

16 mm Push Buttons

- Bulletin 800B **Page 10-146**

Specialty Push Buttons**Hazardous Location Push Buttons**

- Bulletin 800H Type 7 & 9 **Page 10-152**
- Bulletin 800R **Page 10-189**
- Bulletin 800G **Page 10-194**

Touch/Palm Push Buttons

- Bulletin 800P Palm Operated **Page 10-210**
- Bulletin 800Z Zero-Force™ **Page 10-214**

Miscellaneous Push Buttons

- Bulletin 800L Indicators **Page 10-221**
- Bulletin 800H Security Stations **Web†**
- Bulletin 800S Stations **Page 10-223**

† Information for this product line is available on the Industrial Controls Catalog website: www.ab.com/catalogs.

Bulletin 800T/H

30.5 mm Push Buttons

Product Overview



Bulletin 800T/800H 30.5 mm Push Buttons

- 30.5 mm mounting hole
- Type 4/13 watertight/oiltight (Bul. 800T)
- Type 4/4X/13 corrosion-resistant/watertight/oiltight (Bul. 800H)
- Heavy industrial stations and operators

Description

The Allen-Bradley Bulletin 800T and 800H 30.5 mm push button product lines are in a class by themselves. They are designed and constructed to perform in the most demanding industrial environments. In terms of sealing and switching performance, you will not find a more dependable push button offering. Allen-Bradley delivers more styles and options of operator types and contact blocks, offering flexibility to meet the most demanding specifications in the world's toughest industrial environments.

Design innovation is key to the performance advantage provided in the Bulletin 800T and 800H offerings. New in this catalog are the **Trigger Action E-Stop** operators, the new standard bearer in a tamper-resistant design. Also new is the **Universal LED Illumination** option that accepts a wide 12...130V AC/DC voltage input. This is compatible with all illuminated operator types, allows retrofitting in existing installations, and incorporates super bright LED technology.

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See below.

Standards Compliance

UL 508

CCC

Certifications

UL Listed
(File No. E14840, E10314
Guide No. NKCR, NOIV)

CSA Certified
(File No. LR1234, LR11924)

CSA C22.2, No. 14

EN/IEC: 60947-5-1

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Specifications*

Electrical Ratings		
Contact ratings	Refer to the contact ratings tables on page 10-4.	
Dielectric strength	2200V for one minute, 1300V for one minute (Logic Reed)	
Electrical design life cycles	1 000 000 at max. rated load, 200 000 at max. rated load (Logic Reed)	
Mechanical Ratings		
Vibration	10...2000 Hz, 1.52 mm displacement (peak-to-peak) max./ 10 G max. (except Logic Reed)	
Shock	1/2 cycle sine wave for 11 ms ≥ 25 G (contact fragility) and no damage at 100 G	
Degree of protection	Type 1/4/12/13 (800T); Type 1/4/4X/12/13 (800H); EN/IEC 60529 IP66/65	
Mechanical design life cycles		
Push buttons	(Momentary, non-illuminated)	10 000 000 min.
	(Momentary, illuminated)	250 000 min.
	(Push-pull/twist-to-release)	250 000 min.
Selector switches	(Non-illuminated)	1 000 000 min.
	(Illuminated, key-operated)	200 000 min.
Potentiometers	25 000 min.	
All other devices	200 000 min.	
Contact operation	Shallow, mini, and low-voltage contact blocks: Slow, double make and break Logic Reed and sealed switch contact blocks: Single break magnetic	
Wire gauge/Terminal screw torque	#18...14 AWG (#18...10 Max Duty) / 6...8 lb•in	
Typical operating forces		
Operators without contact blocks	Flush, extended button, standard mushroom, jumbo plastic mushroom: 2 lbs max. Jumbo and extended aluminum mushroom head: 3.95 lbs max. Maintained selector switch: 3.6 in•lb max.	
Spring return selector switches	3.6 in•lb to stop, 0.2 in•lb to return	
Illuminated push buttons and push-to-test pilot lights	5 lb max.	
2-position push-pull	8.0 lb max. push or pull	
3-position push-pull	8 lb max. push to in position or pull to center position (15 lb max. pull to out position)	
Twist-to-release or push-pull	9 lbs max. push or pull 30 in•oz max. twist, 6 in•oz minimum return	
Potentiometer	Rotational torque 3...12 in•oz; stopping torque 12 in•lb (minimum)	
Contact blocks	Standard	1 lb
	Logic Reed	1 lb max.
	Sealed switch	3 lb max. at 0.205 in. plunger travel
	Stackable sealed switch	1 lb max.
	MaxDuty	1.4 lb max.
	PenTUFF	1.4 lb max.
	Self Monitoring	1.6 lb
Environment		
Temperature range	Operating	-40...+131 °F (-40...+55 °C)
	Storage	-40...+185 °F (-40...+85 °C)
Note: Operating temperatures below freezing are based on the absence of moisture and liquids. Consult your local Rockwell Automation sales office or Allen-Bradley distributor for use in lower temperature applications.		
Humidity	50...95% RH from 77...140 °F (25...60 °C) per Procedure IV of MIL-STD-810C, Method 507.1 cycling test	

* Performance Data — See Important- 3.

Bulletin 800T/H

30.5 mm Push Buttons

Specifications

Standard Contact Ratings

Minimum: 24V, 24 mA

Maximum thermal continuous current I_{th} 10 A AC/2.5 A DC. Bulletin 800T units with 800T-XA contacts have ratings as follows:

Max. Operntl. Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make	Break
AC 600	AC-15	A600	120...600 72...120 24...72	7200VA 60 A 60 A	720VA 720VA 10 A
DC 600	DC-13	Q600	28...600 24...28*	69VA 2.5 A	

* For applications below 24V/24 mA, PenTUFF or Logic Reed contacts are recommended.

Sealed Switch Contact Ratings

Minimum: 5V, 1 mA

Maximum continuous current I_{th} 5 A. Bulletin 800T units have control circuit ratings with sealed switch contact blocks as follows:

Max. Operntl. Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make	Break
AC 600	AC-15	B600	120...600 0...120	3600VA 30 A	360VA 3 A
DC 300	DC-13	P300	24...300 0...24	138VA 5.0 A	

Stackable Sealed Switch Contact Ratings

Minimum: 5V, 10 mA (digital); 24V, 1 mA (analog)

Maximum continuous current I_{th} 2.5 A. Bulletin 800T units have control circuit ratings with sealed switch contact blocks as follows:

Max. Operntl. Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make	Break
AC 300	AC-15	C300	120...300 0...120	1800VA 15 A	180VA 1.5 A
DC 150	DC-13	Q150	24...150 0...24	69VA 2.5 A	

Logic Reed Contact Ratings

Minimum — DC: 5V, 1 mA

Maximum — DC: 30V, 0.06 A, AC: 150V, 0.15 A

Should only be used with resistive loads.

Materials Used in 800H Type 4X Operators

Thermoplastic Polyester (Fiberglass Reinforced)

- Bushings
- Mounting Rings
- Sockets

Thermoplastic Polyester

- Non-illuminated button caps

Transparent Amorphous Nylon

- Pilot light lens cap
- Illuminated button caps

Glass Filled Crystalline Nylon

- Thrust washer

Mineral Filled Nylon

- Trim washer

Nitrile (Synthetic Rubber)

- Gaskets and internal seals

PenTUFF™ (Low Voltage) Contact Ratings

Minimum DC: 5V, 1 mA

Maximum thermal continuous current I_{th} 2.5 A AC/1.0 A DC. Bulletin 800T units with 800T-XAV contacts have ratings as follows:

Max. Operntl. Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make	Break
AC 300	AC-15	C300	120...300 0...120	1800VA 15 A	180VA 1.5 A
DC 150	DC-13	R150	24...150 0...24	28VA 1.0 A	

Snap Action Contact Ratings

Max. Operntl. Volts U_e	Contact Rating Designation	Rated Operational Currents		
		Volts U_e	Make	Break
AC 300	A300	120...300 24...72	7200VA 60 A	720VA 10 A
DC 250	—	230...250 115...125	0.2 A 0.4 A	

MaxDuty Contact Rating

Maximum thermal continuous current I_{th} 24 A.

Pilot Duty — 120V AC, 12 A; 24V DC, 10 A

Motor Ratings — 120V AC, 1.5 Hp; 240V AC, 3 Hp; 24V DC, 10 A FLA/60 A LRA

Time Delay Contacts

Max. Operntl. Volts U_e	Contact Rating Designation	Rated Operational Currents		
		Volts U_e	Make	Break
AC 120	B150	120	3600VA	360VA

Note: This device is not rated for DC applications.Adjustment range: 0.5...15 s $\pm$ 25% I_{th} = 5 A

Bulletin 800T/H

30.5 mm Push Buttons

Selector Switches

3-Position Selector Switch Devices, Non-Illuminated

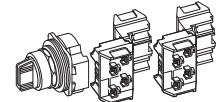
Standard Knob Operator
Cat. No. 800T-J2AKnob Lever Operator
Cat. No. 800T-J17AStandard Knob Operator
Cat. No. 800H-JR2A

Contact Type	Operator Position			M = Maintained S = Spring Return	Type 4/13		Type 4/4X/13
					Standard Knob	Knob Lever	Standard Knob
					Cat. No.	Cat. No.	Cat. No.
No Contacts	—	—	—	M M M	800T-J2	800T-J17	800H-JR2
				S→M M	800T-J4	800T-J18	800H-JR4
				M M←S	800T-J5	800T-J19	800H-JR5
				S→M←S	800T-J91	800T-J20	800H-JR91
 1 N.O. - 1 N.C.	O X	O O	X O	M M M	800T-J2A	800T-J17A	800H-JR2A
				S→M M	800T-J4A	800T-J18A	800H-JR4A
				M M←S	800T-J5A	800T-J19A	800H-JR5A
				S→M←S	800T-J91A	800T-J20A	800H-JR91A

Note: X = Closed/O = Open

800 H - JR 5 A

a b c d e f



a

Protection Rating	
Code	Description
T	Metal, Type 4/13
H	Plastic, Type 4/4X/13

b

Finger-Safe Guards	
Code	Description
Blank	No guards
C	Guards on terminals

c

Knob Insert Colors		
800T Type 4/13	Description	800H Type 4/4X/13
Code		Code
J	White	JR
JX	Packet of colored inserts*	JRX
Metal Wing Lever Colors*		
Code	Color	Code
JA	Red	—
JG	Grey	—

d

Knob/Lever Type Operators	
Standard Knob	
Code	Operator Function
2	Maintained
4	Spring return from left
5	Spring return from right
91	Spring return from both
Knob Lever*	
Code	Operator Function
17	Maintained
18	Spring return from left
19	Spring return from right
20	Spring return from both
Metal Wing Lever*	
Code	Operator Function
11	Maintained
15	Spring return from left
16	Spring return from right
141	Spring return from both
Coin Slot*	
Code	Operator Function
10	Spring return from both

e

Cam Option†	
Code	Description
Blank	KB7 cam (std.)
KA1	KA1 cam
KA7	KA7 cam

e (cont'd)

Cam Option†	
Code	Description
KC1	KC1 cam
KC7	KC7 cam
KD7	KD7 cam
KE7§	KE7 cam
KQ1	KQ1 cam
KQ7	KQ7 cam
KR1§	KR1 cam
KR7§	KR7 cam
KT1§	KT1 cam
KT7§	KT7 cam
KU7§	KU7 cam

f

Contact Blocks	
Code	Description
Blank	No contacts on operator
Standard	
A	1 N.O. - 1 N.C. 1-800T-XA on white side
B	2 N.O. - 2 N.C. 2-800T-XAs — 1 on white side/1 on black side
PentTUFF (Low Voltage)	
AV	1 N.O. - 1 N.C. 1-800T-XAV on white side
BV	2 N.O. - 2 N.C. 2-800T-XAVs — 1 on white side/1 on black side

f (cont'd)

Contact Blocks*	
Code	Description
Blank	No contacts
Class 1, Div. 2/Zone 2	
Logic Reed	
AR	1 N.O. - 1 N.C. 1-800T-XAR on white side
BR	2 N.O. - 2 N.C. 2-800T-XARs — 1 on white side/1 on black side
Sealed Switch	
AP	1 N.O. - 1 N.C. 1-800T-XAP on white side
BP	2 N.O. - 2 N.C. 2-800T-XAPs — 1 on white side/1 on black side
Stackable Sealed Switch	
AY	1 N.O. - 1 N.C. 1-800T-XAY on white side
BY	2 N.O. - 2 N.C. 2-800T-XAYs — 1 on white side/1 on black side

* One insert of each color (blue, green, orange, red, and yellow).
 * Only available on Bul. 800T, Type 4/13 operators.
 † If an overlapping cam is required, consult your local distributor.
 § Not available with wing levers.
 * See Table 1 for cam selections and associated targets.

Table 1. Cam and Contact Block Functionality Table

Contact Block Suffix Code	Contact Block Side	Circuits	Cam Codes													
			KB7 (Std.)	KA1	KA7	KC1	KC7	KD7	KE7	KQ1	KQ7	KR1	KR7	KT1	KT7	KU7
	White	A	X	O	O	X	O	O	O	X	O	O	X	X	O	O
		B	O	O	X	O	X	O	O	X	O	O	X	O	O	X
	Black	A	X	O	O	X	O	O	X	O	O	X	X	O	O	X
		B	O	O	X	O	X	O	O	X	O	O	X	O	O	X
	White	A	X	O	O	X	O	O	X	O	O	X	X	O	O	X
		B	O	O	X	O	X	O	O	X	O	O	X	O	O	X
	Black	A	X	O	O	X	O	O	X	O	O	X	X	O	O	X
		B	O	O	X	O	X	O	O	X	O	O	X	O	O	X

Note: X = Closed/O = Open

www.ab.com/catalogs Preferred availability cat. nos. are bold.



HPS Fortress™ Commercial Encapsulated Transformers

MODEL #: C1F007LES

Features

Totally enclosed to seal out moisture and airborne contaminants

Easily accessible nameplate

Installation is made quick and easy with keyhole mounting slots

All units are encapsulated with an electrical grade silica sand and resin compound

NEMA 3R enclosure meets or exceeds listing criteria including NEMA and ANSI standards for indoor and outdoor applications

Conduit knockouts and an easily accessible wiring compartment



Voltage Regulation

Voltage regulation in transformers is the difference between the “No-Load voltage” and the “Full-Load voltage”. This is expressed in terms of percentage.

$$\text{Regulation Percentage} = \frac{E_{\text{No-Load}} - E_{\text{Full Load}}}{E_{\text{Full Load}}} (100\%)$$

The secondary voltage (nominal) listed in these pages are at Full-Load, meaning the point at which the transformer is operating at maximum permissible secondary current. No-Load voltage can increase 6 to 10% max.

Warning: Secondary voltages of transformers may damage some loads. For example, a transformer connected as 480/120 Volt but applied 495 Volt primary can produce at No-Load a voltage of 134 Volts which will damage the inputs of a PLC D0-06AA, whose maximum input voltage is 132 Volt. Notice that the current of D0-06AA input is 10mA, making it very close to No-Load.

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZiLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

HPS Fortress™ Commercial Encapsulated Transformers

Primary 480 x 240 VAC

Secondary 240 x 120 VAC

MODEL #: C1F007LES

Features

- **Ratings:** Single phase from 0.50kVA to 25kVA; 60 Hz
- **Electrostatic Shield:** Standard on all single phase units 0.75kVA and larger
- **Quality Design:** All units are encapsulated with electrical grade silica sand and resin compounds which completely enclose the core and coil to seal out moisture, airborne contaminants and eliminates corrosion and deterioration.
- **Insulation:** Offering UL class 130°C (266°F) insulation, 95°C (203°F) temperature rise up to 1kVA on single phase; 180°C (356°F) insulation, 135°C (275°F) temperature rise on all units over 1kVA on single phase. Quiet operation with sound levels below NEMA standards.
- **Enclosures:** NEMA 3R enclosures meet or exceed listing criteria including NEMA, ANSI, and OSHA standards for indoor and outdoor service.

- To provide NEMA 3R protection (protection from falling rain), the transformer must be mounted vertically with the mounting tabs facing up.
- Rear and side entry conduit knockouts into an easily accessible and roomy wiring compartment.
- Color is ANSI 61 gray, UL50
- Taps are convenient to select output voltage.
- **Wiring compartment:** Provides tinned copper lead wire terminations up to 5kVA, terminal pad termination on 7.5kVA and larger and standard ground lug assembly for easy cable installation.
- Output voltage adjustable by taps.
- **Temperature Range:** -20°C (-4°F) to average ambient temperature 30°C (86°F), not to exceed 40°C (104°F)

- **Installation made quick and easy:** All encapsulated transformers are designed for wall mounting and include keyhole mounting slots.
- **10 year warranty** (limited to mfg. defects)

Agency Approvals

- UL Listed File No. E50394 (Type Q)
- CSA File No. LR3902 (Type Q)
- CE (up to 10 kVA)
- RoHS


C1FC50LE

C1F1C5LES

C1F005LES
HPS Fortress 480x240/240x120 Encapsulated Transformer Specifications

Part Number	Price	kVA Rating	Primary Voltage (60Hz)	Secondary Voltage (Nominal)	Output Current (Amps) 120/240	Impedance %		Total Heat Dissipation (Watts)*	Product Wt/Lbs
						VA	%Z		
C1FC50LE	\$102.00	0.50	240x480	120x240	4.17/2.08	500	7.6	35.8	15.0
C1FC75LES	\$127.50	0.75			6.25/3.13	750	5.6	57.2	18.0
C1F1C0LES	\$154.00	1.0			8.33/4.17	1000	4.8	75.3	22.0
C1F1C5LES	\$184.00	1.5			12.5/6.25	1500	4.1	100.0	25.0
C1F002LES	\$228.00	2.0			16.7/8.33	2000	4.3	121.6	40.0
C1F003LES	\$282.00	3.0			25.0/12.5	3000	3.7	160.8	55.0
C1F005LES	\$404.00	5.0			41.7/20.8	5000	4.2	314.0	88
C1F007LES	\$611.75	7.5			62.5/31.3	7500	3.6	402.0	145
C1F010LES	\$706.00	10			83.3/41.6	10000	3.7	525.0	165
C1F015LES**	\$909.00	15			125/62.5	15000	2.4	585.0	286
C1F025LES**	\$1,118.00	25			208.3/104.2	25000	2.0	838.0	346

* Heat dissipation calculated based on full rated load on transformer.

** Not CE

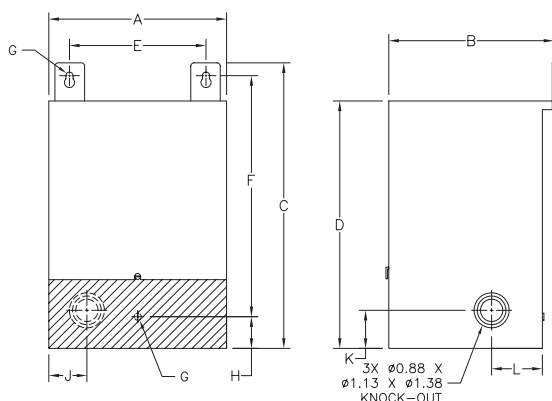
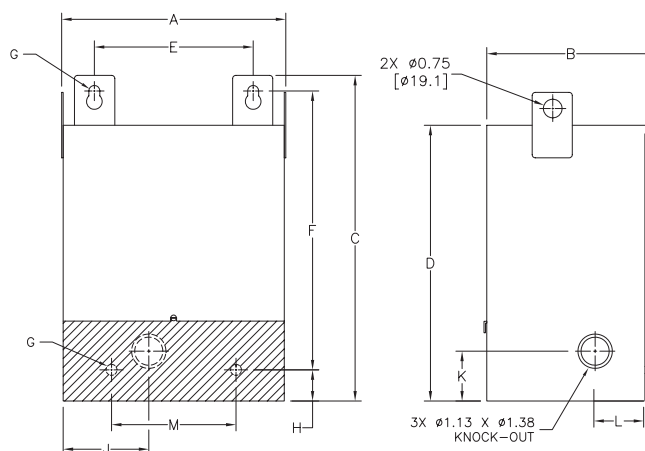
HPS Fortress™ Commercial Encapsulated Transformers

Primary 480 x 240 VAC

Secondary 240 x 120 VAC

MODEL #: C1F007LES

Dimensions

Figure A - 500VA to 3kVA

Figure B - 5kVA to 25kVA


* Front bottom panel is hinged for access to terminals, shaded areas show view of rear mounting holes and knockout.

Dimensions inches [mm]

HPS Fortress 480x240/240x120 Encapsulated Transformer Dimensions

Part Number	Mtg. Fig.	Overall Dimensions in (mm)				Mounting Holes in (mm)		Mtg. Hole Dia. in (mm)	Knock Out Dimensions in (mm)				Rear Mtg. Holes in (mm)
		A	B	C	D	E	F		G	H	J	K	
C1FC50LE	A	5.00 (127.0)	4.75 (120.7)	9.25 (235.0)	8.25 (209.6)	3.88 (98.6)	7.75 (196.9)	0.22 (5.6)	1.25 (31.8)	1.00 (25.4)	1.50 (38.1)	2.00 (50.8)	N/A
C1FC75LES	A	5.00 (127.0)	4.75 (120.7)	9.25 (235.0)	8.25 (209.6)	3.88 (98.6)	7.75 (196.9)	0.22 (5.6)	1.25 (31.8)	1.00 (25.4)	1.50 (38.1)	2.00 (50.8)	
C1F1C0LES	A	5.88 (149.4)	5.50 (139.7)	10.50 (267.0)	8.50 (215.9)	4.13 (104.9)	8.25 (209.6)	0.28 (7.1)	1.25 (31.8)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	
C1F1C5LES	A	5.88 (149.4)	5.50 (139.7)	10.50 (267.0)	8.50 (215.9)	4.13 (104.9)	8.25 (209.6)	0.28 (7.1)	1.25 (31.8)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	
C1F002LES	A	7.00 (177.8)	6.50 (165.1)	11.25 (285.8)	9.75 (247.7)	5.38 (136.7)	9.50 (241.3)	0.28 (7.1)	1.25 (31.8)	1.50 (38.1)	1.50 (38.1)	2.00 (50.8)	
C1F003LES	A	7.00 (177.8)	6.50 (165.1)	11.25 (285.8)	9.75 (247.7)	5.38 (136.7)	9.50 (241.3)	0.28 (7.1)	1.25 (31.8)	1.50 (38.1)	1.50 (38.1)	2.00 (50.8)	
C1F005LES	B	10.00 (254.0)	7.75 (196.9)	17.25 (438.2)	15.25 (387.4)	7.38 (187.5)	15.38 (390.7)	0.44 (11.2)	1.25 (31.8)	4.00 (101.6)	2.00 (50.8)	2.00 (50.8)	6.00 (152.4)
C1F007LES	B	12.25 (311.2)	9.25 (234.9)	17.63 (447.8)	15.56 (395.2)	9.38 (238.3)	14.88 (377.9)	0.44 (11.2)	2.00 (50.8)	5.00 (127.0)	2.00 (50.8)	2.00 (50.8)	8.00 (203.2)
C1F010LES	B	12.25 (311.2)	9.25 (234.9)	20.88 (530.4)	18.88 (479.6)	9.38 (238.3)	18.13 (460.5)	0.44 (11.2)	2.00 (50.8)	5.00 (127.0)	2.00 (50.8)	2.00 (50.8)	8.00 (203.2)
C1F015LES	B	14.50 (368.3)	10.75 (273.1)	21.38 (543.1)	19.38 (492.3)	11.63 (295.4)	18.63 (473.2)	0.44 (11.2)	2.00 (50.8)	6.00 (152.4)	2.00 (50.8)	2.00 (50.8)	10.00 (254.0)
C1F025LES	B	14.50 (368.3)	10.75 (273.1)	27.38 (695.5)	24.88 (631.9)	11.13 (282.7)	24.50 (622.3)	0.56 (14.2)	2.00 (50.8)	6.00 (152.4)	2.00 (50.8)	2.00 (50.8)	10.00 (254.0)
Note: All dimensions have a tolerance of ±0.06 inches unless otherwise noted. To provide NEMA 3R protection (protection from falling rain), the transformer must be mounted vertically with the mounting tabs facing up. Additional information in installation insert.													

HPS Fortress™ Commercial Encapsulated Transformers

Primary 480 x 240 VAC

Secondary 240 x 120 VAC

Wiring Diagram - For 500VA to 5kVA

SCHEMATIC		CONNECTIONS		
		Primary Volts	Connect lines to	Inter-connect
		480	H1, H4	H2-H3
		240	H1, H4	H1-H3, H2-H4
		Secondary Volts	Connect lines to	Inter-connect
		240	X1, X4	X2-X3
		120/240	X1, X2, X4	X2-X3
		120	X1, X2	X2-X4, X1-X3

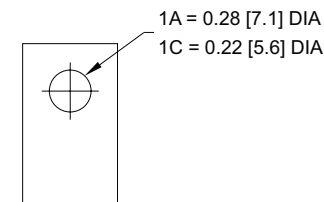
Wiring Diagram - For 7.5kVA to 25kVA

SCHEMATIC		CONNECTIONS		
		Primary Volts	Connect lines to	Inter-connect
		504	H1, H2	1-2
		492	H1, H2	2-3
		480	H1, H2	3-4
		468	H1, H2	4-5
		456	H1, H2	5-6
		444	H1, H2	6-7
		432	H1, H2	7-8
		240	H1, H2	H1-2, H2-1
		228	H1, H2	H1-4, H2-3
		216	H1, H2	H1-6, H2-5
				H1-8, H2-7
		Secondary Volts	Connect lines to	Inter-connect
		240	X1, X4	X2- X3
		120	X1, X2	X2-X4, X1-X3
		120/240	X1, X2, X4	X2-X3

Termination*		
Part No.	HV	LV
C1FC50LE	#18 AWG Leads	#18 AWG Leads
C1FC75LES	#18 AWG Leads	#14 AWG Leads
C1F1C0LES	#18 AWG Leads	#14 AWG Leads
C1F1C5LES	#14 AWG Leads	#14 AWG Leads
C1F002LES	#14 AWG Leads	#14 AWG Leads
C1F003LES	#14 AWG Leads	#14 AWG Leads
C1F005LES	#14 AWG Leads	#12 AWG Leads
C1F007LES	#12 AWG Leads	Terminal Pad 1C
C1F010LES	#10 AWG Leads	Terminal Pad 1C
C1F015LES	#8 AWG Leads	Terminal Pad 1A
C1F025LES	#6 AWG Leads	Terminal Pad 1A

* Transformers are provided with copper leads or copper terminal pads.

Terminal Pad Diagram



Dimensions inches [mm]

Control Transformer Selection

Control transformer selection

To select the proper transformer, you must first determine three characteristics of the load circuit. They are: total steady-state (sealed) VA, total inrush VA, and inrush load power factor.

Total steady-state “sealed” VA is the total amount of VA that the transformer must supply to the load circuit for an extended length of time. Calculate by adding the total steady-state VA of all devices in your control circuit. (The operating VA data for the devices should be available from the manufacturers.)

The inrush VA is the amount of VA that the transformer must supply for all components in the control circuit that are energized together. Consideration for the start-up sequence may be required. (Inrush VA data should be obtained from the device manufacturers.)

The inrush load power factor is difficult to determine without detailed vector analysis of all the control components. In the absence of such information, we recommend that a 40% power factor be utilized.

Six easy steps

Once the three load circuit variables have been determined, follow these steps to select the proper transformer.

1. Determine your primary (supply) and secondary (output) voltage requirements, as well as the required frequency (i.e. 60 Hz).
2. Calculate the total sealed VA of your circuit by adding the total sealed VA of all devices in the control circuit.
3. Calculate the inrush VA by adding the inrush VA of all components being energized together. Remember to add the sealed VA of all components that do not have inrush VA (lamps, timers, etc.), as they do present a load to the transformer during maximum inrush. If the inrush for your components is unknown, assume a 40% inrush power factor.
4. Calculate the total inrush VA using one of two methods:
Method B will result in slightly larger transformer selected.

$$A \quad \text{Total Inrush VA} = \sqrt{(\text{VA sealed})^2 + (\text{VA inrush})^2}$$

or

$$B \quad \text{Total Inrush VA} = \text{VA Sealed} + \text{VA Inrush}$$

5. If the nominal supply voltage does not fluctuate more than 5%, then reference the 90% secondary voltage column in the Regulation Data Table for the correct VA rating. If the supply voltage varies up to 10%, the 95% secondary voltage column should be used to size the transformer. The 85% secondary voltage column gives minimum values for proper electromagnetic device operation and should only be used as a reference.

6. Using the regulation data table below, select the appropriate VA rated transformer:

- A. With a continuous VA rating that is equal to or greater than the value in Step 2.
- B. With a maximum inrush VA equal to or greater than the value obtained in Step 4.

Note: See over-current protection chart for transformers at the end of this section.

HPS Imperator Transformer Regulation Data Table			
Continuous VA Transformer Nameplate	Inrush VA @ 40% Power Factor		
	85% Secondary Voltage	90% Secondary Voltage	95% Secondary Voltage
50	330	259	192
75	350	258	170
100	620	467	321
150	895	699	512
250	1596	1229	880
350	2464	1889	1345
500	3939	2854	1819
750	6422	4778	3228
1000	9842	7102	4530
1500	12797	9018	5489

Note: It is recommended that a control transformer be sized at a 40% power factor. Some components in a circuit, such as electromagnetic devices, typically operate at that level due to their inherently lower power factor. Selecting a transformer at 40% power factor will more than adequately size the unit for all the various loads in the circuit.

Voltage regulation in transformers is the difference between the “No-Load voltage” and the “Full-Load voltage”. This is expressed in terms of percentage.

$$\text{Regulation Percentage} = \frac{E_{\text{No-Load}} - E_{\text{Full Load}}}{E_{\text{Full Load}}} (100\%)$$

The secondary voltage (nominal) listed in these pages are at Full-Load, meaning the point at which the transformer is operating at maximum permissible secondary current. No-Load voltage can increase 4 to 6%.

Warning: Secondary voltages of transformers may damage some loads. For example, a transformer connected as 480/120 Volt but applied 495 Volt primary can produce at No-Load a voltage of 134 Volts which will damage the inputs of a PLC D0-06AA, whose maximum input voltage is 132 Volt. Notice that the current of D0-06AA input is 10mA, making it very close to No-Load.

EAT•N FAZ-NA Miniature Circuit Breakers



Overview

Eaton FAZ-NA miniature circuit breakers offer optimum and efficient protection for branch and control circuits up to 40 amps. The FAZ-NA series is available with C or D trip characteristics in accordance with UL 489. These circuit breakers are current limiting, which means they interrupt fault currents within one half cycle of the fault. The FAZ-NA series is DIN-rail mountable and can be used in feeder and branch circuit applications.

Listings

- UL Listed under UL 489
Category DIVQ File E235139
Busbar Accessory
Category NMTR2.E257181
Category DIHS E257181
- CSA 22.2, No. 5 File 204453
- CE LVD 2006/95/EC
- IEC/EN 60947-2



Features and Benefits

- Dual rated for AC or DC applications
- Complete range of UL 489 listed DIN rail mounted miniature circuit breakers up to 40 ampere current rating
- Single-pole, two-pole and three-pole models
- Current limiting design provides fast short circuit interruption that reduces the let-through energy, which can damage the circuit
- Suitable for branch circuit device protection
- Thermal-magnetic overcurrent protection — two levels of short circuit protection, categorized by C and D curves
- **C curve magnetic trip point:**
5 to 10 times the rated current, typically used for small transformers, pilot devices, etc.
- **D curve magnetic trip point:**
10 to 20 times the rated current, typically used for transformers or very high inductive loads.

- Trip-free design — breaker cannot be defeated by holding the handle in the "ON" position
- Captive screws cannot be lost
- SWD (switching duty) rated circuit breaker — suitable for switching fluorescent lighting loads ($I_n \leq 20A$)
- Fulfills UL 489, CSA C22.2 No.5 and also IEC 60947-2 Standard
- Can also be used in applications for which UL 1077 or CSA C22.2 No.235 are also allowed
- Field installable shunt trip and auxiliary switch subsequent mounting
- Module width of only 17.7 mm (per pole)
- Contact position indicator (red / green)
- 35mm DIN-rail mountable, utilizing spring clip
- Suitable for reverse feed applications

Applications

Feeder and Branch Circuit Protection

- Convenience receptacle circuits (internal / external)
- Motor control circuits
- Load circuits leaving the equipment (external)
- HACR Equipment (Heating Air Conditioning, Refrigeration)
- PLC I/O points
- Computers
- Power supplies
- Control instrumentation
- Relays
- UPS
- Power conditioners

EAT-NA FAZ-NA Miniature Circuit Breakers

Tripping Characteristics

Eaton FAZ-NA miniature circuit breakers are available with "C" and "D" tripping characteristics.

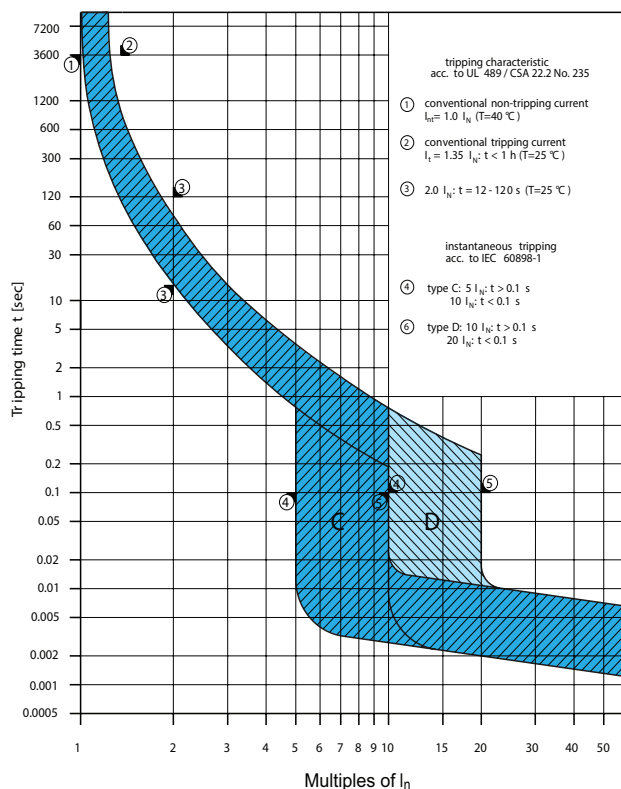
Type C trip curve: 5 to 10 I_n

C-curve devices are suitable for applications where medium levels of inrush current are expected. Applications include small transformers, lighting, pilot devices, control circuits and coils. C-curve devices provide a medium magnetic trip point.

Type D trip curve: 10 to 20 I_n

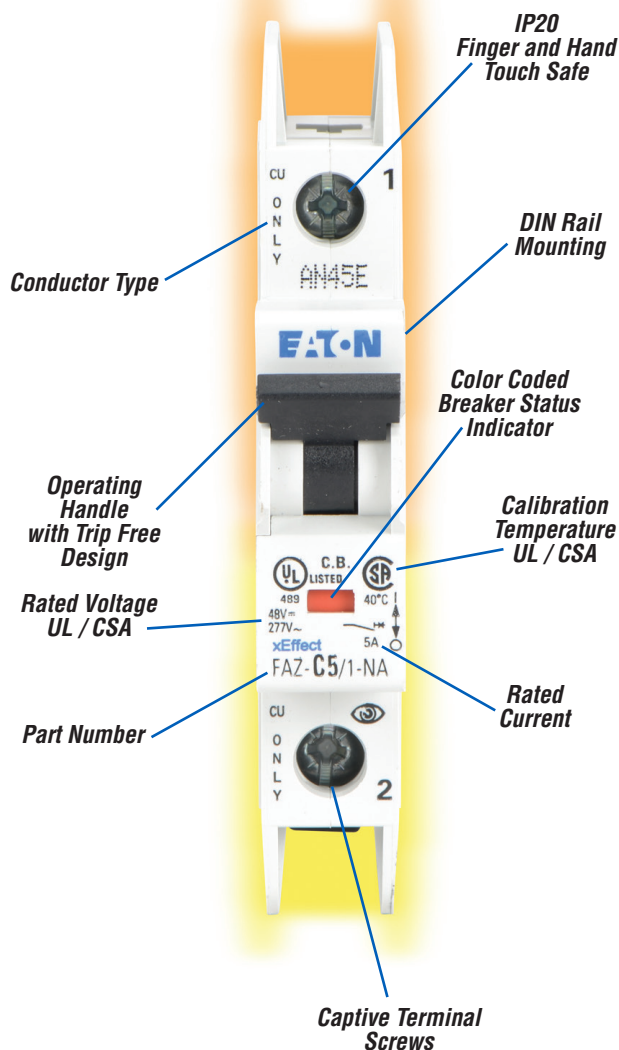
D-curve devices are suitable for applications where high levels of inrush current are expected. The high magnetic trip point prevents nuisance tripping in high inductive applications such as motors, transformers and power supplies.

Eaton FAZ-NA devices are current limiting, which means they interrupt fault currents within one half cycle of the fault. Current limiting devices offer superior protection by reducing peak let-through current and energy.



Labeling

The front of each Eaton FAZ-NA miniature circuit breaker is labeled for positive identification.



EATON FAZ-NA Series Selection Guide



Single-Pole

Note: Eaton product part numbers will contain a [.] instead of [P] and a [/] instead of a [-].

Example: FAZ-C0P5-1-NA-SP = FAZ-C0.5/1-NA-SP

FAZ-NA – Single-Pole Selection Guide				
Ampere Rating	C Curve Part Number	Price	D Curve Part Number	Price
0.5	FAZ-C0P5-1-NA-SP	\$18.00	FAZ-D0P5-1-NA-SP	\$18.00
1	FAZ-C1-1-NA-SP		FAZ-D1-1-NA-SP	
1.5	FAZ-C1P5-1-NA-SP		FAZ-D1P5-1-NA-SP	
2	FAZ-C2-1-NA-SP		FAZ-D2-1-NA-SP	
3	FAZ-C3-1-NA-SP		FAZ-D3-1-NA-SP	
4	FAZ-C4-1-NA-SP		FAZ-D4-1-NA-SP	
5	FAZ-C5-1-NA-SP		FAZ-D5-1-NA-SP	
6	FAZ-C6-1-NA-SP		FAZ-D6-1-NA-SP	
7	FAZ-C7-1-NA-SP		FAZ-D7-1-NA-SP	
8	FAZ-C8-1-NA-SP		FAZ-D8-1-NA-SP	
10	FAZ-C10-1-NA-SP		FAZ-D10-1-NA-SP	
13	FAZ-C13-1-NA-SP		FAZ-D13-1-NA-SP	
15	FAZ-C15-1-NA-SP		FAZ-D15-1-NA-SP	
16	FAZ-C16-1-NA-SP		FAZ-D16-1-NA-SP	
20	FAZ-C20-1-NA-SP		FAZ-D20-1-NA-SP	
25	FAZ-C25-1-NA-SP		FAZ-D25-1-NA-SP	
30	FAZ-C30-1-NA-SP		FAZ-D30-1-NA-SP	
32	FAZ-C32-1-NA-SP		FAZ-D32-1-NA-SP	
*35	FAZ-C35-1-NA-SP		FAZ-D35-1-NA-SP	
*40	FAZ-C40-1-NA-SP		FAZ-D40-1-NA-SP	
* Rated 240VAC				



Two-Pole

Note: Eaton parts available for sale to North America locations only.

FAZ-NA – Two-Pole Selection Guide				
<i>Ampere Rating</i>	<i>C Curve Part Number</i>	<i>Price</i>	<i>D Curve Part Number</i>	<i>Price</i>
0.5	FAZ-C0P5-2-NA	\$35.00	FAZ-D0P5-2-NA	\$35.00
1	FAZ-C1-2-NA		FAZ-D1-2-NA	
1.5	FAZ-C1P5-2-NA		FAZ-D1P5-2-NA	
2	FAZ-C2-2-NA		FAZ-D2-2-NA	
3	FAZ-C3-2-NA		FAZ-D3-2-NA	
4	FAZ-C4-2-NA		FAZ-D4-2-NA	
5	FAZ-C5-2-NA		FAZ-D5-2-NA	
6	FAZ-C6-2-NA		FAZ-D6-2-NA	
7	FAZ-C7-2-NA		FAZ-D7-2-NA	
8	FAZ-C8-2-NA		FAZ-D8-2-NA	
10	FAZ-C10-2-NA		FAZ-D10-2-NA	
13	FAZ-C13-2-NA		FAZ-D13-2-NA	
15	FAZ-C15-2-NA		FAZ-D15-2-NA	
16	FAZ-C16-2-NA		FAZ-D16-2-NA	
20	FAZ-C20-2-NA		FAZ-D20-2-NA	
25	FAZ-C25-2-NA		FAZ-D25-2-NA	
30	FAZ-C30-2-NA		FAZ-D30-2-NA	
32	FAZ-C32-2-NA		FAZ-D32-2-NA	
*35	FAZ-C35-2-NA		FAZ-D35-2-NA	
*40	FAZ-C40-2-NA		FAZ-D40-2-NA	
* Rated 240VAC				

EATON FAZ-NA Series Selection Guide

FAZ-NA – Three-Pole Selection Guide				
Ampere Rating	C Curve Part Number	Price	D Curve Part Number	Price
0.5	FAZ-C0P5-3-NA	\$54.50	FAZ-D0P5-3-NA	\$54.50
1	FAZ-C1-3-NA		FAZ-D1-3-NA	
1.5	FAZ-C1P5-3-NA		FAZ-D1P5-3-NA	
2	FAZ-C2-3-NA		FAZ-D2-3-NA	
3	FAZ-C3-3-NA		FAZ-D3-3-NA	
4	FAZ-C4-3-NA		FAZ-D4-3-NA	
5	FAZ-C5-3-NA		FAZ-D5-3-NA	
6	FAZ-C6-3-NA		FAZ-D6-3-NA	
7	FAZ-C7-3-NA		FAZ-D7-3-NA	
8	FAZ-C8-3-NA		FAZ-D8-3-NA	
10	FAZ-C10-3-NA		FAZ-D10-3-NA	
13	FAZ-C13-3-NA		FAZ-D13-3-NA	
15	FAZ-C15-3-NA		FAZ-D15-3-NA	
16	FAZ-C16-3-NA		FAZ-D16-3-NA	
20	FAZ-C20-3-NA		FAZ-D20-3-NA	
25	FAZ-C25-3-NA		FAZ-D25-3-NA	
30	FAZ-C30-3-NA		FAZ-D30-3-NA	
32	FAZ-C32-3-NA		FAZ-D32-3-NA	
*35	FAZ-C35-3-NA		FAZ-D35-3-NA	
*40	FAZ-C40-3-NA		FAZ-D40-3-NA	
* Rated 240VAC				



Three-Pole

*Note: Eaton product part numbers will contain a [.] instead of [P] and a [/] instead of a [-].
Example: FAZ-C0P5-3-NA = FAZ-C0.5/3-NA*

EATON FAZ-NA Series

Technical Specifications

FAZ-NA Miniature Circuit Breakers – UL/CSA			
		C Curve	D Curve
Short Circuit Trip Response		5 - 10 <i>I</i> _n	10 - 20 <i>I</i> _n
Current Range		0.5 - 40 A	
Maximum Voltage Ratings UL / CSA	0.5 - 32 A	277 / 480Y	
	35 - 40 A	240VAC	
	Per pole	48VDC	
	2 poles in series	96VDC Max	
Thermal Tripping Characteristics	Single pole	40°C	
	Multi-pole		
Short Circuit Ratings (@ maximum voltage)	1 pole	10kA <i>Note: 14 kAIC at select amperages B and C curves (15-25 A) D curve (13-20 A)</i>	
	2 pole		
	3 pole		
Rated Frequency		50/60 Hz	
Agency Approvals		UL File #E235139, CSA #204453	
<i>Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.</i>			
FAZ-NA Miniature Circuit Breaker - IEC			
		C Curve	D Curve
Short Circuit Trip Response		5 - 10 <i>I</i> _n	10 - 20 <i>I</i> _n
Current Range		0.5 - 40 A	
Maximum Voltage Ratings - IEC/EN 60947-2	1 pole	240/415 VAC	
	2 pole / 3 pole		
	2 poles in series		
Thermal Tripping Characteristics	Single pole	30°C	
	Multi-pole		
Interrupt Ratings (At Max Voltage)		15kA	
Rated Frequency		50/60 Hz	
General Specifications			
Lifespan / Endurance		≥20,000 (1 operation = ON/OFF)	
Operating Temperature		UL 489, CSA C22.2 No.5 = 40°C IEC 60947-2 = 30°C	
Shock (UL 489)		10g 20-25 ms	
Housing Material		Nylon	
Mounting Position		Vertical	
Weight	1 pole	0.3 lb (136g)	
	2 pole	0.6 lb (272g)	
	3 pole	0.9 lb (408g)	
Wire Size			
Ampere Rating		Conductor Size	
0.5 - 40		One wire	18 to 6 AWG (0.75 to 13mm²)
		Two wires	18 to 10 AWG (0.75 to 5mm²)
<i>Note: Eaton does not recommend the use of wire ferrules or crimping terminals. The wire gauges are specified above and in the installation instructions included with each circuit breaker.</i>			
Tightening Torque			
Conductor Size		Tightening Torque	
18 - 12 AWG		21 lb-in (2.4 N-m)	
10 - 8 AWG		25 lb-in (2.8 N-m)	
6AWG		36 lb-in (4.1 N-m)	

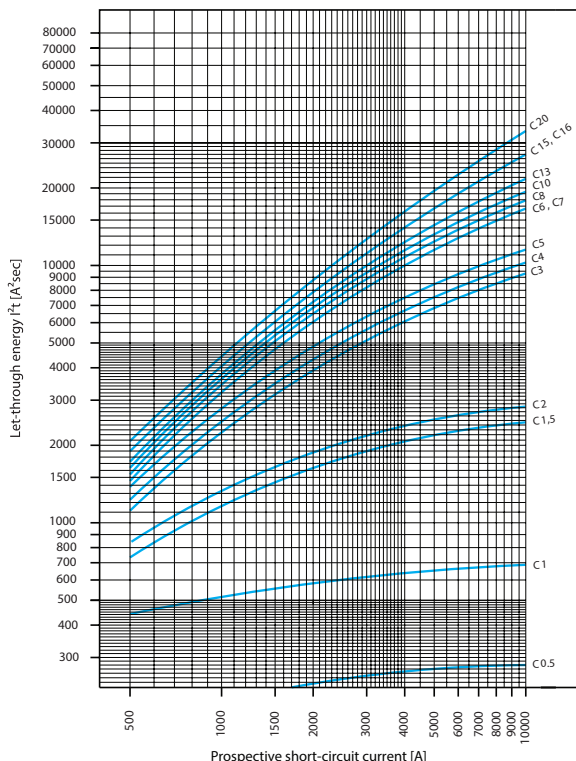
EAT•N FAZ-NA Series Technical Data

Let-Through Energy

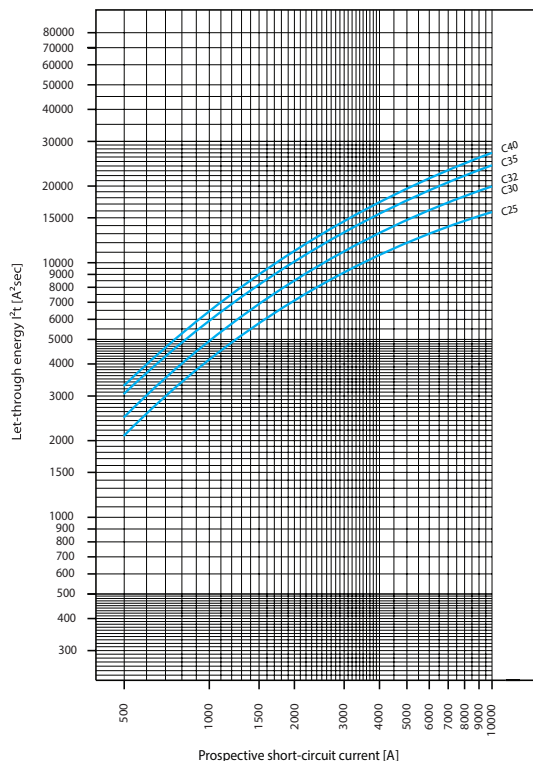
- The X axis shows the prospective short-circuit current levels.
- The Y axis indicates the actual let-through values at those prospective fault ratings for each FAZ-NA device plotted.

As can be interpreted from the bend in the plotted curves, each device acts to limit the damaging let-through energy at those values of short-circuit current.

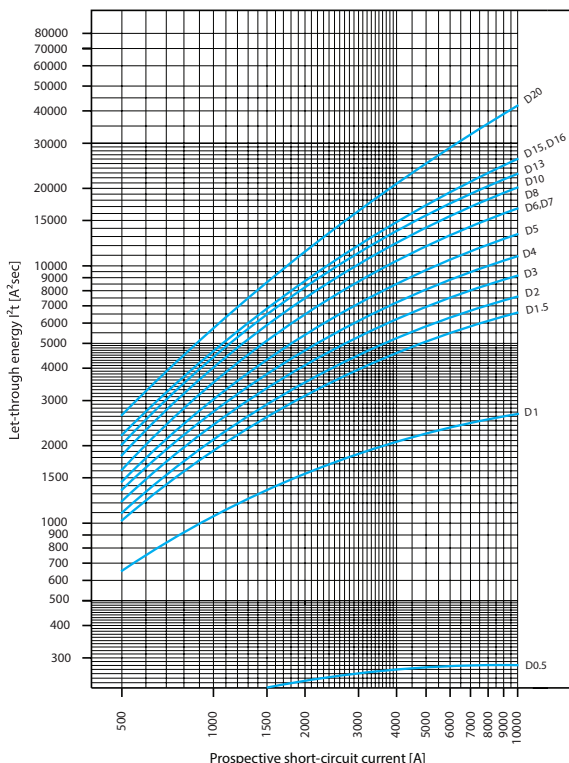
Characteristic C (0.5-20A), 277V



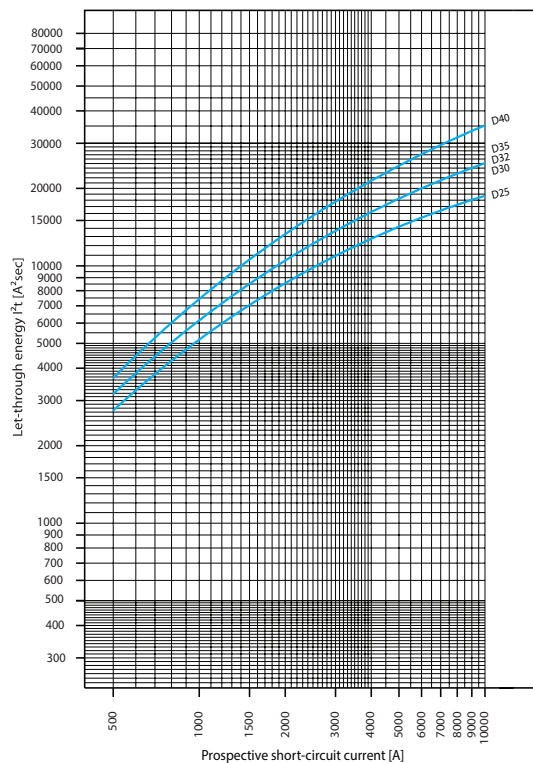
Characteristic C (25-40A), 240V



Characteristic D (0.5-20A), 277V



Characteristic D (25-40A), 240V

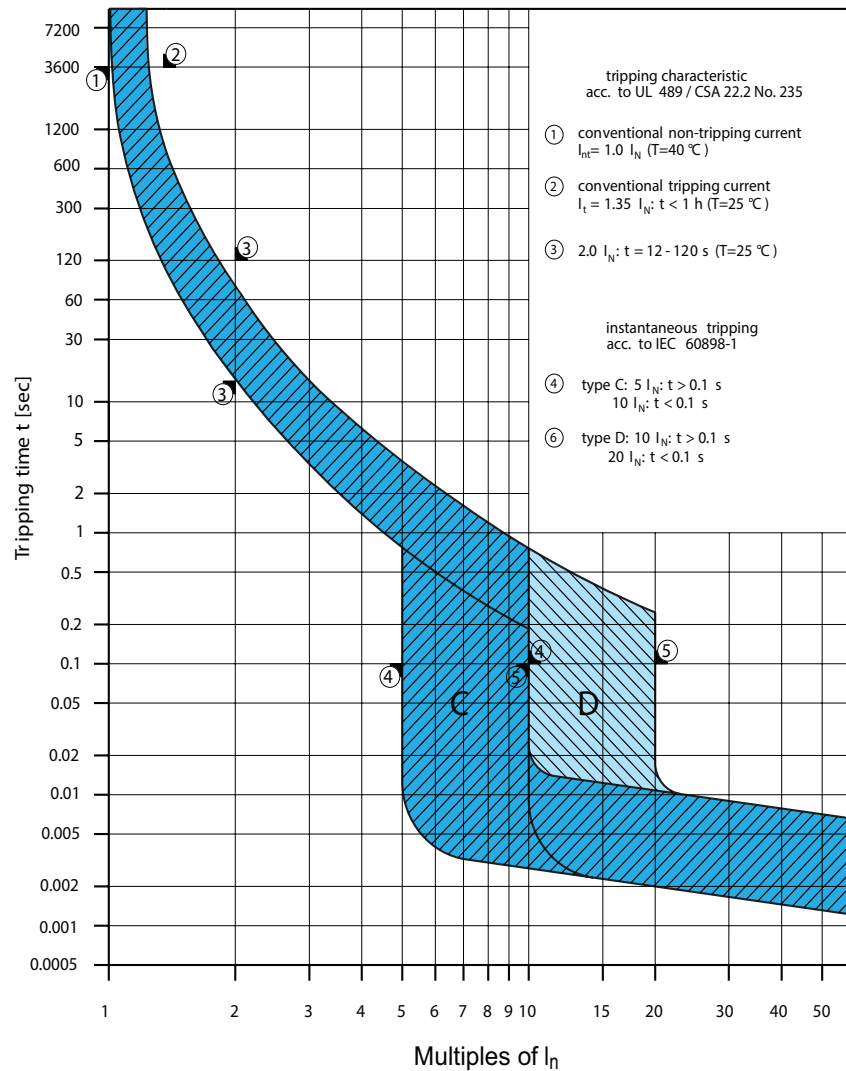


EATON FAZ-NA Series Technical Data

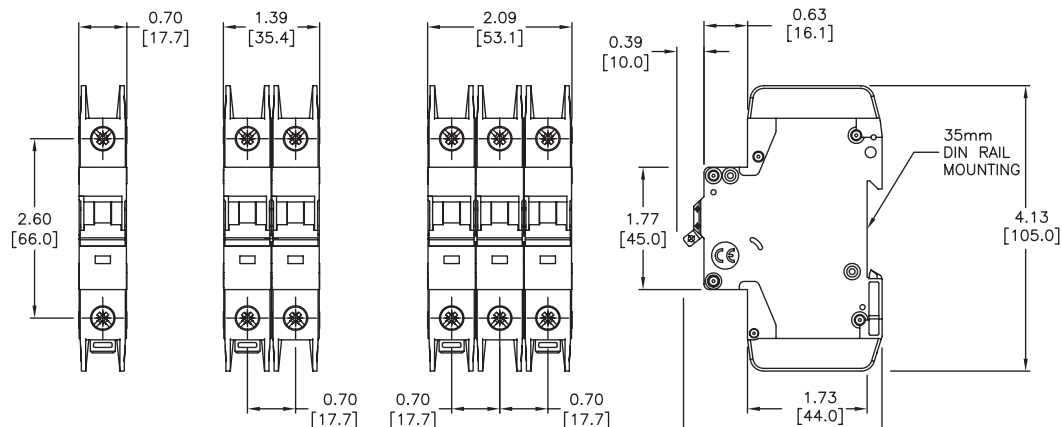
Power Loss at I_n Characteristic C			
I_n [A]	1p P[W]	2p P[W]	3p P[W]
0.5	1.6	3.2	4.7
1	1.1	2.2	3.4
1.5	1.3	2.6	3.9
2	1.4	2.8	4.3
3	1.2	2.4	3.6
4	1.4	2.9	4.3
5	1.9	3.7	5.6
6	1.2	2.3	3.5
7	1.4	2.8	4.3
8	1.4	2.8	4.2
10	1.8	3.6	5.3
13	2.4	4.7	7.1
15	1.9	3.8	5.6
16	2.1	4.3	6.4
20	2.9	5.8	8.7
25	3.1	6.2	9.3
30	3.0	6.0	9.0
32	3.4	6.8	10.2
35	3.7	7.4	11.0
40	4.0	8.1	12.1

Power Loss at I_n Characteristic D			
I_n [A]	1p P[W]	2p P[W]	3p P[W]
0.5	1.6	3.2	4.8
1	0.8	1.5	2.3
1.5	1.0	2.1	3.1
2	1.0	2.1	3.1
3	1.2	2.4	3.6
4	1.4	2.9	4.3
5	1.5	2.9	4.4
6	1.2	2.3	3.5
7	1.4	2.8	4.3
8	1.2	2.4	3.7
10	1.5	3.0	4.5
13	2.0	4.1	6.1
15	1.5	3.1	4.6
16	1.7	3.5	5.2
20	1.8	3.7	5.5
25	2.6	5.1	7.7
30	2.7	5.4	8.1
32	3.1	6.2	9.3
35	3.8	7.6	11.3
40	3.9	7.8	11.6

Tripping Curves



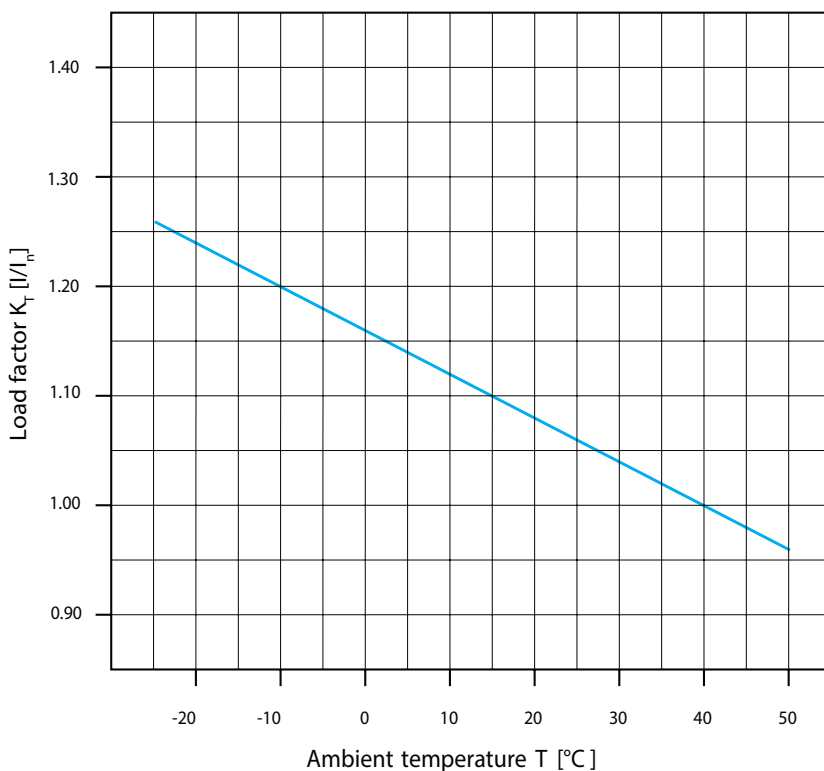
FAZ-NA Miniature Circuit Breakers Dimensions



Please see our website www.AutomationDirect.com for complete engineering drawings.
Dimensions are approximate. Not for construction purposes.

EATON FAZ-NA Series Technical Data

Device Market Current Rating I_n (A) at 40°C	Influence of Ambient Temperature T on Load Carrying Capacity							
	I_n (A) at Higher Ambient Temperature							
	15°C	20°C	25°C	30°C	40°C	50°C	55°C	60°C
0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.0	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9
1.5	1.7	1.6	1.6	1.6	1.5	1.4	1.4	1.4
2.0	2.2	2.2	2.1	2.1	2.0	1.9	1.9	1.8
3.0	3.3	3.2	3.2	3.1	3.0	2.9	2.9	2.8
4.0	4.4	4.3	4.2	4.2	4.0	3.8	3.8	3.7
5.0	5.5	5.4	5.3	5.2	5.0	4.8	4.7	4.6
6.0	6.6	6.5	6.4	6.2	6.0	5.8	5.6	5.5
7.0	7.7	7.6	7.4	7.3	7.0	6.7	6.6	6.4
8.0	8.8	8.6	8.5	8.3	8.0	7.7	7.5	7.4
10.0	11.0	10.8	10.6	10.4	10.0	9.6	9.4	9.2
13.0	14.3	14.0	13.8	13.5	13.0	12.5	12.5	12.0
15.0	16.5	16.2	15.9	15.6	15.0	14.4	14.1	13.8
16.0	17.6	17.3	17.0	16.6	16.0	15.4	15.0	14.7
20.0	22.0	21.6	21.2	20.8	20.0	19.2	18.8	18.4
25.0	27.5	27.0	26.5	26.0	25.0	24.0	23.3	23.0
30.0	33.0	32.4	31.8	31.2	30.0	28.8	28.2	27.6
32.0	35.2	34.6	33.9	33.3	32.0	30.7	30.1	29.4
35.0	38.5	37.8	37.1	36.4	35.0	33.6	32.9	32.2
40.0	44.0	43.2	42.4	41.6	40.0	38.4	37.6	36.8



Maximum load I_L at ambient temperature T:

$$I_L(T) = I_n K_T(T)$$

I_L = Maximum Load
 T = Ambient Temperature
 I_n = Rated Current in Amps
 K_T = Load Factor

EAT•N FAZ-NA Series Accessories

Field Mountable Accessories

- Auxiliary switch
- Alarm switch
- Shunt trip
- No tools required for mounting



ZNHK
Alarm/Aux Contact

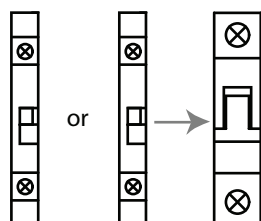


ZIHK-NA
Auxiliary Contact

		ZNHK*	ZIHK-NA
Price		\$20.75	\$16.00
Electrical Data			
Contact function		2 Form C (one set changeover) (SPDT)	1 N.O. + 1 N.C. (DPST)
Rated voltage		230VAC / 110V AC/DC	600VAC / 230VAC / 120VAC
Frequency		50/60 Hz	
Rated current		2A / 0.5 A	1.2 A / 2A / 6A
Rated thermal current I_{th} 60947-5-1		2A / 250VAC	6A / 250VAC
60947-5-1 Rated operational current I_e	Utilization category AC13	3A / 250VAC	
	Utilization category AC15	2A / 250VAC	
	Utilization category DC12	0.5 A / 110VDC	0.5 A / 110VDC 0.25 A / 220VDC
Rated insulation voltage U_i		250VAC	
Minimal operational voltage per Contact U_{min}		5VDC	
Minimum operational current I_{min}		10mA DC	10 mA AC/DC
Rated peak withstand voltage U_{imp} (1.2/50μ)		2.5 kV	4kV
Conditional short-circuit current I_k w/ backup fuse 6A		1kA	1kA
Mechanical Data			
Tripping indicator "electrical tripping"		Blue/white	—
Frame size		45mm	
Mounting		Onto FAZ-NA	
Degree of protection, built-in		IP40	
Terminal protection		Finger and hand touch safe according to BGV A3, OVE-EN 6	
Terminals		Lift terminals	
Terminal capacity		20-18 AWG (0.75 - 2.5 mm ²)	20-14 AWG (0.5 - 2.5 mm ²)
Terminal screws		M3 (Posidrive Z0 - Phillips)	
Fastening torque of terminal screws		7 lb-in (0.79 N·m)	Max. 10.6 lb-in (1.2 N·m)

*Voltage of the FAZ-NA circuit breaker is limited to 300V with contact installed.

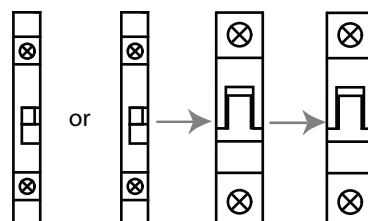
Allowable Combinations of Accessories



Z-IHK-NA
Standard
Auxiliary

Z-NHK
Auxiliary /
Alarm
Switch

FAZ-NA
Miniature
Circuit
Breaker



Z-IHK-NA
Standard
Auxiliary

Z-NHK
Auxiliary /
Alarm
Switch

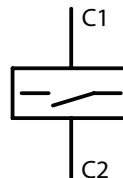
FAZ-XAA-NAxxx
Shunt
Trip

FAZ-NA
Miniature
Circuit
Breaker

EAT•N FAZ-NA Series Accessories

Shunt Trip Release

- Remote release for subsequent mounting onto FAZ-NA
- Additional installation of standard auxiliary switch is possible
- Position indicator red-green



FAZ-XAA-NA Series

Circuit Diagram

	FAZ-XAA-NA12-110V	FAZ-XAA-NA110-415V
Price	\$29.00	\$29.00
Electrical Data		
Can be mounted onto	FAZ-NA	
Operational voltage range	12-110 VAC 12-60 VDC	110-415 VAC 110-230 VDC
Maximum inrush current	15A	2.1 A
Frequency	50/60 Hz	
Mechanical Data		
Frame size	45mm	
Height	4.13 in (105mm)	
Width	0.69 in (17.5 mm)	
Weight	0.28 lb (127g)	
Mounting	Quick fastening with two lock-in positions on EN 50022	
Degree of protection, built-in	IP40	
Terminal protection	Finger and hand touch safe according to BGV A3, OVE-EN 6	
Terminals	Open mouthed/lift	
Terminal capacity, one and two wires	18-10 AWG (0.8 - 5.3 mm²)	
Agency Approval	UL File # E257181, CSA 204453	

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

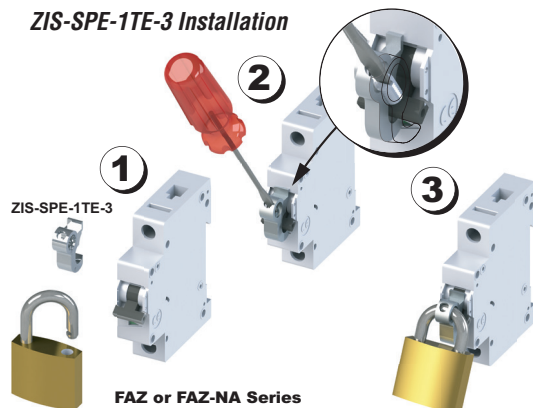
Lockout Attachment

Lockout Attachment				
Part Number	Description	Weight	Qty	Price
ZIS-SPE-1TE-3	Lockout attachment for Eaton FAZ-NA series supplementary protectors and FAZ-NA mini circuit breakers, suitable to prevent unauthorized activation of a de-energized circuit, accepts lock shackles up to 9/32 in. (7.1 mm) in diameter	0.10 lb (45g)	3	\$25.50



ZIS-SPE-1TE-3
Lockout Attachment

ZIS-SPE-1TE-3 Installation



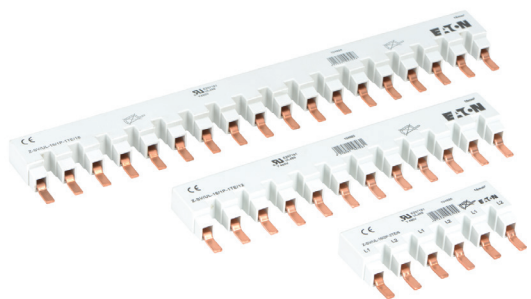
EAT•N FAZ-NA Series Accessories

Busbar System

(Without auxiliary contacts)

Busbar System for FAZ-NA Series Miniature Circuit Breakers		
Part Number	Description	Price
ZSVUL16-1P-1TE6SP	Busbar for connecting up to six (6) 1-pole FAZ-NA series circuit breakers	\$8.50
ZSVUL16-1P-1TE12SP	Busbar for connecting up to twelve (12) 1-pole FAZ-NA series circuit breakers	\$15.50
ZSVUL16-1P-1TE18SP	Busbar for connecting up to eighteen (18) 1-pole FAZ-NA series circuit breakers	\$23.25
ZSVUL16-2P-2TE6SP	Busbar for connecting up to three (3) 2-pole FAZ-NA series circuit breakers	\$9.50
ZSVUL16-2P-2TE12SP	Busbar for connecting up to six (6) 2-pole FAZ-NA series circuit breakers	\$19.00
ZSVUL16-2P-2TE18SP	Busbar for connecting up to nine (9) 2-pole FAZ-NA series circuit breakers	\$28.00
ZSVUL16-3P-3TE6SP	Busbar for connecting up to two (2) 3-pole FAZ-NA series circuit breakers	\$10.00
ZSVUL16-3P-3TE12SP	Busbar for connecting up to four (4) 3-pole FAZ-NA series circuit breakers	\$20.00
ZSVUL16-3P-3TE18SP	Busbar for connecting up to six (6) 3-pole FAZ-NA series circuit breakers	\$29.50

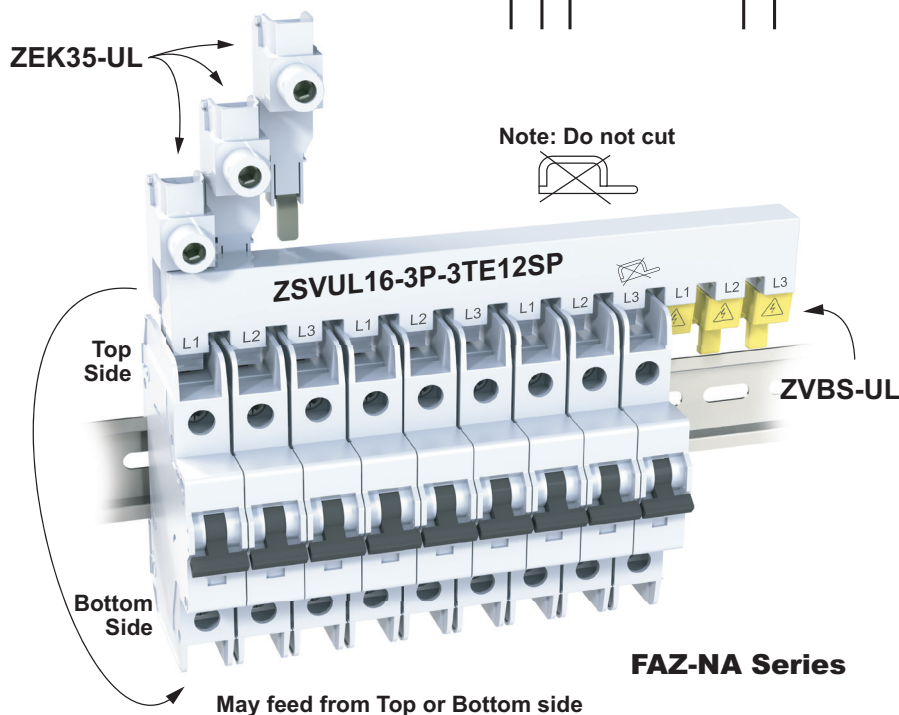
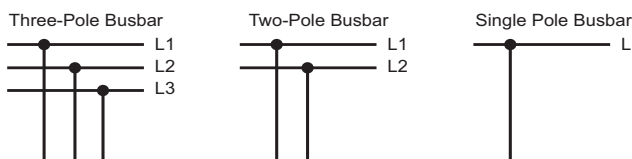
Note: FAZ-NA Busbar is not for use with FAZ supplementary protectors.



ZSVUL16-xP-xTE_xSP

Busbar Specifications			
Description	UL489		IEC/EN60947-2
Operating Voltage	480VAC	96VDC	240/415 VAC
Frequency	50/60 Hz	n/a	50/60 Hz
Rated impulse withstand U_{imp}	n/a		9.5 kV
Max Current - I_e Fed from End	80A @ 40°C		80A @ 30°C
Cross Section	n/a		16 mm ²

Busbar Connection Diagrams



EAT•N FAZ-NA Series Accessories

Busbar Accessories

Busbar Accessories for FAZ-NA Series Miniature Circuit Breakers		
Part Number	Description	Price
ZVBS-UL	Busbar Shroud - covers for unused bus bar terminals, (10) 3-terminal covers per package	\$21.75
ZVBS-UL-5	Busbar Shroud - covers for unused bus bar terminals, (5) 3-terminal covers per package	\$11.75
ZEK35-UL	Wiring Lug, 2 - 14 AWG (35mm), 3 lugs per package	\$31.50
ZEK35-UL-1	Wiring Lug, 2 - 14 AWG (35mm), 1 lug per package	\$11.25



ZVBS-UL



ZEK35-UL

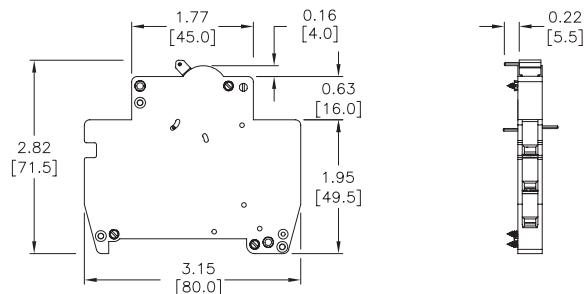
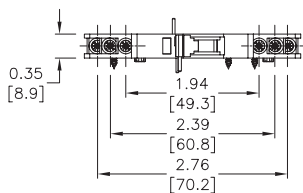
ZEK35-UL – Specifications			
Description	UL489		IEC/EN60947-2
Operating Voltage	480VAC	96VDC	240/415 VAC
Frequency	50/60 Hz	n/a	50/60 Hz
Rated impulse withstand - U _{imp}	n/a		9.5 kV
Max Current - I _e	80A @ 40°C		80A @ 30°C
	#2 - 14 AWG		2.5 - 35 mm²
	0.56 in		14mm
Agency Approval	UL File # E257182, E257181		

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

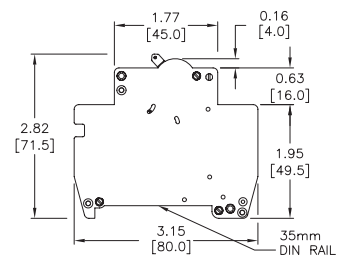
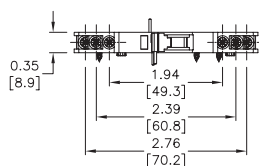
ZEK35-UL – Tightening Torque		
Tested Acc. To	Cable Size	Tightening Torque
UL 486A	#14 AWG	≥ 20 lb-in (2.3 N-m)
UL 486B	#8 - 12 AWG	≥ 25 lb-in (2.8 N-m)
UL 486E	#6 - 1 AWG	35 lb-in (4 N-m)

EAT•N FAZ-NA Series Accessories

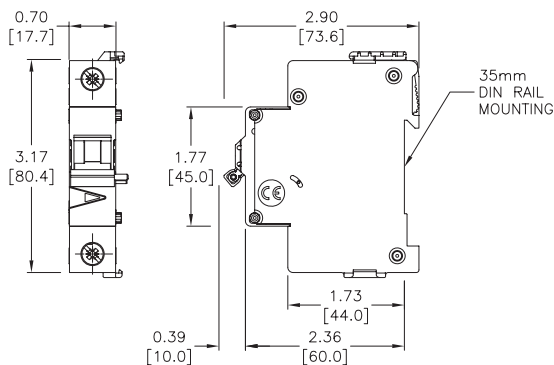
Accessories Dimensions in [mm]



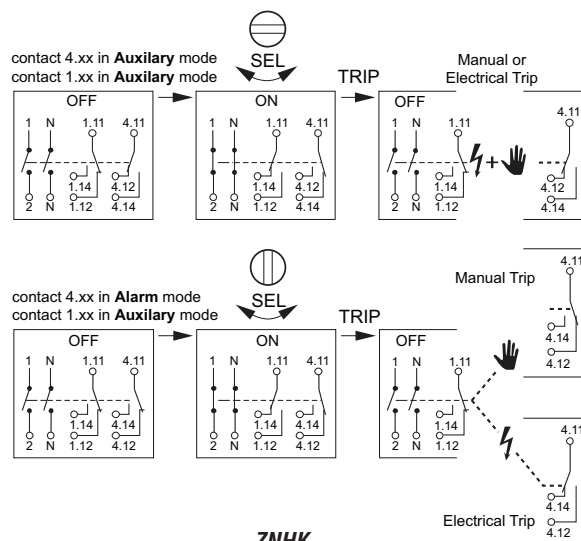
ZNKK



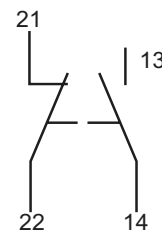
ZIHK-NA



FAZ-XAA-NA-xxx



**ZNKK
Diagrams**



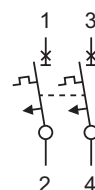
**ZIHK-NA
Diagram**

FAZ-NA Series Miniature Circuit Breakers Connection Diagrams

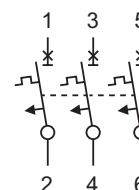
Single Pole



Two-Pole



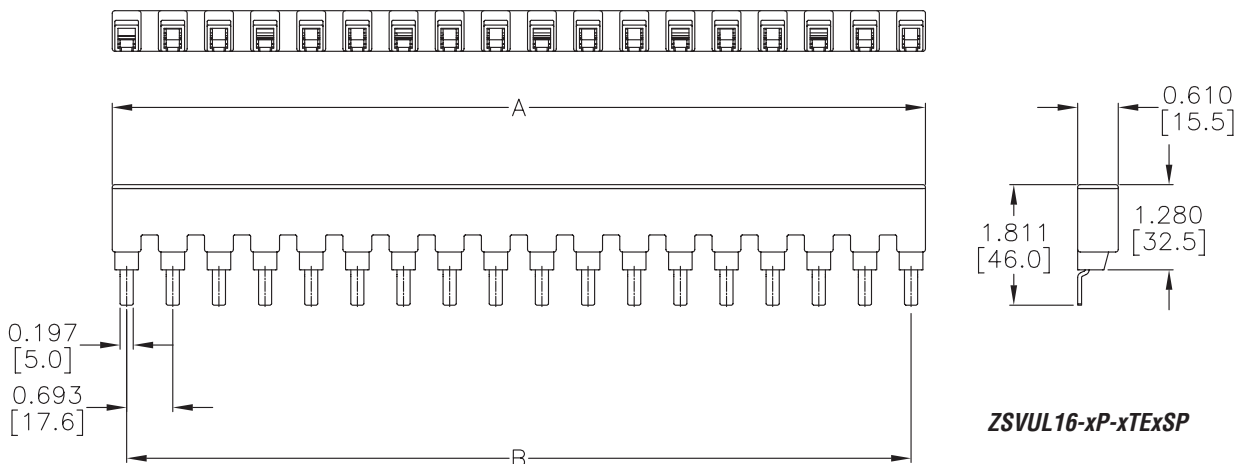
Three-Pole



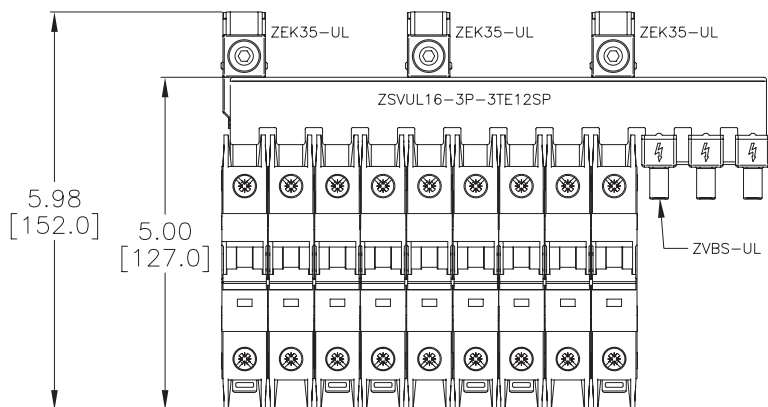
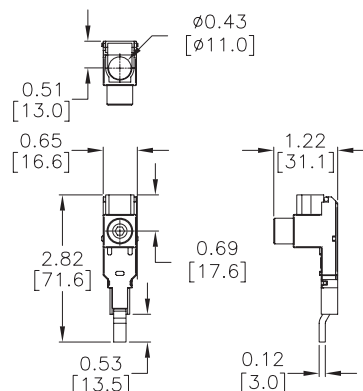
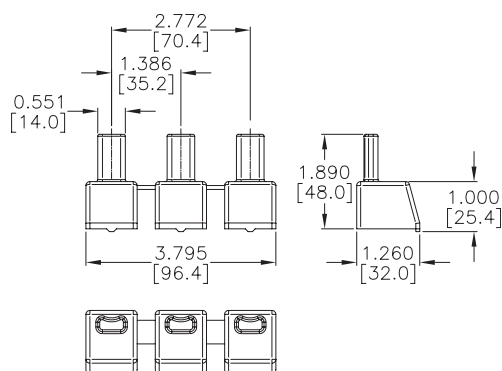
Please see our website www.AutomationDirect.com for complete engineering drawings.
Dimensions are approximate. Not for construction purposes.

EAT•N FAZ-NA Series Accessories

Accessories Dimensions in [mm]



FAZ-NA Busbar Length – in [mm]		
Part Number	A	B
ZSVUL16-xP-xTE6SP	3.90 [99.0]	3.46 [88.0]
ZSVUL16-xP-xTE12SP	8.06 [204.6]	7.62 [193.6]
ZSVUL16-xP-xTE18SP	12.21 [310.2]	11.78 [299.2]



Please see our website www.AutomationDirect.com for complete engineering drawings. Dimensions are approximate. Not for construction purposes.

UL489 or UL1077?

What are your Circuit Protection Requirements?

An understanding of circuit types and circuit protection products is critical to ensure their proper application.
See NEC Sections 100, 430 and 409 for definitions.

The proper sizing of an overcurrent protection device is the responsibility of the customer and should be determined using the application standards of the NEC (National Electric Code), CEC (Canadian Electrical Code) or other applicable standards. Per fine print note of 2008 NEC Section 100 "A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Therefore, the rules for overcurrent protection are specific for particular situations."

UL489

Branch Protection



UL1077

Supplementary Protection



What You Need to Know and Look For In Specifications

Certifications – Standards – Acceptance

UL489

Branch Protection

- UL489 Listed or Recognized
- CSA C22.2 No. 5
- International ratings available depending on breaker type

UL1077

Supplementary Protection

- UL Recognized under UL1077
- CSA 22.2 No. 285
- IEC 60947-2 or IEC 898

Function

- Opens automatically on Overload and Short Circuit when properly applied within its ratings
- Protects wire and cable against Overload and Short Circuit

- Opens automatically on Overload and Short Circuit
- Provides additional equipment protection where branch circuit protection is already provided or not required
- Not suitable for the protection of branch circuit conductors

Applications

- Branch circuit protection in control panels, panelboards, switchboards and motor control centers
- Motor overload and motor short circuit protection (UL489 Recognized motor circuit protectors) for control panels and motor control centers

- Used within appliances or other electrical equipment such as control circuits, control power transformers, relays, PLC I/O points and lighting circuits
- Ideal replacement for fuses that are applied as supplementary protection

Features

- Bolted down or DIN-rail mounted
- External handle mechanisms available
- Field mounted accessories
- Stand alone branch circuit protection
- Various levels of protection (curve type)
- High voltage and interruption levels (up to 100 kAIC @ 480V)

- DIN-Rail mounted
- Field mounted accessories
- Various levels of protection (curve type)
- 10 kAIC @ 240 VAC
- 10 kAIC @ 277 VAC and 5 kAIC @ 480VAC
- 10 kAIC @ 48VDC

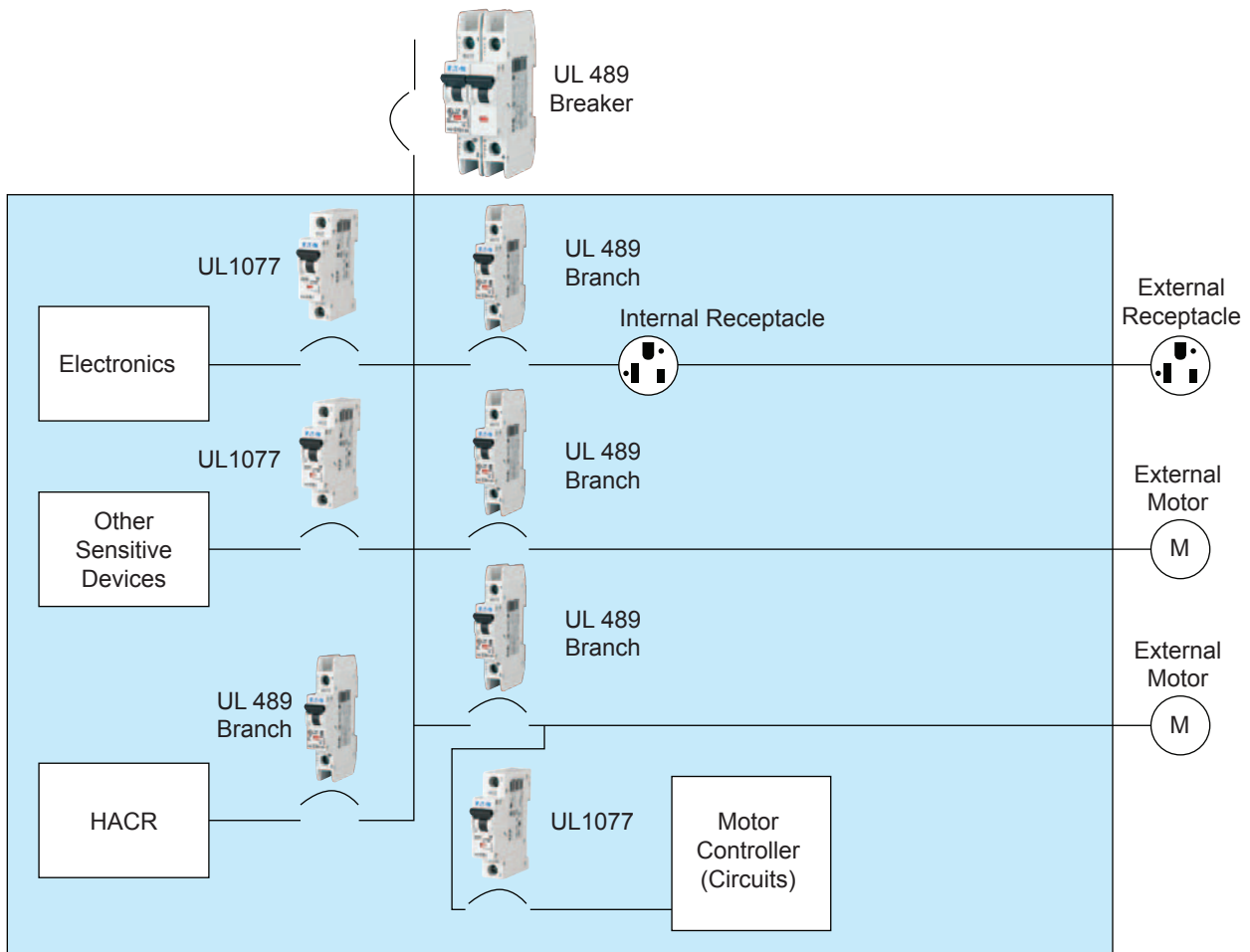
kAIC = thousands of Amps interrupt capacity

Summary

A Supplementary Protector can't be used for Branch Circuit Protection.

Understanding the difference between Branch Circuit Protection and Supplementary Protection helps to ensure their proper use.

UL 1077 Supplementary Protectors and UL 489 Circuit Breakers Application Guidelines



Example of UL 489 and UL 1077 Application

UL489 circuit breakers

Used for branch circuit protection, internal/external receptacles, external motors and HACR equipment (heating, air conditioning and refrigeration).

UL1077 supplementary protectors

Used for overcurrent protection within appliances or electrical equipment, where branch circuit protection is already provided or not required.

Note: UL489 devices can be used in place of UL1077; UL1077 devices cannot be used in place of UL489.

Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input for 2-wire SMART transmitters and current sources
- Output for 4 mA ... 20 mA or 1 V ... 5 V
- Sink or source mode
- Housing width 12.5 mm
- Up to SIL 2 acc. to IEC 61508

Function

This isolated barrier is used for intrinsic safety applications.

The device supplies 2-wire SMART transmitters in a hazardous area, and can also be used with 2-wire SMART current sources.

It transfers the analog input signal to the safe area as an isolated current value.

Digital signals may be superimposed on the input signal in the hazardous or safe area and are transferred bi-directionally.

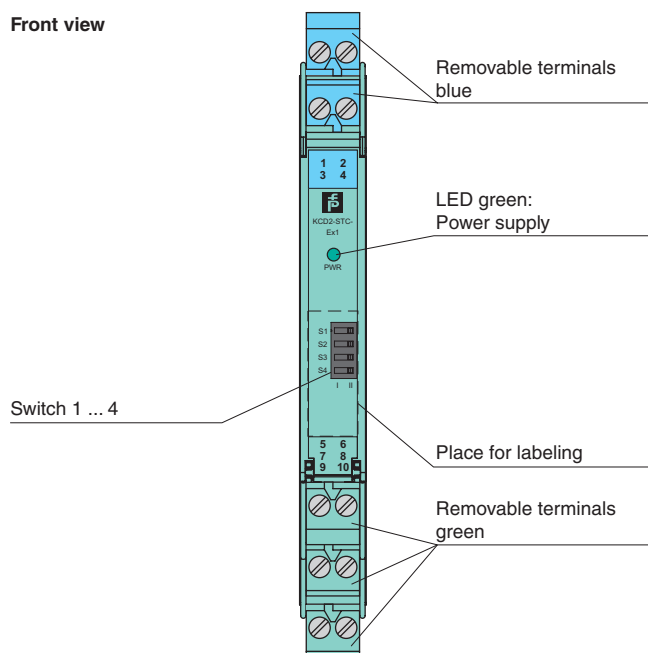
Selectable output of current source, sink mode, or voltage output is available via DIP switches.

If the HART communication resistance in the loop is too low, the internal resistance of 250 Ω between terminals 6 and 8 can be used.

Test sockets for the connection of HART communicators are integrated into the terminals of the device.

Assembly

Front view



Application

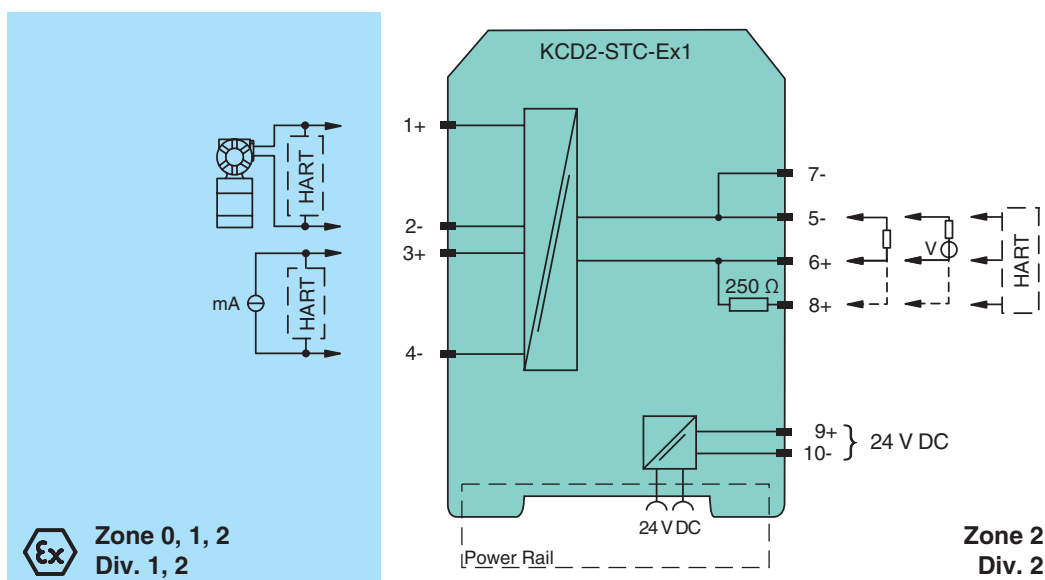
The device supports the following SMART protocols:

- HART
- BRAIN



SIL 2

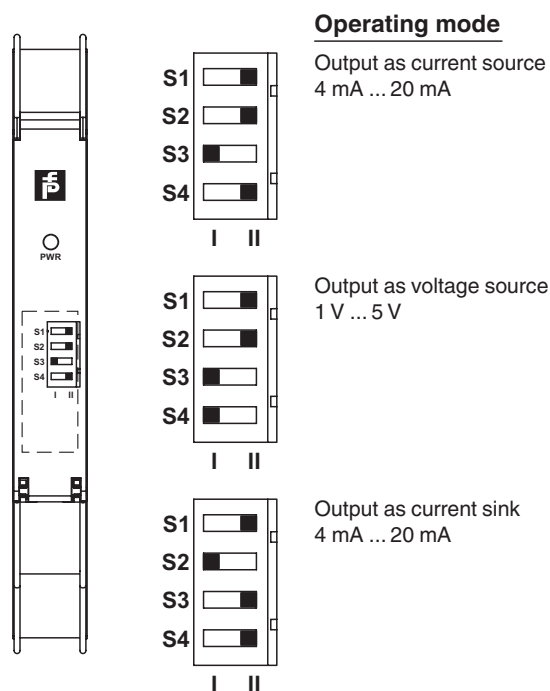
Connection



General specifications		
Signal type		Analog input
Supply		
Connection		Power Rail or terminals 9+, 10-
Rated voltage	U_n	19 ... 30 V DC
Ripple		$\leq 10 \%$
Rated current	I_n	$\leq 45 \text{ mA}$
Power dissipation		$\leq 800 \text{ mW}$
Power consumption		$\leq 1.1 \text{ W}$
Input		
Connection		terminals 1+, 2-; 3+, 4-
Input signal		4 ... 20 mA limited to approx. 30 mA
Open circuit voltage/short-circuit current		terminals 1+, 2-: 22 V / 30 mA
Voltage drop		terminals 3+, 4- : approx. 5 V
Available voltage		terminals 1+, 2-: $\geq 15 \text{ V}$ at 20 mA
Output		
Connection		terminals 5-, 6+
Load		0 ... 300 Ω (source mode)
Output signal		4 ... 20 mA or 1 ... 5 V (on 250 Ω , 0.1 % internal shunt) 4 ... 20 mA (sink mode), operating voltage 15.5 ... 26 V
Ripple		20 mV _{rms}
Transfer characteristics		
Deviation		at 20 °C (68 °F) $\leq \pm 0.1 \%$ incl. non-linearity and hysteresis (source mode 4 ... 20 mA) $\leq \pm 0.2 \%$ incl. non-linearity and hysteresis (sink mode 4 ... 20 mA) $\leq \pm 0.2 \%$ incl. non-linearity and hysteresis (source mode 1 ... 5 V)
Influence of ambient temperature		$< 2 \mu\text{A/K}$ (0 ... 60 °C (32 ... 140 °F)); $< 4 \mu\text{A/K}$ (-20 ... 0 °C (-4 ... 32 °F)) (source mode and sink mode 4 ... 20 mA) $< 0.5 \text{ mV/K}$ (0 ... 60 °C (32 ... 140 °F)); $< 1 \text{ mV/K}$ (-20 ... 0 °C (-4 ... 32 °F)) (source mode 1 ... 5 V)
Frequency range		field side into the control side: bandwidth with 0.5 V _{pp} signal 0 ... 3 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V _{pp} signal 0 ... 3 kHz (-3 dB)
Settling time		$\leq 200 \text{ ms}$
Rise time/fall time		$\leq 20 \text{ ms}$
Electrical isolation		
Input/Output		reinforced insulation acc. to EN 50178, rated insulation voltage 300 V _{eff}
Input/power supply		reinforced insulation acc. to EN 50178, rated insulation voltage 300 V _{eff}
Output/power supply		reinforced insulation acc. to EN 50178, rated insulation voltage 300 V _{eff}
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
Conformity		
Electromagnetic compatibility		NE 21:2006
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Mass		approx. 100 g
Dimensions		12.5 x 114 x 124 mm (0.5 x 4.5 x 4.9 inch) , housing type A2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with Ex-areas		
EC-Type Examination Certificate		CESI 06 ATEX 021
Group, category, type of protection		 II (1)G [Ex ia Ga] IIC ,  II (1)D [Ex ia Da] IIIC ,  I (M1) [Ex ia Ma] I
Input		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
Supply		
Maximum safe voltage	U_m	250 V AC (Attention! U_m is no rated voltage.)
Equipment		
Voltage	U_o	25.2 V
Current	I_o	100 mA
Power	P_o	630 mW
Equipment		
Voltage	U_i	$< 30 \text{ V}$
Current	I_i	$< 128 \text{ mA}$
Voltage	U_o	7.2 V
Current	I_o	100 mA

Power	P _o	25 mW
Statement of conformity		PF 06 CERT 0973 X
Group, category, type of protection, temperature class		Ⓔ II 3G Ex nA IIC T4 Gc
Electrical isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Input/power supply		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 50303:2000
International approvals		
FM approval		
Control drawing		116-0419 (cFMus)
UL approval		
Control drawing		116-0420 (cULus)
IECEx approval		IECEx CES 06.0001
Approved for		[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I
General information		
Supplementary information		EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com .

Configuration



Factory settings: output as current source 4 mA ... 20 mA

Accessories

Power feed module KFD2-EB2

The power feed module is used to supply the devices with 24 V DC via the Power Rail. The fuse-protected power feed module can supply up to 150 individual devices depending on the power consumption of the devices. Collective error messages received from the Power Rail activate a galvanically-isolated mechanical contact.

Power Rail UPR-03

The Power Rail UPR-03 is a complete unit consisting of the electrical insert and an aluminium profile rail 35 mm x 15 mm. To make electrical contact, the devices are simply engaged.

Profile Rail K-DUCT with Power Rail

The profile rail K-DUCT is an aluminum profile rail with Power Rail insert and two integral cable ducts for system and field cables. Due to this assembly no additional cable guides are necessary.



Power Rail and Profile Rail must not be fed via the device terminals of the individual devices!

Isolation amplifier - MACX MCR-EX-SL-NAM-R - 2865434

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Ex i NAMUR isolating amplifier For operating proximity sensors and switches in Ex areas. The signals are transmitted via a relay output (PDT contact) to the safe area. Line fault detection (LFD), 3-way isolation, SIL 2.

Product Features

- ✓ Power supply and error indication possible via DIN rail connector
- ✓ Installation in zone 2, protection type "n" (EN 60079-15) permitted
- ✓ Up to SIL 2 according to EN 61508
- ✓ Line fault detection (LFD), can be activated/deactivated, error indicated by red flashing LED with de-excitation of output relay
- ✓ 3-way electrical isolation
- ✓ LED indicators for supply voltage, switching state, and malfunction according to NAMUR NE 44
- ✓ Relay signal output (PDT)
- ✓ Input for NAMUR proximity sensors (EN 60947-5-6), floating contacts or contacts with resistance circuit, [Ex ia] IIC
- ✓ Direction of operation can be selected (operating or closed circuit current behavior)



Key commercial data

Packing unit	1 pc
Weight per Piece (excluding packing)	165.8 GRM
Custom tariff number	85437090
Country of origin	Germany

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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Dimensions

Isolation amplifier - MACX MCR-EX-SL-NAM-R - 2865434

Technical data

Dimensions

Width	12.5 mm
Height	99 mm
Depth	114.5 mm

Ambient conditions

Ambient temperature (operation)	-20 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Maximum altitude	≤ 2000 m
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Noise immunity	EN 61000-6-2 EN 61326
Degree of protection	IP20

Input data

Non-load voltage	~ 8 V DC
Switching points (attenuated)	< 1.2 mA (blocking)
Switching points (unattenuated)	> 2.1 mA (conductive)

Output data

Switching output	Relay output
Contact type	1 PDT
Contact material	AgSnO ₂ , hard gold-plated
Maximum switching voltage	250 V AC (2 A)
	120 V DC (0.2 A)
	30 V DC (2 A)
Maximum switching capacity	500 VA
Mechanical service life	10 ⁷ cycles

Power supply

Nominal supply voltage	24 V DC -20 % ... +25 %
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC (-20% ... +25%))
Max. current consumption	21 mA (24 V DC)
Power consumption	< 650 mW

Connection data

Conductor cross section solid min.	0.2 mm ²
Conductor cross section solid max.	2.5 mm ²
Conductor cross section stranded min.	0.2 mm ²
Conductor cross section stranded max.	2.5 mm ²
Conductor cross section AWG/kcmil min.	24
Conductor cross section AWG/kcmil max	14

Isolation amplifier - MACX MCR-EX-SL-NAM-R - 2865434

Technical data

Connection data

Stripping length	7 mm
Screw thread	M3
Connection method	Screw connection
Tightening torque, min	0.5 Nm
Tightening torque max	0.6 Nm

General

No. of channels	1
Status display	Green LED (supply voltage)
	LED yellow (switching state)
	Red LED (line errors)
Inflammability class according to UL 94	V0
Pollution degree	2
Surge voltage category	II
Housing material	PA 66-FR
Color	green
Designation	Input/output
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
Designation	Input/output/supply, DIN rail connector
Electrical isolation	300 V _{rms} (Rated insulation voltage (surge voltage category II; pollution degree 2, safe isolation as per EN 61010-1))
	2.5 kV (50 Hz, 1 min., test voltage)
Designation	Input/supply, DIN rail connector
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
Conformance	CE-compliant, additionally EN 61326
ATEX	# II (1) G [Ex ia Ga] IIC
	# II (1) D [Ex ia Da] IIIC
IECEX	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA nC IIC T4 Gc
UL, USA / Canada	Class I Div 2; IS for Class I, II, III Div 1

Safety characteristic data

Integrity requirement	IEC 61508 - Low demand
Designation	Non-inverted operation
Equipment type	Type A
Safety Integrity Level (SIL)	Up to 2
Safe Failure Fraction (SFF)	78 %

Isolation amplifier - MACX MCR-EX-SL-NAM-R - 2865434

Technical data

Safety characteristic data

λ_{SU}	2.49×10^{-7} (249 FIT)
λ_{SD}	6×10^{-9} (6 FIT)
λ_{DU}	6.4×10^{-8} (64 FIT)
λ_{DD}	7×10^{-9} (7 FIT)
Probability of a hazardous failure on demand (PFD _{AVG})	3.09×10^{-4} (1 year)
	6.17×10^{-4} (2 years)
	1.54×10^{-3} (5 years)
Diagnostic coverage (DC)	DC _S = 2.4%, DC _D = 9%
Integrity requirement	IEC 61508 - Low demand
Designation	Inverted operation
Equipment type	Type A
Safety Integrity Level (SIL)	Up to 2
Safe Failure Fraction (SFF)	78 %
λ_{SU}	2.48×10^{-7} (248 FIT)
λ_{SD}	1×10^{-9} (1 FIT)
λ_{DU}	6.2×10^{-8} (62 FIT)
λ_{DD}	6×10^{-9} (6 FIT)
Probability of a hazardous failure on demand (PFD _{AVG})	3.01×10^{-4} (1 year)
	6.02×10^{-4} (2 years)
	1.5×10^{-3} (5 years)
Diagnostic coverage (DC)	DC _S = 0.4%, DC _D = 8%

Safety data

Max. internal inductance L_i	negligible
Max. internal capacitance C_i	11 nF
Max. output voltage U_o	9.6 V
Max. output current I_o	10 mA
Max. output power P_o	25 mW
Group	IIC
Max. external inductivity L_o	100 mH
Max. external capacity C_o	510 nF
Group	IIC
Max. external inductivity L_o	5 mH
Max. external capacity C_o	840 nF
Group	IIC

Isolation amplifier - MACX MCR-EX-SL-NAM-R - 2865434

Technical data

Safety data

Max. external inductivity L_o	1 mH
Max. external capacity C_o	1.2 μ F
Group	IIC
Max. external inductivity L_o	10 μ H
Max. external capacity C_o	3.6 μ F
Group	IIB
Max. external inductivity L_o	100 mH
Max. external capacity C_o	2.7 μ F
Group	IIB
Max. external inductivity L_o	5 mH
Max. external capacity C_o	4.4 μ F
Safety-related maximum voltage U_m	253 V AC (125 V DC)

Classifications

eCl@ss

eCl@ss 4.0	27210121
eCl@ss 4.1	27210121
eCl@ss 5.0	27210121
eCl@ss 5.1	27210121
eCl@ss 6.0	27210121
eCl@ss 7.0	27210121
eCl@ss 8.0	27210121

ETIM

ETIM 2.0	EC001430
ETIM 3.0	EC001599
ETIM 4.0	EC001599
ETIM 5.0	EC001599

UNSPSC

UNSPSC 6.01	30211506
UNSPSC 7.0901	39121008
UNSPSC 11	39121008
UNSPSC 12.01	39121008
UNSPSC 13.2	39121008

Isolation amplifier - MACX MCR-EX-SL-NAM-R - 2865434

Approvals

Approvals

Approvals

UL Listed / cUL Listed / GL / Functional Safety / cULus Listed

Ex Approvals

IECEEx / UL Listed / cUL Listed / ATEX / IECEEx / ATEX / cULus Listed

Approvals submitted

Approval details

UL Listed 
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cUL Listed 
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GL

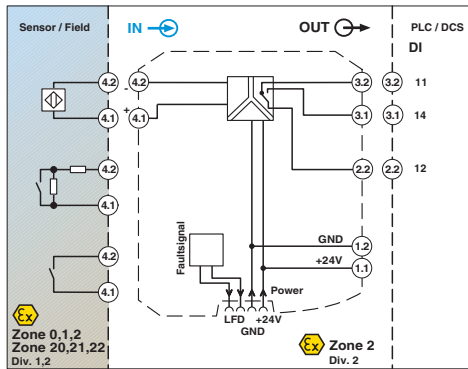
Functional Safety

cULus Listed 
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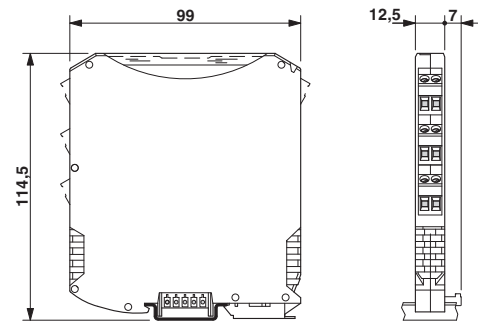
Drawings

Isolation amplifier - MACX MCR-EX-SL-NAM-R - 2865434

Block diagram



Dimensioned drawing



FC Series Signal Conditioners



FC-33

DC Selectable Signal Conditioner with 3-way isolation

Field configurable input and output ranges of 0-5V, 0-10 V, 0-20 mA and 4-20 mA with 1500 VDC isolation between input and output, and 1500 VDC isolation from 24 volt power and input/output. LED indicates normal operation and is used in conjunction with the calibration pushbutton for the internal calibration process.

- 3-way 1500 V isolation
- Push button calibration



FC-T1

Thermocouple/mV Isolated Signal Conditioner

Field configurable input for type J, K, E, T, R, S, B, N and C thermocouples or ± 156.25 mV inputs with 1500 VDC isolation between input and the 4-20 mA output. Cold junction compensation and burnout detection. Alarm/run LED.

- 1500 V isolation
- Cold junction compensation (CJC)
- Internal diagnostics (burnout detection or calibration errors)



FC-35B

Unipolar Voltage or Current to Bipolar Voltage Signal Conditioner

Field configurable input and output, unipolar input ranges of 0-5V, 0-10 V, 0-20 mA or 4-20 mA, and bipolar output ranges of ± 100 mV, ± 50 mV, ± 5 V, ± 10 V, ± 15 V. Field calibrated with offset and span adjustments.



FC-3RLY2

Analog Input, 2-Relay, Limit Alarm

Field configurable analog to relay limit alarm powered by 24VAC/VDC and Input signal ranges of 0-15V, 0-30V or 0-20mA. Trip/Release Point programmed via DIP switches. LED's indicate operating status.



FC-ISO-D

Encoder Signal Conditioner and Optical Isolator - Differential Line Driver Output

Ideal for use with single-ended (open collector, NPN, pull-up, push-pull, totem pole) or differential line driver encoders. Three complementary inputs (A, B, Z, A-not, B-not, Z-not) are rated for 4.5-7.5 and 12-26 VDC and frequency response up to 1 MHz.

Optical isolation separates the input signals from three differential line driver outputs (A, B, Z, A-not, B-not, Z-not) rated for 5VDC.



FC-11

4-20 mA Isolated Signal Conditioner

Loop powered 4-20 mA input/output signal with 1500 VDC isolation between input and output.

- 1500 V isolation
- Loop powered



FC-R1

RTD Input Signal Conditioner

Loop powered, non-isolated, 3-wire unit converts an RTD input to a linear 4-20 mA signal. User selectable CU10, PT100 or PT1000 input.



FC-P3

Potentiometer Input, Analog Output Signal Conditioner

Field configurable input and output, input ranges of 3-wire potentiometer 0 to 100 ohms through 0 to 100 kilohms, and output ranges of 0-5V, 0-10 V, 0-20 mA or 4-20 mA. Field calibrated to 10% of potentiometer full range.



FC-B34

Bipolar Voltage to Unipolar Voltage or Current Signal Conditioner

Field configurable input and output, bipolar input ranges of ± 100 mV, ± 50 mV, ± 5 V, ± 10 V, ± 15 V, and unipolar output ranges of 0-5V, 0-10 V, 0-20 mA or 4-20 mA. Field calibrated with offset and span adjustments.



FC-3RLY4

Analog Input, 4-Relay, Limit Alarm

Field configurable analog to relay limit alarm powered by 24VAC/VDC and Input signal ranges of 0-15V, 0-30V or 0-20mA. Trip/Release Point programmed via DIP switches. LED's indicate operating status.



FC-ISO-C

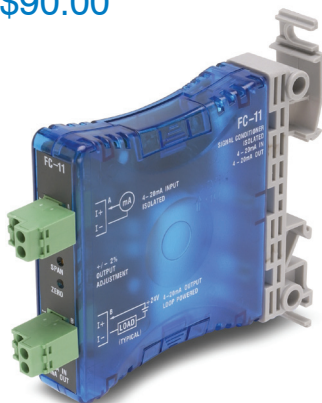
Encoder Signal Conditioner and Optical Isolator - Open Collector Output

Ideal for use with single-ended (open collector, NPN, pull-up, push-pull, totem pole) or differential line driver encoders. Three complementary inputs (A, B, Z, A-not, B-not, Z-not) are rated for 4.5-7.5 and 12-26 VDC and frequency response up to 1 MHz.

Optical isolation separates the input signals from three complementary open collector outputs (A, B, Z, A-not, B-not, Z-not) rated for 5-36 VDC that can be used in single-ended configurations.

FC-11 4-20mA Isolated Signal Conditioner

\$90.00



UL file E200031

Overview

The FC-11 is a DIN-rail or side-mount, 4-20 mA Input/Output loop powered signal conditioner with 1500 VDC isolation between input and output.

The FC-11 has a user-selectable factory calibration. The output can also be calibrated with OFFSET (zero) and SPAN (full scale) adjustments. The OFFSET has an adjustment range of 0 to 25% of full scale input and the SPAN has an adjustment of 80% to 102%.

Application

The FC-11 isolated input/output signal conditioner is useful in eliminating ground loops and sinking/sourcing issues when interfacing to PLC analog input modules. The FC-11 design feature solves many types of configuration problems. For example, the signal conditioner can solve the problem of connecting a sinking input transmitter to a sinking analog input module.

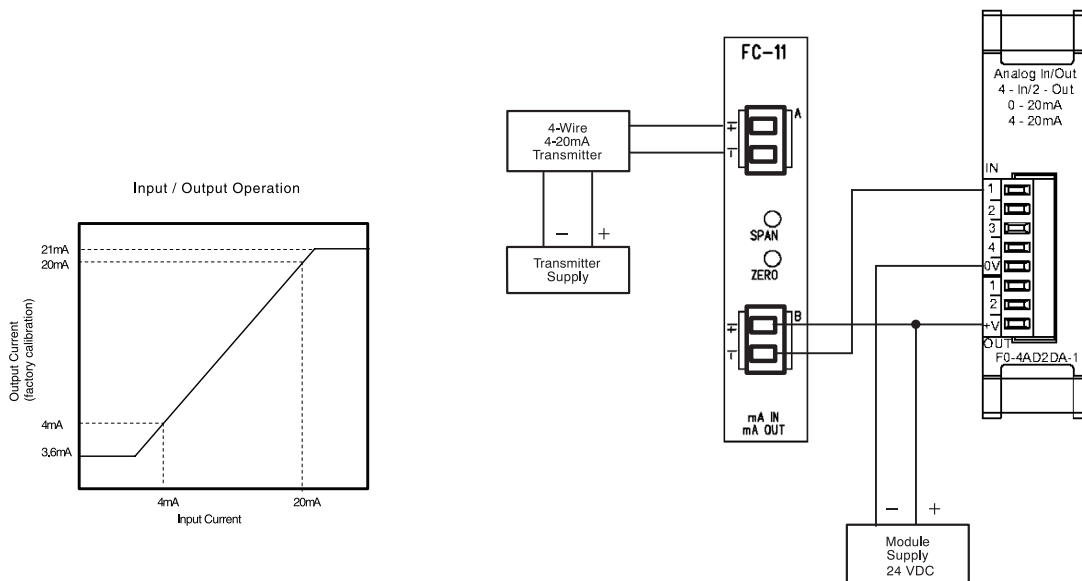
Specifications

Input Ranges	4-20 ma
Extended Input range¹	3.5 mA to 20.6 mA, $\pm 1\%$
Input Burden Voltage²	6.8 VDC
Maximum Input Current	34 mA @ 9.7 VDC
Output Burden Voltage³	8.5 VDC minimum
Output Range	4-20 mA
Extended Output Range¹	3.5 mA to 20.6 mA, $\pm 1\%$
Maximum Load Impedance	650 Ω @ 24 VDC, 1000 Ω 29 VDC
Maximum Output Current	23 mA @ 29 VDC
Sample Duration Time	18 mS maximum
Linearity Error	0.1% FSO maximum
Max Inaccuracy of Output	0.05% @ 25°C, FSO maximum, 0.3% @ 0-60°C, FSO maximum
Filter Characteristics	-3 dB @ 200 Hz, -6 dB / octave
Stability	0.1% FSO maximum
Accuracy vs. Temperature	$\pm 0.0065\%$ / °C (65ppm / °C)
Isolation	1500 VDC Input - Output
Operating Temperature	0 to 60°C (32 to 140°F)
Storage Temperature	-20 to 70°C (-4 to 158°F)
Relative Humidity	5 to 90% (non-condensing)
Vibration	ML STD 810C 514.2
Shock	ML STD 810C 516.2
Noise Immunity	NEMA ICS3-304

NOTES:

1. When adjusting SPAN and OFFSET potentiometer
2. Voltage required to power internal circuitry
3. Formula, $[(\text{output load}) \times 20 \text{ mA}] + 8.5 \text{ V}$, i.e.: 13.5 VDC @ 250 Ω
4. Internal analog converter resolution is 12-bit

Typical User Wiring



4-20 mA Input Isolated to 4-20 mA Output (example)

UNO-PS/1AC/24DC/150W

Primary-switched power supply unit

Data sheet
106261_en_02

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1 Description

The UNO POWER power supply makes a worldwide impression thanks to maximum energy efficiency. Low idling losses (No Load) and the high degree of efficiency save energy.

Thanks to its high power density, the UNO POWER power supply unit is the ideal solution, particularly in compact control boxes.

Features

- Worldwide use thanks to input voltage range of 85 V AC ... 264 V AC
- Superior system availability through reliable power supply with 24 V DC ... 28 V DC
- Maximum energy efficiency thanks to optimized efficiency over the entire operating range of the power supply unit and low idling losses
- Particularly compact: 150 W of power from this narrow power supply, which is just 37 mm wide
- Reliable supply thanks to the high MTBF (Mean Time Between Failure) greater than 500 000 h (40°C)
- High operating range from -25 °C to 70 °C
- Idle and short-circuit-proof



Make sure you always use the latest documentation.
It can be downloaded from the product at phoenixcontact.net/products.

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3 Ordering data

Description	Type	Order No.	Pcs./Pkt.
Primary-switched UNO power supply for DIN rail mounting, input: 1-phase, output: 24 V DC/150 W	UNO-PS/1AC/24DC/150W	2904376	1
Accessories	Type	Order No.	Pcs./Pkt.
Redundancy module, 5 V - 24 V DC, 2 x 10 A, 1 x 20 A.	UNO-DIODE/5-24DC/2X10/1X20	2905489	1
 Our range of accessories is being continually extended, our current range can be found in the download area.			

4 Technical data

Input data

Nominal input voltage	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC
AC frequency range	45 Hz ... 65 Hz
Current consumption	1.4 A (120 V AC) 0.8 A (230 V AC)
Inrush current limitation	< 50 A (typical)
I^2t	< 0.8 A ² s
Typical response time	< 1 s
Power failure bypass	> 20 ms (120 V AC) > 20 ms (230 V AC)
Protective circuit	Transient surge protection Varistor
Input fuse, integrated	2.5 A (slow-blow, internal)
Choice of suitable fuses	6 A ... 16 A (Characteristics B, C, D, K)

Input connection data

Connection method	Screw connection
Conductor cross section, solid	0.2 mm ² ... 2.5 mm ²
Conductor cross section, stranded	0.2 mm ² ... 2.5 mm ²
Conductor cross section AWG/kcmil	24 ... 14
Stripping length	8 mm
Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

Output data

Nominal output voltage	24 V DC $\pm 1\%$
Setting range of the output voltage	24 V DC ... 28 V DC $\pm 1\%$
Output current	6.25 A (-25°C ... 55°C)
Derating	55 °C ... 70 °C (2.5%/K)
Control deviation	< 1 % (change in load, static 10 % ... 90 %) < 2 % (change in load, dynamic 10 % ... 90 %) < 0.1 % (change in input voltage $\pm 10\%$)
Rise time	< 0.5 s (U_{OUT} (10 % ... 90 %))
Residual ripple	< 40 mV _{PP} (with nominal values)
Connection in parallel	yes, with redundancy module
Connection in series	No
Protection against surge voltage on the output	≤ 35 V DC
Resistance to reverse feed	< 35 V DC

Output connection data

Connection method	Screw connection
Conductor cross section, solid	0.2 mm ² ... 2.5 mm ²
Conductor cross section, stranded	0.2 mm ² ... 2.5 mm ²
Conductor cross section AWG/kcmil	24 ... 14
Stripping length	8 mm
Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

Power consumption

Efficiency	> 94 % (for 230 V AC and nominal values)
Maximum power dissipation NO-Load	< 1.2 W
Power loss nominal load max.	< 9.7 W

General data

Insulation voltage input/output	4 kV AC (type test) 3 kV AC (routine test)
MTBF (IEC 61709, SN 29500)	> 868000 h (40°C)
Housing material	Polycarbonate
Foot latch material	Plastic POM
Dimensions W/H/D	37 mm / 130 mm / 125 mm
Weight	0.5 kg

Security

Degree of protection	IP20
Protection class	II (in closed control cabinet)
SELV	EN 60950-1 (SELV) and EN 60204 (PELV)

Ambient conditions

Ambient temperature (operation)	-25 °C ... 70 °C (> 55 °C Derating: 2,5 %/K)
Ambient temperature (start-up type tested)	-40 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Vibration (operation)	< 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6) 15 Hz ... 150 Hz, 2.3g, 90 min.
Shock	30g in each direction, according to IEC 60068-2-27
Pollution degree	2
Climatic class	3K3 (in acc. with EN 60721)
Inflammability class in acc. with UL 94 (housing)	V0

Standards

Electrical Equipment for Machinery	EN 60204-1
Safety transformers for power supply units	EN 61558-2-16
Electrical safety (of information technology equipment - Safety - Part 1)	EN 60950-1/VDE 0805 (SELV)
Electronic equipment for use in electrical power installations	EN 50178/VDE 0160 (PELV)
SELV	EN 60950-1 (SELV) and EN 60204 (PELV)
Safe isolation	DIN VDE 0100-410
Limitation of mains harmonic currents	EN 61000-3-2
Network version/undervoltage	EN 61000-4-11
Information technology equipment - Safety (CB Scheme)	CB Scheme

Approvals

UL approvals	UL Listed UL 508 UL/C-UL Recognized UL 60950
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Current approvals/permissions for the product can be found in the download area under phoenixcontact.net/products.

Conformance with EMC Directive 2004/108/EC

Noise immunity according to EN 61000-6-2

	EN 61000-6-2 requirement	Tested
Electrostatic discharge EN 61000-4-2		
Housing contact discharge	4 kV (Test intensity 2)	6 kV (Test intensity 3)
Housing air discharge	8 kV (Test intensity 3)	8 kV (Test intensity 3)
Comments	Criterion B	Criterion B
Electromagnetic HF field EN 61000-4-3		
Frequency range	80 MHz ... 1 GHz	80 MHz ... 1 GHz
Test field strength	10 V/m (Test intensity 3)	10 V/m (Test intensity 3)
Frequency range	1.4 GHz ... 2 GHz	1 GHz ... 2 GHz
Test field strength	3 V/m (Test intensity 2)	10 V/m (Test intensity 3)
Frequency range	2 GHz ... 2.7 GHz	2 GHz ... 3 GHz
Test field strength	1 V/m (Test intensity 1)	10 V/m (Test intensity 3)
Comments	Criterion A	Criterion A
Fast transients (burst) EN 61000-4-4		
Input	2 kV (Test intensity 3 - asymmetrical)	4 kV (Test intensity 4 - asymmetrical)
Output	2 kV (Test intensity 3 - asymmetrical)	2 kV (Test intensity 3 - asymmetrical)
Comments	Criterion B	Criterion A
Surge current loads (surge) EN 61000-4-5		
Input	1 kV (Test intensity 2 - symmetrical) 2 kV (Test intensity 3 - asymmetrical)	2 kV (Test intensity 3 - symmetrical) 4 kV (Test intensity 4 - asymmetrical)
Output	0.5 kV (Test intensity 1 - symmetrical) 0.5 kV (Test intensity 1 - asymmetrical)	1 kV (Test intensity 2 - symmetrical) 2 kV (Test intensity 3 - asymmetrical)
Comments	Criterion B	Criterion A
Conducted interference EN 61000-4-6		
Input/output	asymmetrical	asymmetrical
Frequency range	0.15 MHz ... 80 MHz	0.15 MHz ... 80 MHz
Voltage	10 V (Test intensity 3)	10 V (Test intensity 3)
Comments	Criterion A	Criterion A

Key

Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

Emitted interference in acc. with EN 61000-6-3

Radio interference voltage in acc. with EN 55011	EN 55011 (EN 55022) Class B, area of application: Industry and residential
Emitted radio interference in acc. with EN 55011	EN 55011 (EN 55022) Class B, area of application: Industry and residential



All technical specifications are nominal values and refer to a room temperature of 25 °C and 70 % relative humidity at 100 m above sea level.

5 Intended use

This power supply unit features IP20 protection and is intended for installation in housing. It is suitable for use in industrial applications.

6 Structure

6.1 Device elements

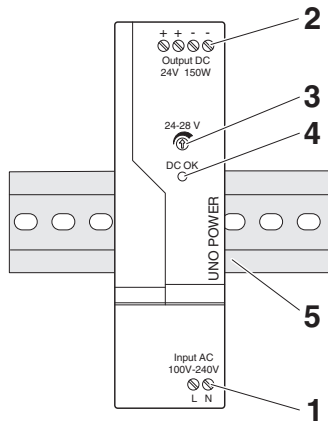


Figure 1 Device elements

1. Input voltage: Input AC L/N
2. Output voltage: Output DC+/-
3. Potentiometer, 24 V DC ... 28 V DC
4. Green LED: DC OK
5. Universal snap-on foot: 35 mm DIN rail according to EN 60715

6.2 Block diagram

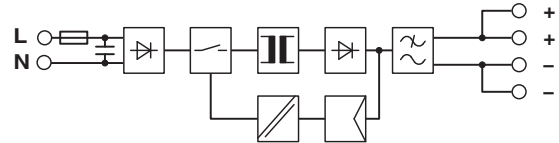


Figure 2 Block diagram

Element	Meaning
	Fuse
	Rectifier
	Switch
	Transformer
	Filter
	Electrically isolated signal transmission
	Regulation

7 Assembly

7.1 Unpacking

Before mounting the power supply unit, it must be checked for damage:

- Take the device out of its packaging.
- Check the device for any damage sustained during transport.
- Retain the package slip for future use.
- Dispose of packaging in an environmentally-friendly way.

7.2 Mounting the power supply unit



The power supply unit is intended for installation in a distributor box or control cabinet.



The power supply unit is designed for convection cooling. Maintain a minimum distance from other devices in order to ensure convection cooling.

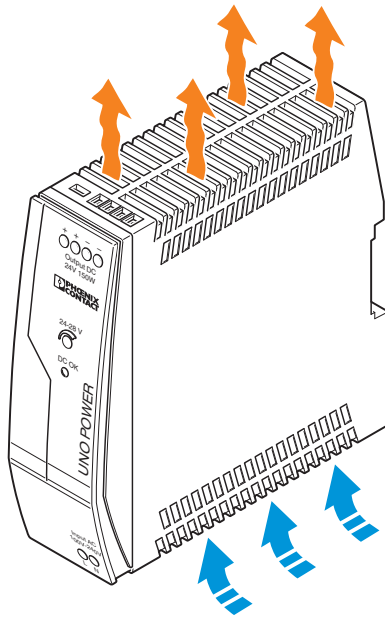


Figure 3 Convection

Please note the following before mounting the power supply unit:

- The minimum distance from other devices that must be observed in order to ensure convection cooling is: 30 mm vertically, 0 mm horizontally

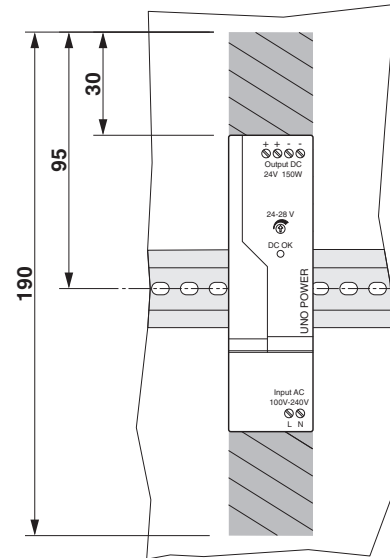


Figure 4 Locked areas

- The device dimensions

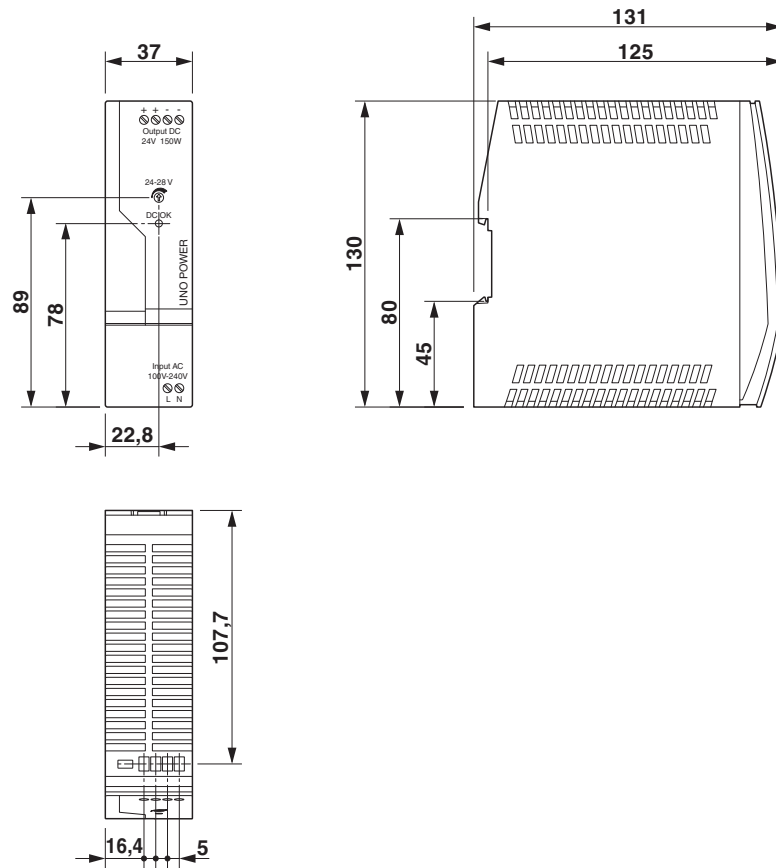


Figure 5 Device dimensions

7.3 Mounting on a DIN rail

The power supply unit can be installed on all 35 mm DIN rails according to EN 60715.

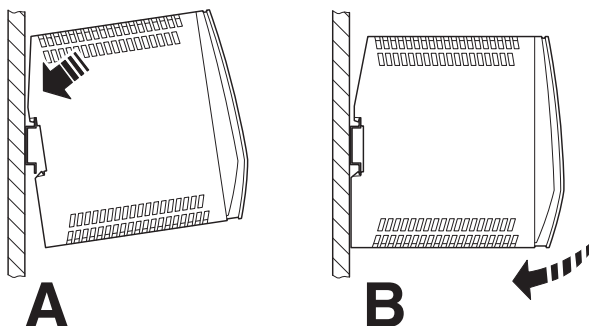


Figure 6 Mounting on a DIN rail

7.4 Normal mounting position

When installed, the input terminal blocks must be at the bottom and the output terminal blocks at the top.

If the power supply unit is installed in a mounting position other than the normal mounting position, the output power must be reduced.

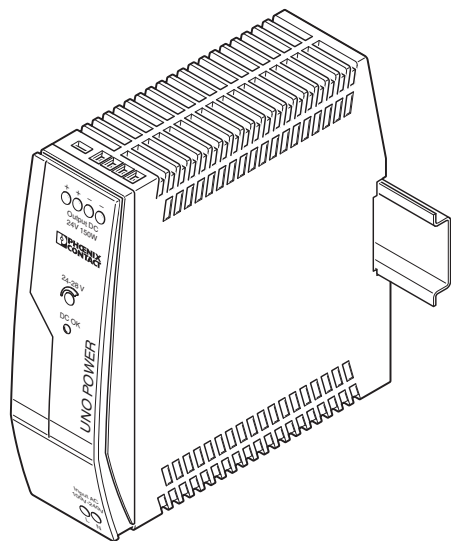


Figure 7 Normal mounting position

8 Installing the power supply unit

8.1 Safety regulations and installation notes



WARNING: risk of electric shock!

Only professionals may install, start up, and operate the device. Observe the national safety and accident prevention regulations. Prior to installation, disconnect the input voltage and make sure that it cannot be switched on again unintentionally.

Mains connection must be performed by specialist personnel and protection against electric shock ensured.

Make sure that the device can be switched off outside the power supply according to the regulations in EN 60950 (e.g., by line protection on the primary side).

Cover termination area after installation in order to avoid accidental contact with live parts (e.g., by installing in a control cabinet).

Protect the device against ingress by foreign bodies, e.g., paper clips or metal parts.



WARNING: risk of electric shock!

Make sure that all supply lines are sufficiently dimensioned and have sufficient fuse protection.

Make sure that all output cables are dimensioned accordingly for the maximum device output current or have separate fuse protection.



WARNING: risk of electric shock!

Never open or repair the device yourself.

Internal fuses will only blow in the event of device malfunction. Do not modify or attempt to repair the device. Send the device to the factory for examination.

8.2 Mains connection

The device can be connected to single-phase AC or three-phase power grids (TN-S, TN-C, TT, and IT) while considering the nominal input voltage.



For operation on two of the phase conductors of a three-phase system, an isolating facility for all poles must be provided.

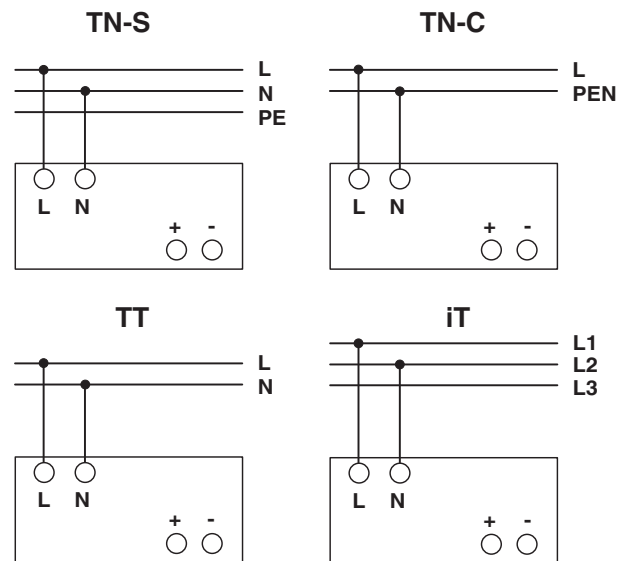


Figure 8 Network types

8.3 Device connections

Screw connection for input AC L/N

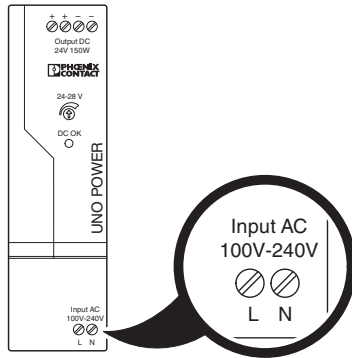


Figure 9 Screw connection for input AC L/N

Screw connection for output DC +/-

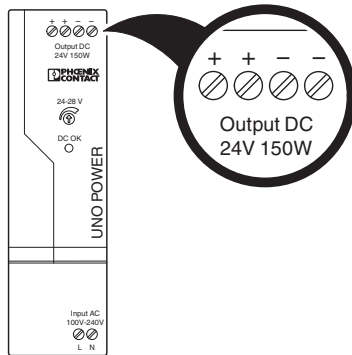


Figure 10 Screw connection for output DC +/-

8.4 Connecting cables



Use copper cables with an operating temperature > 75°C (ambient temperature < 55°C) and > 90°C (ambient temperature < 75°C).

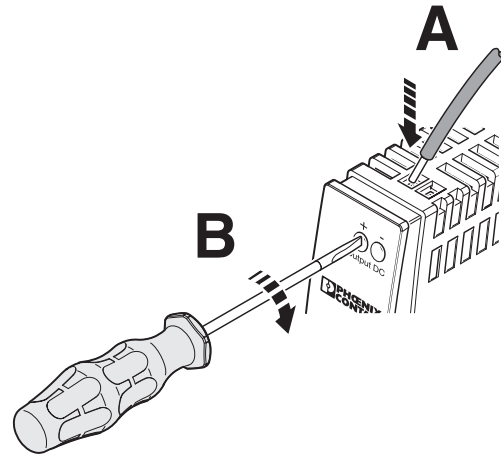


Figure 11 Connecting cables

1. Connect the supply lines to the input AC L/N connection terminal blocks.
2. Connect the output cables to the output DC +/- connection terminal blocks.

The power supply unit is operational as soon as the input terminal blocks are supplied with voltage.

9 Operating behavior of the power supply unit

9.1 Normal operation

In normal operation, the loads are supplied with a constant output voltage of 24 V DC.

9.2 Overload response

The power supply operates according to the characteristic curve shown in the figure. In the event of an overload ($I > I_N$), the device reduces the output voltage. If the output voltage drops below $U_N \times 0.8$, the output current is also reduced. In the event of a higher overload, the power supply constantly limits the output current to $I_N \times 0.5$. If the overload is rectified, the device continues running in nominal operation.

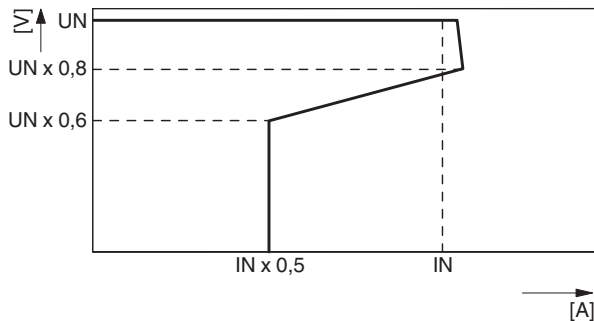


Figure 12 Output characteristic curve

9.3 Behavior at ambient temperatures > 55 °C

At an ambient temperature of up to 55 °C, the power supply unit supplies the nominal output current. At ambient temperatures upwards of 55 °C, the output power must be reduced by 2.5 % per Kelvin temperature increase (temperature-dependent derating).

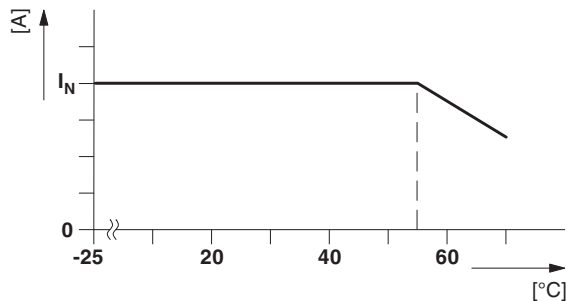


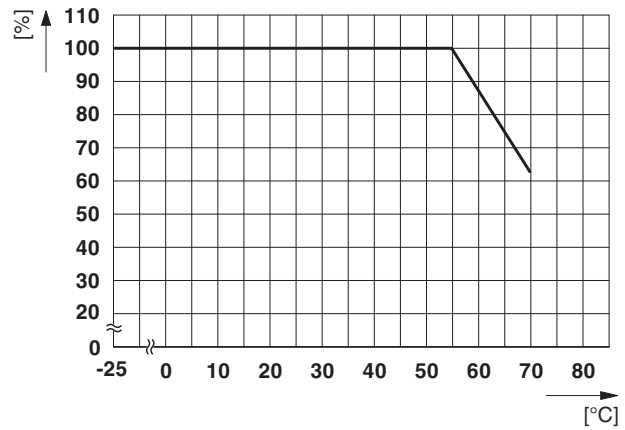
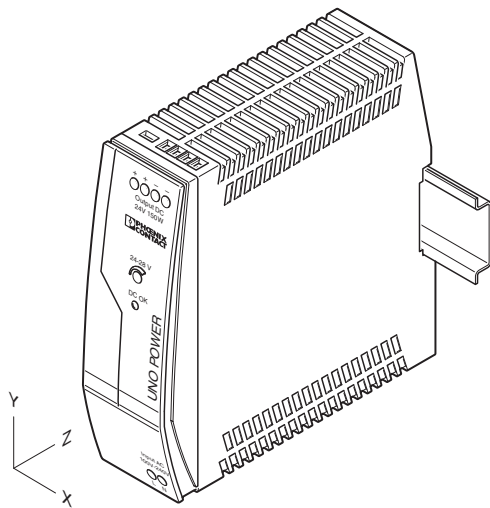
Figure 13 Temperature-dependent derating

9.4 Behavior in the case of alternative mounting positions

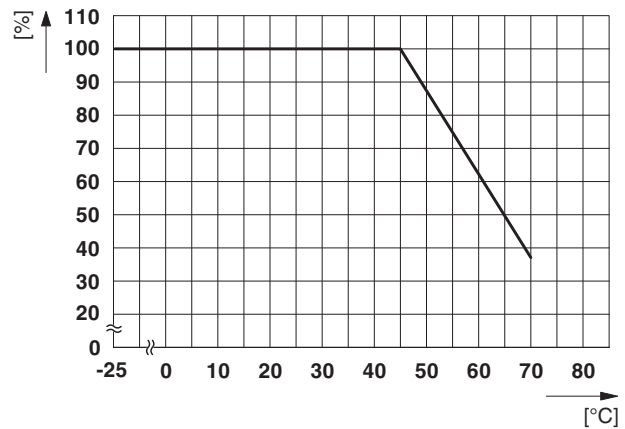
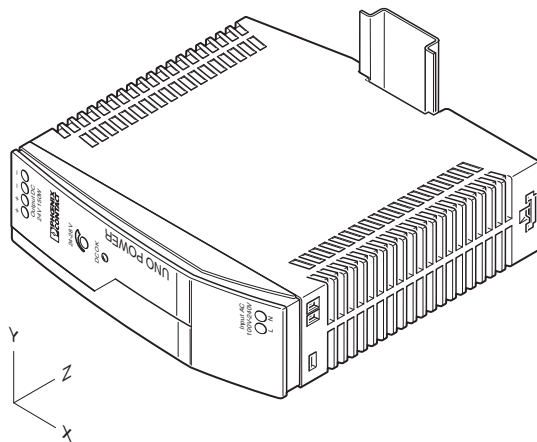
For mounting positions that differ from the normal mounting position, the output power must be reduced (position-dependent derating).

The characteristic curve can be used to determine the maximum output power to be drawn for each ambient temperature for different mounting positions.

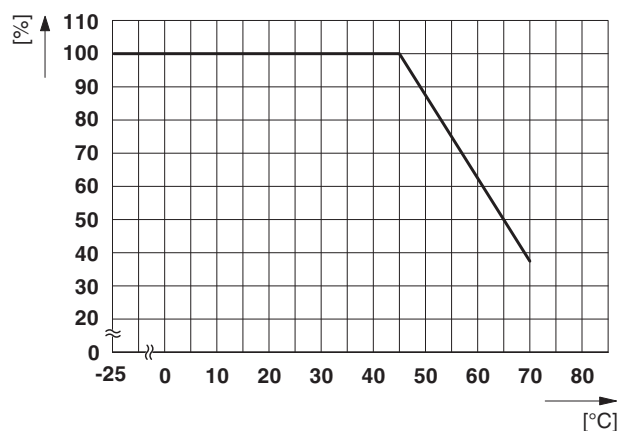
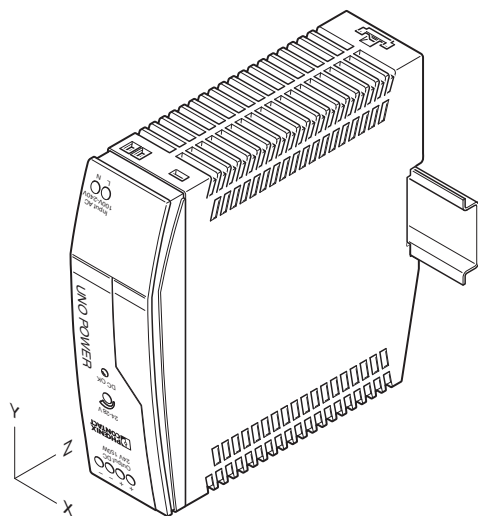
Normal mounting position



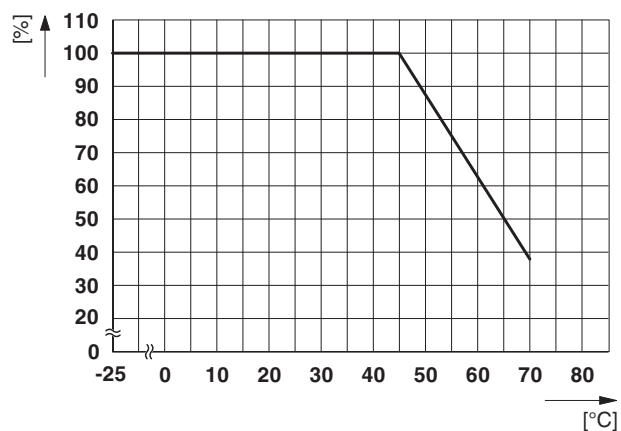
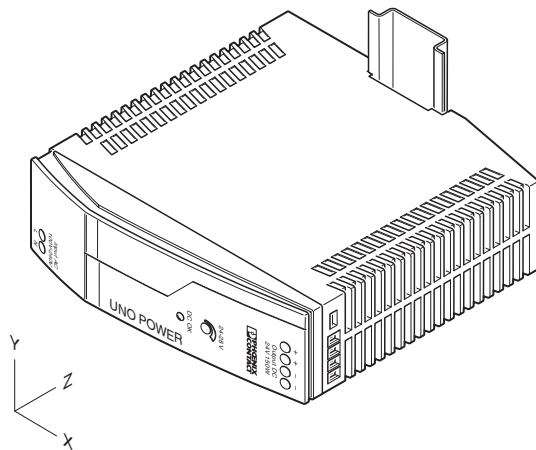
Rotated mounting position 90° X-axis



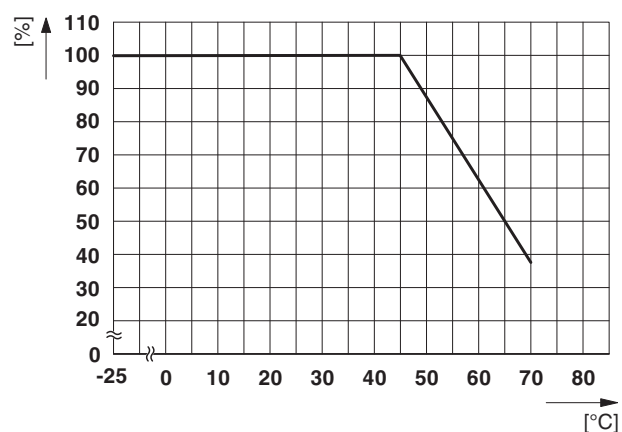
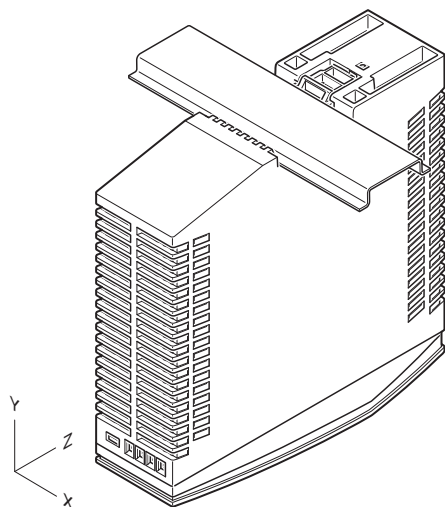
Rotated mounting position 180° X-axis



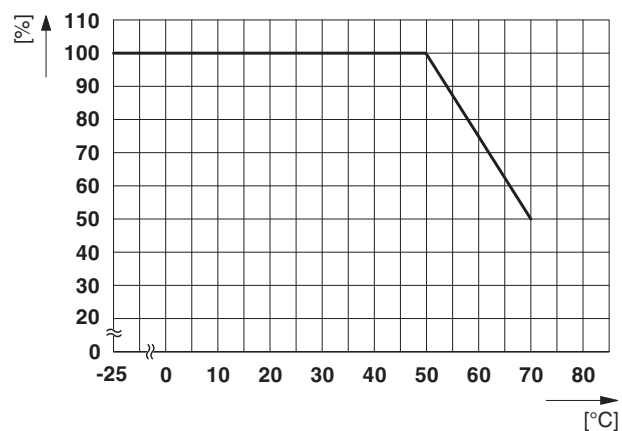
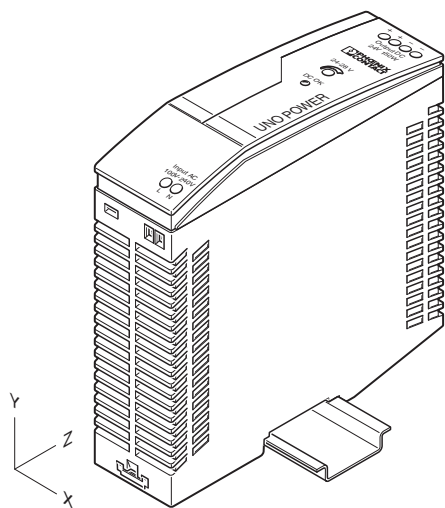
Rotated mounting position 270° X-axis



Rotated mounting position 90° Z-axis



Rotated mounting position 270° Z-axis



10 Operating the power supply unit

10.1 Function monitoring

DC OK LED

The DC OK LED is available for visual function monitoring of the power supply unit.

Status 1	Status 2	
DC OK LED	lit	OFF
Meaning	Output voltage > 21.5 V	Output voltage < 21.5 V DC, overload mode or no mains voltage
State description	The device is operating, output voltage and output current are OK	The device is in operation, but there is a fault on the side of the consumer; the current consumption is greater than I_N or the output is short-circuited. The device is out of operation because there is no mains voltage, the fuse on the primary side has been triggered, or the device is faulty.
Corrective		Remove the error at the load, use a more powerful power supply unit, connect a power supply unit of the same type parallel to the existing device, remove the short circuit, apply mains voltage, enable the fuse again or replace the power supply unit.

10.2 Operating power supply units in parallel

Power supply units of the same type can be connected in parallel to increase both redundancy and power.



To ensure symmetrical current distribution, all cable connections from the power supply unit to the busbar must be the same length and have the same conductor cross section.

Redundant operation

Redundant circuits are suitable for supplying systems which place particularly high demands on operational safety. If a fault occurs in the primary circuit of the first power supply unit, the second device automatically takes over the complete power supply without interruption, and vice versa.

Using a redundancy module, it is possible for two power supply units of the same type that are connected in parallel on the output side for redundancy to be decoupled from one another.

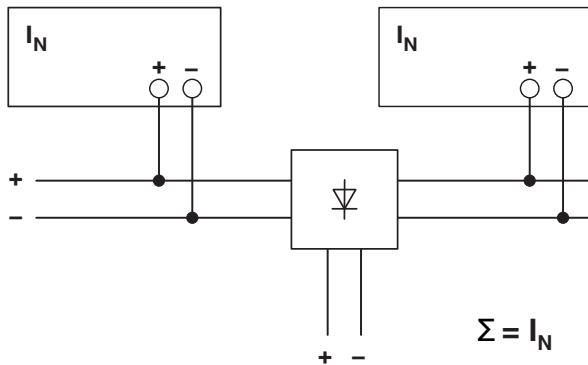


Figure 14 Redundant circuit with redundancy module

Increased performance

Power supply units of the same type can be connected in parallel to increase the power to $n \times I_N$. Parallel connection is recommended if existing systems are to be extended and the power supply unit that is installed here does not cover the current consumption of the most powerful load. Otherwise, the loads should be distributed between individual devices that are independent of one another.

Using a redundancy module, it is possible for two power supply units of the same type that are connected in parallel on the output side to increase power to be decoupled from one another.

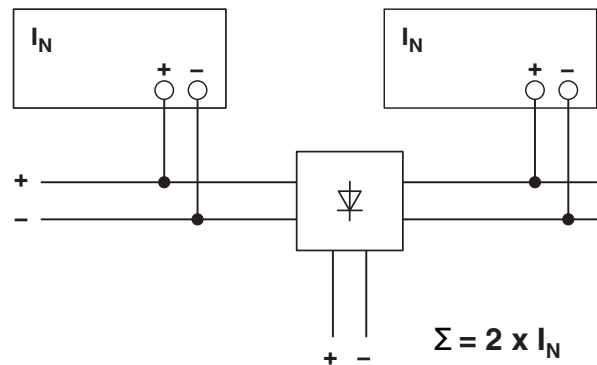


Figure 15 Parallel connection to increase power with a redundancy module

11 Removal

11.1 Removing the power supply unit

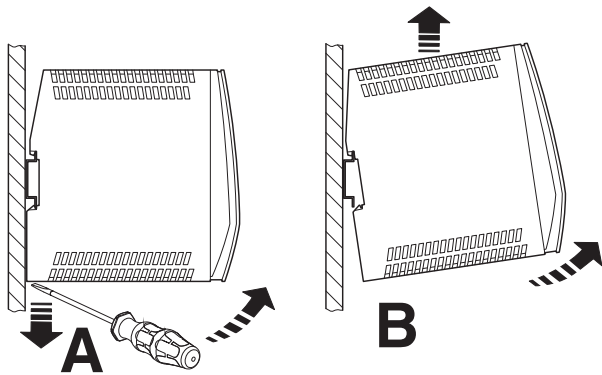


Figure 16 Removal

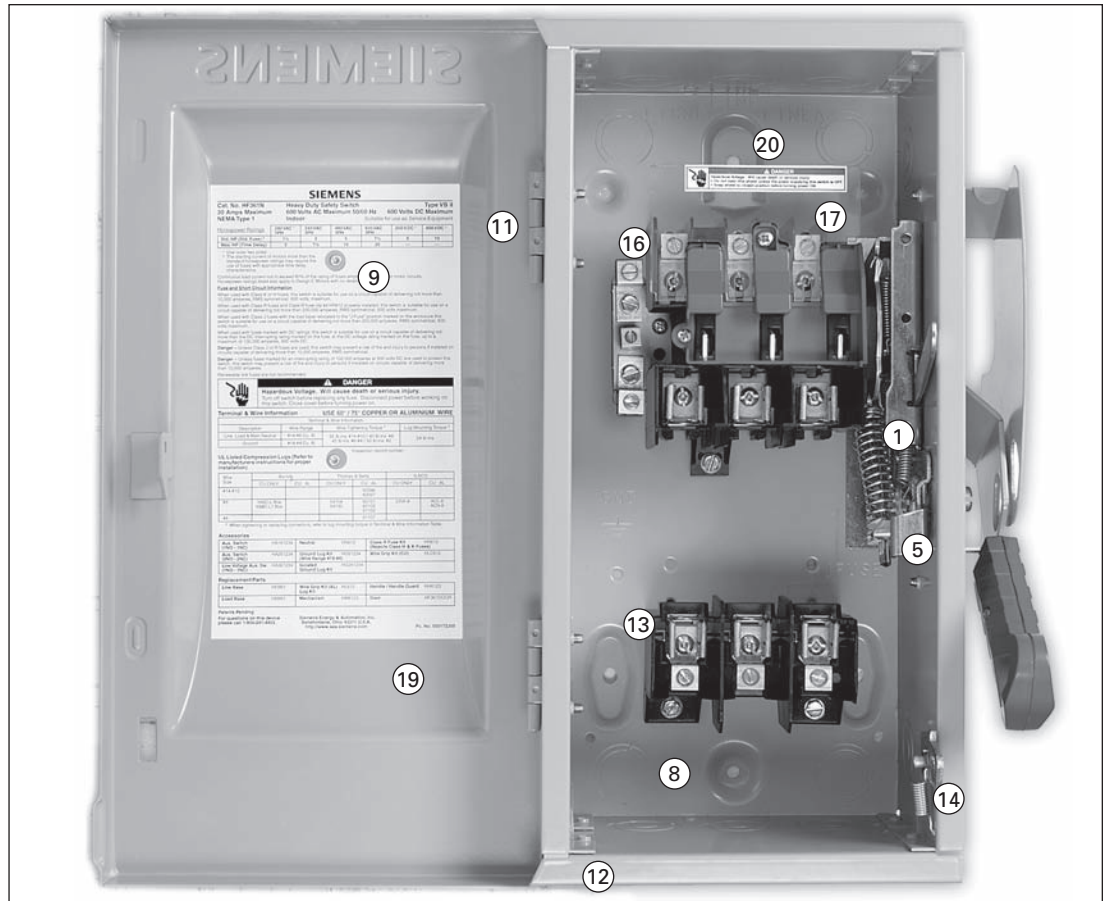
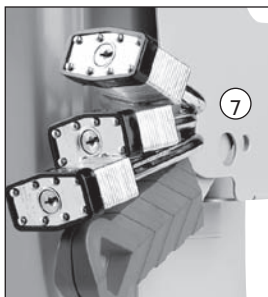
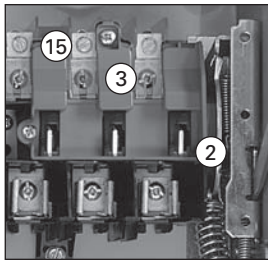
11.2 Notes on disposal



Do not dispose of the power supply unit with household waste. It should be disposed of in accordance with the currently applicable national regulations.

Heavy Duty Safety Switches

Features



1. Quick-make, quick-break operating mechanism that ensures positive operation.
2. Visible blade, double-break switching action.
3. Arc chutes dissipate heat and prolong switch life.
4. Highly visible red handle grip. Designed for hook stick operation.
5. Defeatable dual cover interlock.
6. Center punch provided for field drilling to allow ON padlocking.
7. Handle can be padlocked in the OFF position with up to (3) padlocks with 5/16" hasps.
8. Generous top, bottom and side gutters that meet or exceed NEC wire-bending space requirements.
9. Informative door labeling which includes replacement parts list.
10. Tangential knockouts through 600A for easy conduit lineup.
11. Side-hinged door that opens past 180 degrees for easier wiring.
12. Unique enclosure design increases rigidity and prevents cuts and scrapes to conductors and installer's hands.
13. Spring reinforced fuse clips that assure reliable contact for cool operation.
14. Door latch securely holds door closed and allows cover padlocking.
15. Front removable mechanical lugs that are suitable for CU/Al 60 or 75° C conductors.
16. Lugs are field convertible to copper body and to a wide variety of compression connectors.
17. Hinged clear line terminal shield with probe holes for inspecting or testing line side terminals.
18. Embossed aluminum nameplate on Heavy Duty Switches provides highly visible ON/OFF indication.
19. Drawn cover for increased rigidity and resistance to abuse.
20. Top key hole and bottom mounting holes provide easy 2 or 3 point mounting.

Heavy Duty Safety Switches

Selection


System	Ampere Rating	Indoor - Type 1		Outdoor - Type 3R		Horsepower Ratings							
		Catalog Number	Ship. Wt. (lbs.)	Catalog Number	Ship. Wt. (lbs.)	240 Volt		480 Volt		600 Volt		250V DC	600V DC
						1-Phase	3-Phase	1-Phase	3-Phase	1-Phase	3-Phase		

600 Volt Non-Fusible^④

2-Pole^③

480 Volt AC / 600 Volt AC / 600 Volt DC

	30	HNF261	12	HNF261R	13	—	—	7 1/2	—	10	—	5	15
	60	HNF262	19	HNF262R	20	—	—	20	—	25	—	10	30
	100	HNF263	24	HNF263R	25	—	—	30	—	40	—	20	50
	400	HNF265■	109	HNF265R	113	15	—	50	—	50	—	40	50
	600	HNF266■	111	HNF266R■	115	15	—	50	—	50	—	50	50

3-Pole

480 Volt AC / 600 Volt AC / 250 Volt DC

	30	HNF361	12	HNF361R	13	5	10	7 1/2	20	10	30	5	—
	30	—	—	HNF361RL ^⑤	19	5	10	7 1/2	20	10	30	5	—
	60	HNF362H ^②	11	HNF362RH ^②	11	10	20	20	50	20	40	10	—
	60	HNF362 ^①	18	HNF362R ^①	19	10	20	20	50	25	60	10	30 ^②
	60	—	—	HNF362RL ^⑤	24	10	20	20	50	25	60	10	30 ^②
	100	HNF363 ^①	23	HNF363R ^①	24	15	40	30	75	40	100	20	50 ^②
	200	HNF364 ^①	46	HNF364R ^①	47	15	60	50	125	50	150	40	50
	400	HNF365	114	HNF365R	118	15	125	50	250	50	350	50	—
	600	HNF366	116	HNF366R	120	15	200	50	400	50	500	50	—
	800	HNF367	295	HNF367R	295	15	250	50	500	50	500	50	—
	1200	HNF368	305	HNF368R	307	15	250	50	500	50	500	50	—

600 Volt Non-Fusible^④

2-Pole^③

480 Volt AC / 600 Volt AC / 600 Volt DC

	30	Type 4 / 4X Stainless ^⑤		Type 12 Industrial ^⑤		—	—	7 1/2	—	10	—	5	15
	60	HNF261S	13	HNF261J	13	—	—	20	—	25	—	10	30
	100	HNF262S	20	HNF262J	20	—	—	30	—	40	—	20	50
	400	HNF263S■	25	HNF263J■	25	—	—	50	—	—	—	40	50
	600	HNF265S■	113	HNF265J■	114	15	—	50	—	—	—	50	50

3-Pole

480 Volt AC / 600 Volt AC / 250 Volt DC

	30	HNF361S	13	HNF361J	13	5	10	7 1/2	20	10	30	5	—
	60	HNF362SH ^②	15	HNF362JH ^②	14	10	20	20	50	20	40	10	—
	60	HNF362S ^①	19	HNF362J ^①	19	10	20	20	50	25	60	10	30 ^②
	100	HNF363S ^①	24	HNF363J ^①	24	15	40	30	75	40	100	20	50 ^②
	200	HNF364S ^①	47	HNF364J ^①	47	15	60	50	125	50	150	40	50
	400	HNF365S	118	HNF365J	119	15	125	50	250	50	350	50	—
	600	HNF366S	120	HNF366J	120	15	200	50	400	50	500	50	—
	800	HNF367S	295	HNF367J■	295	15	250	50	500	50	500	50	—

■ Built to order. Allow 2-3 weeks for delivery.

① Also rated 600V DC.

② Compact switch (11.1"H, 6.6"W box less cover and handle).

③ Short circuit withstand rating—100,000 RMS sym. amps.

④ Use 3-Pole switch for 200A application.

⑤ Suitable for use as service entrance equipment except for

1200 when used on a 480 or 600V grounded wye system.

⑥ Also rated type 3S / 3R.

⑦ Indicates oversized enclosure (30A switch in a 60A enclosure or a 60A switch in a 100A enclosure).

⑧ 600V DC and 600V DC horsepower rating shown

requires (2) poles to be connected in series.

⑨ 304 grade stainless steel. For switches with enclosures constructed from 316 grade stainless steel, see page 4-16.

Distributor Stock Panelboards

Same Day Availability

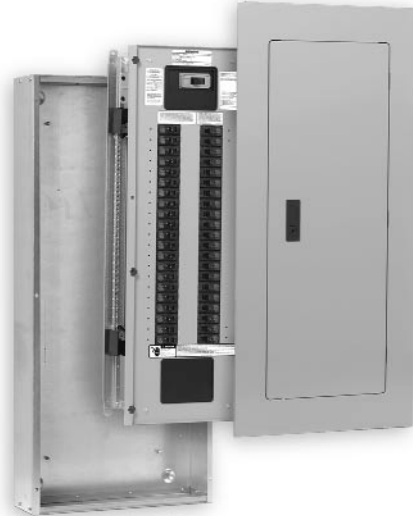
MODEL #: P1E18MC250C

Type P1 Panelboards

Convertible Mains – 1 Ø 3 Wire

120/240V

Interiors Only – Less Branch Breakers			Boxes			Fronts	
Amp Rating Mains	Max No. of Poles	Interiors	Height (in.)	Type 1	Type 3R/12	Surface	Flush
250	18	P1A18MC250A	32	B32	WP32	S32B	F32B
	30	P1A30MC250A	38	B38	WP38	S38B	F38B
	42	P1A42MC250A	44	B44	WP44	S44B	F44B
400	18	P1A18MC400A	56	B56	WP56	S56B	F56B
	30	P1A30MC400A	62	B62	WP62	S62B	F62B
	42	P1A42MC400A	68	B68	WP68	S68B	F68B
250	18	P1A18MC250C	32	B32	WP32	S32B	F32B
	30	P1A30MC250C	38	B38	WP38	S38B	F38B
	42	P1A42MC250C	44	B44	WP44	S44B	F44B
400	18	P1A18MC400C	56	B56	WP56	S56B	F56B
	30	P1A30MC400C	62	B62	WP62	S62B	F62B
	42	P1A42MC400C	68	B68	WP68	S68B	F68B



Convertible Mains – 3 Ø 4 Wire

208Y/120V

250	18	P1X18MC250A	32	B32	WP32	S32B	F32B
	30	P1X30MC250A	38	B38	WP38	S38B	F38B
	42	P1X42MC250A	44	B44	WP44	S44B	F44B
400	18	P1X18MC400A	56	B56	WP56	S56B	F56B
	30	P1X30MC400A	62	B62	WP62	S62B	F62B
	42	P1X42MC400A	68	B68	WP68	S68B	F68B
250	18	P1X18MC250C	32	B32	WP32	S32B	F32B
	30	P1X30MC250C	38	B38	WP38	S38B	F38B
	42	P1X42MC250C	44	B44	WP44	S44B	F44B
400	18	P1X18MC400C	56	B56	WP56	S56B	F56B
	30	P1X30MC400C	62	B62	WP62	S62B	F62B
	42	P1X42MC400C	68	B68	WP68	S68B	F68B



Convertible Mains – 3 Ø 4 Wire

480Y/277V

250	18	P1E18MC250A	32	B32	WP32	S32B	F32B
	30	P1E30MC250A	38	B38	WP38	S38B	F38B
	42	P1E42MC250A	44	B44	WP44	S44B	F44B
400	18	P1E18MC400A	56	B56	WP56	S56B	F56B
	30	P1E30MC400A	62	B62	WP62	S62B	F62B
	42	P1E42MC400A	68	B68	WP68	S68B	F68B
250	18	P1E18MC250C	32	B32	WP32	S32B	F32B
	30	P1E30MC250C	38	B38	WP38	S38B	F38B
	42	P1E42MC250C	44	B44	WP44	S44B	F44B
400	18	P1E18MC400C	56	B56	WP56	S56B	F56B
	30	P1E30MC400C	62	B62	WP62	S62B	F62B
	42	P1E42MC400C	68	B68	WP68	S68B	F68B



Siemens Panelboards 2001

P1 Panelboards

P1 Feature Overview

Key Panelboard Features
Lighting and Appliance Applications
Power Panelboard Applications
Convertible From Top Feed to Bottom Feed and Vice Versa
Change From Main Lug to Main Breaker or Add Sub-Feed Without Changing Enclosure Size
Space-Saving, Horizontally Mounted Main Breaker Through 250 Amps
Short-Circuit Rating Label Giving Performance Level
Standard Aluminum Ground Bus
Blank End-Walls Standard
Bolted Current-Carrying Parts
Split Neutral
Connection Accessible From Front
Screw-Type Mechanical Lugs
Time-Reducing Wing Nuts to Secure Interior Without Tools
200 Ampere Rated Branch Breaker Connector
Main and Branch Devices Connected With Case-Hardened Hardware
Flush Lock, Concealed Door Hinges/Trim Screws
Symmetrical Interior Mounting Studs to Eliminate Upside-Down Mounting of Box
Jacking Screw Interior Adjustment
Shallow Depth
Optional Compression Lugs

Contents

Introduction to P1 Panelboards	1
General Specifications	3
Distributor Stock Panelboards	4 – 8
Factory-Assembled Panelboards	9 – 16
Dimensions and Weights	17

The end product of an outstanding ancestry, the current family of panelboard designs represents the high level of engineering innovation expected from Siemens. Additional strength has been added to an already rugged and durable panelboard family. At the same time, many models have a trimmed exterior size, have added flexibility and are easier to install. These newer designs simplify wiring and reduce material requirements, saving additional installation time.

The lighting panel design still features the Fas-Latch trim that is so popular with installers, the jacking screw system that permits adjustments even after wiring has been installed, and other features such as exclusive split neutral. Many panelboards have the capability of mixing and matching breakers of different sizes and ratings, or changing from main lug to main breaker, or adding sub-feed breakers without changing box size.

The complete family of panelboards from Siemens employs numerous features – all industry-leading, many exclusive. Note the following, all found in the innovative P1 lighting panelboards:

- Symmetrical interiors – no top or bottom! To change from top to bottom (or vice versa), simply invert the interior. The deadfront labeling is always right-side up.
- First in the industry ratings of 125A/250A main lug and main breaker.
- Field convertible from main lug to main breaker and vice versa, with no increase in enclosure height.
- Field addability of feed-thru lugs or sub-feed circuit breaker without increasing enclosure size.
- Neutral system is field upgradeable to 200% capacity – another industry first.
- Three circuit sizes (18, 30, 42) mean only three box heights, regardless of main configuration through 250 amps and an additional (18, 30, 42) circuit version available at 400 amps.
- Suitable for use as service entrance given compliance with NEC.
- Bonding provisions are shipped with each panel.
- 240V and 480Y/277V versions utilize identical boxes and fronts.

Panelboard General Specifications

MODEL #: P1E18MC250C

Class CTL Panelboards

Class CTL panelboards incorporate physical features which, in conjunction with the physical size, configuration, or other means provided in Class CTL circuit breakers, are designed to prevent the installation of more overcurrent protective poles than that number for which the device is designed and rated, per UL 67.

Service Entrance Equipment

When a panelboard is used as service entrance equipment, it must be located near the point of entrance of building supply conductors. In a panel having main lugs only, the number of breakers or switches directly connected to the main bus must be limited to six. In a panel having a main breaker or main switch, the number of circuits are not limited except as may be provided under other panelboard requirements, i.e., lighting and appliance branch circuit panelboards.

Also panels must include a connector for bonding and grounding neutral conductor.

Panelboard Code Data

42-Circuit Rule: NEC Paragraph 384-14 defines a lighting and appliance branch circuit panelboard as one having more than 10 percent of its overcurrent devices rated 30 amperes or less, for which neutral connectors are provided. NEC paragraph 384-15 states that not more than 42 overcurrent devices (other than those provided for in the mains) of a lighting and appliance branch-circuit panelboard shall be installed in any one cabinet. For the purpose of this article a two-pole circuit breaker shall be considered two overcurrent devices; a three-pole circuit breaker shall be considered three overcurrent devices. (NEC 384-14 and -15 do not apply to panelboards feeding and communication circuits. Panelboards for this application must be so marked.)

Integrated Equipment Short Circuit Rating

The term "Integrated Equipment Short Circuit Rating" refers to the application of series connected circuit breakers in combination that allows some breakers to have lower individual interrupting ratings than the available fault current. This is permitted as long as the series combination has been tested and certified by UL.

Standards

NEC: 1996

NEMA: PB1

UL: 67 and 50. Listed by Underwriter's Laboratories, Inc., under "Panelboards" File #E2269, and #E4016. Meets Federal Specification W-P-115c dated June 8, 1996, for Type 1, Class 1.

Feed-thru and sub-feed lugs may result in lower interrupt ratings if not protected by an upstream short circuit protection device.

Lighting and Distribution Panels – Type P1

- Interiors have the ability to physically interchange two- and three-pole breakers with an equivalent number of one-pole breakers.
- Panels come standard with connectors suitable for connection to copper or aluminum cable.
- Panels are labeled as "suitable for use as service entrance equipment."
- Panel interiors have adjustment screws to provide easy alignment for flush mounted applications.
- The interior is provided with wing nuts for securing to box without tools.
- Removable end-walls are standard and available blank and with KO's.
- Panelboard box has a separate UL label and supplies wire bending and gutter requirements to meet the NEC and UL standards.
- Wiring gutters are completely free of any part of trim clamp to prevent damaging wire insulation.
- Deadfronts are provided with a flange for easy attachment of trim.
- Incoming cable lugs are grouped at one end to separate them from the load side cables.
- Individual circuit number button, as well as an embossed number next to each breaker or provision, are provided.
- The interior shall be provided with wing nuts for securing to box without tools.
- The panel trim may be surface or flush and is equipped with concealed hinges, flush lock and a holder for circuit directory card. Trims are fabricated from code gauge steel and finished ANSI 61.
- Trim shall have two separate supports designed to engage the box flange to stabilize and secure the trim during installation.
- Trim screws to be located behind the lockable door for tamper resistance.

Interior – Type P1

- Interiors may be completely factory-assembled.
- Sizing of conductor is in accordance with UL 67.
- Interiors permit installation of feed-thru lugs or a bus fed sub-feed circuit breaker, up to 250 amperes, without increasing the enclosure size.
- Interiors are convertible from main lug to main breaker with the addition of an appropriate field-installable kit.
- Interiors are changeable from top to bottom feed and vice versa, while maintaining readability of deadfront labeling.
- Main lugs up to 350 Kcmil are lay-in construction to facilitate connections.
- Neutral bussing is located adjacent to the breaker load terminals for easy wiring and shortest cable run possible.

Siemens Panelboards 2001

Distributor Stock Panelboards

Same Day Availability

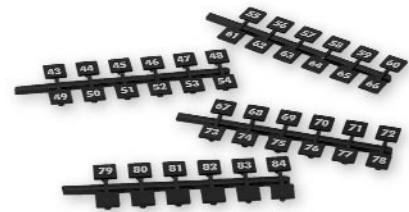
Type P1 Panelboards

MODEL #: P1E18MC250C

Breaker Mounting Kits
– Main or Sub-Feed w/o Breaker

Amp Rating	Breaker Frames	Service	Catalog No.
100	BL, BLH, HBL	1 Phase	MBKBL1
100	BQ0	3 Phase	MBKBD3
225	QJ2, QJH2, QJ2-H	1 Phase	MBKQJ1
		3 Phase	MBKQJ3
125	ED2, ED4, ED6, HED4, HED6	1 Phase	MBKED1
		3 Phase	MBKED3
250	FXD6, FD6, HFD6	1 Phase	MBKFD1
		3 Phase	MBKFD3
400*	JD2, JD6, JX06, HJ06, HJX06	1 Phase	MBKJD1

* Main only



NBK4

Miscellaneous Accessories

Catalog No.	Description
NBK4	Number Strips 43-84
NBK5	Number Strips 85-126
NBK6	Number Strips 127-168
ECGK	Cu Ground Bus 44 Connections
IGK	Insulated Al Ground Bus
ICGK	Insulated Cu Ground Bus
EWK1	End-Wall Kit with Knockouts (20"W x 5.75"DP)
QF3	Filler Plate



MBKQJ3



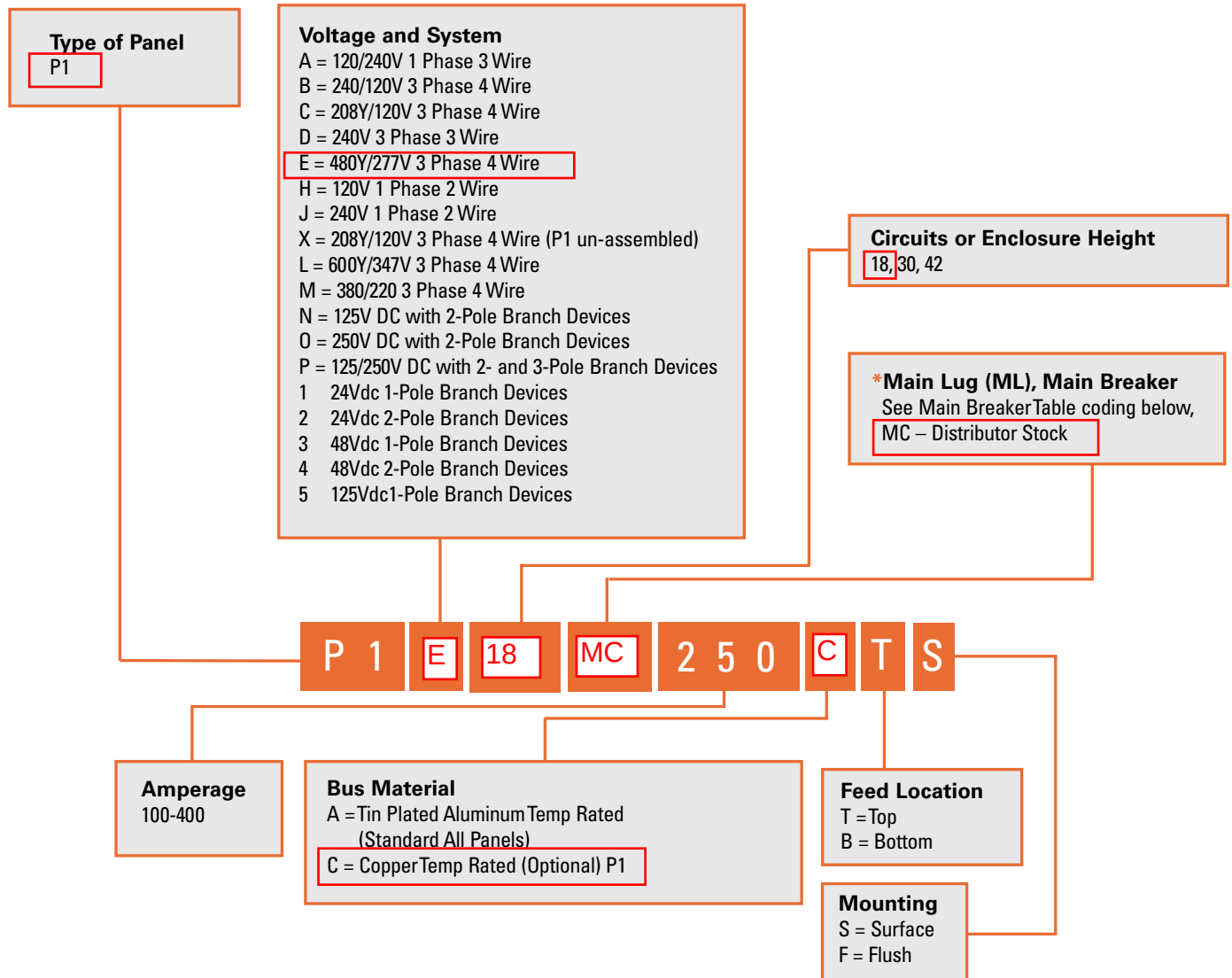
MBKFD3

Siemens Panelboards 2001

Factory-Assembled Panelboards

Catalog Numbering System

P1 Panelboard



*(Breaker Type) Code

(BL) BL, (BLH) LH, (HBL) HL, (BQD) BD, (ED4) E4, (ED6) E6, (HED4) H4, (QJ2) QJ, (QJH2) QH, (QJ2-H) Q2, (FXD6) FX, (HFD6) HF, (JD6) J6, (JXD6) JX, (HJD6) HJ

Kits and Accessories

Type P2 Panelboards

Table P2-20 – Standard Enclosures

Box Height Inches	Catalog Number				
	Type 1 Standard Trim			Type 3R	Type 3R/12
	Box	Surface	Flush		
26	B26	S26B	F26B	NR26	WP26
32	B32	S32B	F32B	NR32	WP32
38	B38	S38B	F38B	NR38	WP38
44	B44	S44B	F44B	NR44	WP44
50	B50	S50B	F50B	NR50	WP50
56	B56	S56B	F56B	NR56	WP56
62	B62	S62B	F62B	NR62	WP62
68	B68	S68B	F68B	NR68	WP68
74	B74	S74B	F74B	NR74	WP74

Options For Type 1 Trims

Items must be ordered as manual line item on Spartanburg

Hinged trim – Replace “B” suffix with “H”

Door-in-door – Replace “B” suffix with “D”

Metal card holder – Replace “B” suffix with “M” on standard trim, add “M” suffix on optional trims

Option For 24” Wide Enclosures with Equal Gutter on Both Sides

24” wide with equal gutter on both sides - Add “24” as prefix

Table P2-21 – Breaker Kits and Accessories

Kit No.	Description	Contents
BBKB32	BL/BQD 6-pole 3” branch breaker kit	Kit contains top barrier, (3) A/C connectors, (1) B connector, hardware
BBKED32	ED 6-pole 3” branch breaker kit	Kit contains breaker support, inter-phase barriers, (3) A/C connectors, (1) B connector, hardware
BBKQ1	QJ branch breaker kit for 2 and 3-pole single mount	Kit to contain all connectors and cover plates necessary to mount both 2 and 3-pole breakers
DFK1	BL, BQD, ED deadfront kit for 1” pole breakers	Center strips 3”, 6”, 9”, 15”, 21” plus mounting hardware
DFFP3	Deadfront filler 3”	3” empty space filler and hardware
DFFP6	Deadfront filler 6”	6” empty space filler and hardware
BNK2	Branch neutral (P2)	Three tier lug with mounting hardware to increase neutral capacity
P2BK1	P2 250A max. Bonding Kit	Bonding strap and hardware
P2BK2	P2 400A max. Bonding Kit	Bonding strap and hardware
P2BK3	P2 600A max. Bonding Kit	Bonding strap and hardware

Molded Case Circuit Breakers

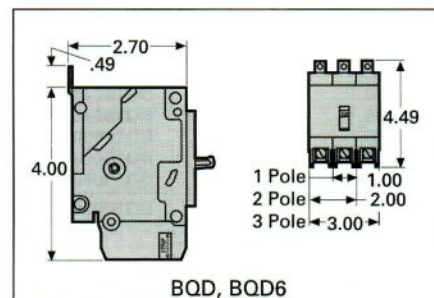
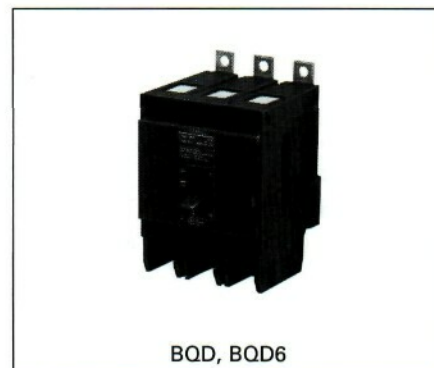
MODEL #: BQD215, BQD315, BQD360

SELECTION / DIMENSIONS

BQD 100A Frame Panelboard Mounting Circuit Breakers

BQD-HACR Type

Continuous Current Rating @ 40°C	1-Pole		2-Pole ^①		3-Pole ^②	
	277V AC-125V DC		480Y/277V AC- 125/250V DC		480Y/277V AC	
	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
15	BQD115 ^③	92.00	BQD215	227.00	BQD315	402.00
20	BQD120 ^③	92.00	BQD220	227.00	BQD320	402.00
25	BQD125 ^③	92.00	BQD225	227.00	BQD325	402.00
30	BQD130 ^③	92.00	BQD230	227.00	BQD330	402.00
35	BQD135	92.00	BQD235	227.00	BQD335	402.00
40	BQD140	92.00	BQD240	227.00	BQD340	402.00
45	BQD145	92.00	BQD245	227.00	BQD345	402.00
50	BQD150	92.00	BQD250	227.00	BQD350	402.00
60	BQD160	92.00	BQD260	227.00	BQD360	402.00
70	BQD170	193.00	BQD270	461.00	BQD370	548.00
80	BQD180	193.00	BQD280	461.00	BQD380	548.00
90	BQD190	193.00	BQD290	461.00	BQD390	548.00
100	BQD1100	193.00	BQD2100	461.00	BQD3100	548.00



BQD6 CSA Certified

Continuous Current Rating @ 40°C	1-Pole		2-Pole ^①		3-Pole ^②	
	347V AC		600/347V AC		600/347V AC	
	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$
15	BQD6115	92.00	BQD6215	227.00	BQD6315	402.00
20	BQD6120	92.00	BQD6220	227.00	BQD6320	402.00
25	BQD6125	92.00	BQD6225	227.00	BQD6325	402.00
30	BQD6130	92.00	BQD6230	227.00	BQD6330	402.00
35	BQD6135	92.00	BQD6235	227.00	BQD6335	402.00
40	BQD6140	92.00	BQD6240	227.00	BQD6340	402.00
45	BQD6145	92.00	BQD6245	227.00	BQD6345	402.00
50	BQD6150	92.00	BQD6250	227.00	BQD6350	402.00
60	BQD6160	92.00	BQD6260	227.00	BQD6360	402.00
70	BQD6170	193.00	BQD6270	461.00	BQD6370	548.00
80	—	—	BQD6280	461.00	BQD6380	548.00
90	—	—	BQD6290	461.00	BQD6390	548.00
100	—	—	BQD62100	461.00	BQD63100	548.00

Shipping Weights

Number of Poles	Number per Carton	Shipping Weight (lbs.) (ea.)
1	1/12/48	.6
2	1/6/24	1.2
3	1/4/16	2.0

Lugs For 60/70°C Wire

BQD - Load End Only	
15-40	#14-#6 AWG Cu #12-#6 AWG Al
45-100	#8-#1 AWG Cu #6-#1/0 AWG Al

Interrupting Ratings

Breaker Type	Number of Poles	RMS Symmetrical Amperes (KA)							
		Volts AC						Volts DC	
		120	240	277	480/ 277	347	600/ 347	125	250
BQD (UL)	1	65	—	14	—	—	—	14	—
	2	—	65	—	14	—	—	—	14
	3	—	65	—	14	—	—	—	—
BQD6 (CSA)	1	65	—	—	—	14	—	14	—
	2	—	65	—	—	—	14	—	14
	3	—	65	—	—	—	14	—	—

For inches / millimeters conversion,
see Application Data section.

①SWD rated for switching 277V AC fluorescent lighting.
②HID rated at 277V AC.
③Not suitable for 3 phase delta 480V applications.

Accessories pages 112-123

Reference Guide

Thermal-Magnetic Trip Breakers

				Load Center Breakers						Panelboard Breakers			
Page				QT ^①	QP, QPP ^②	QPH, QPPH ^②	HQP, HQPP ^②	HQPPH ^②	QPJ ^②	BL	BLH	HL	BQD, BQD6 ^③
				53	50, 54	50, 54	50, 54	54	53	56	56	56	59
Ratings	AC	Poles		1, 2	1, 2, 3	1, 2, 3	1, 2, 3 ^②	2	2,3	1, 2, 3,	1, 2, 3	1, 2, 3 ^②	1, 2, 3
		Amperes, Continuous		15–50	15–125 ^{②④}	15–125 ^{②④}	15–125 ^②	100–200	150–200	15–125 ^③	15–125 ^③	15–100 ^②	15–100
		Volts (60 Hertz)	1-Pole	120/240	120/240	120/240	120/240	120/240	120/240	120/240	120/240	120/240	277
			2-Pole	—	240	240	240	240	240	240	240	240	480/277
			3-Pole	—	240	240	240	240	240	240	240	240	480/277
		UL Interrupting Rating — Symmetrical RMS Amperes	120V	10,000	10,000	22,000	65,000	—	—	10,000	22,000	65,000	65,000
			240V	10,000	10,000	22,000	65,000	100,000	10,000	10,000	22,000	65,000	65,000
			277V	—	—	—	—	—	—	—	—	—	10,000 ^⑤
			347V	—	—	—	—	—	—	—	—	—	14,000
			480/277V	—	—	—	—	—	—	—	—	—	10,000 ^⑤
			600/347V	—	—	—	—	—	—	—	—	—	14,000
	DC	Volts — 2-Pole		—	—	—	—	—	—	—	—	—	250
		Interrupting Rating — DC Amperes		—	—	—	—	—	—	—	—	—	14,000 ^⑥
Dimensions in inches	Height	15–50A		—	2.87	2.87	—	—	7.00	3.56	3.56	—	4.50
		15–30A		—	—	—	—	—	—	—	3.75	—	—
		15–60A		3.12	—	—	—	—	—	—	—	—	—
		55–125A		—	3.12	3.12	3.12	3.12	3.00 ^⑦	3.75	—	3.75	4.50
	Width	1-Pole		1.00	1.00	1.00	1.00	—	—	1.00	1.00	1.00	1.00
		2-Pole		2.00 ^⑧	2.00 ^⑧	2.00 ^⑧	2.00	4.00 ^⑧	⑨	2.00	2.00	2.00	2.00
		3-Pole		2.00 ^⑧	3.00	3.00	3.00	—	3.00 ^⑧	3.00	3.00	3.00	3.00
	Depth			2.06	2.37	2.37	2.37	2.37	2.34	2.37	2.37	2.69	2.23
Overcurrent Devices	Thermal and Fixed Magnetic Trip			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Molded Case Switch			—	✓ ^⑩	—	—	—	—	—	—	—	—
Accessories & Modifications	Undervoltage Trip			—	—	—	—	—	—	—	—	—	✓
	Shunt Trip			—	✓ ^⑩	✓ ^⑩	✓ ^⑩	✓ ^⑩	—	✓	✓	✓	✓
	Auxiliary Switch			—	—	—	—	✓ ^⑩	—	✓	✓	✓	✓
	Alarm Switch			—	—	—	—	—	—	—	—	—	✓
Individual Enclosures	Type 1 — Indoor Surface			✓	✓	✓	✓	✓	—	—	—	—	—
	Type 1 — Indoor, Flush			—	✓	✓	✓	✓	—	—	—	—	—
	Type 3R — Outdoor-Rainproof			—	✓	✓	✓	✓	—	—	—	—	—



QP, QPH, HQP



BL, BLH, HBL



BQD, BQD6

For inches / millimeters conversion, see page 583.

① BQD6 CSA certified 10,000A @ 600Y/347V 15–70A only.
② Types QPP, QPPH, HQPP and HQPPH are special 2-pole configurations for load center mains. Amperage range = 125–225A, width = 4 in.

③ Single pole breakers available in ratings 15–70A only.

④ 125A, 2-pole 120/240V AC only.

⑤ 14,000A IR at 277/480V AC only.

⑥ Not applicable to types QPP and QPPH.

⑦ Single pole circuit breakers available in ratings 15–70A only, 125A available as a 2-pole only.

⑧ Not applicable to type HQPP and HQPPH.

⑨ Fits only Siemens EQIII load centers. Breaker is 2 or 3 poles wide.

PL Series 1-Phase Main Lug & Main Breaker Load Centers

1-phase, 3-wire SN, 120/240 Volts AC

Main Breaker/Convertible Load Centers^①

12-70 Circuits / 100-225 Amperes

Copper Bus^⑦

60/75°C Rated 22,000A IR^②

Branch Circuits			Indoor Enclosure – NEMA Type 1		Outdoor Enclosure – NEMA Type 3R	
Amp Rating	No. of Spaces	No. of Circuits	Catalog Number	Enclosure Height (inches) ^③	Catalog Number	Enclosure Height (inches) ^④
100	12	24	P1224B1100CU	18	PW1224B1100CU	21
100	16	24	P1624B1100CU	21	PW1624B1100CU	23
100	20	20	P2020B1100CU	24	PW2020B1100CU	27
100	20	24	P2024B1100CU	24	—	—
100	24	24	P2424B1100CU	24	—	—
100	30	30	P3030B1100CU	30	—	—
100	30	40	—	—	PW3040B1100CU NEW!	35
125	30	30	P3030B1125CU	30	PW3040B1125CU NEW!	35
150	20	30	P2030B1150CU	24	—	—
150	20	30	—	—	PW2030B1150CU NEW!	27
150	30	30	P3030B1150CU	30	—	—
150	30	40	—	—	PW3040B1150CU NEW!	35
200	20	40	P2040B1200CU	30	PW2040B1200CU	27
200	30	40	P3040B1200CU	36	PW3040B1200CU	35
200	30	40	P3040B1200 ^⑤	36	—	—
200	40	40	P4040B1200CU	36	PW4040B1200CU	38
200	40	40	P4040B1200 ^⑤	36	—	—
200	54	70	P5470B1200CU NEW!	44	—	—
225	42	60	P4260B1225CU	39	PW4260B1225CU	42
225	54	70	P5470B1225CU	44	—	—

Single phase factory installed 22kA IR main circuit breaker offers 22/10kA IR series combination rating when using 10kA type QP, QT, QPF, QE, QN, and QAF/QAFC branch breakers.

Main Lug/Convertible Load Centers^⑥

12-70 Circuits / 125-225 Amperes

Copper Bus^⑦

60/75° Rated 100,000A IR

Branch Circuits			Indoor Enclosure - NEMA Type 1		Outdoor Enclosure - NEMA Type 3R	
Amp Rating	No. of Spaces	No. of Circuits	Catalog Number	Enclosure Height (inches) ^③	Catalog Number	Enclosure Height (inches) ^④
125	12	12	P1212L1125CU ^⑤	18	PW1212L1125CU ^⑤	21
125	12	24	P1224L1125CU ^⑤	18	PW1224L1125CU ^⑤	21
125	16	24	P1624L1125CU	21	PW1624L1125CU	23
125	20	20	P2020L1125CU	24	—	—
125	20	24	P2024L1125CU	24	—	—
125	24	40	P2440L1125CU	24	—	—
125	30	40	P3040L1125CU	30	PW3040L1125CU	35
125	40	40	P4040L1125CU	36	—	—
150	20	30	P2030L1150CU	24	PW2030L1150CU	27
200	12	24	P1224L1200CU	24	PW1224L1200CU ^⑤	23
200	20	40	P2040L1200CU	30	PW2040L1200CU	27
200	24	40	P2440L1200CU	30	—	—
200	30	30	P3030L1200CU	36	—	—
200	30	40	P3040L1200CU	36	PW3040L1200CU	35
200	30	40	P3040L1200 ^⑤	36	—	—
200	30	54	P3054L1200CU	36	PW3054L1200CU	35
200	40	40	P4040L1200CU	36	PW4040L1200CU	38
200	40	40	P4040L1200 ^⑤	36	—	—
225	12	24	—	—	PW1224L1225CU	23
225	42	60	P4260L1225CU	39	PW4260L1225CU	42
225	54	70	P5470L1225CU	44	—	—

① Suitable for use as service equipment.

② May be installed on higher rated systems when protected by a circuit breaker with a higher AIR rating.

③ Indoor enclosures are 14 1/4" wide by 3 7/8" deep.

④ Outdoor enclosures are 14 1/2" wide by 4 1/4" deep.

⑤ Suitable for use as service entrance equipment when not more than six main disconnecting means are provided. See article 230.71 of the NEC®.

⑥ 125A load centers will accept MBK100A and MBK125A. 150A load centers will accept MBK150A. 200A load centers will accept MBK200A and MBK150A. 225A load centers will accept MBK225A, MBK200A, MBK150A.

⑦ Copper bus load centers are recommended for those applications where the environment may be severe (i.e. far and coastal areas).

⑧ Includes all PL Series features with aluminum bussing.

Circuit Breakers

MODEL #: Q115, Q230

• Revised •

03/06/13

Type QP with INSTA-WIRE

LOAD CENTERS &
CIRCUIT BREAKERS

Continuous Current Rating @ 40° C	Type QP ^①	Type QPH	Type HQP
	10,000A IR	22,000A IR	65,000A IR
	Catalog Number	Catalog Number	Catalog Number

1-Pole Plug-In (120V AC)^⑤

10	Q110 ^③	—	—
15	Q115 ^③	Q115H ^③	Q115HH ^③
20	Q120 ^③	Q120H ^③	Q120HH ^③
25	Q125	Q125H	Q125HH
30	Q130	Q130H	Q130HH
35	Q135	Q135H	Q135HH
40	Q140	Q140H	Q140HH
45	Q145	Q145H	Q145HH
50	Q150	Q150H	Q150HH
60	Q160	Q160H	Q160HH
70	Q170	Q170H	Q170HH



2-Pole Plug-In (Common-Trip 120/240V AC)^⑥

10	Q210 ^③	—	—
15	Q215	Q215H	Q215HH
20	Q220	Q220H	Q220HH
25	Q225	Q225H	Q225HH
30	Q230	Q230H	Q230HH
35	Q235	Q235H	Q235HH
40	Q240	Q240H	Q240HH
45	Q245	Q245H	Q245HH
50	Q250	Q250H	Q250HH
60	Q260	Q260H	Q260HH
70	Q270	Q270H	Q270HH
80	Q280	Q280H	Q280HH
90	Q290	Q290H	Q290HH
100	Q2100	Q2100H	Q2100HH
110	Q2110	Q2110H	Q2110HH
125	Q2125	Q2125H	Q2125HH



2-Pole Plug-In (Common-Trip 240V AC)^{④⑥}

15	Q215R	—	—
20	Q220R	—	—
30	Q230R	—	—
40	Q240R	—	—
50	Q250R	—	—
60	Q260R	—	—
70	Q270R	—	—
100	Q2100R	—	—

3-Pole Plug-In (Common-Trip 240V AC)^⑦

15	Q315	Q315H	Q315HH
20	Q320	Q320H	Q320HH
25	Q325	Q325H	Q325HH
30	Q330	Q330H	Q330HH
35	Q335	Q335H	Q335HH
40	Q340	Q340H	Q340HH
45	Q345	Q345H	Q345HH
50	Q350	Q350H	Q350HH
60	Q360	Q360H	Q360HH
70	Q370	Q370H	Q370HH
80	Q380	Q380H	Q380HH
90	Q390	Q390H	Q390HH
100	Q3100	Q3100H	Q3100HH



QP / QPH / HQP Internal Accessories

Control Voltage AC	Catalog Number	Field/Factory Installed
120V Shunt Trip	add suffix ...00S01	Factory
24V Shunt Trip	add suffix ...00S07	Factory
120V Auxiliary Switch	add suffix ...01	Factory

Modifications

Description	Catalog Number
400 Hz Calibration	add suffix ...Y ^⑧
Marine 50°C Ambient Calibration	add suffix ...M
Fungus Proofing	add suffix ...F

For external accessories
please refer to page 1-42.

■ Built to order. Allow 2-3 weeks for delivery.

⑤ UL Listed for use with 60/75° wire through 40 amps,
UL listed for use with 75° wire only for 50 amps
and above, HACR rated.

⑥ 1A and 1B contacts.

③ UL Listed for frequent switching applications (SWD).

120V AC Fluorescent Lighting.

④ UL Listed for use on 3-phase grounded "B" systems —
10,000 for this application.

⑦ Shipped 12 per sleeve.

⑧ Shipped 6 per sleeve.

⑨ Shipped 4 per sleeve.

⑩ UL Listed 5 KA IR.

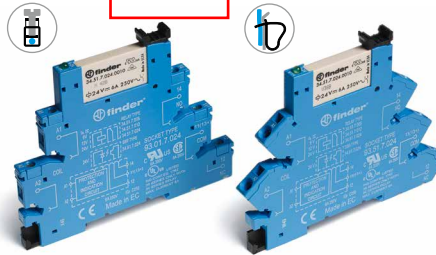
⑪ Type QP1, UL listed for 16 AWG conductors and
multiple wires.

38 Series - Relay interface modules 0.1 - 2 - 3 - 5 - 6 - 8 - 16 A
Common features

- Instant ejection of relay by plastic retaining clip
- Integral coil indication and protection circuit
- 35 mm rail (EN 60715) mounting

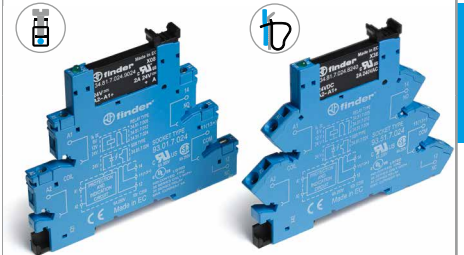
6.2 mm wide

- EMR - DC, AC or AC/DC coil versions
- SSR - DC or AC/DC input versions
- Screw and Screwless terminal options

EMR
Electromechanical Relays
38.51/38.61


- 1 CO - 6 A/250 V AC

Page 1

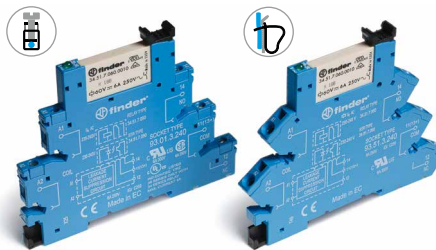
SSR
Solid State Relays
38.81/38.91


- Single solid state output:
Options 0.1 A/48 V DC, 2 A/24 V DC, 2 A/240 V AC
- Silent, high speed switching
- Long electrical life

Page 2

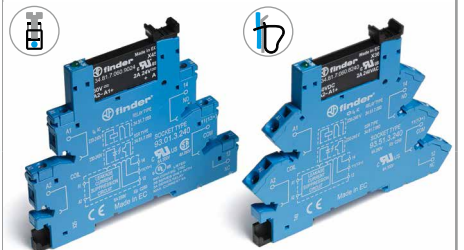
6.2 mm wide

- Special coil/input leakage current suppression types
- EMR - AC or AC/DC coil versions
- SSR - AC or AC/DC input versions
- Screw and Screwless terminal options

38.51.3... - 38.61.3...


- 1 CO - 6 A/250 V AC

Page 1

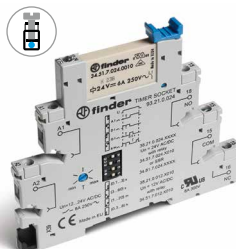
38.81.3... - 38.91.3...


- Single solid state output:
Options 0.1 A/48 V DC, 2 A/24 V DC, 2 A/240 V AC
- Silent, high speed switching
- Long electrical life

Page 2

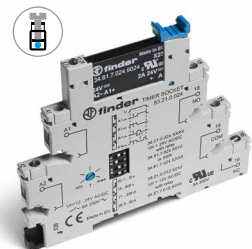
6.2 mm wide

- Timed Interface module
- 4 functions & 4 time scales 0.1 s...6 h
- EMR - AC/DC (12 or 24 V) supply versions
- SSR - AC/DC (24 V) supply
- Screw terminals

38.21


- 1 CO - 6 A/250 V AC

Page 3

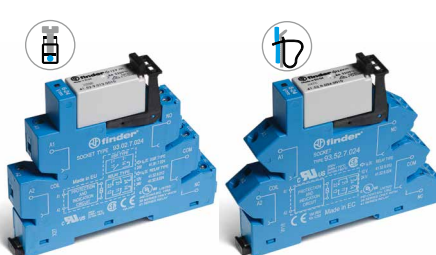
38.21...9024-8240


- Single solid state output:
Options 2 A/24 V DC, 2 A/240 V AC
- Silent, high speed switching
- Long electrical life

Page 3

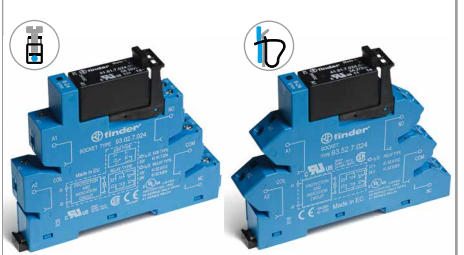
14 mm wide

- 2 pole 8 A or 1 pole 16 A
- EMR - DC or AC/DC coil versions
- SSR - DC input versions
- Screw and Screwless terminal options

38.01/38.52/38.11/38.62


- 1 CO - 16 A/250 V AC
- 2 CO - 8 A/250 V AC

Page 4

38.31/38.41


- Single solid state output:
Options 5 A/24 V DC, 3 A/240 V AC
- Silent, high speed switching
- Long electrical life

Page 5

1 Pole - 6 A electromechanical relay interface modules, 6.2 mm wide.

Ideal interface for PLC and electronic systems

- Sensitive DC coil or AC/DC coil versions
- Integral coil indication and protection circuit
- Instant ejection of relay using plastic retaining clip
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

38.51/38.51.3
Screw terminal



38.61/38.61.3
Screwless terminal



* Special version for max ambient temperature +70 °C.

For outline drawing see page 12

Contact specification

Contact configuration

1 CO (SPDT)

1 CO (SPDT)

Rated current/

Maximum peak current

A

6/10

6/10

Rated voltage/

Maximum switching voltage

V AC

250/400

250/400

Rated load AC1

VA

1500

1500

Rated load AC15 (230 V AC)

VA

300

300

Single phase motor rating (230 V AC)

kW

0.185

0.185

Breaking capacity DC1: 30/110/220 V

A

6/0.2/0.12

6/0.2/0.12

Minimum switching load

mW (V/mA)

500 (12/10)

500 (12/10)

Standard contact material

AgNi

AgNi

Coil specification

Nominal voltage (U_N)

V AC/DC

12 - 24 - 48 - 60 - (110...125) - (220...240)

(110...125)

—

V AC

(230...240)*

—

(230...240)

V DC

6 - 12 - 24 - 48 - 60 (non polarized)

—

—

Rated power AC/DC

VA (50 Hz)/W

See page 9

1/1

0.5/—

Operating range

AC/DC

(0.8...1.1) U_N

(94...138)V

—

AC

(184...264)V

—

(184...264)V

DC

(0.8...1.2) U_N

—

—

Holding voltage

AC/DC

0.6 U_N / 0.6 U_N

0.6 U_N / 0.6 U_N

Must drop-out voltage

AC/DC

0.1 U_N / 0.05 U_N

44 V

72 V

Technical data

Mechanical life AC/DC

cycles

10 · 10⁶

10 · 10⁶

Electrical life at rated load AC1

cycles

60 · 10³

60 · 10³

Operate/release time

ms

5/6

5/6

Insulation between coil

and contacts (1.2/50 μ s)

kV

6 (8 mm)

6 (8 mm)

Dielectric strength

between open contacts

V AC

1000

1000

Ambient temperature range ($U_N \leq 60$ V / > 60 V) °C

−40...+70/−40...+55

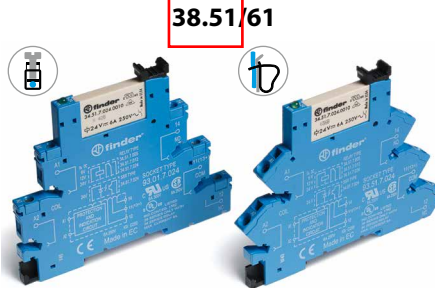
−/−40...+55

Protection category

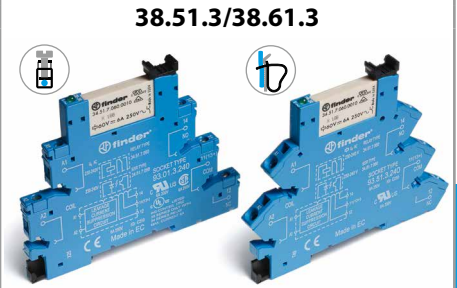
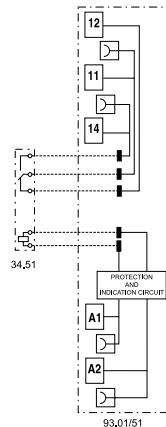
IP 20

IP 20

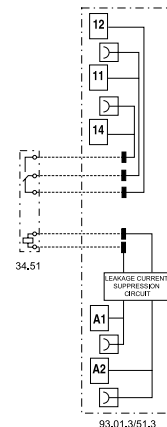
Approvals relay (according to type)



- 1 pole electromechanical relay
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting



- Leakage current suppression
- 1 pole electromechanical relay
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting



**Electromechanical relay interface modules,
14 mm wide.**

38.01 and 38.11 - 1 Pole 16 A

38.52 and 38.62 - 2 Pole 8 A

Ideal interface for PLC and electronic systems

- Sensitive DC coil or AC/DC coil versions
- Integral coil indication and protection circuit
- Instant ejection of relay using plastic retaining clip
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

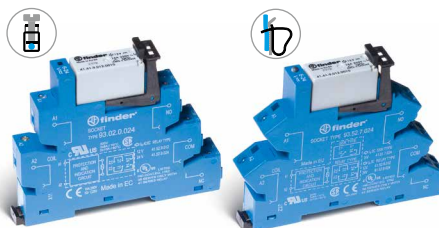
38.01/52
Screw terminal



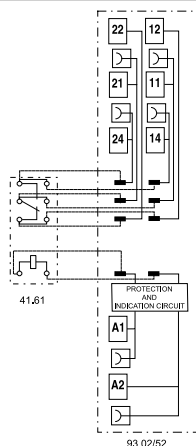
38.11/62
Screwless terminal



38.01/38.11

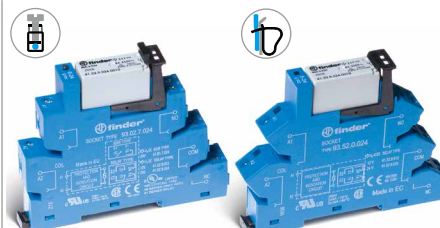


- Screw terminal and screwless terminal
- 1 pole electromechanical relay
- 35 mm rail (EN 60715) mounting

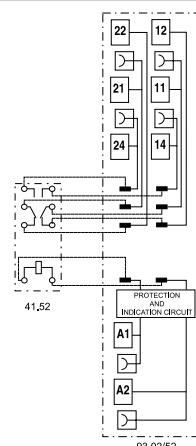


* For currents > 10 A, contact terminals must be connected in parallel (21 with 11, 24 with 14, 22 with 12).

38.52/38.62



- Screw terminal and screwless terminal
- 2 pole electromechanical relay
- 35 mm rail (EN 60715) mounting



For outline drawing see page 12

Contact specification

Contact configuration		1 CO (DPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	16*/30	8/15
Rated voltage/ Maximum switching voltage	V AC	250/400	250/400
Rated load AC1	VA	4000	2000
Rated load AC15 (230 V AC)	VA	750	400
Single phase motor rating (230 V AC)	kW	0.5	0.3
Breaking capacity DC1: 30/110/220 V	A	16/0.3/0.12	8/0.3/0.12
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi

Coil specification

Nominal voltage (U _N)	V AC/DC	24 - 60 - (110...125) - (220...240)	24 - 60 - (110...125) - (220...240)
	V AC	230...240	230...240
	V DC	12 - 24 - 60	12 - 24 - 60
Rated power AC/DC	VA (50 Hz)/W	See page 9	See page 9
Operating range	AC/DC	0.8...1.1	0.8...1.1
	DC	(0.8...1.2)U _N	(0.8...1.2)U _N
Holding voltage	AC/DC	0.6 U _N / 0.6 U _N	0.6 U _N / 0.6 U _N
Must drop-out voltage	AC/DC	0.1 U _N / 0.05 U _N	0.1 U _N / 0.05 U _N

Technical data

Mechanical life AC/DC	cycles	10 · 10 ⁶	10 · 10 ⁶
Electrical life at rated load AC1	cycles	50 · 10 ³	60 · 10 ³
Operate/release time	ms	8/10	8/10
Insulation between coil and contacts (1.2/50 μs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1000	1000
Ambient temperature range (U _N ≤ 60 V / > 60 V)	°C	-40...+70 / -40...+55	-40...+70 / -40...+55
Protection category		IP 20	IP 20

Approvals relay (according to type)



Single output - solid state relay interface modules, 14 mm wide.

Ideal interface for PLC and electronic systems

- DC input versions
- Supplied with integral coil indication and protection circuit
- Silent, high switching speed and long electrical life
- Instant ejection of relay using plastic retaining clip
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

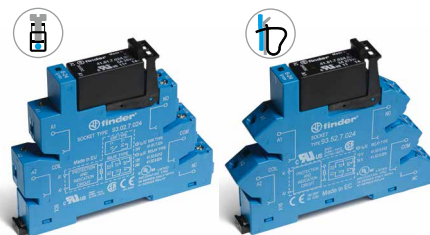
38.31
Screw terminal



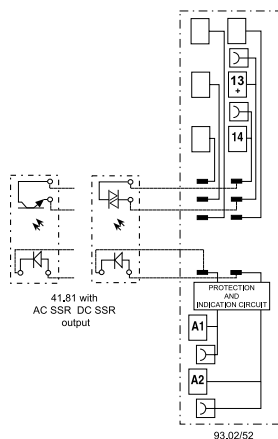
38.41
Screwless terminal



38.31/38.41



- Screw terminal and screwless terminal
- AC or DC output switching
- SSR relay - DC input voltage
- 35 mm rail (EN 60715) mounting



For outline drawing see page 12

Output specification

Contact configuration		1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current/ Maximum peak current (10 ms)	A	5/40	3/40
Rated voltage/ Maximum blocking voltage	V	(24/35)DC	(240/—)AC
Switching voltage range	V	(1.5...24)DC	(12...275)AC
Repetitive peak off-state voltage	V _{pk}	—	600
Minimum switching current	mA	1	50
Max. "OFF-state" leakage current	mA	0.01	1
Max. "ON-state" voltage drop	V	0.3	1.1

Input specification

Nominal voltage (U _N)	V AC/DC	24
	V DC	12 - 24
Operating range	V DC	See page 10
Control current	mA	See page 10
Release voltage	V DC	See page 10

Technical data

Operate/release time: ON/OFF (DC input)	ms	0.05/0.25	12/12
Dielectric strength between input/output	V AC	2500	
Ambient temperature range	°C	-20...+55	
Environmental protection		IP20	

Approvals relay (according to type)



Ordering information

Electromechanical relay - 1 or 2 Pole

Example: 38 series screw terminal relay interface module, 1 CO (SPDT), sensitive 12 V DC coil.

B

3 8 . 5 1 . 7 . 0 2 4 . 0 0 5 0

A B C D

Series

Type

- 0 = Electromechanical 16 A relay, with screw terminal
- 1 = Electromechanical 16 A relay, with screwless terminal
- 2 = Timer multifunction (AI, DI, GI, SW), with screw terminal
- 5 = Electromechanical relay, with screw terminal
- 6 = Electromechanical relay, with screwless terminal

No. of poles

- 1 = 1 pole, 6 or 16 A
- 2 = 2 pole, 8 A

Coil version

- 0 = AC (50/60 Hz)/DC
- 3 = Leakage current suppression for (110...125)V AC/DC - (230...240)V AC
- 7 = Sensitive DC, (6, 12, 24, 48, 60)V only
- 8 = AC (50/60 Hz)

Coil voltage

See coil specifications

D: Special versions

- 0 = Standard

C: Options

- 5 = Standard DC
- 6 = Standard AC or AC/DC

B: Contact circuit

- 0 = CO (nPDT)

A: Contact material

- 0 = AgNi Standard
- 4 = AgSnO₂
- 5 = AgNi + Au

Selecting features and options: only combinations in the same row are possible.

Type	Coil version	A	B	C	D
38.01/11	7	0 - 4	0	5	0
38.01/11	0 - 8	0 - 4	0	6	0
38.51/61	7	0 - 4 - 5	0	5	0
38.51/61	0 - 3 - 8	0 - 4 - 5	0	6	0
38.52/62	7	0 - 5	0	5	0
38.52/62	0 - 8	0 - 5	0	6	0
38.21	0	0	0	6	0

Technical data - 1 & 2 Pole Electromechanical Relays

Insulation

Insulation according to EN 61810-1	insulation rated voltage	V	250	400
	rated impulse withstand voltage	kV	4	4
	pollution degree		3	2
	overvoltage category		III	III

Insulation between coil and contacts (1.2/50 μ s)	kV	6 (8 mm)
Dielectric strength between open contacts	V AC	1000

Conducted disturbance immunity

Burst (5...50)ns, 5 kHz, on A1 - A2	EN 61000-4-4	level 4 (4 kV)
Surge (1.2/50 μ s) on A1 - A2 (differential mode)	EN 61000-4-5	level 3 (2 kV)

Other data

Bounce time: NO/NC		ms	1/6	2/5
Vibration resistance (10...55)Hz: NO/NC		g	10/5	15/2
Power lost to the environment	without contact current	W	0.2 (12 V) - 0.9 (240 V)	0.5 (24 V) - 0.9 (240 V)
	with rated current	W	0.5 (12 V) - 1.5 (240 V)	1.3 (24 V) - 1.7 (240 V)

Terminals

Wire strip length	mm	10	10
⊖ Screw torque	Nm	0.5	—

Max. wire size	mm ²	solid cable	stranded cable	solid cable	stranded cable
		1 x 2.5 / 2 x 1.5	1 x 2.5 / 2 x 1.5	1 x 2.5	1 x 2.5

Max. wire size	AWG	1 x 14 / 2 x 16	1 x 14 / 2 x 16	1 x 14	1 x 14
		38.01 / 38.52	38.11 / 38.62		

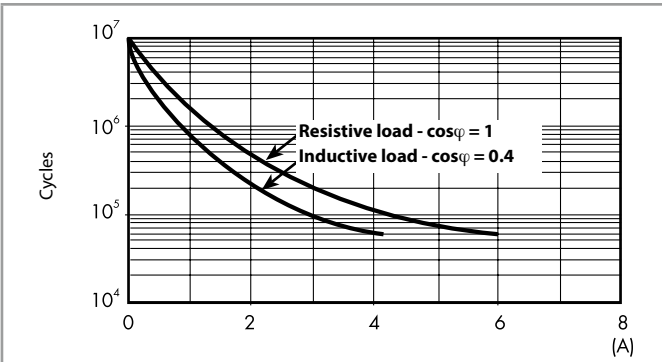
Wire strip length	mm	10	10
⊖ Screw torque	Nm	0.5	—

Max. wire size	mm ²	solid cable	stranded cable	solid cable	stranded cable
		1 x 2.5 / 2 x 1.5	1 x 2.5 / 2 x 1.5	1 x 2.5	1 x 2.5

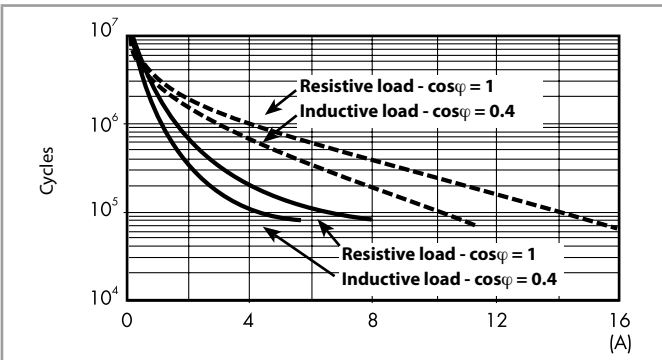
Max. wire size	AWG	1 x 14 / 2 x 16	1 x 14 / 2 x 16	1 x 14	1 x 14

Contact specification - 1 & 2 Pole Electromagnetic Relays

F 38 - Electrical life (AC) v contact current, 1 Pole 6 A

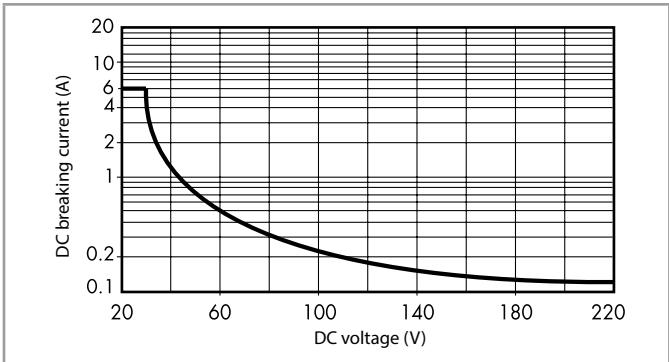


F 38 - Electrical life (AC) v contact current, 1 Pole 16 A and 2 Pole 8 A

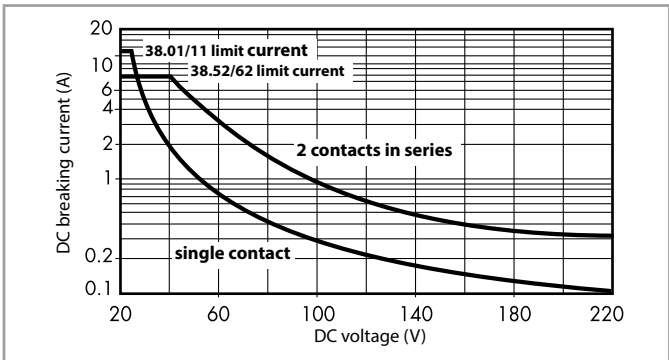


— : 2 Pole 8 A
 — : 1 Pole 16 A

H 38 - Maximum DC1 breaking capacity, 1 Pole 6 A



H 38 - Maximum DC1 breaking capacity, 1 Pole 16 A and 2 Pole 8 A



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of $\geq 60 \cdot 10^3$ (1 Pole) or $\geq 80 \cdot 10^3$ (2 Pole) can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load.
Note: the release time for the load will be increased.

Coil specifications - 1 Pole 6 A Electromechanical Relay

Coil data sensitive DC, 1 Pole

Nominal voltage U_N	Coil code	Operating range		Rated coil consumption I at U_N	Power consumption P at U_N
V		U_{min}	U_{max}	mA	W
6	7.006	4.8	7.2	35	0.2
12	7.012	9.6	14.4	15.2	0.2
24	7.024	19.2	28.8	10.4	0.3
48	7.048	38.4	57.6	6.3	0.3
60	7.060	48	72	7	0.4

Coil data AC/DC, 1 Pole

Nominal voltage U_N	Coil code	Operating range		Rated coil consumption I at U_N	Power consumption P at U_N
V		U_{min}	U_{max}	mA	VA/W
12	0.012	9.6	13.2	16	0.2/0.2
24	0.024	19.2	26.4	12	0.3/0.2
48	0.048	38.4	52.8	6.9	0.3/0.3
60	0.060	48	66	7	0.5/0.5
110...125	0.125	88	138	5(*)	0.6/0.6(*)
220...240	0.240	176	264	4(*)	1/0.9(*)

(*) Rated coil consumption and power consumption values relate to $U_N = 125$ and 240 V.

Coil data AC, 1 Pole (indicated for max ambient temperature +70 °C)

Nominal voltage U_N	Coil code	Operating range		Rated coil consumption I at U_N	Power consumption P at U_N
V		U_{min}	U_{max}	mA	VA/W
(230...240) AC	8.240	184	264	3	0.7/0.3

Coil data, leakage current suppression types, 1 Pole

Nominal voltage U_N	Coil code	Operating range		Rated coil consumption I at U_N	Power consumption P at U_N
V		U_{min}	U_{max}	mA	VA/W
(110...125) AC/DC	3.125	94	138	8(*)	1/1(*)
(230...240) AC	3.240	184	264	7(*)	1.7/0.5(*)

(*) Rated coil consumption and power consumption values relate to $U_N = 125$ and 240 V.

The 38 Series interface modules (supply version 3) have built-in leakage current suppression to address industry concerns of the contacts not dropping-out when there is residual current in the circuit; at (110...125)V AC and (230...240)V AC.

This problem can occur, for example, when connecting the interface modules to PLCs with triac outputs or when connecting via relatively long cables.

Coil specifications - 1 Pole 16 A and 2 Pole 8 A Electromechanical Relay

Coil data sensitive DC, 1 Pole 16 A and 2 Pole 8 A

Nominal voltage U_N	Coil code	Operating range		Rated coil consumption I at U_N	Power consumption P at U_N
V		U_{min}	U_{max}	mA	W
12	7.012	9.6	14.4	41	0.5
24	7.024	19.2	28.8	19.5	0.5
60	7.060	48	72	8	0.5

Coil data AC/DC, 1 Pole 16 A and 2 Pole 8 A

Nominal voltage U_N	Coil code	Operating range		Rated coil consumption I at U_N	Power consumption P at U_N
V		U_{min}	U_{max}	mA	W
24	0.024	19.2	26.4	20	0.5/0.5
60	0.060	48	66	7.1	0.5/0.5
110...125	0.125	88	138	4.6	0.6/0.6
220...240	0.240	184	264	3.8	0.9/0.9

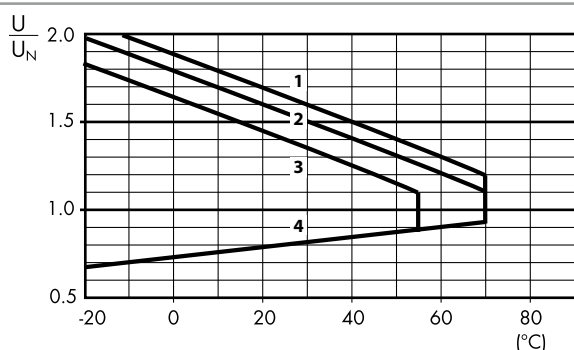
Coil data AC, 1 Pole 16 A and 2 Pole 8 A

Nominal voltage U_N	Coil code	Operating range		Rated coil consumption I at U_N	Power consumption P at U_N
V		U_{min}	U_{max}	mA	VA/W
230...240	8.230	184	264	5.3	1.2/0.6

Coil specification - 1 & 2 Pole Electromagnetic Relays

R 38 - DC coil operating range v ambient temperature

1 Pole and 2 Pole



- 1 - Max. permitted coil voltage at nominal load (DC coil).
- 2 - Max. permitted coil voltage at nominal load (AC/DC coils $U \leq 60$ V).
- 3 - Max. permitted coil voltage at nominal load (AC/DC coils $U > 60$ V).
- 4 - Min pick-up voltage with coil at ambient temperature.

Technical data - Solid State Relays

Other data			38.81/38.91		38.31/38.41	
Power lost to the environment	without output current	W	0.25 (24 V DC)		0.5	
	with rated current	W	0.4		2.2 (DC output)/3 (AC output)	
Terminals			38.81		38.91	
Wire strip length		mm	10		10	
 Screw torque		Nm	0.5		—	
Max. wire size			solid cable	stranded cable	solid cable	stranded cable
		mm ²	1 x 2.5 / 2 x 1.5	1 x 2.5 / 2 x 1.5	1 x 2.5	1 x 2.5
		AWG	1 x 14 / 2 x 16	1 x 14 / 2 x 16	1 x 14	1 x 14
			38.31		38.41	
Wire strip length		mm	10		10	
 Screw torque		Nm	0.5		—	
Max. wire size			solid cable	stranded cable	solid cable	stranded cable
		mm ²	1 x 2.5 / 2 x 1.5	1 x 2.5 / 2 x 1.5	1 x 2.5	1 x 2.5
		AWG	1 x 14 / 2 x 16	1 x 14 / 2 x 16	1 x 14	1 x 14

Input specifications - Solid State Relays type 38.81 and 38.91 - 6.2 mm wide

Input data DC

Nominal voltage	Supply code	Operating range		Release voltage	Rated coil consumption	Power consumption
U _N		U _{min}	U _{max}	U	I at U _N	P
V		V	V	V	mA	W
6	7.006	5	7.2	2.4	7	0.2
24	7.024	16.8	30	10	10.5	0.3
60	7.060	35.6	72	20	6.5	0.4

Input data - Leakage current suppression types

Nominal voltage	Supply code	Operating range		Release voltage	Rated coil consumption	Power consumption
U _N		U _{min}	U _{max}	U	I at U _N	P at U _N
V		V	V	V	mA	W
110...125 AC/DC	3.125	94	138	44	8(*)	1/1(*)
230...240 AC	3.240	184	264	72	6.5(*)	1.6/0.6(*)

(*) Rated coil consumption and power consumption values relate to U_N = 125 and 240 V.

Input data AC/DC

Nominal voltage	Supply code	Operating range		Release voltage	Rated coil consumption	Power consumption
U _N		U _{min}	U _{max}	U	I at U _N	P
V		V	V	V	mA	VA/W
110...125	0.125	88	138	22	5.5*	0.7/0.7
220...240	0.240	184	264	44	3.5*	1/0.9

(*) Rated coil consumption and power consumption values relate to U_N = 125 and 240 V.

The 38 Series interface modules (supply version 3) have built-in leakage current suppression to address industry concerns of the contacts not dropping-out when there is residual current in the circuit; at (110...125) V AC and (230...240) V AC.

This problem can occur, for example, when connecting the interface modules to PLCs with triac outputs or when connecting via relatively long cables.

Input specification - Solid State Relay types 38.31 and 38.41 - 14 mm wide

Input data DC

Nominal voltage	Supply code	Operating range		Release voltage	Rated coil consumption	Power consumption
U _N		U _{min}	U _{max}	U	I at U _N	P
V		V	V	V	mA	W
12	7.012	9.6	18	5	9	0.2
24	7.024	16.8	30	5	12	0.3

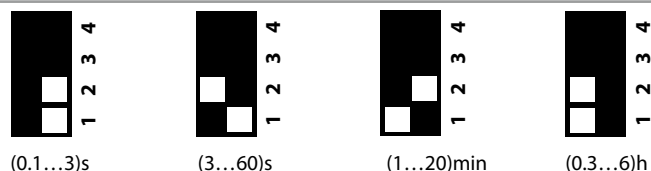
Input data AC/DC

Nominal voltage	Supply code	Operating range		Release voltage	Rated coil consumption	Power consumption
U _N		U _{min}	U _{max}	U	I at U _N	P
V		V	V	V	mA	W
24	0.024	16.8	30	9	16.5	0.3

Additional technical data - Timed Interface Module

EMC specifications				
Type of test		Reference standard		
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV	
	air discharge	EN 61000-4-2	8 kV	
Radio-frequency electromagnetic field (80 ÷ 1000 MHz)		EN 61000-4-3	10 V/m	
Fast transients (burst) (5-50 ns, 5 kHz) on Supply terminals		EN 61000-4-4	4 kV	
Surges (1.2/50 µs) on Supply terminals	common mode	EN 61000-4-5	4 kV	
	differential mode	EN 61000-4-5	4 kV	
Radio-frequency common mode (0.15 ÷ 80 MHz) on Supply terminals		EN 61000-4-6	10 V	
Radiated and conducted emission		EN 55022	class B	
Other data		EMR	SSR	
Power lost to the environment	without contact current	W	0.1	0.1
	with rated current	W	0.6	0.5
Terminals		38.21		
Wire strip length		mm	10	
Screw torque		Nm	0.5	
Max. wire size		solid cable		stranded cable
		mm ²	1 x 2.5 / 2 x 1.5	1 x 2.5 / 2 x 1.5
		AWG	1 x 14 / 2 x 16	1 x 14 / 2 x 16

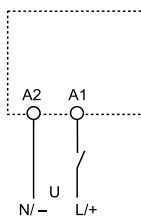
Times scales



Functions

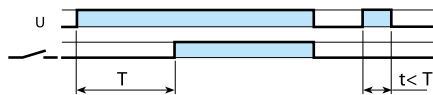
LED	Supply voltage	NO contact/output
	OFF	Open
	ON	Open (time in progress)
	ON	Closed

Wiring diagram



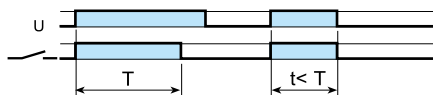
U = Supply voltage

= Output contact



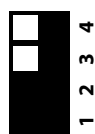
(AI) On-delay.

Apply power to timer.
Output contacts transfer after preset time has elapsed.
Reset occurs when power is removed.



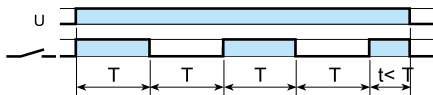
(DI) Interval.

Apply power to timer.
Output contacts transfer immediately.
After the preset time has elapsed, contacts reset.



(GI) Pulse delayed.

Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs after a fixed time of 0.5 s.

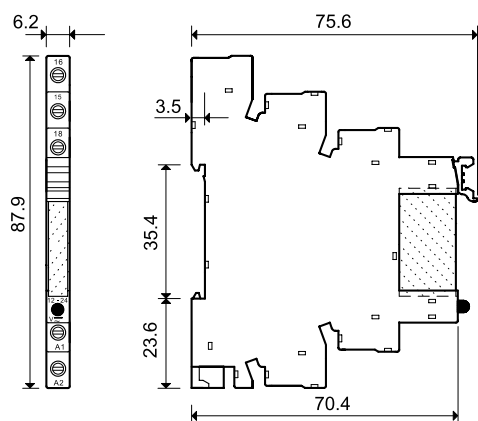


(SW) Symmetrical flasher (starting pulse on).

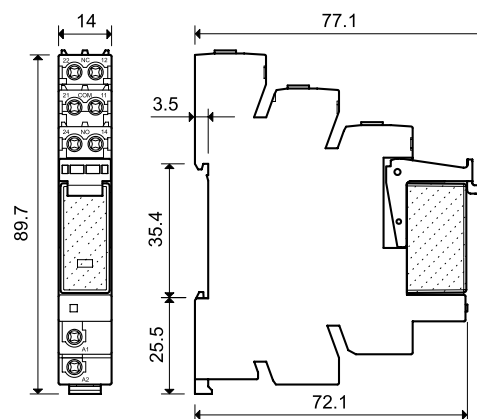
Apply power to timer.
Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied.
The ratio is 1:1 (time on = time off).

Outline drawings

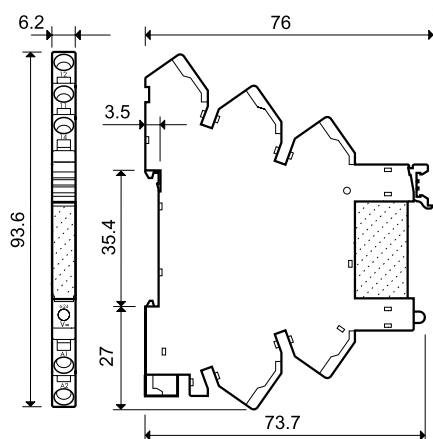
38.21
38.51 / 38.51.3
38.81 / 38.81.3
Screw terminal



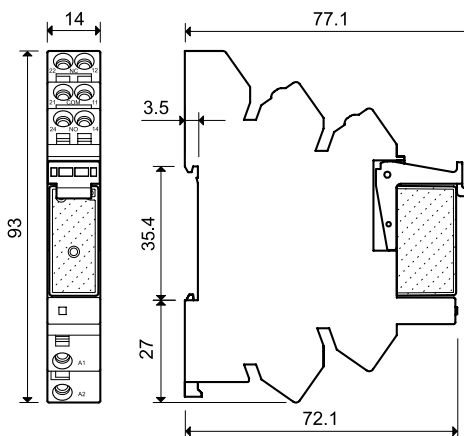
38.01
38.31
38.52
Screw terminal



38.61 / 38.61.3
38.91 / 38.91.3
Screwless terminal



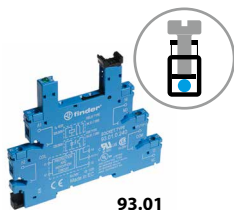
38.11
38.41
38.62
Screwless terminal



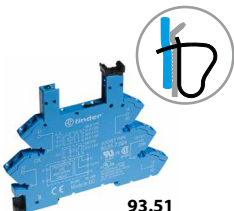
93 Series - Sockets and accessories for 38 series

Electromechanical Relay & Socket Combinations

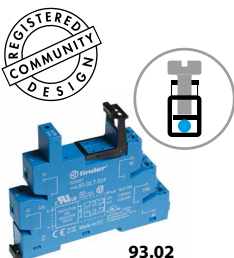
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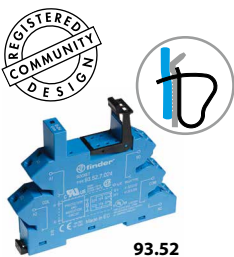
93.01



93.51



93.02

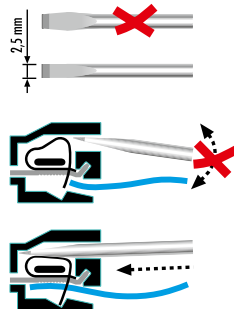


93.52

Approvals
(according to type):

CE ENEC EAC PG
UL US

UL US Certain relay/socket combinations



Screw terminal - 1 Pole relay 6 A

Interface Module Code	Coil voltage	Relay	Socket
38.51.0.012.0060	12 V AC/DC	34.51.7.012.0010	93.01.0.024
38.51.0.024.0060	24 V AC/DC	34.51.7.024.0010	93.01.0.024
38.51.0.048.0060	48 V AC/DC	34.51.7.048.0010	93.01.0.060
38.51.0.060.0060	60 V AC/DC	34.51.7.060.0010	93.01.0.060
38.51.0.125.0060	(110...125)V AC/DC	34.51.7.060.0010	93.01.0.125
38.51.0.240.0060	(220...240)V AC/DC	34.51.7.060.0010	93.01.0.240
38.51.3.125.0060	(110...125)V AC/DC	34.51.7.060.0010	93.01.3.125
38.51.3.240.0060	(230...240)V AC	34.51.7.060.0010	93.01.3.240
38.51.7.006.0050	6 V DC	34.51.7.005.0010	93.01.7.024
38.51.7.012.0050	12 V DC	34.51.7.012.0010	93.01.7.024
38.51.7.024.0050	24 V DC	34.51.7.024.0010	93.01.7.024
38.51.7.048.0050	48 V DC	34.51.7.048.0010	93.01.7.060
38.51.7.060.0050	60 V DC	34.51.7.060.0010	93.01.7.060
38.51.8.240.0060	(230...240)V AC	34.51.7.060.0010	93.01.8.240

Screwless terminal - 1 Pole relay 6 A

Interface Module Code	Coil voltage	Relay	Socket
38.61.0.012.0060	12 V AC/DC	34.51.7.012.0010	93.51.0.024
38.61.0.024.0060	24 V AC/DC	34.51.7.024.0010	93.51.0.024
38.61.0.125.0060	(110...125)V AC/DC	34.51.7.060.0010	93.51.0.125
38.61.0.240.0060	(220...240)V AC/DC	34.51.7.060.0010	93.51.0.240
38.61.3.125.0060	(110...125)V AC/DC	34.51.7.060.0010	93.51.3.125
38.61.3.240.0060	(230...240)V AC	34.51.7.060.0010	93.51.3.240
38.61.7.012.0050	12 V DC	34.51.7.012.0010	93.51.7.024
38.61.7.024.0050	24 V DC	34.51.7.024.0010	93.51.7.024
38.61.8.240.0060	(230...240)V AC	34.51.7.060.0010	93.51.8.240

Screw terminal - 1 Pole relay 16 A

Interface Module Code	Coil voltage	Relay	Socket
38.01.7.012.0050	12 V DC	41.61.9.012.0010	93.02.7.024
38.01.7.024.0050	24 V DC	41.61.9.024.0010	93.02.7.024
38.01.7.060.0050	60 V DC	41.61.9.060.0010	93.02.7.060
38.01.0.024.0060	24 V AC/DC	41.61.9.024.0010	93.02.0.024
38.01.0.060.0060	60 V AC/DC	41.61.9.060.0010	93.02.0.060
38.01.0.125.0060	125 V AC/DC	41.61.9.110.0010	93.02.0.125
38.01.0.240.0060	240 V AC/DC	41.61.9.110.0010	93.02.0.240
38.01.8.230.0060	230 V AC	41.61.9.110.0010	93.02.8.230

Screwless terminal - 1 Pole relay 16 A

Interface Module Code	Coil voltage	Relay	Socket
38.11.7.012.0050	12 V DC	41.61.9.012.0010	93.52.7.024
38.11.7.024.0050	24 V DC	41.61.9.024.0010	93.52.7.024
38.11.7.060.0050	60 V DC	41.61.9.060.0010	93.52.7.060
38.11.0.024.0060	24 V AC/DC	41.61.9.024.0010	93.52.0.024
38.11.0.060.0060	60 V AC/DC	41.61.9.060.0010	93.52.0.060
38.11.0.125.0060	125 V AC/DC	41.61.9.110.0010	93.52.0.125
38.11.0.240.0060	240 V AC/DC	41.61.9.110.0010	93.52.0.240
38.11.8.230.0060	230 V AC	41.61.9.110.0010	93.52.8.230

Screw terminal - 2 Pole relay 8 A

Interface Module Code	Coil voltage	Relay	Socket
38.52.0.024.0060	24 V AC/DC	41.52.9.024.0010	93.02.0.024
38.52.0.060.0060	60 V AC/DC	41.52.9.060.0010	93.02.0.060
38.52.0.125.0060	(110...125)V AC/DC	41.52.9.110.0010	93.02.0.125
38.52.0.240.0060	(220...240)V AC/DC	41.52.9.110.0010	93.02.0.240
38.52.7.012.0050	12 V DC	41.52.9.012.0010	93.02.7.024
38.52.7.024.0050	24 V DC	41.52.9.024.0010	93.02.7.024
38.52.7.060.0050	60 V DC	41.52.9.060.0010	93.02.7.060
38.52.8.230.0060	(230...240)V AC	41.52.9.110.0010	93.02.8.230

Screwless terminal - 2 Pole relay 8 A

Interface Module Code	Coil voltage	Relay	Socket
38.62.0.024.0060	24 V AC/DC	41.52.9.024.0010	93.52.0.024
38.62.0.060.0060	60 V AC/DC	41.52.9.060.0010	93.52.0.060
38.62.0.125.0060	(110...125)V AC/DC	41.52.9.110.0010	93.52.0.125
38.62.0.240.0060	(220...240)V AC/DC	41.52.9.110.0010	93.52.0.240
38.62.7.012.0050	12 V DC	41.52.9.012.0010	93.52.7.024
38.62.7.024.0050	24 V DC	41.52.9.024.0010	93.52.7.024
38.62.7.060.0050	60 V DC	41.52.9.060.0010	93.52.7.060
38.62.8.230.0060	(230...240)V AC	41.52.9.110.0010	93.52.8.230

Solid State Relay & Socket Combinations - 6.2 mm wide

Screw terminal

Interface Module Code	Input voltage	Relay	Socket
38.81.7.006.xxxx	6 V DC	34.81.7.005.xxxx	93.01.7.024
38.81.7.024.xxxx	24 V DC	34.81.7.024.xxxx	93.01.7.024
38.81.7.060.xxxx	60 V DC	34.81.7.060.xxxx	93.01.7.060
38.81.0.125.xxxx	(110...125)V AC/DC	34.81.7.060.xxxx	93.01.0.125
38.81.0.240.xxxx	(220...240)V AC/DC	34.81.7.060.xxxx	93.01.0.240
38.81.3.125.xxxx	(110...125)V AC/DC	34.81.7.060.xxxx	93.01.3.125
38.81.3.240.xxxx	(230...240)V AC	34.81.7.060.xxxx	93.01.3.240

Screwless terminal

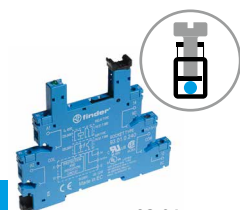
Interface Module Code	Input voltage	Relay	Socket
38.91.7.006.xxxx	6 V DC	34.81.7.005.xxxx	93.51.7.024
38.91.7.024.xxxx	24 V DC	34.81.7.024.xxxx	93.51.7.024
38.91.7.060.xxxx	60 V DC	34.81.7.060.xxxx	93.51.7.060
38.91.0.125.xxxx	(110...125)V AC/DC	34.81.7.060.xxxx	93.51.0.125
38.91.0.240.xxxx	(220...240)V AC/DC	34.81.7.060.xxxx	93.51.0.240
38.91.3.125.xxxx	(110...125)V AC/DC	34.81.7.060.xxxx	93.51.3.125
38.91.3.240.xxxx	(230...240)V AC	34.81.7.060.xxxx	93.51.3.240

Example: .xxxx

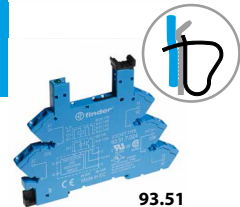
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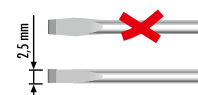
.8240



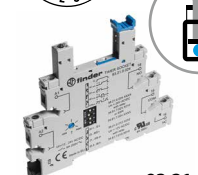
93.01



93.51

Approvals
(according to type):Certain relay/socket
combinations

93.52

Approvals
(according to type):

93.21

Approvals
(according to type):

Solid State Relay & Socket Combinations - 14 mm wide

Screw terminal

Interface Module Code	Input voltage	Relay	Socket
38.31.0.024.xxxx	24 V AC/DC	41.81.7.024.xxxx	93.02.0.024
38.31.7.012.xxxx	12 V DC	41.81.7.012.xxxx	93.02.7.024
38.31.7.024.xxxx	24 V DC	41.81.7.024.xxxx	93.02.7.024

Screwless terminal

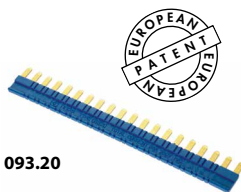
Interface Module Code	Input voltage	Relay	Socket
38.41.0.024.xxxx	24 V AC/DC	41.81.7.024.xxxx	93.52.0.024
38.41.7.012.xxxx	12 V DC	41.81.7.012.xxxx	93.52.7.024
38.41.7.024.xxxx	24 V DC	41.81.7.024.xxxx	93.52.7.024

SSR / EMR & Timer Socket Combinations

Screw terminal

Interface Module Code	Input / Coil voltage	Relay	Socket
38.21.0.012.0060	12 V AC/DC	34.51.7.012.0010	93.21.0.024
38.21.0.024.0060	24 V AC/DC	34.51.7.024.0010	93.21.0.024
38.21.0.024.xxxx	24 V AC/DC	34.81.7.024.xxxx	93.21.0.024

Accessories



093.20

Approvals
(according to type):



20-way jumper link for 3a8.21/51/61/81/91

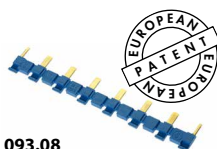
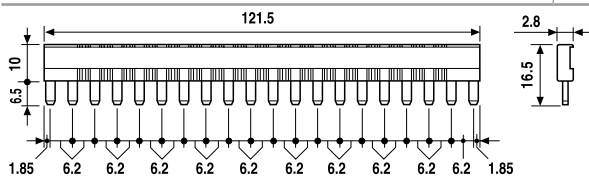
093.20 (blue)

093.20.0 (black)

093.20.1 (red)

Rated values

36 A - 250 V



093.08

Approvals
(according to type):



8-way jumper link for 38.01/11/31/41/52/62

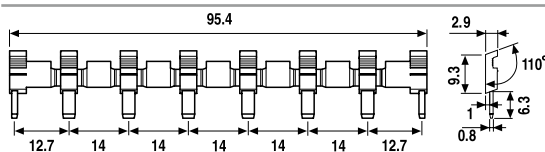
093.08 (blue)

093.08.0 (black)

093.08.1 (red)

Rated values

10 A - 250 V



093.01

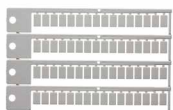
Plastic separator

093.01

Thickness 2 mm, required at the start and the end of a group of interfaces.

Can be used for visual separation group, must be used for:

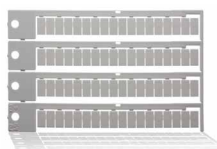
- protective separation of different voltages of neighbouring PLC interfaces according to VDE 0106-101
- protection of cut jumper links



093.64

Sheet of marker tags for 38.21/51/61/81/91, plastic, 64 tags, 6 x 10 mm

093.64



060.72

Sheet of marker tags for 38.01/11/31/41/52/62, plastic, 72 tags, 6 x 12 mm

060.72

4C Series - Relay interface modules 8 - 10 - 16 A

B

Features

1 & 2 pole relay interface modules,
screw terminal socket, 15.8 mm wide.

Ideal interface for PLC and electronic systems

4C.01 - 1 Pole 16 A
4C.02 - 2 Pole 8 A

- AC coils or DC coils
- Instant ejection of relay using plastic retaining clip
- Supply status indication and coil suppression module as standard
- Identification label
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

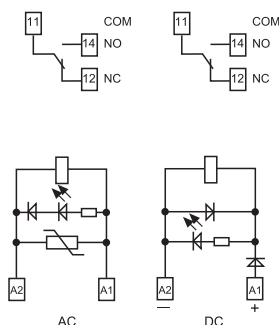
4C.01 / 4C.02
Screw terminal



4C.01



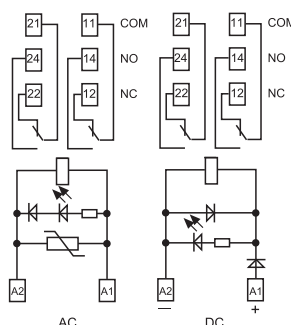
- 1 pole, 16 A
- Screw terminal connection
- 35 mm rail (EN 60715) mounting



4C.02



- 2 pole, 8 A
- Screw terminal connection
- 35 mm rail (EN 60715) mounting



For outline drawing of 4C.01/02 see page 5

Contact specification

Contact configuration	1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current A	16/25	8/15
Rated voltage/Maximum switching voltage V AC	250/440	250/440
Rated load AC1 VA	4,000	2,000
Rated load AC15 (230 V AC) VA	750	350
Single phase motor rating (230 V AC) kW	0.55	0.37
Breaking capacity DC1: 30/110/220V A	16/0.5/0.15	6/0.5/0.15
Minimum switching load mW (V/mA)	300 (5/5)	300 (5/5)
Standard contact material	AgNi	AgNi

Coil specification

Nominal voltage (U _N)	V AC (50/60 Hz)	12 - 24 - 110 - 120 - 230	12 - 24 - 110 - 120 - 230
	V DC	12 - 24 - 125	12 - 24 - 125
Rated power AC/DC VA (50 Hz)/W		1.2/0.5	1.2/0.5
Operating range	AC	(0.8...1.1)U _N	(0.8...1.1)U _N
	DC	(0.73...1.1)U _N	(0.73...1.1)U _N
Holding voltage AC/DC		0.8 U _N / 0.4 U _N	0.8 U _N / 0.4 U _N
Must drop-out voltage AC/DC		0.2 U _N / 0.1 U _N	0.2 U _N / 0.1 U _N

Technical data

Mechanical life AC/DC	cycles	10 · 10 ⁶	10 · 10 ⁶
Electrical life at rated load AC1	cycles	100 · 10 ³	100 · 10 ³
Operate/release time	ms	15/5 (AC) - 15/12 (DC)	10/3 (AC) - 10/10 (DC)
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000	1,000
Ambient temperature range	°C	≤ 12A: -40...+70 / >12A: -40...+50	-40...+70
Protection category		IP 20	IP 20

Approvals - relay (according to type)



Ordering information

Example: 4C series, 35 mm rail (EN 60715) mount screw terminal relay interface module, 1 CO (SPDT) 16 A contacts, 24 V DC coil, green LED + diode.

4
C
.
0
1
.
9
.
0
2
4
.
0
0
5
0

Series —

Type
 0 = 35 mm rail (EN 60715) mount screw terminal socket
 5 = 35 mm rail (EN 60715) mount screwless terminal socket

No. of poles
 1 = 1 pole
 2 = 2 pole

Coil version
 8 = AC (50/60 Hz)
 9 = DC

Coil voltage
 See coil specifications

A: Contact material
 0 = AgNi
 4 = AgSnO₂
 5 = AgNi + Au

B: Contact circuit
 0 = CO (nPDT)

D: Special version
 0 = Standard

C: Options
 5 = Standard for DC:
 green LED + diode (polarity +A1)
 6 = Standard for AC:
 green LED + Varistor

Selecting features and options: only combinations in the same row are possible.
 Preferred selections for best availability are shown in **bold**.

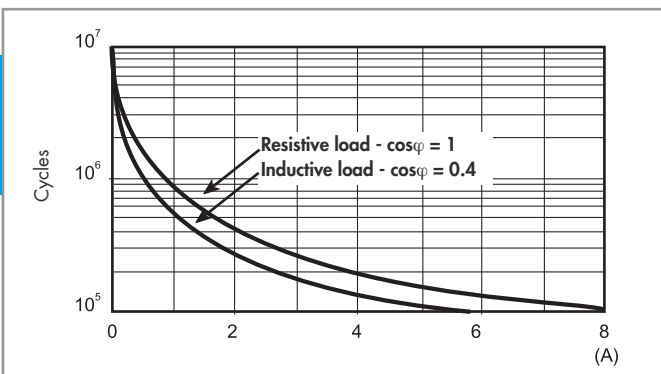
Type	Coil version	A	B	C	D
4C.02	AC	0 - 5	0	6	0
4C.52	DC	0 - 5	0	5	0
4C.01	AC	0 - 4 - 5	0	6	0
4C.51	DC	0 - 4 - 5	0	5	0

Technical data

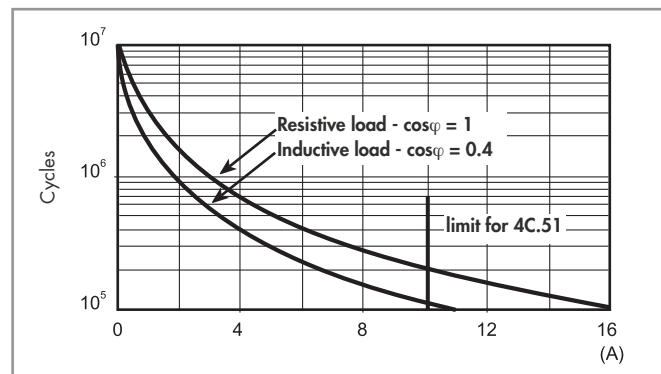
Insulation						
Insulation according to EN 61810-1	insulation rated voltage	V	250		440	
	rated impulse withstand voltage	kV	4		4	
	pollution degree		3		2	
	overvoltage category		III		III	
Insulation between coil and contacts (1.2/50 µs)		kV	6 (8 mm)			
Dielectric strength between open contacts		V AC	1,000			
Dielectric strength between adjacent contacts		V AC	2,000			
Conducted disturbance immunity						
Burst (5...50)ns, 5 kHz, on A1 - A2			EN 61000-4-4		level 4 (4 kV)	
Surge (1.2/50 µs) on A1 - A2 (differential mode)			EN 61000-4-5		level 3 (2 kV)	
Other data						
Bounce time: NO/NC		ms	2/6 (4C.01/51)		1/4 (4C.02/52)	
Vibration resistance (10...150)Hz: NO/NC		g	20/12			
Power lost to the environment	without contact current	W	0.6			
	with rated current	W	1.6 (4C.01/51)		2 (4C.02/52)	
Terminals			4C.01/4C.02		4C.51/4C.52	
Wire strip length		mm	8		8	
Screw torque		Nm	0.8		—	
Max. wire size			solid cable	stranded cable	solid cable	stranded cable
		mm²	1x6/2x2.5	1x4/2x2.5	2x(0.2...1.5)	2x(0.2...1.5)
		AWG	1x10/2x14	1x12/2x14	2x(24...18)	2x(24...18)

Contact specification

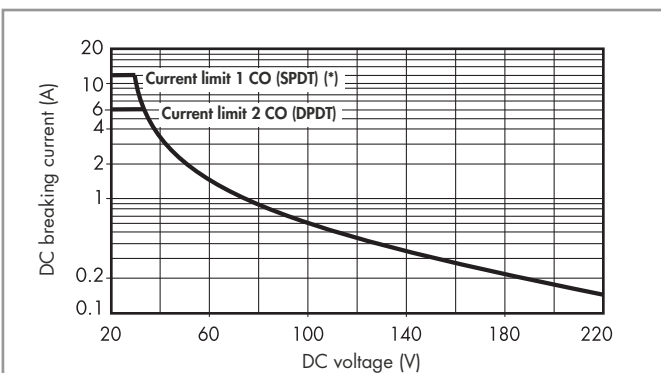
F 4C - Electrical life (AC) v contact current
Types 4C.02/52



F 4C - Electrical life (AC) v contact current
Types 4C.01/51



H 4C - Maximum DC1 breaking capacity



(*) Type 4C.01= 12 A, Type 4C.51= 10 A

- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of $\geq 100 \cdot 10^3$ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load. Note: the release time for the load will be increased.

Coil specifications

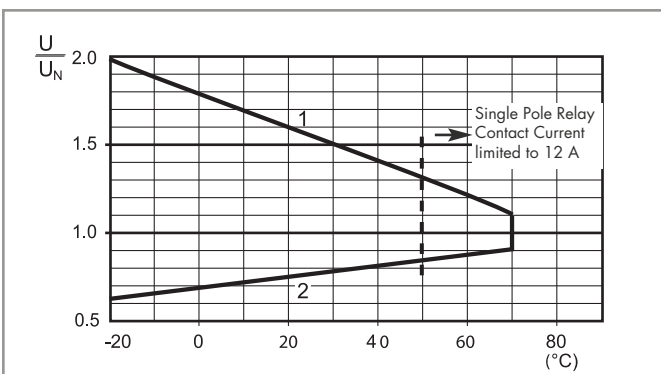
DC coil data

Nominal voltage U_N V	Coil code	Operating range		Resistance R Ω	Rated coil consumption I at U_N mA
		U_{min} V	U_{max} V		
12	9.012	8.8	13.2	300	40
24	9.024	17.5	26.4	1,200	20
125	9.125	91.2	138	32,000	3.9

AC coil data

Nominal voltage U_N V	Coil code	Operating range		Resistance R Ω	Rated coil consumption I at U_N mA
		U_{min} V	U_{max} V		
12	8.012	9.6	13.2	80	90
24	8.024	19.2	26.4	320	45
110	8.110	88	121	6,900	9.4
120	8.120	96	132	9,000	8.4
230	8.230	184	253	28,000	5

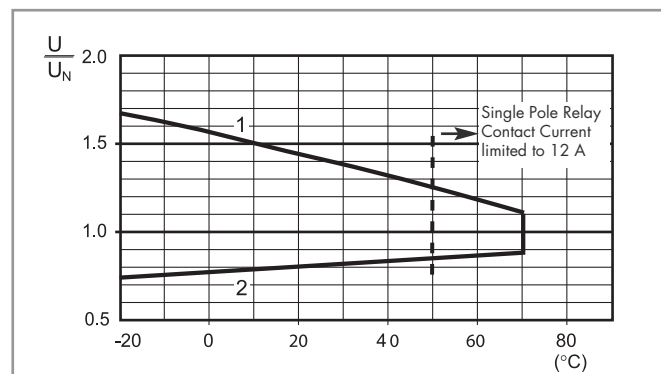
R 4C - DC coil operating range v ambient temperature



- 1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

----- Temperature limit for the single pole version under full 16 A contact current.

R 4C - AC coil operating range v ambient temperature



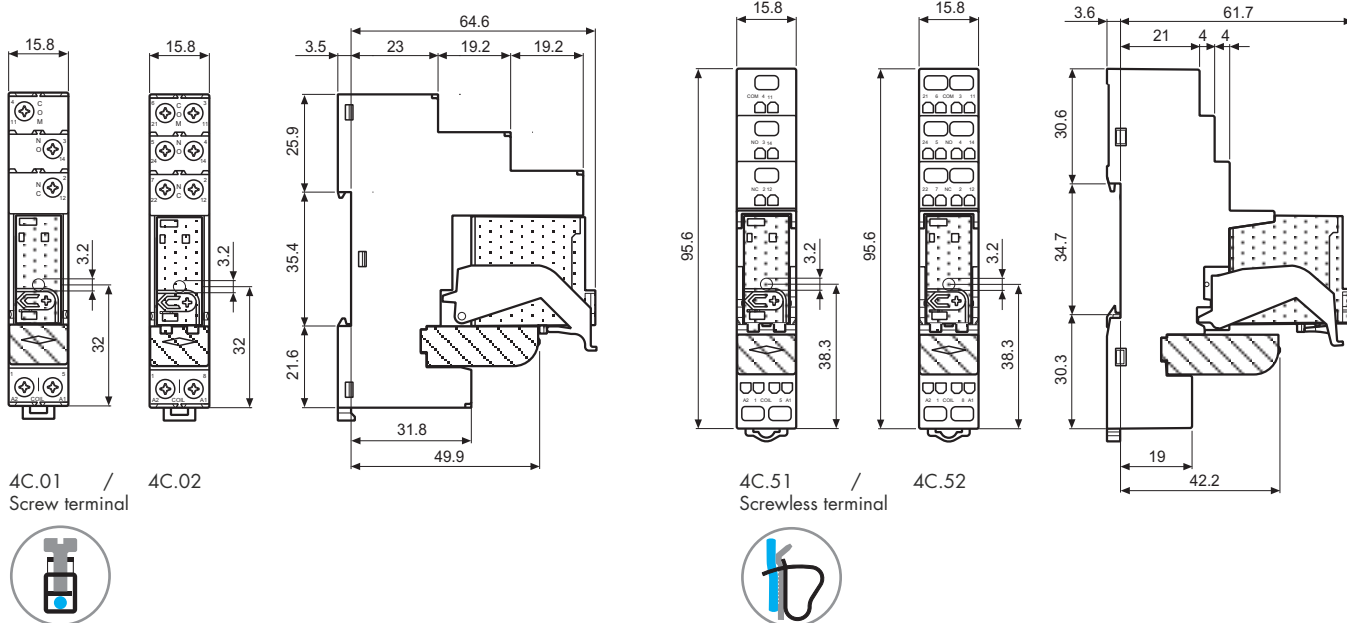
- 1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

Combinations

 Certain relay/socket combinations

Code	Type of socket	Type of relay	Module	Retaining clip
4C.01	97.01	46.61	99.02	097.01
4C.02	97.02	46.52	99.02	097.01
4C.51	97.51	46.61	99.02	097.01
4C.52	97.52	46.52	99.02	097.01

Outline drawing



Accessories



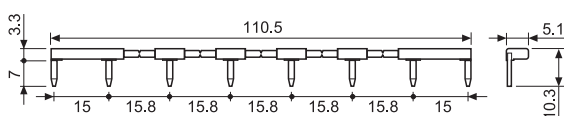
095.18

8-way jumper link for 4C.01 and 4C.02

Rated values

095.18 (blue)

10 A - 250 V



060.72

Sheet of marker tags, plastic, 72 tags, 6x12 mm

060.72

Packaging code

How to code and identify retaining clip and packaging options for relay interface module.

Example:

4 C . 0 1 . 9 . 0 2 4 . 0 0 5 0 S P A

A Standard packaging
B Blister packaging

SP Plastic retaining clip

MODEL #: IGNITION VER. 7.9



What's New in Ignition v7.9

**See, Maintain, and Manage Your
Enterprise with Ease**

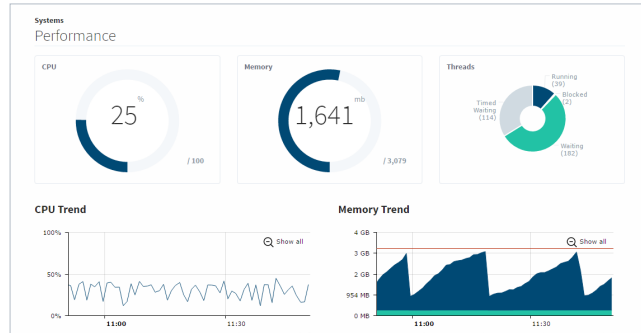
Ignition by Inductive Automation is the industry's only server-centric industrial automation software platform with unlimited licensing, built for connecting all your industrial devices, databases, and business data together in one central location. Now, with the new Ignition version 7.9, we've made it easier than ever to get, see, maintain, and manage your Ignition systems across your entire enterprise.

What's New in Ignition! v7.9

Gateway Status Section

Improved Troubleshooting

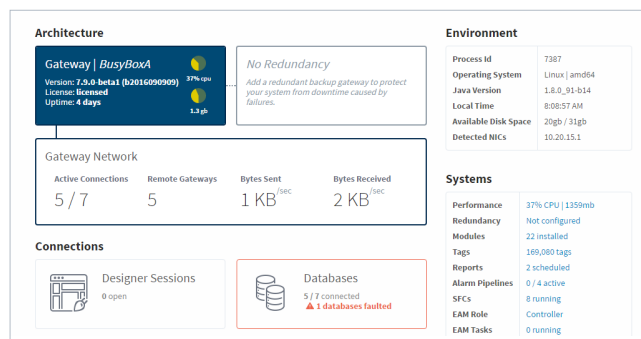
Rapidly pinpoint trouble spots in your Ignition Gateway in the revamped Gateway Status section. Rebuilt from the ground up, the new Status section improves your ability to troubleshoot and monitor the status of your Ignition installation.



Visualize your Gateway's status in the performance overview.

At-a-Glance Informational Tools

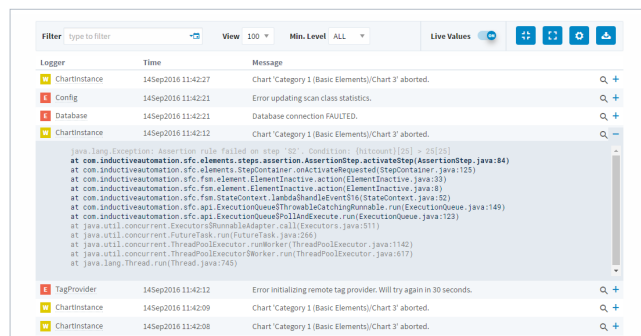
Users now see improved at-a-glance information as well as tools that allow for deeper insight into what is happening inside an Ignition Gateway. For example, a subsystem may be overloaded and using too much CPU, or a connection to an external system may be faulty. In Ignition v7.9, it's now easier to quickly identify these problems and determine the steps to resolve them.



Resolve system issues more quickly with new tools to check into your Ignition system's architecture, connections, and more.

Annotated Logging System

The new system can annotate messages with contextual information, so it's easier for users to dig deep into the logging system with greater precision. The log information is searchable and filterable, allowing for precise pinpointing of diagnostic messages in the log history.



Search and filter your log information to diagnose problems more easily.

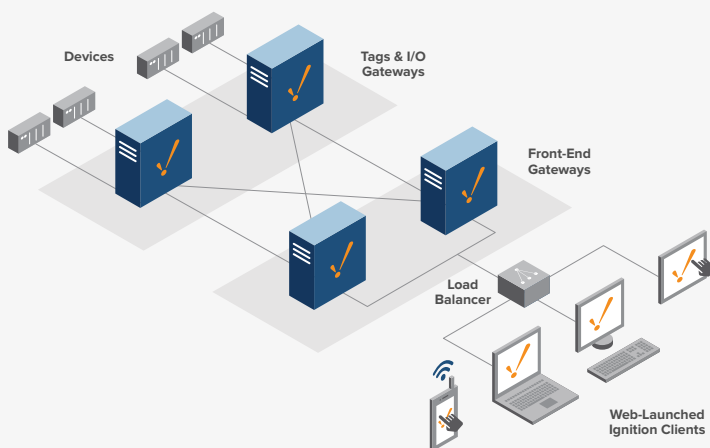
What's New in Ignition! v7.9

Distributed Services on the Gateway Network

The new Distributed Services feature on the Gateway Network unlocks architectural possibilities for Ignition users. Ignition Gateways can now share unprecedented information between each other via a secure, high-performance network. New kinds of hub-and-spoke architectures and horizontal scale-out are now easy to achieve using Distributed Services that let Gateways share tags, alarms, and more. All services can be configured with fine-grained security based on the new Security Zone paradigm.

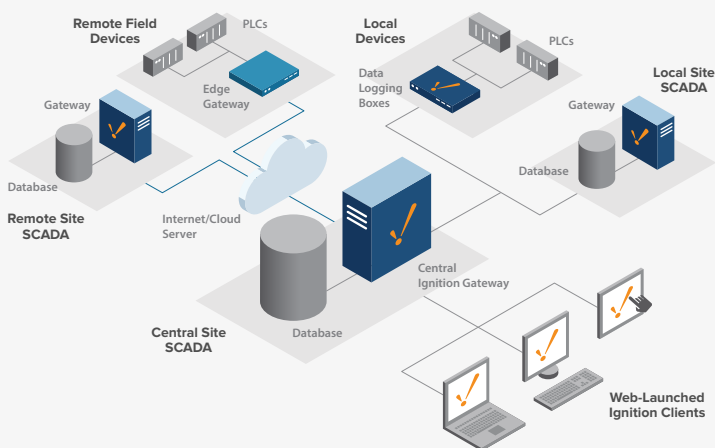
Scale-Out Architecture

The scale-out architecture links together several Ignition Gateways to form a decentralized system. The workload is split between tags and I/O Gateways that handle device data and front-end Gateways that handle client applications. This architecture scales out easily without overloading any single Gateway.



Hub & Spoke Architecture

In this architecture, multiple local and remote sites are linked together by a central Ignition Gateway. Each site is fully independent, operating with its own history, alarms, and clients, with the client Gateway being used for coordination and long-term history storage.



What's New in Ignition! v7.9

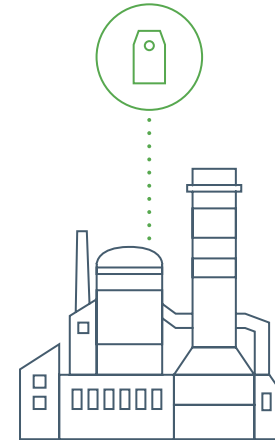
Distributed Services in Ignition v7.9

Remote Tag Provider

The Remote Tag Provider lets you view and utilize a Tag Provider from a different Gateway. It supports browsing, real-time value subscriptions, and full read/write/edit capabilities. Furthermore, multiple facilities are provided for accessing remote alarm status and tag history.

By utilizing Remote Tag Providers, you can make data available to other Gateways with minimal configuration. Furthermore, since only the currently subscribed tags are monitored, Remote Tag Providers can be an extremely effective means for scaling up support for many clients, by allowing you to create dedicated tag servers that are separated from the overhead of executing tags, polling devices, and so on.

Remote Tag Providers are built directly into the platform, and available in all editions of Ignition.



Remote History Provider

The Remote History Provider lets you access both the query and storage functionalities of a History Provider on a different Gateway. When storing to a remote connection, data is transferred through an efficient and compressed encoding, dramatically reducing the transfer cost compared to direct database access. By communicating directly with another Gateway, security is configured through the function-specific Service Security Policy system, built around Security Zones, which is more flexible and easier to configure than most database security models.

When querying historical data, all data is streamed and automatically aggregated from multiple servers, ensuring minimal overhead on the source servers, and seamless results on the querying side.

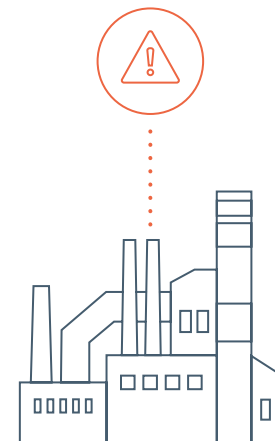
Remote History Providers are provided through the Tag Historian Module. As with the standard features of the module, storage requires a valid license on both sides, while query access is allowed at any time.



Remote Alarm Provider

The Remote Alarm Provider offers several ways to utilize the alarm notification capabilities of a remote Ignition Gateway. Alarms can be sent through a central Gateway, with full support for remote acknowledgment delivery. This means that you can manage your Email, Voice, and SMS equipment in a central location, and provide those services to a multitude of Gateways.

After configuring a remote alarm provider, the Ignition Gateway will automatically expose the alarm pipelines configured on the remote system. Tags can then target those pipelines directly, with no further configuration required.



What's New in Ignition! v7.9

Alternatively, custom pipelines can be created, and can utilize the remote notification profile through the Notification Block, expanding the already significant power of alarm pipelines to include the notification capabilities of other Gateways.

The Remote Alarm Provider is provided by the Alarm Notification Module, which must be present on all Gateways involved. However, notification modules such as Voice, SMS, and so on, only need to be present on the Gateways that are ultimately executing the notification.

Community-Requested Features

It wouldn't be an Ignition release without a host of new features inspired by feedback from the community of Ignition users around the globe. Ignition v7.9 delivers many new features requested by our enthusiastic user base.



Global Templates in the Vision Module

Share all your Vision templates along all projects on a Gateway using the new Global Templates. Combine this with the Enterprise Administration Module, and you could set up a set of standard templates that is synchronized across an entire enterprise.



First-Class Multi-Monitor Support in the Vision Module

Create a seamless experience for multi-monitor workstations. The Vision Module now lets you open up multiple Vision client frames to occupy multiple monitors from the same Vision client instance. Each client frame shares credentials and client tags, and can directly interact with other client frames, allowing for an improved experience for multi-monitor setups.



Security Zones

Set security restrictions for various services based on where the call is coming from. Security Zones can be thought of as User Roles for machines and connections, based on IP address, machine name, etc.



Multiple Licenses

In order to better support our community of third-party module authors, we now allow for multiple license keys to be installed on a single Gateway. In this way, we give more control and autonomy to third-party module authors to sell their modules in a manner that most suits their market.

What's New in Ignition! v7.9



Internal User Source Password Policies

It's easy to natively use Ignition to comply with any password policy requirements through Ignition's built-in user source. It now supports password expiration, complexity requirements, and password re-use prevention.



OPC Array Read/Write Support

Write support has been added to array items for both memory and OPC tags. When supported by the server, individual elements and ranges of elements may be written as well.



ARM Support

Ignition v7.9.0 now includes a build targeting Linux systems based on the ARM architecture. Supported versions are 32-bit hard-float ARMv7 and ARMv8.



Vision Module Popup Movement Restriction

Prevent Vision popups from being dragged beyond the frame boundaries to ensure consistent sizing of primary windows.



Modbus Write Optimization Options

Limit the size of write requests via the new configuration options.



Enable/Disable UA Connections Via Scripting

Dynamically enable and disable configured OPC-UA connections through new scripting calls.

Supported Operating Systems

Windows Server 2008/2012
Windows 7, 8, and 10
Ubuntu Linux 12.04 or later
Other Java SE-enabled OSes¹

Requirements

Java SE 8 (server)
Java SE 6, 7, or 8 (client)
1024 MB RAM²
1 GB free HD space

Footnotes

¹ Ignition is compatible with any Java SE 8-enabled OS. Full support is only offered for listed OSes.

² Requirements vary by usage.

Long-Term Support

Inductive Automation will support Ignition v7.9 for five years beginning with the date of its original dot-zero release (i.e., until October 2021).

Supported Databases

Microsoft® SQL Server
MySQL
Oracle
PostgreSQL

To learn more about Ignition v7.9, please contact an account rep at: **800.266.7798, ext. 247**

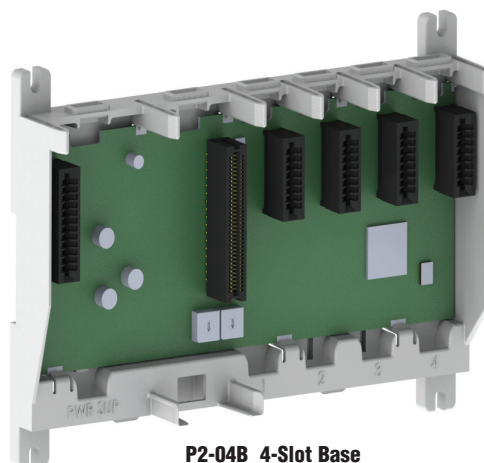
Bases

MODEL #: P2-11B

P2-04B	\$69.00
P2-07B	\$99.00
P2-11B	\$129.00
P2-15B	\$155.00

The P2-04B, P2-07B, P2-11B, and P2-15B are 4, 7, 11, and 15-slot I/O bases respectively.

See Dimensions and Installation for base dimensions.



P2-04B 4-Slot Base

Base Specifications

Input or Output Modules per Base	4, 7, 11 , or 15
Power Supply Slots	1 (For P2-01AC or P2-01DCAC)
CPU Slots	1 (P2-550)
Module Types Supported	Discrete, analog and specialty
Module Placement Restrictions	None. Any I/O module may be installed in any I/O slot without power supply budget or module type restrictions.
I/O Module Hot Swap Support	Yes. (All discrete, analog and specialty modules can be software enabled for Hot Swap operation)
Module Keying	Electronic to slot
Maximum Number of Local Bases	1

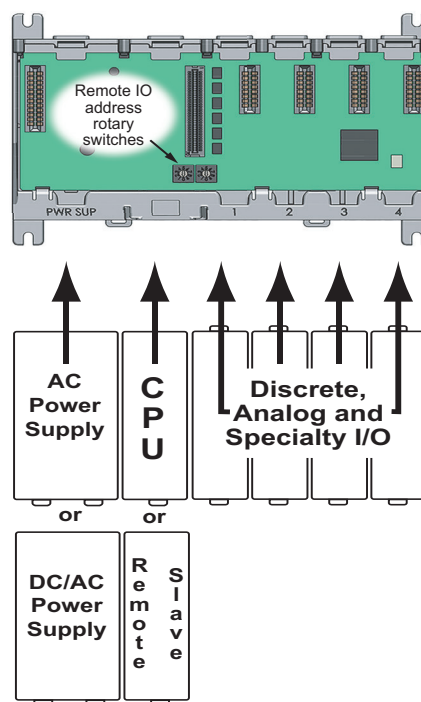
General Specifications

Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Heat Dissipation	3W
Weight	P2-04B: 204g (7.2 oz) P2-07B: 294g (10.4 oz) P2-11B: 430g (15.2 oz) P2-15B: 521g (18.4 oz)
Agency Approvals**	UL508 file E139594, Canada & USA CE (EN61131-2*)

*Meets EMC and Safety requirements. See the Declaration of Conformity for details.

**To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific component part number web page.

Base Configuration



Dimensions and Installation

It is important to review and understand the installation requirements for your Productivity2000 system. Your knowledge of these requirements will help ensure that your system operates within safe environmental and electrical limits.

Plan for Safety

This catalog should never be used as a replacement for the product inserts and user manual. Each base, CPU, power supply, I/O module, and specialty module comes with a product insert. You can purchase, download for free, or view online the Productivity2000 user manual (P2-USER-M). These documents, along with the software help files, contain important safety information that must be followed.

The system installation should comply with all appropriate electrical codes and standards.

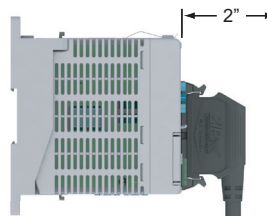
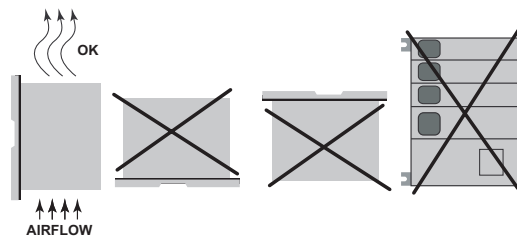
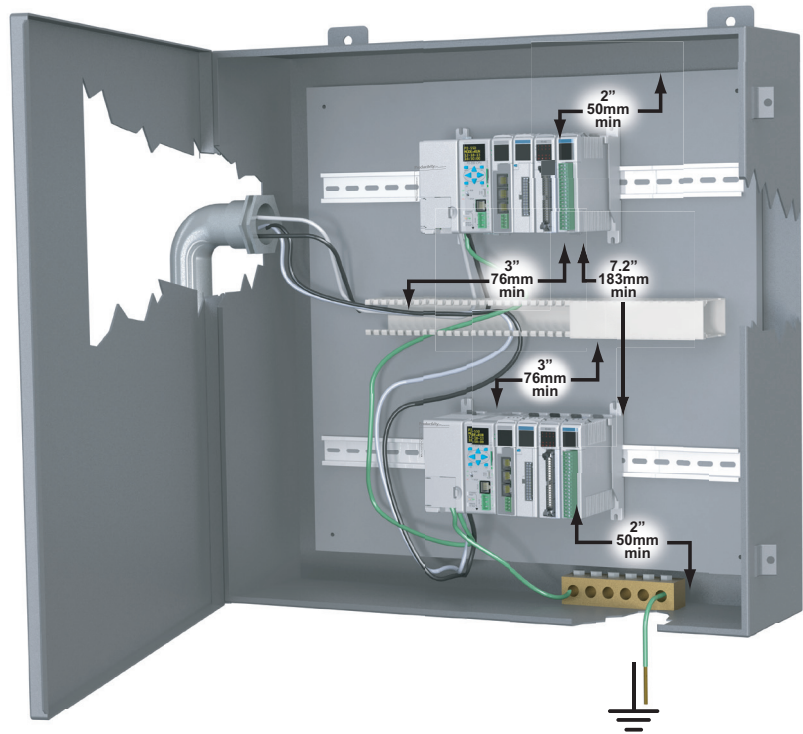
Enclosures

Your selection of a proper enclosure is important to ensure safe and proper operation of your Productivity2000 system. Applications for the Productivity2000 system vary and may require additional hardware considerations. The minimum considerations for enclosures include:

- Conformance to electrical standards
- Protection from the elements in an industrial environment
- Common ground reference
- Maintenance of specified ambient temperature
- Access to the equipment
- Security or restricted access
- Sufficient space for proper installation and maintenance of the equipment

Mounting Position

Mount the bases horizontally, as shown in the illustration, to provide proper ventilation. Do not mount the bases vertically, upside down, or on a flat horizontal surface.



NOTE: Add 2" to mounting depth when using ZIPLink cable.

Dimensions and Installation

Mounting Clearances

Provide a minimum clearance of 2 inches (50mm) between the bases and all sides of the enclosure. Allow extra door clearance for operator panels and other door mounted items. There should be a minimum of 3 inches (76mm) clearance between the base and any wire duct, and a minimum of 7.2 inches (183mm) from base to base in a multiple base installation.

Grounding

A good common ground reference (earth ground) is essential for proper operation of the Productivity2000 system. One side of all control circuits, power circuits and the ground lead must be properly connected to earth ground by either installing a ground rod in close proximity to the enclosure or by connecting to the incoming power system ground. There must be a single-point ground (i.e. copper bus bar) for all devices in the enclosure that require an earth ground.

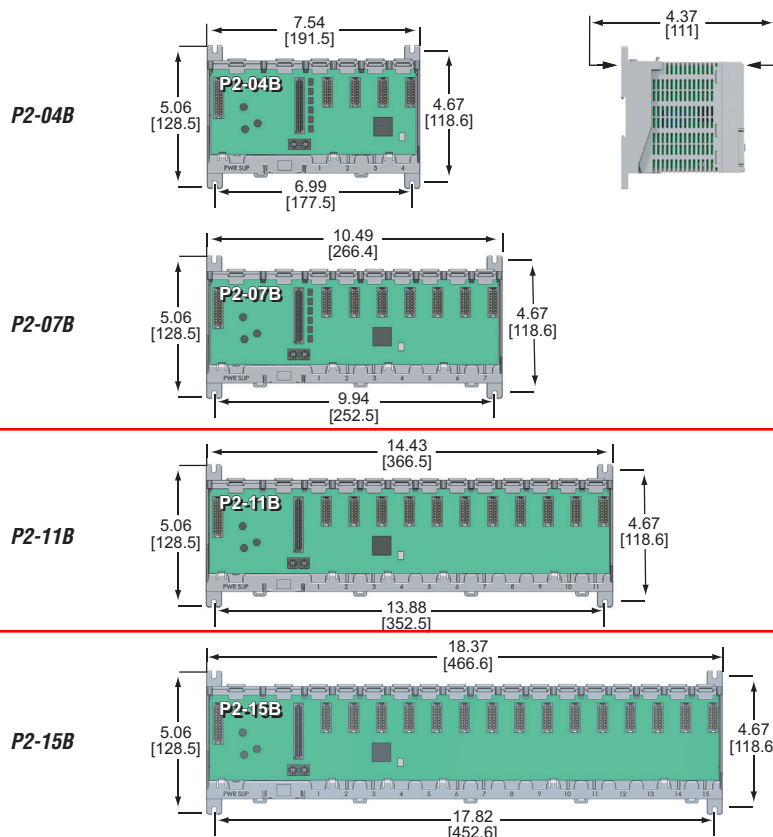
Temperature Considerations

The Productivity2000 system should be installed in an environment operating within the equipment operating temperature specifications. If the temperature deviates above or below the specification, measures such as cooling or heating the enclosure should be taken to maintain the specification.

Power Considerations

The Productivity2000 system is designed to be powered by the 110/240 VAC Productivity2000 power supply. The Productivity2000 has achieved CE certification without requiring EMF/RFI line noise filters on the AC power supply. Please review the "EU Directives" document, located in the User Manual or at www.productivity2000.com, for applications which require CE Compliance.

Base Dimensions, inches[mm]



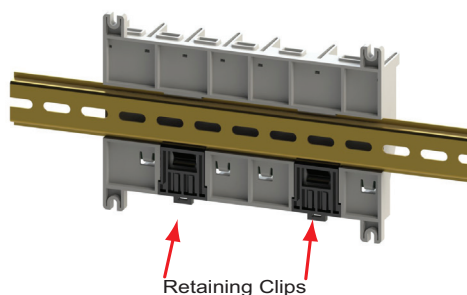
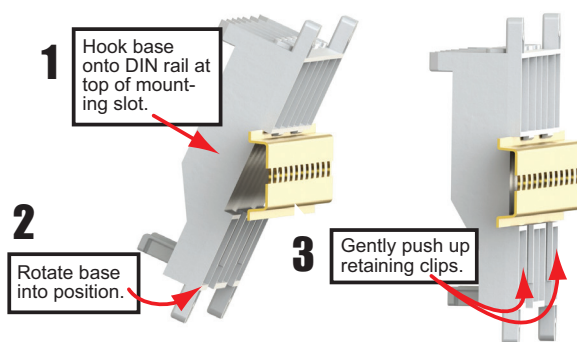
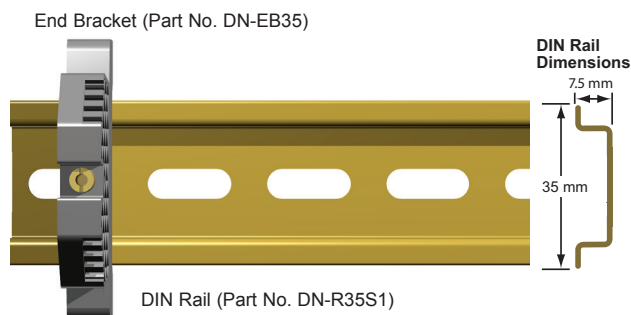
Base Installation

Using Mounting Rails

The Productivity2000 bases can be secured to the cabinet using mounting rails. Use rails that conform to DIN EN standard 50022. ADC offers a complete line of DIN rail, DINnectors and DIN rail mounted apparatus. The rails are approximately 35mm high, with a depth of 7.5 mm. When mounting the base on a rail, consider using end brackets on each side of the base. The end brackets keep the base from sliding horizontally along the rail. This minimizes the possibility of accidentally pulling the wiring loose.

Several retaining clips are located on the lower rear surface of the base of the base. To secure the base to a DIN rail, place the base onto the rail and gently push up on the retaining clips. The clips lock the base onto the rail.

To remove the base, pull down on the retaining clips, lightly pull forward from the bottom and rotate the base, pulling it away from the rail.



Power Supplies

P2-01AC

\$69.00

The P2-01AC Input Power Supply provides isolated power to the Productivity2000 base from an external 100-240 VAC source.

No power budgeting is required. Any combination of I/O modules may be installed in any slots without power budget considerations.



AC Input Power Supply

IMPORTANT!



Hot-Swapping Information

NOTE: This device cannot be Hot Swapped.

P2-01AC Specifications

P2-01AC User Specifications

Input Voltage Range (Tolerance)	100 to 240 VAC (-15% / +10%)
Rated Operating Frequency	50 to 60 Hz with $\pm 5\%$ tolerance
Maximum Input Power	37.4 W
Cold Start Inrush Current	23.6 A
Maximum Inrush Current (Hot Start)	25.6 A
Input Fuse Protection (Internal)	Micro fuse 250V, 2A, Non-replaceable
Efficiency	75%
Output	24VDC, 0.85 A 3.3 VDC, 3.81 A
Maximum Output Power	29W Combined
Heat Dissipation	8.4 W
Isolated User 24VDC Output	None
Output Protection for Over Current, Over Voltage, and Over Temperature	Self resetting for both voltage outputs to base
Under Input Voltage Lock-out	55–65 VAC
Over Input Voltage Lock-out	265–280 VAC
Input Transient Protection	Varistor, plus input choke and filter
Operating Design Life	10 years at full load at 40°C ambient and 5 years at 60°C ambient

P2-01AC General Specifications

Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Enclosure Type	Open Equipment
Voltage Withstand (dielectric)	2100 VDC applied for 2 seconds
Insulation Resistance	>10M Ω @ 500VDC
Module Location	Power Supply slot in a Productivity2000 System.
EU Directive	See the "EU Directive" topic in the Productivity Suite Help File. Information can also be obtained at: www.productivity2000.com
Weight	90g (3.2 oz)
Agency Approvals**	UL508 file E139594, Canada & USA CE (EN61131-2*)

*Meets EMC and Safety requirements. See the Declaration of Conformity for details.

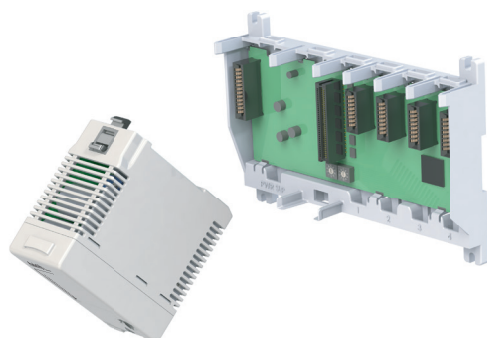
**To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific component part number web page.

Terminal Block Specifications

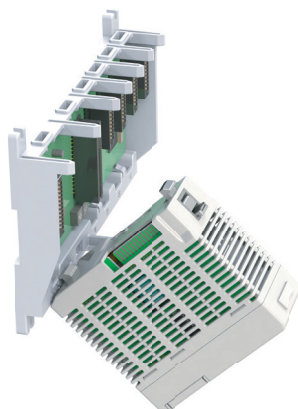
Number of Positions	4 Screw Terminals
Wire Range	22–14 AWG (0.324 to 2.08 sq. mm) Solid Conductor 22–14 AWG (0.324 to 2.08 sq. mm) Stranded Conductor 3/64 inch (1.2 mm) insulation maximum
Screw Driver Width	1/4 inch (6.5 mm) maximum
Screw Size	M3 size
Screw Torque	7–9 inch-pounds (0.882 - 1.02 N-m)

Power Supply

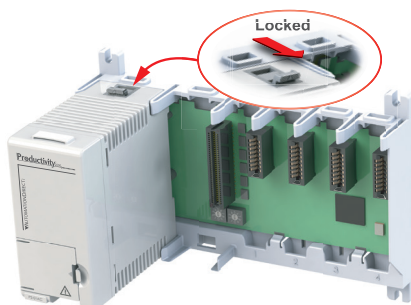
Power Supply Installation



Step One:
Locate the left most socket in the base.



Step Two:
Insert the Power Supply at a 30° angle into the notch located at the bottom of the base and rotate up until seated in socket.



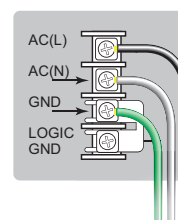
Step Three:
Snap the top retaining tab into the locked position.

Power Connections

P2-01AC



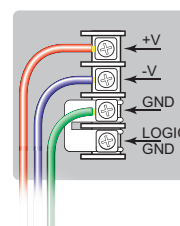
100-240 VAC



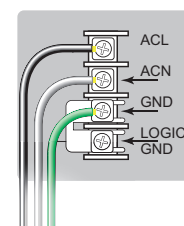
P2-01DCAC



12-24 VDC



24VAC



Grounding

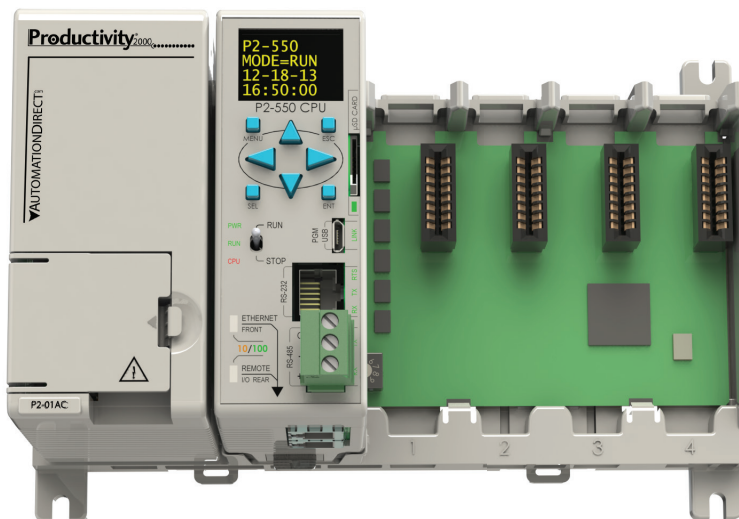
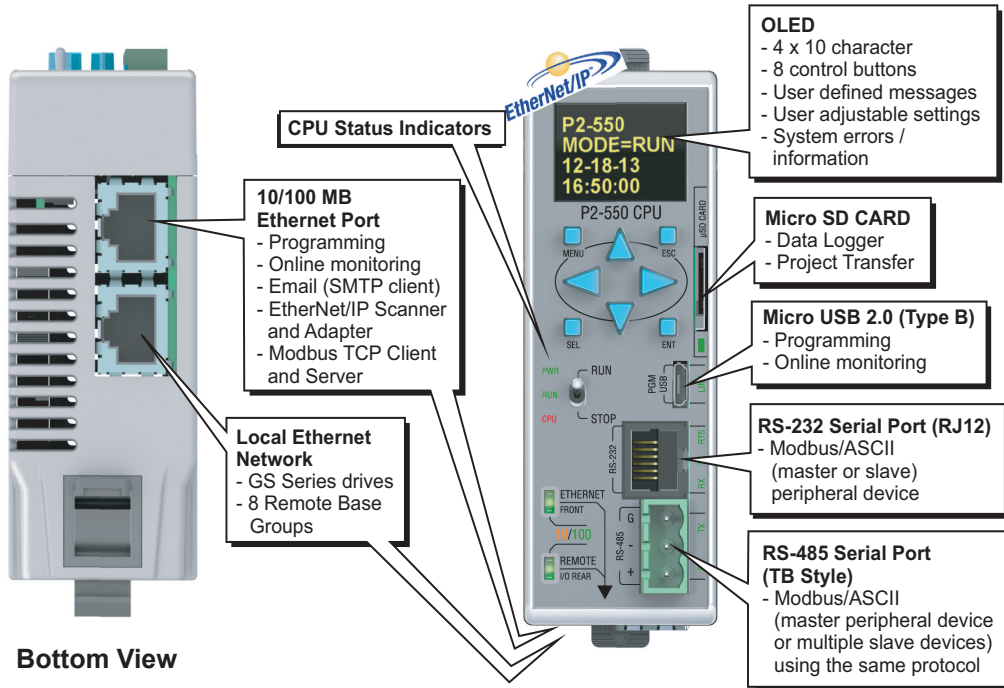
A good common ground reference (earth ground) is essential for proper operation of the Productivity2000 system. One side of all control circuits, power circuits and the ground lead must be properly connected to earth ground by either installing a ground rod in close proximity to the enclosure or by connecting to the incoming power system ground. There must be a single-point ground (i.e. copper bus bar) for all devices in the enclosure that require an earth ground.

CPU Module

MODEL #: P2-550

P2-550 \$255.00

The P2-550 is a high-performance CPU which has communications ports that support Ethernet and serial devices. The P2-550 also includes a 4-line x 10-character OLED local display and a USB programming port.



Each Productivity2000 system base requires a CPU module be mounted in the controller slot of the unit. The CPU stores and executes the user's program.

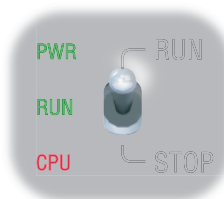
CPU Module

CPU Run/Stop Switch

RUN position	Executes user program, run-time edits possible
STOP position	Does not execute user program, normal program load position

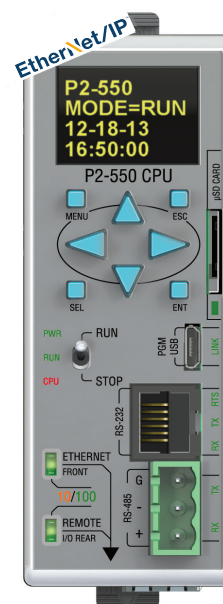
CPU Status Indicators

PWR	Green LED is illuminated when power is ON
RUN	Green LED is illuminated when CPU is in RUN mode
CPU	Red LED is illuminated during power ON reset, power down, or watch-dog time-out.



CPU Specifications

User Memory	50MB (Includes program, data and documentation)														
Memory Type	Flash and Battery Backed RAM														
Retentive Memory	500kB														
Scan Time	500µs (3K Boolean, 240 I/O)														
Display	OLED, 4x10 characters, 8 control buttons; OLED characters are 7x12 with a dot pitch of 0.245 mm; 1.72 mm x 2.94 mm														
Communications; 5 Integrated Ports	USB IN: Programming, Monitoring, Debug, Firmware ETHERNET: (10/100 Mbps Ethernet) Programming, Monitoring, Debug, Firmware, Email SMTP Client, Modbus TCP Client (32 Servers) and Server (16 Clients), EtherNet/IP Scanner (32 Adapters) and Adapter (4 scanners) with 8 connections per device. REMOTE I/O: 16 GS-EDRV100 (GS Drives), 8 Remote Base Groups RS-232: (RJ12, 1200–115.2k baud) ASCII, Modbus RS-485: Removable Terminal Included, (1200–115.2k baud) ASCII, Modbus RTU														
Data Logging/Project Transfer	Micro SD card slot														
Hardware Limits of System	240 Hardware I/O Points: All 16-point I/O Modules 16 GS Series Drives as Local Network I/O 8 Remote Base Groups														
Instruction Types	<table> <tr> <td>Application Functions</td><td>PID</td></tr> <tr> <td>Array Functions</td><td>Program Control</td></tr> <tr> <td>Counters/Timers</td><td>String Functions</td></tr> <tr> <td>Communications</td><td>System Functions</td></tr> <tr> <td>Data Handling</td><td>Contacts</td></tr> <tr> <td>Drum Sequencers</td><td>Coils</td></tr> <tr> <td>Math Functions</td><td></td></tr> </table>	Application Functions	PID	Array Functions	Program Control	Counters/Timers	String Functions	Communications	System Functions	Data Handling	Contacts	Drum Sequencers	Coils	Math Functions	
Application Functions	PID														
Array Functions	Program Control														
Counters/Timers	String Functions														
Communications	System Functions														
Data Handling	Contacts														
Drum Sequencers	Coils														
Math Functions															
Real Time Clock Accuracy	±5s per day typical at 25°C -15s per day maximum at 60°C														



IMPORTANT!



Hot-Swapping Information

NOTE: This device cannot be Hot Swapped.

CPU Module

Specifications

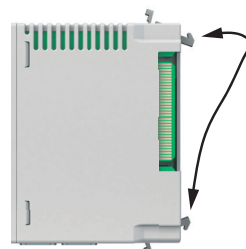
General Specifications

Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Heat Dissipation	3.81 W
Enclosure Type	Open Equipment
Module Location	Controller slot in the local base in a Productivity2000 System.
EU Directive	See the "EU Directive" topic in the Productivity Suite Help File. Information can also be obtained at: www.productivity2000.com
Weight	158g (5.6 oz)
Agency Approvals**	UL508 file E139594, Canada & USA CE (EN61131-2)*

*Meets EMC and Safety requirements. See the Declaration of Conformity for details.

**To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific component part number web page.

CPU Installation



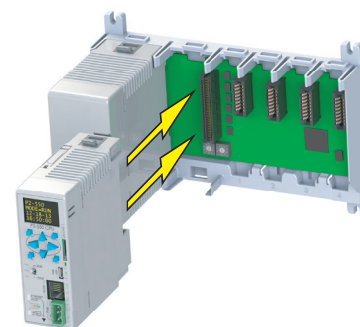
Step One:

Unlock both locking tabs

WARNING: Do not apply field power until the following steps are completed. .

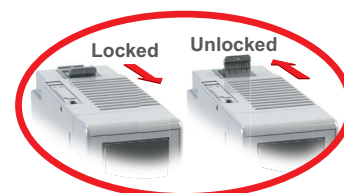
Step Two:

Seat CPU on support platform and push towards base until circuit board is fully engaged into connector



Step Three:

Snap retaining tab into the locked position.



WARNING: Explosion hazard – Do not connect or disconnect or operate switches while circuit is live unless the area is known to be non-hazardous. Do not hot-swap modules unless the area is known to be non-hazardous.

OLED Message Display

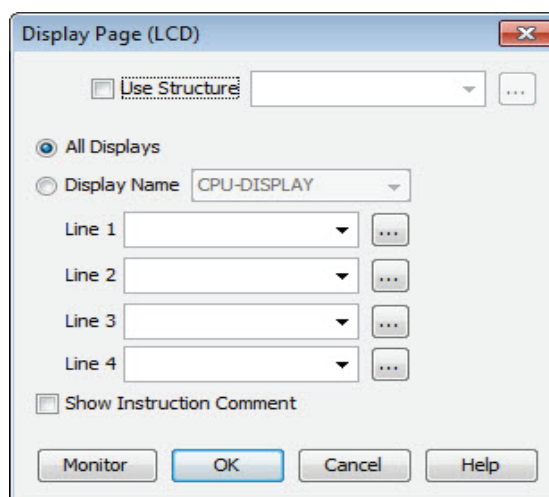
The P2-550 CPU incorporates a 4-line by 10-character OLED (Organic Light-Emitting Diode) display for system alarms, information and for displaying user-defined messages. OLED characters are 7x12 (1.72 mm x 2.94 mm) with a dot pitch of 0.245 mm.

Control buttons located beneath the OLED display allow the user to navigate through menu items. These buttons also permit local configuration of time and date settings.

User defined display messages may be configured using the Productivity Suite Programming Software. A "Display Page" dialog box allows the user to program text into user-defined tags that will be displayed based on the programmed ladder execution.

OLED Control Buttons

Menu Button	Access the OLED menu
ESC Button	Returns to the previous screen
SEL Button	Selects the desired menu option
ENT Button	Starts the selected process
Directional Arrows	Moves the cursor around the 4 Row x 10 Column OLED



CPU Module

D2-BAT-1 \$13.00

Battery (Replacement)

A battery is included with the P2-550 CPU module, but is not installed. The battery can be installed to retain the Time and Date along with any Tagname values that are set up as retentive.

The battery is not needed for program backup.

Battery (Optional)

D2-BAT-1

Coin type, 3.0 V Lithium battery, 560mA, battery number CR2354

Note: Although not needed for program backup, a battery is included with the P2-550. Install this battery if you want the CPU to retain the Time and Date along with any Tagname values that you have set up as retentive.

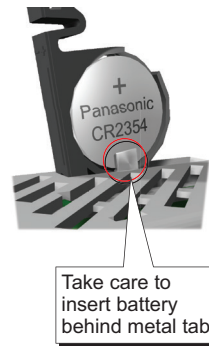
Step One:

Press spring lock and swing battery compartment away from CPU.



Step Two:

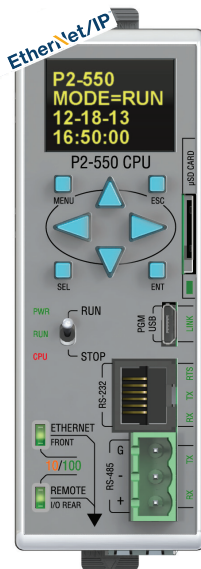
Insert battery and close compartment.



MICSD-16G \$25.50

Micro SD Card

Used for data logging or project transfers.



Micro SD Specifications

Port Name	MICRO SD			
Description	Standard Micro SD socket for data logging or program transfer			
Maximum Card Capacity	32GB			
Transfer Rate (ADATA microSDHC Class 4 memory card)	Mbps	Minimum	Typical	Maximum
	Read	14.3	14.4	14.6
	Write	4.8	4.9	5.1
Port Status LED	Green LED is illuminated when card is inserted/detected			



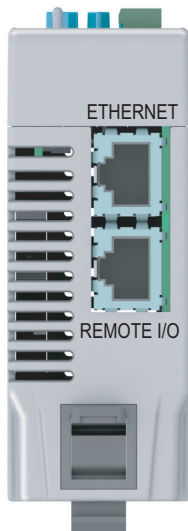
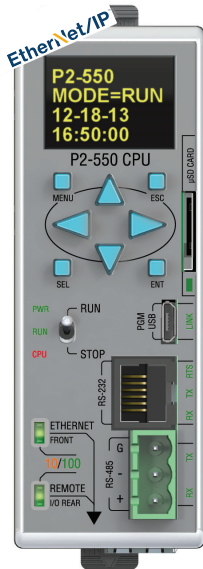
Pin	SD
1	DAT2
2	CD/DAT3
3	CMD
4	VDD
5	CLK
6	VSS
7	DAT0
8	DAT1

Note: Card not included with unit.

CPU Module

Port Specifications

P2-550



P2-550 BOTTOM VIEW

Ethernet Port (On bottom of CPU)

RJ-45 style connector used for:

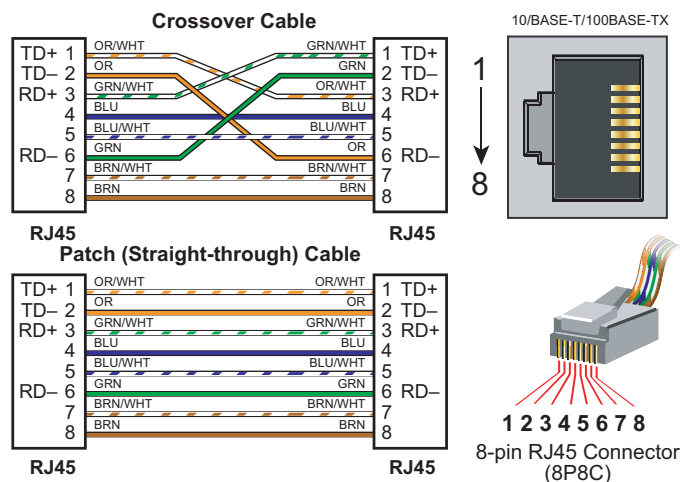
- Connection to a PC running the ProductivitySuite programming software
- Modbus TCP Client connections (Modbus requests sent from the CPU)
- Modbus TCP Server connections (Modbus requests received by the CPU)
- EtherNet/IP Scanner (32 Adaptors)
- EtherNet/IP Adapter (4 scanners) with 8 connections per device.
- Outgoing E-mail

Remote I/O Port (On bottom of CPU)

RJ-45 style connector used for connecting to a Remote I/O network consisting of GS-EDRV100 units connected to GS drives.

Ethernet Specifications

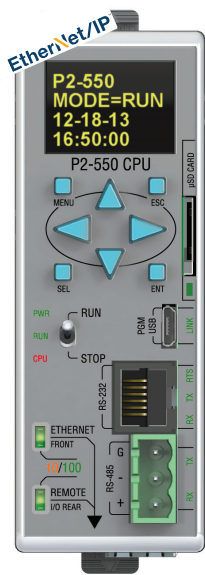
Port Name	ETHERNET	REMOTE I/O
Description	Standard transformer isolated Ethernet port with built-in surge protection for programming, online monitoring, Email (SMTP client), Modbus/TCP client/server connections (fixed IP or DHCP) and EtherNet/IP client/server connections.	Standard transformer isolated Ethernet port with built-in surge protection for connection to 16 GS Series Drives.
Transfer Rate	10Mbps (Orange LED) and 100Mbps (Green LED) [Auto-MDIX (cross-over)].	
Port Status LED	LED is solid when network LINK is established. LED flashes when port is active (ACT).	



CPU Module

Port Specifications

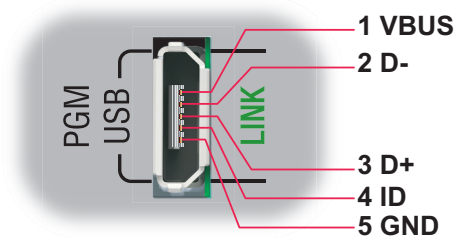
P2-550



MICRO USB Programming Port

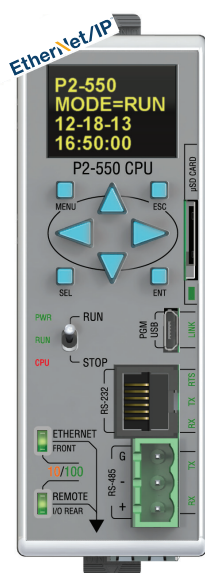
Used exclusively for connecting to a PC running the Productivity Suite programming software.

Micro USB Input Specifications	
Port Name	MICRO USB
Description	Standard Micro USB Slave input for programming and on-line monitoring, with built-in surge protection. Not compatible with older full speed USB devices.
Transfer Rate	480 Mbps
Port Status LED	Green LED is illuminated when LINK is established to programming software.
Cables	USB Type A to Micro USB Type B: 6ft cable part # USB-CBL-AMICB6 15ft cable part # USB-CBL-AMICB15



CPU Module

P2-550



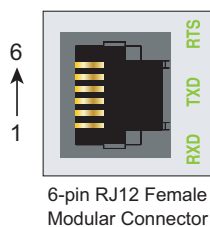
RS-232 Port

RJ-12 style connector used for:

- Modbus RTU Master connections
- Modbus RTU Slave connections
- ASCII full or half duplex communications
- Custom Protocol Incoming and Outgoing communications

RS-232 Specifications

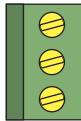
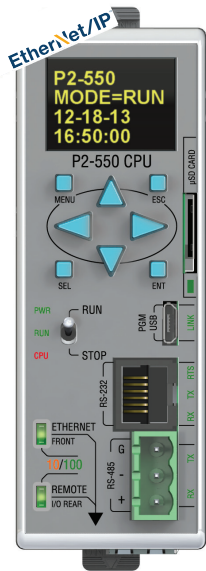
Port Name	RS-232
Description	Non-isolated RS-232 DTE port connects the CPU as a Modbus/ASCII master or slave to a peripheral device. Includes ESD and built-in surge protection
Data Rates	Selectable, 1200, 2400, 4800, 9600, 19200, 33600, 38400, 57600, and 115200 baud
+5V Cable Power Source	210mA maximum at 5V, $\pm 5\%$. Reverse polarity and overload protected
TXD	RS-232 Transmit output
RXD	RS-232 Receive input
RTS	Handshaking output for modem control
GND	Logic ground
Maximum Output Load (TXD/RTS)	3k Ω , 1000pf
Minimum Output Voltage Swing	$\pm 5V$
Output Short Circuit Protection	$\pm 15mA$
Port Status LED	Green LED is illuminated when active for TXD, RXD and RTS
Cable Options	EA-MG-PGM-CBL D2-DSCBL USB-RS232 with D2-DSCBL FA-CABKIT FA-ISOCAN for converting RS-232 to isolated RS-485



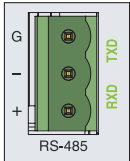
Pin #	Signal
6	GND Logic Ground
5	RTS RS-232 Output
4	TXD RS-232 Output
3	RXD RS-232 Input
2	+5V 210mA Maximum
1	GND Logic Ground

CPU Module

P2-550



Removable connector included.
Spare connectors available
(part no. P3-RS485CON).



Pin #	Signal
G	GND
-	TXD-/RXD-
+	TXD+/RXD+

RS-485 Port

A 3-pin removable terminal block used for:

- Modbus RTU Master connections
- Modbus RTU Slave connections
- ASCII Incoming and Outgoing communications
- Custom Protocol Incoming and Outgoing communications

RS-485 Port Specifications

Port Name	RS-485
Description	Non-isolated RS-485 port connects the CPU as a Modbus/ASCII master or slave to a peripheral device. Includes ESD/EFT protection and automatic echo cancellation when transmitter is active
Data Rates	Selectable, 1200, 2400, 4800, 9600, 19200, 33600, 38400, 57600, and 115200
TXD+/RXD+	RS-485 transceiver high
TXD-/RXD-	RS-485 transceiver low
GND	Logic ground
Input Impedance	19k Ω
Maximum Load	50 transceivers, 19k Ω each, 60 Ω termination
Output Short Circuit Protection	± 250 mA, thermal shut-down protection
Electrostatic Discharge Protection	± 8 kV per IEC1000-4-2
Electrical Fast Transient Protection	± 2 kV per IEC1000-4-4
Minimum Differential Output Voltage	1.5 V with 60 Ω load
Fail Safe Inputs	Logic high input state if inputs are unconnected
Maximum Common Mode Voltage	-7.5 V to 12.5 V
Port Status LED	Green LED illuminated when active for TXD and RXD
Cable Options	Recommend L19827-XXX from AutomationDirect.com

Removable Terminal Block Specifications

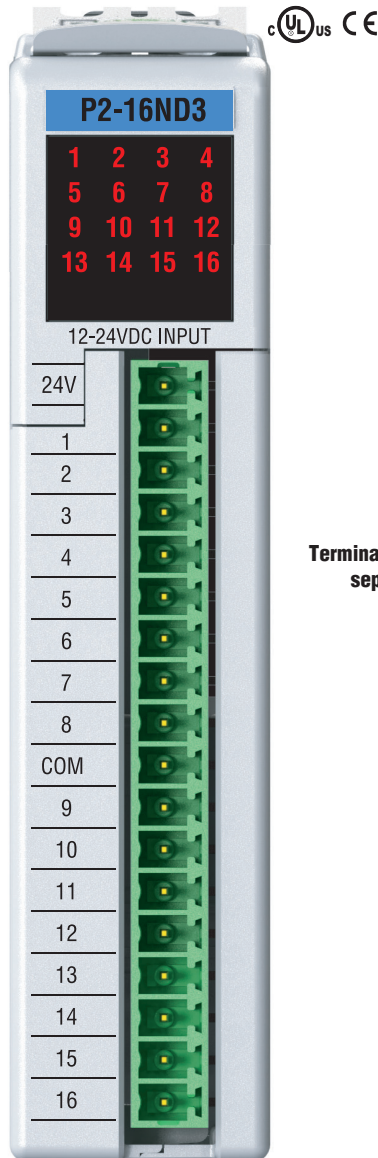
Part Number	P3-RS485CON
Number of Positions	3 Screw Terminals
Pitch	5mm
Wire Range	28–12 AWG Solid Conductor 30–12 AWG Stranded Conductor
Screw Driver Width	1/8 inch (3.175 mm) Maximum
Screw Size	M2.5
Screw Torque	4.5 lb-in (0.51 N-m)

DC Input Modules

MODEL #: P2-16ND3
P2-16ND3
\$69.00

Discrete Input

The P2-16ND3 DC Input Module provides sixteen 12-24 VDC sinking/sourcing inputs.



Input Specifications

Inputs per Module	16 (Sink/Source)
External 24VDC Power Required*	24VDC (-20% / +25%), 100mA
Input Voltage Range	12-24 VDC ($\pm 10\%$) $\leq$ External Voltage
Peak Voltage Range	26.4 VDC
Input Current (typical)	2.5 mA @ 12VDC 5mA @ 24VDC
Maximum Input Current	6mA @ 60°C (26.4 VDC)
Input Impedance	4.7k Ω @ 24VDC
ON Voltage Level*	≤ 4 VDC sourcing ≥ 12.5 VDC sinking
OFF Voltage Level	> 6 VDC sourcing < 8.5 VDC sinking
Minimum ON Current	2mA
Maximum OFF Current	1.5 mA
OFF to ON Response	Max. 2ms Typical 1ms
ON to OFF Response	Max. 2ms Typical 1ms
Status Indicators	Logic side (16 points)
Commons per Module	1 Isolated (16 points/common)

*External 24VDC is required for the module to operate and cannot drop below the channel input voltage:

External Supply Voltage	On Voltage Level
19.2 VDC	> 9.0 VDC
24.0 VDC	> 11.3 VDC
26.4 VDC	> 12.5 VDC

General Specifications

Surrounding Air Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	1800VAC applied for 1 second
Insulation Resistance	> 10 M Ω @ 500VDC
Heat Dissipation	3.5 W
Enclosure Type	Open Equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in a Productivity2000 System.
Field Wiring	Use ZIP Link Wiring System or removable terminal block (not included). See Wiring Solutions.
EU Directive	See the "EU Directive" topic in the Productivity Suite Help File. Information can also be obtained at: www.productivity2000.com
Weight	100g (3.5 oz)
Agency Approvals**	UL508 file E139594, Canada & USA CE (EN61131-2*)

*Meets EMC and Safety requirements. See the Declaration of Conformity for details.

**To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific component part number web page.

CPU	Firmware	Productivity Suite
P2-550	Version 1.2.1.16 or later	Version 2.1.x.x or later

We recommend using pre-wired **ZIP**Link cables and connection modules. See Wiring Solutions.

If you wish to hand-wire your module, removable terminal blocks are sold separately. Order part number P2-RTB or P2-RTB-1

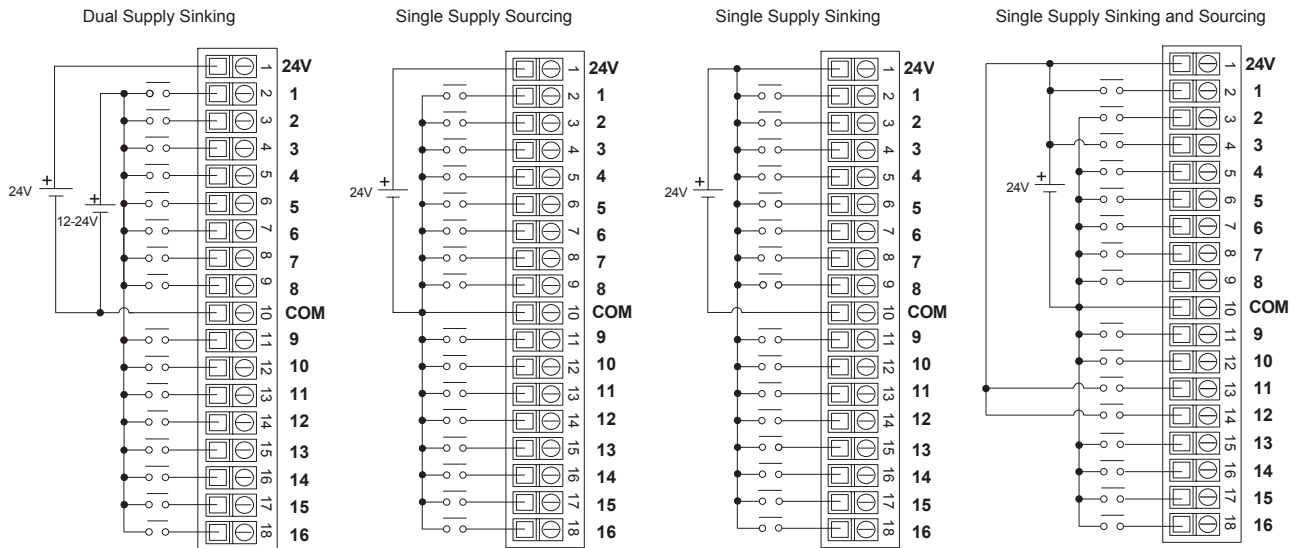


DC Input Modules

P2-16ND3 (cont'd)

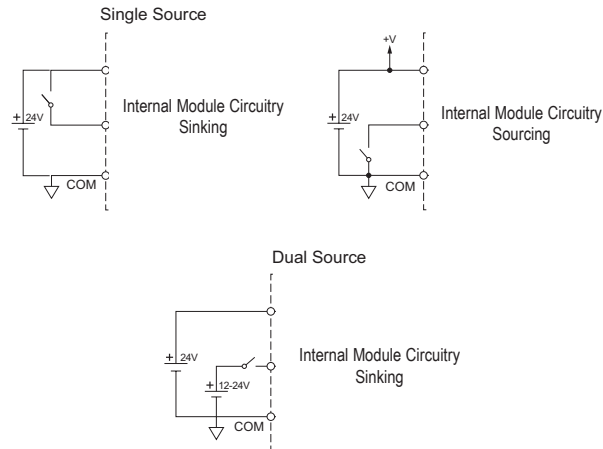
Removable Terminal Block Specifications		
Part Number	P2-RTB	P2-RTB-1
Number of Positions	18 Screw Terminals	18 Spring Clamp Terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Maximum 1/4 in (6–7 mm) Strip Length	28–16 AWG (0.081–1.31 mm ²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Maximum 19/64 in (7–8 mm) Strip Length
Conductors	"USE COPPER CONDUCTORS, 75°C" or Equivalent.	
Screw Driver Width	1/8 inch (3.8 mm) Maximum	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

Wiring Diagrams



1, 3, 11, & 12 Sinking Inputs
Remaining are Sourcing Inputs

Equivalent Input Circuit



Wiring I/O Modules

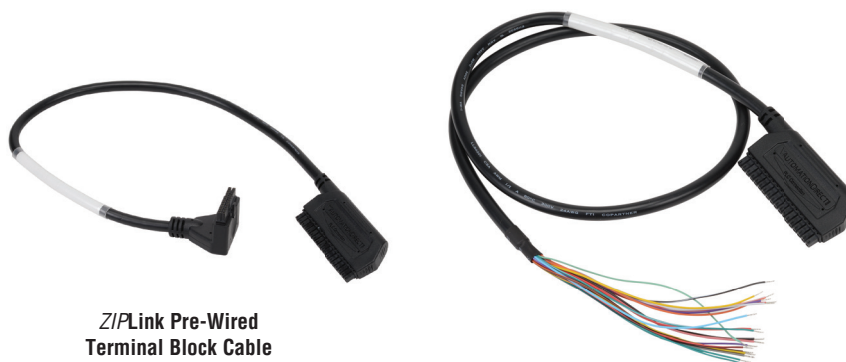
There are two available methods for wiring most I/O modules: The **ZIPLink** wiring system or hand wiring to the optional removable I/O module terminal blocks.

Note: Thermocouple and RTD modules are not compatible with the **ZIPLink** system and are shipped with the optional terminal blocks included.

ZIPLinks Wiring Systems

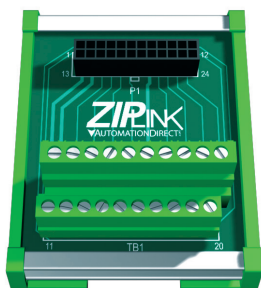
For wiring I/O modules, we strongly recommend using pre-wired **ZIPLink** wiring systems, which eliminate the need for hand wiring modules to terminal blocks.

See the selection matrix guide on the following pages.



**ZIPLink Pre-Wired
Terminal Block Cable**

ZIPLink Pigtail Cable



ZIPLink Module

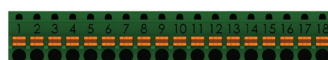
Removable Terminal Blocks

For most I/O modules you can also purchase a removable terminal block (part no. P2-RTB or P2-RTB-1).

Note: P2-RTB supplied with Thermocouple and RTD modules.



Removable Terminal Block P2-RTB



Removable Terminal Block P2-RTB-1

Terminal Block Removal





Wiring Solutions

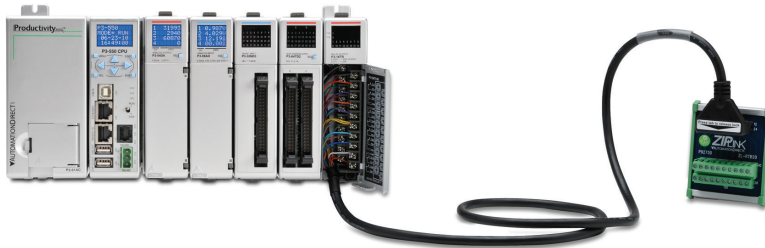
Wiring Solutions using the ZIPLink Wiring System

ZIPLinks eliminate the normally tedious process of wiring between devices by utilizing prewired cables and DIN rail mount connector modules. It's as simple as plugging in a cable connector at either end and terminating wires at only one end. Prewired cables keep installation clean and efficient, using half the space at a fraction of the cost of standard terminal blocks. There are several wiring solutions available when using the **ZIPLink** System ranging from

CPU I/O-to-**ZIPLink** Connector Modules that are ready for field termination, options for connecting to third party devices, GS Series, DuraPulse and SureServo Drives, and specialty relay, transorb and communications modules. Pre-printed I/O-specific adhesive label strips for quick marking of **ZIPLink** modules are provided with **ZIPLink** cables. See the following solutions to help determine the best **ZIPLink** system for your application.

Solution 1: DirectLOGIC, CLICK, Productivity2000 and Productivity3000 I/O Modules to ZIPLink Connector Modules

When looking for quick and easy I/O-to-field termination, a **ZIPLink** connector module used in conjunction with a prewired **ZIPLink** cable, consisting of an I/O terminal block at one end and a multi-pin connector at the other end, is the best solution.



Use the CPU I/O Modules to **ZIPLink** Connector Modules selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your I/O module/CPU,
2. Select a **ZIPLink** Module, and
3. Select a corresponding **ZIPLink** Cable.

Solution 2: DirectLOGIC, CLICK, Productivity2000 and Productivity3000 I/O Modules to 3rd Party Devices

When wanting to connect I/O to another device within close proximity of the I/O modules, no extra terminal blocks are necessary when using the **ZIPLink** Pigtail Cables. **ZIPLink** Pigtail Cables are prewired to an I/O terminal block with color-coded pigtail with soldered-tip wires on the other end.



Use the I/O Modules to 3rd Party Devices selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your CPU I/O module, and
2. Select a **ZIPLink** Pigtail Cable that is compatible with your 3rd party device.

Solution 3: GS Series and DuraPulse Drives Communication Cables

Need to communicate via Modbus RTU to a drive or a network of drives?

ZIPLink cables are available in a wide range of configurations for connecting to CPUs, SureServo, SureStep, Stellar Soft Starter and AC drives. Add a **ZIPLink** communications module to quickly and easily set up a multi-device network.

Use the Drives Communication selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your Drive and type of communications, and
2. Select a **ZIPLink** cable and other associated hardware.





Wiring Solutions

Solution 4: Serial Communications Cables

ZIPLink offers communications cables for use with *DirectLOGIC*, *CLICK*, *Productivity2000* and *Productivity3000* CPUs, that can also be used with other communications devices. Connections include a 6-pin RJ12 or 9-pin, 15-pin and 25-pin D-Sub connectors which can be used in conjunction with the RJ12 or D-Sub Feedthrough modules.

Using the **Serial Communications Cables** selector table located in the **ZIPLink Wiring Solutions** section,

1. Locate your connector type
2. Select a cable.



Solution 5: Specialty ZIPLink Modules

For additional application solutions, **ZIPLink Specialty Modules** are available in a variety of configurations including stand-alone relays, 24VDC and 120VAC transorb modules, D-Sub and RJ12 feedthrough modules, communication port adapter and distribution modules, and SureServo 50-pin I/O interface connection.

Using the **ZIPLink Specialty Modules** selector table located in the **ZIPLink Wiring Solutions** section:

1. Locate the type of application.
2. Select a **ZIPLink** module.



Solution 6: ZIPLink Connector Modules to 3rd Party Devices

If you need a way to connect your device to terminal blocks without all that wiring time, then our pigtail cables with color-coded soldered-tip wires are a good solution. Used in conjunction with any compatible **ZIPLink** Connector Modules, a pigtail cable keeps wiring clean and easy and reduces troubleshooting time.

Use the **Universal Connector Modules and Pigtail Cables** table located in the **ZIPLink Wiring Solutions** section to:

1. Select module type,
2. Select the number of pins,
3. Select cable.





CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

Discrete Input Modules

Productivity2000 Input Module ZIPLink Selector				
I/O Input Module	# of Terms	Component	Part No.	Cable Part No.
P2-08ND3	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16ND3		Sensor/LED	ZL-LTB16-24-1	
P2-08NE3		Feedthrough	ZL-RTB20 (-1)	
P2-16NE3		Sensor/LED	ZL-LTB16-24-1	
P2-32ND3	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
		Sensor/LED	ZL-LTB32-24-1	
P2-32NE3	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
		Sensor/LED	ZL-LTB32-24-1	
P2-08NAS	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16NA	18			

Specialty Modules

Productivity2000 Specialty & Motion Modules ZIPLink Selector				
I/O Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-HSI	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *S
P2-HSO				
P2-08SIM	See Note 1			
P2-SCM				



Discrete Output Modules

Productivity2000 Output Module ZIPLink Selector				
I/O Output Module	# of Terms	Component	Part No.	Cable Part No.
P2-08TD1S	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-08TD2S	8			
P2-15TD1	15			
P2-15TD2	15			
P2-08TD1P	18			
P2-08TD2P	18			
P2-08TRS	18			
P2-08TAS	18			
P2-16TA	18	Feedthrough	ZL-RTB20 (-1)	
		Fuse	ZL-RFU20 ²	
P2-16TD1P	18	Relay (Sourcing)	ZL-RTB20 (-1) ZL-RRL16-24-1 ZL-RRL16W-24-1 ZL-RRL16F-24-1 ZL-RRL16HDF-24-1	
P2-16TD2P	18	Relay (Sinking)	ZL-RTB20 (-1) ZL-RRL16-24-2 ZL-RRL16W-24-2 ZL-RRL16F-24-2 ZL-RRL16HDF-24-2	
P2-32TD1P	32	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
P2-32TD2P	32			
P2-16TR	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
		Fuse	ZL-RFU20 ²	

* Select the cable length by replacing the * with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

¹ These modules are not supported by the ZIPLink wiring system

² Note: Fuses (5 x 20 mm) are not included. See Edison Electronic Fuse section for (5 x 20 mm) fuse. S500 and GMA electronic circuit protection for fast-acting maximum protection. S506 and GMC electronic circuit protection for time-delay performance. Ideal for inductive circuits.

To ensure proper operation, do not exceed the voltage and current rating of ZIPLink module. ZL-RFU20 = 2A per circuit; ZL-RFU40 = 400 mA per circuit.



CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

Analog Input Modules

Productivity2000 Analog Input Module ZIPLink Selector							
I/O Analog Module	ZIPLink						
	# of Terms	Component	Part No.	Cable Part No.			
P2-04AD	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *			
P2-08AD-1							
P2-08AD-2							
P2-08ADL-1							
P2-08ADL-2							
P2-16AD-1	24			Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL24 *	
P2-16AD-2							
P2-16ADL-1							
P2-16ADL-2							
P2-06RTD							Matched Only
P2-08THM	T/C Wire Only					See Note 1	
P2-08NTC	Copper Conductors					See Note 1	

* Select the cable length by replacing the * with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

¹ These modules are not supported by the ZIPLink wiring system.

Analog Output Modules

Productivity2000 Analog Output Module ZIPLink Selector				
I/O Analog Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-04DA	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-04DAL-1				
P2-04DAL-2				
P2-08DA-1				
P2-08DA-2				
P2-08DAL-1				
P2-08DAL-2	24			ZL-P2-CBL24 *
P2-16DA-1				
P2-16DA-2				
P2-16DAL-1				
P2-16DAL-2	18			ZL-P2-CBL18 *
P2-8AD4DA-1				
P2-8AD4DA-2				



I/O Modules

A variety of discrete, analog and specialty I/O modules are available for use in a Productivity2000 System. Specifications for each module are on the following pages.

A filler module is available for unused I/O module slots (part number P2-FILL).

Discrete Input Modules

Productivity2000 Discrete Input Modules			
Part Number	Number of Inputs	Description	Price
P2-08SIM	8	Input Simulator Module	\$47.00
P2-08ND3	8	Sinking/Sourcing 12–24 VDC	\$46.00
P2-08NE3	8	Sinking/Sourcing 24V AC/DC	\$40.00
P2-16ND3	16	Sinking/Sourcing 12–24 VDC	\$69.00
P2-16NE3	16	Sinking/Sourcing 24V AC/DC	\$69.00
P2-32ND3	32	Sinking/Sourcing 24 VDC	\$99.00
P2-32NE3	32	Sinking/Sourcing 24V AC/DC	\$99.00
P2-08NAS	8	AC Isolated 100-120 VAC	\$77.00
P2-16NA	16	AC 100-240 VAC	\$105.00

Analog Input Modules

Productivity2000 Analog Input Modules			
Part Number	Number of Channels	Description	Price
P2-04AD	4	Analog Input (Voltage/Current)	\$195.00
P2-08AD-1	8	Analog Input (Current)	\$199.00
P2-08AD-2	8	Analog Input (Voltage)	\$219.00
P2-08ADL-1*	8	Analog Input (Current)	\$143.00
P2-08ADL-2*	8	Analog Input (Voltage)	\$157.50
P2-16AD-1	16	Analog Input (Current)	\$249.00
P2-16AD-2	16	Analog Input (Voltage)	\$275.00
P2-16ADL-1*	16	Analog Input (Current)	\$178.00
P2-16ADL-2*	16	Analog Input (Voltage)	\$196.00
P2-06RTD	6	Analog RTD Input	\$325.00
P2-08THM	8	Analog Thermocouple Input	\$329.00
P2-08NTC	8	Analog Thermistor Input	\$265.00

Analog Output Modules

Productivity2000 Analog Output Modules			
Part Number	Number of Channels	Description	Price
P2-04DA	4	Analog Output (Voltage/Current)	\$194.00
P2-04DAL-1*	4	Analog Output (Current)	\$110.00
P2-04DAL-2*	4	Analog Output (Voltage)	\$101.00
P2-08DA-1	8	Analog Output (Current)	\$269.00
P2-08DA-2	8	Analog Output (Voltage)	\$249.00
P2-08DAL-1*	8	Analog Output (Current)	\$202.00
P2-08DAL-2*	8	Analog Output (Voltage)	\$195.50
P2-16DA-1	16	Analog Output (Current)	\$354.00
P2-16DA-2	16	Analog Output (Voltage)	\$339.00
P2-16DAL-1*	16	Analog Output (Current)	\$253.00
P2-16DAL-2*	16	Analog Output (Voltage)	\$243.00

* Low resolution analog modules without OLED display.

Discrete Output Modules

Productivity2000 Discrete Output Modules			
Part Number	Number of Outputs	Description	Price
P2-08TD1S	8	Isolated Sinking	\$47.00
P2-08TD2S	8	Isolated Sourcing	\$47.00
P2-15TD1	15	Sinking	\$65.00
P2-15TD2	15	Sourcing	\$65.00
P2-08TD1P	8	Sinking Protected	\$41.00
P2-08TD2P	8	Sourcing Protected	\$41.00
P2-16TD1P	16	Sinking Protected	\$69.00
P2-16TD2P	16	Sourcing Protected	\$69.00
P2-32TD1P	32	Sinking Protected	\$99.00
P2-32TD2P	32	Sourcing Protected	\$99.00
P2-08TAS	8	Isolated AC	\$105.00
P2-16TA	16	100-240 VAC Output	\$129.00
P2-08TRS	8	Isolated Relay	\$51.00
P2-16TR	16	Relay	\$95.00

Productivity2000 Analog Input/Output Modules			
Part Number	Number of Channels	Description	Price
P2-8AD4DA-1	8/4	Analog Input/Output (Current)	\$310.00
P2-8AD4DA-2	8/4	Analog Input/Output (Voltage)	\$310.00

Specialty Modules

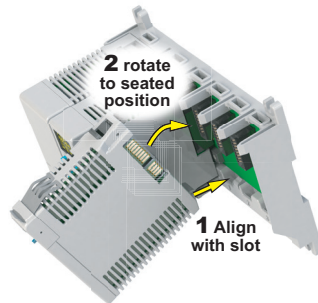
Productivity2000 Specialty Modules			
Part Number	Number of Channels	Description	Price
P2-HSI**	2	High-Speed Input	\$195.00
P2-HSO**	2	High-Speed Output	\$195.00
P2-SCM	4 ports	Serial Communications Module	\$165.00

** ZIPLink required.

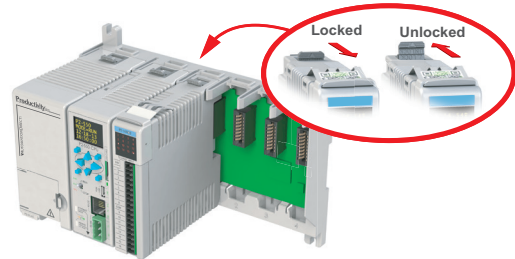
I/O Module Installation Procedure

WARNING: Do not apply field power until the following steps are completed. See hot-swapping procedure for exceptions.

Step One: Align module catch with base slot and rotate module into connector.



Step Two: Pull top locking tab toward module face. Click indicates lock is engaged.



Step Three: Attach field wiring using removable terminal block or *ZIPLink* wiring system.



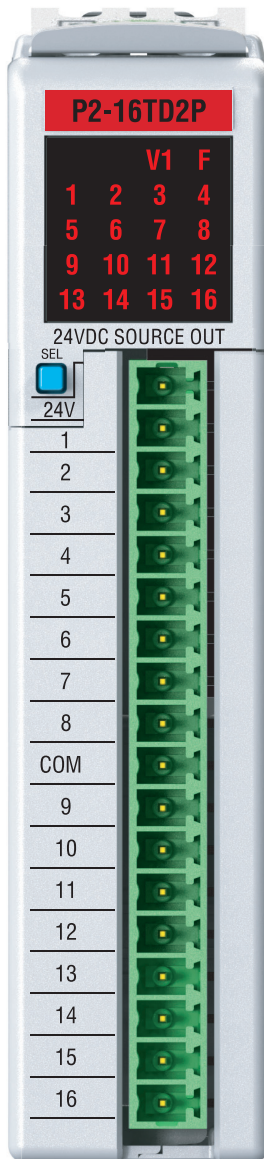
WARNING: Explosion hazard – Do not connect or disconnect connectors or operate switches while circuit is live unless the area is known to be non-hazardous. Do not hot-swap modules unless the area is known to be non-hazardous.

DC Output Modules

MODEL #: P2-16TD2P
P2-16TD2P \$69.00

Sourcing Output

The P2-16TD2P DC Output Module provides sixteen 24VDC sourcing outputs with short-circuit and overload protection.



Terminal block sold separately

Output Specifications

Outputs per Module	16 sourcing
Voltage Rating	24VDC
Operating Voltage Range	21.6–26.4 VDC
Maximum Output Current	0.25 A continuous
On Voltage Drop	0.7 VDC
Maximum Inrush Current	Self-limited
OFF to ON Response	0.5 ms
ON to OFF Response	0.5 ms
Overcurrent Trip	0.6 A min., 1.2 A max.
Minimum Load Current to Avoid Open Load Fault Detection	113µA
Overtemperature Shutdown	Independent to each output
Load Resistance to Avoid Open Load Fault Detection	<58kΩ
Status Indicators	Logic Side (16 points)
External 24V Error Indicator	Logic Side (1 point)
Fault Condition Indicator	Logic Side (16 points)
Commons	1
Fuses	None
External DC Power Required	24VDC @ 55mA (not including 0.25 A per point)

General Specifications

Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	1800VAC applied for 1 second
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	2.6 W
Enclosure Type	Open Equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in a Productivity2000 System.
Field Wiring	Use ZIPLink Wiring System or removable terminal block (not included). See Wiring Solutions.
EU Directive	See the "EU Directive" topic in the Productivity Suite Help File. Information can also be obtained at: www.productivity2000.com
Connector Type (Sold separately)	18 Position Removable Terminal Block
Weight	90g (3.2 oz)
Agency Approvals**	UL508 file E139594, Canada & USA CE (EN61131-2*)

*Meets EMC and Safety requirements. See the Declaration of Conformity for details.

**To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific component part number web page.

We recommend using prewired **ZIPLink** cables and connection modules. See Wiring Solutions.

If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P2-RTB or P2-RTB-1.



LED Status

Fault Condition	Fault Status Indication	Operation to Reset Fault
Missing External 24VDC	'V1' LED is ON	Apply external 24VDC
Open Load (Note 1)	'F' LED is ON (Note 2)	Connect the load
Over Temperature or Over Load Current		Turn the output OFF or cycle power

Note 1: Open Load Fault is always enabled, but is only valid when output is OFF. If Open Load Fault happens while output is ON, fault will not appear until output turns OFF.

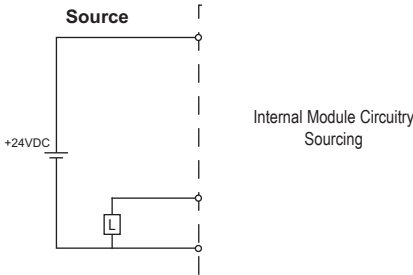
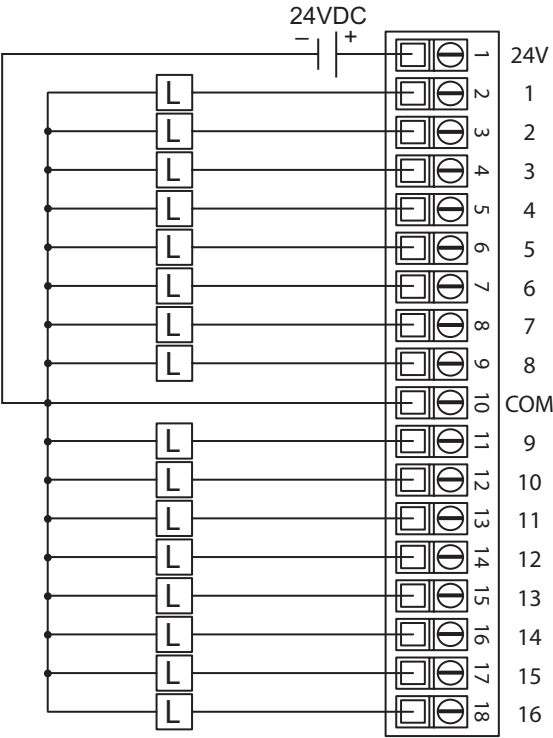
Note 2: The SEL button cycles between the output status and fault status. If the "F" LED is OFF the numbered LEDs are showing output status. If the "F" LED is ON the numbered LEDs are showing fault status of each output. The "V1" LED is independent of fault or output display.

DC Output Modules

P2-16TD2P (cont'd)

Removable Terminal Block Specifications		
Part Number	P2-RTB	P2-RTB-1
Number of Positions	18 Screw Terminals	18 Spring Clamp Terminals
Wire Range	30-16 AWG (0.051–1.31 mm ²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Maximum 1/4 in (6–7 mm) Strip Length	28-16 AWG (0.081–1.31 mm ²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Maximum 19/64 in (7–8 mm) Strip Length
Conductors	"USE COPPER CONDUCTORS, 75°C" or Equivalent.	
Screw Driver Width	1/8 inch (3.8 mm) Maximum	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N·m)	N/A

Wiring Diagrams



Wiring I/O Modules

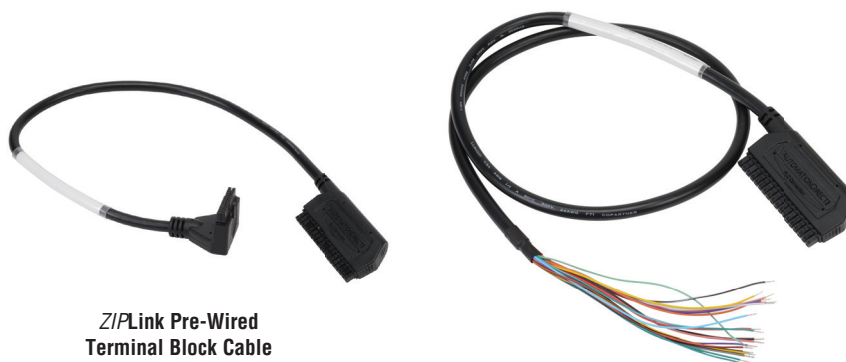
There are two available methods for wiring most I/O modules: The **ZIPLink** wiring system or hand wiring to the optional removable I/O module terminal blocks.

Note: Thermocouple and RTD modules are not compatible with the **ZIPLink** system and are shipped with the optional terminal blocks included.

ZIPLinks Wiring Systems

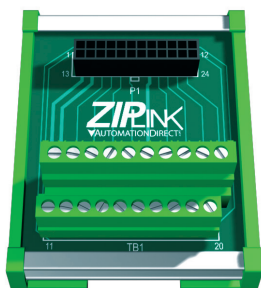
For wiring I/O modules, we strongly recommend using pre-wired **ZIPLink** wiring systems, which eliminate the need for hand wiring modules to terminal blocks.

See the selection matrix guide on the following pages.



**ZIPLink Pre-Wired
Terminal Block Cable**

ZIPLink Pigtail Cable



ZIPLink Module

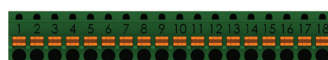
Removable Terminal Blocks

For most I/O modules you can also purchase a removable terminal block (part no. P2-RTB or P2-RTB-1).

Note: P2-RTB supplied with Thermocouple and RTD modules.



Removable Terminal Block P2-RTB



Removable Terminal Block P2-RTB-1

Terminal Block Removal





Wiring Solutions

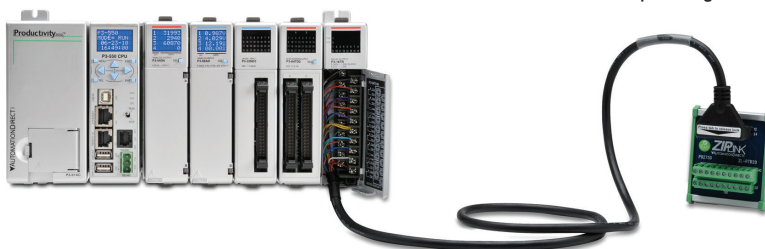
Wiring Solutions using the ZIPLink Wiring System

ZIPLinks eliminate the normally tedious process of wiring between devices by utilizing prewired cables and DIN rail mount connector modules. It's as simple as plugging in a cable connector at either end and terminating wires at only one end. Prewired cables keep installation clean and efficient, using half the space at a fraction of the cost of standard terminal blocks. There are several wiring solutions available when using the **ZIPLink** System ranging from

CPU I/O-to-**ZIPLink** Connector Modules that are ready for field termination, options for connecting to third party devices, GS Series, DuraPulse and SureServo Drives, and specialty relay, transorb and communications modules. Pre-printed I/O-specific adhesive label strips for quick marking of **ZIPLink** modules are provided with **ZIPLink** cables. See the following solutions to help determine the best **ZIPLink** system for your application.

Solution 1: DirectLOGIC, CLICK, Productivity2000 and Productivity3000 I/O Modules to ZIPLink Connector Modules

When looking for quick and easy I/O-to-field termination, a **ZIPLink** connector module used in conjunction with a prewired **ZIPLink** cable, consisting of an I/O terminal block at one end and a multi-pin connector at the other end, is the best solution.



Use the CPU I/O Modules to **ZIPLink** Connector Modules selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your I/O module/CPU,
2. Select a **ZIPLink** Module, and
3. Select a corresponding **ZIPLink** Cable.

Solution 2: DirectLOGIC, CLICK, Productivity2000 and Productivity3000 I/O Modules to 3rd Party Devices

When wanting to connect I/O to another device within close proximity of the I/O modules, no extra terminal blocks are necessary when using the **ZIPLink** Pigtail Cables. **ZIPLink** Pigtail Cables are prewired to an I/O terminal block with color-coded pigtail with soldered-tip wires on the other end.



Use the I/O Modules to 3rd Party Devices selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your CPU I/O module, and
2. Select a **ZIPLink** Pigtail Cable that is compatible with your 3rd party device.

Solution 3: GS Series and DuraPulse Drives Communication Cables

Need to communicate via Modbus RTU to a drive or a network of drives?

ZIPLink cables are available in a wide range of configurations for connecting to CPUs, SureServo, SureStep, Stellar Soft Starter and AC drives. Add a **ZIPLink** communications module to quickly and easily set up a multi-device network.

Use the Drives Communication selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your Drive and type of communications, and
2. Select a **ZIPLink** cable and other associated hardware.





Wiring Solutions

Solution 4: Serial Communications Cables

ZIPLink offers communications cables for use with *DirectLOGIC*, *CLICK*, *Productivity2000* and *Productivity3000* CPUs, that can also be used with other communications devices. Connections include a 6-pin RJ12 or 9-pin, 15-pin and 25-pin D-Sub connectors which can be used in conjunction with the RJ12 or D-Sub Feedthrough modules.

Using the **Serial Communications Cables** selector table located in the **ZIPLink Wiring Solutions** section,

1. Locate your connector type
2. Select a cable.



Solution 5: Specialty ZIPLink Modules

For additional application solutions, **ZIPLink Specialty Modules** are available in a variety of configurations including stand-alone relays, 24VDC and 120VAC transorb modules, D-Sub and RJ12 feedthrough modules, communication port adapter and distribution modules, and SureServo 50-pin I/O interface connection.

Using the **ZIPLink Specialty Modules** selector table located in the **ZIPLink Wiring Solutions** section:

1. Locate the type of application.
2. Select a **ZIPLink** module.



Solution 6: ZIPLink Connector Modules to 3rd Party Devices

If you need a way to connect your device to terminal blocks without all that wiring time, then our pigtail cables with color-coded soldered-tip wires are a good solution. Used in conjunction with any compatible **ZIPLink** Connector Modules, a pigtail cable keeps wiring clean and easy and reduces troubleshooting time.

Use the **Universal Connector Modules and Pigtail Cables** table located in the **ZIPLink Wiring Solutions** section to:

1. Select module type,
2. Select the number of pins,
3. Select cable.





CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

Discrete Input Modules

Productivity2000 Input Module ZIPLink Selector				
I/O Input Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-08ND3	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16ND3		Sensor/LED	ZL-LTB16-24-1	
P2-08NE3		Feedthrough	ZL-RTB20 (-1)	
P2-16NE3		Sensor/LED	ZL-LTB16-24-1	
P2-32ND3	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
		Sensor/LED	ZL-LTB32-24-1	
P2-32NE3	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
		Sensor/LED	ZL-LTB32-24-1	
P2-08NAS	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16NA	18			

Specialty Modules

Productivity2000 Specialty & Motion Modules ZIPLink Selector				
I/O Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-HSI	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *S
P2-HSO				
P2-08SIM	See Note 1			
P2-SCM				



Discrete Output Modules

Productivity2000 Output Module ZIPLink Selector				
I/O Output Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-08TD1S	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-08TD2S	8			
P2-15TD1	15			
P2-15TD2	15			
P2-08TD1P	18			
P2-08TD2P	18			
P2-08TRS	18			
P2-08TAS	18			
P2-16TA	18	Feedthrough	ZL-RTB20 (-1)	
		Fuse	ZL-RFU20 ²	
P2-16TD1P	18	Relay (Sourcing)	ZL-RTB20 (-1) ZL-RRL16-24-1 ZL-RRL16W-24-1 ZL-RRL16F-24-1 ZL-RRL16HDF-24-1	
		Feedthrough	ZL-RTB20 (-1)	
P2-16TD2P	18	Relay (Sinking)	ZL-RTB20 (-1) ZL-RRL16-24-2 ZL-RRL16W-24-2 ZL-RRL16F-24-2 ZL-RRL16HDF-24-2	
P2-32TD1P	32	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
P2-32TD2P	32			
P2-16TR	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
		Fuse	ZL-RFU20 ²	

* Select the cable length by replacing the * with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

¹ These modules are not supported by the ZIPLink wiring system

² Note: Fuses (5 x 20 mm) are not included. See Edison Electronic Fuse section for (5 x 20 mm) fuse. S500 and GMA electronic circuit protection for fast-acting maximum protection. S506 and GMC electronic circuit protection for time-delay performance. Ideal for inductive circuits.

To ensure proper operation, do not exceed the voltage and current rating of ZIPLink module. ZL-RFU20 = 2A per circuit; ZL-RFU40 = 400 mA per circuit.



CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

Analog Input Modules

Productivity2000 Analog Input Module ZIPLink Selector						
I/O Analog Module	ZIPLink					
	# of Terms	Component	Part No.	Cable Part No.		
P2-04AD	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *		
P2-08AD-1						
P2-08AD-2						
P2-08ADL-1						
P2-08ADL-2						
P2-16AD-1	24			Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL24 *
P2-16AD-2						
P2-16ADL-1						
P2-16ADL-2						
P2-06RTD	Matched Only	See Note 1				
P2-08THM	T/C Wire Only	See Note 1				
P2-08NTC	Copper Conductors	See Note 1				

* Select the cable length by replacing the * with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

¹ These modules are not supported by the ZIPLink wiring system.

Analog Output Modules

Productivity2000 Analog Output Module ZIPLink Selector				
I/O Analog Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-04DA	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-04DAL-1				
P2-04DAL-2				
P2-08DA-1				
P2-08DA-2				
P2-08DAL-1				
P2-08DAL-2	24			ZL-P2-CBL24 *
P2-16DA-1				
P2-16DA-2				
P2-16DAL-1				
P2-16DAL-2	18			ZL-P2-CBL18 *
P2-8AD4DA-1				
P2-8AD4DA-2				



I/O Modules

A variety of discrete, analog and specialty I/O modules are available for use in a Productivity2000 System. Specifications for each module are on the following pages.

A filler module is available for unused I/O module slots (part number P2-FILL).

Discrete Input Modules

Productivity2000 Discrete Input Modules			
Part Number	Number of Inputs	Description	Price
P2-08SIM	8	Input Simulator Module	\$47.00
P2-08ND3	8	Sinking/Sourcing 12–24 VDC	\$46.00
P2-08NE3	8	Sinking/Sourcing 24V AC/DC	\$40.00
P2-16ND3	16	Sinking/Sourcing 12–24 VDC	\$69.00
P2-16NE3	16	Sinking/Sourcing 24V AC/DC	\$69.00
P2-32ND3	32	Sinking/Sourcing 24 VDC	\$99.00
P2-32NE3	32	Sinking/Sourcing 24V AC/DC	\$99.00
P2-08NAS	8	AC Isolated 100-120 VAC	\$77.00
P2-16NA	16	AC 100-240 VAC	\$105.00

Analog Input Modules

Productivity2000 Analog Input Modules			
Part Number	Number of Channels	Description	Price
P2-04AD	4	Analog Input (Voltage/Current)	\$195.00
P2-08AD-1	8	Analog Input (Current)	\$199.00
P2-08AD-2	8	Analog Input (Voltage)	\$219.00
P2-08ADL-1*	8	Analog Input (Current)	\$143.00
P2-08ADL-2*	8	Analog Input (Voltage)	\$157.50
P2-16AD-1	16	Analog Input (Current)	\$249.00
P2-16AD-2	16	Analog Input (Voltage)	\$275.00
P2-16ADL-1*	16	Analog Input (Current)	\$178.00
P2-16ADL-2*	16	Analog Input (Voltage)	\$196.00
P2-06RTD	6	Analog RTD Input	\$325.00
P2-08THM	8	Analog Thermocouple Input	\$329.00
P2-08NTC	8	Analog Thermistor Input	\$265.00

Analog Output Modules

Productivity2000 Analog Output Modules			
Part Number	Number of Channels	Description	Price
P2-04DA	4	Analog Output (Voltage/Current)	\$194.00
P2-04DAL-1*	4	Analog Output (Current)	\$110.00
P2-04DAL-2*	4	Analog Output (Voltage)	\$101.00
P2-08DA-1	8	Analog Output (Current)	\$269.00
P2-08DA-2	8	Analog Output (Voltage)	\$249.00
P2-08DAL-1*	8	Analog Output (Current)	\$202.00
P2-08DAL-2*	8	Analog Output (Voltage)	\$195.50
P2-16DA-1	16	Analog Output (Current)	\$354.00
P2-16DA-2	16	Analog Output (Voltage)	\$339.00
P2-16DAL-1*	16	Analog Output (Current)	\$253.00
P2-16DAL-2*	16	Analog Output (Voltage)	\$243.00

* Low resolution analog modules without OLED display.

Discrete Output Modules

Productivity2000 Discrete Output Modules			
Part Number	Number of Outputs	Description	Price
P2-08TD1S	8	Isolated Sinking	\$47.00
P2-08TD2S	8	Isolated Sourcing	\$47.00
P2-15TD1	15	Sinking	\$65.00
P2-15TD2	15	Sourcing	\$65.00
P2-08TD1P	8	Sinking Protected	\$41.00
P2-08TD2P	8	Sourcing Protected	\$41.00
P2-16TD1P	16	Sinking Protected	\$69.00
P2-16TD2P	16	Sourcing Protected	\$69.00
P2-32TD1P	32	Sinking Protected	\$99.00
P2-32TD2P	32	Sourcing Protected	\$99.00
P2-08TAS	8	Isolated AC	\$105.00
P2-16TA	16	100-240 VAC Output	\$129.00
P2-08TRS	8	Isolated Relay	\$51.00
P2-16TR	16	Relay	\$95.00

Productivity2000 Analog Input/Output Modules			
Part Number	Number of Channels	Description	Price
P2-8AD4DA-1	8/4	Analog Input/Output (Current)	\$310.00
P2-8AD4DA-2	8/4	Analog Input/Output (Voltage)	\$310.00

Specialty Modules

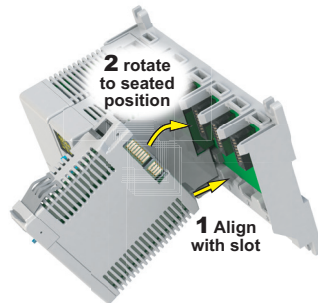
Productivity2000 Specialty Modules			
Part Number	Number of Channels	Description	Price
P2-HSI**	2	High-Speed Input	\$195.00
P2-HSO**	2	High-Speed Output	\$195.00
P2-SCM	4 ports	Serial Communications Module	\$165.00

** ZIPlink required.

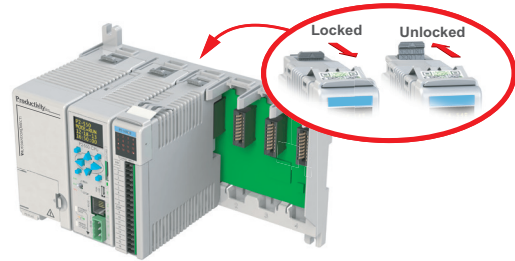
I/O Module Installation Procedure

WARNING: Do not apply field power until the following steps are completed. See hot-swapping procedure for exceptions.

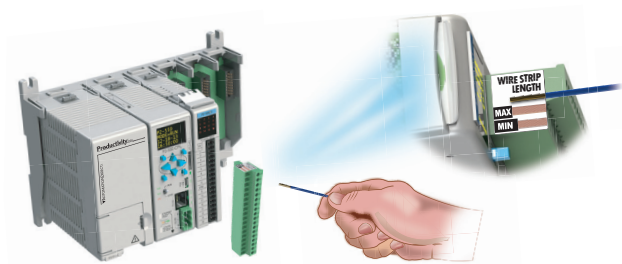
Step One: Align module catch with base slot and rotate module into connector.



Step Two: Pull top locking tab toward module face. Click indicates lock is engaged.



Step Three: Attach field wiring using removable terminal block or *ZIPLink* wiring system.



WARNING: Explosion hazard – Do not connect or disconnect connectors or operate switches while circuit is live unless the area is known to be non-hazardous. Do not hot-swap modules unless the area is known to be non-hazardous.

Analog Input Modules

P2-16AD-1 \$249.00

Current Analog Input

The P2-16AD-1 Current Analog Input Module provides sixteen channels for receiving 0 to 20 mA input signals.



No terminal block sold for this module; ZIPLink required.

Input Specifications

Input Channels	16 sinking
Module Signal Input Range	0–20mA
Signal Resolution	16-bit
Resolution Value of LSB (least significant bit)	0–20mA = 305µA per count (1 LSB = 1 count)
Data Range	0 to 65535 counts
Input Type	Single-ended (1 common)
Maximum Continuous Overload	±31mA
Input Impedance	250Ω ±0.1% 1/4 W
Filter Characteristics	Low Pass, -3dB @ 100Hz
Sample Duration Time	4ms per channel (does not include ladder scan time)
All Channel Update Rate	112ms
Open Circuit Detection Time	Zero reading within 1s
Conversion Method	Successive approximation
Accuracy vs. Temperature	±25PPM / °C maximum
Maximum Inaccuracy	0.1% of range (including temperature drift)
Linearity Error (end to end)	±10 LSB maximum (±0.015% of range) Monotonic with no missing codes
Input Stability and Repeatability	±10 LSB
Full Scale Calibration Error (not including offset)	±10 LSB maximum (±0.015% of range)
Offset Calibration Error	±10 LSB maximum
Max Crosstalk	-76dB, ±10 LSB
Recommended Fuse (external)	Edison S500-32-R, 0.032 A fuse
External DC Power Required	24VDC (-20% / +25%) 35mA

General Specifications

Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	1800VAC applied for 1 second
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	800mW
Enclosure Type	Open Equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in a Productivity2000 System
Field Wiring	ZIPLink Wiring System ONLY. See Wiring Solutions. Must use copper conductors 75°C or equivalent.
EU Directive	See the "EU Directive" topic in the Productivity Suite Help File. Information can also be obtained at: www.productivity2000.com
Connector Type	24-Pin Molex Style 43025-2400
Weight	90g (3.2 oz)
Agency Approvals**	UL508 File E139594, Canada & USA CE (EN61131-2*)

We recommend using pre-wired ZIPLink cables and connection modules. See Wiring Solutions.

Module connector type is a 24-pin Molex Style 43025-2400.



*Meets EMC and Safety requirements. See the Declaration of Conformity for details.

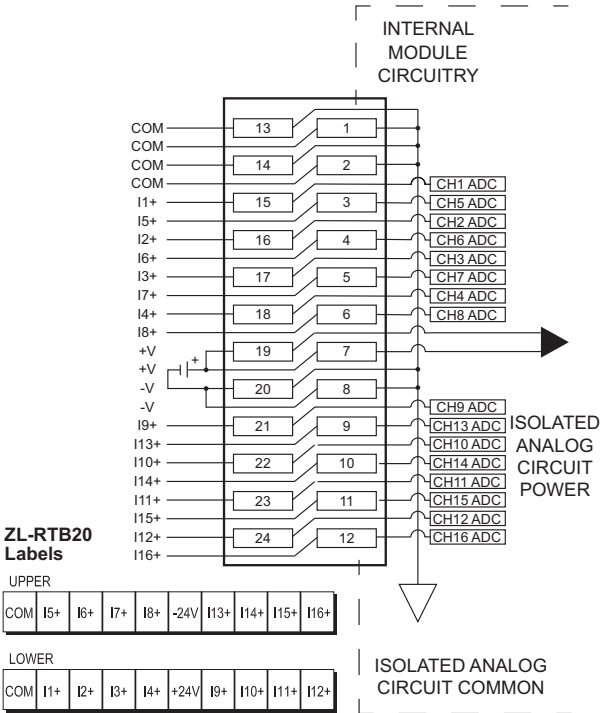
**To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific component part number web page.

Analog Input Modules

P2-16AD-1 (cont'd)

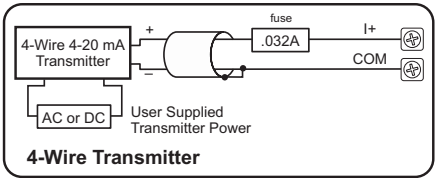
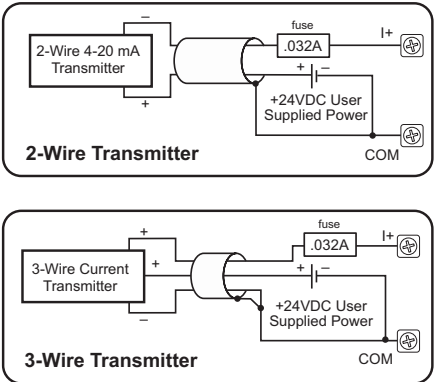
Connector Specifications	
Connector Type	24-Pin Molex Style 43025-2400
Number of Pins	24
Pin Spacing	3x3 mm (0.118 x 0.118 in)

Wiring Diagrams



Current Input Circuits

An Edison S500-32-R 0.032A fast-acting fuse is recommended for current loops.



Note: Do not connect both ends of shield.

Wiring I/O Modules

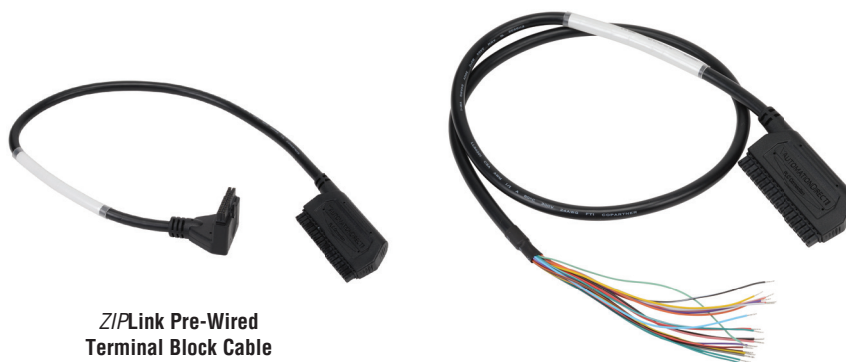
There are two available methods for wiring most I/O modules: The **ZIPLink** wiring system or hand wiring to the optional removable I/O module terminal blocks.

Note: Thermocouple and RTD modules are not compatible with the **ZIPLink** system and are shipped with the optional terminal blocks included.

ZIPLinks Wiring Systems

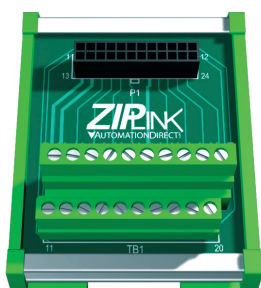
For wiring I/O modules, we strongly recommend using pre-wired **ZIPLink** wiring systems, which eliminate the need for hand wiring modules to terminal blocks.

See the selection matrix guide on the following pages.



**ZIPLink Pre-Wired
Terminal Block Cable**

ZIPLink Pigtail Cable



ZIPLink Module

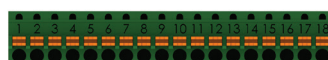
Removable Terminal Blocks

For most I/O modules you can also purchase a removable terminal block (part no. P2-RTB or P2-RTB-1).

Note: P2-RTB supplied with Thermocouple and RTD modules.



Removable Terminal Block P2-RTB



Removable Terminal Block P2-RTB-1

Terminal Block Removal





Wiring Solutions

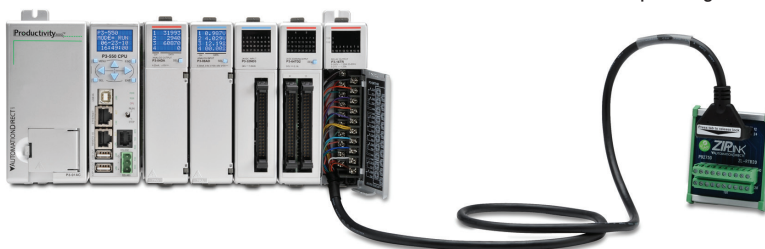
Wiring Solutions using the ZIPLink Wiring System

ZIPLinks eliminate the normally tedious process of wiring between devices by utilizing prewired cables and DIN rail mount connector modules. It's as simple as plugging in a cable connector at either end and terminating wires at only one end. Prewired cables keep installation clean and efficient, using half the space at a fraction of the cost of standard terminal blocks. There are several wiring solutions available when using the **ZIPLink** System ranging from

CPU I/O-to-**ZIPLink** Connector Modules that are ready for field termination, options for connecting to third party devices, GS Series, DuraPulse and SureServo Drives, and specialty relay, transorb and communications modules. Pre-printed I/O-specific adhesive label strips for quick marking of **ZIPLink** modules are provided with **ZIPLink** cables. See the following solutions to help determine the best **ZIPLink** system for your application.

Solution 1: DirectLOGIC, CLICK, Productivity2000 and Productivity3000 I/O Modules to ZIPLink Connector Modules

When looking for quick and easy I/O-to-field termination, a **ZIPLink** connector module used in conjunction with a prewired **ZIPLink** cable, consisting of an I/O terminal block at one end and a multi-pin connector at the other end, is the best solution.



Use the CPU I/O Modules to **ZIPLink** Connector Modules selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your I/O module/CPU,
2. Select a **ZIPLink** Module, and
3. Select a corresponding **ZIPLink** Cable.

Solution 2: DirectLOGIC, CLICK, Productivity2000 and Productivity3000 I/O Modules to 3rd Party Devices

When wanting to connect I/O to another device within close proximity of the I/O modules, no extra terminal blocks are necessary when using the **ZIPLink** Pigtail Cables. **ZIPLink** Pigtail Cables are prewired to an I/O terminal block with color-coded pigtail with soldered-tip wires on the other end.



Use the I/O Modules to 3rd Party Devices selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your CPU I/O module, and
2. Select a **ZIPLink** Pigtail Cable that is compatible with your 3rd party device.

Solution 3: GS Series and DuraPulse Drives Communication Cables

Need to communicate via Modbus RTU to a drive or a network of drives?

ZIPLink cables are available in a wide range of configurations for connecting to CPUs, SureServo, SureStep, Stellar Soft Starter and AC drives. Add a **ZIPLink** communications module to quickly and easily set up a multi-device network.

Use the Drives Communication selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your Drive and type of communications, and
2. Select a **ZIPLink** cable and other associated hardware.





Wiring Solutions

Solution 4: Serial Communications Cables

ZIPLink offers communications cables for use with *DirectLOGIC*, *CLICK*, *Productivity2000* and *Productivity3000* CPUs, that can also be used with other communications devices. Connections include a 6-pin RJ12 or 9-pin, 15-pin and 25-pin D-Sub connectors which can be used in conjunction with the RJ12 or D-Sub Feedthrough modules.

Using the **Serial Communications Cables** selector table located in the **ZIPLink Wiring Solutions** section,

1. Locate your connector type
2. Select a cable.



Solution 5: Specialty ZIPLink Modules

For additional application solutions, **ZIPLink Specialty Modules** are available in a variety of configurations including stand-alone relays, 24VDC and 120VAC transorb modules, D-Sub and RJ12 feedthrough modules, communication port adapter and distribution modules, and SureServo 50-pin I/O interface connection.

Using the **ZIPLink Specialty Modules** selector table located in the **ZIPLink Wiring Solutions** section:

1. Locate the type of application.
2. Select a **ZIPLink** module.



Solution 6: ZIPLink Connector Modules to 3rd Party Devices

If you need a way to connect your device to terminal blocks without all that wiring time, then our pigtail cables with color-coded soldered-tip wires are a good solution. Used in conjunction with any compatible **ZIPLink** Connector Modules, a pigtail cable keeps wiring clean and easy and reduces troubleshooting time.

Use the **Universal Connector Modules and Pigtail Cables** table located in the **ZIPLink Wiring Solutions** section to:

1. Select module type,
2. Select the number of pins,
3. Select cable.





CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

Discrete Input Modules

Productivity2000 Input Module ZIPLink Selector				
I/O Input Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-08ND3	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16ND3		Sensor/LED	ZL-LTB16-24-1	
P2-08NE3		Feedthrough	ZL-RTB20 (-1)	
P2-16NE3		Sensor/LED	ZL-LTB16-24-1	
P2-32ND3	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
		Sensor/LED	ZL-LTB32-24-1	
P2-32NE3	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
		Sensor/LED	ZL-LTB32-24-1	
P2-08NAS	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16NA	18			

Specialty Modules

Productivity2000 Specialty & Motion Modules ZIPLink Selector				
I/O Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-HSI	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *S
P2-HSO				
P2-08SIM	See Note 1			
P2-SCM				



Discrete Output Modules

Productivity2000 Output Module ZIPLink Selector				
I/O Output Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-08TD1S	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-08TD2S	8			
P2-15TD1	15			
P2-15TD2	15			
P2-08TD1P	18			
P2-08TD2P	18			
P2-08TRS	18			
P2-08TAS	18			
P2-16TA	18	Feedthrough	ZL-RTB20 (-1)	
		Fuse	ZL-RFU20 ²	
P2-16TD1P	18	Feedthrough	ZL-RTB20 (-1)	
		Relay (Sourcing)	ZL-RRL16-24-1 ZL-RRL16W-24-1 ZL-RRL16F-24-1 ZL-RRL16HDF-24-1	
P2-16TD2P	18	Feedthrough	ZL-RTB20 (-1)	
		Relay (Sinking)	ZL-RRL16-24-2 ZL-RRL16W-24-2 ZL-RRL16F-24-2 ZL-RRL16HDF-24-2	
P2-32TD1P	32	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
P2-32TD2P	32			
P2-16TR	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
		Fuse	ZL-RFU20 ²	

* Select the cable length by replacing the * with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

¹ These modules are not supported by the ZIPLink wiring system

² Note: Fuses (5 x 20 mm) are not included. See Edison Electronic Fuse section for (5 x 20 mm) fuse. S500 and GMA electronic circuit protection for fast-acting maximum protection. S506 and GMC electronic circuit protection for time-delay performance. Ideal for inductive circuits.

To ensure proper operation, do not exceed the voltage and current rating of ZIPLink module. ZL-RFU20 = 2A per circuit; ZL-RFU40 = 400 mA per circuit.



CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

Analog Input Modules

Productivity2000 Analog Input Module ZI/Link Selector				
I/O Analog Module	ZI/Link			
	# of Terms	Component	Part No.	Cable Part No.
P2-04AD	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-08AD-1				
P2-08AD-2				
P2-08ADL-1				
P2-08ADL-2				
P2-16AD-1	24			ZL-P2-CBL24 *
P2-16AD-2				
P2-16ADL-1				
P2-16ADL-2				
P2-06RTD	Matched Only	See Note 1		
P2-08THM	T/C Wire Only	See Note 1		
P2-08NTC	Copper Conductors	See Note 1		

* Select the cable length by replacing the * with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

¹ These modules are not supported by the ZIPLink wiring system.

Analog Output Modules

Productivity2000 Analog Output Module ZIPLink Selector				
I/O Analog Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-04DA	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-04DAL-1				
P2-04DAL-2				
P2-08DA-1				
P2-08DA-2				
P2-08DAL-1	24	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL24 *
P2-08DAL-2				
P2-16DA-1				
P2-16DA-2				
P2-16DAL-1	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16DAL-2				
P2-8AD4DA-1				
P2-8AD4DA-2				



I/O Modules

A variety of discrete, analog and specialty I/O modules are available for use in a Productivity2000 System. Specifications for each module are on the following pages.

A filler module is available for unused I/O module slots (part number P2-FILL).

Discrete Input Modules

Productivity2000 Discrete Input Modules			
Part Number	Number of Inputs	Description	Price
<i>P2-08SIM</i>	8	Input Simulator Module	\$47.00
<i>P2-08ND3</i>	8	Sinking/Sourcing 12–24 VDC	\$46.00
<i>P2-08NE3</i>	8	Sinking/Sourcing 24V AC/DC	\$40.00
<i>P2-16ND3</i>	16	Sinking/Sourcing 12–24 VDC	\$69.00
<i>P2-16NE3</i>	16	Sinking/Sourcing 24V AC/DC	\$69.00
<i>P2-32ND3</i>	32	Sinking/Sourcing 24 VDC	\$99.00
<i>P2-32NE3</i>	32	Sinking/Sourcing 24V AC/DC	\$99.00
<i>P2-08NAS</i>	8	AC Isolated 100-120 VAC	\$77.00
<i>P2-16NA</i>	16	AC 100-240 VAC	\$105.00

Analog Input Modules

Productivity2000 Analog Input Modules			
Part Number	Number of Channels	Description	Price
<i>P2-04AD</i>	4	Analog Input (Voltage/Current)	\$195.00
<i>P2-08AD-1</i>	8	Analog Input (Current)	\$199.00
<i>P2-08AD-2</i>	8	Analog Input (Voltage)	\$219.00
<i>P2-08ADL-1*</i>	8	Analog Input (Current)	\$143.00
<i>P2-08ADL-2*</i>	8	Analog Input (Voltage)	\$157.50
<i>P2-16AD-1</i>	16	Analog Input (Current)	\$249.00
<i>P2-16AD-2</i>	16	Analog Input (Voltage)	\$275.00
<i>P2-16ADL-1*</i>	16	Analog Input (Current)	\$178.00
<i>P2-16ADL-2*</i>	16	Analog Input (Voltage)	\$196.00
<i>P2-06RTD</i>	6	Analog RTD Input	\$325.00
<i>P2-08THM</i>	8	Analog Thermocouple Input	\$329.00
<i>P2-08NTC</i>	8	Analog Thermistor Input	\$265.00

Analog Output Modules

Productivity2000 Analog Output Modules			
Part Number	Number of Channels	Description	Price
<i>P2-04DA</i>	4	Analog Output (Voltage/Current)	\$194.00
<i>P2-04DAL-1*</i>	4	Analog Output (Current)	\$110.00
<i>P2-04DAL-2*</i>	4	Analog Output (Voltage)	\$101.00
<i>P2-08DA-1</i>	8	Analog Output (Current)	\$269.00
<i>P2-08DA-2</i>	8	Analog Output (Voltage)	\$249.00
<i>P2-08DAL-1*</i>	8	Analog Output (Current)	\$202.00
<i>P2-08DAL-2*</i>	8	Analog Output (Voltage)	\$195.50
<i>P2-16DA-1</i>	16	Analog Output (Current)	\$354.00
<i>P2-16DA-2</i>	16	Analog Output (Voltage)	\$339.00
<i>P2-16DAL-1*</i>	16	Analog Output (Current)	\$253.00
<i>P2-16DAL-2*</i>	16	Analog Output (Voltage)	\$243.00

* Low resolution analog modules without OLED display.

Discrete Output Modules

Productivity2000 Discrete Output Modules			
Part Number	Number of Outputs	Description	Price
<i>P2-08TD1S</i>	8	Isolated Sinking	\$47.00
<i>P2-08TD2S</i>	8	Isolated Sourcing	\$47.00
<i>P2-15TD1</i>	15	Sinking	\$65.00
<i>P2-15TD2</i>	15	Sourcing	\$65.00
<i>P2-08TD1P</i>	8	Sinking Protected	\$41.00
<i>P2-08TD2P</i>	8	Sourcing Protected	\$41.00
<i>P2-16TD1P</i>	16	Sinking Protected	\$69.00
<i>P2-16TD2P</i>	16	Sourcing Protected	\$69.00
<i>P2-32TD1P</i>	32	Sinking Protected	\$99.00
<i>P2-32TD2P</i>	32	Sourcing Protected	\$99.00
<i>P2-08TAS</i>	8	Isolated AC	\$105.00
<i>P2-16TA</i>	16	100-240 VAC Output	\$129.00
<i>P2-08TRS</i>	8	Isolated Relay	\$51.00
<i>P2-16TR</i>	16	Relay	\$95.00

Productivity2000 Analog Input/Output Modules			
Part Number	Number of Channels	Description	Price
<i>P2-8AD4DA-1</i>	8/4	Analog Input/Output (Current)	\$310.00
<i>P2-8AD4DA-2</i>	8/4	Analog Input/Output (Voltage)	\$310.00

Specialty Modules

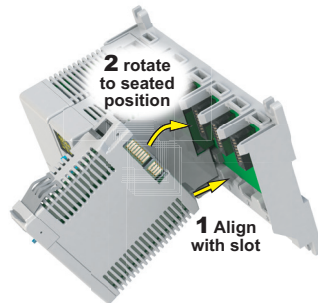
Productivity2000 Specialty Modules			
Part Number	Number of Channels	Description	Price
<i>P2-HSI**</i>	2	High-Speed Input	\$195.00
<i>P2-HSO**</i>	2	High-Speed Output	\$195.00
<i>P2-SCM</i>	4 ports	Serial Communications Module	\$165.00

** ZIPlink required.

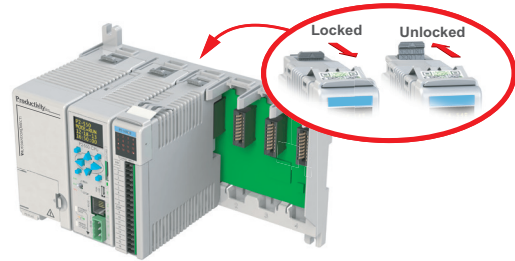
I/O Module Installation Procedure

WARNING: Do not apply field power until the following steps are completed. See hot-swapping procedure for exceptions.

Step One: Align module catch with base slot and rotate module into connector.



Step Two: Pull top locking tab toward module face. Click indicates lock is engaged.



Step Three: Attach field wiring using removable terminal block or *ZIPLink* wiring system.



WARNING: Explosion hazard – Do not connect or disconnect connectors or operate switches while circuit is live unless the area is known to be non-hazardous. Do not hot-swap modules unless the area is known to be non-hazardous.

Wiring I/O Modules

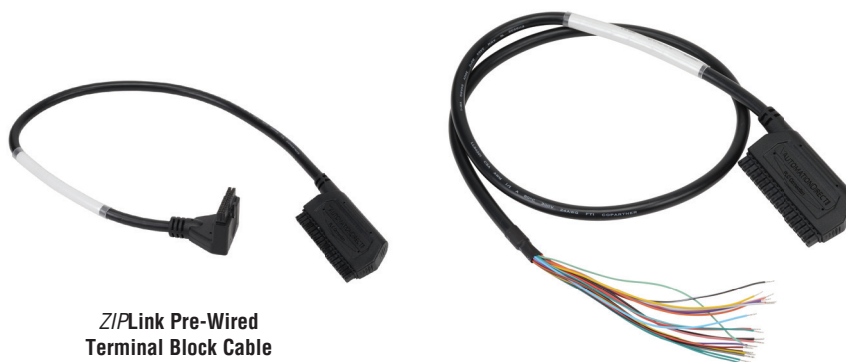
There are two available methods for wiring most I/O modules: The **ZIPLink** wiring system or hand wiring to the optional removable I/O module terminal blocks.

Note: Thermocouple and RTD modules are not compatible with the **ZIPLink** system and are shipped with the optional terminal blocks included.

ZIPLinks Wiring Systems

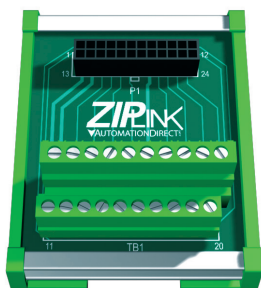
For wiring I/O modules, we strongly recommend using pre-wired **ZIPLink** wiring systems, which eliminate the need for hand wiring modules to terminal blocks.

See the selection matrix guide on the following pages.



**ZIPLink Pre-Wired
Terminal Block Cable**

ZIPLink Pigtail Cable

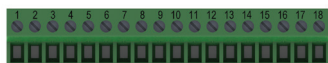


ZIPLink Module

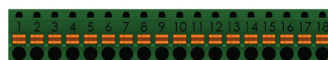
Removable Terminal Blocks

For most I/O modules you can also purchase a removable terminal block (part no. P2-RTB or P2-RTB-1).

Note: P2-RTB supplied with Thermocouple and RTD modules.



Removable Terminal Block P2-RTB



Removable Terminal Block P2-RTB-1

Terminal Block Removal





Wiring Solutions

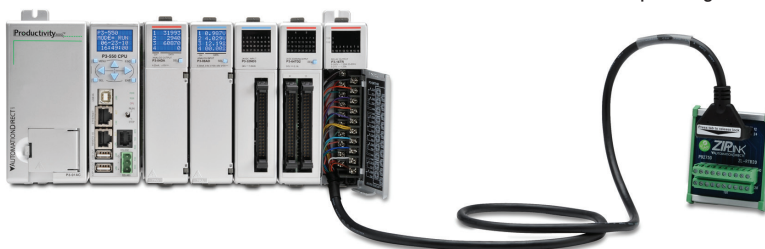
Wiring Solutions using the ZIPLink Wiring System

ZIPLinks eliminate the normally tedious process of wiring between devices by utilizing prewired cables and DIN rail mount connector modules. It's as simple as plugging in a cable connector at either end and terminating wires at only one end. Prewired cables keep installation clean and efficient, using half the space at a fraction of the cost of standard terminal blocks. There are several wiring solutions available when using the **ZIPLink** System ranging from

CPU I/O-to-**ZIPLink** Connector Modules that are ready for field termination, options for connecting to third party devices, GS Series, DuraPulse and SureServo Drives, and specialty relay, transorb and communications modules. Pre-printed I/O-specific adhesive label strips for quick marking of **ZIPLink** modules are provided with **ZIPLink** cables. See the following solutions to help determine the best **ZIPLink** system for your application.

Solution 1: DirectLOGIC, CLICK, Productivity2000 and Productivity3000 I/O Modules to ZIPLink Connector Modules

When looking for quick and easy I/O-to-field termination, a **ZIPLink** connector module used in conjunction with a prewired **ZIPLink** cable, consisting of an I/O terminal block at one end and a multi-pin connector at the other end, is the best solution.



Use the CPU I/O Modules to **ZIPLink** Connector Modules selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your I/O module/CPU,
2. Select a **ZIPLink** Module, and
3. Select a corresponding **ZIPLink** Cable.

Solution 2: DirectLOGIC, CLICK, Productivity2000 and Productivity3000 I/O Modules to 3rd Party Devices

When wanting to connect I/O to another device within close proximity of the I/O modules, no extra terminal blocks are necessary when using the **ZIPLink** Pigtail Cables. **ZIPLink** Pigtail Cables are prewired to an I/O terminal block with color-coded pigtail with soldered-tip wires on the other end.



Use the I/O Modules to 3rd Party Devices selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your CPU I/O module, and
2. Select a **ZIPLink** Pigtail Cable that is compatible with your 3rd party device.

Solution 3: GS Series and DuraPulse Drives Communication Cables

Need to communicate via Modbus RTU to a drive or a network of drives?

ZIPLink cables are available in a wide range of configurations for connecting to CPUs, SureServo, SureStep, Stellar Soft Starter and AC drives. Add a **ZIPLink** communications module to quickly and easily set up a multi-device network.

Use the Drives Communication selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your Drive and type of communications, and
2. Select a **ZIPLink** cable and other associated hardware.





Wiring Solutions

Solution 4: Serial Communications Cables

ZIPLink offers communications cables for use with *DirectLOGIC*, *CLICK*, *Productivity2000* and *Productivity3000* CPUs, that can also be used with other communications devices. Connections include a 6-pin RJ12 or 9-pin, 15-pin and 25-pin D-Sub connectors which can be used in conjunction with the RJ12 or D-Sub Feedthrough modules.

Using the **Serial Communications Cables** selector table located in the **ZIPLink Wiring Solutions** section,

1. Locate your connector type
2. Select a cable.



Solution 5: Specialty ZIPLink Modules

For additional application solutions, **ZIPLink Specialty Modules** are available in a variety of configurations including stand-alone relays, 24VDC and 120VAC transorb modules, D-Sub and RJ12 feedthrough modules, communication port adapter and distribution modules, and SureServo 50-pin I/O interface connection.

Using the **ZIPLink Specialty Modules** selector table located in the **ZIPLink Wiring Solutions** section:

1. Locate the type of application.
2. Select a **ZIPLink** module.



Solution 6: ZIPLink Connector Modules to 3rd Party Devices

If you need a way to connect your device to terminal blocks without all that wiring time, then our pigtail cables with color-coded soldered-tip wires are a good solution. Used in conjunction with any compatible **ZIPLink** Connector Modules, a pigtail cable keeps wiring clean and easy and reduces troubleshooting time.

Use the **Universal Connector Modules and Pigtail Cables** table located in the **ZIPLink Wiring Solutions** section to:

1. Select module type,
2. Select the number of pins,
3. Select cable.





CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

Discrete Input Modules

Productivity2000 Input Module ZIPLink Selector				
I/O Input Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-08ND3	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16ND3		Sensor/LED	ZL-LTB16-24-1	
P2-08NE3		Feedthrough	ZL-RTB20 (-1)	
P2-16NE3		Sensor/LED	ZL-LTB16-24-1	
P2-32ND3	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
		Sensor/LED	ZL-LTB32-24-1	
P2-32NE3	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
		Sensor/LED	ZL-LTB32-24-1	
P2-08NAS	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16NA	18			

Specialty Modules

Productivity2000 Specialty & Motion Modules ZIPLink Selector				
I/O Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-HSI	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *S
P2-HSO				
P2-08SIM	See Note 1			
P2-SCM				



Discrete Output Modules

Productivity2000 Output Module ZIPLink Selector				
I/O Output Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-08TD1S	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-08TD2S	8			
P2-15TD1	15			
P2-15TD2	15			
P2-08TD1P	18			
P2-08TD2P	18			
P2-08TRS	18			
P2-08TAS	18			
P2-16TA	18	Feedthrough	ZL-RTB20 (-1)	
		Fuse	ZL-RFU20 ²	
P2-16TD1P	18	Feedthrough	ZL-RTB20 (-1)	
		Relay (Sourcing)	ZL-RTB20 (-1)	
			ZL-RRL16-24-1 ZL-RRL16W-24-1 ZL-RRL16F-24-1 ZL-RRL16HDF-24-1	
P2-16TD2P	18	Feedthrough	ZL-RTB20 (-1)	
		Relay (Sinking)	ZL-RTB20 (-1) ZL-RRL16-24-2 ZL-RRL16W-24-2 ZL-RRL16F-24-2 ZL-RRL16HDF-24-2	
P2-32TD1P	32	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
P2-32TD2P	32			
P2-16TR	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
		Fuse	ZL-RFU20 ²	

* Select the cable length by replacing the * with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

¹ These modules are not supported by the ZIPLink wiring system

² Note: Fuses (5 x 20 mm) are not included. See Edison Electronic Fuse section for (5 x 20 mm) fuse. S500 and GMA electronic circuit protection for fast-acting maximum protection. S506 and GMC electronic circuit protection for time-delay performance. Ideal for inductive circuits.

To ensure proper operation, do not exceed the voltage and current rating of ZIPLink module. ZL-RFU20 = 2A per circuit; ZL-RFU40 = 400 mA per circuit.



CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

Analog Input Modules

Productivity2000 Analog Input Module ZIPLink Selector						
I/O Analog Module	ZIPLink					
	# of Terms	Component	Part No.	Cable Part No.		
P2-04AD	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *		
P2-08AD-1						
P2-08AD-2						
P2-08ADL-1						
P2-08ADL-2						
P2-16AD-1	24					ZL-P2-CBL24 *
P2-16AD-2						
P2-16ADL-1						
P2-16ADL-2						
P2-06RTD	Matched Only			See Note 1		
P2-08THM	T/C Wire Only			See Note 1		
P2-08NTC	Copper Conductors	See Note 1				

* Select the cable length by replacing the * with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

¹ These modules are not supported by the ZIPLink wiring system.

Analog Output Modules

Productivity2000 Analog Output Module ZIPLink Selector				
I/O Analog Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-04DA	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-04DAL-1				
P2-04DAL-2				
P2-08DA-1				
P2-08DA-2				
P2-08DAL-1				
P2-08DAL-2	24			ZL-P2-CBL24 *
P2-16DA-1				
P2-16DA-2				
P2-16DAL-1				
P2-16DAL-2	18			ZL-P2-CBL18 *
P2-8AD4DA-1				
P2-8AD4DA-2				



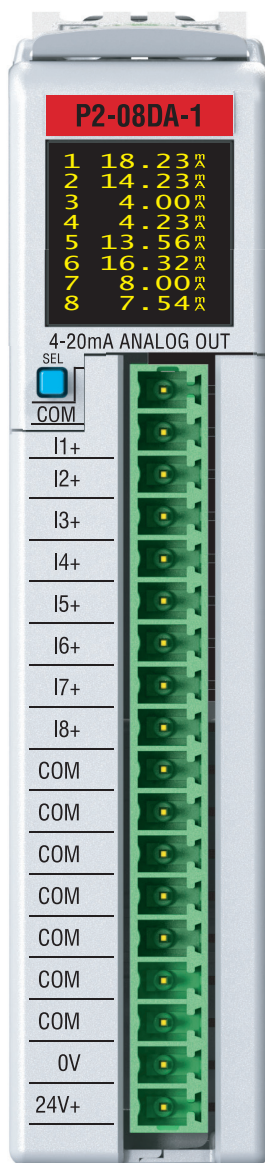
Analog Output Modules

P2-08DA-1

\$269.00

Current Analog Output

The P2-08DA-1 Current Analog Output Module provides eight channels of 4 to 20 mA sourcing outputs.



Terminal block sold separately.

Output Specifications

Output Channels (Commons)	8
Module Signal Output Range	4–20mA
Output Signal Resolution	16-bit
Resolution Value of LSB (least significant bit)	4–20mA = 0.244 μ A/count 1 LSB = 1 count
Data Range	0 to 65535 counts
Output Type (sourcing)	Current: 20mA max
Output Value in Fault Mode	Near 0mA
Load Impedance (Minimum External Power Supply)	0–570 Ω (19.2 VDC) 0–690 Ω (21.6 VDC) 0–810 Ω (24VDC) 0–930 Ω (26.4 VDC) 0–1100 Ω (30VDC) Minimum Load 0–125 Ω @ 0–45°C 250–715 Ω @ 0–60°C
Maximum Inductive Load	1mH
Allowed Load Type	Grounded
Maximum Inaccuracy	0.1% of range (Counts TBD) (including temperature drift)
Maximum Full Scale Calibration Error (not including offset error)	$\pm$ 0.025% of range maximum
Maximum Offset Calibration Error	$\pm$ 0.025% of range maximum
Accuracy vs. Temperature	$\pm$ 25PPM/°C max full scale calibration change ($\pm$ 0.0025% of range/°C)
Max Crosstalk	-96dB, 1 LSB
Linearity Error (End to End)	$\pm$ 16 LSB maximum ($\pm$ 0.025% of full scale) Monotonic with no missing codes
Output Stability and Repeatability	$\pm$ 10 count after 10 minute warm-up (typical)
Output Ripple	0.05% of full scale
Output Setting Time	300 μ s max, 5 μ s min (full scale change)
All Channel Update Rate	600 μ s
Maximum Continuous Overload	Outputs open circuit protected
Type of Output Protection	Electronically current limited to 20mA or less
Output Signal (power-up,-down)	4mA
External DC Power Required	24VDC @ 220mA (Loop Power Included)

Removable Terminal Block Specifications

Part Number	P2-RTB	P2-RTB-1
Number of positions	18 Screw Terminals	18 Spring Clamp Terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Maximum 1/4 in (6–7 mm) Strip Length	28–16 AWG (0.081–1.31 mm ²) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Maximum 19/64 in (7–8 mm) Strip Length
Conductors	"USE COPPER CONDUCTORS, 75°C" or equivalent.	
Screw Driver Width	1/8 in (3.8 mm) Maximum	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

We recommend using prewired **ZIP**Link cables and connection modules. See Wiring Solutions.

If you wish to hand-wire your module, a removable terminal block is sold separately. Order part number P2-RTB or P2-RTB-1.



Analog Output Modules

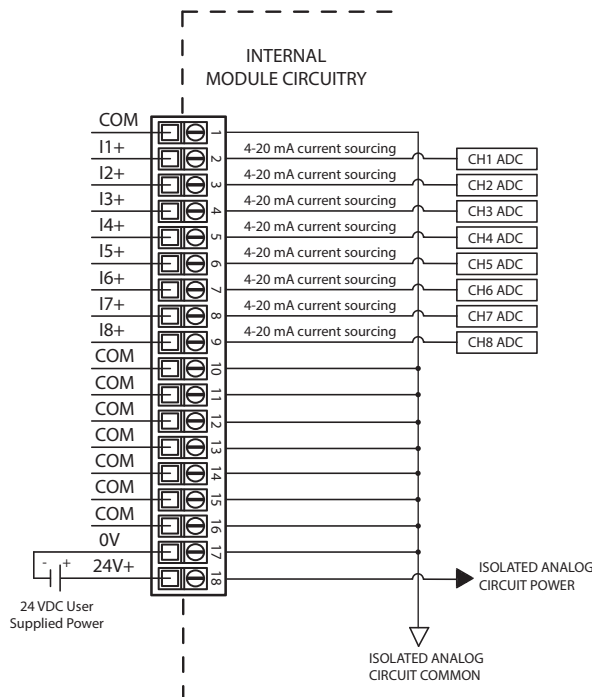
P2-08DA-1 (cont'd)

General Specifications	
Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Field to Logic Side Isolation	1800VAC applied for 1 second
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	700mW
Enclosure Type	Open Equipment
Module Keying to Backplane	Electronic
Module Location	Any I/O slot in a Productivity2000 System
Field Wiring	Use ZIP Link Wiring System or removable terminal block (not included). See Wiring Solutions.
EU Directive	See the "EU Directive" topic in the Productivity Suite Help File. Information can also be obtained at: www.productivity2000.com
Connector Type (Sold separately)	18-position removable terminal block
Weight	90g (3.2 oz)
Agency Approvals**	UL508 File E139594, Canada & USA CE (EN61131-2*)

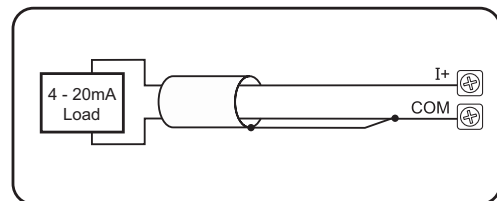
*Meets EMC and Safety requirements. See the Declaration of Conformity for details.

**To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific component part number web page.

Wiring Diagrams



Current Source Output Circuit



Wiring I/O Modules

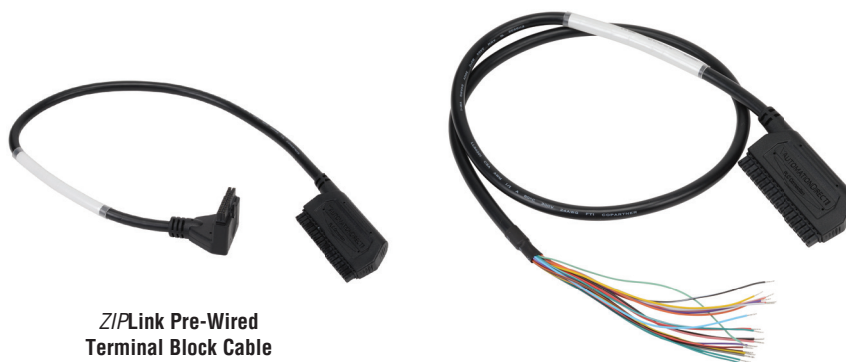
There are two available methods for wiring most I/O modules: The **ZIPLink** wiring system or hand wiring to the optional removable I/O module terminal blocks.

Note: Thermocouple and RTD modules are not compatible with the **ZIPLink** system and are shipped with the optional terminal blocks included.

ZIPLinks Wiring Systems

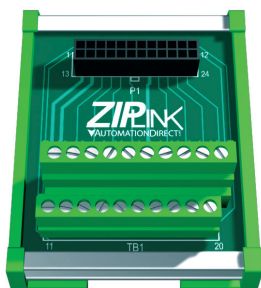
For wiring I/O modules, we strongly recommend using pre-wired **ZIPLink** wiring systems, which eliminate the need for hand wiring modules to terminal blocks.

See the selection matrix guide on the following pages.



**ZIPLink Pre-Wired
Terminal Block Cable**

ZIPLink Pigtail Cable



ZIPLink Module

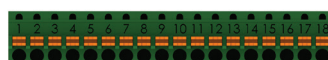
Removable Terminal Blocks

For most I/O modules you can also purchase a removable terminal block (part no. P2-RTB or P2-RTB-1).

Note: P2-RTB supplied with Thermocouple and RTD modules.



Removable Terminal Block P2-RTB



Removable Terminal Block P2-RTB-1

Terminal Block Removal





Wiring Solutions

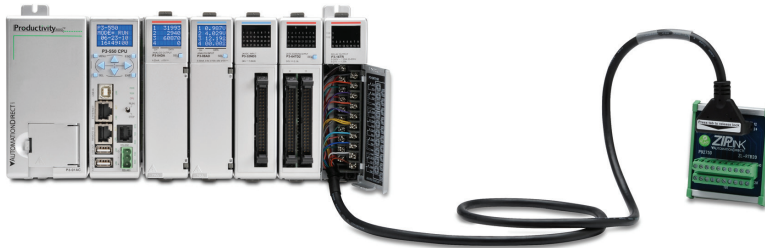
Wiring Solutions using the ZIPLink Wiring System

ZIPLinks eliminate the normally tedious process of wiring between devices by utilizing prewired cables and DIN rail mount connector modules. It's as simple as plugging in a cable connector at either end and terminating wires at only one end. Prewired cables keep installation clean and efficient, using half the space at a fraction of the cost of standard terminal blocks. There are several wiring solutions available when using the **ZIPLink** System ranging from

CPU I/O-to-**ZIPLink** Connector Modules that are ready for field termination, options for connecting to third party devices, GS Series, DuraPulse and SureServo Drives, and specialty relay, transorb and communications modules. Pre-printed I/O-specific adhesive label strips for quick marking of **ZIPLink** modules are provided with **ZIPLink** cables. See the following solutions to help determine the best **ZIPLink** system for your application.

Solution 1: DirectLOGIC, CLICK, Productivity2000 and Productivity3000 I/O Modules to ZIPLink Connector Modules

When looking for quick and easy I/O-to-field termination, a **ZIPLink** connector module used in conjunction with a prewired **ZIPLink** cable, consisting of an I/O terminal block at one end and a multi-pin connector at the other end, is the best solution.



Use the CPU I/O Modules to **ZIPLink** Connector Modules selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your I/O module/CPU,
2. Select a **ZIPLink** Module, and
3. Select a corresponding **ZIPLink** Cable.

Solution 2: DirectLOGIC, CLICK, Productivity2000 and Productivity3000 I/O Modules to 3rd Party Devices

When wanting to connect I/O to another device within close proximity of the I/O modules, no extra terminal blocks are necessary when using the **ZIPLink** Pigtail Cables. **ZIPLink** Pigtail Cables are prewired to an I/O terminal block with color-coded pigtail with soldered-tip wires on the other end.



Use the I/O Modules to 3rd Party Devices selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your CPU I/O module, and
2. Select a **ZIPLink** Pigtail Cable that is compatible with your 3rd party device.

Solution 3: GS Series and DuraPulse Drives Communication Cables

Need to communicate via Modbus RTU to a drive or a network of drives?

ZIPLink cables are available in a wide range of configurations for connecting to CPUs, SureServo, SureStep, Stellar Soft Starter and AC drives. Add a **ZIPLink** communications module to quickly and easily set up a multi-device network.

Use the Drives Communication selector tables located in the **ZIPLink** Wiring Solutions section to:

1. Locate your Drive and type of communications, and
2. Select a **ZIPLink** cable and other associated hardware.





Wiring Solutions

Solution 4: Serial Communications Cables

ZIPLink offers communications cables for use with *DirectLOGIC*, *CLICK*, *Productivity2000* and *Productivity3000* CPUs, that can also be used with other communications devices. Connections include a 6-pin RJ12 or 9-pin, 15-pin and 25-pin D-Sub connectors which can be used in conjunction with the RJ12 or D-Sub Feedthrough modules.

Using the **Serial Communications Cables** selector table located in the **ZIPLink Wiring Solutions** section,

1. Locate your connector type
2. Select a cable.



Solution 5: Specialty ZIPLink Modules

For additional application solutions, **ZIPLink Specialty Modules** are available in a variety of configurations including stand-alone relays, 24VDC and 120VAC transorb modules, D-Sub and RJ12 feedthrough modules, communication port adapter and distribution modules, and SureServo 50-pin I/O interface connection.

Using the **ZIPLink Specialty Modules** selector table located in the **ZIPLink Wiring Solutions** section:

1. Locate the type of application.
2. Select a **ZIPLink** module.



Solution 6: ZIPLink Connector Modules to 3rd Party Devices

If you need a way to connect your device to terminal blocks without all that wiring time, then our pigtail cables with color-coded soldered-tip wires are a good solution. Used in conjunction with any compatible **ZIPLink** Connector Modules, a pigtail cable keeps wiring clean and easy and reduces troubleshooting time.

Use the **Universal Connector Modules and Pigtail Cables** table located in the **ZIPLink Wiring Solutions** section to:

1. Select module type,
2. Select the number of pins,
3. Select cable.





CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

Discrete Input Modules

Productivity2000 Input Module ZIPLink Selector				
I/O Input Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-08ND3	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16ND3		Sensor/LED	ZL-LTB16-24-1	
P2-08NE3		Feedthrough	ZL-RTB20 (-1)	
P2-16NE3		Sensor/LED	ZL-LTB16-24-1	
P2-32ND3	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
		Sensor/LED	ZL-LTB32-24-1	
P2-32NE3	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
		Sensor/LED	ZL-LTB32-24-1	
P2-08NAS	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-16NA	18			

Specialty Modules

Productivity2000 Specialty & Motion Modules ZIPLink Selector				
I/O Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-HSI	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *S
P2-HSO				
P2-08SIM	See Note 1			
P2-SCM				



Discrete Output Modules

Productivity2000 Output Module ZIPLink Selector				
I/O Output Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-08TD1S	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-08TD2S	8			
P2-15TD1	15			
P2-15TD2	15			
P2-08TD1P	18			
P2-08TD2P	18			
P2-08TRS	18			
P2-08TAS	18			
P2-16TA	18	Feedthrough	ZL-RTB20 (-1)	
		Fuse	ZL-RFU20 ²	
P2-16TD1P	18	Feedthrough	ZL-RTB20 (-1)	
		Relay (Sourcing)	ZL-RTB20 (-1)	
			ZL-RRL16-24-1 ZL-RRL16W-24-1 ZL-RRL16F-24-1 ZL-RRL16HDF-24-1	
P2-16TD2P	18	Feedthrough	ZL-RTB20 (-1)	
		Relay (Sinking)	ZL-RTB20 (-1) ZL-RRL16-24-2 ZL-RRL16W-24-2 ZL-RRL16F-24-2 ZL-RRL16HDF-24-2	
P2-32TD1P	32	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40 *
P2-32TD2P	32			
P2-16TR	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
		Fuse	ZL-RFU20 ²	

* Select the cable length by replacing the * with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

¹ These modules are not supported by the ZIPLink wiring system

² Note: Fuses (5 x 20 mm) are not included. See Edison Electronic Fuse section for (5 x 20 mm) fuse. S500 and GMA electronic circuit protection for fast-acting maximum protection. S506 and GMC electronic circuit protection for time-delay performance. Ideal for inductive circuits.

To ensure proper operation, do not exceed the voltage and current rating of ZIPLink module. ZL-RFU20 = 2A per circuit; ZL-RFU40 = 400 mA per circuit.



CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

Analog Input Modules

Productivity2000 Analog Input Module ZIPLink Selector							
I/O Analog Module	ZIPLink						
	# of Terms	Component	Part No.	Cable Part No.			
P2-04AD	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *			
P2-08AD-1							
P2-08AD-2							
P2-08ADL-1							
P2-08ADL-2							
P2-16AD-1	24			Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL24 *	
P2-16AD-2							
P2-16ADL-1							
P2-16ADL-2							
P2-06RTD							Matched Only
P2-08THM	T/C Wire Only					See Note 1	
P2-08NTC	Copper Conductors					See Note 1	

* Select the cable length by replacing the * with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

¹ These modules are not supported by the ZIPLink wiring system.

Analog Output Modules

Productivity2000 Analog Output Module ZIPLink Selector				
I/O Analog Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
P2-04DA	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
P2-04DAL-1				
P2-04DAL-2				
P2-08DA-1				
P2-08DA-2				
P2-08DAL-1				
P2-08DAL-2	24			ZL-P2-CBL24 *
P2-16DA-1				
P2-16DA-2				
P2-16DAL-1				
P2-16DAL-2	18			ZL-P2-CBL18 *
P2-8AD4DA-1				
P2-8AD4DA-2				



I/O Modules

A variety of discrete, analog and specialty I/O modules are available for use in a Productivity2000 System. Specifications for each module are on the following pages.

A filler module is available for unused I/O module slots (part number P2-FILL).

Discrete Input Modules

Productivity2000 Discrete Input Modules			
Part Number	Number of Inputs	Description	Price
P2-08SIM	8	Input Simulator Module	\$47.00
P2-08ND3	8	Sinking/Sourcing 12–24 VDC	\$46.00
P2-08NE3	8	Sinking/Sourcing 24V AC/DC	\$40.00
P2-16ND3	16	Sinking/Sourcing 12–24 VDC	\$69.00
P2-16NE3	16	Sinking/Sourcing 24V AC/DC	\$69.00
P2-32ND3	32	Sinking/Sourcing 24 VDC	\$99.00
P2-32NE3	32	Sinking/Sourcing 24V AC/DC	\$99.00
P2-08NAS	8	AC Isolated 100-120 VAC	\$77.00
P2-16NA	16	AC 100-240 VAC	\$105.00

Analog Input Modules

Productivity2000 Analog Input Modules			
Part Number	Number of Channels	Description	Price
P2-04AD	4	Analog Input (Voltage/Current)	\$195.00
P2-08AD-1	8	Analog Input (Current)	\$199.00
P2-08AD-2	8	Analog Input (Voltage)	\$219.00
P2-08ADL-1*	8	Analog Input (Current)	\$143.00
P2-08ADL-2*	8	Analog Input (Voltage)	\$157.50
P2-16AD-1	16	Analog Input (Current)	\$249.00
P2-16AD-2	16	Analog Input (Voltage)	\$275.00
P2-16ADL-1*	16	Analog Input (Current)	\$178.00
P2-16ADL-2*	16	Analog Input (Voltage)	\$196.00
P2-06RTD	6	Analog RTD Input	\$325.00
P2-08THM	8	Analog Thermocouple Input	\$329.00
P2-08NTC	8	Analog Thermistor Input	\$265.00

Analog Output Modules

Productivity2000 Analog Output Modules			
Part Number	Number of Channels	Description	Price
P2-04DA	4	Analog Output (Voltage/Current)	\$194.00
P2-04DAL-1*	4	Analog Output (Current)	\$110.00
P2-04DAL-2*	4	Analog Output (Voltage)	\$101.00
P2-08DA-1	8	Analog Output (Current)	\$269.00
P2-08DA-2	8	Analog Output (Voltage)	\$249.00
P2-08DAL-1*	8	Analog Output (Current)	\$202.00
P2-08DAL-2*	8	Analog Output (Voltage)	\$195.50
P2-16DA-1	16	Analog Output (Current)	\$354.00
P2-16DA-2	16	Analog Output (Voltage)	\$339.00
P2-16DAL-1*	16	Analog Output (Current)	\$253.00
P2-16DAL-2*	16	Analog Output (Voltage)	\$243.00

* Low resolution analog modules without OLED display.

Discrete Output Modules

Productivity2000 Discrete Output Modules			
Part Number	Number of Outputs	Description	Price
P2-08TD1S	8	Isolated Sinking	\$47.00
P2-08TD2S	8	Isolated Sourcing	\$47.00
P2-15TD1	15	Sinking	\$65.00
P2-15TD2	15	Sourcing	\$65.00
P2-08TD1P	8	Sinking Protected	\$41.00
P2-08TD2P	8	Sourcing Protected	\$41.00
P2-16TD1P	16	Sinking Protected	\$69.00
P2-16TD2P	16	Sourcing Protected	\$69.00
P2-32TD1P	32	Sinking Protected	\$99.00
P2-32TD2P	32	Sourcing Protected	\$99.00
P2-08TAS	8	Isolated AC	\$105.00
P2-16TA	16	100-240 VAC Output	\$129.00
P2-08TRS	8	Isolated Relay	\$51.00
P2-16TR	16	Relay	\$95.00

Productivity2000 Analog Input/Output Modules			
Part Number	Number of Channels	Description	Price
P2-8AD4DA-1	8/4	Analog Input/Output (Current)	\$310.00
P2-8AD4DA-2	8/4	Analog Input/Output (Voltage)	\$310.00

Specialty Modules

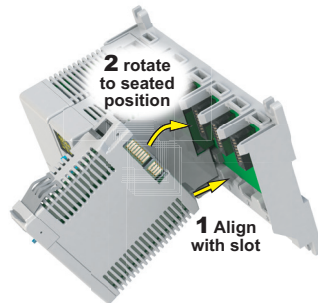
Productivity2000 Specialty Modules			
Part Number	Number of Channels	Description	Price
P2-HSI**	2	High-Speed Input	\$195.00
P2-HSO**	2	High-Speed Output	\$195.00
P2-SCM	4 ports	Serial Communications Module	\$165.00

** ZIPlink required.

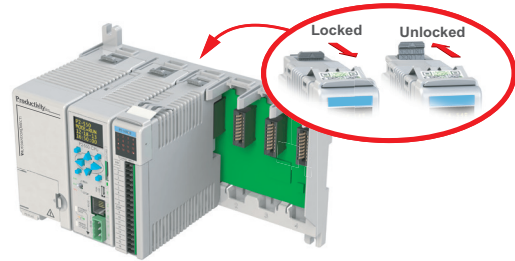
I/O Module Installation Procedure

WARNING: Do not apply field power until the following steps are completed. See hot-swapping procedure for exceptions.

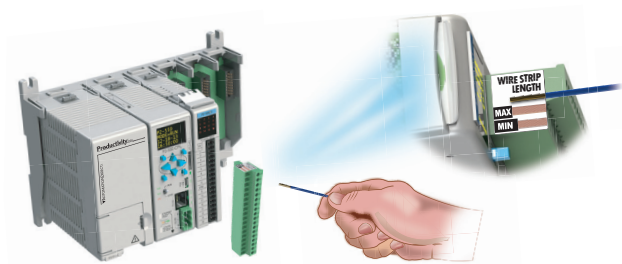
Step One: Align module catch with base slot and rotate module into connector.



Step Two: Pull top locking tab toward module face. Click indicates lock is engaged.



Step Three: Attach field wiring using removable terminal block or *ZIPLink* wiring system.



WARNING: Explosion hazard – Do not connect or disconnect connectors or operate switches while circuit is live unless the area is known to be non-hazardous. Do not hot-swap modules unless the area is known to be non-hazardous.

Input Simulator & Filler Module

P2-08SIM \$165.00

Input Simulator Module

The P2-08SIM Input Simulator module provides 8 toggle switches to simulate input devices.



Input Specifications

Inputs per Module	8 Internal switches
OFF to ON Response	Max. 20ms
ON to OFF Response	Max. 20ms
Status Indicators	Logic Side (8 points)

General Specifications

Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Heat Dissipation	200mW
Enclosure Type	Open Equipment
Module Location	Any I/O slot in a Productivity2000 System.
EU Directive	See the "EU Directive" topic in the Productivity Suite Help File. Information can also be obtained at: www.productivity2000.com
Weight	90g (3.2 oz.)
Agency Approvals**	UL508 file E139594, Canada & USA CE (EN61131-2*)

* Meets EMC and Safety requirements. See the D.O.C. for details.

**For complete system limits, please refer to the "Hardware and Communication Limits" table in the Productivity Suite online "Help" file "Hardware Configuration", topic P050.

P2-FILL \$11.00

Filler Module

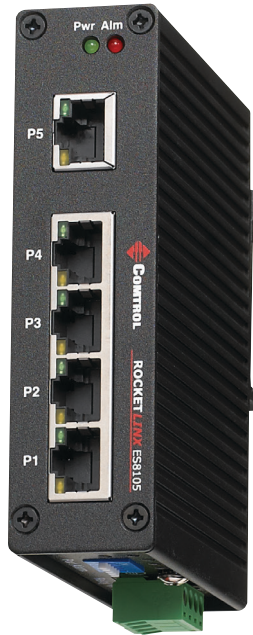
The P2-FILL filler module protects unused I/O module slots in the base.





RocketLinx® ES8105

Part Number: 32025-8



KEY FEATURES AND BENEFITS

- Compact industrial Fast Ethernet switch
- Five - 10/100BASE-TX ports
- 3.2Gbps Switch Fabric
- AC or DC power input (18 to 32VDC or 18 to 27VAC)
- DIN rail or wall-mount installation
- -25° to +70° C extended operating temperature for extreme environments
- Alarm relay output for port event notifications
- Aluminum metal case with IP31 grade protection for drip-proof and dustproof protection
- Supports 1.5KV Hi-Pot isolation protection
- Plug-and-play
- RoHS2 compliant under CE
- UL listed

ETHERNET SWITCH

PRODUCT DESCRIPTION

The RocketLinx ES8105 is a compact 5-port Fast Ethernet industrial switch featuring a 3.2Gbps switch fabric with Store and Forward technology, and housed in a slim industrial enclosure to save rail or panel space in compact system designs.

For installation in hazardous or industrial environments, the RocketLinx ES8105 features an extended operating temperature range (-25° to 70° C) and provides IP31 protection to guard against dust and water.

The ES8105 is an unmanaged switch that requires no user setup and immediately starts operating as soon as power is applied for true “plug-and-play” operation. The RocketLinx ES8105 supports 18

to 27VAC or 18 to 32VDC power inputs and provides built-in reverse power polarity protection.

For ease-of-maintenance, the RocketLinx ES8105 has one alarm relay that is controlled by a DIP switch to assist engineers with on-site notifications in the case of link-down events.

RocketLinx Reliability

With the 1.5KV Hi-Pot isolation protection, CE/FCC/UL regulatory approvals, high MTBF, a 5-year warranty, and rugged aluminum design, the RocketLinx ES8105 is the ideal switch solution for industrial and hazardous environments.

ROCKETLINX SPECIFICATIONS

HARDWARE

Network Interface	10/100BASE-TX
Enclosure	IP31 Grade Aluminum Metal Case Drop-Waterproof and Dustproof
Installation Method	DIN rail
LED Indicators	Power, Alarm, 10Mbps Link/Activity, 100Mbps Link/
Activity	
Dimensions	3.9" x 1.2" x 4.4" 99 x 30.5 x 112 mm
Product Weight	0.65 lbs 0.295 kg

TECHNOLOGY

Standard	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX
Switch Technology	3.2Gbps switch fabric Store and forward technology
Aggregate System Throughput	1.49Mbps
Flow Control	IEEE 802.3x Flow control

ETHERNET SPECIFICATIONS

Connector Type	RJ45
Number of Ports	5
Cable Types	Cat 3, Cat 4, Cat 5, Cat 5e (UTP or STP)
Link Distance	100 Meters
Port Type	10/100BASE-TX Auto MDI/MDIX, auto-negotiation
Port Failure Alarm	Yes
Relay Rating	DIP switch enabled 1A Max. @ 24VDC

ELECTRICAL SPECIFICATIONS

Device	
Power Input	AC or DC
DC Input Voltage	18 to 32VDC
Current Consumption +24VDC	130mA
AC Input Voltage	18 to 27VAC, 47 to 63
HZ Power Consumption (Max)	3W
Number of Power Connectors	1
Power Connector Type	4-Pin Screw Terminal Block
Reverse Polarity Protection	Yes

ENVIRONMENTAL SPECIFICATIONS

Air temperature	
System On	-25° to +70° C
System Off	-40° to +85° C
MTBF	
(Mean Time Between Failures)	93.45 years

Operating Humidity	(non-condensing) 0% to 95%
Storage Humidity	0% to 95%

EXPORT INFORMATION

Packaged Shipping Weight	0.90 lbs 0.41 kg
Package Dimensions	6.0" x 2.5" x 5.0" 15.24 x 6.35 x 12.7 cm
UPC Code	7-56727-32025-8
ECCN	5A991
Schedule B Number	8517.62.0050

REGULATORY APPROVALS

Emissions	Canadian EMC Requirements ICES-003 European Standard EN55022 CISPR 22 FCC Part 15 Subpart B Class A limit
Immunity	European Standard EN55024 IEC 1000-4-2/EN61000-4-2: ESD IEC 1000-4-3/EN61000-4-3: RF IEC 1000-4-4/EN61000-4-4: Fast Transient/Burst IEC 1000-4-5/EN61000-4-5: Surge IEC 1000-4-6/EN61000-4-6: Conducted Disturbance IEC 1000-4-8/EN61000-4-8: Magnetic Field IEC 1000-4-11/EN61000-4-11: DIPS and Voltage
Variations	
Safety	IEC 60950/EN60950 (LISTED) CSA C22.2 No. 60950/UL60950 Third Edition
Other	RoHS2 compliant

REGULATORY APPROVALS



RECOMMENDED PRODUCTS

32100-2	Power Supply PS1020 Universal (24V, 20W, Din Rail)
32101-9	Power Supply PS1060 Universal (24V, 60W, Din Rail)
32102-6	Power Supply PS1100 Universal (24V, 100W, Din Rail)
1200038	External Power Adapter, Bare Wires (24VDC, 24W, 3-Wire)



Warranty Information

Control offers a 30-day satisfaction guarantee and 5-year limited warranty.

Sales Support

+1.763.957.6000
sales@comtrol.com

Technical Support

+1.763.957.6000
www.comtrol.com/support

Email, FTP, and Web Support

info@comtrol.com
ftp.comtrol.com
www.comtrol.com

Signet 2551 Magmeter Flow Sensor



MODEL #: 3-2551-P0-42

Available in a variety of wetted materials and ideal for pipe sizes up to DN900 (36 in.)



The Signet 2551 Magmeter is an insertion style magnetic flow sensor that features no moving parts. The patented* sensor design is available in corrosion-resistant materials to provide long-term reliability with minimal maintenance costs. Material options include PP with stainless steel, PVDF with Hastelloy-C, or PVDF with Titanium. Utilizing the comprehensive line of Signet installation fittings, sensor alignment and insertion depth is automatic. These versatile, simple-to-install sensors deliver accurate flow measurement over a wide dynamic range in pipe sizes ranging from DN15 to DN900 (½ to 36 inches), satisfying the requirements of many diverse applications.

Signet 2551 Magmeters offer many output options of frequency/digital (S³L) or 4 to 20 mA which are available on both the blind and display versions. The frequency or digital (S³L) sensor output can be used with Signet's extensive line of flow instruments while the 4 to 20 mA output can be used for a direct input to PLCs, chart recorders, etc. Both the 4 to 20 mA output and digital (S³L) sensor interface is available for long distance signal transmission. An additional benefit is the empty pipe detection which features a zero flow output when the sensors are not completely wetted. Also, the frequency output is bi-directional while the 4 to 20 mA output can be set for uni- or bi-directional flow using the display or the 3-0250 USB to Digital (S³L) Configuration/Diagnostic setup tool which connects to PCs for programming capabilities.

In addition the display version of the 2551 Magmeter is available with relays and features permanent and resettable totalizer values which can be stored and seen on the display. Also, the display contains multi-languages with English, Spanish, German, French, Italian and Portuguese menu options.

Features

- Test certificate included for -X0, -X1
- Patented Magmeter technology*
- No moving parts
- Bi-directional flow
- Empty pipe detection
- Installs into pipe sizes DN15 to DN900 (0.5 to 36 in.)
- Operating range 0.05 to 10 m/s (0.15 to 33 ft/s)
- Accurate measurement even in dirty liquids
- Polypropylene or PVDF retaining nuts
- Blind 4 to 20 mA, digital (S³L), frequency, relay output
- No pressure drop
- Corrosion resistant materials; PP or PVDF with SS, Hastelloy-C, or Titanium
- Multi-language display menu available



Applications

- Chemical Processing
- Water and Wastewater Monitoring
- Metal Recovery and Landfill Leachate
- Commercial Pools, Spas, and Aquariums
- HVAC
- Irrigation
- Scrubber Control
- Neutralization Systems
- Industrial Water Distribution

* U.S. Patent No: 7,055,396 B1

Specifications

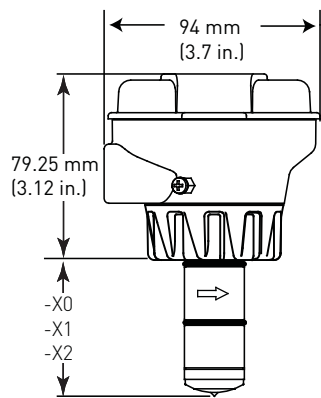
General			
Operating Range	0.05 to 10 m/s	0.15 to 33 ft/s	
Pipe Size Range	DN15 to DN900	½ in. to 36 in.	
Linearity	± 1% reading plus 0.1% of full scale		
Repeatability	±0.5% of reading @ 25 °C (77 °F)		
Minimum Conductivity	20 µS/cm		
Wetted Materials			
Sensor Body/Electrodes and Grounding Ring	-P0, -P1, -P2: PP/316L SS		
	-T0, -T1, -T2: PVDF/Titanium		
	-V0, -V1, -V2: PVDF/Hastelloy-C		
O-rings	FPM (standard) EPR (EPDM), FFPM (optional)		
Case	PBT		
Display Window	Polyamide (transparent nylon)		
Protection Rating	NEMA 4X/IP65		
Electrical			
Power Requirements	4 to 20 mA	24 VDC ±10%, regulated, 22.1 mA max.	
	Frequency	5 to 24 VDC ±10%, regulated, 15 mA max.	
	Digital (S³L)	5 to 6.5 VDC, 15 mA max.	
Auxiliary (only required for units with relays)		9 to 24 VDC, 0.4 A max.	
Reverse Polarity and Short Circuit Protected			
Current Output 4 to 20 mA	Loop Accuracy	32 µA max. error (25 °C @ 24 VDC)	
	Isolation	Low voltage < 48 VAC/DC from electrodes and auxiliary power	
	Maximum Cable	300 m (1000 ft)	
	Error condition	22.1 mA	
	Max. Loop Resistance	300 Ω	
	Compatible with PLC, PC or similar equipment		
	4 to 20 mA load needed		
	Frequency Output	Output Modes	Freq., or Mirror Relay (display version only)
	Max. Pull-up Voltage	30 VDC	
	Max. Current Sink	50 mA, current limited	
	Maximum Cable	300 m (1000 ft)	
	Compatible with Signet Model 8550, 8900, 9900, 9900-1BC		
	Digital (S³L) Output	Serial ASCII, TTL level 9600 bps	
	Compatible with Model Signet 8900 controller		
Relay Specifications			
#1, #2 Type	Mechanical SPDT		
Rating	5 A @ 30 VDC max., 5 A @ 250 VDC max.		
#3 Type	Solid State		
	50 mA @ 30 VDC, 50 mA @ 42 VAC		
Hysteresis	User adjustable for exiting alarm condition		
Alarm On Trigger Delay	Adjustable (0 to 9999.9 sec.)		
Relay Modes	Off, Low, High, Window, and Proportional Pulse		
Relay Source	Flow Rate, Resettable Totalizer		
Error Condition	Selectable; Fail Open or Closed		
Display			
Characters		2 x 16	
Contrast		User-set in four levels	
Backlighting (only on relay versions)		Requires external 9-24 VDC, 0.4 mA max.	
Max. Temperature/Pressure Rating			
Storage Temperature		-20 °C to 70 °C	-4 °F to 158 °F
Relative Humidity		0 to 95% (non-condensing)	
Operating Temperature	Ambient	-10 °C to 70 °C	14 °F to 158 °F
	Media	0 °C to 85 °C	32 °F to 185 °F
Maximum Operating Pressure	10.3 bar @ 25 °C		150 psi @ 77 °F
	1.4 bar @ 85 °C		20 psi @ 185 °F
Shipping Weight			
	0.680 kg	1.50 lb	
Standards and Approvals			
CE, FCC, UL, CUL (for display versions with relays)			
RoHS compliant, China RoHS			
NEMA 4X / IP65 Enclosure (with cap installed)			
Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety			

Dimensions

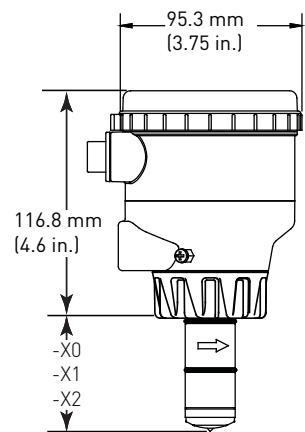
Pipe Range	
1/2 to 4 in.	-X0 = 58 mm (2.3 in.)
5 to 8 in.	-X1 = 91 mm (3.6 in.)
10 to 36 in.	-X2 = 167 mm (6.6 in.)

X = Sensor Body P, T, or V

Blind version



Display version



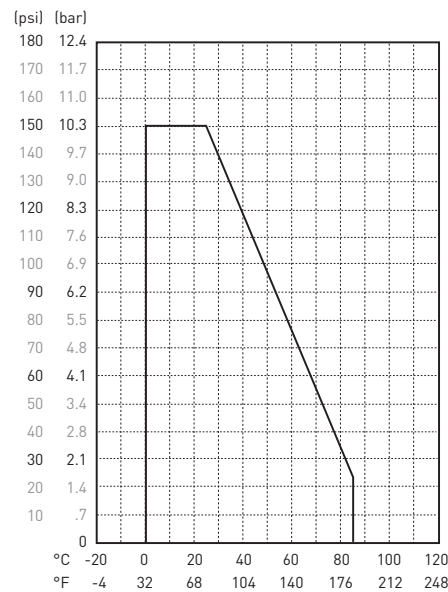
System Overview

Stand-Alone	Panel Mount	Field Mount - Pipe, Tank, Wall	4 to 20 mA Input
Signet Model 2551 Magmeter	Signet Instruments 8550 8900 9900 9900-1BC	Signet Instruments 8550 9900 with 3-8050 Universal Mount Kit	Customer Supplied Chart Recorder or Programmable Logic Controller
	 	  + 	 OR 
Signet 2551 Magmeter  			
Signet Fittings     			
All sold separately			

Operating Temperature/Pressure Graphs

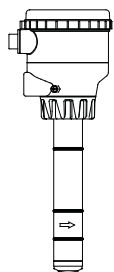
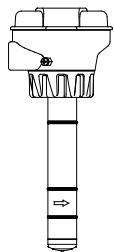
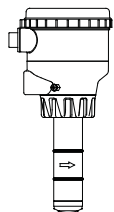
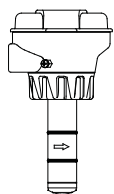
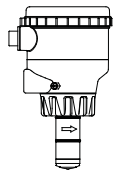
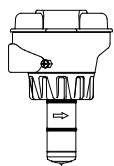
Note:
The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.

- Application Tips**
- Note minimum process liquid conductivity requirement is 20 $\mu\text{s}/\text{cm}$.
 - Install sensor using standard Signet installation fittings for best results.
 - Sensor is capable of retrofitting into existing 515 and 2536 fittings.



Please refer to Wiring, Installation, and Accessories sections for more information.

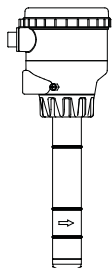
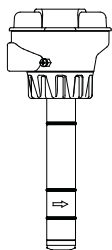
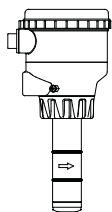
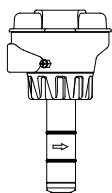
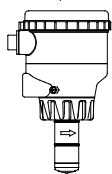
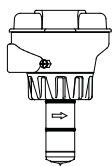
Ordering Information



Pipe Size	Mfr. Part No.	Code	Sensor Body
Frequency or Digital (S²L) output			
programmable open collector for use with any Signet Flow Instrument or the 8900 or 9900 Instruments**			
DN15 to DN100 (½ to 4 in.)			
No Display			
	3-2551-P0-11	159 001 105	Polypropylene and 316L SS
	3-2551-T0-11	159 001 108	PVDF and Titanium
	3-2551-V0-11	159 001 257	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P0-21	159 001 267	Polypropylene and 316L SS
	3-2551-T0-21	159 001 436	PVDF and Titanium
	3-2551-V0-21	159 001 269	PVDF and Hastelloy-C
with display			
	3-2551-P0-41	159 001 261	Polypropylene and 316L SS
	3-2551-T0-41	159 001 433	PVDF and Titanium
	3-2551-V0-41	159 001 263	PVDF and Hastelloy-C
DN125 to DN200 (5 to 8 in.)			
No Display			
	3-2551-P1-11	159 001 106	Polypropylene and 316L SS
	3-2551-T1-11	159 001 109	PVDF and Titanium
	3-2551-V1-11	159 001 258	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P1-21	159 001 268	Polypropylene and 316L SS
	3-2551-T1-21	159 001 437	PVDF and Titanium
	3-2551-V1-21	159 001 270	PVDF and Hastelloy-C
with Display			
	3-2551-P1-41	159 001 262	Polypropylene and 316L SS
	3-2551-T1-41	159 001 434	PVDF and Titanium
	3-2551-V1-41	159 001 264	PVDF and Hastelloy-C
DN250 to DN900 (10 to 36 in.)			
No Display			
	3-2551-P2-11	159 001 107	Polypropylene and 316L SS
	3-2551-T2-11	159 001 448	PVDF and Titanium
	3-2551-V2-11	159 001 450	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P2-21	159 001 435	Polypropylene and 316L SS
	3-2551-T2-21	159 001 454	PVDF and Titanium
	3-2551-V2-21	159 001 456	PVDF and Hastelloy-C
with Display			
	3-2551-P2-41	159 001 432	Polypropylene and 316L SS
	3-2551-T2-41	159 001 460	PVDF and Titanium
	3-2551-V2-41	159 001 462	PVDF and Hastelloy-C

**This option is a programmable open collector output that is available with display versions only.

Ordering Information (continued)



Pipe Size	Mfr. Part No.	Code	Sensor Body
-----------	---------------	------	-------------

4 to 20 mA output for use with PLC, PC or similar equipment

DN15 to DN100 (½ to 4 in.)

No Display

3-2551-P0-12	159 001 110	Polypropylene and 316L SS
3-2551-T0-12	159 001 113	PVDF and Titanium
3-2551-V0-12	159 001 259	PVDF and Hastelloy-C

with Display, two SPDT relays, one solid state relay

3-2551-P0-22	159 001 273	Polypropylene and 316L SS
3-2551-T0-22	159 001 439	PVDF and Titanium
3-2551-V0-22	159 001 275	PVDF and Hastelloy-C

with Display

3-2551-P0-42	159 001 279	Polypropylene and 316L SS
3-2551-T0-42	159 001 442	PVDF and Titanium
3-2551-V0-42	159 001 281	PVDF and Hastelloy-C

DN125 to DN200 (5 to 8 in.)

No Display

3-2551-P1-12	159 001 111	Polypropylene and 316L SS
3-2551-T1-12	159 001 114	PVDF and Titanium
3-2551-V1-12	159 001 260	PVDF and Hastelloy-C

with Display, two SPDT relays, one solid state relay

3-2551-P1-22	159 001 274	Polypropylene and 316L SS
3-2551-T1-22	159 001 440	PVDF and Titanium
3-2551-V1-22	159 001 276	PVDF and Hastelloy-C

with Display

3-2551-P1-42	159 001 280	Polypropylene and 316L SS
3-2551-T1-42	159 001 443	PVDF and Titanium
3-2551-V1-42	159 001 282	PVDF and Hastelloy-C

DN250 to DN900 (10 to 36 in.)

No Display

3-2551-P2-12	159 001 112	Polypropylene and 316L SS
3-2551-T2-12	159 001 449	PVDF and Titanium
3-2551-V2-12	159 001 451	PVDF and Hastelloy-C

with Display, two SPDT relays, one solid state relay

3-2551-P2-22	159 001 438	Polypropylene and 316L SS
3-2551-T2-22	159 001 455	PVDF and Titanium
3-2551-V2-22	159 001 457	PVDF and Hastelloy-C

with Display

3-2551-P2-42	159 001 441	Polypropylene and 316L SS
3-2551-T2-42	159 001 461	PVDF and Titanium
3-2551-V2-42	159 001 463	PVDF and Hastelloy-C

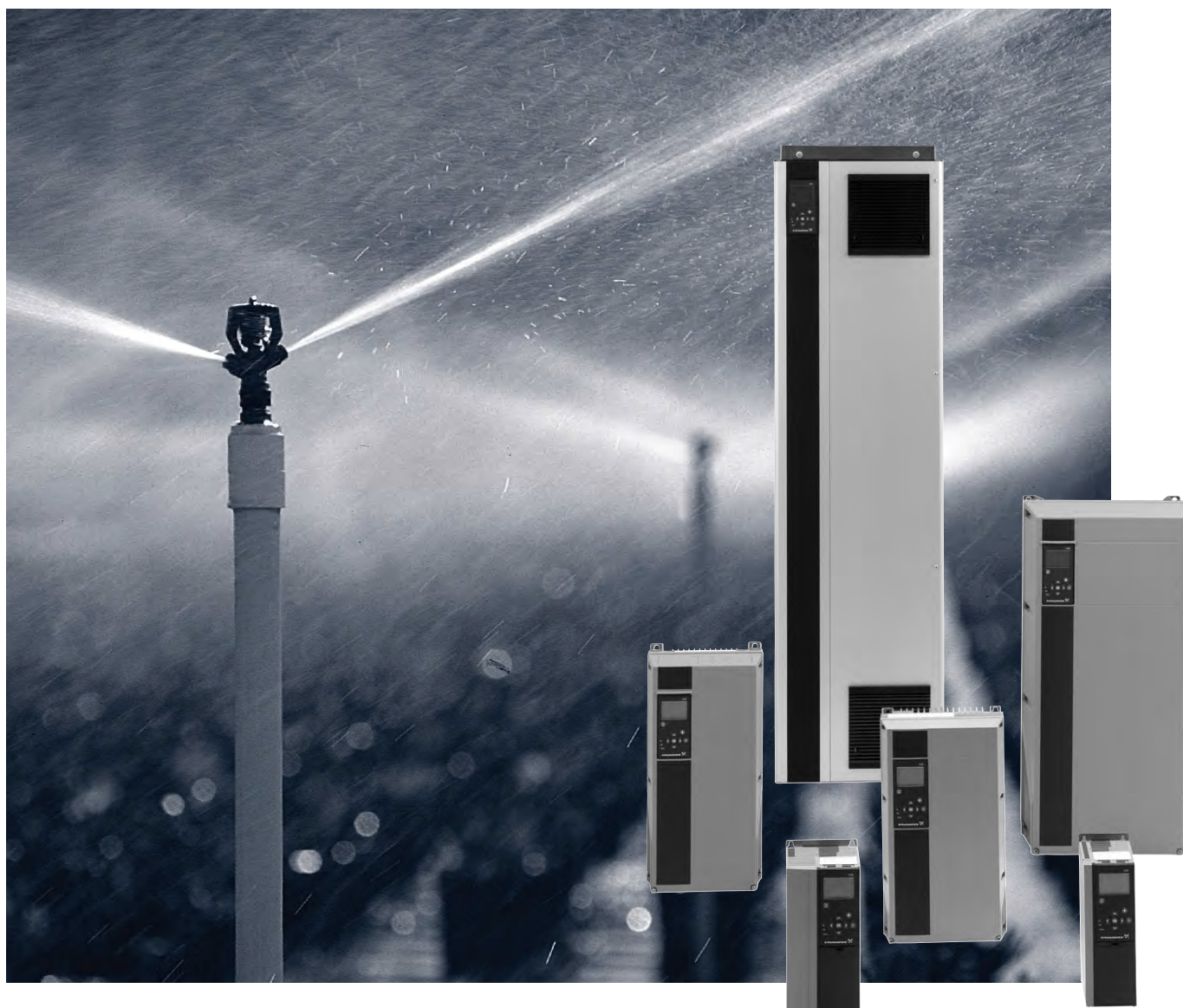
Accessories and Replacement Parts

Mfr. Part No.	Code	Description
O-Rings		
1220-0021	198 801 000	O-ring, FPM (2 required per sensor)
1224-0021	198 820 006	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	198 820 007	O-ring, FFPM (2 required per sensor)
Replacement Transducers		
3-2551-P0	159 001 211	PP/316L SS, DN15 to DN100 (½ to 4 in.) pipe
3-2551-P1	159 001 212	PP/316L SS, DN125 to DN200 (5 to 8 in.) pipe
3-2551-P2	159 001 444	PP/316L SS, DN250 to DN900 (10 to 36 in.) pipe
3-2551-T0	159 001 213	PVDF/Titanium, DN15 to DN100 (½ to 4 in.) pipe
3-2551-T1	159 001 214	PVDF/Titanium, DN125 to DN200 (5 to 8 in.) pipe
3-2551-T2	159 001 445	PVDF/Titanium, DN250 to DN900 (10 to 36 in.) pipe
3-2551-V0	159 001 376	PVDF/Hastelloy-C, DN15 to DN100 (½ to 4 in.) pipe
3-2551-V1	159 001 377	PVDF/Hastelloy-C, DN125 to DN200 (5 to 8 in.) pipe
3-2551-V2	159 001 446	PVDF/Hastelloy-C, DN250 to DN900 (10 to 36 in.) pipe
Replacement Electronics Module		
3-2551-11	159 001 215	Magmeter electronics, frequency or digital (S ³ L) output
3-2551-12	159 001 216	Magmeter electronics, 4 to 20 mA output
3-2551-21	159 001 372	Magmeter display electronics, frequency or digital (S ³ L) output, with relays
3-2551-22	159 001 373	Magmeter display electronics, 4 to 20 mA output w/relays
3-2551-41	159 001 374	Magmeter display electronics, frequency or digital (S ³ L) output
3-2551-42	159 001 375	Magmeter display electronics, 4 to 20 mA output
Other		
P31536	198 840 201	Sensor plug, Polypropylene
7310-1024	159 873 004	24 VDC Power Supply, 0.42 A, 10W
7310-2024	159 873 005	24 VDC Power Supply, 1.0 A, 24W
7310-4024	159 873 006	24 VDC Power Supply, 1.7 A, 40W
7310-6024	159 873 007	24 VDC Power Supply, 2.5 A, 60W
7310-7024	159 873 008	24 VDC Power Supply, 4.0 A, 96W
3-8050.390-1	159 001 702	Retaining Nut Replacement Kit, NPT, Valox
3-8050.390-3	159 310 116	Retaining Nut Replacement Kit, NPT, PP
3-8050.390-4	159 310 117	Retaining Nut Replacement Kit, NPT, PVDF
3-8551.521	159 001 378	Clear plastic cap for display
1222-0042	159 001 379	O-ring for clear plastic cap, EPR (EPDM)
3-0250	159 001 538	USB to digital (S ³ L) Configuration/Diagnostic tool

MODEL #: CUE 3x380-500V IP55 7.5kW

Grundfos CUE

Frequency converters for pump control
60 Hz



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— to successfully develop, produce and sell high-quality pumps and pumping systems worldwide, contributing to a better quality of life and a healthy environment



Bjerringbro, Denmark



Fresno, California



Olathe, Kansas



Monterrey, Mexico



Allentown, Pennsylvania



Oakville, Ontario

- One of the 3 largest pump companies in the world
 - The second largest manufacturer of submersible motors in the world
 - World headquarters in Denmark
 - North American headquarters in Kansas City - Manufacturing in Fresno, California
 - 72 companies in 41 countries
 - More than 10 million motors and pumps produced annually worldwide
 - North American companies operating in USA, Canada and Mexico
 - Continuous reinvestment in growth and development enables the company to
- BE** responsible, **THINK** ahead, and **INNOVATE**

Grundfos CUE

The CUE is a series of frequency converters designed for speed control of a wide range of Grundfos pumps.

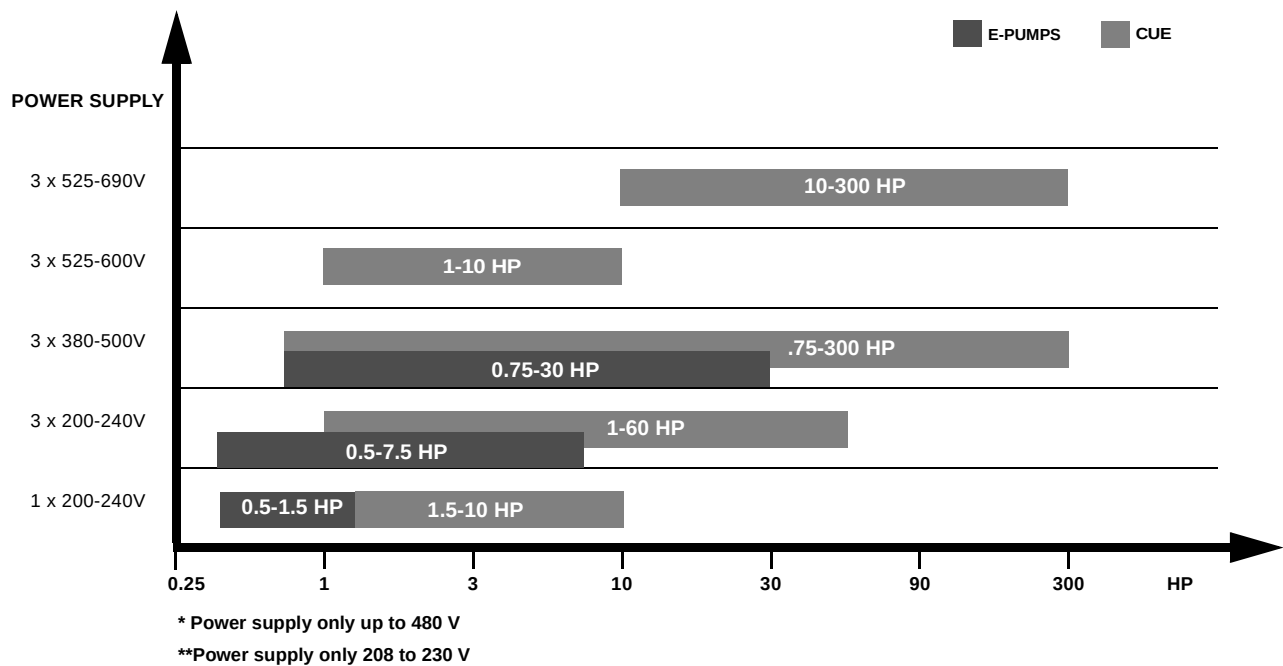


Fig. 1 Grundfos CUE solution

Built-in E-pump functionality

The CUE solution contains the same control functionality as the Grundfos E-pumps and is thus a supplement to the E-pump range. See the table below.

All CUE Solutions are available in two enclosure classes: IP21 (NEMA 1) or IP55 (Nema 12).



Designed for Grundfos pumps

The CUE can be used in both new and existing installations, but the pump and motor should be suitable for use with frequency converters.

The table below shows which Grundfos pump types the CUE is designed for.

Pump type
AFG
AMD
AMG
BM, BMB, BMP
BME, BMET, BMEX
CH, CHI, CHN, CHV
CHIU
Contra
CPH, CPV
CR, CRI, CRN, CRT
CRK
CV
DP, EF
durietta
Euro HYGIA
F&B HYGIA
HS
LC, LF
MAXA, MAXANA
MTA, MTH, MTR
MTB
NB, NK
NBG, NKG
S
SE, SEN, SEV
SP, SP-G, SP-NE
SPK
SRP
TP
VL

Further technical documentation

- Installation and operating instructions contain all information for putting the CUE into operation.
- Installation and operating instructions of the MCB 114 sensor input module contain all information for installation of the MCB 114.

Technical documentation is available on www.grundfos.com > International website > WebCAPS.

If you have any questions, please contact the nearest Grundfos company or service workshop.

User interface

The user interface offers these possibilities:

- Local operation via a control panel with graphic display where the menu structure is based on the well-known system from Grundfos E-pumps.
- Remote operation via external signals, for instance via digital inputs or GENIbus.
- Monitoring of operating status via indicator lights and signal relays.
- Display of alarm or warning and logging of the last five alarms and warnings.

Functions

Control modes for centrifugal pumps

The CUE has a wide range of pump-specific functions:

- Open loop:
The speed is kept at a set value in the range of min. and max. speed.
- Proportional differential pressure:
The differential pressure is reduced at a falling flow rate and increased at a rising flow rate.
- Constant differential pressure:
The differential pressure is kept constant, independently of the flow rate.
- Constant pressure:
The pressure is kept constant, independently of the flow rate.
- Constant level:
The liquid level is kept constant, independently of the flow rate.
- Constant flow rate:
The flow rate is kept constant, independently of the head.
- Constant temperature:
The liquid temperature is kept constant, independently of the flow rate.
- Constant other value:
Any other value is kept constant.

Start-up guide

The CUE has a start-up guide, which begins at the first start-up. Here a number of parameters are set automatically on basis of the pump type. Other parameters are set manually on basis of the data on the motor and pump nameplates.

Thanks to the start-up guide, the installer can quickly set central parameters and put the CUE into operation.

Direction of rotation test

During the start-up guide, the CUE automatically tests

and sets the correct direction of rotation without changing the cable connections. This feature is activated only if a pressure or flow sensor is installed.

Duty/standby

The duty/standby function is used to alternate between two pumps. Each pump is connected to a CUE unit. The primary task is to start the standby pump if the duty pump is stopped due to an alarm and to alternate the two pumps at least every 24 hours.

Duty/standby operation increases the security of supply and ensures even use between the two pumps.

Dry-running protection

To protect the pump, select the dry-running function together with an external sensor so that lack of inlet pressure or water shortage can be detected.

Low-flow stop function

In control mode constant pressure or constant level, the stop function is used for changing between on/off operation at low or no flow and continuous operation at high flow rate.

The low-flow stop function protects the pump and saves energy.

Monitoring of lubrication of motor bearings

When the bearing monitoring function is active, a warning will appear in the display when the motor bearings are to be relubricated or replaced. Furthermore, the function gives an estimated time to service.

This aids in motor maintenance programs.

Inputs and outputs

The CUE is equipped with a number of inputs and outputs:

- 1 analog input, 0-10 V, 4-20 mA
- external setpoint
- 1 analog input, 4-20 mA
- sensor input, feedback sensor
- 1 analog output, 0-20 mA
- 4 digital inputs
- start/stop and 3 programmable inputs
- 2 signal relays (C/NO/NC)
- programmable
- 1 RS-485 GENIbus connection.

Accessories

Grundfos offers a number of accessories for the CUE.

MCB 114 sensor input module

The MCB 114 is an option offering additional analog inputs for the CUE:

- 1 analog input, 4-20 mA
- 2 inputs for Pt100/Pt1000 temperature sensors.

Output filters

Output filters are used primarily for protecting the motor against overvoltage and increased operating temperature. However, output filters can also be used for reduction of acoustic motor noise.

Grundfos provides two types of output filter as accessories for the CUE:

- dU/dt filters
- sine-wave filters.

Floor mounting option

The CUE is default installed on the wall. The enclosures D1 and D2 can also be installed on the floor on a pedestal designed for that purpose.

For information about enclosures, see page 45.

Remote mounting kit

Allows control pad to be mounted remotely; 9.8 ft (3m) cable.

Overview applications

The CUE is a multi-purpose frequency converter suitable for a variety of applications demanding reliable and cost-efficient pump operation.

The CUE is used in five main fields of application:

Water supply and pressure boosting

Besides general water supply in municipal and industrial waterworks, the CUE is used for these specific applications:

- water supply
- pressure boosting
- washing.

The typical control modes are constant pressure, constant flow rate. Stop functions are used to stop the pump when low or no flow is detected.

Heating and air-conditioning

Liquid transfer in:

- heating applications
- cooling and air-conditioning applications.

The typical control modes are proportional pressure or constant temperature.

Process and sanitary applications

Liquid transfer in:

- breweries and dairies
- pure-water applications
- process applications
- purification applications.

The CUE is typically controlled by an external controller. The typical control mode is Open loop.

Groundwater

Typical applications:

- groundwater supply to waterworks
- irrigation in horticulture and agriculture
- dewatering.

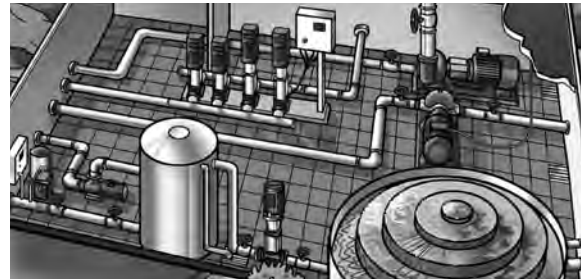
The typical control modes are constant pressure, constant flow rate or constant level control.

Wastewater

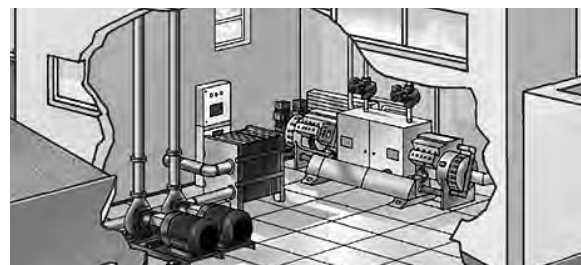
Transfer of:

- wastewater
- effluent
- drainage water
- process water.

The typical control mode is constant level function (emptying function).



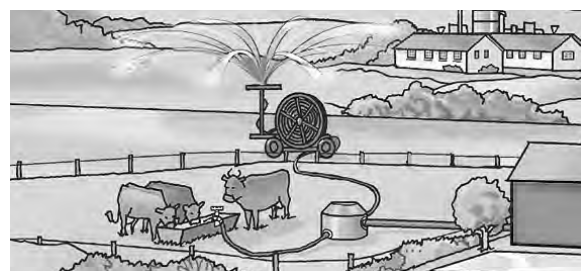
TM03 0146 4204



TM03 0147 4204



TM03 0148 4204



TM03 0149 4204



TM04 0223 5107

Nameplate

The CUE can be identified by means of the nameplate.
An example is shown below.



Fig. 2 Example of nameplate

Text	Description
T/C:	CUE (product name) 202P132... (internal code)
Prod.no:	Product number: 96754515*
S/N:	Serial number: 123456G123 The last three digits indicate the production date: 12 is the week, and 3 is the year 2003.
0.75 kW	Typical shaft power on the motor
IN:	Supply voltage, frequency and maximum input current
OUT:	Motor voltage, frequency and maximum output current. The maximum output frequency usually depends on the pump type.
CHASSIS/ IP20	Enclosure class
Tamb.	Maximum ambient temperature

* Product number is for drive only. Refer to price lists for packaged drive part numbers.

Overview

The CUE cabinet sizes are characterised by their enclosures. The table shows the relation between power size (P2), mains supply (V) and enclosure class (IP). It shows the complete range of the CUE.

Typical shaft power P2		Mains supply and enclosure class													
		1 x 200-240 V			3 x 200-240 V		3 x 380-500 V				3 x 525-600 V		3 x 525-690 V		
[kW]	[HP]*	IP20	IP21	IP55	IP20	IP55	IP20	IP21	IP54	IP55	IP20	IP55	IP21	IP54	IP55
0.55	0.75						●			●					
0.75	1				●	●	●			●	●	●			
1.1	1.5	●		●	●	●	●			●	●	●			
1.5	2		●	●	●	●	●			●	●	●			
2.2	3		●	●	●	●	●			●	●	●			
3	4		●	●	●	●	●			●	●	●			
3.7	5		●	●	●	●									
4	5						●			●	●	●			
5.5	7.5		●	●	●	●	●			●	●	●			
7.5	10		●	●	●	●	●			●	●	●			
11	15				●	●	●			●			●		●
15	20				●	●	●			●			●		●
18.5	25				●	●	●			●			●		●
22	30				●	●	●			●			●		●
30	40				●	●	●			●			●		●
37	50				●	●	●			●			●		●
45	60				●	●	●			●			●		●
55	75						●			●			●		●
75	100						●			●			●		●
90	125						●			●			●		●
110	150							●	●				●	●	
132	200							●	●				●	●	
160	250							●	●				●	●	
200	300							●	●				●	●	
250	350							●	●				●	●	

* CUE Hp ratings do not always match motor Hp ratings. Always size CUE by max amperage output and motor amperage.

Overview

The table below shows the functions settings offered by the CUE.

CUE functions	Setting or reading via:		
	CUE	GENIbus	PC Tool*
Operating modes, see page 13			
Normal	●	○	□
Stop	●	○	□
Min.	●	○	□
Max.	●	○	□
Control modes, see page 14			
Open loop	●	○	□
Proportional differential pressure	●	○	□
Constant differential pressure	●	○	□
Constant pressure	●	○	□
Constant pressure with stop function	●	○	□
Constant level	●	○	□
Constant level with stop function	●	○	□
Constant flow rate	●	○	□
Constant temperature	●	○	□
Constant other value	●	○	□
Setpoints, see page 17			
Setpoint, CUE menu	●		
External setpoint	●	○	□
GENIbus setpoint		○	
Predefined setpoints from digital inputs			□
Additional functions, see page 20			
Setting the direction of rotation	●		□
Status information	●		□
Logging information	●		□
PID controller	●	○	□
Stop functions	●		□
Dry-running protection	●		□
Duty/standby	●		□
Operating range	●	○	□
Motor bearing monitoring	●	○	□
Standstill heating	●	○	□
Ramps	●		□
Proportional differential pressure, parabolic			□
Hmax update			□
Differential pressure from two sensors			□
Start delay after power-up			□
Auto/manual restart after alarm		○	□
Limit exceeded		○	□
Copy settings	●		
Pipe fill		○	□

CUE functions	Setting or reading via:		
	CUE	GENIbus	PC Tool*
Digital inputs, see page 27			
Start/stop	●		□
Min. (Min. curve)	●		□
Max. (Max. curve)	●		□
External fault	●		□
Flow switch	●		□
Alarm reset	●		□
Dry running (from external sensor)	●		□
Accumulated flow (from pulse flow sensor)	●		□
Additional set of ramps, ramp selector			□
Predefined setpoints from digital input			□
Signal relays, see page 28			
Ready	●		□
Warning	●		□
Alarm	●		□
Operation	●		□
Pump running	●		□
Relubricate	●		□
External relay control			□
Limit exceeded			□
Analog inputs, see page 28			
External setpoint	●		□
Sensor 1	●		□
Analog output, see page 28			
Feedback value			□
Speed			□
Frequency			□
Motor current			□
External setpoint input			□
Limit exceeded			□
MCB 114 sensor input module, see page 29			
Sensor input 2	●		□
Temperature sensor 1	●		□
Temperature sensor 2	●		□

- Default
- Optional with GENIbus
- Optional with PC-tool

* The PC Tool is a software program supplied on a CD and hardware connecting your computer with the CUE.

Operating modes

These operating modes can be selected with the CUE:

- Normal
- Stop
- Min.
- Max.

The operating modes can be set without changing the setpoint setting.

Normal

The pump operates in the control mode selected. See page 14.

The control modes are different ways of controlling the pump speed when the operating mode is set to Normal.

Stop

The pump has been stopped by user.

Min. curve

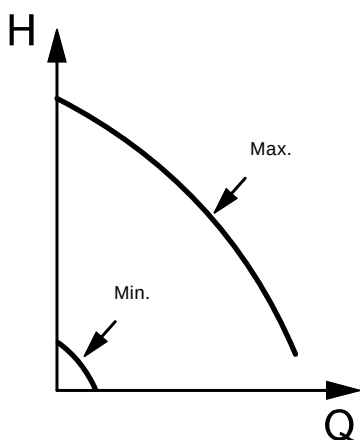
The pump is running at a set value for minimum speed. See fig. 3.

This operating mode can for instance be used in periods with a very small flow requirement.

Max. curve

The pump is running at a set value for maximum speed. See fig. 3.

This operating mode can for instance be used for venting the pump during installation.



TM03 8813 2507

Fig. 3 Min. and max. curves

Control modes

The CUE has a built-in PID controller that provides closed-loop control of the value you want to control. The CUE can also be set to open-loop control where the setpoint represents the desired pump speed.

Open loop is typically used without sensor. All other control modes require a sensor.

The table below shows the functions and possible settings offered by the CUE.

Overview

Pump type	Open loop	Proportional differential pressure	Constant differential pressure	Constant pressure	Constant level	Constant flow rate	Constant temperature	Constant other value
AFG	●				●	●		●
AMD	●				●	●		●
AMG	●				●	●		●
BM, BMB	●			●	●	●		●
BME, BMET, BMEX	●			●	●	●		●
BMP	●	●	●	●		●		●
CH, CHI, CHN, CHV	●			●	●	●	●	●
CHIU	●			●	●	●	●	●
Contra	●			●	●	●	●	●
CPH, CPV	●			●	●	●	●	●
CR, CRI, CRN, CRT	●			●	●	●	●	●
CRK	●			●	●	●	●	●
CV	●			●	●	●	●	●
DP, EF	●			●	●	●		●
durietta	●			●	●	●	●	●
Euro HYGIA	●			●	●	●	●	●
F&B HYGIA	●			●	●	●	●	●
HS	●		●	●		●	●	●
LC, LF	●		●	●		●	●	●
MAXA, MAXANA	●		●	●	●	●	●	●
MTA, MTH, MTR	●			●	●	●	●	●
MTB	●			●	●	●	●	●
NB, NK	●		●	●	●	●	●	●
NBG, NKG	●		●	●	●	●	●	●
S	●			●	●	●		●
SE, SEN, SEV	●			●	●	●		●
SP, SP-G, SP-NE	●			●	●	●	●	●
SPK	●			●	●	●	●	●
SRP	●				●	●		●
TP	●	●	●	●	●	●	●	●
VL	●			●		●	●	●
Other	●	●	●	●	●	●	●	●

See further description on the next pages.

Open loop, constant curve

The speed is kept at a set value in the range between the min. and max. curves. See fig. 4.

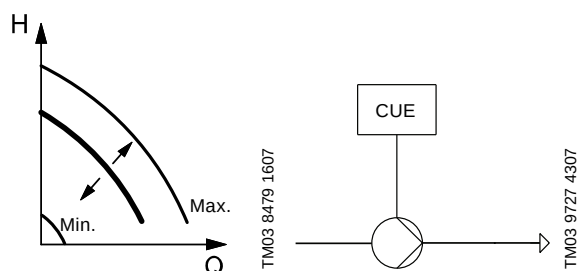


Fig. 4 Open loop, constant curve

In control mode Open loop, the setpoint is set in% of the nominal speed. The setting range will lie between the min. and max. curves.

Operation on constant curve can for instance be used for pumps with no sensor connected.

This control mode is also typically used in connection with an overall control system such as Control MPC or another external controller.

Proportional differential pressure

The differential pressure of the pump is reduced at falling flow rate and increased at rising flow rate. See fig. 5.

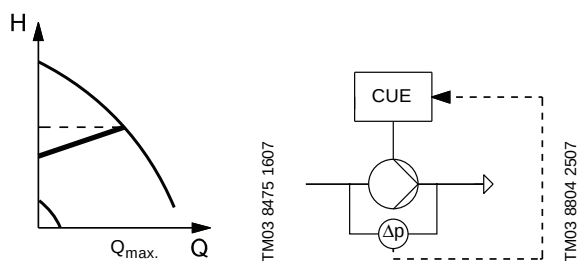


Fig. 5 Proportional differential pressure

The pump is controlled according to a differential pressure measured across the pump. This means that the pump system offers a proportional differential pressure in the Q-range of 0 to $Q_{max.}$, represented by the sloping line in the QH diagram.

Constant differential pressure, pump

The differential pressure of the pump is kept constant, independently of the flow rate. See fig. 6.

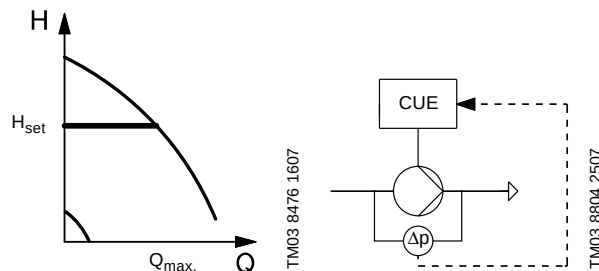


Fig. 6 Constant differential pressure, pump

The pump is controlled according to a constant differential pressure measured across the pump. This means that the pump system offers constant differential pressure in the Q-range of 0 to $Q_{max.}$, represented by the horizontal line in the QH diagram.

Constant differential pressure, system

The differential pressure of the system is kept constant, independently of the flow rate. See fig. 7.

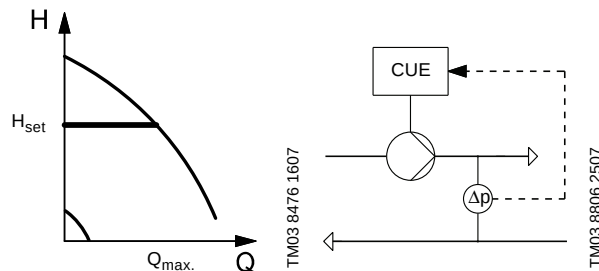


Fig. 7 Constant differential pressure, system

The pump is controlled according to a constant differential pressure measured across the system. This means that the pump offers constant differential pressure of the system in the Q-range of 0 to $Q_{max.}$, represented by the horizontal line in the QH diagram.

Constant pressure with stop function

The outlet pressure is kept constant at high flow rate. On/off operation at low flow rate. See fig. 8.

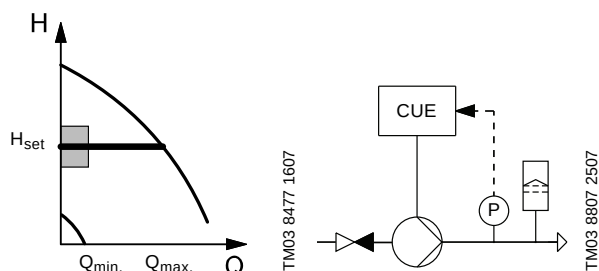


Fig. 8 Constant pressure with stop function

The pump is controlled according to a constant pressure measured after the pump. This means that the pump offers a constant pressure in the Q -range of $Q_{min.}$ to $Q_{max.}$, represented by the horizontal line in the QH diagram.

Constant level

The liquid level is kept constant, independently of the flow rate. See fig. 9.

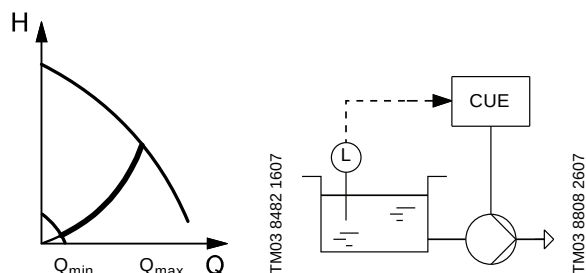


Fig. 9 Constant level

The pump is controlled according to a constant liquid level. This means that the pump offers a constant level in the Q -range of $Q_{min.}$ to $Q_{max.}$, represented by the parable line in the QH diagram.

The function is default an emptying function.

Constant level with stop function

The liquid level is kept constant at high flow rate. On/off operation at low flow rate. See fig. 10.

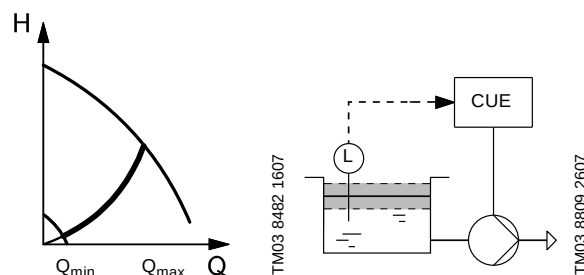


Fig. 10 Constant level with stop function

The pump is controlled according to a constant liquid level. This means that the pump offers a constant level in the Q -range of $Q_{min.}$ to $Q_{max.}$, represented by the parable line in the QH diagram.

The function is default an emptying function.

Constant flow rate

The flow rate is kept constant, independently of the head. See fig. 11.

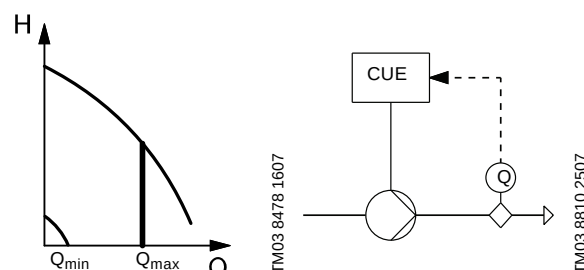


Fig. 11 Constant flow rate

The pump is controlled according to a constant flow rate, represented by the vertical line in the QH diagram.

Constant temperature

The liquid temperature is kept constant, independently of the flow rate. See fig. 12.

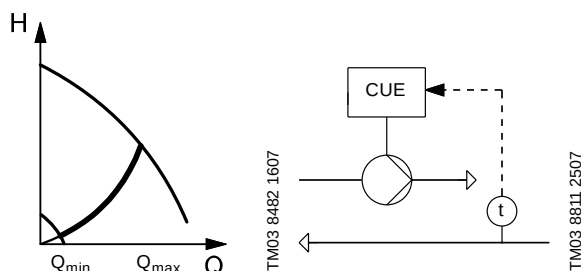


Fig. 12 Constant temperature

The pump is controlled according to a constant temperature. This means that the pump offers a variable flow rate in the Q-range of $Q_{min.}$ to $Q_{max.}$, represented by the parable line in the QH diagram.

Constant other value

Any other value is kept constant. See the CUE installation and operation instructions for further information.

Setpoints

The setpoint is normally set in the menu Operation via the CUE control panel. If needed, the setpoint can be influenced via the external setpoint input.

The CUE offers these setpoint possibilities:

- Setpoint, CUE menu (default)
- External setpoint (default)
- Predefined setpoints (setting via PC Tool)
- GENIbus setpoint (setting via GENIbus).

Setpoint, CUE menu

The setpoint can be set by the user via the CUE control panel when the CUE is in local operating mode and no digital inputs are used for predefined setpoints.



Fig. 13 Setpoint, CUE menu

The setpoint range depends on the selected control mode.

In control mode Open loop, the setpoint is set in% corresponding to the required speed. The setting range is between the min. and max. curves.

In control mode Proportional differential pressure, the setting range is equal to 25% to 90% of max. head.

In all other control modes, the setting range is equal to the sensor measuring range.

External setpoint

The setpoint set via the CUE menu can be influenced by connecting an analog signal to the external setpoint input.

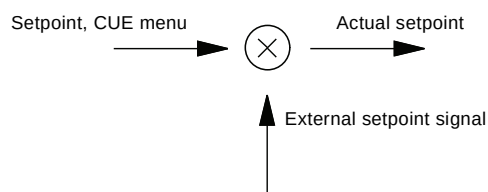


Fig. 14 Setpoint, CUE menu and external setpoint signal

This function offers these possibilities:

- External setpoint (default)
- Inverse external setpoint (setting via control panel)
- External setpoint with stop (setting via PC Tool)
- External setpoint based on a reference table (setting via PC Tool).

The external setpoint signal is used for calculating the actual setpoint. The minimum signal is the minimum setpoint, and the maximum signal is the setpoint set via the CUE menu. See fig. 15.

External setpoint influence (default)

The actual setpoint is a linear function of the external setpoint signal. See fig. 15.

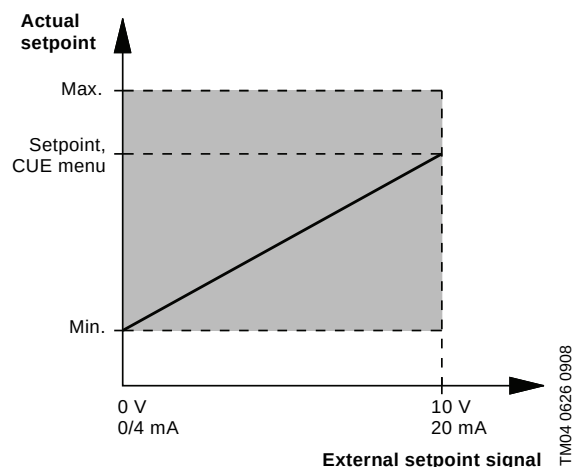


Fig. 15 External setpoint

The minimum and maximum values of the external setpoint signal can be set via the PC Tool. See fig. 16.

Inverse external setpoint

The actual setpoint is an inverse linear function of the external setpoint signal. See fig. 17.

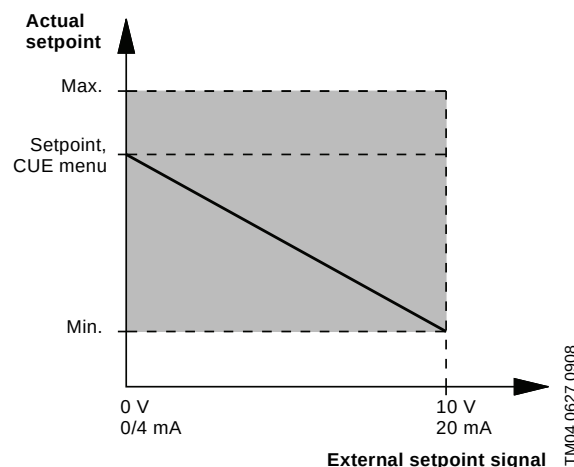


Fig. 17 Inverse external setpoint signal

The minimum and maximum values of the external setpoint signal can be set via the control panel. See fig. 18.

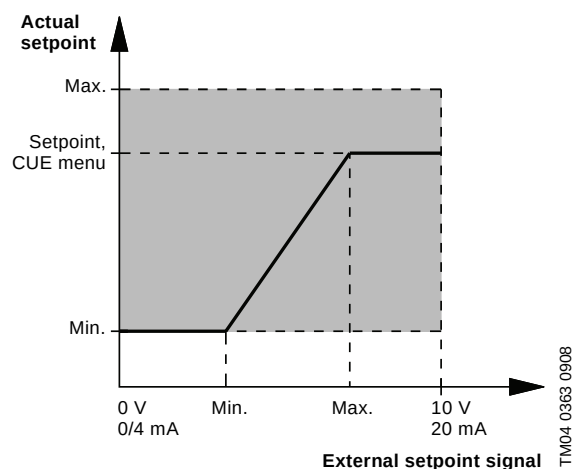


Fig. 16 Reduced external setpoint signal

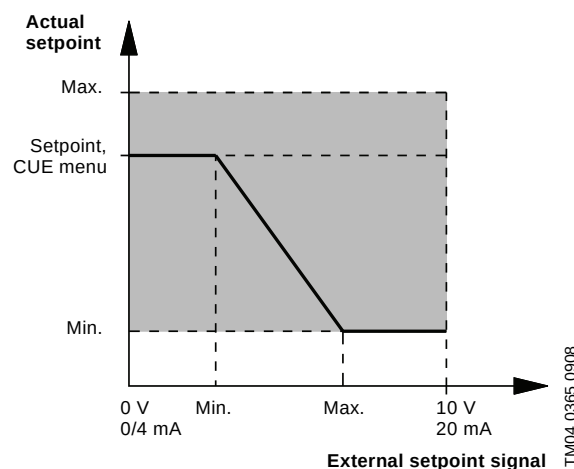


Fig. 18 Reduced inverse external setpoint signal

External setpoint with stop function

Setting via PC Tool.

The actual setpoint with stop is a linear function of the external setpoint signal above 20% signal and on/off operation below 20% signal. See fig. 19.

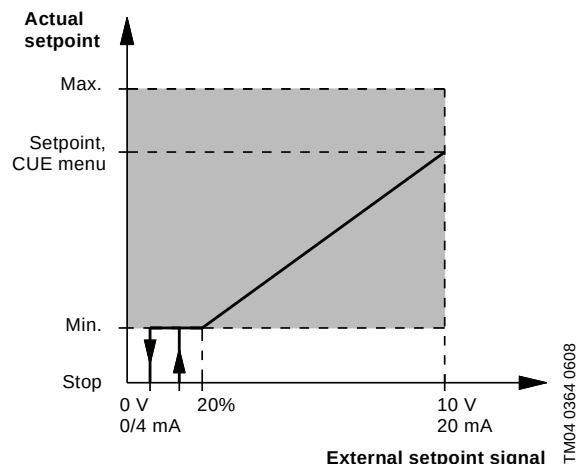


Fig. 19 External setpoint with stop function

When the external setpoint signal is below 10%, the operating mode is Stop.

When the external setpoint signal is above 15%, the operating mode is Normal.

External setpoint based on a reference table

Setting via PC Tool.

The actual setpoint is a piecewise linear function of the external setpoint signal. See fig. 20.

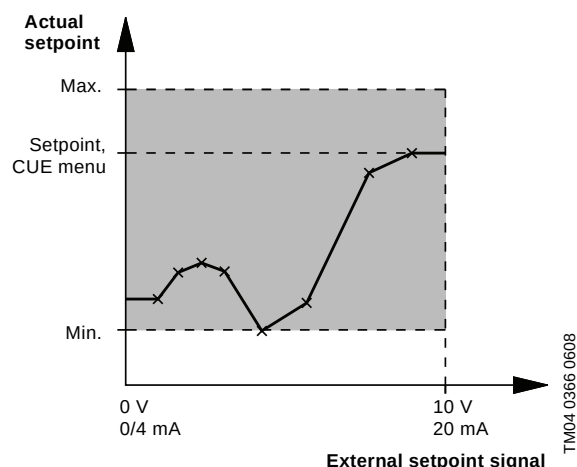


Fig. 20 External setpoint based on a reference table

The linear function is defined as an interpolation between the points in a table. The table has up to 8 points.

Predefined setpoints

Setting via PC Tool.

This function makes it possible to select up to seven predefined setpoints using one to three digital inputs.

The setpoints are selected as a binary coding of the digital inputs as shown in the table below.

Predefined setpoint	DI 2	DI 3	DI 4
1	x		
2		x	
3	x	x	
4			x
5	x		x
6		x	x
7	x	x	x

x = Closed contact

If none of the digital inputs are activated, the operating mode can be configured to Stop or to being controlled according to a setpoint set via the control panel.

If Min., Max. or Stop is selected via the control panel, the predefined setpoints are overruled.

Note: Predefined setpoints cannot be influenced by the external setpoint input.

GENIbus setpoint

If the CUE is remote-controlled via the GENIbus input, the setpoint is set via the bus.

Note: The GENIbus setpoint cannot be influenced by the external setpoint signal.

Setting the direction of rotation

The start-up guide begins the first time the CUE is connected to supply voltage. While going through the start-up guide, the CUE tests and sets the correct direction of rotation without changing the cable connections to the motor.

The correct direction of rotation can be set in these ways:

- automatic setting
- manual setting when the direction of rotation is visible
- manual setting when the direction of rotation is not visible.

Automatic setting

The CUE automatically tests and sets the correct direction of rotation without changing the cable connections. This feature is activated only if a flow or pressure sensor is installed.

This test is not suitable for all pump types and will in certain cases not be able to determine for certainty the correct direction of rotation. In these cases, the CUE changes over to manual setting where the direction of rotation is determined on the basis of the installer's observations.

Manual setting when the direction of rotation is visible

The correct direction of rotation is set manually without changing the cable connections. This requires that it is possible to observe the motor fan or shaft.

Manual setting when the direction of rotation is not visible

The correct direction of rotation is set manually without changing the cable connections. This requires that it is possible to observe the head or flow rate.

Status functions

The CUE shows these data:

- power consumption
- operating hours
- accumulated flow
- energy per m³ or gallon (requires flow meter).

The status information can be shown in the display.

Power consumption

The value of the power consumption is an accumulated value calculated from the pump's birth and cannot be reset. No additional sensor is required.

Operating hours

The value of operating hours is an accumulated value calculated from the pump's birth and cannot be reset. No additional sensor is required.

Accumulated flow

The value of accumulated flow is calculated by means of a flow measurement from either a digital pulse input or an analog input.

When using a digital input, the number of pulses is counted and multiplied by the litre/pulse parameter in order to get the accumulated flow.

When using an analog input, the accumulated flow value is updated every 10 seconds with the volume pumped in that period.

Energy per m³ or gallon

The actual energy per m³ (kWh/m³) is calculated as actual power consumption divided by actual flow rate.

Logging functions

Alarm and warning log

The latest five alarms and five warnings are logged with a timestamp corresponding to the power on time after the fault has occurred. The alarm and warning log can be shown directly on the display.

See the warning and alarm list page 38.

Correlated histogram (setting via PC Tool)

The correlated histogram is a way to examine the joint distribution of two parameters. The logging for a correlated histogram are count of the number of samples that at the same time are within a given interval of variable 1 and variable 2.

PID controller

The CUE has a built-in PID controller for speed control of pumps. The factory setting of gain (K_p) and integral time (T_i) can easily be changed in the control panel.

The controller can operate in both normal and inverse mode.

Normal mode

Normal mode is used in systems in which an increase in pump performance will result in a **rise** in the value measured at the feedback sensor. This will typically be the case in most CUE applications.

Normal mode is selected by setting the gain (K_p) to a positive value in the control panel.

Inverse mode

Inverse mode is used in systems in which an increase in pump performance will result in a **drop** in the value measured at the feedback sensor. This mode will typically be used for constant level operation (emptying tank) and for constant temperature operation in cooling systems.

Inverse mode is selected by setting the gain (K_p) to a negative value in the control panel.

Description

The PID controller compares the required setpoint (p_{set}) with the actual value (p) measured by the transmitter (P). See fig. 21.

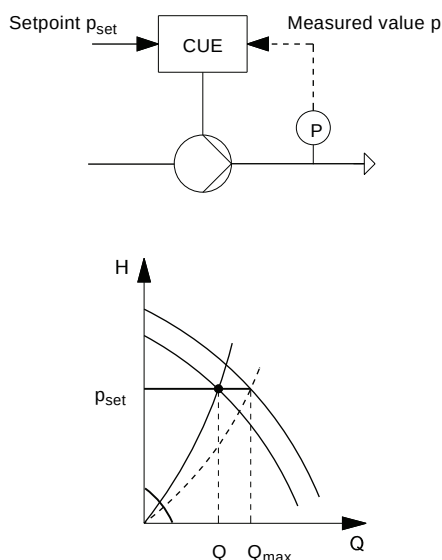


Fig. 21 Constant pressure control

If the measured value is higher than the required setpoint, the PID controller will reduce the speed and the performance of the pump until the measured value is equal to the required setpoint.

Suggested controller settings

System/application	K_p		T_i
	Heating system 1)	Cooling system 2)	
	0.2		0.5
	SP, SP-G, SP-NE: 0.5		0.5
	0.2		0.5
	SP, SP-G, SP-NE: 0.5		0.5
	0.2		0.5
	-2.5		100
	0.5	-0.5	$10 + 5L_2$
	0.5		$10 + 5L_2$
	0.5	-0.5	$30 + 5L_2^*$
	0.5		0.5*
	0.5		$L_1 < 5 \text{ m: } 0.5^*$ $L_1 > 5 \text{ m: } 3^*$ $L_1 > 10 \text{ m: } 5^*$

* T_i = 100 seconds (factory setting).

Heating systems are systems in which an increase in pump performance will result in a **rise** in temperature at the sensor.

Cooling systems are systems in which an increase in pump performance will result in a **drop** in temperature at the sensor.

L_1 = Distance in [m] between pump and sensor.

L_2 = Distance in [m] between heat exchanger and sensor.

Stop functions

Constant pressure with stop function

The purpose of the stop function is to stop the pump when low or no flow is detected.

When low flow is detected, the pump is in on/off operation. If there is flow, the pump will continue operating according to the setpoint. See fig. 22.

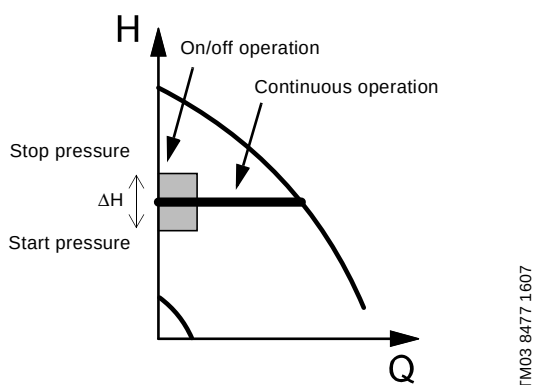


Fig. 22 Constant pressure with stop function. Difference between start and stop pressures (ΔH)

Low flow can be detected in two different ways:

- a built-in low-flow detection function
- a flow switch connected to a digital input.

Low-flow detection function

The low-flow detection function will check the flow regularly by reducing the speed for a short time. No or only a small change in pressure means that there is low flow.

Low-flow detection with flow switch

When a flow switch detects low flow, the digital input will be activated.

Operating conditions for the stop function

It is only possible to use the stop function if the system incorporates these components:

- a pressure sensor
- a non-return valve
- a diaphragm tank.

Note: The non-return valve must always be installed before the pressure sensor. See figs 23 and 24.

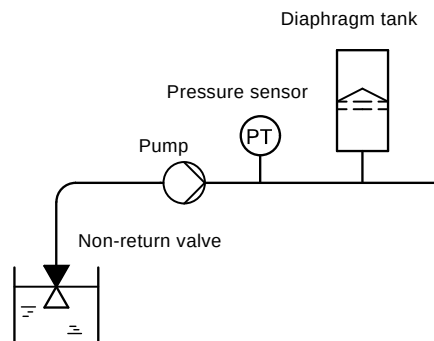


Fig. 23 Position of the non-return valve and pressure sensor in a system with suction lift operation

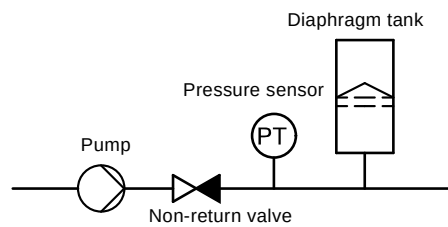


Fig. 24 Position of the non-return valve and pressure sensor in a system with positive inlet pressure

Diaphragm tank

The stop function requires a diaphragm tank of a certain minimum size. The tank must be installed as close as possible after the pump, and the precharge pressure must be 0.7 x actual setpoint.

Recommended diaphragm tank size:

Rated flow rate of pump gpm (m ³ /h)	Typical diaphragm tank size gal (litres)
0-25 (0-6)	2 (8)
25-100 (7-24)	4 (18)
100-175 (25-40)	14 (50)
175-300 (41-70)	32 (120)
300-450 (71-100)	44 (180)

If a diaphragm tank of the above size is installed in the system, the factory setting of ΔH is the correct setting. If the tank installed is too small, the pump will start and stop too often.

Constant level with stop function

The purpose of the stop function is to stop the pump when low or no flow is detected.

Note: It is only possible to set constant level with stop function if the system incorporates a level sensor, and all valves can be closed.

When low flow is detected, the pump is in on/off operation. If there is flow, the pump will continue operating according to the setpoint. See fig. 25.

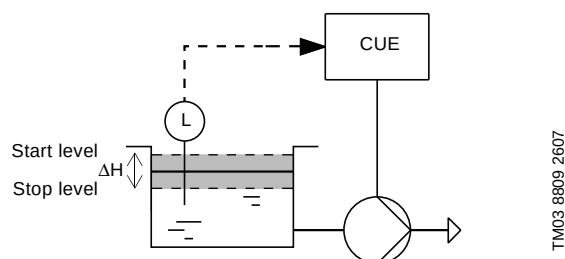


Fig. 25 Constant level with stop function. Difference between start and stop levels (ΔH)

Low flow can be detected in two different ways:

- with the built-in low-flow detection function
- with a flow switch connected to a digital input.

Low-flow detection function

The low-flow detection function will check the flow regularly by measurement of speed and power.

Low-flow detection with flow switch

When a flow switch detects low flow, the digital input will be activated.

Dry-running protection

This function protects the pump against dry running. When lack of inlet pressure or water shortage is detected, the pump will be stopped before being damaging.

Lack of inlet pressure or water shortage can be detected in two ways:

- With a switch connected to a digital input configured to dry-running protection.
- The CUE checks if the shaft power is below a dry-pump limit for a configurable time (setting via PC Tool).

The use of a digital input requires an accessory, such as:

- a Grundfos Liqtec® dry-running switch
- a pressure switch installed on the suction side of the pump

- a float switch installed on the suction side of the pump.

The pump cannot restart as long as the input is activated. Restart may be delayed by up to 30 minutes, depending of the pump family.

Duty/standby

The built-in duty/standby function applies to two pumps connected in parallel to ensure reliability of supply. See fig. 26.

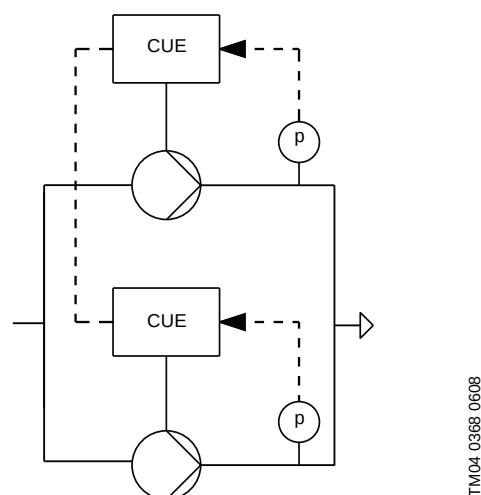


Fig. 26 Two pumps connected in parallel and controlled via GENIbus

These are the primary purposes of the function:

- To let one pump run at a time.
- To start the standby pump if the duty pump stops due to an alarm.
- To alternate the pumps at least every 24 hours.

Description

The two pumps are electrically connected by means of the GENIbus interface. Each pump must be connected to its own CUE and sensor.

Note: The two pumps running duty/standby in this way cannot use the GENIbus interface for remote communication.

The function is activated via the control panel.

Operating mode

The two pumps use their own local operating mode. For instance, pump 1 can operate in Normal mode, and pump 2 can operate in Max. mode.

Control mode

Both pumps must have the same control mode.

Operating range

The area between the min. and max. speed is the actual operating range of the pump.

The operating range can be changed by the user within the area defined by the pump-dependent speed range.

For some pump families over synchronous operation (max. speed above 100%) will be possible. This requires an over-size motor to deliver the shaft power required by the pump during over-synchronous operation.

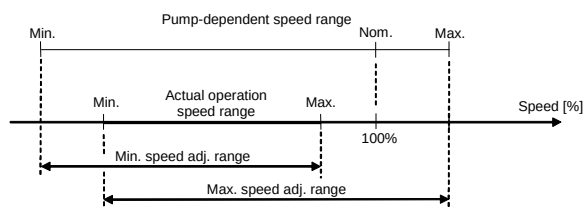


Fig. 27 Setting of the min. and max. speed in % of the nominal speed of the pump

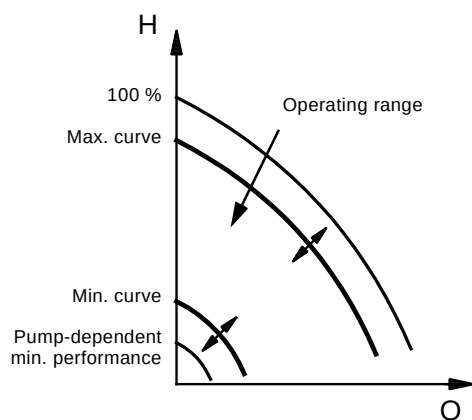


Fig. 28 Operating range of the CUE

Motor bearing monitoring

This function is used to give an indication when it is time to relubricate or change the motor bearings.

It shows these pieces of information:

- When to relubricate the motor bearings.
- How many times relubrication has been confirmed,
- When to replace the motor bearings.

Default function

The default function is based on the "mileage" of the pump and takes into account if the pump has been running with reduced speed.

Extended function

The bearing temperature is also included in the calculation.

The extended function requires an MCB 114 sensor input module and Pt100/Pt1000 sensors measuring the bearing temperature.

Monitoring of motor bearing temperatures

When temperature sensor 1 and 2 are used for measuring the motor bearing temperature, a warning or an alarm will be generated if the bearing temperature gets too high.

Warnings and alarms are generated and reset using hysteresis. See fig. 29.

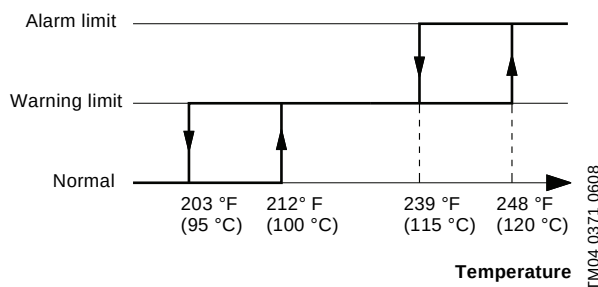


Fig. 29 Monitoring of bearing temperature with warning and alarm limits

Standstill heating

This function pre-heats the motor during standstill in order to avoid condensation within the motor.

When the pump is stopped by a stop command, a current will be applied to the motor windings in order to keep the temperature within the motor above the dew-point temperature. No external heater is needed.

The pre-heating of the motor is especially important when the motor is installed under these conditions:

- high humidity
- outdoor installation.

The consequences of condensed moisture within the motor are for example corrosion damage to electrical contacts and the bearings of the motor shaft.

Ramps

The controller incorporates two types of ramp:

- ramp-up and ramp-down (default)
- initial and final ramps (setting via PC-Tool).

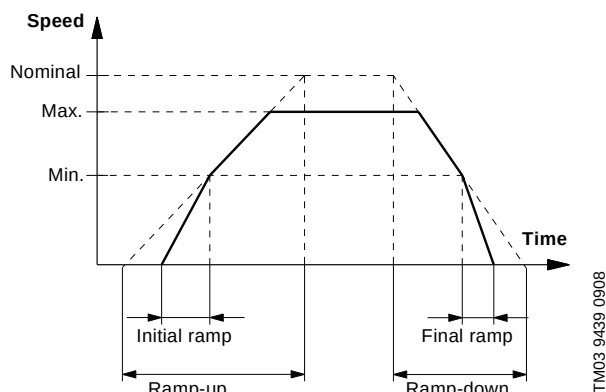


Fig. 30 Ramp-up and ramp-down of the CUE

Ramp-up and ramp-down

The ramp-up and ramp-down are used for protection against overload when starting and stopping the CUE. The setting is done by means of the control panel.

The ramp-up time is the acceleration time from 0 rpm to nominal motor speed.

The ramp-down time is the deceleration time from nominal motor speed to 0 rpm.

Additional set of ramp-up and ramp-down (setting via PC Tool)

An additional set of ramp-up and ramp-down can be remote-set to predefined ramps by means of a digital input.

Initial and final ramps

The initial and final ramps prevent operation for a longer time than necessary at speeds below minimum speed.

The setting is done automatically based on the pump family selected in the start-up guide.

Proportional differential pressure, parabolic

Setting via PC Tool.

The proportional differential pressure can be selected with one of these flow dependencies:

- linear (default), see page 15
- parabolic (setting via PC Tool).

When the flow dependency is selected as parabolic, the differential pressure of the pump will be reduced with a parabolic curve at falling flow rate and increased at rising flow rate. See fig. 31.

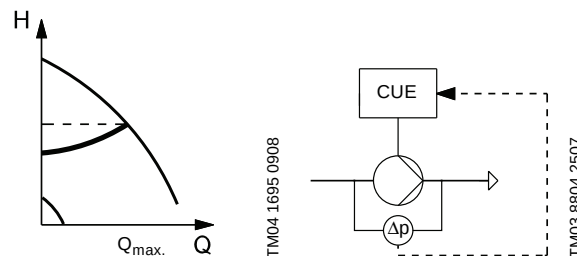


Fig. 31 Proportional differential pressure, parabolic curve

The pump is controlled according to a differential pressure measured across the pump. This means that the pump system offers a flow-compensated differential pressure in the Q -range of 0 to Q_{max} , represented by the parabolic curve in the QH diagram.

Hmax update

Setting via PC Tool.

This function is used in connection with the control mode Proportional differential pressure. The purpose is to find the "true" value of the maximum head at no flow and nominal pump speed. See fig. 32.

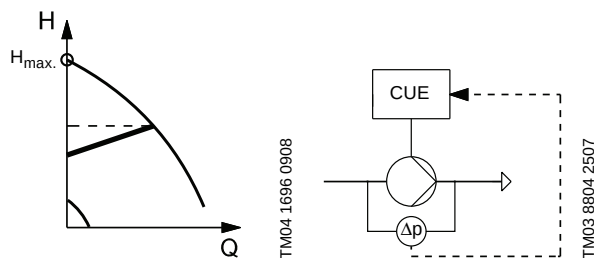


Fig. 32 Proportional differential pressure, H_{max} update

The function consists of two steps:

1. Ramping up the speed to nominal speed.
 2. Measuring Hmax for 20 seconds at nominal speed.
- Valves must be closed so that the pump is operating without flow.

Differential pressure from two sensors

Setting via PC Tool.

The purpose of this function is to make differential pressure control possible by using measurements from two separate pressure sensors.

It can be used in these control modes:

- Proportional differential pressure. See page 15
- Constant differential pressure. See page 15.

The function requires an MCB 114 sensor input module.

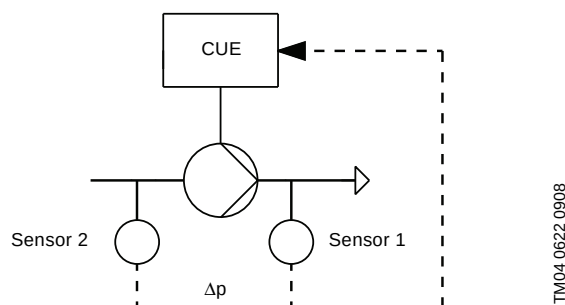


Fig. 33 Differential pressure from two sensors

Sensor 1 is connected to the sensor input 1.

Sensor 2 is connected to the sensor input 2 of an MCB 114 sensor input module.

Start delay after power-up

Setting via PC Tool.

The start delay after power-up is a delay between power being applied and the pump starting.

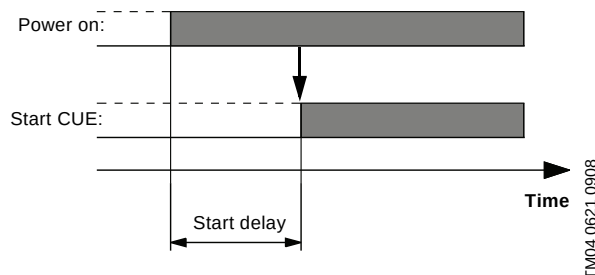


Fig. 34 Start delay after power-up

The purpose is to allow remote control equipment to start up before the pump.

The start delay is deactivated if a remote command is received via GENIbus.

Auto/manual restart after alarm

Setting via PC Tool.

In case of an alarm, the CUE will stop the pump or change the operating mode, depending on the alarm and pump type. See Warning and alarm list on page 38.

Pump operation will be resumed when the cause of the alarm has been remedied and the alarm has been reset automatically or manually.

The CUE can be configured to activate and deactivate automatic restart for all alarms or for groups of alarms.

Limit exceeded

Setting via PC Tool.

This is a monitoring function offering information, warning or alarm when a low or high limit is exceeded. See fig. 35.

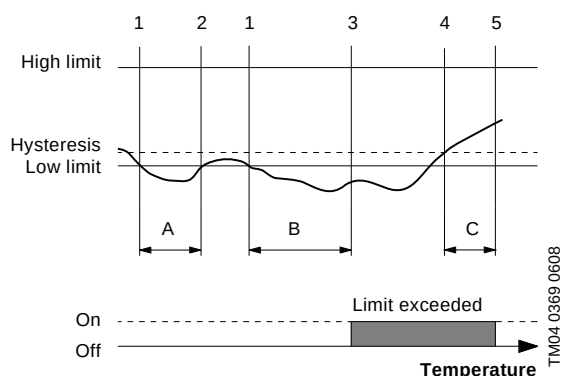


Fig. 35 Example of low limit exceeded

Description

The function has two timers: a detection delay timer and a reset delay timer.

The detection delay timer starts when a limit is exceeded (1). See fig. 35. The time is configurable.

A: If the limit is no longer exceeded (2) when the detection time expires, the timer will be reset.

B: If the limit is still exceeded (3) when the detection time expires, the output of the detector will change to "limit exceeded".

The reset delay timer starts when the detector output is "limit exceeded" and the limit is no longer exceeded, using hysteresis (4).

C: When the delay time has expired (5), the detector output changes to "limit not exceeded".

Input possibilities

It is possible to have two limit exceeded functions in parallel with these inputs:

- all analog inputs
- all Pt100/Pt1000 inputs.

The use of Pt100/Pt1000 inputs requires an MCB 114 sensor input module.

Output possibilities

There are these output possibilities:

- signal relay 1 and 2
- analog output
- warning and alarm.

Digital inputs

As standard, the CUE offers these digital inputs:

- one digital input for external start/stop
- three programmable digital inputs.

The three digital inputs can be set to these functions:

- min. (min. curve)
- max. (max. curve)
- external fault
- flow switch
- alarm reset
- dry-running protection (via external switch)
- accumulated flow (pulse flow, only DI 4)
- predefined ramps (setting via PC Tool)
- predefined setpoints (setting via PC Tool).

Start/stop

The pump will start if the pump is ready to run (the state of the on/off button is on, and no alarms prevent the pump from running).

Min.

The pump will run according to the min. curve.

Max.

The pump will run according to the max. curve.

External fault

If the input is activated for more than 5 seconds, external fault will be indicated.

Flow switch

The flow switch indicates no flow in constant pressure with stop function and constant level with stop function. It requires an external signal from a flow switch or a controller.

Alarm reset

When the input has been activated, the alarm will be reset if the cause of the alarm no longer exists.

Dry running

Indicates lack of inlet pressure or water shortage, and the pump will be stopped. The pump cannot restart as long as the input is activated. Restart may be delayed by up to 30 minutes, depending of the pump family.

For further information, see page 23.

Accumulated flow (only DI 4)

The number of pulses is counted and multiplied by the litre/pulse parameter in order to get the accumulated flow. This requires the use of an accessory, such as a pulse sensor.

Predefined ramps (setting via PC Tool)

The ramp-up and ramp-down time can be remote-set from the default setting to a predefined setting by means of PC Tool.

For further information, see page 25.

Predefined setpoints (setting via PC Tool)

One to seven predefined setpoints can be selected via digital inputs configured for this purpose.

For further information, see Predefined setpoints on page 19.

Signal relays

The two relay outputs can be independently set to these indications:

- ready
- alarm
- operation
- pump running
- warning
- relubricate
- external control (setting via PC Tool)
- limit exceeded (setting via PC Tool).

Ready

The pump is ready to run or running.

Warning

There is a warning.

Alarm

There is an alarm.

Operation

The pump is running or has been stopped by a stop function.

Pump running

The pump is running.

Relubricate

Lubrication time is exceeded.

External relay control (setting via PC Tool)

This function offers information, warning or alarm when a signal is given via GENIbus.

Limit exceeded (setting via PC Tool)

This function offers information, warning or alarm when a low or high limit is exceeded.

Analog inputs

As standard, the CUE offers these analog inputs:

- one analog input for external setpoint
- one analog input for sensor 1.

External setpoint

The setpoint can be influenced by connecting an analog signal to the setpoint input.

For further information, see page 17.

Sensor 1

The sensor 1 is default used for control in closed loop.

In closed loop, the feedback signal is kept at a given setpoint by a PID controller.

In open loop, sensor 1 can be used for monitoring.

Analog output

The analog output (0-20 mA) can be set via the PC Tool to one of these indications:

- feedback value
- speed
- frequency
- motor current
- external setpoint input
- limit exceeded.

The analog output is default set to not active.

Feedback value

The output signal is a function of the actual feedback value.

Speed

The output signal is a function of the actual pump speed.

Frequency

The output signal is a function of the actual frequency.

Motor current

The output signal is a function of the actual motor current.

External setpoint input

The output signal is a function of the external setpoint input.

Limit exceeded

The output signal indicates whether the limit is exceeded:

- Minimum output = limit is not exceeded.
- Maximum output = limit is exceeded.

Default setting is NOT ACTIVE.

MCB 114 sensor input module

The MCB 114 sensor input module offers three additional analog inputs for the CUE:

- one analog 4-20 mA input for an additional sensor
- two analog Pt100/Pt1000 inputs for temperature sensors.

Sensor 2

The analog 4-20 mA input is used for these functions:

- Monitoring of measured value of sensor 2 (default setting).
- Measured value of sensor 2 used for control purpose. This makes differential pressure control possible by using measurements from sensor 1 and sensor 2 (setting by means of PC Tool).

Temperature sensors 1 and 2

The analog Pt100/Pt1000 inputs are used for monitoring of these temperatures:

- drive-end motor bearing
- non drive-end motor bearing
- other liquid 1
- other liquid 2
- motor windings
- pumped liquid
- ambient temperature.

Displays

MCB 114 input	Display Menu Number	
	Reading	Setting
Sensor 2	(2.5)	(3.16)
Temperature sensor 1	(2.12)	(3.21)
Temperature sensor 2	(2.13)	(3.22)

Further information

See MCB 114 sensor input module, page 53.

See also the CUE and MCB 114 installation and operating instructions.

GENIbus

The CUE supports serial communication via the RS-485 connection. The communication enables connection to a building management system or another external control system.

Operating parameters, such as setpoint and operating mode, can be remote-set via the bus signal. At the same time, the pump can provide status information about important parameters, such as actual value of control parameter, input power and fault indications.

Protocol

Using GENIbus interface, the protocol selection of the RS-485 port must be selected to GENIbus, and the communication must be set according to the Grundfos GENIbus standard.

Pump number

Using GENIbus interface, a pump number between 1 and 199 must be allocated to each pump via the control panel.

Local/remote operating mode

In local operating mode, the unit is controlled from local sources, i.e. control panel and digital input.

In remote operating mode, the unit is controlled via GENIbus. Change to remote operating mode is done via the GENIbus.

Priority of settings

The CUE can be controlled in various ways at the same time. If two or more operating modes are active at the same time, the operating mode with the highest priority will be in force.

Local operating mode

Priority	CUE menu	External signal
1	Stop	
2	Max.	
3		Stop
4		Max.
5	Min.	Min.
6	Normal	Normal

Example: If an external signal has activated the operating mode *Max.*, it will only be possible to stop the pump.

Remote operating mode

Priority	CUE menu	External signal	Bus signal
1	Stop		
2	Max.		
3		Stop	Stop
4			Max.
5			Min.
6			Normal

Example: If the bus signal has activated the operating mode *Max.*, it will only be possible to stop the pump.

Copy of Settings

The Grundfos Local Control Panel (GLCP) can be used to copy the settings made on one CUE to another CUE.

The function includes two different possibilities:

- Make a copy of the setup from the present CUE to the Grundfos Local Control Panel
- Make a copy of the setup stored in the Grundfos Local Control Panel to the CUE

Both functions must be used in the correct order to copy a setup from one CUE to another.

A setup can be used for more than once, when it is loaded into the Grundfos Local Control Panel.

The copy can only be performed between units of the same size and firmware version.

Pipe fill (PC Tool)

The pipe fill function is used for filling empty pipes with water in a controlled manner. With pipe fill disabled the speed will go to maximum speed when filling the pipes in pressure controlled systems where pipes are empty at start up, and when the pipes are filled the high speed will give pressure spikes in the system, before the speed is reduced properly to fit the actual need in the application.

The pipe filling function can be used to avoid these pressure spikes, by introducing a pipe filling sequence before the system is turned into normal operation.

The pipe filling function can limit the speed of the pump during fill mode operation; this will decrease the pressure spikes at full pipes. A time limit or a filled pipe pressure can be used to deactivate the pipe fill function and turn the CUE into normal operation.

The following parameters are used in fill mode:

Pipe fill

- Activate or deactivate the function

Pipe fill speed

- The maximum speed used during pipe filling (horizontal piping)

Pipe fill time

- The time it takes to fill the pipes, the CUE turns into normal operation when the pipe fill time has passed

Pipe fill rate

- If a vertical pipe system is being filled a pipe fill rate in scale of the used transmitter can be used to limit the pipe filling rate Example: [0.3bar/sec] (vertical piping)

Filled setpoint

- The setpoint where the pipe fill function is deactivated and the CUE turns into normal operation.

Mechanical installation

The CUE cabinet sizes are characterised by their enclosure. The CUE is available in three enclosure classes: IP21, IP54 and IP55. To see the relationship of enclosure class and enclosure type, see tables starting on page 41.

The general installation requirements necessitate special considerations as to these aspects:

- Enclosure class IP54/55 must be installed freely accessible, but must not be installed outdoors without additional protection against water and the sun.
- The CUE contains a large number of mechanical and electronic components and must therefore not be installed in an environment where the air contains liquids, particles or gasses which may affect and damage the electronic components.
- In applications requiring Ex approval, the CUE should be installed outside the hazardous area.

Space requirements and air circulation

CUE units can be mounted side by side, but as a sufficient air circulation is required for cooling, these requirements must be met:

- Sufficient free space above and below the CUE. See table below.
- Hang the CUE directly on the wall, or fit it with a back plate to secure sufficient air flow for cooling. See fig. 36.

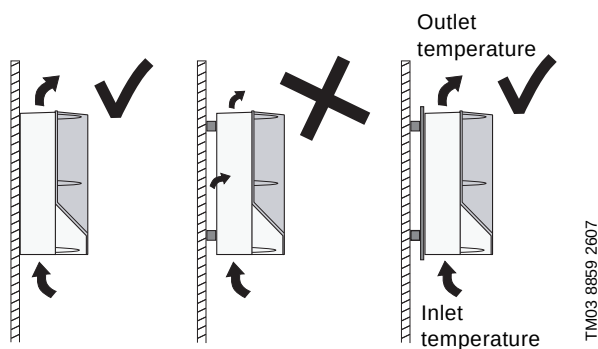


Fig. 36 CUE hung directly on the wall or fitted with a back plate

Required free space above and below the CUE

Enclosure	Space - in [mm]
A2, A3, A5	4 (100)
B1, B2, B3, B4, C1, C3	8 (200)
C2, C4, D1, D2	9 (225)

Required free space in front of the CUE

Furthermore, there must be sufficient space in front of the CUE for opening the door of the CUE. See fig. 37.

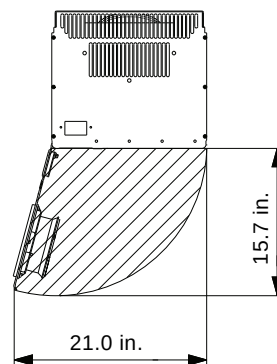


Fig. 37 Free space in front of CUE enclosures D1 and D2

Ventilation of built-in CUE

The CUE can be mounted in a control cabinet if sufficient air circulation is ensured. The quantity of air flow required for cooling the CUE can be calculated as follows:

$$q_v = \frac{\sum P \times 3.285}{\Delta T} \quad [\text{ft}^3/\text{min}]$$

Insert P in Watt and ΔT in F (Fahrenheit).

P is the power loss of all equipment integrated in the same cabinet. Calculate the power loss P of the CUE by means of the typical shaft power P2 multiplied by the efficiency.

ΔT is the difference between the outlet temperature and the inlet temperature (ambient) of the cooling air. See fig. 36.

Note: The inlet and outlet temperatures must not be higher than the values in the table below.

Output current	Max. inlet temperature	Max. outlet temperature
Up to 177 amps	122 °F (50 °C)	131 °F (55 °C)
Over 177 amps	113°F (45 °C)	122 °F (50 °C)

The average inlet temperature over 24 hours must be 9 °F lower.

The outlet from the ventilation must be placed above the highest-mounted CUE. Allowance must be made for the pressure loss across the inlet filters of the control panel and for the fact that the pressure will drop as the filters get choked.

Example: Calculate the required air flow for cooling of a built-in CUE when the ambient temperature is 80° F (27 °C). The CUE has a typical shaft power of 11.0 kW (ISHP) and an efficiency of 0.98. See page 44.

Calculate the power loss of the CUE:

$$P = P_2 \times \text{efficiency} = 11.0 \times (1-0.98) \times 1000 = 220 \text{ W.}$$

Calculate the required air flow for cooling the CUE:

$$q_v = (P \times 3.285) / (\Delta T) = (220 \times 3.285) / (131-80) = 14.2 \text{ ft}^3/\text{min.}$$

Electrical installation

Note: Always observe national and local regulations as to cable cross-section, short circuit protection and over-current when installing the CUE.

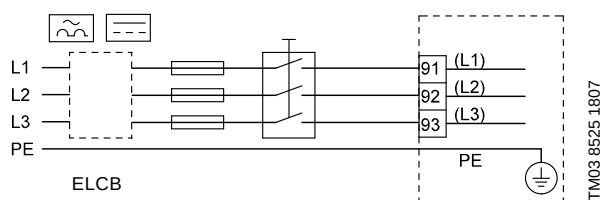


Fig. 38 Example of three-phase mains connection of the CUE with mains switch, back-up fuses and additional protection

Electrical protection

Protection against electric shock, indirect contact

Protective conductors must always have a yellow/green (PE) or yellow/green/blue (PEN) colour marking.

Instructions according to EN IEC 61800-5-1:

- The CUE must be stationary, installed permanently and connected permanently to the mains supply.
- The earth connection must be carried out with duplicate protective conductors or with a single reinforced protective conductor with a cross-section of minimum 8 AWG [10 mm²].

Protection against short-circuit, fuses

The CUE and the supply system must be protected against short-circuit.

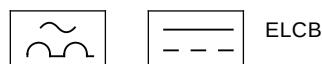
Grundfos demands that the fuses mentioned on 48 are used for protection against short-circuit.

The CUE offers complete short-circuit protection in case of a short-circuit on the motor output.

Additional protection

Note: The leakage current to earth exceeds 3.5 A.

If the CUE is connected to an electrical installation where an earth leakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols:



The circuit breaker is **type B**.

The total leakage current of all the electrical equipment in the installation must be taken into account.

Leakage current of the CUE in normal operation, see page 51.

During start and in asymmetrical supply systems, the leakage current can be higher than normal and may cause the ELCB to trip.

Motor protection

The motor requires no external motor protection. The CUE protects the motor against thermal overloading and blocking.

Protection against overcurrent

The CUE has an internal overcurrent protection for overload protection on the motor output.

Protection against mains voltage transients

The CUE is protected against mains voltage transients according to EN 61800-3, second environment.

Mains and motor connection

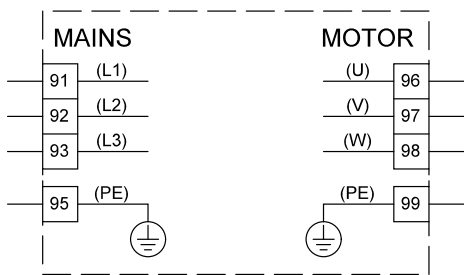
The supply voltage and frequency are marked on the CUE nameplate. Make sure that the CUE is suitable for the electricity supply of the installation site.

Mains switch

A mains switch can be installed before the CUE according to local regulations. See fig. 38.

Wiring diagram

The wires in the terminal box must be as short as possible. Excepted from this is the protective conductor which must be so long that it is the last one to be disconnected in case the cable is inadvertently pulled out of the cable entry.



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Fig. 39 Wiring diagram, three-phase mains connection

Terminal	Function
91 (L1)	Three-phase supply
92 (L2)	
93 (L3)	
95/99 (PE)	Earth connection
96 (U)	Three-phase motor connection, 0-100 % of mains voltage
97 (V)	
98 (W)	

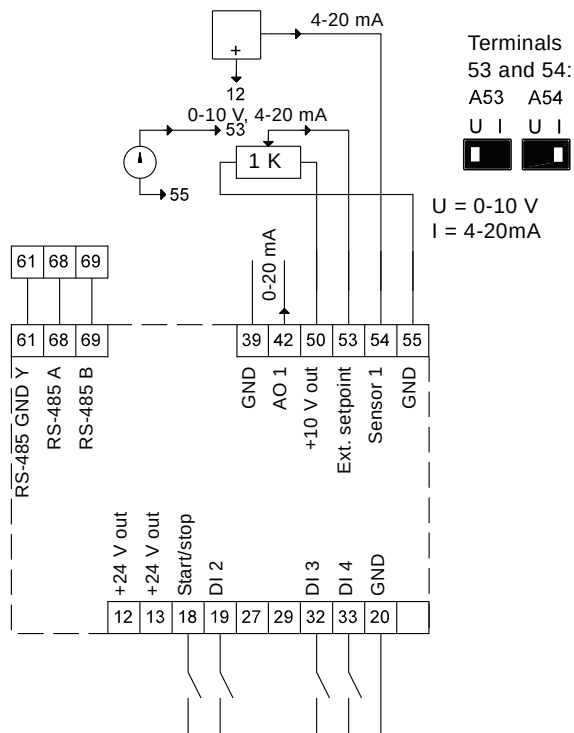
Note: use terminals 91 and 92 for single phase CUE's.

Connecting the signal terminals

Note: As a precaution, signal cables must be separated from other groups by reinforced insulation in their entire lengths.

Note: If no external on/off switch is connected, short-circuit terminals 18 and 20 using a short wire.

Wiring diagram, signal terminals



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Fig. 40 Wiring diagram, signal terminals

Terminal	Type	Function
12	+24 V out	Supply to sensor
13	+24 V out	Additional supply
18	DI 1	Digital input, start/stop
19	DI 2	Digital input, programmable
20	GND	Common frame for digital inputs
32	DI 3	Digital input, programmable
33	DI 4	Digital input, programmable
39	GND	Frame for analog output
42	AO 1	Analog output, 0-20 mA
50	+10 V out	Supply to potentiometer
53	AI 1	External setpoint, 0-10 V, 0/4-20 mA
54	AI 2	Sensor input, sensor 1, 0/4-20 mA
55	GND	Common frame for analog inputs
61	RS-485 GND Y	GENIbus, screen (frame)
68	RS-485 A	GENIbus, signal A (+)
69	RS-485 B	GENIbus, signal B (-)

Terminals 27 and 29 are not used.

Connect the signal cables according to the guidelines for good practice to ensure EMC-correct installation. See section *EMC-correct installation*, 35.

- Use shielded signal cables.
- Use a 3-conductor shielded bus cable.

RFI filters

To meet the EMC requirements, the CUE comes with the following types of built-in radio frequency interference filter (RFI).

Voltage	Typical shaft power P2	RFI filter type
1 x 200-240 V	1.5-10 Hp (1.1-7.5 kW)	C1
3 x 200-240 V	1-60 Hp (0.75-45 kW)	C1
3 x 380-500 V	0.75-125 Hp (0.55-90 kW)	C1
	150-350 Hp (110-250 kW)	C2
3 x 525-600 V	1-10 Hp (0.75-7.5 kW)	C3
3 x 525-690 V	15-350 Hp (11-250 kW)	C3

RFI filter types are according to EN 61800-3.

C1 is a high-performance filter. C2 and C3 are typically RFI filter types for standard frequency converters.

Description of RFI filter types

C1: For use in domestic areas.

C2: For use in domestic and industrial areas, connected permanently to the mains supply. In domestic areas, special care should be taken regarding EMC-correct installation.

C3: For use in industrial areas with own low-voltage transformer.

Equipment of category C2

- In a domestic environment this product may cause radio interference in which case supplementary mitigation measures may be required.

Equipment of category C3

- This type of power drive system (PDS) is not intended to be used on a low-voltage public network which supplies domestic premises.
- Radio frequency interference is expected if used on such a network.

Output filters

Output filters are used for reducing the voltage stress on the motor windings and the stress on the motor insulation system as well as for decreasing acoustic noise from the frequency converter-driven motor.

Grundfos offers two types of output filter as accessories for the CUE:

- dU/dt filters
- sine-wave filters

The filters are IP20/NEMA1 enclosure.

dU/dt filters

Motor insulation stress is often caused by the combination of rapid voltage and current increase. The rapid energy changes can also be reflected back to the DC line in the inverter and cause shut down. The dU/dt filter is designed to reduce the voltage rise time/the rapid energy change in the motor, and by that intervention, it prevents premature aging and flashover in the motor insulation.

The dU/dt filters have a positive influence on the radiation of magnetic noise in the cable that connects the drive to the motor. The voltage wave form is still pulse-shaped but the du/dt ratio is reduced in comparison with the installation without filter.

Sine-wave filters

Sine-wave filters are designed to allow only low frequencies to pass. High frequencies are consequently shunted away, which results in a sinusoidal phase-to-phase voltage waveform and sinusoidal current waveforms.

With the sinusoidal waveforms, the use of special adjustable frequency drive motors with reinforced insulation is no longer needed. The acoustic noise from the motor is also damped as a consequence of the wave condition.

Besides the features of the dU/dt filter, the sine-wave filter also reduces insulation stress and bearing currents in the motor, thus leading to prolonged motor lifetime and longer periods between service. Sine-wave filters enable use of longer motor cables in applications where the motor is installed far from the drive. The length is unfortunately limited because the filter does not reduce leakage currents in the cables.

Use of output filters

The table below explains in which cases an output filter is required. From the table it can be seen if a filter is needed, and which type to use.

The selection depends of:

- pump type
- motor cable length
- the required reduction of the acoustic noise from the motor.

Pump type	Typical shaft power P2	dU/dt filter	Sine-wave filter
SP, BM, BMB with 380 V motor and up	Up to 10 Hp	–	0-1000 ft (0-300 m)
	15 Hp and up	0-500 ft (0-150 m)	500-1000 ft (150-300 m)
Other pumps, noise reduction	Up to 10 Hp	–	0-1000 ft (0-300 m)
	15 Hp and up	0-500 ft (0-150 m)	500-1000 ft (150-300 m)
Other pumps, higher noise reduction	Up to 10 Hp	–	0-1000 ft (0-300 m)
	15 Hp and up	–	0-1000 ft (0-300 m)
Pumps with 690 V motor	All	0-500 ft (0-150 m)	500-1000 ft (150-300 m)

The lengths stated apply to the motor cable.

Motor cable

Use a shielded/armored motor cable to comply with EMC emission specifications (or install the cable in a metal conduit). Keep the motor cable as short as possible to reduce the noise level and leakage currents. Connect the motor cable shield/armor to both the decoupling plate of the adjustable frequency drive and to the metal of the motor. (Same applies to both ends of the metal conduit if used instead of a shield.)

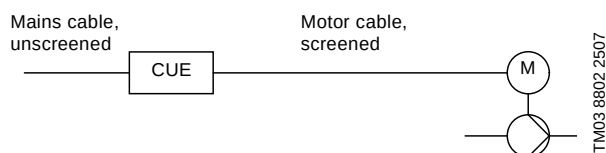


Fig. 41 Example of installation without filter

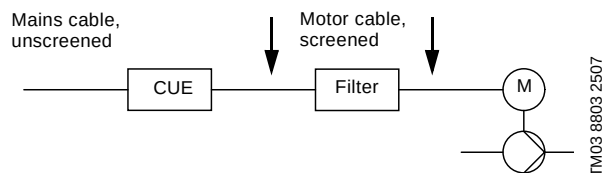


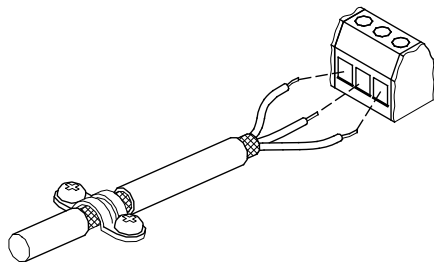
Fig. 42 Example of installation with filter. The cable between the CUE and filter must be short

EMC-correct installation

This section gives guidelines for good practice when installing the CUE. Follow these guidelines to meet EN 61800-3, first environment.

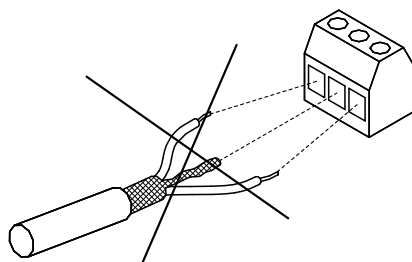
- Use only motor and signal cables with a braided metal screen in applications without output filter.
- There are no special requirements to supply cables, apart from local requirements.
- Leave the screen as close to the connecting terminals as possible. See fig. 43.
- Avoid terminating the screen by twisting the ends. See fig. 44. Use cable clamps or EMC screwed cable entries instead.
- Connect the screen to frame at both ends for both motor and signal cables. See fig. 45. If the controller has no cable clamps, connect only the screen to the CUE. See fig. 46.
- Avoid unscreened motor and signal cables in electrical cabinets with frequency converters.
- Make the motor cable as short as possible in applications without output filter to limit the noise level and minimize leakage currents.
- Screws for frame connections must always be tightened whether a cable is connected or not.
- Keep main cables, motor cables and signal cables separated in the installation, if possible.

Other installation methods may give similar EMC results if the above guidelines for good practice are followed.



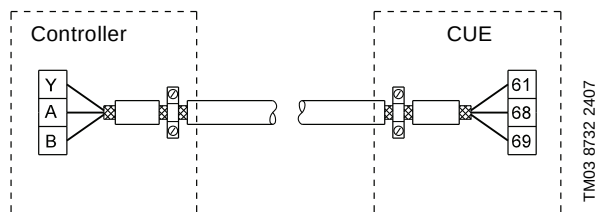
TM02 1325 0901

Fig. 43 Example of stripped cable with screen



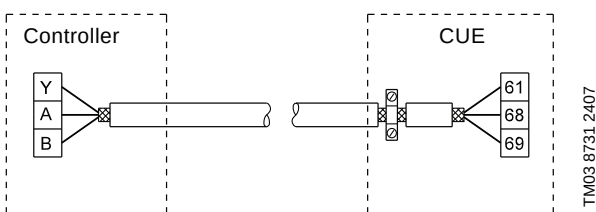
TM03 8812 2507

Fig. 44 Do not twist the screen ends



TM03 8732 2407

Fig. 45 Example of connection of a 3-conductor bus cable with screen connected at both ends

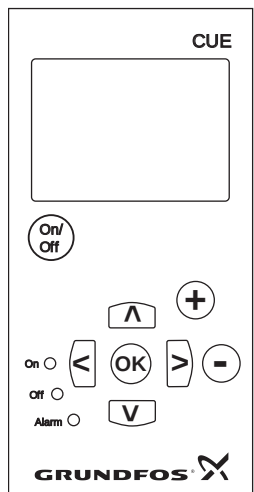


TM03 8731 2407

Fig. 46 Example of connection of a 3-conductor bus cable with screen connected at the CUE (controller with no cable clamps)

Control panel

The control panel is used for local setting of the CUE. The functions available depend on the pump family.



TM03 8719 2507

Fig. 47 Control panel of the CUE

Editing buttons

Button	Function
	Makes the pump ready for operation/starts and stops the pump.
	Saves changed values, resets alarms and expands the value field.
	Changes values in the value field.

Navigating buttons

Button	Function
	Navigates from one menu to another. When the menu is changed, the display shown will always be the top display of the new menu.
	Navigates up and down in the individual menu.

Indicator lights

The operating condition of the pump is indicated by the indicator lights on the front of the control panel. See fig. 47.

The table shows the function of the indicator lights.

Indicator light	Function
On (green)	The pump is running or has been stopped by a stop function. If flashing, the pump has been stopped by the user (CUE menu), external start/stop or bus.
Off (orange)	The pump has been stopped with the on/off button.
Alarm (red)	Indicates an alarm or a warning.

Start-up guide

Use the start-up guide for the general setting of the CUE including the setting of the correct direction of rotation.

The start-up guide is started the first time when the CUE is connected to supply voltage. It can be restarted in menu GENERAL. Please note that in this case all previous settings will be erased.

Warning and alarm list

Code and display text	Status			Operating mode	Re-setting
	Warning	Alarm	Locked alarm		
1 Too high leakage current			●	Stop	Man.
2 Mains phase failure		●		Stop	Aut.
3 External fault		●		Stop	Man.
16 Other fault		●		Stop	Aut.
30 Replace motor bearings	●		●	Stop	Man. ³⁾
32 Overvoltage	●			–	Aut.
		●		Stop	Aut.
40 Undervoltage	●			–	Aut.
		●		Stop	Aut.
48 Overload		●		Stop	Aut.
			●	Stop	Man.
49 Overload		●		Stop	Aut.
55 Overload	●			–	Aut.
		●		Stop	Aut.
57 Dry running		●		Stop	Aut.
64 Too high CUE temperature		●		Stop	Aut.
70 Too high motor temperature		●		Stop	Aut.
77 Communication fault, duty/standby	●			–	Aut.
89 Sensor 1 outside range		●		1)	Aut.
91 Temperature sensor 1 outside range	●			–	Aut.
93 Sensor 2 outside range	●			–	Aut.
96 Setpoint signal outside range		●		1)	Aut.
148 Too high bearing temperature	●			–	Aut.
		●		Stop	Aut.
149 Too high bearing temperature	●			–	Aut.
		●		Stop	Aut.
155 Inrush fault		●		Stop	Aut.
175 Temperature sensor 2 outside range	●			–	Aut.
240 Relubricate motor bearings	●			–	Man. ³⁾
241 Motor phase failure	●			–	Aut.
		●		Stop	Aut.
242 AMA ²⁾ did not succeed	●			–	Man.

¹⁾ In case of an alarm, the CUE will change the operating mode depending on the pump type. For example: In constant pressure mode, SP's will run at min. speed while CR's will run at 70% of max. speed.

²⁾ AMA, Automatic Motor Adaptation.

³⁾ Warning is reset in display 3.20.

In case of fault or malfunction of the CUE, the latest five warnings and latest five alarms can be found in the log menus.

Warning

The CUE will continue the operation as long as the warning is active. The warning remains active until the cause no longer exists. Some warnings may switch to alarm condition if the warning has been present for a period.

Alarm

In case of an alarm, the CUE will stop the pump or change the operating mode depending on the alarm type and pump type.

Pump operation will be resumed when the cause of the alarm has been remedied and the alarm has been reset.

Resetting an alarm manually

- Press OK in the alarm display.
- Press On/Off twice.
- Activate a digital input DI 2-DI 4 set to *Alarm reset* or the digital input DI 1 (*Start/stop*).

If it is not possible to reset an alarm, the reason may be that the fault has not been remedied, or that the alarm has been locked.

Locked alarm

In case of a locked alarm, the CUE will stop the pump and become locked. Pump operation cannot be resumed until the cause of the locked alarm has been remedied and the alarm has been reset.

Resetting a locked alarm

- Switch off the electricity supply to the CUE for approx. 30 seconds. Switch on the electricity supply, and press OK in the alarm display to reset the alarm.

How to select a CUE

The size of the CUE is determined quickly and precisely based on the max. motor current. See fig. 48.

The power size, which is the typical shaft power P2, is only an approximate value and cannot be used to select the nominal size of the CUE.

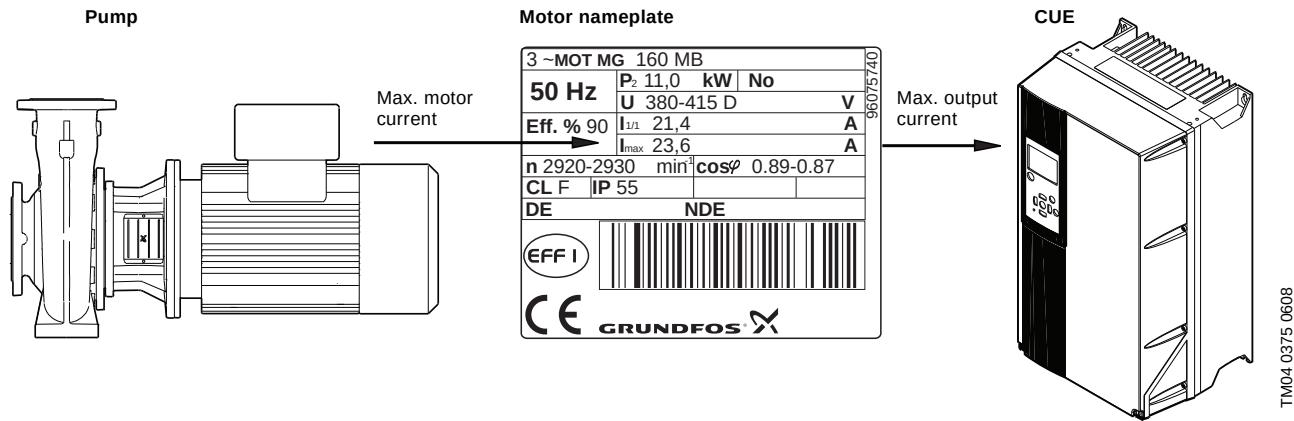


Fig. 48 Selection of CUE based on max. motor current

The main steps

When you have selected the pump, follow these steps to select a CUE:

- 1. Select the voltage range of the CUE. It should fit the motor voltage and the mains supply at the installation site.
- 2. Find the max. motor current*on the motor nameplate or in the data sheet of the selected motor. Select the first CUE that is able to deliver the max. motor current. See selection tables starting on page 41.
- 3. Select the enclosure class. Choose IP21 or IP54/55. See selection tables starting on page 41.
- 4. Check if an output filter is required. Select the output filter according to the table on page 34.
- 5. Select the accessories required for the application. It could be sensors or additional input modules.

Selecting the different accessories may require additional steps.

*** Important note: If motor has service factor, use service factor amperes for max. motor current.**

The actual motor current should always be less than or equal to the output current of the CUE.

If not, the CUE will reduce the maximum speed when the maximum limit is reached during operation.

Example 1

These data are given:

- voltage range is 3 x 460 V
- max. motor current is 23.6 A.
- enclosure class of the CUE must be IP21.

Select the CUE according to the selection tables in section Mains supply 3 x 440 - 500V on 43.

Data of the CUE selected:

Max. output current:	27A
Product number (IP21):	91136772

Special conditions

Derating must be taken into account when using the CUE in these situations:

- low air pressure (heights)
- low speeds
- installations with long motor cables
- cables with a large cross-section
- high ambient temperature.

The required action is described in the next sections.

Low air pressure

At low air pressure, the cooling capability of air is reduced.

At altitudes above 3,280 ft (1,000 m), the max. output current should be derated in accordance with the diagram in fig. 49.

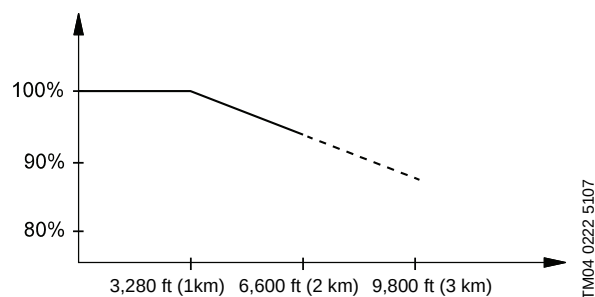


Fig. 49 Derating of output current at low air pressure

At altitudes above 6,600 ft (2,000 m), PELV cannot be met. PELV = Protective Extra Low Voltage.

An alternative is to lower the ambient temperature at high altitudes and thereby ensure 100% output current at high altitudes.

Example 2

At an altitude of 6,600 ft (2,000 m), the output current 27 A of the selected CUE in example 1 must be derated to 92% according to fig. 49. This is equal to 25 A.

High ambient temperature

If the output current is reduced to 80 % of the nominal output current of the CUE in questions, the ambient may be 5 °C higher.

The other possibility is to use a unit one size bigger. For higher temperature increases, bigger units are required. The efficiency of the CUE will, however, be reduced at higher temperatures.

If the CUE gets too hot, it will reduce the switching frequency.

Note that the nominal temperature rating depends on the enclosure type.

The maximum ambient temperature of the different enclosures can be found in section *Technical data* on p. 45.

Selection tables

Mains supply 1 x 200-240 V

Rated Input Voltage	CUE output amps	enclosure rating	CUE only part number	CUE constant pressure* part number	Enclosure	Max conductor (AWG)	Efficiency	output filter	
								dU/dt	Sine wave
1 x 200-240V	6.6	IP21	91136746	91136789	A3	10	0.96		96754973
	6.6	IP55	91136854	91136908	A5	10	0.96		96754973
	7.5	IP21	91136832	91136843	B1	8	0.96		96754973
	7.5	IP55	91136855	91136909	B1	8	0.96		96754973
	10.6	IP21	91136833	91136844	B1	8	0.96		96754976
	10.6	IP55	91136856	91136910	B1	8	0.96		96754976
	12.5	IP21	91136834	91136845	B1	8	0.96		96754976
	12.5	IP55	91136857	91136911	B1	8	0.96		96754976
	16.7	IP21	91136835	91136846	B1	8	0.96		96754976
	16.7	IP55	91136858	91136912	B1	8	0.96		96754976
	24.2	IP21	91136836	91136847	B1	8	0.98		96754977
	24.2	IP55	91136859	91136913	B1	8	0.98		96754977
	30.8	IP21	91136837	91136848	B2	2	0.98		96754978
	30.8	IP55	91136860	91136914	B2	2	0.98		96754978

* includes CUE and 0-120 psi 4-20mA sensor

Mains supply 3 x 200-240 V

Rated Input Voltage	CUE output amps	enclosure rating	CUE only part number	CUE constant pressure* part number	Enclosure	Max conductor (AWG)	Efficiency	output filter	
								dU/dt	Sine wave
3 x 200-240V	4.6	IP21	91136747	91136790	A2	10	0.95		96754973
	4.6	IP55	91136861	91136915	A5	10	0.95		96754973
	6.6	IP21	91136748	91136791	A2	10	0.96		96754973
	6.6	IP55	91136862	91136916	A5	10	0.96		96754973
	7.5	IP21	91136749	91136792	A2	10	0.96		96754973
	7.5	IP55	91136863	91136917	A5	10	0.96		96754973
	10.6	IP21	91136750	91136793	A2	10	0.96		96754976
	10.6	IP55	91136864	91136918	A5	10	0.96		96754976
	12.5	IP21	91136751	91136794	A3	10	0.96		96754976
	12.5	IP55	91136865	91136919	A5	10	0.96		96754976
	16.7	IP21	91136752	91136795	A3	10	0.96		96754976
	16.7	IP55	91136866	91136920	A5	10	0.96		96754976
	24.2	IP21	91136753	91136796	B3	8	0.96		96754977
	24.2	IP55	91136867	91136921	B1	8	0.96		96754977
	30.8	IP21	91136754	91136797	B3	8	0.96		96754978
	30.8	IP55	91136868	91136922	B1	8	0.96		96754978
	46.2	IP21	91136755	91136798	B3	8	0.96		96755019
	46.2	IP55	91136869	91136923	B1	8	0.96		96755019
	59.4	IP21	91136756	91136799	B4	2	0.96		96755021
	59.4	IP55	91136870	91136924	B2	2	0.96		96755021
	74.8	IP21	91136757	91136800	B4	1/0	0.96		96755032
	74.8	IP55	91136871	91136925	C1	1/0	0.96		96755032
	88	IP21	91136758	91136801	C3	1/0	0.97		96755033
	88	IP55	91136872	91136926	C1	1/0	0.97		96755033
	115	IP21	91136759	91136802	C3	1/0	0.97		96755033
	115	IP55	91136873	91136927	C1	1/0	0.97		96755033
	143	IP21	91136760	91136803	C4	4/0	0.97		96755034
	143	IP55	91136874	91136928	C2	4/0	0.97		96755034
	170	IP21	91136761	91136804	C4	250 MCM	0.97		96755034
	170	IP55	91136875	91136929	C2	250 MCM	0.97		96755034

* includes CUE and 0-120 psi 4-20mA sensor

Mains supply 3 x 440 - 500V

Rated Input Voltage	CUE output amps	enclosure rating	CUE only part number	CUE constant pressure* part number	Enclosure	Max conductor (AWG)	Efficiency	output filter	
								dU/dt	Sine wave
3 x 440 - 500V	1.6	IP21	91136762	91136805	A2	10	0.95		96754941
	1.6	IP55	91136876	91136930	A5	10	0.95		96754941
	2.1	IP21	91136763	91136806	A2	10	0.96		96754941
	2.1	IP55	91136877	91136931	A5	10	0.96		96754941
	2.7	IP21	91136764	91136807	A2	10	0.96		96754972
	2.7	IP55	91136878	91136932	A5	10	0.96		96754972
	3.4	IP21	91136765	91136808	A2	10	0.97		96754972
	3.4	IP55	91136879	91136933	A5	10	0.97		96754972
	4.8	IP21	91136766	91136809	A2	10	0.97		96754973
	4.8	IP55	91136880	91136934	A5	10	0.97		96754973
	6.3	IP21	91136767	91136810	A2	10	0.97		96754973
	6.3	IP55	91136881	91136935	A5	10	0.97		96754973
	8.2	IP21	91136768	91136811	A2	10	0.97		96754974
	8.2	IP55	91136882	91136936	A5	10	0.97		96754974
	11	IP21	91136769	91136812	A3	10	0.97		96754976
	11	IP55	91136883	91136937	A5	10	0.97		96754976
	14.5	IP21	91136770	91136813	A3	10	0.97		96754976
	14.5	IP55	91136884	91136938	A5	10	0.97		96754976
	21	IP21	91136771	91136814	B3	8	0.98	96755062	96754977
	21	IP55	91136885	91136939	B1	8	0.98	96755062	96754977
	27	IP21	91136772	91136815	B3	8	0.98	96755063	96754978
	27	IP55	91136886	91136940	B1	8	0.98	96755063	96754978
	34	IP21	91136773	91136816	B3	8	0.98	96755063	96754978
	34	IP55	91136887	91136941	B1	8	0.98	96755063	96754978
	40	IP21	91136774	91136817	B4	2	0.98	96755063	96755019
	40	IP55	91136888	91136942	B2	2	0.98	96755063	96755019
	52	IP21	91136775	91136818	B4	2	0.98	96755064	96755021
	52	IP55	91136889	91136943	B2	2	0.98	96755064	96755021
	65	IP21	91136776	91136819	B4	1/0	0.98	96755064	96755032
	65	IP55	91136890	91136944	C1	1/0	0.98	96755064	96755032
	80	IP21	91136777	91136820	C3	1/0	0.98	96755066	96755033
	80	IP55	91136891	91136945	C1	1/0	0.98	96755066	96755033
	105	IP21	91136778	91136821	C3	1/0	0.98	96755066	96755033
	105	IP55	91136892	91136946	C1	1/0	0.98	96755066	96755033
	130	IP21	91136779	91136822	C4	4/0	0.98	96755067	96755034
	130	IP55	91136893	91136947	C2	4/0	0.98	96755067	96755034
	160	IP21	91136780	91136823	C4	250 MCM	0.99	96755067	96755034
	160	IP55	91136894	91136948	C2	250 MCM	0.99	96755067	96755034
	190	IP21	96754649	-	D1	2 x 2/0	0.98	96755069	96755037
	190	IP54	96754666	-	D1	2 x 2/0	0.98	96755069	96755037
	240	IP21	96754651	-	D1	2 x 2/0	0.98	96755069	96755037
	240	IP54	96754669	-	D1	2 x 2/0	0.98	96755069	96755037

* includes CUE and 0-120 psi 4-20mA sensor

Mains supply 3 x 525-600 V

Rated Input Voltage	CUE output amps	enclosure rating	CUE only part number	CUE constant pressure* part number	Enclosure	Max conductor (AWG)	Efficiency	output filter	
								dU/dt	Sine wave
3 x 525 - 600V	1.7	IP21	91136781	91136824	A3	10	0.97		96755040
	1.7	IP55	91136900	91136954	A5	10	0.97		96755040
	2.4	IP21	91136782	91136825	A3	10	0.97		96755040
	2.4	IP55	91136901	91136955	A5	10	0.97		96755040
	2.7	IP21	91136783	91136826	A3	10	0.97		96755040
	2.7	IP55	91136902	91136956	A5	10	0.97		96755040
	3.9	IP21	91136784	91136827	A3	10	0.97		96755040
	3.9	IP55	91136903	91136957	A5	10	0.97		96755040
	4.9	IP21	91136785	91136828	A3	10	0.97		96755040
	4.9	IP55	91136904	91136958	A5	10	0.97		96755040
	6.1	IP21	91136786	91136829	A3	10	0.97		96755040
	6.1	IP55	91136905	91136959	A5	10	0.97		96755040
	9	IP21	91136787	91136830	A3	10	0.97		96755040
	9	IP55	91136906	91136960	A5	10	0.97		96755040
	11	IP21	91136788	91136831	A3	10	0.97		96755040
	11	IP55	91136907	91136961	A5	10	0.97		96755040

* includes CUE and 0-120 psi 4-20mA sensor

Main dimensions and weight

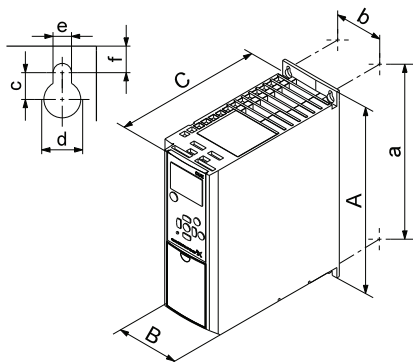


Fig. 50 Enclosures A2 and A3

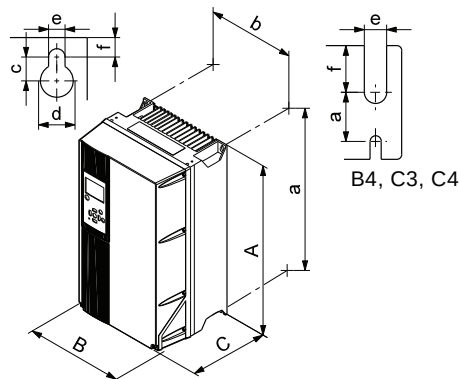


Fig. 51 Enclosures A5, B1, B2, B3, B4, C1, C2, C3 and C4

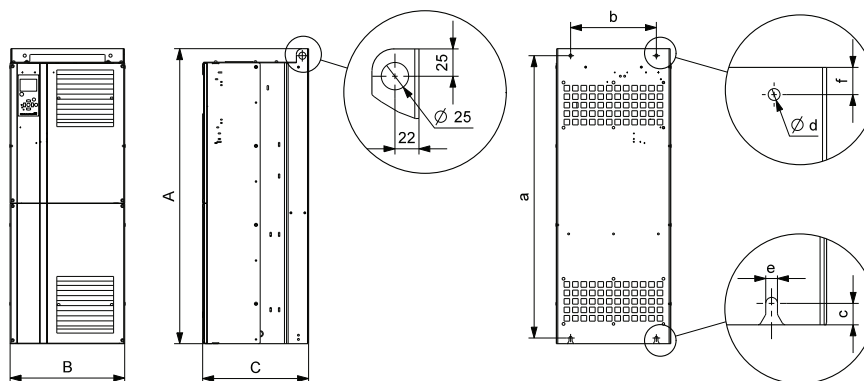


Fig. 52 Enclosures D1 and D2

Enclosure	Height [in (mm)] ¹⁾		Width [in (mm)] ¹⁾		Depth [in (mm)] ¹⁾		Screw holes [in (mm)]				Weight [lb (kg)]
	A	a	B	b	C	C ²⁾	c	Ød	Øe	f	
A2	10.55 (268)	10.12 (257)	3.54 (90)	2.76 (70)	8.08 (205)	8.62 (219)	.315 (8.0)	.433 (11)	.217 (5.5)	.354 (9.0)	10.8 (4.9)
with IP21/NEMA1 kit	14.76 (375)	13.78 (350)	3.54 (90)	2.76 (70)	8.08 (205)	8.62 (219)	.315 (8.0)	.433 (11)	.217 (5.5)	.354 (9.0)	11.7 (5.3)
A3	10.55 (268)	10.12 (257)	5.12 (130)	4.34 (110)	8.08 (205)	8.62 (219)	.315 (8.0)	.433 (11)	.217 (5.5)	.354 (9.0)	14.6 (6.6)
with IP21/NEMA1 kit	14.76 (375)	13.78 (350)	5.12 (130)	4.34 (110)	8.08 (205)	8.62 (219)	.315 (8.0)	.433 (11)	.217 (5.5)	.354 (9.0)	15.4 (7.0)
A5	16.54 (420)	15.83 (402)	9.53 (242)	8.47 (215)	7.87 (200)	7.87 (200)	.323 (8.2)	.472 (12)	.256 (6.5)	.354 (9.0)	30.9 (14)
B1	18.90 (480)	17.87 (454)	9.53 (242)	8.27 (210)	10.24 (260)	10.24 (260)	.472 (12.0)	.748 (19)	.354 (9.0)	.354 (9.0)	26.5 (12)
B2	25.59 (650)	24.57 (624)	9.53 (242)	8.27 (210)	10.24 (260)	10.24 (260)	.472 (12.0)	.748 (19)	.354 (9.0)	.354 (9.0)	59.5 (27)
B3	15.71 (399)	14.96 (380)	6.50 (165)	5.52 (140)	9.76 (248)	10.32 (262)	.315 (8.0)	.472 (12)	.268 (6.8)	.311 (7.9)	26.5 (12)
with IP21/NEMA1 kit	18.71 (475)	—	6.50 (165)	—	9.80 (249)	10.32 (262)	.315 (8.0)	.472 (12)	.268 (6.8)	.311 (7.9)	—
B4	20.47 (520)	19.49 (495)	9.09 in (231)	7.87 (200)	9.53 (242)	9.53 (242)	—	—	.335 (8.5)	.591 (15.0)	51.8 (23.5)
with IP21/NEMA1 kit	26.38 (670)	—	10.04 (255)	—	9.69 (246)	9.69 (246)	—	—	.335 (8.5)	.591 (15.0)	—
C1	26.77 (680)	25.52 (648)	12.13 in (308)	10.71 (272)	12.21 (310)	12.21 (310)	.472 (12.0)	.748 (19)	.354 (9.0)	.386 (9.8)	99.2 (45)

Enclosure	Height [in (mm)] ¹⁾		Width [in (mm)] ¹⁾		Depth [in (mm)] ¹⁾		Screw holes [in (mm)]				Weight [lb (kg)]
	A	a	B	b	C	C ²⁾	c	Ød	Øe	f	
C2	30.31 (770)	29.09 (739)	14.57 (370)	13.15 (334)	13.19 (335)	13.19 (335)	.472 (12 0)	.748 (19)	.354 (9.0)	.386 (9.8)	143.3 (65)
C3	21.65 (550)	20.51 (521)	12.13 (308)	10.63 (270)	13.11 (333)	13.11 (333)	–	–	.335 (8.5)	.669 (17.0)	77.2 (35)
with IP21/NEMA1 kit	21.65 (755)	–	12.95 (329)	–	13.27 (337)	13.27 (337)	–	–	.335 (8.5)	.669 (17.0)	–
C4	25.98 (660)	24.84 (631)	14.57 (370)	12.99 (330)	13.11 (333)	13.11 (333)	–	–	.335 (8.5)	.669 (17.0)	110 2 (50)
with IP21/NEMA1 kit	37.40 (950)	–	15.39 (391)	–	13.27 (337)	13.27 (337)	–	–	.335 (8.5)	.669 (17.0)	–
D1	47.60 (1209)	45.43 (1154)	16.54 (420)	11.97 (304)	14.96 (380)	–	.787 (20)	.433 (11)	.433 (11)	.984 (25)	229.3 (104)
D2	62.56 (1589)	60.43 (1535)	16.54 (420)	11.97 (304)	14.96 (380)	–	.787 (20)	.433 (11)	.433 (11)	.984 (25)	332.9 (151)

¹⁾ The dimensions are maximum height, width and depth.

²⁾ Depth with MCB 114 option

Shipping dimensions of D1 and D2:

Height x width x length = 650 x 570 x 1730 mm.

Surroundings

Relative humidity	5-95 % RH
Minimum ambient temperature at full operation	32° F (0 °C)
Minimum ambient temperature at reduced operation	14° F (–10 °C)
Temperature during storage and transportation	–13° F to 149° F (–25 to 65 °C)
Storage duration	Max. 6 months
Maximum altitude above sea level with full performance	3,280 ft (1 km)
Maximum altitude above sea level with performance reduction	6,600 ft (2 km)
CUE, up to 160 amps	
Ambient temperature	Max. 122 °F (50 °C)
Average ambient temperature over 24 hours	Max. 113° F (45 °C)
CUE, 190 amps and above	
Ambient temperature	Max. 113° F (45 °C)
Average ambient temperature over 24 hours	Max. 104° F (40 °C)

Note: The CUE comes in a packaging which is not suitable for outdoor storage.

Sound pressure level

Maximum sound pressure level measured at a distance of 1 m from the unit:

Enclosure	Sound pressure level [dBA]
A2	60
A3	60
A5	63
B1	67
B2	70
B3	63 ¹⁾
B4	63
C1	62
C2	65
C3	67
C4	–
D1	76
D2	74

¹⁾ The sound pressure level for B3 in the 3 x 525-600 V range is 70 dBA.

The sound pressure level of a motor controlled by a frequency converter may be higher than that of a corresponding motor which is not controlled by a frequency converter.

Terminal tightening torques

Enclosure	Tightening torque [Nm]			
	Mains	Motor	Ground	Relay
A2	1.8	1.8	3	0.6
A3	1.8	1.8	3	0.6
A5	1.8	1.8	3	0.6
B1	1.8	1.8	3	0.6
B2	4.5	4.5	3	0.6
B3	1.8	1.8	3	0.6
B4	4.5	4.5	3	0.6
C1	10	10	3	0.6
C2	14 ¹⁾ /24 ²⁾	14 ¹⁾ /24 ²⁾	3	0.6
C3	10	10	3	0.6
C4	14 ¹⁾ /24 ²⁾	14 ¹⁾ /24 ²⁾	3	0.6
D1	19	19	19	0.6
D2	19	19	19	0.6

¹⁾ Conductor cross-section ≤ 95 mm².

²⁾ Conductor cross-section ≥ 95 mm².

Cables

Cable length

Maximum length, screened motor cable	500 ft (150 m)
Maximum length, unscreened motor cable	1000 ft (300 m)
Maximum length, signal cable	1000 ft (300 m)

Cable cross-section to signal terminals

Maximum cable cross-section to signal terminals, rigid conductor	16 AWG (1.5 mm ²)
Maximum cable cross-section to signal terminals, flexible conductor	18 AWG (1.0 mm ²)
Minimum cable cross-section to signal terminals	22 AWG (0.5 mm ²)

Note: For cable cross-section to mains and motor, see next section Fuses on page 48.

Fuses

Non-UL fuses and conductor cross-section to mains and motor

Typical shaft power P2	Maximum fuse size	Fuse type	Maximum conductor cross-section
[kW]	[A]		[AWG] (mm ²)
1 x 200-240 V			
1.1	20	–	12 (4)
1.5	30	–	8 (10)
2.2	40	–	8 (10)
3	40	–	8 (10)
3.7	60	–	8 (10)
5.5	80	–	8 (10)
7.5	100	–	2 (35)
3 x 200-240 V			
0.75	10	gG	12 (4)
1.1	20	gG	12 (4)
1.5	20	gG	12 (4)
2.2	20	gG	12 (4)
3	32	gG	12 (4)
3.7	32	gG	12 (4)
5.5	63	gG	8 (10)
7.5	63	gG	8 (10)
11	63	gG	8 (10)
15	80	gG	2 (35)
18.5	125	gG	1 (50)
22	125	gG	1 (50)
30	160	gG	1 (50)
37	200	aR	3/0 (95)
45	250	aR	4/0 (120)
3 x 380-500 V			
0.55	10	gG	12 (4)
0.75	10	gG	12 (4)
1.1	10	gG	12 (4)
1.5	10	gG	12 (4)
2.2	20	gG	12 (4)
3	20	gG	12 (4)
4	20	gG	12 (4)
5.5	32	gG	12 (4)
7.5	32	gG	12 (4)
11	63	gG	8 (10)
15	63	gG	8 (10)
18.5	63	gG	8 (10)
22	63	gG	2 (35)
30	80	gG	2 (35)
37	100	gG	1 (50)
45	125	gG	1 (50)
55	160	gG	1 (50)
75	250	aR	3/0 (95)
90	250	aR	4/0 (120)
110	300	gG	2 x 70
132	350	gG	2 x 70
160	400	gG	2 x 185
200	500	gG	2 x 185
250	600	gR	2 x 185
3 x 525-600 V			

Typical shaft power P2	Maximum fuse size	Fuse type	Maximum conductor cross-section
[kW]	[A]		[AWG] (mm ²)
0.75	10	gG	12 (4)
1.1	10	gG	12 (4)
1.5	10	gG	12 (4)
2.2	20	gG	12 (4)
3	20	gG	12 (4)
4	20	gG	12 (4)
5.5	32	gG	12 (4)
7.5	32	gG	12 (4)
3 x 525-690 V			
11	–	–	–
15	–	–	–
18.5	–	–	–
22	–	–	–
30	–	–	–
37	–	–	–
45	–	–	–
55	–	–	–
75	–	–	–
90	–	–	–
110	225	–	2 x 70
132	250	–	2 x 70
160	350	–	2 x 185
200	400	–	2 x 185
250	500	–	2 x 185

UL fuses and conductor cross-section to mains and motor

CUE Output Amps [Amp (kW)]	Fuse type							Maximum conductor
	Bussmann RK1	Bussmann J	Bussmann T	SIBA RK1	Littel Fuse RK1	Ferraz-Shawmut CC	Ferraz-Shawmut RK1	cross-section
								[AWG]
1 x 200-240 V								
6.6 (1.1)	KTN-R20	–	–	–	–	–	–	10
7.5 (1.5)	KTN-R30	–	–	–	–	–	–	7
10.6 (2.2)	KTN-R40	–	–	–	–	–	–	7
12.5 (3)	KTN-R40	–	–	–	–	–	–	7
16.7 (3.7)	KTN-R60	–	–	–	–	–	–	7
24.2 (5.5)	–	–	–	–	–	–	–	7
30.8 (7.5)	–	–	–	–	–	–	–	2
3 x 200-240 V								
4.6 (0.75)	KTN-R10	JKS-10	JJN-10	5017906-010	KTN-R10	ATM-R10	A2K-10R	10
6.6 (1.1)	KTN-R20	JKS-20	JJN-20	5017906-020	KTN-R20	ATM-R20	A2K-20R	10
7.5 (1.5)	KTN-R20	JKS-20	JJN-20	5017906-020	KTN-R20	ATM-R20	A2K-20R	10
10.6 (2.2)	KTN-R20	JKS-20	JJN-20	5017906-020	KTN-R20	ATM-R20	A2K-20R	10
12.5 (3)	KTN-R30	JKS-30	JJN-30	5012406-032	KTN-R30	ATM-R30	A2K-30R	10
16.7 (3.7)	KTN-R30	JKS-30	JJN-30	5012406-032	KTN-R30	ATM-R30	A2K-30R	10
24.2 (5.5)	KTN-R50	JKS-50	JJN-50	5012406-050	KLN-R50	–	A2K-50R	7
30.8 (7.5)	KTN-R50	JKS-60	JJN-60	5012406-050	KLN-R60	–	A2K-50R	7
46.2 (11)	KTN-R60	JKS-60	JJN-60	5014006-063	KLN-R60	A2K-60R	A2K-60R	7
59.4 (15)	KTN-R80	JKS-80	JJN-80	5014006-080	KLN-R80	A2K-80R	A2K-80R	2
74.8 (18.5)	KTN-R125	JKS-150	JJN-125	2028220-125	KLN-R125	A2K-125R	A2K-125R	1/0
88 (22)	KTN-R125	JKS-150	JJN-125	2028220-125	KLN-R125	A2K-125R	A2K-125R	1/0
115 (30)	FWX-150	–	–	2028220-150	L25S-150	A25X-150	A25X-150	1/0
143 (37)	FWX-200	–	–	2028220-200	L25S-200	A25X-200	A25X-200	4/0
170 (45)	FWX-250	–	–	2028220-250	L25S-250	A25X-250	A25X-250	250 MCM
3 x 380-500 V								
1.6 (0.55)	KTS-R10	JKS-10	JJS-10	5017906-010	KTN-R10	ATM-R10	A2K-10R	10
2.1 (0.75)	KTS-R10	JKS-10	JJS-10	5017906-010	KTN-R10	ATM-R10	A2K-10R	10
2.7 (1.1)	KTS-R10	JKS-10	JJS-10	5017906-010	KTN-R10	ATM-R10	A2K-10R	10
3.4 (1.5)	KTS-R10	JKS-10	JJS-10	5017906-010	KTN-R10	ATM-R10	A2K-10R	10
4.3 (2.2)	KTS-R20	JKS-20	JJS-20	5017906-020	KTN-R20	ATM-R20	A2K-20R	10
6.3 (3)	KTS-R20	JKS-20	JJS-20	5017906-020	KTN-R20	ATM-R20	A2K-20R	10
8.2 (4)	KTS-R20	JKS-20	JJS-20	5017906-020	KTN-R20	ATM-R20	A2K-20R	10
11 (5.5)	KTS-R30	JKS-30	JJS-30	5012406-032	KTN-R30	ATM-R30	A2K-30R	10
14.5 (7.5)	KTS-R30	JKS-30	JJS-30	5012406-032	KTN-R30	ATM-R30	A2K-30R	10
21 (11)	KTS-R40	JKS-40	JJS-40	5014006-040	KLS-R40	–	A6K-40R	7
27 (15)	KTS-R40	JKS-40	JJS-40	5014006-040	KLS-R40	–	A6K-40R	7
34 (18.5)	KTS-R50	JKS-50	JJS-50	5014006-050	KLS-R50	–	A6K-50R	7
40 (22)	KTS-R60	JKS-60	JJS-60	5014006-063	KLS-R60	–	A6K-60R	2
52 (30)	KTS-R80	JKS-80	JJS-80	2028220-100	KLS-R80	–	A6K-80R	2
65 (37)	KTS-R100	JKS-100	JJS-100	2028220-125	KLS-R100	–	A6K-100R	1/0
80 (45)	KTS-R125	JKS-150	JJS-150	2028220-125	KLS-R125	–	A6K-125R	1/0
105 (55)	KTS-R150	JKS-150	JJS-150	2028220-160	KLS-R150	–	A6K-150R	1/0
130 (75)	FWH-220	–	–	2028220-200	L50S-225	–	A50-P225	4/0
160 (90)	FWH-250	–	–	2028220-250	L50S-250	–	A50-P250	250 MCM
3 x 525-600 V								
1.7 (0.75)	KTS-R10	JKS-10	JJS-10	5017906-010	KTN-R10	ATM-R10	A2K-10R	10
2.4 (1.1)	KTS-R10	JKS-10	JJS-10	5017906-010	KTN-R10	ATM-R10	A2K-10R	10
2.7 (1.5)	KTS-R10	JKS-10	JJS-10	5017906-010	KTN-R10	ATM-R10	A2K-10R	10
3.9 (2.2)	KTS-R20	JKS-20	JJS-20	5017906-020	KTN-R20	ATM-R20	A2K-20R	10
4.9 (3)	KTS-R20	JKS-20	JJS-20	5017906-020	KTN-R20	ATM-R20	A2K-20R	10
6.1 (4)	KTS-R20	JKS-20	JJS-20	5017906-020	KTN-R20	ATM-R20	A2K-20R	10
9 (5.5)	KTS-R30	JKS-30	JJS-30	5012406-032	KTN-R30	ATM-R30	A2K-30R	10

CUE Output Amps [Amp (kW)]	Fuse type							Maximum conductor cross-section [AWG]
	Bussmann RK1	Bussmann J	Bussmann T	SIBA RK1	Littel Fuse RK1	Ferraz-Shawmut CC	Ferraz-Shawmut RK1	
11 (7.5)	KTS-R30	JKS-30	JJS-30	5012406-032	KTN-R30	ATM-R30	A2K-30R	10
3 x 525-690 V								
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–

CUE Output Amps [Amps (kW)]	Fuse type							Maximum conductor
	Bussmann E1958 JFHR2	Bussmann E4273 T/JDDZ	Bussmann E4274 H/JDDZ	Bussmann E125085 JFHR2	SIBA E180276 RK1/JDDZ	Littel Fuse E71611 JFHR2	Ferraz-Shawmut E60314 JFHR2	cross-section
								[AWG]
3 x 380-500 V								
190 (110)	FWH-300	JJS-300	NOS-300	170M3017	2028220-315	L50S-300	A50-P300	2 x 2/0
240 (132)	FWH-350	JJS-350	NOS-350	170M3018	2028220-315	L50S-350	A50-P350	2 x 2/0
302 (160)	FWH-400	JJS-400	NOS-400	170M4012	206xx32-400	L50S-400	A50-P400	2 x 350 MCM
361 (200)	FWH-500	JJS-500	NOS-500	170M4014	206xx32-500	L50S-500	A50-P500	2 x 350 MCM
443 (250)	FWH-600	JJS-600	NOS-600	170M4016	206xx32-600	L50S-600	A50-P600	2 x 350 MCM
–	–	–	–	Bussmann E125085 JFHR2	SIBA E180276 JFHR2	–	Ferraz-Shawmut E76491 JFHR2	–
3 x 525-690 V								
155 (110)	–	–	–	170M3017	2061032.315	–	6.6URD30D08A0315	2 x 2/0
192 (132)	–	–	–	170M3018	2061032.350	–	6.6URD30D08A0350	2 x 2/0
242 (160)	–	–	–	170M4011	2061032.350	–	6.6URD30D08A0350	2 x 350 MCM
290 (200)	–	–	–	170M4012	2061032.400	–	6.6URD30D08A0400	2 x 350 MCM
344 (250)	–	–	–	170M4014	2061032.500	–	6.6URD30D08A0500	2 x 350 MCM

Inputs and outputs

Mains supply (L1, L2, L3)

Supply voltage	200-240 V $\pm$ 10 %
Supply voltage	380-500 V $\pm$ 10 %
Supply voltage	525-600 V $\pm$ 10 %
Supply voltage	525-690 V $\pm$ 10 %
Supply frequency	50/60 Hz
Maximum temporary imbalance between phases	3 % of rated value
Leakage current to earth	>3.5 mA
Number of cut-ins, enclosure A	max. 2 times/min.
Number of cut-ins, enclosures B and C	max. 1 time/min.
Number of cut-ins, enclosures D	max. 1 time/2 min.

Note: Do not use the supply voltage for switching the CUE on and off.

Motor output (U, V, W)

Output voltage	0-100% ¹⁾
Output frequency	0-100 Hz ²⁾
Switching on output	not recommended

¹⁾ Output voltage in% of supply voltage.

²⁾ Depending on the pump family selected.

RS-485 GENibus connection

Terminal number	68 (A), 69 (B), 61 GND (Y)
-----------------	----------------------------

The RS-485 circuit is functionally separated from other central circuits and galvanically separated from the supply voltage (PELV).

Digital inputs

Terminal number	18, 19, 32, 33
Voltage level	0-24 VDC
Voltage level, open contact	> 19 VDC
Voltage level, closed contact	< 14 VDC
Maximum voltage on input	28 VDC
Input resistance, R_i	Approx. 4 k Ω

All digital inputs are galvanically separated from the supply voltage (PELV) and other high-voltage terminals.

Signal relays

Relay 01 , terminal number	1 (C), 2 (NO), 3 (NC)
Relay 02 , terminal number	4 (C), 5 (NO), 6 (NC)
Maximum terminal load (AC-1) ¹⁾	240 VAC, 2 A
Maximum terminal load (AC-15) ¹⁾	240 VAC, 0.2 A
Maximum terminal load (DC-1) ¹⁾	50 VDC, 1 A
Minimum terminal load	24 V DC 10 mA 24 V AC 20 mA

¹⁾ IEC 60947, parts 4 and 5.

C Common
NO Normally open
NC Normally closed

The relay contacts are galvanically separated from other circuits by reinforced insulation (PELV).

Analog inputs

Analog input 1 , terminal number	53
Voltage signal	A53 = "U" ¹⁾
Voltage range	0-10 V
Input resistance, R_i	Approx. 10 k Ω
Maximum voltage	$\pm$ 20 V
Analog input 2 , terminal number	54
Current signal	A54 = "I" ¹⁾
Current range	0-20, 4-20 mA
Input resistance, R_i	Approx. 200 Ω
Maximum current	30 mA
Maximum fault, terminals 53, 54	0.5 % of full scale

The factory setting is voltage signal "U".

All analog inputs are galvanically separated from the supply voltage (PELV) and other high-voltage terminals.

Analog output

Analog output 1 , terminal number	42
Current range	0-20 mA
Maximum load to frame	500 Ω
Maximum fault	0.8 % of full scale

The analog output is galvanically separated from the supply voltage (PELV) and other high-voltage terminals.

MCB 114 sensor input module

Analog input 3 , terminal number	2
Current range	0/4-20 mA
Input resistance	< 200 Ω
Analog inputs 4 , terminal number	4, 5
Analog inputs 5 , terminal number	7, 8
Signal type, 2- or 3-wire	Pt100/Pt1000

Note: When using Pt100 with 3-wire cable, the resistance must not exceed 30 Ω .

Product numbers

CUE accessories

Add-on module, see page 53	Type	Product number
Sensor input module	MCB 114	96760901
Control panel, see page 54		
Grundfos Local Control Panel	GLCP	96809398
Remote-mounting option for GLCP, with 9.8 ft (3 m) cable	GLCP remote mounting	96801229
Floor-mounting option, see page 55		
Enclosure D1 and D2, option including pedestal parts and instructions	Floor mounting	96801230
Output filters, see page 56		
Sine-wave filters		1)
dU/dt filters		1)

1) Product numbers for sine-wave filters and dU/dt filters, see pages 41 to 44.

Communication modules

Gateways	Type	Product number
LonWorks gateway	CIU 100	96753736
Profibus gateway	CIU 150	96753081
Modbus gateway	CIU 200	96753082
GSM modem	CIU 250	96787106

Sensors

Danfoss pressure sensor	Type	Measuring range [psi] (bar)	Product number
Pressure connection: NPT 1/2"	Kit*	0-120 psi (0-8 bar)	96437852
	6 ft potted cable	0-200 psi (0-14 bar)	91120777
	Kit*	0-87 psi (0-6 bar)	91136169
	Kit*	0-145 psi (0-10 bar)	91136170
	Kit*	0-232 psi (0-16 bar)	91136171
	Kit*	0-362 psi (0-25 bar)	91136172
	Kit*	0-580 psi (0-40 bar)	91136173
	Kit*	0-870 psi (0-60 bar)	91136174
Grundfos differential pressure sensor option, 0.9 m screened cable			
Pressure connection: 7/16" Including fittings for pressure connection (1/4" - 7/16"), brackets for wall and motor mounting, 3 capillary tubes (short/long) and 5 cable clips (black), installation and operating instructions, service kit instructions		0-8.7 psi (0-0.6 bar)	96611522
		0-14.5 psi (0-1.0 bar)	96611523
		0-23 psi (0-1.6 bar)	96611524
		0-36 psi (0-2.5 bar)	96611525
		0-58 psi (0-4.0 bar)	96611526
		0-87 psi (0-6.0 bar)	96611527
		0-145 psi (0-10 bar)	96611550

* **Note:** Kits include a 6 ft cable with removable potted plug in addition to a standard plug for remote mounting. All sensors have a 4-20 mA output.

Other accessories

Dry-running protection 1)	Type	Product number
LiqTec dry-run protector 1 x 115V	LiqTec	96556430
LiqTec dry-run protector 1 x 220V	LiqTec	96556429
LiqTec Extension Cable Kit	LiqTec Ext. Cable	96443676

1) Main pump types CR, CRI, CRN, MTR, SPK, CRK, CHI.

2) Sensor connection: 1/2".

MCB 114 sensor input module



TM04 0293 0308

Fig. 53 MCB 114 sensor input module

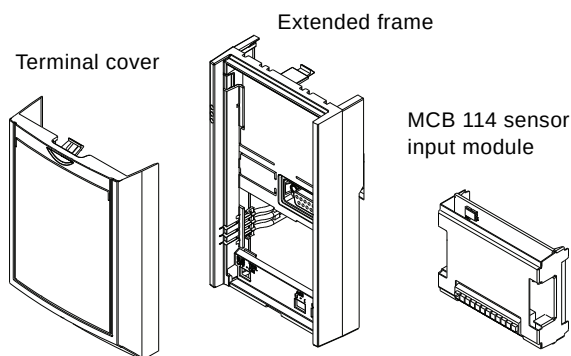
The MCB 114 offers three additional analog inputs for the CUE:

- one analog 0/4-20 mA input for an additional sensor
- two analog Pt100/Pt1000 inputs for temperature sensors.

The three analog inputs are default used for monitoring. For further information, see section MCB 114 sensor input module on page 29.

Scope of delivery

The MCB 114 comes with a terminal cover, an extended frame and an identification label to put onto the CUE.



TM04 0026 4807

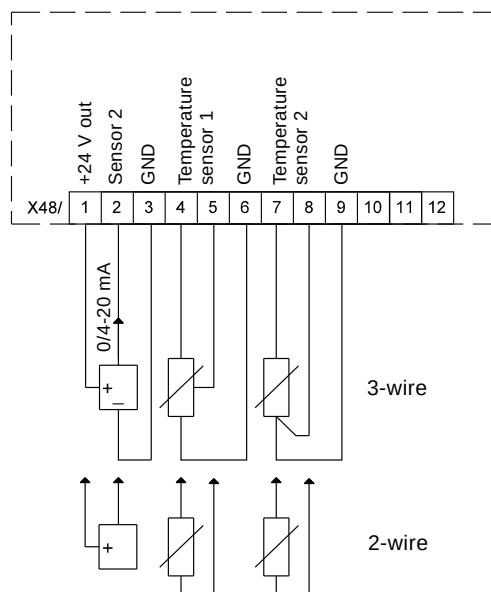
Fig. 54 Scope of delivery

Technical data

Relative humidity	5-95% RH
Ambient temperature during operation	14 to 131° F (-10 to 55° C)
Temperature during storage and transportation	-13 to 158° F (-25 to 70° C)
Maximum length, signal cable	984 ft (300 m)
Analog input 3	
Terminal number	2
Current range	0/4-20 mA
Input resistance	< 200 Ω
Analog inputs 4 and 5	
Terminal number	4, 5 and 7, 8
Signal type, 2- or 3-wire	Pt100/Pt1000

All analog inputs are galvanically separated from the supply voltage (PELV) and other high-voltage terminals.

Wiring diagram



TM03 9483 4007

Fig. 55 Wiring diagram, MCB 114

Terminal	Type	Function
1	+24 V out	Supply to sensor
2	AI 3	Sensor 2, 0/4-20 mA
3	GND	Common frame for analog input
4, 5	AI 4	Temperature sensor 1, Pt100/Pt1000
6	GND	Common frame for temperature sensor 1
7, 8	AI 5	Temperature sensor 2, Pt100/Pt1000
9	GND	Common frame for temperature sensor 2

Terminals 10, 11 and 12 are not used

Grundfos Local Control Panel, GLCP

GLCP is used for local setting of the CUE.

The CUE unit comes default with a GLCP fitted, but the control panel is also available as an option.

Cable is not included in the option.

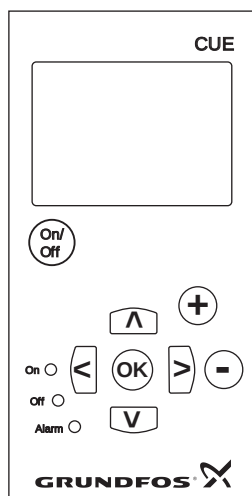


Fig. 56 Control panel of the CUE

For further information, see the installation and operating instructions of the CUE.

TM03 8719 2507

Remote-mounting option for GLCP

By means of a remote-mounting option, the GLCP can also be moved to the front of a cabinet. The enclosure is IP65. The fastening screws must be tightened to a torque of maximum 1 Nm.

The remote-mounting option includes fasteners, 3 m cable and gasket.

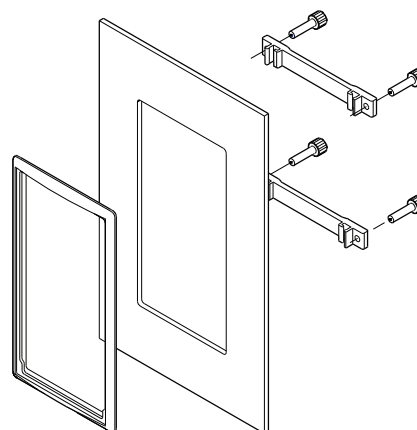


Fig. 57 Remote-mounting option for GLCP

TM04 0376 0608

Dimensions

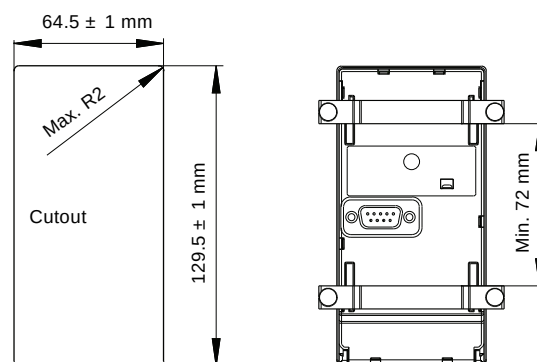


Fig. 58 Cabinet mounting, dimensions of cutout

For further information, see the installation and operating instructions of the remote-mounting option.

TM04 0377 0608

Floor-mounting option

By means of a pedestal, the CUE can also be mounted on the floor. A pedestal has been designed for that purpose.

One pedestal fits both enclosure D1 and D2.

Scope of delivery

- Primary pedestal frame
- Vented front cover
- Two side covers
- Two front brackets
- Hardware for assembly
- Instructions.

Drilling dimensions

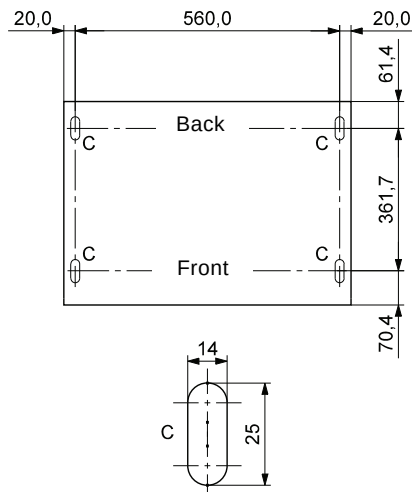


Fig. 59 Drilling template for pedestal [mm]



Fig. 60 CUE enclosure D1 or D2 on a pedestal

Please see the instructions of the pedestal option for further information.

IP21/NEMA1 kit

An IP20 enclosure can be upgraded to IP21/NEMA1 with the IP20/NEMA1 kit. The power terminals (mains and motor) will be covered. See fig. 61.

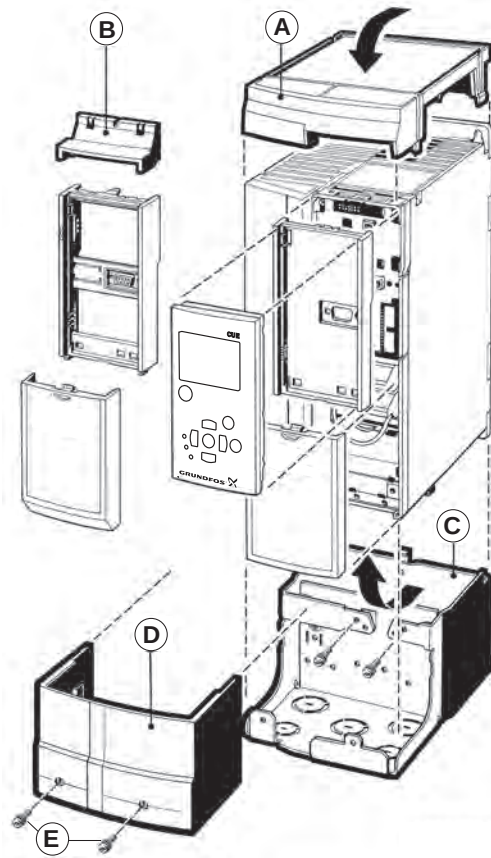


Fig. 61 Example of IP21/NEMA1 kit for enclosure A3

- A: Top cover
- B: Brim
- C: Base part
- D: Base cover
- E: Screw(s).

If the MCB 114 sensor input module is fitted, the brim (B) must be fitted on the top cover (A).

Output filters

Grundfos offers two types of output filter as accessories for the CUE:

- dU/dt filters
- sine-wave filters.

The filters are in IP20/NEMA1 enclosure.



Fig. 62 Wall-mounted sine-wave filters

Use of output filters

The table below explains in which cases an output filter is required. From the table, it can be seen if a filter is needed and which type to use.

Pump type	Typical shaft power P2	dU/dt filter	Sine-wave filter
SP, BM, BMB with 380 V motor and up	Up to 7.5 kW	—	0-984 ft (0-300 m)
	11 kW and up	0-492 ft (0-150 m)	492-984 ft (150-300 m)
Other pumps, noise reduction	Up to 7.5 kW	—	0-984 ft (0-300 m)
	11 kW and up	0-492 ft (0-150 m)	492-984 ft (150-300 m)
Other pumps, higher noise reduction	Up to 7.5 kW	—	0-984 ft (0-300 m)
	11 kW and up	—	0-984 ft (0-300 m)
Pumps with 690 V motor	All	0-492 ft (0-150 m)	492-984 ft (150-300 m)

The lengths stated apply to the motor cable.

For information about installation, see page 34.

Dimensions and weight of output filters

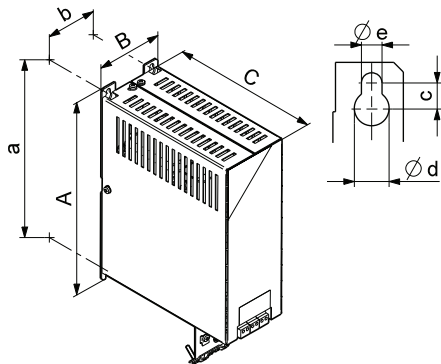


Fig. 63 Wall mounting

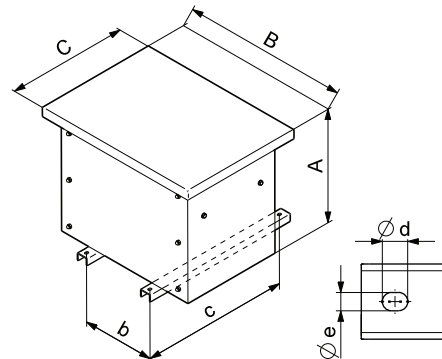


Fig. 64 Floor mounting

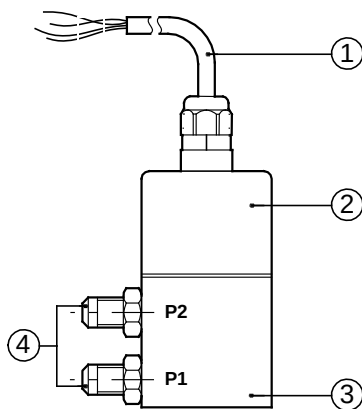
Product number	Mounting	Height [in (mm)]		Width [in (mm)]		Depth [in (mm)]		Screw holes [in (mm)]			Weight [lbs (kg)]
		A	a	B	b	C	c	Ød	Øe	f	
Sine-wave filters											
96754941	Wall	7.87 (200)	7.48 (190)	2.95 (75)	2 36 (60)	8 07 (205)	–	.315 (8)	.177 (4.5)	276 (7)	7 3 (3 3)
96754972	Wall	7.87 (200)	7.48 (190)	2.95 (75)	2 36 (60)	8 07 (205)	–	.315 (8)	.177 (4.5)	276 (7)	9 3 (4 2)
96754973	Wall	10 55 (268)	10.12 (257)	3.54 (90)	2.76 (70)	8.11 (206)	–	.433 (11)	.256 (6 5)	.315 (8)	101.0 (5.8)
96754974	Wall	10 55 (268)	10.12 (257)	3.54 (90)	2.76 (70)	8 07 (205)	–	.433 (11)	.256 (6 5)	.315 (8)	103.9 (7.1)
96754976	Wall	10 55 (268)	10.12 (257)	5.12 (130)	3 54 (90)	8 07 (205)	–	.433 (11)	256 (6 5)	315 (8)	20.1 (9.1)
96754977	Wall	12 99 (330)	12.28 (312)	5.90 (150)	4.72 (120)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	37 3 (16.9)
96754978	Wall	16 93 (430)	16.22 (412)	5.90 (150)	4.72 (120)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	43 9 (19.9)
96755019	Wall	20 87 (530)	19.69 (500)	6.69 (170)	4.92 (125)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	86.0 (39)
96755021	Wall	24 02 (610)	22.83 (580)	6.69 (170)	4.92 (125)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	90.4 (41)
96755032	Wall	24 02 (610)	22.83 (580)	6.69 (170)	5.32 (135)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	119 0 (54)
96755033	Floor	20 55 (522)	–	26.38 (670)	11.42 (290)	19.69 (500)	18.11 (460)	.591 (15)	.433 (11)	–	191 8 (87)
96755034	Floor	30.79 (782)	–	37.01 (940)	15.74 (400)	25.60 (650)	24 02 (610)	.591 (15)	.433 (11)	–	249.1 (113)
96755037	Floor	30.79 (782)	–	37.01 (940)	15.74 (400)	25.60 (650)	24 02 (610)	.591 (15)	.433 (11)	–	418.9 (190)
96755038	Floor	30.79 (782)	–	37.01 (940)	16 93 (430)	25.60 (650)	24 02 (610)	.591 (15)	.433 (11)	–	540.1 (245)
96755039	Floor	29 21 (742)	–	4 39 (1050)	16 93 (430)	29.92 (760)	28 32 (720)	.591 (15)	.433 (11)	–	683.4 (310)
96755040	Wall	16 93 (430)	16.22 (412)	5.90 (150)	4.72 (120)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	36 8 (16.7)
96755041	Floor	20 55 (522)	–	26.38 (670)	8.66 (220)	19.69 (500)	18.11 (460)	.591 (15)	.433 (11)	–	121 3 (55)
96755042	Floor	20 55 (522)	–	26.38 (670)	10 24 (260)	19.69 (500)	18.11 (460)	.591 (15)	.433 (11)	–	154 3 (70)
96755043	Floor	20 55 (522)	–	26.38 (670)	12 20 (310)	19.69 (500)	18.11 (460)	.591 (15)	.433 (11)	–	231.5 (105)
96755044	Floor	20 55 (522)	–	25.20 (640)	14 96 (380)	19.69 (500)	18.11 (460)	.591 (15)	.433 (11)	–	330.7 (150)
96755045	Floor	30.79 (782)	–	35.83 (910)	16 93 (430)	25.60 (650)	24 02 (610)	.591 (15)	.433 (11)	–	485.0 (220)
96755047	Floor	30.79 (782)	–	37.01 (940)	19 69 (500)	25.60 (650)	24 02 (610)	.591 (15)	.433 (11)	–	628.3 (285)
96755049	Floor	43.35 (1152)	–	50.79 (1290)	19 29 (490)	31.50 (800)	29 92 (760)	.591 (15)	.433 (11)	–	815.7 (370)
96755050	Floor	43.35 (1152)	–	50.79 (1290)	21 26 (540)	31.50 (800)	29 92 (760)	–	–	–	1212 5 (550)
dU/dt filters											
96755062	Wall	10 55 (268)	10.12 (257)	4.72 (120)	3 54 (90)	8 07 (205)	–	.433 (11)	256 (6 5)	315 (8)	11.5 (5.2)
96755063	Wall	12 99 (330)	12.28 (312)	6.69 (170)	4.92 (125)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	20.5 (9.3)
96755064	Wall	12 99 (330)	12.28 (312)	6.69 (170)	4.92 (125)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	23 6 (10.7)
96755066	Wall	12 99 (330)	12.28 (312)	6.69 (170)	4.92 (125)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	28 2 (12.8)
96755067	Floor	18.19 (462)	–	24.02 (610)	6.89 (175)	17.32 (440)	15.74 (400)	.591 (15)	.433 (11)	–	72.8 (33)
96755069	Floor	18 23 (463)	–	24.02 (610)	7.48 (190)	17.32 (440)	15.74 (400)	.591 (15)	.433 (11)	–	110 2 (50)
96755070	Floor	22.48 (571)	–	30.31 (770)	7.48 (190)	21.56 (550)	20 08 (510)	.591 (15)	.433 (11)	–	132.3 (60)
96755071	Floor	20 55 (522)	–	26.38 (670)	8.47 (215)	19.69 (500)	18.11 (460)	.591 (15)	.433 (11)	–	127.9 (58)
96755078	Wall	–	11.81 (300)	5.91 (150)	4.72 (120)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	18.3 (8.3)
96755079	Wall	–	12.28 (312)	6.69 (170)	4.92 (125)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	20.7 (9.4)
96755080	Wall	12 99 (330)	12.28 (312)	6.69 (170)	4.92 (125)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	26.01 (11 8)
96755081	Wall	12 99 (330)	12.28 (312)	6.69 (170)	4.92 (125)	10.24 (260)	–	.748 (19)	.354 (9)	.472 (12)	26 9 (12.2)
96755082	Floor	20 55 (522)	–	26.38 (670)	8.47 (215)	19.69 (500)	18.11 (460)	.591 (15)	.433 (11)	–	99.2 (45)
96755083	Floor	20 55 (522)	–	25.20 (640)	8.47 (215)	19.69 (500)	18.11 (460)	.591 (15)	.433 (11)	–	103.6 (47)
96755084	Floor	20 55 (522)	–	26.38 (670)	8.47 (215)	19.69 (500)	18.11 (460)	.591 (15)	.433 (11)	–	103.6 (47)
96755085	Floor	20 55 (522)	–	26.38 (670)	8.47 (215)	19.69 (500)	18.11 (460)	.591 (15)	.433 (11)	–	114 6 (52)

Grundfos differential pressure sensor, DPI

Product description

A cable (pos. 1) goes through an M12 x 1.5 pg connection. See fig. 65.

The sensor housing and parts in contact with the medium are made of Inox DIN W.-Nr. 1.4305 (pos. 3) with composite PA top (pos. 2). The pressure connections (pos. 4) are DIN W.-Nr. 1.4305, 7/16" UNF, and gaskets are FKM.



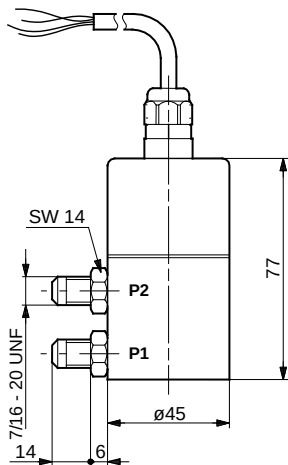
TM03 2057 3505

Fig. 65 DPI position numbers

The sensor is supplied with angular bracket for mounting on motor or bracket for wall mounting. See fig. 67.

Options with other cable lengths and various fitting connectors are available.

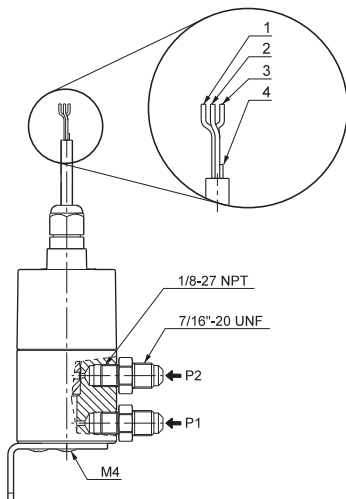
Dimensions



TM03 2059 3505

Fig. 66 Dimensions, DPI

Wiring diagram



TM03 2225 3905

Fig. 67 Wiring diagram, DPI

No	Colour	Function
1	Brown	Supply voltage, 12-30 V
2	Yellow	GND
3	Green	Control signal
4	White	Test signal. Must not be connected to supply voltage (conductor can be cut off)

Technical data

Supply voltage	12-30 VDC
Output signal	4-20 mA
Load [Ω]	24 V: max. 500 [Ω] 16 V: max. 200 [Ω] 12 V: max. 100 [Ω]
Max. system pressure, P1 and P2 simultaneously	232 psi (16 bar)
Rupture pressure [bar]	1.5 x system pressure
Measuring accuracy	2.5% BFS
Response time	< 0.5 sec
Media temperature range	+14 °F to +158 °F (-10 °C to +70 °C)
Storage temperature range	-40 °F to 176 °F (-40 °C to +80 °C)
Electrical connection	3-wire 0.13 mm ² 2.9 ft (0.9 m) cable M12 x 1.5 in sensor top
Short-circuit proof	Yes
Protected against reverse polarity	Yes
Over supply voltage	Yes
Materials in contact with medium	DIN W.-Nr. 1.4305 FKM and PPS
Enclosure class	IP55
Weight	550 g
EMC (electromagnetic compatibility)	According to EN 61326-1
Emission/immunity	According to EN 61326-1
Connections	7/16"-UNF
Sealing material	FKM

WebCAPS

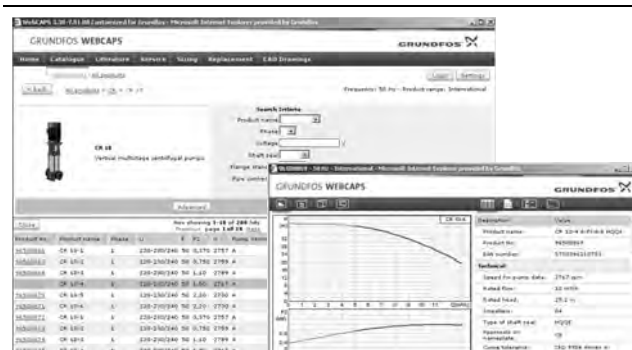


WebCAPS is a **Web-based Computer Aided Product Selection** program available on www.grundfos.com.

WebCAPS contains detailed information on more than 185,000 Grundfos products in more than 20 languages.

In WebCAPS, all information is divided into 6 sections:

- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



Catalogue

This section is based on fields of application and pump types, and contains

- technical data
- curves (QH, Eta, P1, P2, etc) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

In this section you can access all the latest documents of a given pump, such as

- data booklets
- installation and operating instructions
- service documentation, such as Service kit catalogue and Service kit instructions
- quick guides
- product brochures, etc.



Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and discontinued Grundfos pumps.

Furthermore, this section contains service videos showing you how to replace service parts.



Sizing

This section is based on different fields of application and installation examples, and gives easy step-by-step instructions in how to

- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, life cycle costs, etc.
- analyse your selected pump via the built-in life cycle cost tool
- determine the flow velocity in wastewater applications, etc.



Replacement

In this section you find a guide to selecting and comparing replacement data of an installed pump in order to replace the pump with a more efficient Grundfos pump. The section contains replacement data of a wide range of pumps produced by other manufacturers than Grundfos.

Based on an easy step-by-step guide, you can compare Grundfos pumps with the one you have installed on your site. When you have specified the installed pump, the guide will suggest a number of Grundfos pumps which can improve both comfort and efficiency.



CAD drawings

In this section it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most Grundfos pumps.

These formats are available in WebCAPS:

2-dimensional drawings:

- .dxf, wireframe drawings
- .dwg, wireframe drawings.

3-dimensional drawings:

- .dwg, wireframe drawings (without surfaces)
- .stp, solid drawings (with surfaces)
- .eprt, E-drawings.

WinCAPS



Fig. 1 WinCAPS CD-ROM

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 185,000 Grundfos products in more than 20 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no Internet connection is available.

WinCAPS is available on CD-ROM and updated once a year.

L-CUE-PG-01 1009 **US**
Rep. 1108

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GRUNDFOS 

Rosemount™ 2088 Absolute and Gage Pressure Transmitter



- Performance of 0.065% with high accuracy option
- Lightweight, compact design for cost-effective installation
- Protocols available include 4–20 mA HART® and 1–5 Vdc HART Low Power
- Absolute and gage pressure ranges up to 4,000 psi (276 bar)
- Rangeability of 50:1



Rosemount 2088 Pressure Transmitter product offering



Proven reliability for gage and absolute applications

- Available protocols include 4–20 mA HART and 1–5 Vdc HART Low Power
- Fully configurable LCD display to display process variable, percent of range, and diagnostic messages
- Lightweight, compact design enables easy installation
- Choice of stainless steel or Alloy C-276 wetted materials



Unlock the value of devices with the Emerson™ Smart Wireless THUM™ Adapter

- Gain access to field intelligence and improve quality, safety, availability, operations, and maintenance costs
- Remotely manage devices and monitor health
- Enable new wireless measurement points
- Utilize existing loop power



Proven, reliable, and innovative DP Level technologies

- Connect to virtually any process with a comprehensive offering of process connections, fill fluids, direct mount or capillary connections and materials
- Quantify and optimize total system performance with QZ option



Instrument manifolds – quality, convenient, and easy

- Designed and engineered for optimal performance with Rosemount transmitters
- Save installation time and money with factory assembly
- Offers a variety of styles, materials, and configurations

Contents

Ordering information	3	Dimensional drawings.....	15
Specifications.....	7	Options	17
Product Certifications	10		

Ordering information

Rosemount 2088 In-line Pressure Transmitter



Configuration	Transmitter output code
4–20 mA HART Rosemount 2088 with Selectable HART	S
1–5 Vdc Low Power Rosemount 2088 with Selectable HART	N

Additional information

[Specifications: page 7](#)

[Product Certifications: page 10](#)

[Dimensional drawings: page 15](#)

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See [page 9](#) for more information on material selection.

Table 1. Rosemount 2088 Pressure Transmitter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

Model	Product description			
2088	Pressure Transmitter			★
Measurement type				
A	Absolute			★
G	Gage			★
Pressure ranges				
	Rosemount 2088G		Rosemount2088A	
1	-14.7 to 30 psi (-1,01 to 2,1 bar)		0 to 30 psi (0 to 2,1 bar)	★
2	-14.7 to 150 psi (-1,01 to 10,3 bar)		0 to 150 psi (0 to 10,3 bar)	★
3	-14.7 to 800 psi (-1,01 to 55,2 bar)		0 to 800 psi (0 to 55,2 bar)	★
4	-14.7 to 4,000 psi (-1,01 to 275,8 bar)		0 to 4,000 psi (0 to 275,8 bar)	★
Transmitter output ⁽¹⁾				
S	4–20 mA dc/Digital HART Protocol			★
N	1–5 Vdc Low Power/Digital HART Protocol			★
Materials of construction ⁽²⁾				
	Process connection	Isolating diaphragm	Fill fluid	
22	316L SST	316L SST	Silicone	★
33	Alloy C-276	Alloy C-276	Silicone	★
2B	316L SST	316L SST	Inert	

Table 1. Rosemount 2088 Pressure Transmitter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

Process connection		
A	1/2–14 NPT female	★
B ⁽³⁾	DIN 16288 G 1/2 male	★
D ⁽³⁾⁽⁴⁾	M20 × 1.5 male	★
C ⁽³⁾⁽⁴⁾	RC 1/2 female	
Conduit entry		
1	1/2–14 NPT	★
2 ⁽³⁾	M20 × 1.5	★
4 ⁽³⁾⁽⁵⁾	G 1/2	
Options (Include with selected model number)		
Extended product warranty		
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★
Diaphragm seal assemblies ⁽⁶⁾⁽⁷⁾		
S1	Assemble to one Rosemount 1199 Diaphragm Seal	★
Display and interface		
M4	LCD display with local operator interface	★
M5	LCD display, configured for engineering units	★
Configuration buttons		
D4	Analog zero and span	★
DZ	digital zero trim	★
Mounting brackets		
B4	SST mounting bracket with SST bolts	★
Product certifications		
C6	Canada Explosionproof, Intrinsic Safety, Division 2, and Dust-Ignitionproof	★
E2	INMETRO Flameproof	★
E3	China Flameproof	★
E4 ⁽³⁾⁽⁸⁾	Japan Flameproof	★
E5	USA Explosionproof (XP) and Dust-Ignitionproof (DIP)	★
E7	IECEx Flameproof	★
ED	ATEX Flameproof	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★
I1 ⁽³⁾	ATEX Intrinsic Safety	★
I2	INMETRO Intrinsic Safety	★

Table 1. Rosemount 2088 Pressure Transmitter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

I3	China Intrinsic Safety	★
I5	USA Intrinsic Safety (IS) and Nonincendive (NI)	★
I7	IECEx Intrinsic Safety	★
IM	Technical Regulation Customs Union (EAC) Intrinsic Safety	★
K1	ATEX Flameproof, Intrinsic Safety, Type n, Dust	★
K2	INMETRO Flameproof, Intrinsic Safety	★
K5	USA Explosionproof, Dust-Ignitionproof, Intrinsic Safety, and Nonincendive	★
K6 ⁽³⁾	Canada Explosion-Proof, Intrinsic Safety, Division 2, Dust-ignitionproof, and ATEX Flameproof, Intrinsic Safety	★
K7	IECEx Flameproof, Intrinsic Safety, Type n, Dust	★
KB	USA Explosionproof, Dust-Ignitionproof, Intrinsic Safety, Nonincendive, and Canada Explosionproof, Dust-Ignitionproof, Intrinsic Safety, Division 2	★
KM	Technical Regulation Customs Union (EAC) Flameproof and Intrinsic Safety	★
KH ⁽³⁾	ATEX Flameproof, Intrinsic Safety, and USA Explosion-Proof, Dust Ignitionproof, Intrinsic Safety, and Nonincendive	★
N1 ⁽³⁾	ATEX Type n	★
N3	China Type n	★
N7	IECEx Type n	★
ND ⁽³⁾	ATEX Dust	★
NK	IECEx Dust	★
Shipboard approvals		
SBS	American Bureau of Shipping (ABS) Type Approval	★
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyd's Register (LR) Type Approval	★
Pressure testing		
P1	Hydrostatic testing	
Terminal blocks		
T1	Transient protection	★
Special cleaning		
P2	Cleaning for special service	
Calibration certificate		
Q4	Calibration certificate	★
Quality calibration certificate traceability certification		
Q8	Material traceability certification per EN 10204 3.1	★
Q15	Certificate of compliance to NACE® MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★

Table 1. Rosemount 2088 Pressure Transmitter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

Digital signal		
C4 ⁽³⁾	NAMUR alarm and saturation levels, high alarm	★
CN ⁽³⁾	NAMUR alarm and saturation levels, low alarm	★
C5 ⁽⁹⁾⁽¹⁰⁾	Custom alarm and saturation levels, high alarm (requires C9 and Configuration Data Sheet)	★
C7 ⁽⁹⁾⁽¹⁰⁾	Custom alarm and saturation levels, low alarm (requires C9 and Configuration Data Sheet)	★
C8 ⁽¹⁰⁾	Low alarm (Standard Rosemount alarm and saturation levels)	★
Conduit plug ⁽¹¹⁾		
DO	316 SST conduit plug	★
Configuration		
C9	Software configuration	★
Manifold assemblies ⁽⁶⁾⁽⁷⁾		
S5	Assemble to Rosemount 306 Integral Manifold	★
Calibration accuracy ⁽¹²⁾		
P8	0.065% accuracy to 10:1 turndown	★
Water approval ⁽¹³⁾		
DW	NSF drinking water approval	★
Surface finish		
Q16	Surface finish certification for sanitary remote seals	★
Toolkit total system performance reports		
QZ	Remote seal system performance calculation report	★
HART Revision configuration ⁽¹⁰⁾		
HR 5 ⁽¹⁴⁾	Configured for HART Revision 5	★
HR7 ⁽¹⁵⁾	Configured for HART Revision 7	★
Typical model number: 2088 G 2 S 22 A 1 B4 M5		

- HART Revision 5 is the default HART output. The Rosemount2088 with selectable HART can be factory or field configured to HART Revision 7. To order HART Revision 7 factory configured, add option code HR7.
- Materials of construction comply with recommendations per NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.
- Not available with Low Power transmitter output code N.
- Not available with Alloy C-276, materials of construction code 33.
- Consists of a 1/2–14 NPT housing with a G1/2 adapter.
- Use 1/2–14 NPT female process connection code A.
- “Assemble-to” items are specified separately and require a completed model number.
- Only available with conduit thread code 4.
- Only available with 4–20 mA HART output (output code A).
- Select configuration buttons (option code D4 or DZ) or local operator interface (option code M4) if local configuration buttons are required.
- Transmitter shipped with 316SST conduit plug (uninstalled) in place of standard carbon steel conduit plug.
- Requires transmitter output code S with either materials of construction code 22 or 23.
- Requires materials of construction code 22 with process connection code A.
- Configures the HART output to HART Revision 5. The device can be field configured to HART Revision 7 if needed.
- Configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 if needed.

Specifications

Performance specifications

For zero-based spans, reference conditions, silicone oil fill, 316L SST isolating diaphragm

Reference accuracy

±0.075% of calibrated span. Includes combined effects of linearity, hysteresis, and repeatability

±0.065% of calibrated span (high accuracy option – P8)

For spans less than 10:1, accuracy = $\pm \left(0.009 \left[\frac{URL}{Span} \right] \right)$ % of span

Ambient temperature effect

Expressed as a total effect per 50 °F (28 °C)

Total effect includes zero and span effects

± (0.15% URL + 0.15% of span)

Stability

Ranges 2–4: ±0.10% of URL for 3 years

Range 1: ±0.10% of URL for 1 year

Warranty⁽¹⁾

All Rosemount 2088 models:

- One-year limited warranty is standard⁽²⁾
- Extended three-year and five-year limited warranties available if ordered.⁽³⁾ (Select option WR3 or WR5 in model string respectively.)

1. Warranty details can be found in Emerson Process Management Terms & Conditions of Sale, document 63445, Rev G (10/6).
2. Goods are warranted for 12 months from the date of initial installation or 18 months from the date of shipment by seller, whichever period expires first.
3. Three-year and five-year warranty period begins on date of shipment by seller.

Vibration effect

Less than ±0.1% of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3g)

Power supply effect

Less than ±0.005% of calibrated span per volt change in voltage at the transmitter terminals

Electromagnetic compatibility (EMC)

Meets all industrial environment requirements of EN61326 and NAMUR NE-21⁽¹⁾. Maximum deviation < 1% span during EMC disturbance⁽²⁾.

1. NAMUR NE-21 does not apply to Low Power (transmitter output option code N).
2. During surge event device may exceed maximum EMC deviation limit or reset; however, device will self-recover and return to normal operation within specified start-up time.

Mounting position effect

Zero shifts to ±2.5 inH₂O (6,22 mbar), which can be zeroed

Span: no effect

Transient protection

Tested in accordance with IEEE C62.41.2-2002, Location Category B

6 kV crest (0.5 μs – 100 kHz)

3 kA crest (8 × 20 microseconds)

6 kV crest (1.2 × 50 microseconds)

General specifications

Tested to IEC 801-3

Functional specifications

Table 2. Rosemount 2088 Range Values

Range	Minimum span	Upper (URL)	Lower (LRL)	Lower ⁽¹⁾ (LRL)(gage)
1	0.60 psi (41,37 mbar)	30.00 psi (2,07 bar)	0 psia (0 bar)	-14.70 psig (-1,01 bar)
2	3.00 psi (206,85 mbar)	150.00 psi (10,34 bar)	0 psia (0 bar)	-14.70 psig (-1,01 bar)
3	16.00 psi (1,11 bar)	800.00 psi (55,16 bar)	0 psia (0 bar)	-14.70 psig (-1,01 bar)
4	80.00 psi (5,52 bar)	4000.00 psi (275,79 bar)	0 psia (0 bar)	-14.70 psig (-1,01 bar)

1. Assumes atmospheric pressure of 14.70 psia (1,01 bar-a).

Output

Code S: 4–20 mA

Code N: 1–5 Vdc, Low Power

Outputs are directly proportional to the input pressure

Selectable HART

Digital communications based on HART Revision 5 (default) or Revision 7 (option code HR7) protocol can be selected. The HART revision can be switched in the field using any HART based configuration tool or the optional local operator interface (LOI).

Service

Liquid, gas, and vapor applications

Power supply

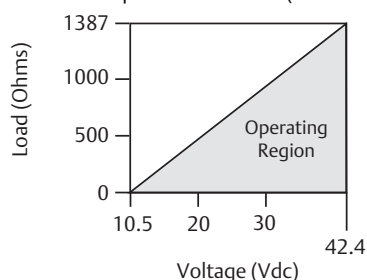
External power supply required. Transmitter operates on 10.5–42.4 Vdc with no load (5.8–28 V for Low Power). Reverse polarity protection is standard.

Load limitations

Reverse polarity protection is standard. Maximum loop resistance is determined by the power supply voltage as described by the following equations:

Figure 1. Maximum Loop Resistance

Maximum loop resistance = 43.5 (Power supply voltage – 10.5)



The Field Communicator requires a minimum loop resistance of 250 Ω for communication.

Indication

Optional two-line LOI/LCD display

Zero and span adjustment requirements

Zero and span values can be set anywhere within the range limits stated in Table 2. Span must be greater than or equal to the minimum span stated in Table 2.

LOI

The LOI utilizes a two-button menu with internal and external configuration buttons. Internal buttons are always configured for LOI. External buttons can be configured for either LOI, (option code M4), analog zero and span (option code D4) or digital zero trim (option code DZ) for LOI configuration menu.

Current draw

Output code N: ≤ 3 mA

Overpressure limits

Range 1: 120 psig max

All other ranges: two times the URL

Burst pressure

11,000 psi for all ranges

Zero elevation and suppression

Zero can be suppressed between atmosphere for gage transmitters or 0 psia for absolute transmitters and upper range limit, provided the calibrated span is equal to or greater than the minimum span, and the upper range value does not exceed the upper range limit.

Dynamic performance

Total response time: 145 milliseconds

Update rate: 22 times per second minimum

Temperature limits

Ambient

–40 to 185 °F (–40 to 85 °C)

With LCD display⁽¹⁾: –40 to 176 °F (–40 to 80 °C)

Storage⁽²⁾

–50 to 230 °F (–46 to 110 °C)

With LCD display: –40 to 185 °F (–40 to 85 °C)

- For the output code N, LCD display may not be readable and LCD display updates will be slower at temperatures below –22 °F (–30 °C).
- If storage temperature is above 85 °C, perform a sensor trim prior to installation.

Process⁽¹⁾⁽²⁾

Silicone fill sensor: -40 to 250 °F (-40 to 121 °C)

Inert fill sensor: -22 to 250 °F (-30 to 121 °C)

1. 220 °F (104 °C) limit in vacuum service; 130 °F (54 °C) for pressures below 0.5 psia.
2. Process temperatures above 185 °F (85 °C) require derating the ambient limits by a 1.5:1 ratio. For example, for process temperature of 195 °F (91 °C), new ambient temperature limit is equal to 170 °F (77 °C). This can be determined as follows: $(195\text{ °F} - 185\text{ °F}) \times 1.5 = 15\text{ °F}$,
 $185\text{ °F} - 15\text{ °F} = 170\text{ °F}$

Humidity limits

0–100% relative humidity

Volumetric displacement

Less than 0.0005 in³ (0,008 cm³)

Damping

Analog output response time to a step change is user-selectable from 0 to 60 seconds for one time constant. Software damping is in addition to sensor module response time.

Turn-on time

2.0 seconds, no warm-up required

Transmitter security

Activating the transmitter security function prevents changes to the transmitter configuration, including local zero and span adjustments. Security is activated by an internal switch.

Failure mode alarm

If self-diagnostics detect a sensor or microprocessor failure, the analog signal will be driven either high or low to alert the user. High or low failure mode is user-selectable with a jumper on the transmitter. The values to which the transmitter drives its output in failure mode depend on whether it is factory-configured to standard or NAMUR-compliant operation. The values for each are as follows:

Table 3. Standard Operation

Output code	Linear output	Fail high	Fail low
S	$3.9 \leq I \leq 20.8$	$I \geq 21.75\text{ mA}$	$I \leq 3.75\text{ mA}$
N	$0.97 \leq V \leq 5.2$	$V \geq 5.4\text{ V}$	$V \leq 0.95\text{ V}$

Table 4. NAMUR-Compliant Operation

Output code	Linear output	Fail high	Fail low
S	$3.8 \leq I \leq 20.5$	$I \geq 22.5\text{ mA}$	$I \leq 3.6\text{ mA}$

Physical specifications**Material selection**

Emerson Process Management provides a variety of Rosemount product with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

Electrical connections

1/2–14 NPT, M20 × 1.5 (CM20), or G 1/2 female (PF 1/2 female) conduit entry

Process connections

1/2–14 NPT female, DIN 16288 G 1/2 male, RC 1/2 female (PT 1/2 female), M20 × 1.5 (CM20) male

Process-wetted parts**Isolating diaphragm**

316L SST (UNS S31603), Alloy C-276 (UNS N10276)

Process connector

316L stainless steel CF-3M (Cast version of 316L SST, material per ASTM_A743) or Alloy C-276

Non-wetted parts**Electronics housing**

Low-copper aluminum
Enclosures meet NEMA® Type 4X, IP66, and IP68 when properly installed

Paint for aluminum housing

Polyurethane

Cover O-rings

Buna-N

Fill fluid

Silicone or inert fill

Weight

Output code S and N: approximately 2.44 lb (1, 11 kg)

Product Certifications

Rev 1.9

European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

Ordinary Location Certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

North America

E5 USA Explosionproof (XP) and Dust-Ignitionproof (DIP)

Certificate: 1V2A8.AE

Standards: FM Class 3600 – 2011, FM, Class 3615 – 2006, FM class 3616 – 2011, FM Class 3810 – 2005, ANSI/NEMA 250 – 1991

Markings: XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1, GP E, F, G; CL III; T5(–40 °C ≤ T_a ≤ +85 °C); Factory Sealed; Type 4X

I5 USA Safety (IS) and Nonincendive (NI)

Certificate: 0V9A7.AX

Standards: FM Class 3600 – 1998, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3810 – 1989

Markings: IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; DIV 1 when connected per Rosemount drawing 02088-1018; NI CL 1, DIV 2, GP A, B, C, D; T4(–40 °C ≤ T_a ≤ +70 °C); Type 4x

Special Condition for Safe Use (X):

1. The Rosemount 2088 Transmitter with the transient terminal block (Option code T1) will not pass the 500 Vrms dielectric strength test and this must be taken into account during installation.

C6 Canada Explosionproof, Intrinsic Safety and Division 2, Dust-Ignitionproof

Certificate: 1015441

Standards: CAN/CSA C22.2 No. 0-M91 (R2001), CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CAN/CSA-C22.2 No. 157-92, CSA Std C22.2 No. 213-M1987, ANSI-ISA-12.27.01-2003

Markings: Explosionproof for Class I, Division 1, Groups B, C and D; Dust-Ignitionproof Class II, Division 1, Groups E, F, G; Class III Division 1; Intrinsically Safe Class I, Division 1 Groups A, B, C, D when connected in accordance with Rosemount drawing 02088-1024, Temperature Code T3C; Class I Division 2 Groups A, B, C and D; Type 4X; Factory Sealed; Single Seal

Europe

ED ATEX Flameproof

Certificate: KEMA97ATEX2378X

Standards: EN60079-0:2012 + A11:2013, EN60079-1:2014, EN60079-26:2015

Markings:  II 1/2 G Ex db IIC T6....T4, Ga/Gb, T6(–60 °C ≤ T_a ≤ +70 °C), T4/T5(–60 °C ≤ T_a ≤ +80 °C)

Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

I1 ATEX Intrinsic Safety

Certificate: BAS00ATEX1166X

Standards: EN60079-0:2012, EN60079-11:2012

Markings:  II 1 G Ex ia IIC T4 Ga (–55 °C ≤ T_a ≤ +70 °C)

Table 5. Input Parameters

Parameter	HART
Voltage U _i	30 V
Current I _i	200 mA
Power P _i	0.9 W
Capacitance C _i	0.012 μF

Special Condition for Safe Use (X):

1. The apparatus is not capable of withstanding the 500 V insulation test required by EN60079-11. This must be taken into account when installing the apparatus.

N1 ATEX Type n

Certificate: BAS00ATEX3167X

Standards: EN60079-0:2012, EN60079-15:2010

Markings:  II 3 G Ex nA IIC T5 Gc (–40 °C ≤ T_a ≤ +70 °C)

Emerson.com/Rosemount

Special Condition for Safe Use (X):

1. The apparatus is not capable of withstanding the 500 V insulation test required by EN60079-15. This must be taken into account when installing the apparatus.

ND ATEX Dust

Certificate: BAS01ATEX1427X

Standards: EN60079-0:2012, EN60079-31:2009

Markings:  II 1 D Ex t IIC T50 °C T₅₀₀ 60 °C Da**Special Conditions for Safe Use (X):**

1. The user must ensure the maximum rated voltage and current (36 volts, 24 milliamperes, d.c.) are not exceeded. All connection to other apparatus or associated apparatus shall have control over this voltage and current to a category 'ib' circuit.
2. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66.
3. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
4. Cable entries and blanking plugs must be suitable for the ambient range of the apparatus and capable of withstanding a 7 J impact test.
5. The Rosemount 2088/2090 sensor module must be securely screwed in place to maintain the ingress protection of the enclosure.

International**E7** IECEx Flameproof

Certificate: IECEx KEM 06.0021X

Standards: IEC 60079-0:2011, IEC60079-1:2014, IEC60079-26:2014

Markings: Ex d IIC T6...T4 Ga/Gb, T6(−60 °C ≤ T_a ≤ +70 °C), T4/T5 (−60 °C ≤ T_a ≤ +80 °C)**Special Condition for Safe Use (x):**

1. This device contains a thin wall diaphragm. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

I7 IECEx Intrinsic Safety

Certificate: IECEx BAS 12.0071X

Standards: IEC60079-0:2011, IEC60079-11:2011

Markings: Ex ia IIC T4 Ga (−55 °C ≤ T_a ≤ +70 °C)**Table 6. Entity Parameters**

Parameter	HART
Voltage U _i	30 V
Current I _i	200 mA
Power P _i	0.9 W
Capacitance C _i	0.012 μF

Special Conditions for Safe Use (X):

1. When fitted with a transient suppression terminal block, the Rosemount 2088 is incapable of passing the 500 V isolation test. This must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a Zone 0 environment.

N7 IECEx Type n

Certificate: IECEx BAS 12.0072X

Standards: IEC60079-0:2011, IEC60079-15:2010

Markings: Ex nA IIC T5 Gc (−40 °C ≤ T_a ≤ +70 °C)**Special Condition for Safe Use (X):**

1. When fitted with a transient suppression terminal block, the Rosemount 2088 is incapable of passing the 500 V isolation test. This must be taking into account during installation.

NK IECEx Dust

Certificate: IECEx BAS12.0073X

Standards: IEC60079-0:2011, IEC60079-31:2008

Markings: Ex t IIC T50 °C T₅₀₀ 60 °C Da**Table 7. Input Parameters**

Parameter	HART
Voltage U _i	36 V
Current I _i	24 mA

Special Conditions For Safe Use (x):

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient range of the apparatus and capable of withstanding a 7 J impact.

Brazil

E2 INMETRO Flameproof

Certificate: UL-BR 15.0728X

Standards: ABNT NBR IEC60079-0:2008 + Errata 1:2011,
ABNT NBR IEC 60079-1:2009 + Errata 1:2011

Markings: Ex d IIC T* Gb, *T4($-20^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$),
*T6($-20^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$)

Special Conditions For Safe Use (x):

1. The material of the diaphragm shall not be subject to environmental conditions that might adversely affect the partition wall.
 2. The pressure transducers are not intended to be physically connected to a separate external source of heating or cooling that could influence on its ambient temperature rating.
 3. For ambient temperature above $+60^{\circ}\text{C}$, use field wiring rated to at least $+90^{\circ}\text{C}$.
 4. The cable glands, thread adapters or plugs to be used on the equipment shall be INMETRO certified.
- I2 INMETRO Intrinsic Safety**
Certificate: UL-BR 13.0246X
Standards: ABNT NBR IEC60079-0:2008 + Errata 1:2011,
ABNT NBR IEC60079-11:2009
Markings: Ex ia IIC T4 Ga ($-55^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$)

Table 8. Input Parameters

Parameter	HART
Voltage U_i	30 V
Current I_i	200 mA
Power P_i	0.9 W
Capacitance C_i	0.012 μF

Special Conditions for Safe Use (X):

1. When fitted with a transient suppression terminal block, the Rosemount 2088 is incapable of passing the 500 V isolation test. This must be taken into account when installing the equipment.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in Zone 0.

China

E3 China Flameproof

Certificate: GYJ15.1505

Standards: GB3836.1-2010, GB3836.2-2010

Markings: Ex d IIC T4/T6 Gb, T6($-20^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$),
T4($-20^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$)

Special Conditions For Safe Use (X):

1. The ambient temperature is as follows:

T_a	Temperature class
$-20^{\circ}\text{C} \leq T_a \leq 80^{\circ}\text{C}$	T4
$-20^{\circ}\text{C} \leq T_a \leq 40^{\circ}\text{C}$	T6

2. The earth connection facility in the enclosure should be connected reliably.
3. During installation in hazardous location, cable glands, conduits, and blanking plugs, certified by state-appointed inspection bodies with Ex d IIC type of protection, should be used.
4. During installation, use and maintenance in explosive gas atmospheres, observe the warning "Do not open when energized."
5. During installation, there should be no mixture harm to flameproof housing.
6. End user is not permitted to change any components insides, but to settle the problem in conjunction with manufacturer to avoid damage to the product.
7. Maintenance should be done in non-hazardous location.
8. During installation, use and maintenance of this product, observe the following standards: GB3836.13-2013, GB3836.15-2000, GB3836.16-2006, GB50257-2014.

I3 China Intrinsic Safety

Certificate: GYJ15.1507

Standards: GB3836.1-2010, GB3836.4-2010,
GB3836.20-2010

Markings: Ex ia IIC T4/T5 Ga

Special Conditions for Safe Use (X):

1. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a zone 0 environment.
2. This apparatus is not capable of withstanding the 500 V r.m.s. insulation test required by Clause 6.3.12 of GB3836.4-2010.
3. The ambient temperature is:

T_a	Temperature class
$-55^{\circ}\text{C} \leq T_a \leq 70^{\circ}\text{C}$	T4

4. Intrinsically safe parameters:

Parameter	HART
Voltage U_i	30 V
Current I_i	200 mA
Power P_i	0.9 W
Capacitance C_i	0.012 μF
Inductance L_i	0 mH

5. The product should be used with Ex-certified linear associated apparatus to establish explosion protection system that can be used in explosive gas atmospheres. Wiring and terminals should comply with the instruction manual of the product and associated apparatus.
6. The cables between this product and associated apparatus should be shielded cables (the cables must have insulated shields). The shield has to be grounded reliably in a non-hazardous area.
7. End users are not permitted to change any internal components, but to settle the problem in conjunction with the manufacturer to avoid damage to the product.
8. During installation, use and maintenance of this product, observe the following standards: GB3836.13-2013, GB3836.15-2000, GB3836.16-2006, GB3836.18-2010, GB50257-2014

N3 China Type n
 Certificate: GYJ15.1108X
 Standards: GB3836.1-2000, GB3836.8-2003
 Markings: Ex nA nL IIC T5 Gc ($-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$)

Special Conditions For Safe Use (X):

1. The apparatus is not capable of withstanding the 500 V r.m.s. insulation test required by GB3836.8-2003.
2. The ambient temperature range is $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$.
3. Maximum input voltage: 50 V.
4. Cable glands, conduit or blanking plugs, certified by NEPSI with Ex e or Ex n protection types should be used on external connections and redundant cable entries.
5. Maintenance should be done in non-hazardous location.
6. End users are not permitted to change any internal components, but to settle the problem in conjunction with manufacturer to avoid damage to the product.
7. During installation, use and maintenance of this product, observe the following standards: GB3836.13-2013, GB3836.15-2000, GB3836.16-2006, GB50257-1996.

Japan

E4 Japan Flameproof
 Certificate: TC20869, TC20870
 Markings: Ex d IIC T5

Technical Regulations Customs Union (EAC)

EM EAC Flameproof
 Certificate: RU C-US.GB05.B.01197
 Markings: Ga/Gb Ex d IIC T4/T6 X, T4 ($-40^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$), T6 ($-40^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$)

Special Condition for Safe Use (X):

1. See certificate for special conditions.

IM EAC Intrinsically Safe
 Certificate: RU C-US.GB05.B.01197
 Markings: 0Ex ia IIC T4 Ga X ($-55^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$)

Special Condition for Safe Use (X):

1. See certificate for special conditions.

Combinations

K1 Combination of ED, I1, ND and N1
K2 Combination of E2 and I2
K5 Combination of E5 and I5
K6 Combination of C6, ED and I1
K7 Combination of E7, I7, NK and N7
KB Combination of K5 and C6
KM Combination of EM and IM
KH Combination of ED, I1, K5

Conduit Plugs and Adapters

IECEX Flameproof and Increased Safety
 Certificate: IECEx FMG 13.0032X
 Standards: IEC60079-0:2011, IEC60079-1:2007-04,
 IEC60079-7:2006-07
 Markings: Ex de IIC Gb

ATEX Flameproof and Increased Safety
 Certificate: FM13ATEX0076X
 Standards: EN60079-0:2012, EN60079-1:2007,
 IEC60079-7:2007
 Markings:  II 2 G Ex de IIC Gb

Table 9. Conduit Plug Thread Sizes

Thread	Identification mark
M20 × 1.5 – 6g	M20
1/2–14 NPT	1/2 NPT
G1/2A	G1/2

Table 10. Thread Adapter Thread Sizes

Male thread	Identification mark
M20 × 1.5 – 6H	M20
1/2–14 NPT	1/2–14 NPT
3/4–14 NPT	3/4–14 NPT
Female thread	Identification mark
M20 × 1.5 – 6H	M20
1/2–14 NPT	1/2–14 NPT
PG 13.5	PG 13.5
G1/2	G1/2

Special Conditions For Safe Use (X):

1. When the thread adapter or blanking plug is used with an enclosure in type of protection increased safety “e” the entry thread shall be suitably sealed in order to maintain the ingress protection rating (IP) of the enclosure.
2. The blanking plug shall not be used with an adapter.
3. Blanking Plug and Threaded Adapter shall be either NPT or Metric thread forms. G1/2 thread forms are only acceptable for existing (legacy) equipment installations.

Additional Certifications

SBS American Bureau of Shipping (ABS) Type Approval
 Certificate: 09-HS446883D-3-PDA
 Intended Use: Measure gauge or absolute pressure of liquid, gas or vapor applications on ABS classed vessels, marine, and offshore installations.

ABS Rules: 2014 Steel Vessels Rules 1-1-4/7.7, 1-1-Appendix 3, 4-8-3/1.7, 4-8-3/13.1, 4-8-3/13.3.1 & 13.3.2, 4-8-4/27.5.1

SBV Bureau Veritas (BV) Type Approval
 Certificate: 23156/B0 BV
 Requirements: Bureau Veritas Rules for the Classification of Steel Ships
 Application: Class notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS; Pressure transmitter type 2088 cannot be installed on diesel engines

SDN Det Norske Veritas (DNV) Type Approval
 Certificate: TAA000004F
 Intended Use: DNV GL Rules for Classification - Ships and offshore units

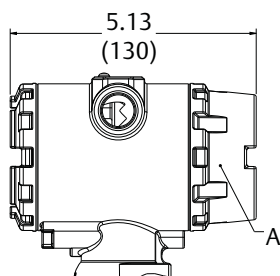
Application:

Location classes	
Temperature	D
Humidity	B
Vibration	A
EMC	B
Enclosure	D

SLL Lloyds Register (LR) Type Approval
 Certificate: 11/60002
 Application: Environmental categories ENV1, ENV2, ENV3 and ENV5

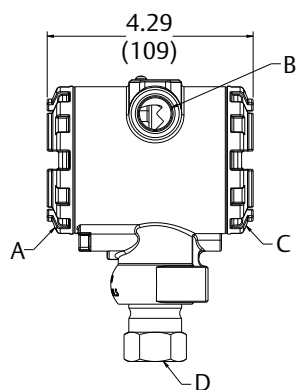
Dimensional drawings

Figure 2. Rosemount 2088 with Optional Digital Display



- A. Digital display cover
B. 2 1/2–14 NPT conduit connection

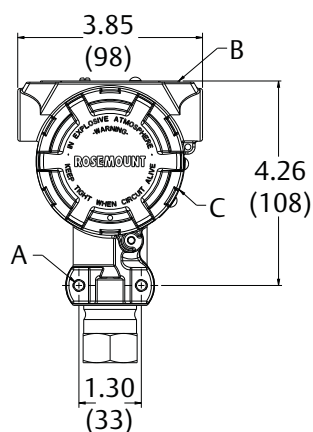
Figure 3. Rosemount 2088 Process Connection



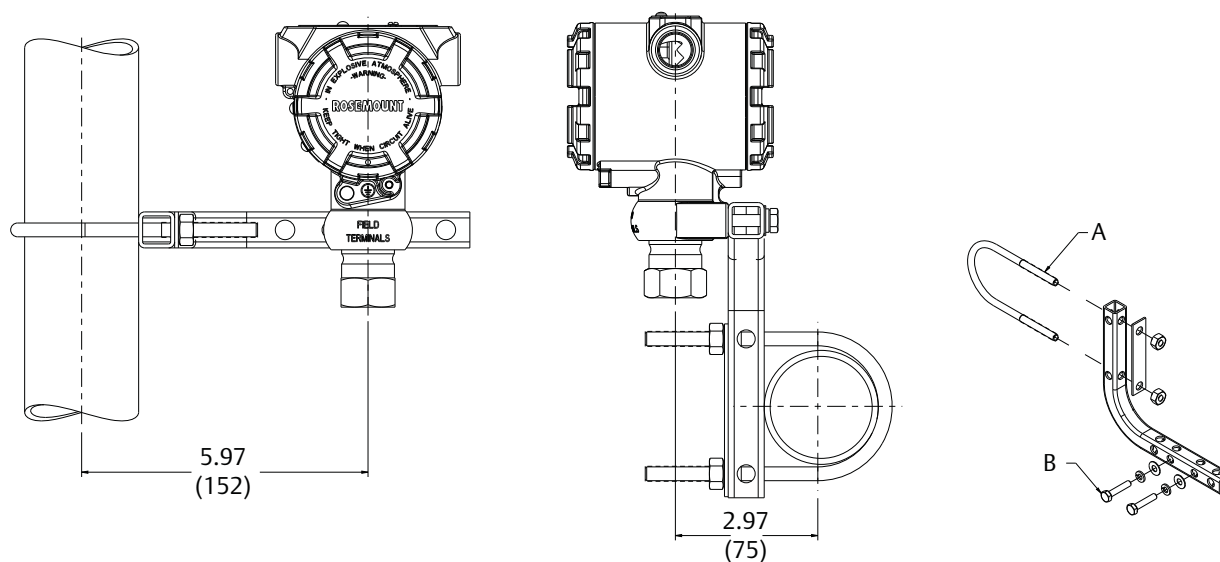
- A. Field terminals
B. Conduit connection
C. Transmitter electronics
D. 1/2–14 NPT female connection⁽¹⁾

1. RC 1/2 female (PT 1/2 female), and M20 female also available as options.

Figure 4. Rosemount 2088 Nameplate and Labels



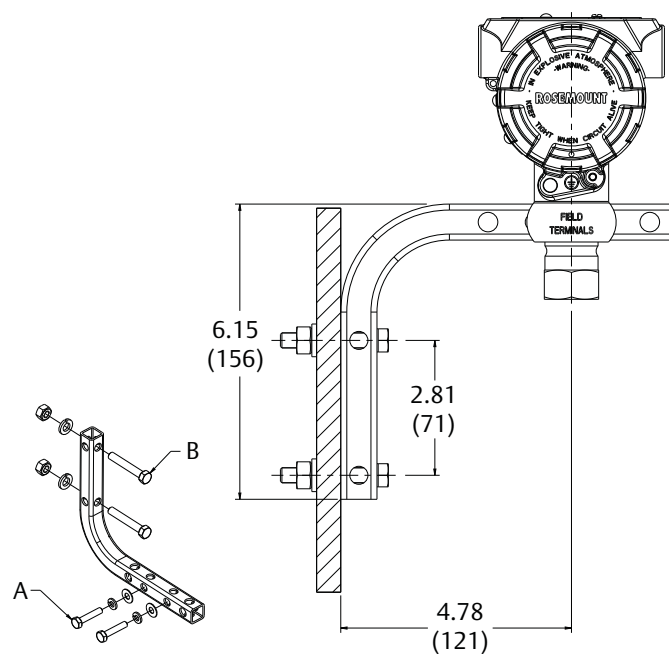
- A. Bracket mounting holes (1/4–20 UNC)
B. Nameplate
C. Certification label (located on side)

Figure 5. Rosemount 2088 with Optional Pipe Mounting Bracket

A. 2-in. U-bolt for pipe mounting (clamp shown)

B. $\frac{1}{4} \times 1\frac{1}{4}$ bolts for transmitter mounting

Dimensions are in inches (millimeters).

Figure 6. Rosemount 2088 with Optional Panel Mounting Bracket

A. $\frac{1}{4} \times 1\frac{1}{4}$ bolts for transmitter mounting

B. $\frac{5}{16} \times 1\frac{1}{2}$ bolts for panel mounting (not supplied)

Dimensions are in inches (millimeters).

Options

Standard configuration

Unless otherwise specified, transmitter is shipped as follows:

Engineering units	psi (all ranges)
4 mA (1 Vdc)	0 (engineering units)
20 mA (5 Vdc)	Upper range limit
Output	Linear
Flange type	Specified model code option
Flange material	Specified model code option
O-ring material	Specified model code option
Drain/vent	Specified model code option
LCD display	Installed or none
Alarm	High
Software tag	Blank

Custom configuration

If option code C9 is ordered, the customer may specify the following data in addition to the standard configuration parameters.

- Output information
- Transmitter information
- LCD display configuration
- Hardware selectable information
- Signal selection

Refer to the Rosemount 2088 [Configuration Data Sheet](#).

Tagging (3 options available)

- Standard SST hardware tag is permanently affixed on transmitter.
- Tag character height is 0.125-in. (3,18 mm), 84 characters maximum.
- Tag may be wired to the transmitter nameplate upon request, 85 characters maximum.
- For HART protocols, the tag may be stored in transmitter memory (eight characters maximum).
- Software tag is left blank unless specified.
- HART Revision 5: 8 characters
- HART Revision 7: 32 characters

Optional Rosemount 306 Integral Manifold

Factory-assembled to Rosemount 2088 Transmitters. Refer to Rosemount Manifolds [Product Data Sheet](#) for additional information.

Other seals

Refer to Rosemount DP Level Transmitters and 1199 Diaphragm Seal System [Product Data Sheet](#) for additional information.

Output information

Output range points must be the same unit of measure. Available units of measure include:

Pressure units ⁽¹⁾		
torr	psf ⁽¹⁾	cmH ₂ O @ 4 °C ⁽¹⁾
atm	inH ₂ O	mH ₂ O @ 4 °C ⁽¹⁾
Pa	inH ₂ O @ 4 °C ⁽¹⁾	inHg
kPa	inH ₂ O @ 60 °F ⁽¹⁾	mmHg
MPa ⁽¹⁾	ftH ₂ O	cmHg @ 0 °C ⁽¹⁾
hPa ⁽¹⁾	ftH ₂ O @ 4 °C ⁽¹⁾	mHg @ 0 °C ⁽¹⁾
mbar	ftH ₂ O @ 60 °F ⁽¹⁾	g/cm ²
bar	mmH ₂ O	kg/m ² ⁽¹⁾
psi	mmH ₂ O @ 4 °C ⁽¹⁾	kg/cm ²

1. Field configurable only, not available for factory calibration or custom configuration (option code C9 "Software configuration").

Display and interface options

M4 Digital display with local operator interface (LOI)

- Available for 4–20 mA HART, 4–20 mA HART Low Power

M5 Digital meter

- Two-line, five-digit LCD display for 4–20 mA HART
- Two-line, five-digit LCD display for 1–5 Vdc HART Low Power
- Direct reading of digital data for higher accuracy
- Displays user-defined flow, level, volume, or pressure units
- Displays diagnostic messages for local troubleshooting
- 90-degree rotation capability for easy viewing

Configuration buttons

Rosemount 2088 now offers optional internal and external configuration buttons.

- Selecting option D4 will add external analog zero and span configuration buttons
- Selecting option DZ will add an external digital zero trim configuration button
- Selecting option M4 (LOI) adds both internal and external local configuration buttons.

Certain button options can also be combined as shown below:

Table 11. Button Configuration

Option codes	Internal	External
DZ	N/A	Digital zero trim
D4	N/A	Analog zero and trim
M4	LOI	LOI
M4 + DZ	LOI	Digital zero trim
M4 + D4	LOI	Analog zero and trim

Rosemount 2088 bracket option

B4 Bracket for 2-in. pipe or panel mounting

- Bracket for mounting of transmitter on 2-in. pipe or panel
- Stainless steel construction with stainless steel bolts

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prosense® SPT25 Series Pressure Transmitters



The ProSense SPT25 pressure transmitter series is engineered to meet many industrial, commercial, and OEM pressure measurement applications. The all stainless steel welded thin film sensing element provides very fast response time and is compatible with many different media sensing applications. With a robust design resistant to vibration, shock, and EMI/RFI, the SPT25 series provides high accuracy over a wide compensated temperature range. Pressure sensing ranges from vacuum to 5000 psig are available along with a 1/4 inch NPT male threaded process connection. Choose from linear outputs of 4-20 mA or 0-10VDC with electrical connections of either a DIN 175301-803C L-connector or 6.6 foot (2 m) integral shielded cable.

Applications

- Process control & automation
- Pump & compressor control
- Hydraulic systems
- Pneumatic systems
- Engine monitoring
- Refrigeration equipment
- Presses
- Machine tools

Features

- All stainless steel welded sensing element
- Fast response time
- Pressure sensing ranges from vacuum to 5000 psig
- 1/4 inch NPT male threaded process connection
- Output options: 4-20 mA or 0-10 VDC
- Integral 6.6 foot shielded cable or DIN form C electrical connections
- Made in the USA
- CE marked
- 3-year warranty

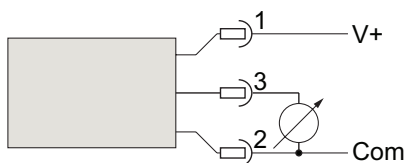


ProSense SPT25 Series Pressure Transmitters (Shielded Cable)					
Part Number	Description	Electrical Connection	Input Voltage	Wt(lb)	Price
SPT25-20-V30A	Pressure transmitter, 4 to 20 mA output, -14.7 vacuum to 30 psig range, 1/4" NPT male port	Integral 6.6 ft (2m) shielded cable	9 - 36 VDC	0.38	\$115.00
SPT25-20-0030A	Pressure transmitter, 4 to 20 mA output, 0 to 30 psig range, 1/4" NPT male port				\$115.00
SPT25-20-0060A	Pressure transmitter, 4 to 20 mA output, 0 to 60 psig range, 1/4" NPT male port				\$115.00
SPT25-20-0100A	Pressure transmitter, 4 to 20 mA output, 0 to 100 psig range, 1/4" NPT male port				\$115.00
SPT25-20-0150A	Pressure transmitter, 4 to 20 mA output, 0 to 150 psig range, 1/4" NPT male port				\$115.00
SPT25-20-0200A	Pressure transmitter, 4 to 20 mA output, 0 to 200 psig range, 1/4" NPT male port				\$115.00
SPT25-20-0300A	Pressure transmitter, 4 to 20 mA output, 0 to 300 psig range, 1/4" NPT male port				\$115.00
SPT25-20-0500A	Pressure transmitter, 4 to 20 mA output, 0 to 500 psig range, 1/4" NPT male port				\$115.00
SPT25-20-1000A	Pressure transmitter, 4 to 20 mA output, 0 to 1000 psig range, 1/4" NPT male port				\$115.00
SPT25-20-1500A	Pressure transmitter, 4 to 20 mA output, 0 to 1500 psig range, 1/4" NPT male port				\$115.00
SPT25-20-2000A	Pressure transmitter, 4 to 20 mA output, 0 to 2000 psig range, 1/4" NPT male port				\$115.00
SPT25-20-3000A	Pressure transmitter, 4 to 20 mA output, 0 to 3000 psig range, 1/4" NPT male port				\$115.00
SPT25-20-5000A	Pressure transmitter, 4 to 20 mA output, 0 to 5000 psig range, 1/4" NPT male port				\$115.00
SPT25-10-V30A	Pressure transmitter, 0 to 10 V output, -14.7 vacuum to 30 psig range, 1/4" NPT male port		14 - 36 VDC		\$115.00
SPT25-10-0030A	Pressure transmitter, 0 to 10 V output, 0 to 30 psig range, 1/4" NPT male port				\$115.00
SPT25-10-0060A	Pressure transmitter, 0 to 10 V output, 0 to 60 psig range, 1/4" NPT male port				\$115.00
SPT25-10-0100A	Pressure transmitter, 0 to 10 V output, 0 to 100 psig range, 1/4" NPT male port				\$115.00
SPT25-10-0150A	Pressure transmitter, 0 to 10 V output, 0 to 150 psig range, 1/4" NPT male port				\$115.00
SPT25-10-0200A	Pressure transmitter, 0 to 10 V output, 0 to 200 psig range, 1/4" NPT male port				\$115.00
SPT25-10-0300A	Pressure transmitter, 0 to 10 V output, 0 to 300 psig range, 1/4" NPT male port				\$115.00
SPT25-10-0500A	Pressure transmitter, 0 to 10 V output, 0 to 500 psig range, 1/4" NPT male port				\$115.00
SPT25-10-1000A	Pressure transmitter, 0 to 10 V output, 0 to 1000 psig range, 1/4" NPT male port				\$115.00
SPT25-10-1500A	Pressure transmitter, 0 to 10 V output, 0 to 1500 psig range, 1/4" NPT male port				\$115.00
SPT25-10-2000A	Pressure transmitter, 0 to 10 V output, 0 to 2000 psig range, 1/4" NPT male port				\$115.00
SPT25-10-3000A	Pressure transmitter, 0 to 10 V output, 0 to 3000 psig range, 1/4" NPT male port				\$115.00
SPT25-10-5000A	Pressure transmitter, 0 to 10 V output, 0 to 5000 psig range, 1/4" NPT male port				\$115.00

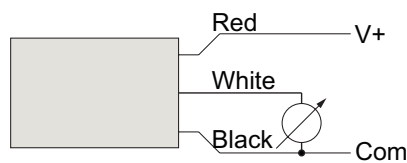
prosense® SPT25 Series Pressure Transmitters

ProSense SPT25 Series Pressure Transmitters (DIN Connector)					
Part Number	Description	Electrical Connection	Input Voltage	Wt(lb)	Price
SPT25-20-V30D	Pressure transmitter, 4 to 20 mA output, -14.7 vacuum to 30 psig range, 1/4" NPT male port	DIN 175301-803C L-connector	9 - 36 VDC	0.30	\$109.00
SPT25-20-0030D	Pressure transmitter, 4 to 20 mA output, 0 to 30 psig range, 1/4" NPT male port				\$109.00
SPT25-20-0060D	Pressure transmitter, 4 to 20 mA output, 0 to 60 psig range, 1/4" NPT male port				\$109.00
SPT25-20-0100D	Pressure transmitter, 4 to 20 mA output, 0 to 100 psig range, 1/4" NPT male port				\$109.00
SPT25-20-0150D	Pressure transmitter, 4 to 20 mA output, 0 to 150 psig range, 1/4" NPT male port				\$109.00
SPT25-20-0200D	Pressure transmitter, 4 to 20 mA output, 0 to 200 psig range, 1/4" NPT male port				\$109.00
SPT25-20-0300D	Pressure transmitter, 4 to 20 mA output, 0 to 300 psig range, 1/4" NPT male port				\$109.00
SPT25-20-0500D	Pressure transmitter, 4 to 20 mA output, 0 to 500 psig range, 1/4" NPT male port				\$109.00
SPT25-20-1000D	Pressure transmitter, 4 to 20 mA output, 0 to 1000 psig range, 1/4" NPT male port				\$109.00
SPT25-20-1500D	Pressure transmitter, 4 to 20 mA output, 0 to 1500 psig range, 1/4" NPT male port				\$109.00
SPT25-20-2000D	Pressure transmitter, 4 to 20 mA output, 0 to 2000 psig range, 1/4" NPT male port				\$109.00
SPT25-20-3000D	Pressure transmitter, 4 to 20 mA output, 0 to 3000 psig range, 1/4" NPT male port				\$109.00
SPT25-20-5000D	Pressure transmitter, 4 to 20 mA output, 0 to 5000 psig range, 1/4" NPT male port				\$109.00
SPT25-10-V30D	Pressure transmitter, 0 to 10 V output, -14.7 vacuum to 30 psig range, 1/4" NPT male port		14 - 36 VDC		\$109.00
SPT25-10-0030D	Pressure transmitter, 0 to 10 V output, 0 to 30 psig range, 1/4" NPT male port				\$109.00
SPT25-10-0060D	Pressure transmitter, 0 to 10 V output, 0 to 60 psig range, 1/4" NPT male port				\$109.00
SPT25-10-0100D	Pressure transmitter, 0 to 10 V output, 0 to 100 psig range, 1/4" NPT male port				\$109.00
SPT25-10-0150D	Pressure transmitter, 0 to 10 V output, 0 to 150 psig range, 1/4" NPT male port				\$109.00
SPT25-10-0200D	Pressure transmitter, 0 to 10 V output, 0 to 200 psig range, 1/4" NPT male port				\$109.00
SPT25-10-0300D	Pressure transmitter, 0 to 10 V output, 0 to 300 psig range, 1/4" NPT male port				\$109.00
SPT25-10-0500D	Pressure transmitter, 0 to 10 V output, 0 to 500 psig range, 1/4" NPT male port				\$109.00
SPT25-10-1000D	Pressure transmitter, 0 to 10 V output, 0 to 1000 psig range, 1/4" NPT male port				\$109.00
SPT25-10-1500D	Pressure transmitter, 0 to 10 V output, 0 to 1500 psig range, 1/4" NPT male port				\$109.00
SPT25-10-2000D	Pressure transmitter, 0 to 10 V output, 0 to 2000 psig range, 1/4" NPT male port				\$109.00
SPT25-10-3000D	Pressure transmitter, 0 to 10 V output, 0 to 3000 psig range, 1/4" NPT male port				\$109.00
SPT25-10-5000D	Pressure transmitter, 0 to 10 V output, 0 to 5000 psig range, 1/4" NPT male port				\$109.00

0 to 10 VDC Output Wiring Diagram

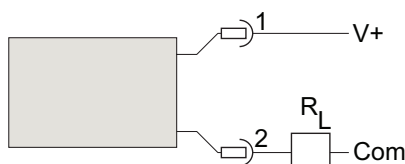


With DIN Connector

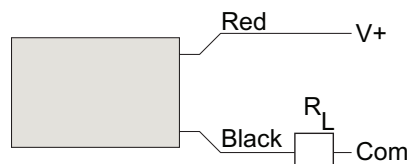


With Integral Cable

4 to 20 mA Output Wiring Diagrams



With DIN Connector



With Integral Cable

Shielded Cable Models Wire Designation

Wire Color	0 - 10 VDC Output	4 - 20 mA Output
Red	V +	V +
Black	Com	Output
White	Output	None
Bare*	Shield Drain Wire	Shield Drain Wire

* Where shielded wiring is being used; Connect the drain wire to the guard terminal on the read out device or measuring instrument if available. In all other cases connect to the power supply negative terminal.

DIN Form C Models Pin Designation

Pin No.	0 - 10 VDC Output	4 - 20 mA Output
1	V+	V+
2	Com	Output
3	Output	None
4	Case Ground	Case Ground

proSense® SPT25 Series Pressure Transmitters

ProSense SPT25 Series General Specifications

Housing Material	20% Glass Reinforced Nylon, Fire retardant to UL94 V1 / 304 Series Stainless steel
Materials (wetted parts)**	304 Series Stainless steel / 17-4PH Stainless Steel
Operating Temperature	-40 to 257°F (-40 to 125°C)
Medium Temperature	-40 to 257°F (-40 to 125°C)
Storage Temperature	-40 to 257°F (-40 to 125°C)
Protection	IP 67 for cabled models IP 65 For DIN connector models
Accuracy*	± 0.50% of full range
Temperature Coefficient	0.15% of full range / 10°F (0.25% of full range / 10°C)
Reference Temperature	70°F ± 1°F (21°C ± 1°C)
Compensated Temperature	-4 to 185°F (-20 to 85°C)
Insulation Resistance	Greater than 100 megohms at 100 VDC
Shock Resistance	100 gs, 6 ms
Vibration Resistance	Random vibration (20 g) over temperature range (-40° to 125°C). Exceeds typical MIL-STD. requirements
Drop Test	Withstands 1 meter on concrete 3 axis
Response Time	Less than 1 msec
Warm-up time	Less than 500 msec
Position Effect	Less than ±0.01% span, typical
Insulation Breakdown Voltage	100 VAC
Reverse Polarity & Miswired Protected	Yes
Durability	Tested to 50 million cycles
Humidity	0 to 100% R.H., no effect
Stability	Less than ±0.25% full range / year
Agency Approvals	CE
<i>*Note - Includes non-linearity, hysteresis & non-repeatability.</i>	
<i>** Not cleaned for oxygen service</i>	

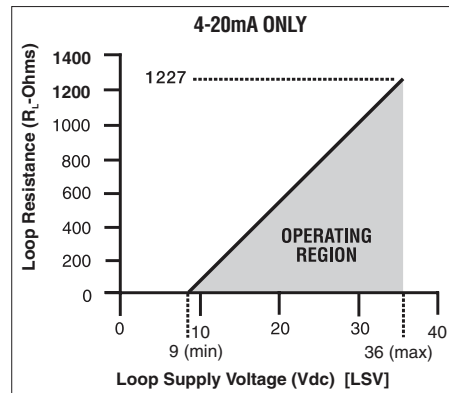
DIN Connector Specifications

Number of contacts	3 + PE
Cable glands	PG 7
Conductor size max.	0.75 mm² / 18AWG
Type of termination	Screw
Suitable cables	4.5 mm to 6mm
Standard DIN	EN 175 301-803-C

ProSense SPT25 Series Technical Specifications

Technical Specifications SPT25-20-xxxx	
Operating Voltage	9 – 36 VDC
Analog Output	4 – 20 mA
Maximum Load	Determine Maximum Loop Resistances $\frac{V_L - 9 \text{ VDC}}{0.022 \text{ amps}} = R_L$ For example: $[(24 \text{ VDC} - 9 \text{ VDC}) / 0.022 \text{ amps}] = 681\Omega$
Technical Specifications SPT25-10-xxxx	
Operating Voltage	14 – 36 VDC
Current Consumption	4 mA
Minimum Load	10 kΩ

Power Supply Voltage vs Loop Resistance



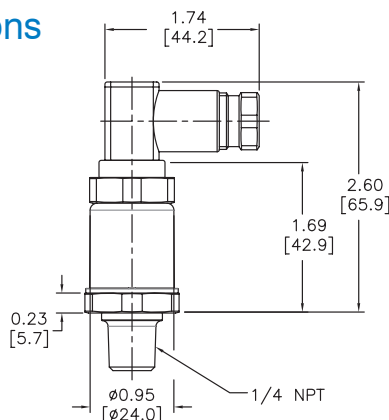
ProSense SPT25 Proof & Burst Pressures

	Proof	Burst
500 psig & below	200% full scale	1000% full scale
1000 – 2000 psig	200% full scale	500% full scale
3000 psig	200% full scale	500% full scale
5000 psig	150% full scale	500% full scale

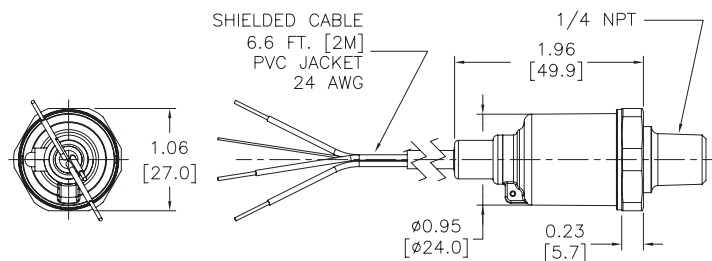
See our website www.AutomationDirect.com for complete Engineering drawings.

Dimensions

inches [mm]



DIN Connector Models



Shielded Cable Models

MODEL #: 9767053

Bourdon Tube Pressure Gauge Stainless Steel Construction Model 21X.53

WIKA Datasheet 21X.53

Applications

- Intended for adverse service conditions where pulsating or vibration exists (with liquid filling)
- Hydraulics & compressors
- Suitable for gaseous or liquid media that will not obstruct the pressure system

Special Features

- Vibration and shock resistant (with liquid filling)
- Stainless steel case
- Pressure ranges up to 15,000 psi



Bourdon Tube Pressure Gauge Model 21X.53

Standard Features

Design

ASME B40.100 & EN 837-1

Sizes

2", 2½" & 4" (50, 63 & 100 mm)

Accuracy class

2" & 2½": ± 2/1/2% of span (ASME B40.100 Grade A)
4": ± 1% of span (ASME B40.100 Grade 1A)

Ranges

Vacuum / Compound to 200 psi
Pressure from 15 psi to 15,000 psi
Pressure from 15 psi to 10,000 psi - 2" size
or other equivalent units of pressure or vacuum

Working pressure

2 & 2½":	Steady:	¾ full-scale value
	Fluctuating:	⅔ full-scale value
	Short time:	full-scale value
4":	Steady:	full-scale value
	Fluctuating:	0.9 x full-scale value
	Short time:	1.3 x full-scale value

Operating temperature

Ambient: -40°F to +140°F (-40°C to +60°C) - dry
-4°F to +140°F (-20°C to +60°C) - glycerine filled
-40°F to +140°F (-40°C to +60°C) - silicone filled
Medium: +140°F (+60°C) maximum

Temperature error

Additional error when temperature changes from reference temperature of 68°F (20°C) ±0.4% for every 18°F (10°C) rising or falling. Percentage of span.

Weather protection

Weather tight (NEMA 4X / IP 65)

Pressure connection

Material: copper alloy
Lower mount (LM) or center back mount (CBM) - 2" & 2½"
Lower mount (LM) or lower back mount (LBM) - 4"
⅛" NPT, ¼" NPT or ½" NPT limited to wrench flat area ABS (2" & 2½") and white aluminum (4")

Bourdon tube

2½" Size- Material: Copper alloy

30" Hg (VAC) to 800 psi - C-type (soldered)

1000 psi to 15,000 psi - helical type (soldered)

Changes to stainless steel at 7,500 psi brazed

4" Size- Material: Copper alloy $\leq$ 1,000 psi

316 stainless steel $\geq$ 1,500 psi

30" Hg (Vac) to 1,000 psi- C-type (soldered)

1,500 psi to 15,000 psi- helical type (brazed)

Changes to stainless steel at 1,500 psi

Movement

Copper alloy

Dial

White ABS (2" & 2½") and white aluminum (4")

Pointer

Black aluminum

Case

304 stainless steel with vent plug and stainless steel crimp ring. Suitable for liquid filling.

Case connection sealed with O-ring, (O-ring material dependent on the case fill):

- 2½": EPDM O-ring for Glycerine case fill; Viton O-ring for Silicone fill
- 4": EPDM O-ring for Glycerine or Silicone case fill; Viton O-ring for Halocarbon or Fluorolube fill

Window

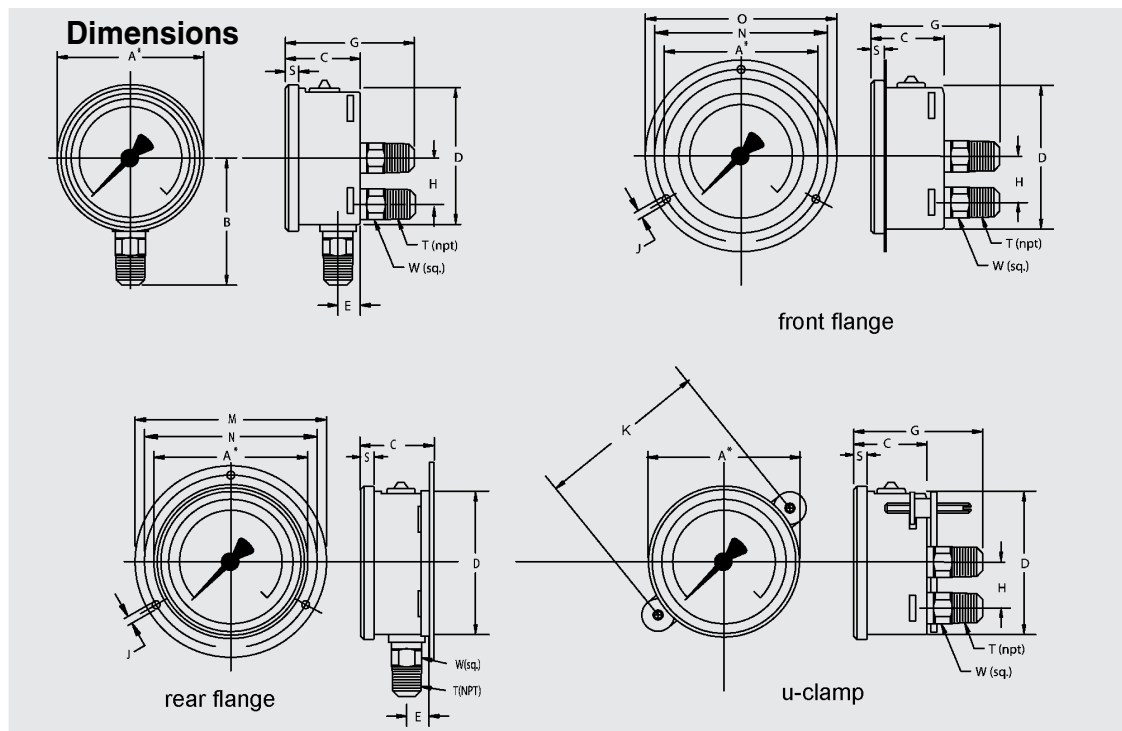
Polycarbonate with Buna-N gasket

Case fill

Glycerine 99.7% - Type 213.53

Optional extras

- Brass restrictor
- Stainless steel front or rear flange - 2½" & 4"
- Zinc-plated steel or SS U-clamp bracket (field installable)
- External zero adjustment (2½" only)
- Red drag pointer or mark pointer
- Silicone or Fluorolube case filling
- Special connections limited to wrench flat area
- Custom dial layout
- Other pressure scales available
bar, kPa, MPa, kg/cm² and dual scales



Size		A	B	C	D	E	G	H	J	K	M	N	O	S	T	W	Weight	
2"	mm	55	48	30	50	12	53	-	3.6	72	71	60	17	5.5		14	0.27 lb.	dry
	in	2.17	1.89	1.18	1.97	0.47	2.09	-	0.14	2.83	2.80	2.36	2.80	0.22	¼"	0.55	0.33 lb.	filled
2½"	mm	69	54	32	62	13	54	-	3.6	72	88.1	75	85	6.5		14	0.36 lb.	dry
	in	2.69	2.13	1.26	2.45	0.51	2.13	-	0.14	2.83	3.47	2.95	3.35	0.26	¼"	0.55	0.44 lb.	filled
4"	mm	107	87	48	100	15.5	79.5	30	4.8	109	132	116	132	8		22	1.10 lb.	dry
	in	4.21	3.43	1.89	3.91	0.61	3.13	1.18	0.19	4.29	5.20	4.57	5.20	0.31	½"	0.87	1.76 lb.	filled

Note: For ¼" NPT connections on 4" gauges, reduce B dimension by 5mm/0.2"

Recommended panel cut-out:

2"- U-clamp: 51mm
front flange: n/a

2½"- U-clamp: 63mm
front flange: 65mm

4"- U-clamp: 101mm
front flange: 104mm

4½"- panel mount adapter 104mm minimum
(not shown)



WIKA Instrument Corporation
1000 Wiegand Boulevard
Lawrenceville, GA 30043-5868
Tel: 888-WIKA-USA • 770-513-8200
Fax: 770-338-5118
E-Mail: info@wika.com
www.wika.com



ITT

MODEL #: V100

HPTANK2

Goulds Pumps

HydroPro®
Water System Tank



Engineered for life

1. Rugged, impact resistant exterior coatings.

Holds up under severe conditions.

2. Tamper proof mechanical-fit air valve.

No heat distortion from brazing. Recessed to prevent damage during shipping.

3. Deep drawn steel shell.

For added structural strength. Maximum working pressure 125 psi. (Except: V45MP & V60MP.)

4. Steel inner shell and insert.

Prevents over expansion of diaphragm for longer life.

5. Heavy-duty butyl diaphragm.

High quality FDA approved material for long, dependable service.

6. Rigid polypropylene liner.

Meets FDA and NSF requirements, providing maximum corrosion protection. Water never touches metal.

7. Patented positive retention system.

Securely fastens diaphragm and liner for years of reliable service.

8. Stainless steel system connection.

For optimal corrosion resistance.

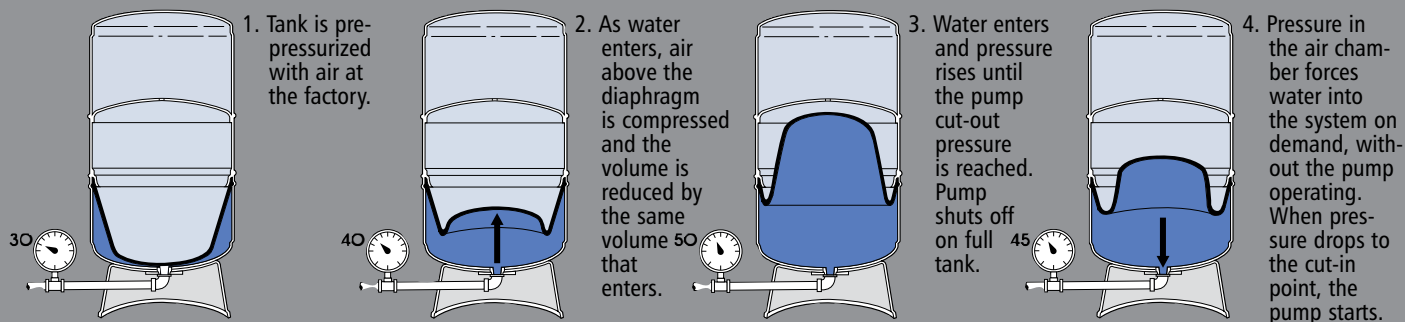
9. Corrosion-proof base.

High density polyethylene is structurally reinforced for added strength. High profile design provides easy access for water hookup.

Base extension.
Optional (not shown).

Increases the height of the inlet/outlet a full 4" for easier installation. Fits any 15" diameter tank, from models V-45 to V-100. Standard on model V-80EX.

How the HydroPro tank works:



Consistent Supply... on Demand!

26 Models-2 to 116 Gallon Capacity

HydroPro tanks provide years of dependable water system storage and delivery service!

The efficient design reduces pump on/off cycles, resulting in longer motor and switch life, and reduced power costs. Each tank is factory tested and 100% air and water tight.



They Are Better Together

The most respected name in the water systems business brings you the toughest, most dependable tanks. Tanks with features that give you the best buy in quality water systems. HydroPro tanks qualify for both the Goulds ProSurance® Program and the Goulds Dealer Incentive Plan.



	Std. Model No.	Union Model No.	Total Volume (Gals.)	Drawdown in Gals. at System Operating Pressure Range of			Maximum Drawdown Vol. (Gals.)	Pre-Charge PSI	System Connection	Dimensions		Shipping Weight
				20/40 PSIG	30/50 PSIG	40/60 PSIG				Diameter	Height	
Stand Models	V45	V45U	13.9	5.1	4.3	3.7	8.4	38	1" NPTF	15 ³ / ₈	24 ¹⁵ / ₁₆	23
	V60	V60U	19.9	7.3	6.1	5.3	12.1	38	1" NPTF	15 ³ / ₈	32 ³ / ₈	34
	V80	V80U	25.9	8.9	7.7	6.7	13.9	38	1" NPTF	15 ³ / ₈	39 ⁹ / ₁₆	43
	V80EX	V80EXU	25.9	8.9	7.7	6.7	13.9	38	1" NPTF	15 ³ / ₈	42 ³ / ₈	43
	V100	V100U	31.8	11.8	9.9	8.6	13.8	38	1" NPTF	15 ³ / ₈	47 ¹ / ₄	52
	V100S	V100SU	31.8	11.8	9.9	8.6	13.8	38	1" NPTF	22	28	56
	V140	V140U	45.2	16.5	13.9	12.1	27.3	38	1 ¹ / ₄ " NPTF	22	36 ⁹ / ₁₆	64
	V200	V200U	65.1	23.9	20.0	17.4	39.3	38	1 ¹ / ₄ " NPTF	22	48 ³ / ₈	89
	V250	V250U	83.5	30.9	25.9	22.5	50.8	38	1 ¹ / ₄ " NPTF	26	46	116
	V260	V260U	84.9	31.2	26.2	22.8	44.7	38	1 ¹ / ₄ " NPTF	22	60 ¹ / ₁₆	113
	V350	V350U	115.9	42.9	35.9	31.3	70.5	38	1 ¹ / ₄ " NPTF	26	61 ¹ / ₁₆	161
Mounted Pump Models*	V45MP		13.9	5.1	4.3	3.7	8.4	38	3/4" Pipe	15 ³ / ₈	25 ¹ / ₁₆	28
	V60MP		19.9	7.3	6.1	5.3	12.1	38	3/4" Pipe	15 ³ / ₈	33 ³ / ₈	40
	V45PST		13.9	5.1	4.3	3.7	8.4	38	3/4" Pipe	15 ³ / ₈	25 ¹ / ₁₆	28
	V60PST		19.9	7.3	6.1	5.3	12.1	38	3/4" Pipe	15 ³ / ₈	33 ³ / ₈	40
Buried Models	V45B		13.9	5.1	4.3	3.7	8.4	38	1" NPTM	15 ³ / ₈	21 ¹ / ₁₆	23
	V60B		19.9	7.3	6.1	5.3	12.1	38	1" NPTM	15 ³ / ₈	28 ¹ / ₂	33
	V140B		45.2	16.5	13.9	12.1	27.3	38	1 ¹ / ₄ " NPTM	22	32 ³ / ₁₆	63
	V200B		65.1	23.9	20.0	17.4	39.3	38	1 ¹ / ₄ " NPTM	22	44 ¹ / ₄	87
In-Line Models	V6P		2.0	0.7	0.6	0.5	1.2	38	3/4" NPTM	8	11 ¹⁵ / ₁₆	8
	V15P		4.5	1.7	1.4	1.2	2.7	38	3/4" NPTM	11	13 ¹⁵ / ₁₆	12
	V25P		8.2	3.1	2.6	2.2	4.5	38	3/4" NPTM	11	23 ¹ / ₁₆	21
	V45P		13.9	5.1	4.3	3.7	8.4	38	1" NPTM	15 ³ / ₈	21 ¹ / ₁₆	24
Horizontal Models w/ Bracket	V25H		8.2	3.1	2.6	2.2	4.5	38	3/4" NPTM	11	24 ⁹ / ₁₆	23
	V45H		13.9	5.1	4.3	3.7	8.4	38	1" NPTM	15 ³ / ₈	22 ⁹ / ₁₆	26
	V60H		19.9	7.3	6.1	5.3	12.1	38	1" NPTF	15 ³ / ₈	33 ³ / ₈	36

NOTES:

* Compatible with only certain Goulds pumps.

P = Pipe mounted

EX = With base extension

B = Buried

U = Union Connection

MP = Mounted pump

PST = Pump system tank

H = Horizontal with bracket

(All dimensions are in inches and weight in lbs. Do not use for construction purposes.)

Shelter tank from corrosive spray, chlorine or groundwater with high salinity. Do Not install tank where it will be subjected to spray from irrigation or landscape sprinkler systems.

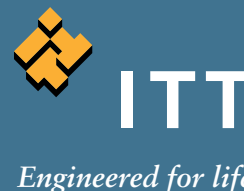


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Application

MODEL #: LU27-01



The general purpose ultrasonic level transmitter provides continuous level measurement up to 32.8' (10m) with a 4-20 mA signal output, and is configured via our free Webcal software. This non-contact liquid level sensor is ideally suited for corrosive, ultrapure, sticky or dirty liquids, and is broadly selected for bulk storage, day tank, lift station and process tank level applications.



Features

- ✓ Offered in 4 measurement ranges from 9.8' (3m) to 32.8' (10m)
- ✓ DSP auto adaptive filters enable plug and play operation optimizing signal output filtering and obstacle recognition
- ✓ Configuration is fast and easy via WebCal software and USB adapter
- ✓ Narrow 2" or 3" beam width for applications with limited measurement space
- ✓ Short 4" or 8" dead band maximizes the measureable filling capacity of the tank
- ✓ PVDF transducer and NEMA 4X polycarbonate enclosure for corrosive liquids
- ✓ Automatic temperature compensation for accurate measurement

Success



Ultrasonic level sensors are often used to measure open channel water flow that's discharged from rivers, streams, creeks, lakes or ponds. Here an

EchoSonic II level sensor is installed on the upstream side of a weir. The non-contact sensor measures the gravity-fed, liquid surface height as it passes through the V-notch, and provides a continuous 4-20 mA signal output. The PLC converts level height into flow volume with rate, totalization and data-logging functions for wastewater treatment and environmental reporting.

Compatible Products

DataLoop™ Level Indicator



LI25

DataView™ Level Controller



LI55

Commander™ Multi-Tank Level Controller



LI90

DataPoint™ Level Controller

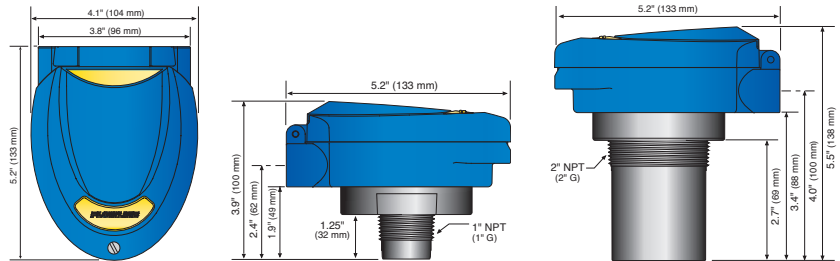


LC52

Specifications

Range:	LU27: 4" to 9.8' (10cm to 3m)
	LU23: 8" to 18.0' (20cm to 5.5m)
	LU28: 8" to 24.6' (20cm to 8m)
	LU29: 8" to 32.8' (20cm to 10m)
Accuracy:	± 0.2% of range
Resolution:	LU27: 0.019" (0.5mm)
	LU23: 0.039" (1mm)
	LU28/29: 0.079" (2mm)
Dead band:	LU27: 4" (10cm)
	LU23/28/29: 8" (20cm)
Beam width:	LU27: 2" (5cm)
	LU23/28/29: 3" (7.6cm)
Configuration:	WebCal® PC
	Windows® USB 2.0
Memory:	Non-volatile
Supply voltage:	24 VDC (loop)
Consumption:	0.5W
Loop resistance:	500 ohms @ 24 VDC
Signal output:	4-20 mA, two-wire
Signal invert:	4-20 mA or 20-4 mA
Signal fail-safe:	4 mA, 20 mA, 21 mA, 22 mA or hold last
Process temp.:	F: -4° to 140°
	C: -20° to 60°
Temp. comp.:	Automatic
Ambient temp.:	F: -31° to 140°
	C: -35° to 60°
Pressure:	MWP = 30 PSI (2 bar)
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	Polycarbonate
Trans. material:	PVDF
Cable jacket mat:	Polyurethane
Cable type:	4-conductor, shielded
Process mount:	LU27: 1" NPT (1" G)
	LU23/28/29: 2" NPT (2" G)
Mount gasket:	Viton®
Classification:	General purpose
Compliance:	CE, RoHS
Approvals:	cFMus

Dimensions



Configuration

The level sensor is configurable via our free WebCal PC software and Fob USB adapter. The sensors are offered with and without Fobs. Fobs are universal and can be used to configure any WebCal compatible product. Download your free copy of WebCal in English or Chinese at www.flowline.com/webcal.php.



LI99-1001

Fittings

For optimum performance, install the level sensor using the below recommended or direct equivalent fittings.

	P/N	Description
	LM52-1400	2" NPT x 1" NPT (Sch. 40)
	LM52-2400	3" NPT x 2" NPT (Sch. 40)
	LM52-2800	3" NPT x 2" NPT (Sch. 80)
	LM52-3800	4" NPT x 2" NPT (Sch. 80)
	LM52-1410	2" Socket x 1" NPT (Sch. 40)
	LM52-2410	3" Socket x 2" NPT (Sch. 40)
	LM52-3410	4" Socket x 2" NPT (Sch. 40)
	LM52-2810	3" Socket x 2" NPT (Sch. 80)
	LM52-3810	4" Socket x 2" NPT (Sch. 80)
	LM52-2890	2" NPT Bulkhead Fitting, PVC
	LM50-1001-1	1" NPT Bracket, PP
	LM50-1001	2" NPT Bracket, PP

Ordering

LU2 -

Sensor range

7	3m (9.8')
3	5.5m (18.0')
8	8m (26.2')
9	10m (32.8')

Process mount (1)

4	NPT (US)
5	G (Metric)

Fob USB adapter (2)

0	Without Fob
1	With Fob

Notes

- 1) Install the level sensor using Flowline installation fittings or equivalents.
- 2) The level sensor is configured via our WebCal software and one LI99-1001 Fob USB adapter. The level sensor is offered with and without a Fob. Fobs are universal and can be Used to configure any WebCal compatible product. WebCal is a free download from our website at www.flowline.com/webcal.php.



KPSI 700

- Submersible level transducer
- $\pm 1.00\%$ FS static accuracy
- Custom built in two days
- Two year warranty

The KPSI 700 is a submersible hydrostatic level transducer specifically designed to meet the rigorous environments encountered in liquid level measurement and control. It can be configured to perform to specifications under most adverse, reactive conditions.

Every KPSI Transducer utilizes a highly accurate pressure sensor assembly specifically designed for hostile fluids and gases. The assembly is integrated with supporting electronics in a durable waterproof housing constructed of 316 stainless steel or titanium. The attached electrical cable is custom manufactured and includes para-aramid synthetic fiber members to prevent errors due to cable elongation, and a unique water block feature that self-seals in the event of accidental cuts to the cable. Each vented reference transducer is shipped with a SuperDry Vent Filter that prevents moisture from entering the vent tube for at least one year without maintenance, even in the most humid environments.

Features

- Custom polyurethane or ETFE cable lengths
- Welded 316SS or titanium body
- Custom level ranges up to 700 ft. (210 m) H₂O
- Multiple analog output
- Multiple nose piece styles
- Optional lifetime lightning protection
- Long life vent filter or aneroid bellows
- Available molded cable seal

Applications

- Lift stations
- Pump control
- Level control
- Surface water monitoring
- Landfill leachate
- Well monitoring
- Groundwater monitoring

Specifications

PARAMETER		COMMENT
LEVEL RANGES		
Full Scale Level Ranges (Intermediate level ranges are available)	2.3 thru 700 ft. H ₂ O (0.70 thru 210 m H ₂ O)	Vented Gage Reference
	10 thru 700 ft. H ₂ O (3 thru 210 m H ₂ O)	Sealed Gage Reference
	35 thru 700 ft. H ₂ O (10 thru 210 m H ₂ O)	Absolute Gage Reference
Proof Pressure	1.5 x FS	
Burst Pressure	2.0 x FS	

STATIC PERFORMANCE

Static Accuracy (combined effects of non-linearity, hysteresis and repeatability, best fit straight line method)	±1.00% FSO	BFSL method
Resolution	+0.0001% FS	

ENVIRONMENTAL

Wetted Materials	316 SS or Titanium; POM; FKM; Polyurethane or ETFE	
Compensated Temp Range	0 to 50°C	
Thermal Error (maximum allowable deviation from the Best Fit Straight Line due to a change in temperature)	±0.05% FSO/°C ±0.1% FSO/°C	Worse case over compensated temperature range for ranges < 12 ft. (4 m) H ₂ O
Operating Temp Range	-20 to 60 °C	When attached to polyurethane cable
Protection Rating	IP 68, NEMA 6P	

ELECTRICAL

Excitation	9-28V – VDC output 9-28V – mA output 15-28V – VDC output 10-28V – VDC output	0-5 V, 0-2.5 V, 0-4 V 4-20 0-10 V 1.5-7.5 V
Input Current	20 mA max., 3.5 mA max.	For mA output, for VDC output
Output	4-20 mA, 0-5 VDC, 0-2.5 VDC, 0-4 VDC, 0-10 VDC, 1.5-7.5 VDC	For ranges < 5 ft. (1.5m) H ₂ O, only 4-20mA output is available
Zero Offset	±0.25 mA for mA output < 0.25 VDC for VDC output	
Output Impedance	See loop diagram for mA output 20 ohm for VDC output	
Insulation Resistance	100 mega ohm at 50 VDC	
Circuit Protection	Polarity, surge/shorted output	

CERTIFICATIONS

CE compliant	EN 61326-1:2013 and 61326-2-3:2013
UL, CUL and FM	Class I, II, III, Div. 1, Groups A,B,C,D,E,F&G
WEEE/RoHS	Waste from Electrical and Electronic Equipment (WEEE) and Restrictions on the use of Hazardous Substances (RoHS)

PHYSICAL

Approximate Weight	0.44 lbs. (198 g) transducer 0.05 lbs./ft. (79 g/m) cable	
Cable Jacket Material	Polyurethane (Standard), ETFE (Optional)	
Cable Pull Strength	200 lbs (90 kg)	Polyurethane
Cable Number of Conductors	4 max.	
Cable Conductor Size	22 AWG	
Cable Seal	Molded Polyurethane FKM Gland	For polyurethane cable For ETFE cable

TEMPERATURE OUTPUT OPTION (Not Intrinsically safety approved)

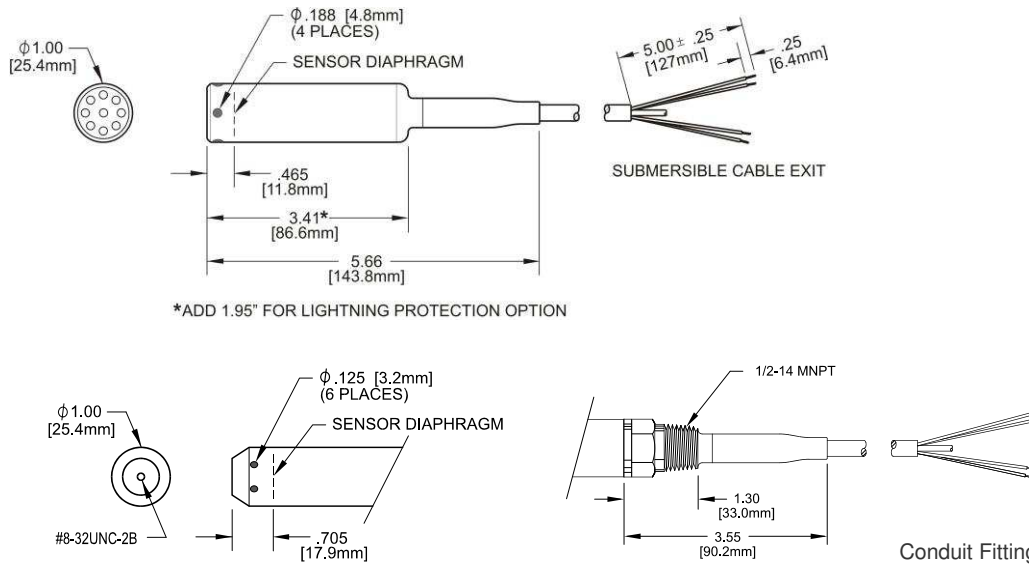
Temperature Range	-20 to 60°C	Available for 4-20 mA output versions only
Output Signal	4-20 mA	
Temperature Measurement Accuracy	±4°C	±1°C with single point calibration

LIGHTNING PROTECTION (Power supply needs to be limited to 150mA to avoid lock up of the gas tube after a suppression event)

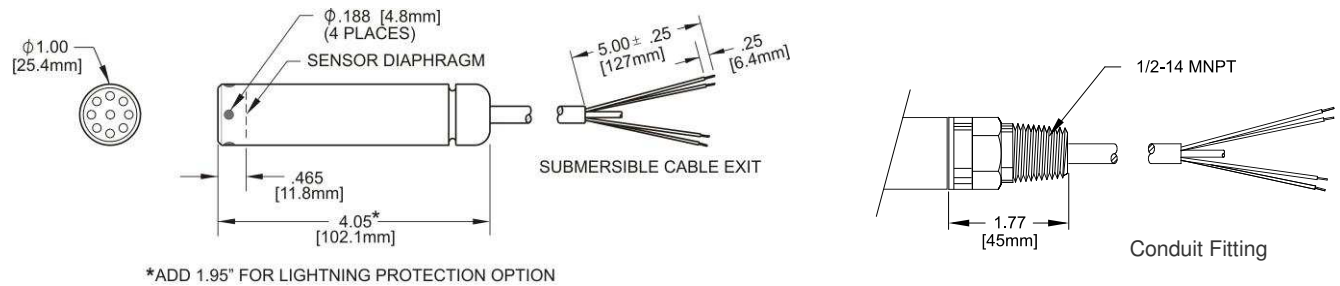
Life Expectancy	>1,000 Operations
Peak Clamping Voltage	36 Volts
Response Time	<10 nsecs
Shunts	20,000 Amperes

KPSI 700

Dimensions



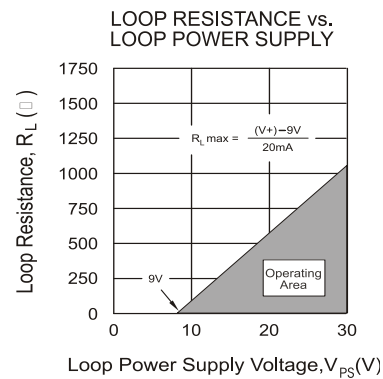
Molded Cable Seal Configuration for Polyurethane Cable



Gland Cable Seal Configuration for ETFE Cable

Electrical Termination / Loop Resistance

ELECTRICAL TERMINATION		
22AWG CONDUCTORS IN A SHIELDED CABLE WITH VENT TUBE		
4-20 mA	RED	+ EXCITATION
	BLACK	- EXCITATION
0-5 VDC	RED	+ EXCITATION
	BLACK	- EXCITATION
	WHITE	+ SIGNAL
ALL	DRAIN WIRE	SHIELD



Ordering Information

MODEL		SUBMERSIBLE LEVEL TRANSDUCER	
7	0 0	±1.00% FSO Static Accuracy	
↓ ↓ ↓			
MATERIAL			
S Stainless Steel			
T Titanium			
↓			
REFERENCE FORMAT			
1 Vented gage			
3 Sealed gage			
4 Absolute			
↓			
OUTPUT			
3 0-5 VDC			
F 0-2.5 V			
G 0-4 V			
H 0-10 V			
J 1.5-7.5V			
4 4-20mA			
6 4-20mA temperature measurement option			
↓			
PRESSURE CONNECTION			
A Open-face nose cap			
B Ported nose cap			
E Piezometer nose cap			
2 1/4" - 18 NPT male fitting			
7 1/2" - 14 NPT male fitting			
↓			
ELECTRICAL CONNECTION			
0 Molded cable seal			
4 1/2" - 14 NPT male conduit fitting with molded cable seal			
A Gland cable seal			
B 1/2" - 14 NPT male conduit fitting with gland cable seal			
↓			
LIGHTNING PROTECTION			
A None			
B Full Lightning Protection			
↓			
LEVEL RANGE (at MAX output) ¹			
#	#	#	#
↓	↓	↓	↓
LEVEL RANGE (at MIN output) ¹			
#	#	#	#
↓	↓	↓	↓
MOISTURE PROTECTION			
A None (sealed/absolute only)			
B Vent Filter			
C Aneroid Bellows			
D Stainless Steel Vent Filter			
↓			
CABLE TYPE			
1 Polyurethane			
2 ETFE (Electrical Connection "A" or "B" Only)			
↓			
CABLE LENGTH			
#	#	#	#
↓	↓	↓	↓
(in feet)			
LABEL ²			
A psi			
B ft H ₂ O			
C m H ₂ O			
↓			
7	0 0	043.341	000.000
		0525	

- Notes: 1 The part number requires two level range limits, depending on the maximum and minimum output of the transducer, to be specified. The lower level range is typically 000.000 unless otherwise required. For reverse output requirements, enter the lower level range for the maximum output signal and the upper range for the minimum output. Use the following conversion factors: $\text{ft. H}_2\text{O} / 2.3073 = \text{psi}$ // $\text{m H}_2\text{O} / 0.703265 = \text{psi}$
 Examples: 10 ft. H₂O / 2.3073 = 4.334 psi (Enter 004.334 in the part number), 10 m H₂O / 0.703265 = 14.219 psi (Enter 014.219 in the part number)
 For sealed gage reference add local atmosphere when converting to psi. Contact PSI for assistance.
 Example: 10 ft. H₂O / 2.3073 + 14.7 = 19.034 psi (Enter 019.034 in the part number)
- 2 Units of measure on standard MEAS label. Contact Measurement Specialties if private labeling is required.

NORTH AMERICA

Measurement Specialties, Inc.,
 a TE Connectivity company
 1000 Lucas Way
 Hampton, VA 23666
 Tel : 1-757-766-1500
 Fax : 1-757-766-4297
 Toll Free: 1-800-745-8008
 Email: WL.Sales@te.com

EUROPE

Measurement Specialties (Europe), Ltd.,
 a TE Connectivity company
 26 Rue des Dames
 78340 Les Clayes-sous-Bois, France
 Tel : +33 (0) 130 79 33 00
 Fax : +33 (0) 134 81 03 59
 Email: customercare.lcsb@te.com

ASIA

Measurement Specialties (China), Ltd.,
 a TE Connectivity company
 No. 26 Langshan Road
 Shenzhen High-Tech Park (North)
 Nanshan District, Shenzhen 518057 China
 Tel : +86 755 3330 5088
 Fax : +86 755 3330 5099
 Email: customercare.shzn@te.com

te.com/sensorsolutions

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prosense® Float Level Switches, Vertical Top-Mount

Float Level Switch Specifications											
Part No.	Price	Float Material	Stem Material	Temperature Range	Pressure	Float Specific Gravity	Electrical Rating*	Lead Wires	Mounting Thread	Approvals	Weight (lbs)
FLS-VM-100	\$10.50	Polypropylene (PP)	Polypropylene (PP)	-40°F to 221°F [-40°C to 105°C]	100 psig [6.9 bar]	0.8	SPST-NC, 30W max 240VAC, 0.14 A 120VAC, 0.28 A 120VDC, 0.07 A 24VDC, 0.28 A	22AWG, MTW 24in	1/8 in MNPT (Install ± 30° max from vertical)	cURus, CSA, CE (See Approvals table for details)	0.1

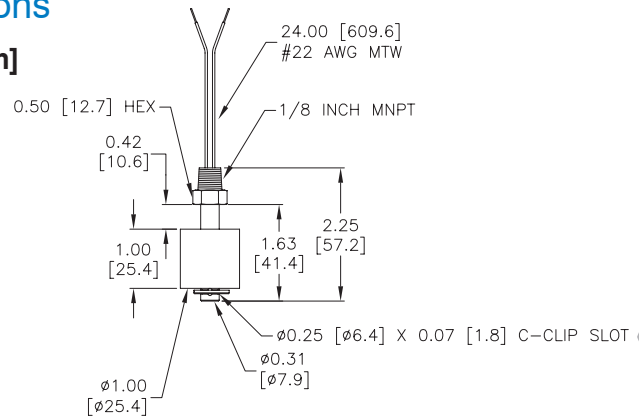
* Normally closed switch. Can be converted in the field to function as normally open as described under "Operation". Electrical ratings are for resistive loads ONLY. For inductive loads, maximum life will be obtained with the use of appropriate transient suppression such as an MOV or TVS.

Caution: Not recommended for use with PLC AC inputs or other digital AC input devices due to damage that may occur to the switch or input device.



Dimensions

inches [mm]



Float Level Switch Specifications											
Part No.	Price	Float Material	Stem Material	Temperature Range*	Pressure	Float Specific Gravity	Electrical Rating¹	Lead Wires	Mounting Thread	Approvals	Weight (lbs)
FLS-VM-200	\$12.00	Buna-N	Polybutylene Terephthalate (PBT)	-40°F to 221°F [-40°C to 105°C]	150 psig [10.4 bar]	0.45	SPST-NC, 30W max 240VAC, 0.14 A 120VAC, 0.28 A 120VDC, 0.07 A 24VDC, 0.28 A	22AWG, Teflon 24in	1/8 in MNPT (Install ± 30° max from vertical)	cURus, CSA, CE (See Approvals table for details)	0.1

* Not for use in hot water at temperatures above 149°F [65°C]

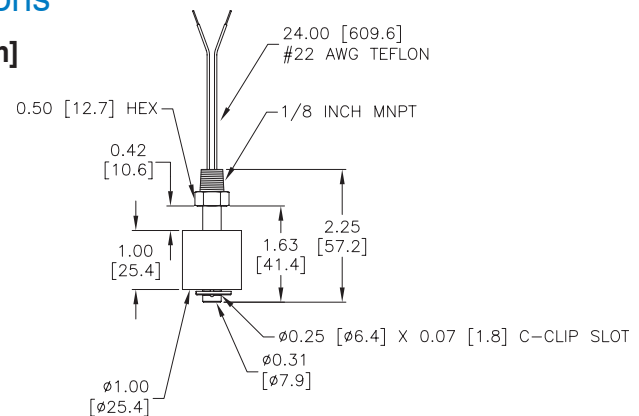
¹ Normally closed switch. Can be converted in the field to function as normally open as described under "Operation". Electrical ratings are for resistive loads ONLY. For inductive loads, maximum life will be obtained with the use of appropriate transient suppression such as an MOV or TVS.

Caution: Not recommended for use with PLC AC inputs or other digital AC input devices due to damage that may occur to the switch or input device.



Dimensions

inches [mm]



prosense® Float Level Switches

Agency Approvals					
Part Number	cURus (E320431)	UR Class I, Group A,B,C,D / Class II, Group E, F, G / Class III (E366154)	CSA (2679134)	CSA Class I, Group A,B,C,D / Class II, Group E, F, G / Class III (2685021)	CE
FLS-VS-100	✓				✓
FLS-VS-200					✓
FLS-VM-100	✓		✓		✓
FLS-VM-200	✓		✓		✓
FLS-VM-300	✓		✓		✓
FLS-VM-400	✓		✓		✓
FLS-VM-500	✓				✓
FLS-VM-600					✓
FLS-VL-010	✓		✓		✓
FLS-VL-020	✓		✓		✓
FLS-VL-030	✓		✓		✓
FLS-VL-040			✓		✓
FLS-VL-100	✓		✓		✓
FLS-VL-200	✓		✓		✓
FLS-VL-300	✓		✓		✓
FLS-VL-400		✓		✓	✓
FLS-VL-500					✓
FLS-VL-600					✓
FLS-VL-900					✓
FLS-HS-100	✓		✓		✓
FLS-HS-200	✓		✓		✓
FLS-HS-300					✓
FLS-HM-100	✓		✓		✓
FLS-HM-200	✓	✓		✓	✓
FLS-HM-300	✓				✓
FLS-HL-010					✓
FLS-HL-200	✓				✓
FLS-BM-100					✓
FLS-BM-200					✓
FLS-BM-300	✓		✓		✓
FLS-BL-100					✓
FLS-VK-100	✓				✓
FLS-VK-200	✓				✓
FLS-VK-300	✓				✓
FLS-HT-100					✓
FLS-HT-200					✓



ProSense Float Level Switches

ProSense float level switches provide a low-cost general purpose solution for single point monitoring of liquid level in a variety of applications. Powerful permanent magnets within the float actuate a highly reliable and repeatable hermetically sealed reed switch as the float rises and lowers with liquid level. These switches are available in several different material constructions for compatibility with many types of liquids, a wide temperature range, and system pressure requirements. Vertical and horizontal mounting styles with several mounting thread variations are offered for ease of installation. Reed switches carry electrical ratings for both AC and DC voltage for adaptability to many control interface applications. Although these switches come configured for normally closed operation, most models can be easily converted for normally open operation in the field. Designed to be shock and vibration resistant, ProSense float level switches ensure long and trouble-free service.

Features

- Low-cost solution for general purpose single point liquid level monitoring
- Magnetically operated, highly reliable and repeatable hermetically sealed reed switch
- Vertical and horizontal mounting styles with a variety of mounting threads
- Several material constructions for compatibility with different liquids
- Electrical ratings for AC and DC voltage
- Most switches easily converted in the field from normally closed to normally open operation
- Made in the USA



Operation

ProSense float level switches are shipped configured for normally closed switch operation. Except where noted, most models can be easily converted to normally open operation in the field.

Vertical Mount Switches

For Vertical Mount switches, normally closed is defined as the switch mounted in a vertical position with the mounting threads above the float (top mount) and the float in the "dry" position at the bottom of the stem (Figure 1). When the liquid raises the float, the switch will open.

To change the operation of the switch to normally open, remove the C-clip, remove the float from the stem, flip the float 180 degrees, re-install the float on the stem and replace the C-clip. Now the switch will be normally open in the "dry" position and will close when the liquid raises the float.

Normally Closed Installation (Dry)

To Change Operation To Normally Open

- Step 1: Remove C-Clip
- Step 2: Flip Float On Stem 180°
- Step 3: Reinstall C-Clip



Figure 1: Vertical (Top) Mount Switch Operation

Vertical Mount switches can also be mounted with the mounting threads below the float (bottom mount) as in the bottom of a tank. If bottom mounted, switch operation will be the opposite of top mounted installation described above.

Horizontal Mount Switches

For Horizontal Mount switches installed in the side of a tank (side-mounted), normally closed is defined as when the float arm is below and parallel with the stem in the "dry" position (Figure 2). When the liquid raises the float, the switch will open.

To change the operation of the switch, rotate the installed position of the switch 180 degrees so the float arm is above and hanging at an angle with the stem. Now the switch will be normally open in the "dry" position and will close when the liquid raises the float.

Normally Closed Installation (Dry)



Normally Open Installation (Dry)

Figure 2: Horizontal Mount Switch Operation

MODEL #: E711-368SI

Data Sheet

Series E

Electronic Metering Pumps

Configuration Data

Model **E7****1** **1** - **368SI**

Control & Output Code

Instrument Responsive/Manual Control

Explosion proof electromagnetic metering pumps. UL and CUL Listed, meets or exceeds all standards for Division 1 and 2, Class I, Groups C and D; Class II, Groups E, F, and G. Manual adjustment or switch conversion to external control for automatic systems.

E70* --- 1.3 GPH (4.9 l/h) 300 psi (20.7 Bar)

E71* --- 2.5 GPH (9.5 l/h) 150 psi (10.3 Bar)

E72* --- 4.0 GPH (15.1 l/h) 100 psi (6.9 Bar)

E73* --- 8.0 GPH (30 l/h) 60 psi (4.1 Bar)

E74* ---20.0 GPH (76 l/h) 25 psi (1.7 Bar)

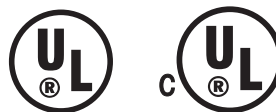
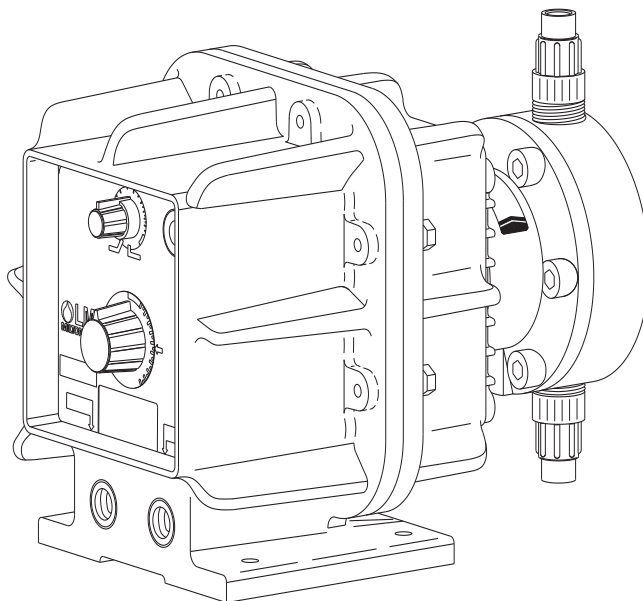
Voltage Code

1 ----- 120 VAC Hardwired

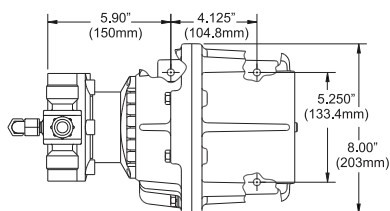
2 ----- 240 VAC Hardwired

Liquid End

See next page for complete liquid end specifications & selection.



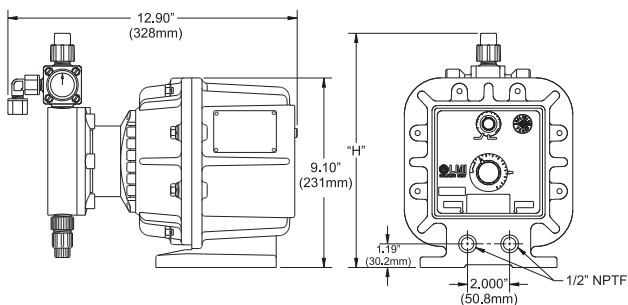
Dimensions



* Dimensions shown are maximums for largest available Liquid End. Dimensions will vary depending on Liquid End selected.

Specifications

Series	Strokes per Minute (Adjustable)		Stroke Length (Adjustable) Recommended Minimum	Average Input Power @ Max Speed	Shipping Weight
	Min	Max			
E70*					
E71*					
E72*	5	100	10%	44 watts	(41 lbs) 18.6 kg
E73*					
E74*					



201 Ivyland Road
Ivyland, PA 18974 USA
TEL: (215) 293-0401
FAX: (215) 293-0445
<http://www.lmipumps.com>

Replaces same of Rev. D 8/01
1586.E 6/09

Standard Liquid End Configuration Data & Materials of Construction

Drive Assembly	Liquid End No.	Size Code	Materials of Construction				Accessory	Tubing & Connections Discharge Suction
			Head & Fittings	Balls	Liquifram™	Check Valve		
E70 ■ -	498SP	0.9	PVC	Ceramic	Fluorofilm™	PVDF / Polyprel®	4FV	Pipe 1/2" NPT M
	297	0.9	316 S.S.	316 S.S.	Fluorofilm™	316 S.S.		Pipe 1/4" NPT M
E71 ■ -	368SI	1.8	PVC	Ceramic	Fluorofilm™	PVDF / Polyprel®	4FV	PE .375" O.D.
E72 ■ -	362SI	1.8	PVDF / PVDF	Ceramic	Fluorofilm™	PVDF / Polyprel®	4FV	PE .375" O.D.
	363SI	1.8	PVDF / PVDF	Ceramic	Fluorofilm™	PVDF / PTFE	4FV	PE .375" O.D.
	460SI	1.8	Acrylic / PVC	Ceramic	Fluorofilm™	PVDF / Polyprel®	4FV	PE .375" O.D.
	465SI	1.8	Polypropylene	Ceramic	Fluorofilm™	PVDF / PTFE	4FV	PE .5" O.D.
	468SI	1.8	PVC/PVC	Ceramic	Fluorofilm™	PVDF / Polyprel®	4FV	PE .375" O.D.
	469SI	1.8	Acrylic/PVDF	PTFE	Fluorofilm™	PVDF / Polyprel®	4FV	PE .375" O.D.
	277	1.8	316 S.S.	316 S.S.	Fluorofilm™	316 S.S.		Pipe 1/4" NPT M
	75HV	1.8	Polypropylene	316 S.S.	Fluorofilm™	PTFE		PE .5" O.D. Vinyl .938" O.D.
	76HV	1.8	Acrylic / PP	316 S.S.	Fluorofilm™	Hypalon®		PE .5" O.D. Vinyl .938" O.D.
	312SI#	3.0	PVDF / PVDF	Ceramic	Fluorofilm™	PVDF / Polyprel®	4FV	PE .5" O.D.
E73 ■ -	313SI#	3.0	PVDF / PVDF	Ceramic	Fluorofilm™	PVDF / PTFE	4FV	PE .5" O.D.
	318SI#	3.0	PVC / PVC	Ceramic	Fluorofilm™	PVDF / Polyprel®	4FV	PE .5" O.D.
	410SI#	3.0	Acrylic / PVC	Ceramic	Fluorofilm™	PVDF / Polyprel®	4FV	PE .5" O.D.
	418SI#	3.0	PVC / PVC	Ceramic	Fluorofilm™	PVDF / Polyprel®	4FV	PE .5" O.D.
	419SI#	3.0	Acrylic/ PVDF	PTFE	Fluorofilm™	PVDF / Polyprel®	4FV	PE .5" O.D.
	20	3.0	Acrylic / PVC	Ceramic	Fluorofilm™	Hypalon®		PE .5" O.D. Vinyl .5" O.D.
	20HV	3.0	Acrylic / PP	316 S.S.	Fluorofilm™	Hypalon®		PE .5" O.D. Vinyl .938" O.D.
	20S	3.0	Acrylic / PVC	Ceramic	Fluorofilm™	Hypalon®	4FV	PE .5" O.D. Vinyl .5" O.D.
	24	3.0	PVC	Ceramic	Fluorofilm™	PTFE		Pipe 1/2" NPT M
	25HV	3.0	Polypropylene	316 S.S.	Fluorofilm™	PTFE		PE .5" O.D. Vinyl .938" O.D.
E74 ■ -	25P	3.0	Polypropylene	Ceramic	Fluorofilm™	PTFE		Pipe 1/2" NPT M
	25T	3.0	Polypropylene	Ceramic	Fluorofilm™	PTFE		PE .5" O.D.
	26	3.0	PVC	Ceramic	Fluorofilm™	Viton®		PE .5" O.D.
	26S	3.0	PVC	Ceramic	Fluorofilm™	Viton®	4FV	PE .5" O.D.
	27	3.0	316 S.S.	316 S.S.	Fluorofilm™	PTFE		Pipe 1/2" NPT M
	29	3.0	UHMW PE	Ceramic	Fluorofilm™	Hypalon®		PE .5" O.D.
	30	6.0	Acrylic / PVC	Ceramic	Fluorofilm™	PTFE		PE .5" O.D. Vinyl .5" O.D.
	34	6.0	PVC	Ceramic	Fluorofilm™	PTFE		Pipe 1/2" NPT M
	35P	6.0	Polypropylene	Ceramic	Fluorofilm™	PTFE		Pipe 1/2" NPT M
	35T	6.0	Polypropylene	Ceramic	Fluorofilm™	PTFE		PE .5" O.D.
	36	6.0	PVC	Ceramic	Fluorofilm™	PTFE		PE .5" O.D.
	37	6.0	316 S.S.	316 S.S.	Fluorofilm™	PTFE		Pipe 1/2" NPT M

- These liquid ends use 3/8" diameter valve balls. Pump output may be reduced in some applications.

NOTE: 1. Pumps are rated for: Class I, Division I, Groups C & D; Class II, Division I, Groups E, F, and G

■ See front page for voltage code specifications.

3FV indicates that the pump is equipped with an LMI Three Function Valve (pressure relief, priming aid, line drain). To specify 3FV, change "S" to "T".

4FV indicates that the pump is equipped with an LMI Four Function Valve. This diaphragm type anti-siphon/pressure relief valve is installed on the pump head. It provides anti-siphon protection and aids in priming, even under pressure.

Output Information

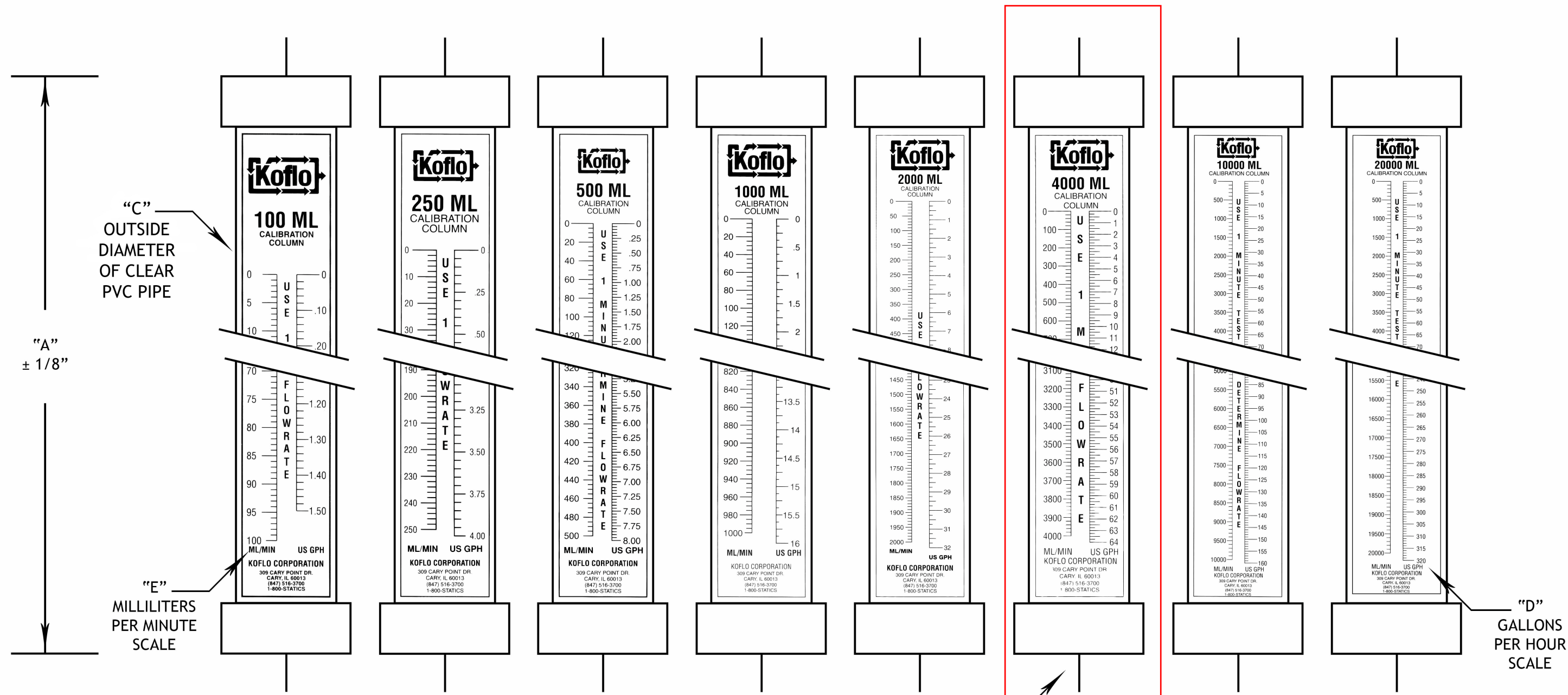
Series	Gallons per Hour		Liters per Hour		mL/cc per Minute		mL/cc per Stroke		Maximum Injection Pressure
	Min	Max	Min	Max	Min	Max	Min	Max	
E70*	0.007	1.3	0.025	4.9	0.41	82	0.08	0.82	300 psi (20.7 Bar)
E71*	0.013	2.5	0.048	9.5	0.79	158	0.16	1.58	150 psi (10.3 Bar)
E72*	0.020	4.0	0.076	15.1	1.26	252	0.25	2.52	100 psi (6.9 Bar)
E73*	0.040	8.0	0.151	30.0	2.52	505	0.50	5.05	60 psi (4.1 Bar)
E74*	0.100	20.0	0.380	76.0	6.33	1267	1.27	12.67	25 psi (1.7 Bar)

* Minimum output can be reduced to zero (0) when in external mode.

Calibration Columns with Fixed Caps

MODEL #: 4000 ML

Drawing



FNPT CONNECTIONS
TOP AND BOTTOM

NOTE: USE ONE (1)
MINUTE TEST TO
DETERMINE
FLOWRATE

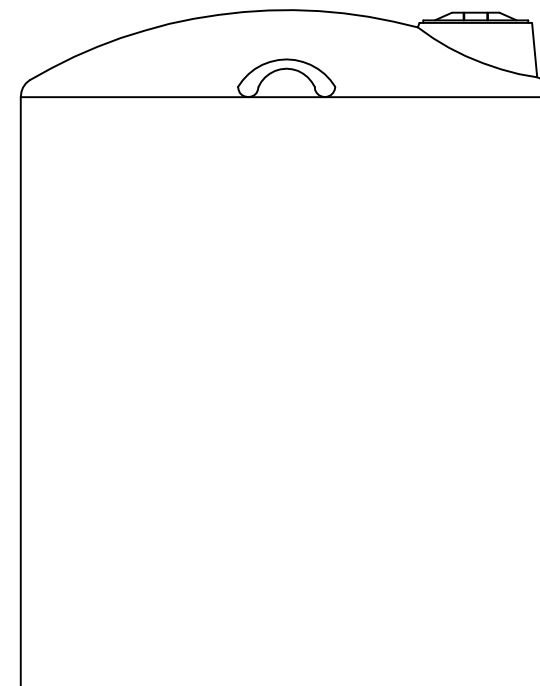
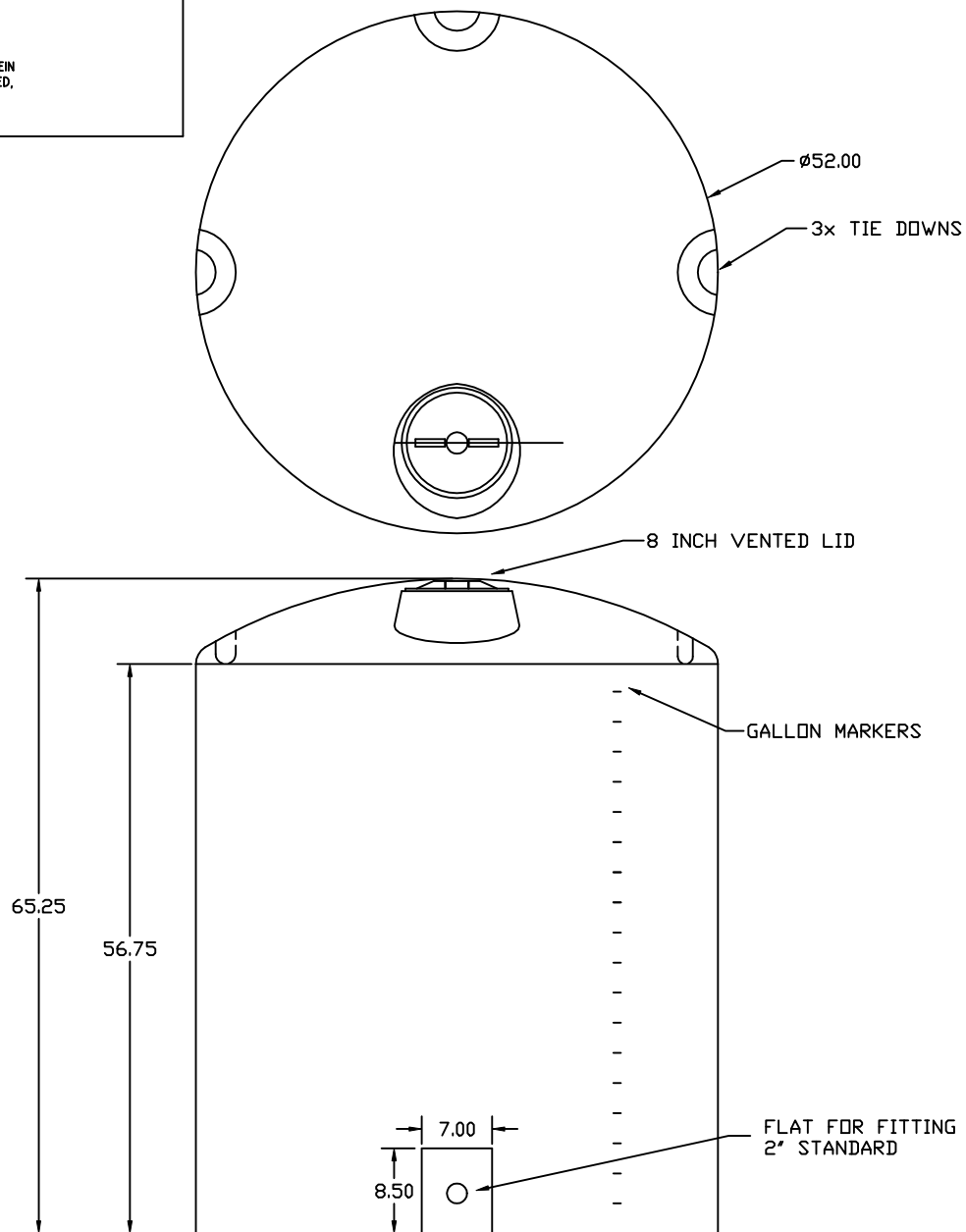
MODEL	"A"	"B"	"C"	"D"	"E"	INCREMENTS
100 ML	12-1/2"	1/2"	1.315"	1.5	100	1 ML / .02 GPH
250 ML	16-1/4"	1/2"	1.650"	4.0	250	2 ML / .05 GPH
500 ML	16"	3/4"	2.375"	8.0	500	5 ML / .05 GPH
1000 ML	25"	3/4"	2.375"	16.0	1000	5 ML / .125 GPH
2000 ML	24"	1"	3.500"	32.0	2000	10 ML / .25 GPH
4000 ML	34"	1"	4.000"	64.0	4000	20 ML / .25 GPH
10000 ML	27"	2"	6.625"	160.0	10,000	100 ML / 1 GPH
20000 ML	46"	2"	6.625"	320.0	20,000	100 ML / 1 GPH

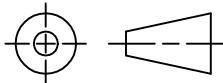
Koflo Corporation 309 CARY POINT DR. CARY, IL 60013		
SCALE: NONE	APPROVED BY:	DRAWN BY: N.J.F.
DATE: 2/6/07		REVISED: 8/8/07
CUSTOMER:		REVISED: 11/24/10
		REVISED:
MODEL NO: PVC CALIBRATION COLUMNS WITH FIXED CAPS		DRAWING NUMBER: KD-1032

PROPRIETARY DATA

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VT0550-52



			DRAWN / DATE DHJ 5/1/03	MATERIAL / SHOT WEIGHT	 Ace Roto-Mold A DIVISION OF DEN HARTOG INDUSTRIES, INC.	
			APPRD. / DATE ADH 11/19/07	POLYETHYLENE 116 LBS.	CLIENT / DESCRIPTION	
REV	DESCRIPTION	DATE APPRD.			550 GALLON VERTICAL	
ALL DIMENSIONS ARE IN DECIMAL INCHES TOLERANCES UNLESS OTHERWISE SPECIFIED ± 1% @ 68° F			THIRD ANGLE PROJECTION ANSI 14.5M 	NOTES: .25 NOM. WALL F2-268	SCALE NONE	PART NO. VT0550-52

Clear PVC Static Mixers, Series 308

In response to a growing need for high quality PVC static mixers at a lower price, Koflo developed the Series 308 PVC Static Mixer. This unit is a clear PVC static mixer, which unlike other static mixers, allows for a visual inspection of the mixing process. All Series 308 static mixers are made in standard 6 element and 12 element configurations. Additionally, all PVC static mixers are edge sealed to the inside of the housing. The advantages of edge sealing are twofold. Not only does edge sealing increase mixing efficiency, but this bonding method also increases the structural integrity of the entire mixer. All mixers come standard with male NPT threads. Sizes 3/8" - 2" are in stock for immediate delivery.

One of the primary uses of the Series 308 static mixers is in the dilution of polymers and flocculants. With proper blending, it is quite common to recover the cost of a mixer in a relatively short period of time, due to the lower chemical costs associated with better mixing.

Other static mixer applications include

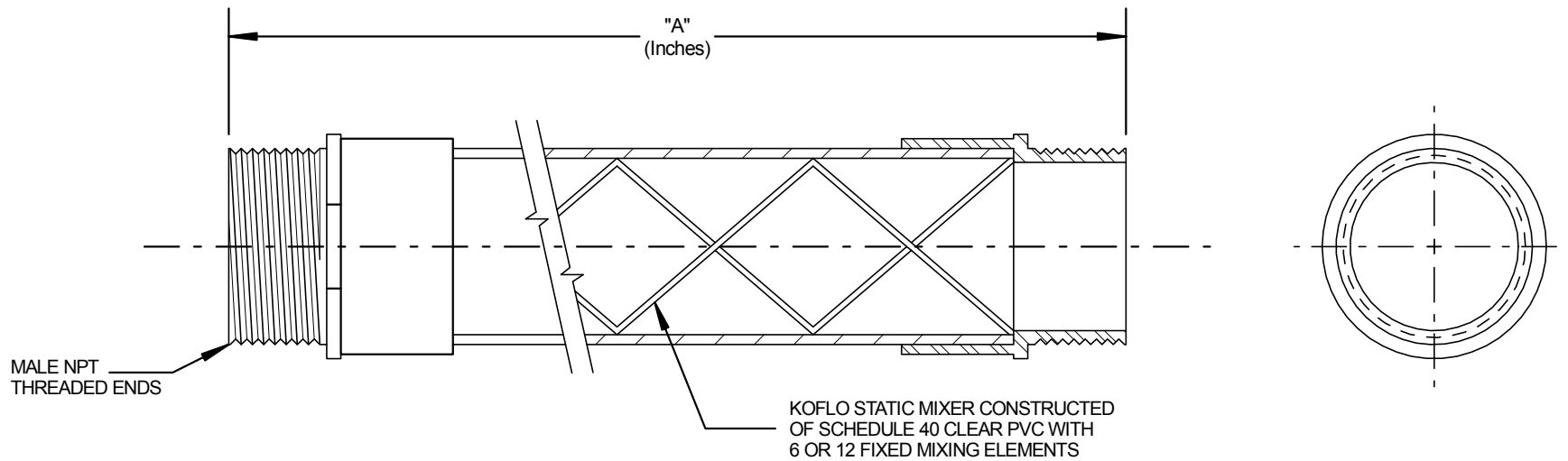
- Admixing of water treatment chemicals
- pH control
- Chlorination and ozonation
- Process control sampling

Technical Specifications

Model Number	Pipe Dia. MNPT Ends	Number of Elements	Length	Weight	Max. Working Pressure (PSI @ 75°F)	Typical Flow (GPM)	Pressure Loss (PSI)
3/8-40C-4-6-2	3/8"	6	6-1/2"	1.3 oz	310	.4 - 3	.25 - 11.25
3/8-40C-4-12-2	3/8"	12	11"	2.1 oz	310	.4 - 3	.50 - 22.5
1/2-40C-4-6-2	1/2"	6	7"	2.1 oz	300	.65 - 5	.25 - 10
1/2-40C-4-12-2	1/2"	12	12"	3.3 oz	300	.65 - 5	.50 - 20
3/4-40C-4-6-2	3/4"	6	9"	3.7 oz	240	1.5 - 12	.25 - 11
3/4-40C-4-12-2	3/4"	12	15"	5.8 oz	240	1.5 - 12	.50 - 22
1-40C-4-6-2	1"	6	11"	6.5 oz	220	2.5 - 16	.30 - 11.75
1-40C-4-12-2	1"	12	18"	9.9 oz	220	2.5 - 16	.60 - 23.5
1.25-40C-4-6-2	1-1/4"	6	14"	12.2 oz	180	4 - 32	.25 - 13.5
1.25-40C-4-12-2	1-1/4"	12	25"	18.3 oz	180	4 - 32	.50 - 27
1.5-40C-4-6-2	1-1/2"	6	15"	14.8 oz	170	6 - 40	.25 - 12.25
1.5-40C-4-12-2	1-1/2"	12	28"	25.4 oz	170	6 - 40	.50 - 24.5
→ 2-40C-4-6-2	2"	6	19"	25 oz	140	9 - 60	.25 - 9.25
2-40C-4-12-2	2"	12	35"	43 oz	140	9 - 60	.50 - 18.5

© 2008 Koflo Corporation 309 Cary Point Drive Cary, IL, 60013
 Phone 847-516-3700 | Fax 847-516-3724 | Toll Free 1-800-782-8427

MODEL #: 2-40C-4-6-2



Size	6 Element Model Number	"A" 6 Element	12 Element Model Number	"A" 12 Element
3/8"	3/8-40C-4-6-2	6-1/2	3/8-40C-4-12-2	11
1/2"	1/2-40C-4-6-2	7	1/2-40C-4-12-2	12
3/4"	3/4-40C-4-6-2	9	3/4-40C-4-12-2	15
1"	1-40C-4-6-2	11	1-40C-4-12-2	18
1-1/4"	1.25-40C-4-6-2	14	1.25-40C-4-12-2	25
1-1/2"	1.5-40C-4-6-2	15	1.5-40C-4-12-2	28
2"	2-40C-4-6-2	19	2-40C-4-12-2	35

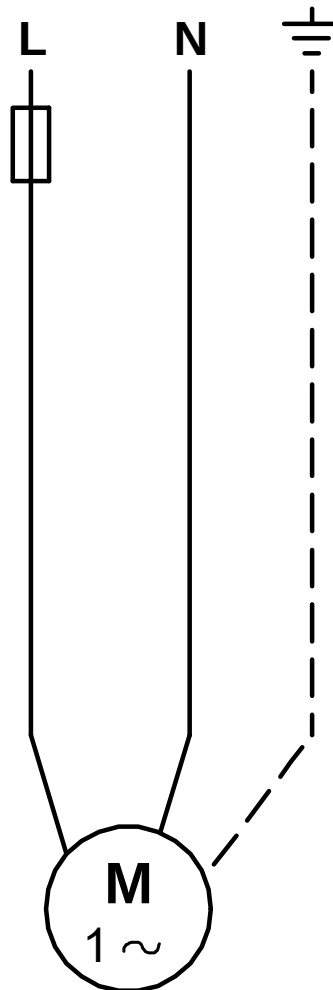
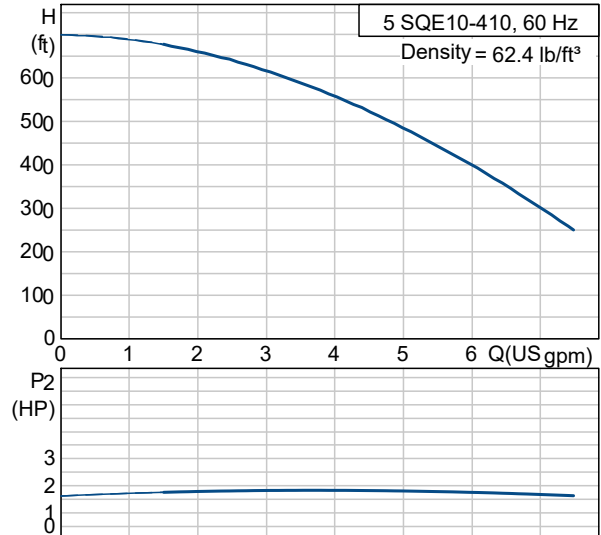
		Koflo Corporation 309 CARY POINT DR. CARY, IL 60013	
		SCALE: NONE	APPROVED BY <i>JLF</i>
DATE: 1/18/94		REVISED 10/15/01	
CUSTOMER:		REVISED 5/22/08	
		REVISED 6/12/09	
MODEL NO: CLEAR PVC SCHEDULE 40 MIXER		DRAWING NUMBER: KD-993	

Position	Count	Description
	1	25S50-26 MODEL #: 05010026  Product photo could vary from the actual product Product No.: 05010026 Multi-stage submersible pump for raw water supply, groundwater lowering and pressure boosting. The pump is suitable for pumping clean, thin, non-agressive liquids without solid particles or fibers. The pump is made entirely of Stainless steel DIN W.-Nr. DIN W.-Nr. 1.4301 and suitable for horizontal and vertical installation. The pump is fitted with a built-in non-return valve. Liquid: Pumped liquid: Maximum liquid temperature: Liquid temp: Density: Water 104 °F 68 °F 62.29 lb/ft³ Technical: Speed for pump data: Curve tolerance: 3450 rpm ISO9906:2012 3B Materials: Pump: Impeller: Stainless steel DIN W.-Nr. 1.4301 AISI 304 Stainless steel DIN W.-Nr. 1.4301 AISI 304 Installation: Pump outlet: Motor diameter: 1 1/2"NPT 4 inch Electrical data: Power (P2) required by pump: 5.498 HP Others: Net weight: Gross weight: 16.1 lb 18.1 lb



Company name: PexUniverse.com
Created by: PexUniverse.com
Phone: 800-818-3201
Fax: 800-818-3211
Date: 01/01/2011

Description	Value
Product name:	5 SQE10-410
Product Number:	96160180
EAN number:	5700398712794
Technical:	
Speed for pump data	10700 rpm
Rated flow:	4.4 US gpm
Rated head:	469 ft
Approvals on nameplate:	UL, cUL
Approvals on motor nameplate:	CE, UL, CUL
Pump Number:	96397408
Stages:	9
Model:	B
Valve:	pump with built-in non-return valve
Materials:	
Pump:	Polyethylene / Stainless steel DIN W.-Nr. 1.4301
Motor:	Stainless steel DIN W.-Nr. 1.4301 AISI 304
Installation:	
Pump outlet:	NPT 1
Minimum borehole diameter:	2.99 in
Liquid:	
Maximum liquid temperature:	95 °F
Max liquid temperature at 0.15 m/sec	95 °F
Electrical data:	
Motor type:	MSE3
Power input - P1:	2.32 kW
Rated power - P2:	2.25 HP
Main frequency:	60 Hz
Rated voltage:	1 x 200-240 V
Start. method:	direct-on-line
Service factor:	2,25
Rated current:	11.2 A
Power factor:	1,00
Rated speed:	10700 rpm
Enclosure class (IEC 34-5):	58
Insulation class (IEC 85):	F
Motor protection:	Y
Thermal protec:	internal
Length of cable:	4.92 ft
Motor Number:	96160541
Controls:	
CU 300/CU 301:	communication with CU 300/CU 301 possible
Others:	
Sales region:	Namreg





MODEL #: 20' DRY CONTAINER

(800) 506 - 7368

SPECIFICATIONS

Typical ISO (International Standards Organization) shipping containers are manufactured with identical size specification in terms of exterior height, exterior width, and exterior length. The standardization of containers and the adoption of the ISO specification is to insure that all equipment handlers, chassis, rail cars, and slot spaces on vessels will accommodate ALL containers. This makes our job much easier, because we can confidently give you exact exterior specifications. Interior specifications can be slightly different, less than 1" variation. These ISO containers are now available in all major metropolitan areas throughout the nation. Shipping containers as storage units have changed the storage industry, most people prefer the convenience of mobile storage vs. standard mini storage. Container Solutions has formed a network of small businesses that are familiar with your needs. This guide is designed to help you become informed about container uses, common questions and problems.

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Typical Dimensions

	Exterior			Interior			Door Opening	
	Length	Width	Height	Length	Width	Height	Width	Height
10' Standard Dry Container	10'	8'	8'6"	9'3"	7'8"	7' 9 7/8"	7'8"	7'5"
20' Standard Dry Container	20'	8'	8'6"	19'3"	7'8"	7' 9 7/8"	7'8"	7'5"
40' Standard Dry Container	40'	8'	8'6"	39' 5"	7'8"	7' 9 7/8"	7'8"	7'5"
40' High Cube Dry Container	40'	8'	9'6"	39' 5"	7'8"	8' 10"	7'8"	8' 5 1/2"
45' High Cube Dry Container	45'	8'	9'6"	44' 5"	7'8"	8' 10"	7'8"	8' 5 1/2"
20' Refrigerated Container	19' 10.5"	8'	8'6"	17' 11"	7'6"	7'6"	7'5"	7'3"
40' Refrigerated Container	40'	8'	8'6"	37' 11"	7'6"	7'6"	7'6"	7'6"
40' High Cube Refrigerated Container	40'	8'	9'6"	37' 11"	7'6"	8'4"	7'6"	8'4"

Typical Weights / Capacity

	Cubic Capacity	Tare Weight	Max Gross	Max Payload
20' Standard Dry Container	1,165 cu. ft.	5,050	67,200	62,150
40' Standard Dry Container	2,350 cu. ft.	8,000	67,200	59,200
40' High Cube Dry Container	2694 cu. ft.	8,775	67,200	58,425
45' High Cube Dry Container	3043 cu. ft.	9,810	72,800	62,990
20' Refrigerated Container	1,010 cu. ft. (967)**	6,503	52,800	46,407
40' Refrigerated Container	2,051 cu. ft. (1959)**	9,700	67,200	57,450

Product: Custom FRP Insulated Equipment Vault
Project Name: Hartzell Construction
Project Number: 42128
Manufactured By: Virtual Polymer Compounds, LLC
Date: 7/5/2016
Revision: original

PRODUCT SPECIFICATION 01 33 00 CUSTOM FRP VAULT

PART ONE -GENERAL INFORMATION

- 1.01 Furnish one fiberglass composite enclosure that measures 48" height x 72" in width x 48" in depth with hinged lid.
- 1.02 Typical Product Performance Design:
 - A. The structure will be designed for 130 mph wind load when correctly installed.
 - B. The unit is designed to handle live roof loads of 50 pounds per square foot.
- 1.03 Submittals:
 - A. Comply with General Conditions of Project Documents (see attached)
 - B. Product data to include:
 - 1. Type, Product Name and Resin Manufacturer
 - 2. Test results of fiberglass laminate used.
 - C. Shop Drawing showing all critical dimensions of Enclosure
 - D. Shop Drawing showing location and plan of all Enclosure options
 - E. Complete off loading, storage and installation instructions

PART TWO: PRODUCT

- 2.01 Products:
 - A. Provide CUSTOM Shelter as manufactured by Virtual Polymer Compounds, LLC of 10478 Ridge Road, Medina NY 14103; Tel. (585) 735-9668.
- 2.02 Material of Construction:
 - A. Gel Coat: All exposed surfaces will be smooth with a 20 mil polyester based gel coat. Color of the gel coat is FIR GREEN.
 - B. Structural laminate will be nominal 3/8 inch thick. The laminate will include 3/8 inch glass fiber reinforced laminate under 20 mils of gel coat.
 - C. The material will meet the following standards:

1. Tensile Strength	ASTM D 638	14,000 psi
2. Flexural Strength	ASTM D 790	25,000 psi
3. Flexural Modulus	ASTM D 790	1,000,000 psi
4. Impact, Notched	ASTM D 256	10 ft-lbs/1
5. Barcol Hardness	ASTM D 2583	40
6. High Temperature Limit		150 F

7. Chemical Resistance ANSI/AWWA F10 Type II

- 2.03 Method of Construction: Single piece contact molded fiberglass reinforced plastic.
- 2.04 Metallic mounting and door hardware is to be 18-8 stainless steel.
- 2.05 The Enclosure is to include the following standard options:
 - A. Provide unit with hinged lid.
 - B. Stainless Steel hinges and eye bolt for hasp.
 - C. Stainless steel pull handle.
 - D. 1 3/4 inch interior base mounting flange.

PART THREE: EXECUTION

- 3.01 Carefully remove structure from original crating only at the time of installation. Examine the unit completely and report any damage to the unit prior to installation.
- 3.02 Verify that the dimensions of the concrete slab (foundation) designated for installation are correct and suitable for installation. Report any anticipated problems at once.
- 3.03 Installation:
 - A. Ensure the structure is set plum, true and level.
 - B. Fasten to foundation using specified fasteners at specified spacing.
 - C. Connect to power from protected circuit.

<<<< End of Section >>>>



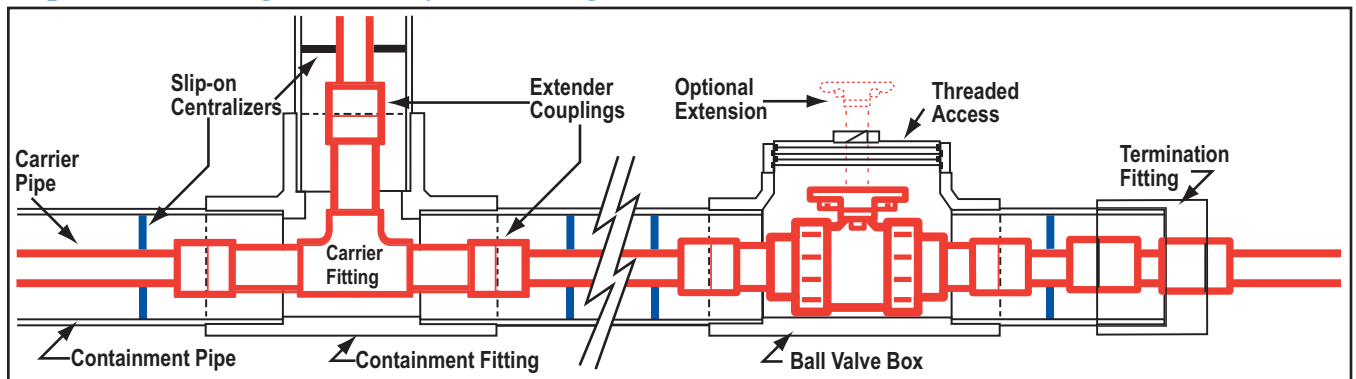
PVC & CPVC DOUBLE CONTAINMENT SYSTEMS

DC-2-1206

Double Containment Made Simple! Simplified Design, Easier Installation, Lower Overall Cost

Spears® Double Containment (DC) Fittings are constructed from standard fittings that are to be assembled on the jobsite. Spears® DC fittings work with standard pipe for both Carrier and Containment lines. Standard DC fitting configurations include Tees, Access Tees, Elbows, Couplings, Dog-Bone Couplers, Termination & Closure Fittings, and Pipe Centralizers. Plus supplemental equipment such as Clamp-on Saddles for Sensors, Expansion Joints, and In-line Valve Boxes assembled with Spears® quality Industrial Ball Valve, Ball Check or Diaphragm Valves. See Catalog publication DC-1, Double Containment, for pricing and installation information.

• Spears® Floating Carrier System Design



Carrier fittings are equipped with special extender couplings for connection to carrier pipe. Simple, slip-on centralizer brackets used on the carrier pipe support this assembly inside the containment pipe. This design allows the carrier fitting to “float” within the containment fitting, allowing ease of movement for installation while reducing problems associated with thermal expansion and contraction during operation.

• Full Size Range for Virtually Any Application

Carrier x Containment Sizes 1/2x2, 3/4x3, 1x3, 1-1/2x4, 2x4, 3x6, 4x8, 6x10, 8x12, plus additional sizes on request.

• PVC & CPVC Carrier/Containment Combination Configured to Order

Select any combination of carrier and containment pipe/fittings from PVC Sch 40, PVC Clear Sch 40, PVC Sch 80, CPVC Sch 80.

• Full Service Pressure Rating

Spears® Double Containment carrier pipe and fittings are suitable for full Sch 40 or Sch 80 pressure applications, except where limited by addition of valves, saddles and other system components with lower pressure ratings. Secondary containment rated at 10 psi unless otherwise specified.



**PROGRESSIVE PRODUCTS FROM
SPEARS® INNOVATION &
TECHNOLOGY**

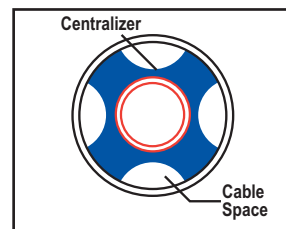
Visit our web site: www.spearsmfg.com



Spears® Double Containment . . . Designed for Simplicity!

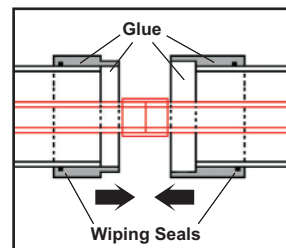
• Easy, Slip-on Centralizer Brackets

Simple, slip-on design centralizes carrier pipe and fittings in containment pipe. Allows free movement of components and provides necessary space for routing of leak detection cables.



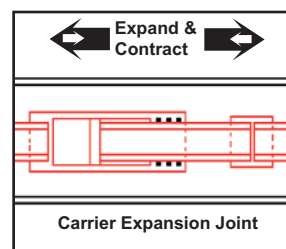
• Quick Glue-and-Connect Closure Fittings

Special fittings designed for final closure of containment pipe features glue-wiping seal to improve distribution of solvent cement during assembly. After assembly of carrier connection, simply solvent cement pipe and closure fitting and slide assembly together. Wiping seals assures spread of cement for proper bond.



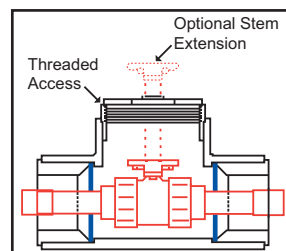
• Carrier & Containment Expansion Joints

Temperature differentials can produce significant expansion and contraction changes between carrier pipe and containment pipe. These forces can severely damage system integrity. In addition to Spears® floating carrier design, Spears® in-line expansion joints can be used on either carrier or containment runs to compensate for expansion and contraction changes.



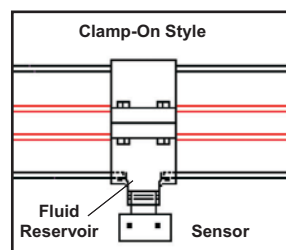
• In-Line Valve Boxes

Spears® unique containment enclosure of Valves provides easy access while allowing for addition of valve operation extensions or mechanical actuation. Special "Tee-style" configuration easily connects to containment system, minimizes space requirements and strengthens overall system integrity.



• Sensor Saddles

Easy-to-install threaded saddle tees can be easily located anywhere along containment pipe for mounting user-supplied leak detection sensors. Saddle tee forms low-point reservoir for detection of any fluid in the containment system. Select either Clamp-on style (for up to 6" pipe) or Glue-on style (for up to 8" and larger pipe).



Contact Spears® for Complete Double Containment Custom Quotation
Not For Use With Compressed Air Or Gases



SPEARS® MANUFACTURING COMPANY
CORPORATE OFFICE

15853 Olden St., Sylmar, CA 91342 • PO Box 9203, Sylmar, CA 91392
(818) 364-1611 • www.spearsmfg.com



Kirtland Air Force Base

Sold to: CB&I Federal Services

Operation & Maintenance Manual **For Downhole Flow Control Valve**

By Baski, Inc.

Invoice# 11968

Serial Number 28861

December 20, 2016

Kirtland Air Force Base

(Sold to CB&I Federal Services)

Baski, Inc. Flow Control Valve (FCV™) 11968

InFlex™ USA Pat. 5,316,081; 6,273,195

Stretch pressure for this valve, Serial # 28861 is 130 psi.

Valve drawing injection_11968.dwg

Driving head H is the sum of the injection pipeline pressure, plus the distance down to the injection water level in the well (feet of water converted to a pressure), minus the head loss in the column pipe. For injection flow the relationship between the flow rate " Q " in gpm, and the driving head " H " through the valve is expressed by the equation $Q = C_v \times \sqrt{H}$. When the valve is all the way open, the value C_v is 8 gpm / $\sqrt{\text{foot water}}$ or 12 gpm / $\sqrt{\text{psi}}$.

The Baski Flow Control Valve (FCV™) regulates recharge injection flow into wells. This FCV™ is a unique application of an inflatable rubber element, special passageways, and a downhole gas-over-liquid reservoir for inflation. Full inflation of the element seals off recharge flow into the well; and will allow water to be pumped to the surface if there is a well pump below the FCV™. In most cases, a downhole check valve is recommended for use with the well pump. Partial inflation of the element creates an annular area between the outside diameter of the internal orifice column and the inside diameter of the element for flow of water back into the well. This annular area can be adjusted to provide varying amounts of head loss across the valve to control the injection rate, which prevents injected water from cavitating through the column pipe. For applications involving only the injection of water, and no pumping, the threaded bottom of the FCV™ must be capped off.

The liquid inflation reservoir within the FCV™ prevents gas from contacting the rubber element, and, therefore, the risk of decompression blistering of the element is eliminated. To operate properly, this FCV™ has been filled with a nontoxic antifreeze with silicone oil on top to prevent evaporation. The fill level is 2.0" from the face of the top head when the valve is in the vertical position.

THIS VALVE IS FILLED WITH LIQUID. DO NOT ATTACH THE ACTUATION LINE TO THE FCV™ UNLESS THE FCV™ IS IN THE VERTICAL POSITION WITH THE INFLATION ACCESS PORTS ON TOP, OR FLUID MAY LEAK OUT OF THE FCV™. SAVE THE CAPS WHICH PREVENT LEAKAGE DURING SHIPMENT.

Failure to use caps during shipping may result in leakage.

INSTALLATION

Read all instructions before installation.

There are no user serviceable parts in the FCV™. No attempt should be made to disassemble the valve. Only the factory is capable of repairing the valve. Because there is fluid in the FCV™, care should be taken not to introduce contaminants into the FCV™. For storage the ends and injection exit ports should be closed off with black plastic sheeting or equivalent. This eliminates sunlight, and the exchange of air, significantly reducing the three enemies of natural rubber: ozone, oxygen and ultraviolet radiation. Remove any such sheeting before assembly into the column piping.

The Baski Flow Control Valve typically has threaded connections and requires no specialized equipment for attaching in-line with the column piping. The Flow Control Valve (FCV™) is made with threads to match the column pipe being used. For vertical turbine installations, the length of the valve is made the same as the length of column pipe, which is normally 10 feet. The joint strength of the FCV™ exceeds that of the column pipe.

Further installation involves the control lines. Normally, 1/4" OD Duplex 2205 stainless steel tubing is used. The stainless tubing requires a tubing cutter for stainless steel tubing and standard open end (English) wrenches. The inside diameter of the tubing, where cut, should be opened up to its full diameter. Banding, if provided, requires a C-001 Junior Band-It banding Tool. Hydraulic hose may also be used in place of the stainless tubing, and may require special tools for installation.

All fittings at the FCV™ should be tested with nitrogen gas for leaks before going into the hole. The FCV™ should be in the vertical position. Remove the caps from the control line tubing fittings on the FCV™. The caps should be saved. If the FCV™ is taken out of the well, the caps should be reattached so the liquid in the FCV™ doesn't spill onto the ground or equipment. Fluid level may be checked by putting a wire or wooden skewer through the tubing fitting and noting insertion depth, and level indicated on dip stick. **Do not use a wire smaller in diameter than 1/8"**. The fill level of the FCV™ is stamped on the top head, and appears as (for instance) "F5", indicating the level is 5" down from the surface of the top head when the FCV™ is in the vertical position. The stainless lines are attached at the FCV™. Stainless control tubing supplied by Baski for the control lines of the FCV™ already have the Swagelok nut and ferrule set assembled and pre-tightened. To remake, use a wrench, and when the nut starts to tighten up, go an additional 1/16th turn. Installation of new ferrules requires tightening of 1-3/4 turns.

The other end of the stainless line is accessible at the wooden spool upon which the stainless line is wound. Attach a Swagelok body with a coupling on the NPT thread or connect directly to a control panel. This end is used for pressurizing with nitrogen to check for leaks at the top of the FCV™. All fittings should be saved, along with the caps that hold the fluid in the FCV™ for shipping, or for future use.

Pressurize the FCV™ to 400 psi. Snoop, a Swagelok product, or a soapy water solution can be sprayed onto the connections at the FCV™ to make bubbles visible, which would indicate leakage. Simulate vibration of the stainless line by jiggling the line. Hold at this pressure for 30 minutes and continue looking for any bubbles using Snoop. Any fitting that leaks, as indicated by bubbles, should be tightened another 1/16th turn. If the leak continues (this would be a rare occurrence), the fitting should be replaced. The fitting should be removed; thread sealant and any oils must be removed from the female NPT thread; and a new fitting installed with thread sealant. Repeat the above procedure for leak testing. After connection of the control lines to the FCV™ control panel, those fittings should also be checked for leaks.

During the pressure test, it is important to remember that temperature affects pressure. If you start the pressure test and the weather changes, the pressure in the FCV and tubing will change as well. If the temperature drops or the sun goes behind clouds, the pressure in the tubing will drop even though there are not any leaks. On the other hand, if the temperature rises, the pressure will also rise. When pressure testing at 400 psi, the pressure in the tubing and FCV will change roughly 0.75 psi per one degree (F) change in temperature up or down.

When the pressure test is complete, the pressure should be released, and the back side of the tubing disconnected from the nitrogen regulator. Put either the original fittings or tubing caps back onto the back end of the tubing to prevent dirt or debris from getting into the tubing during installation. Continue with installation of the column pipe, using stainless steel banding to secure the tubing to the column pipe. It is recommended that the tubing be secured in the middle of each column pipe section, or more if needed. Vertical turbine or injection-only installations may include over-the-coupling protectors to cover the tubing over each coupling. In applications with submersible pumps, no over-the coupling protectors are needed, as the pump cable will protect the stainless tubing.

Note: For installations with two control lines, both lines access the same chamber inside of the FCV, so you do not need to keep track of which line came from which port during installation, as both lines function identically.

Excessive chlorine injection may corrode stainless tubing. In such cases, a suitable hose product should be substituted. After installation, any chlorine solution used to sanitize equipment going into the well should be less than 200 ppm chlorine. Following sanitizing, the equipment should be rinsed off. This can be done by adding water to the annulus between the casing ID and the column piping OD; and by pumping water out of the well, until chlorine levels are less than about 1 ppm.

VALVE ADJUSTMENT FOR PUMPING

Stretch pressure for this valve, Serial # 28861 is 130 psi.

Pumping is defined as water being pumped by a well pump from below ground to surface piping. This process is also referred to as production. For pumping, the FCV™ must be closed. The pressure to close the valve is the shutoff pressure, and is equal to the sum of the set depth (converted to psi), plus the column pipe friction loss, plus the uphole pumping pressure, plus the stretch pressure of the valve. The pumping pressure may not always be known in advance, but may be estimated. **For example**, if the Flow Control Valve is set at 400 feet, and the pumping pressure at the surface is estimated to be 40 psi, and the column pipe friction loss is ignored, the minimum inflation pressure would be $400 \div 2.31 + 40 + 30 = 243$ psi. (2.31 feet of water equals 1 psi). If the inflation pressure is increased to 255 psi, and there is an increase in flow (as seen by observation of the flow meter), then there must have been some leakage past the valve, going back into the well, at 243 psi. When an increase in inflation pressure no longer gives an increase in flow rate, there is no leakage past the valve.

If there is no pressure in the FCV and the pump is turned on, the water will only be circulated in the casing around the pump and motor. If left for very long, the temperature of the water will rise, and can become hot enough to destroy seals in the pump and the FCV.

VALVE ADJUSTMENT FOR INJECTION

Stretch pressure for this valve, Serial 28861 is 130 psi.

For recharge injection into the well, the pump is turned off and the element is partially deflated to control the injection rate as monitored by the injection water meter. The shut off inflation pressure of the valve is slightly less than the sum of the surface injection pressure, plus the FCV™ set depth converted to psi, plus the stretch pressure of the valve, minus the column pipe friction loss. **For example**, if the injection pressure is 25 psi, and the set depth is 400 feet, and we ignore the head loss in the column pipe, a pressure of $25 + 400 \div 2.31 + 30$ (228 psi) would shut off injection flow: hence, to inject, the pressure must be less than this. The range of pressures for injection would be between 0 (zero) and 228 psi. For operation of the control valve after the pump has been turned off, the nitrogen gas is bled off, reducing the pressure in the valve so that the water flows through the valve and into the well. The flow rate is adjusted through the control valve by varying the inflation pressure to the valve, while monitoring the flow rate with the flow meter. It may take several hours for the flow rate to stabilize due to the stabilization of the injection water level. There is a slight hysteresis effect due to the reinforced rubber element, but it is normally a much shorter time variable than the water level stabilization variable. For increasing the flow rate, the valve inflation pressure would be reduced, but after several hours the flow rates may be slightly higher or lower, and the valve inflation pressure would have to be adjusted to compensate for this. When decreasing flow, the valve inflation would be increased; but after several hours the valve inflation may have to be slightly adjusted up or down to obtain the desired flow.

COLUMN PIPE FRICTION LOSS

There are a variety of methods for estimating friction loss in piping. The following formula is given as the Hazen and Williams empirical formula¹. The column pipe friction loss (in feet of water) for a given length L of pipe (in feet) is:

$$10.44 * L * \left(\frac{Q}{c * ID^{2.63}} \right)^{1.85}$$

Where L is in feet of pipe, Q is in gpm, and ID is the inside diameter (ID) of the pipe in inches. The constant " c " is used to estimate the pipe conditions: 140 is used for very smooth pipe ID's; 100 for average pipe ID smoothness; and 40 for very corroded, rough pipe ID's.

For friction loss in psi, replace the constant 10.44 with 4.5195.

The formula is good for 65 °F water. Water temperature extremes (freezing - boiling) can vary the results $\pm 40\%$.

¹Cameron Hydraulic Data, by Ingersoll-Dresser Pumps, 1996, Liberty Corner, NJ, p3-7
Hydraulic Tables, William and Hazen, Wiley and Sons, Inc., 1965

Preventative Maintenance, overhaul, parts

There are no user serviceable parts in this FCV™. No attempt should be made to disassemble the valve. Only the factory is capable of repairing the valve. Because there is liquid in the FCV™, care should be taken not to introduce contaminants into the FCV™. The metal parts of the valve are 316 stainless steel. The liquid is a nontoxic antifreeze (propylene glycol) with a silicone oil layer on top to prevent evaporation.

The Flow Control Valve requires no maintenance. Care must be taken, however, to avoid leakage of the fluid out of the valve during handling. The valve is shipped with a cap over the inflation tubing fitting on the valve. This should be saved. When the valve is pulled out of the well, this cap should be reattached to prevent valve fluid from leaking out when the valve is laid in the horizontal position. Care should also be taken so as not to damage the inflation fittings installed in the ports at the top of the valve. There are no spare parts available for the valve. The inflation fittings are Swagelok, part number SS-400-1-4. However, the ports in the valve are 1/4" NPT and any suitable fitting for the control lines used may be installed in the ports.

For storage the ends and injection exit ports should be closed off with black plastic sheeting or equivalent. This eliminates sunlight, and the exchange of air, significantly reducing the three enemies of natural rubber: ozone, oxygen and ultraviolet radiation.

Original makeup of Swagelok tubing nuts (silver) are tightened to 1-1/4 turns past finger tight. Stainless control tubing supplied by Baski for the control lines of the FCV™ already have the Swagelok nut and ferrule set assembled. To remake, use a wrench, and when the nut starts to tighten up, go an additional 1/16th turn.

The fill level of the FCV™ is stamped on the top head, and appears as (for instance) "F5", indicating the level is 5" down from the surface of the top head when the FCV™ is in the vertical position.

NOTES

Pressure gauges should be operated in the first 2/3 of their range. The proper accuracy should be chosen for expected inflation pressures. For example, a 0 to 800 psi pressure gauge can be used to 600 psi inflation pressure. If the gauge is 1/2% accurate to full range, that means it is $\pm(800 \times 0.005 =)$ 4 psi. **For example**, when the pressure gauge reads 330 psi, the actual pressure would be somewhere between 326 and 334 psi. If the gauge were a 5% gauge, the pressure might be between 290 and 370 psi. This is too great a range, and a more accurate gauge, such as the 1/2% should be chosen.

Nitrogen gas is recommended for pressurizing the FCV™.

Baski, Inc. Flow Control Valve¹ (FCV™) Panel

The Flow Control Valve (FCV™) Panel allows for pressurizing or bleeding the nitrogen from the FCV™ control lines, as well as adding or removing the liquid from the FCV™ inflation chamber. Pressurization or bleeding may be manual or automatic. The manual pressurization and bleeding of the FCV™ utilizes standard needle valves. The automatic pressurization and bleeding makes use of solenoid valves actuated by a programmable logic controller (PLC) (not supplied by Baski). To obtain the desired injection flow rate, the PLC/SCADA systems typically monitor: 1) the injection rate; 2) the FCV™ pressure; 3) injection pipeline pressure (a vacuum or negative pressure must be avoided to prevent possible contamination); 4) well water level; and 5) tank storage or reservoir levels. The FCV™ pressure may be monitored via the transducer pressure port on the upper right manifold block of the panel. The rate of pressurization or bleeding is regulated by metering valves downstream of the (normally closed) solenoid valves. Note: These metering valves cannot shut off flow. A pressure transmitter may be used at the inlet port of the panel, and another one on the cylinder side of the pressure regulator, to trigger a warning signal at low cylinder pressure.

DO NOT OVER TIGHTEN THE METERING VALVES.
THEY CANNOT SHUT OFF FLOW.

Attachment of the panel

The control panel may be mounted to a wall, or placed in a standard NEMA enclosure that takes the same back panel size.

Hookup

Electrical leads of solenoid valves should be terminated by the electrical contractor adjacent to the valve panel, per national electric codes.

A nitrogen regulator is attached to a cylinder and a line run to the panel. The regulator should not be set to deliver more than 600 psi (except Deep Set™ valves). The manual pressurization valve should be closed, and the (normally closed) solenoid valves should not be powered up. The delivery pressure may now be set on the regulator. A pressure relief valve on the lower block may be set to prevent over-pressurization of the FCV™ should the regulator malfunction.

A tube, with a discharge muffler, should be attached to the bleed discharge and routed to a point out of the way of personnel. High pressure nitrogen gas can come out of this port, and care must be taken to prevent injury to personnel and prevent nitrogen concentration from building up in an enclosed or confined space.

The FCV™ is installed with two control lines (1/4" OD stainless steel tubing). The lines may be attached to the FCV™ ports, and to the Control Line ports of the panel.

The FCV™ comes with inflation liquid already installed. Normal pressurization and bleeding of the valve requires that shutoff valve 1 and shutoff valve 2 be open, and the fill/drain valve be closed. When pressurizing the valve, the manual bleed valve should be closed; and when bleeding off pressure from the valve, the manual pressurization valve should be closed. Long inflation lines may require longer times for pressure changes to reach the valve. If the pressurization valve is opened, and then closed, the pressure gauge will slowly rise and then fall to a value which represents the pressure in the valve.

Shutoff valve 1 and shutoff valve 2, and the fill/drain valve, may all be closed to change the pressure gauge without depressurizing the FCV™. The C_v for a Baski Flow Control Valve (FCV™) can be decreased by adding liquid to the control lines. The C_v can later be restored by removing the added liquid. To add liquid, pump liquid in the fill/drain valve (open), with shutoff valves 1 and 2 closed, and the line to the FCV™ at shutoff valve 1 disconnected. To gas lift liquid out of the valve, add gas through shutoff valve 1, with shutoff valve 2 closed and the fill/drain valve open. **Consult the factory before adding or removing any liquid to/from the FCV™.**

Original makeup of Swagelok tubing nuts (silver colored) are tightened to 1-1/4 turns past finger tight. Stainless control tubing supplied by Baski for the control line of the FCV™ typically already has the Swagelok nut and ferrule set assembled. To remake, use a wrench, and when the nut starts to tighten up, go an additional 1/16th turn. Hose and tubing supplied by Baski have fittings at both ends. The stainless steel tubing control line fittings are Swagelok, part number SS-400-1-6. However, the ports in the valve are 3/8" NPT and any suitable fitting for the control lines used may be installed in the ports. Hose fittings are a standard size 4 by 37 degree flare.

Preventative Maintenance, Overhaul, Parts

1	2	[ea]	metering valve	SS-4MG2-MH
2	2	[ea]	solenoid valve	71215SN2ENOONO-C111P3 (120VAC)
3	5	[ea]	shutoff valves	B-1KF-4
4	11	[ea]	tubing connectors	SS-400-1-4 (Swagelok straight male connector)
5	2	[ea]	tubing connectors	SS-400-7-4 (Swagelok straight female connector)
6	2	[ea]	tubing connectors	SS-400-1-6 (Swagelok straight male connector)
7	1	[ea]	filter	1A483
8	1	[ea]	relief valve & cap	B-4CPA2-350 -P-4CP4-K12-RD
9	1	[ea]	gauge	1279-400

The manual-only panel does not have items 1 & 2 from the above table.

Ports for control line are 1/4" female NPT. Stainless tubing requires stainless steel straight male connectors. Item 6 above is for stainless control line. This item would be changed for control line utilizing hose. Hose requires a 1/4" male NPT by #4-37° flare adapter. Other adapters may be substituted for different control lines.

The Flow Control Valve panel requires no regular maintenance. All connections must be clean before assembly. If the filter must be replaced, care must be taken so that dirt does not enter the system while the filter is being replaced. If a leak occurs at one of the connections between the aluminum blocks (except for the pressure gauge and relief valve), the block that has the connection must be removed. We do not recommend that this be done in the field, but, rather, that the panel be returned to the factory. If such a leak occurs, call Baski, Inc. Technical Services at 1.800.55.BASKI. The shutoff valves have packing around the stems. If there is a leak through the stem of the knob of the valve, the packing may be retightened. There are two nuts on the valve. Loosen the lower nut closest to the body of the valve, and tighten the upper nut until the leak stops, then retighten the lower nut. The metering valve must never be over tightened: it cannot shut off flow. Leakage through the solenoid valve may be field repairable: call Baski, Inc. Technical Services at 1.800.55.BASKI. The filter and pressure gauge are the most common spare parts required by the panel. Replacement of the pressure gauge may require removal of the backpanel from the wall. Call Baski, Inc. Technical Services at 1.800.55.BASKI before attempting to replace the gauge.

Leak Check

Before the valve is lowered into the well, the connections on top of the valve should be checked for leaks. Refer to the section on installation of the FCV™.

Only personnel familiar with high pressure cylinder gases should be allowed to make connections to the panel or nitrogen cylinder.

After connection of the valve to the panel and the regulator to the panel, the panel should be tested for leaks.

1. The lower four shutoff valves should be closed, and the shutoff valve to the left of the gauge should be opened. Pressurize the panel to 200 psi. All connections to the aluminum blocks, and between the blocks should be inspected for leaks. This includes the packing at the stem of the shutoff valves. Also, remove the red protective diffusion cap off the pressure relief valve and check to make sure the relief valve is not leaking. Soapy water, or other suitable leak detection fluids or methods may be employed to assure there are no leaks at the NPT connection or the tube connection.

A slight leak at an NPT fitting may be able to be fixed by loosening the tubing nut and tightening the body of the tubing connector into the aluminum block, and retightening the tubing nut. A slight leak at the nut may be able to be fixed by tightening the nut slightly. Do not over tighten connections.

If there are no leaks, the regulator pressure may be backed off and the panel depressurized by opening the shutoff valve for high pressure gas bleed (lower left of the panel). After the pressure in the panel has returned to zero, close the shutoff valve.

2. Open the two shutoff valves for the two control lines of the Flow Control Valve. Pressurize the panel (and Flow Control Valve) to 200 psi. Check for leaks at the two fittings where the stainless control lines enter the panel. Check for leaks at the fittings for the lower center shutoff valve on the bottom aluminum block. The high pressure gas bleed port at the bottom of the panel should have a vent tube attached, to direct bleed gases to a safe area. Check the end of this tube for gas leaking by the solenoid valves. If this is not possible, disconnect the tube, attach another short tube, then put the end of the tube in water and look for bubbles.
3. Now close the shutoff valve just to the left of the pressure gauge and turn the regulator handle counterclockwise to relieve pressure. The panel and Flow Control Valve are now pressurized, and may be left that way for 1 to 2 hours to check for leaks. If there is a leak now, it may be due to a damaged control line in the well. The damage probably occurred during installation. The hose may be detached at the regulator and put in water to see if the back pressure on the PRESSURIZE solenoid is leaking back through the solenoid valve. If there appear to be no leaks at the surface, the valve probably has a damaged control line in the well.

Trouble shooting Flow Control Valve (FCV™) and Panel Operation

The FCV™ is a simple operational valve. Depressurized, the FCV™ is in the open position and pumped water will flow back into the well. Pumping requires the proper shutoff pressure. This shutoff pressure is calculated by the methods stated in the operational instructions. If there is no flow to the surface during pumping, and there is sufficient pressure in the system, then the control line may be smashed closed: i.e., the valve was installed with zero pressure, and the line damaged during installation. There is also the unlikely event that pumping is possible even though the pressure in the FCV™ has been released: the valve sent down pressurized and the lines smashed closed.

A pressure lower than the shutoff pressure will allow injection of water into the well. Zero pressure at the wellhead may indicate cavitation of the water in the well. An increase in pressure in the FCV™ should raise the surface pressure above zero.

A clogged filter can create problems. To check for a clogged filter close the lower four shutoff valves. An increase in pressure at the regulator should be immediately recorded at the gauge on the panel. If the panel gauge is sluggish in response to the regulator, the filter is probably clogged. The regulator may be backed off and the panel may be depressurized (opening the bleed valve) and the sensitivity checked several times.

Other problems are uncommon and the factory should be consulted call Baski, Inc. Technical Services at 1.800.55.BASKI.

Mechanical Safety, Pump Shutdown

A snap action pressure switch (SPDT) may be hooked in series with the (emergency) stop switch of the pump's magnetic starter, so that loss of pressure in the FCV™ turns the pump off, bypassing any computer system. If the FCV™ is open for recharge, and the pump is on, the water will recirculate between the well and the FCV™. As a result of this, the well temperature will increase, possibly high enough to destroy pump and FCV™ seals. Without endorsing the brand, Dwyer Industries' Mercoid Series A1 or A1PS pressure switch is a possible candidate for this application. Dwyer is located in Michigan City, Indiana. A licensed electrical contractor can complete the wiring. This unit may be installed external the panel with a mounting bracket.

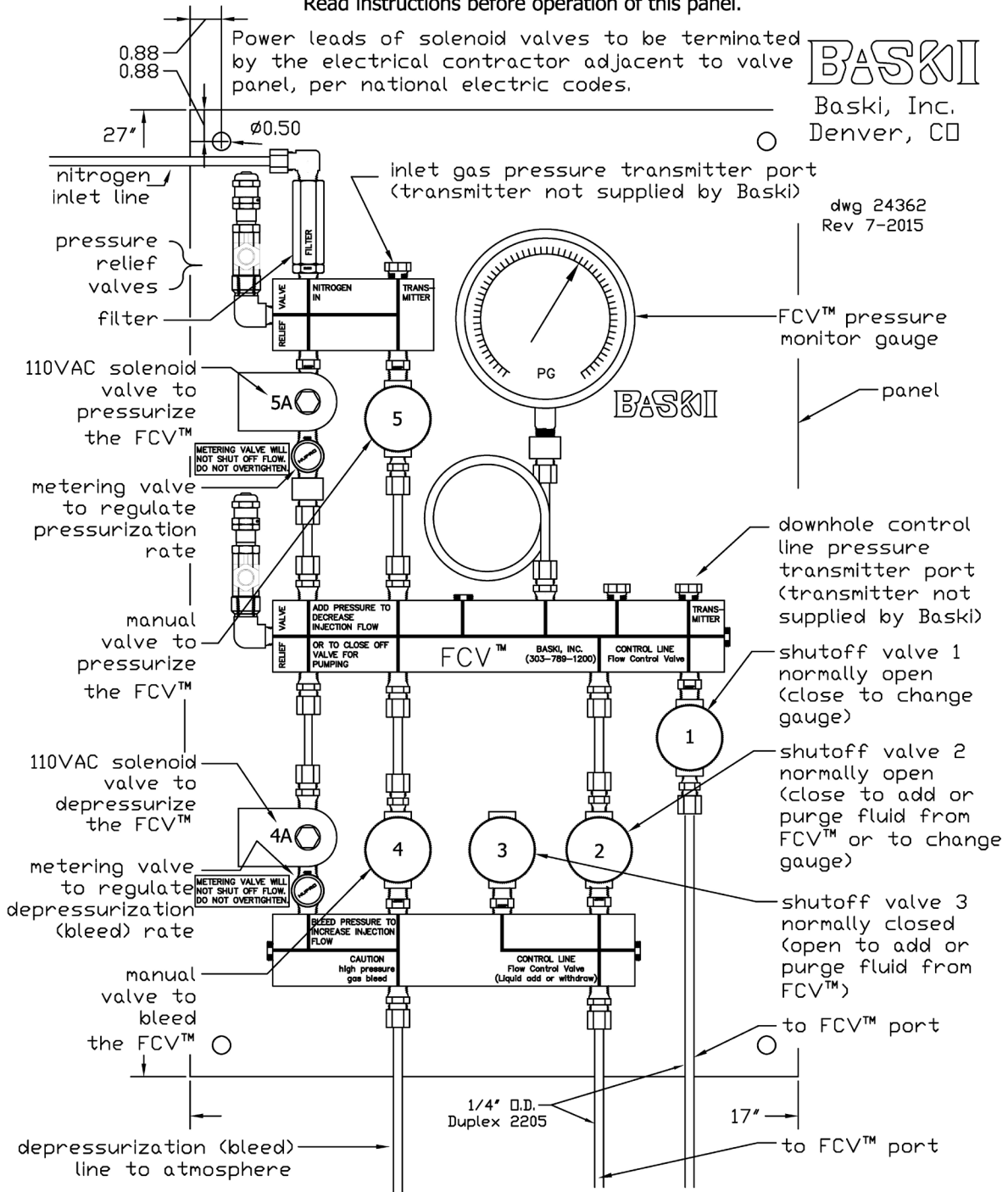
Read instructions before operation of this panel.

Power leads of solenoid valves to be terminated by the electrical contractor adjacent to valve panel, per national electric codes.

BASKI

Baski, Inc.
Denver, CO

dwg 24362
Rev 7-2015



Injection

CB&I Federal Services
Baski IN1968

BASKI

Baski, Inc.
Denver CO
800-55-BASKI

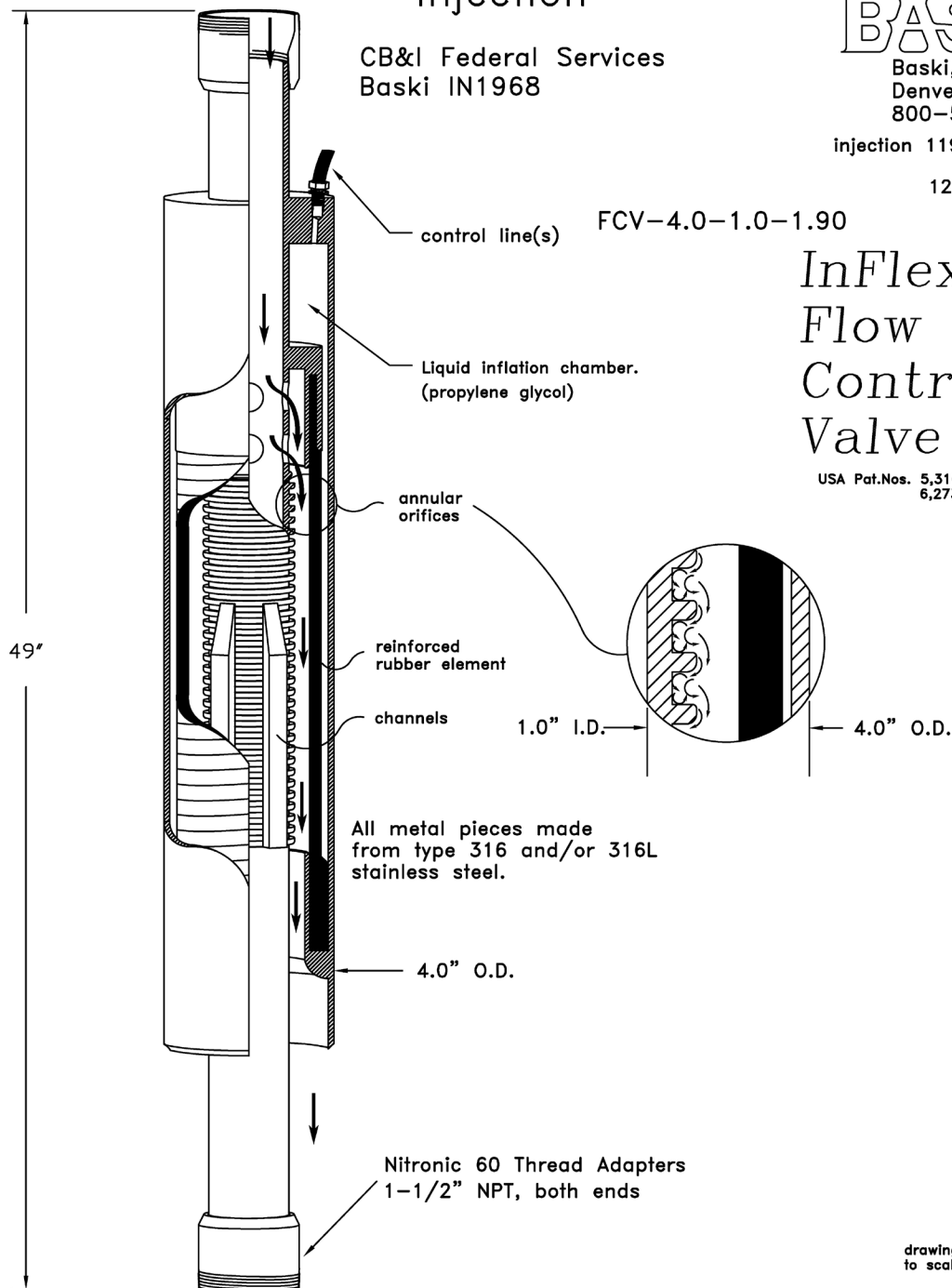
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12/16©

FCV-4.0-1.0-1.90

InFlex™ Flow Control Valve

USA Pat.Nos. 5,316,081
6,273,195





DEUTERIUM OXIDE "100%" (D, 99.96%)

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 30/09/2014

Revision date: 28/07/2015

Supersedes: 04/06/2015

Version: 4

DLM-6

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance
Substance name : DEUTERIUM OXIDE "100%" (D, 99.96%)
EC no : 231-791-2
CAS No : 7789-20-0
Product code : DLM-6
Formula : D₂O

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

No additional information available

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc.
50 Frontage Road
Andover, MA 01810
USA

USA: 1-800-322-1174 Int: 1-978-749-8000
cilsales@isotope.com www.isotope.com

Emergency telephone number

Emergency numbers:

Chemtrec: 1-800-424-9300 (24 hours)
International: 1-703-741-5970 (24 hours)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

Classification according to Directive 67/548/EEC or 1999/45/EC

Not classified

Classification (GHS-US)

Not classified

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]

No labeling applicable

GHS-US labeling

No labeling applicable

2.3. Other hazards

No additional information available

DEUTERIUM OXIDE "100%" (D, 99.96%) DLM-6

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Directive 67/548/EEC
DEUTERIUM OXIDE "100%" (D, 99.96%) (Main constituent)	(CAS No) 7789-20-0 (EC no) 231-791-2	100	Not classified
Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
DEUTERIUM OXIDE "100%" (D, 99.96%) (Main constituent)	(CAS No) 7789-20-0 (EC no) 231-791-2	100	Not classified

Full text of R-, H- and EUH-phrases: see section 16

Name	Product identifier	%	Classification (GHS-US)
DEUTERIUM OXIDE "100%" (D, 99.96%) (Main constituent)	(CAS No) 7789-20-0	100	Not classified

Full text of H-phrases: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : If not breathing give artificial respiration.
First-aid measures after ingestion : Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Special hazards arising from the substance or mixture

Reactivity : Not available.

5.3. Advice for firefighters

Firefighting instructions : The product itself does not burn.
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3. Methods and material for containment and cleaning up

For containment : Wipe up with absorbent material (e.g. cloth, fleece).

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

DEUTERIUM OXIDE "100%" (D, 99.96%) DLM-6

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Keep container tightly closed in a dry and well-ventilated place.
Storage conditions : Store at room temperature away from light and moisture.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Personal protective equipment : Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.



- Eye protection : Wear safety glasses with side shields (or goggles) and a face shield.
Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Respiratory protection : When appropriate, use NIOSH/CEN approved respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Liquid
Appearance : Liquid.
Molecular mass : 20.03
Color : Colourless.
Odor : No data available.
Odor threshold : No data available
pH : 6.0 - 8.0 at 25 °C (77 °F)
Relative evaporation rate (butyl acetate=1) : No data available
Melting point : 0.0 °C (32.0 °F)
Freezing point : No data available
Boiling point : 100.0 °C (212.0 °F)
Flash point : No data available
Self ignition temperature : No data available
Decomposition temperature : No data available
Flammability (solid, gas) : No data available
Vapor pressure : No data available
Relative vapor density at 20 °C : No data available
Relative density : No data available
Density : 1.11 g/m³ at 20 °C (68 °F)
Solubility : Water: Completely miscible
Log Pow : No data available
Log Kow : No data available
Viscosity, kinematic : No data available
Viscosity, dynamic : No data available
Explosive properties : No data available
Oxidizing properties : No data available
Explosive limits : No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Not available.

10.2. Chemical stability

Stable if stored under recommended conditions.

DEUTERIUM OXIDE "100%" (D, 99.96%) DLM-6

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Not available.

10.5. Incompatible materials

No data available.

10.6. Hazardous decomposition products

No data available.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

DEUTERIUM OXIDE "100%" (D, 99.96%) (7789-20-0)	
LD50 oral rat	> 90000 mg/kg

Skin corrosion/irritation : Not classified
No data available
pH: 6.0 - 8.0 at 25 °C (77 °F)

Serious eye damage/irritation : Not classified
No data available
pH: 6.0 - 8.0 at 25 °C (77 °F)

Respiratory or skin sensitization : Not available
No data available

Germ cell mutagenicity : Not available

Carcinogenicity : Not classified

Reproductive toxicity : Not available

Specific target organ toxicity (single exposure) : Not classified
No data available

Specific target organ toxicity (repeated exposure) : Not classified
No data available

Aspiration hazard : Not classified

Potential Adverse human health effects and symptoms : To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

DEUTERIUM OXIDE "100%" (D, 99.96%) (7789-20-0)	
Persistence and degradability	Not available.

12.3. Bioaccumulative potential

DEUTERIUM OXIDE "100%" (D, 99.96%) (7789-20-0)	
Bioaccumulative potential	Not available.

12.4. Mobility in soil

DEUTERIUM OXIDE "100%" (D, 99.96%) (7789-20-0)	
Ecology - soil	Not available.

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

Other adverse effects : Not available.

DEUTERIUM OXIDE "100%" (D, 99.96%) DLM-6

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste) : Waste materials should be disposed of under conditions which meet Federal, State, and Local environmental control regulations.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

Not applicable

14.2. UN proper shipping name

Not applicable

14.3. Additional information

Other information : No supplementary information available.

Special transport precautions : Not dangerous goods.

Overland transport

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

14.4. Environmental hazards

Other information : No supplementary information available.

14.5. Special precautions for user

Special transport precautions : Not dangerous goods.

14.6. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

No additional information available

15.2. International regulations

CANADA

DEUTERIUM OXIDE "100%" (D, 99.96%) (7789-20-0)

Listed on the Canadian DSL (Domestic Substances List) inventory.

15.2.1. National regulations

No additional information available

15.3. US State regulations

DEUTERIUM OXIDE "100%" (D, 99.96%)(7789-20-0)

State or local regulations	U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
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DEUTERIUM OXIDE "100%" (D, 99.96%) DLM-6

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 16: Other information

Other information

: This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

NFPA health hazard

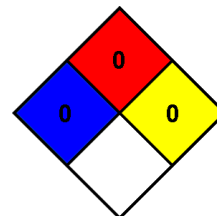
: 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard

: 0 - Materials that will not burn.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health

: 0 Minimal Hazard - No significant risk to health

Flammability

: 0 Minimal Hazard

Physical

: 0 Minimal Hazard

CIL Multi-Solvent Mixture SDS

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

FL MSD
MATERIAL SAFETY DATA SHEET

ORGANIC DYES AND PIGMENTS LLC.
65 VALLEY STREET
East Providence, Rhode Island 02914-0258

Telephone No. (401) 434-3300

Trade Name...: ORCOACID FLUORESCIENE CRUDE 86%
Chemical Name: XANTHENE DYE
Synonyms.....: ACID YELLOW DYE

Product No: 310730R1E1

1. HAZARDOUS INGREDIENTS

Material: OSHA 29 CFR 1910.1200 HAZARDOUS COMMUNICATION STANDARD
WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN THE AIR.

Warning.: OVEREXPOSURE TO THIS PRODUCT MAY CAUSE SLIGHT IRRITATION OF EYES AND SKIN.

2. PHYSICAL DATA

Appearance.....: DEEP AMBER POWDER.
Odor.....: SLIGHTLY AROMATIC.
Solubility in Water: SOLUBLE.

3. FIRE AND EXPLOSION HAZARD DATA

Flash Point and Method.....: N.A.

Flammable Limits LEL: N.A. UEL: N.A.

Extinguishing Media.....: WATER SPRAY, DRY CHEMICALS, FOAM OR CARBON DIOXIDE.

Special Fire Fighting Procedures...: FIREFIGHTERS SHOULD WEAR FULL-FACE, SELF-CONTAINED BREATHING APPARATUS AND IMPERVIOUS PROTECTIVE CLOTHING.

Unusual Fire and Explosion Hazards: NONE EXPECTED, BUT AVOID THE BUILD UP OF DYE DUST CLOUDS WHICH COULD BE EXPLOSIVE, AS OTHER ORGANIC POWDERS ARE.

NFPA Fire Hazards Code

Health.....: 1	Minimal...0
Fire.....: 1	Slight....1
Reactivity..: 0	Moderate..2
Specific...: N.A.	Serious...3
	Severe....4

4. HEALTH HAZARD DATA

LD50 Oral (Ingestion).....: 4738 MG/KG (MOUSE) 6721 MG/KG (RAT)
LD50 Dermal (Skin Contact): N.E.
LC50 (Inhalation).....: N.E.
Primary Route of Exposure.: N.E.
Threshold Limit Value.....: N.E.

Effects of Overexposure

Acute: SLIGHT IRRITATION OF EYES AND/OR SKIN.

Chronic: NO CHRONIC ILL EFFECTS KNOWN.

5. EMERGENCY AND FIRST AID PROCEDURES

Eyes.....: IMMEDIATE AND CONTINUOUS IRRIGATION WITH FLOWING WATER FOR AT
LEAST FIFTEEN MINUTES. CONSULT PHYSICIAN IF IRRITATION OCCURS.
Skin.....: IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER. WASH WELL WITH SOAP
AND WATER. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
Ingestion.: IF CONSCIOUS, GIVE TWO GLASSES OF WATER TO DILUTE. INDUCE
VOMITING ONLY IF ADVISED BY POISON CONTROL CENTER.
Inhalation: REMOVE TO FRESH AIR. IF EFFECTS OCCUR, CONSULT PHYSICIAN.

6. PHYSICAL HAZARDS

Precautions: MAINTAIN GOOD HOUSEKEEPING TO AVOID DUST BUILD UP. AVOID INGESTION,
EYE AND SKIN CONTACT. MINIMIZE INHALATION EXPOSURE BY USING DUST RESPIRATOR.
WASH HANDS AFTER WEIGHING DYE TO AVOID CONTACT OF THE SKIN OR EYES WITH
CONTAMINATED HANDS. A SENSITIZED INDIVIDUAL SHOULD NOT BE EXPOSED TO THE PRODUCT
WHICH CAUSED THE SENSITIZATION.

7. SPECIAL PROTECTION INFORMATION

Ventilation.....: USE LOCAL EXHAUST VENTILATION TO MINIMIZE EXPOSURE.
Respiratory.....: A NIOSH/MSHA APPROVED DUST RESPIRATOR SHOULD BE WORN.
Eye Protection...: WEAR SIDE-SHIELD SAFETY GLASSES OR CHEMICAL SAFETY GOGGLES.

Protective Gloves: WEAR IMPERVIOUS GLOVES AS A STANDARD HANDLING PROCEDURE.

Other.....: DELUGE SAFETY SHOWER, EYE WASH STATION, PROTECTIVE CLOTHING.

All chemicals should be handled so as to prevent eye contact and excessive or repeated skin contact. Appropriate eye and skin protection should be employed. Inhalation of dusts and vapors should be avoided.

8. CHEMICAL REACTIVITY

Stability.....: STABLE UNDER NORMAL STORAGE CONDITIONS.

Incompatability (Materials to Avoid): OXIDIZING AND REDUCING AGENTS.

Hazardous Decomposition Products.....: BURNING WILL PRODUCE OXIDES OF CARBON, NITROGEN AND SULFUR.

Hazardous Polymerization.....: WILL NOT OCCUR UNDER NORMAL CONDITIONS.

9. STORAGE INFORMATION

Precautions To Be Taken In Handling And Storing: AVOID BREATHING DUST. AVOID CONTACT WITH EYES AND SKIN. WASH THOROUGHLY AFTER HANDLING. STORE IN A DRY PLACE AWAY FROM EXCESSIVE HEAT, IN ORIGINAL OR SIMILAR WATERPROOF CONTAINERS. RESEAL CONTAINERS IMMEDIATELY AFTER USE.

10. SPILL, LEAK AND DISPOSAL INFORMATION

Accidental Release Measures: UTILIZE RECOMMENDED PROTECTIVE CLOTHING AND RESPIRATORY PROTECTION. MIX MATERIAL WITH SWEEPING COMPOUND TO MINIMIZE DUSTING WHILE SWEEPING UP AND CONTAINING. VACUUM CONTAMINATED AREA.

Disposal Considerations.....: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL ENVIRONMENTAL CONTROL REGULATIONS. EMPTIED CONTAINERS RETAIN PRODUCT RESIDUE AND SHOULD NOT BE DISTRIBUTED, MADE AVAILABLE, FURNISHED OR REUSED

FL MSD
EXCEPT FOR STORAGE AND SHIPMENT OF ORIGINAL PRODUCT.

: ORCOACID FLUORESCIENE CRUDE 86% Page 3 of 4

11. SHIPPING INFORMATION

DOT Shipping Name.....: NOT REGULATED.

Technical Shipping Name.....: NOT APPLICABLE.

DOT Hazard Classification

Primary.....: NOT APPLICABLE.

Secondary.....: NOT APPLICABLE.

Freight Classification.....: NOT REGULATED.

UN Number.....: NOT APPLICABLE.

IMO Hazard Class.....: NOT APPLICABLE.

DOT Labels Required.....: COMMUNITY RIGHT TO KNOW LABEL.

EPA/DOT Hazardous Substances Rq: NOT APPLICABLE.

12. OTHER GOVERNMENT REGULATIONS

TSCA: ALL COMPONENTS OF THIS PRODUCT ARE IN COMPLIANCE WITH THE TOXIC SUBSTANCE CONTROL ACT.

13. ADDITIONAL COMMENTS

Practices: HANDLE WITH DUE CARE AND MINIMIZE EXPOSURE IN ACCORDANCE WITH GOOD INDUSTRIAL HYGIENE PRACTICE.

DISCLAIMER

Information contained herein is, to our best knowledge, true and accurate. It is offered for information only, as we cannot guarantee the results of processes not under our direct control.

Prepared by...: CANDACE G. TURNER

Telephone No.: (401) 434-3300

FL MSD

Date.....: JUNE 9, 2012

Supersedes MSDS Dated: MAY 11, 2011

: ORCOACID FLUORESCIENE CRUDE 86% Page 4 of 4

N.E. - Not Established
N.A. - Not Applicable

→

SAFETY DATA SHEET

1. Identification

Product identifier: Potassium iodide

Other means of identification

Product No.: 1112, 3164, 3162, 1127, 1123, 1115

Recommended use and restriction on use

Recommended use: Not available.

Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company Name: Avantor Performance Materials, Inc.
Address: 3477 Corporate Parkway, Suite 200
Center Valley, PA 18034

Telephone: Customer Service: 855-282-6867

Fax:
Contact Person: Environmental Health & Safety
e-mail: info@avantormaterials.com

Emergency telephone number:

24 Hour Emergency: 908-859-2151

Chemtrec: 800-424-9300

2. Hazard(s) identification

Hazard classification

Health hazards

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2B
Toxic to reproduction	Category 2
Specific target organ toxicity - single exposure	Category 3
Specific target organ toxicity - repeated exposure	Category 1

Label elements

Hazard symbol:



Signal word: Danger

Hazard statement: Causes skin irritation.
Causes eye irritation.
May cause respiratory irritation.
Suspected of damaging the unborn child.
Causes damage to organs through prolonged or repeated exposure.

Precautionary statement

Prevention:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
Response:	IF exposed or concerned: Get medical advice/attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Storage:	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal:	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: None.

3. Composition/information on ingredients

Substances

Chemical identity	Common name and synonyms	CAS number	Content in percent (%)*
POTASSIUM IODIDE		7681-11-0	99 - 100%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information:	Ensure that emergency personnel are aware of the material involved, and take precautions to protect themselves.
Ingestion:	Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.
Inhalation:	Move to fresh air. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact:	Wash the skin immediately with soap and water. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse.
Eye contact:	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation persists after washing. In case of irritation from airborne exposure, move to fresh air.

Most important symptoms/effects, acute and delayed

Symptoms: Irritating to eyes, respiratory system and skin.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General fire hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical: During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: See Section 8 of the MSDS for Personal Protective Equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unauthorized personnel away.

Methods and material for containment and cleaning up: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures: Stop the flow of material, if this is without risk. Dike for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

Environmental precautions: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling: Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required. Avoid contact with eyes, skin, and clothing. Avoid inhalation of dust. Do not taste or swallow. Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities: Keep away from food, drink and animal feeding stuffs. Store in tightly closed original container in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Chemical identity	Type	Exposure Limit values	Source
POTASSIUM IODIDE - Inhalable fraction and vapor.	TWA	0.01 ppm	US. ACGIH Threshold Limit Values (2011)
POTASSIUM IODIDE - Particulate.	ST ESL	50 µg/m ³	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010)
	AN ESL	5 µg/m ³	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010)

Appropriate engineering controls

Adequate ventilation should be provided so that exposure limits are not exceeded.

Individual protection measures, such as personal protective equipment

General information:	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area.
Eyeface protection:	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection:	Wear protective gloves.
Other:	Wear suitable protective clothing.
Respiratory protection:	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Hygiene measures:	Provide eyewash station and safety shower. Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Wash contaminated clothing before reuse.

9. Physical and chemical properties

Appearance

Physical state:	Solid
Form:	Granules or powder
Color:	Colorless or white
Odor:	No data available.
Odor threshold:	No data available.
pH:	7 - 9 Aqueous solution is neutral or usually slightly alkaline.
Melting point/freezing point:	681 °C
Initial boiling point and boiling range:	1,323 °C
Flash Point:	No data available.
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	Estimated < 0.0000001 kPa (25 °C)
Vapor density:	No data available.
Relative density:	3.13
Solubility(ies)	
Solubility in water:	1.43 g/l
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

Other information

Molecular weight:	166.02 g/mol (IK)
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10. Stability and reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Hazardous polymerization does not occur.
Conditions to avoid:	Exposure to air. Moisture. Light.
Incompatible materials:	Strong oxidizing agents. Chlorinated compounds. Inorganic salts. Acids.
Hazardous decomposition products:	Halogens. Oxides of potassium.

11. Toxicological information

Information on likely routes of exposure

Ingestion:	May cause irritation of the gastrointestinal tract.
Inhalation:	May cause irritation to the respiratory system.
Skin contact:	Causes skin irritation.
Eye contact:	Causes eye irritation.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral	
Product:	No data available.
Dermal	
Product:	No data available.
Inhalation	
Product:	No data available.

Repeated dose toxicity

Product: No data available.

Skin corrosion/irritation

Product: Causes skin irritation.

Serious eye damage/eye irritation

Product: Causes eye irritation.

Respiratory or skin sensitization

Product: Not a skin sensitizer.

Carcinogenicity

Product: This substance has no evidence of carcinogenic properties.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ cell mutagenicity
In vitro

Product: No mutagenic components identified

In vivo

Product: No mutagenic components identified

Reproductive toxicity

Product: May damage fertility or the unborn child.

Specific target organ toxicity - single exposure

Product: Respiratory tract irritation.

Specific target organ toxicity - repeated exposure

Product: Thyroid - Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard

Product: Not classified

Other effects: None known.

12. Ecological information

Ecotoxicity:
Acute hazards to the aquatic environment:
Fish

Product: No data available.

Specified substance(s):

POTASSIUM IODIDE LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 96 h): 896 mg/l Mortality

Aquatic invertebrates

Product: No data available.

Specified substance(s):

POTASSIUM IODIDE LC 50 (Zebra mussel (*Dreissena polymorpha*), 24 h): 220 - 313 mg/l
Mortality

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and degradability

Biodegradation

Product: There are no data on the degradability of this product.

BOD/COD ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration factor (BCF)

Product: No data available on bioaccumulation.

Partition coefficient n-octanol / water (log Kow)

Product: No data available.

Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

POTASSIUM IODIDE No data available.

Other adverse effects: The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

13. Disposal considerations

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws.

Contaminated packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated.

IMDG

Not regulated.

IATA

Not regulated.

15. Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

None present or none present in regulated quantities.

Superfund amendments and reauthorization act of 1986 (SARA)

Hazard categories

☒ Acute (Immediate) ☒ Chronic (Delayed) ☐ Fire ☐ Reactive ☐ Pressure Generating

SARA 302 Extremely hazardous substance

None present or none present in regulated quantities.

SARA 304 Emergency release notification

None present or none present in regulated quantities.

SARA 311/312 Hazardous chemical

Chemical identity	Threshold Planning Quantity
POTASSIUM IODIDE	500 lbs

SARA 313 (TRI reporting)

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US state regulations

US. California Proposition 65

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

No ingredient regulated by NJ Right-to-Know Law present.

US. Massachusetts RTK - Substance List

No ingredient regulated by MA Right-to-Know Law present.

US. Pennsylvania RTK - Hazardous Substances

No ingredient regulated by PA Right-to-Know Law present.

US. Rhode Island RTK

No ingredient regulated by RI Right-to-Know Law present.

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EU EINECS List:	On or in compliance with the inventory
EU ELINCS List:	Not in compliance with the inventory.
Japan (ENCS) List:	Not in compliance with the inventory.
EU No Longer Polymers List:	Not in compliance with the inventory.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	On or in compliance with the inventory
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.

16. Other information, including date of preparation or last revision

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

Issue date:	03-06-2014
Revision date:	No data available.
Version #:	1.0
Further information:	No data available.

Disclaimer:

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SAFETY DATA SHEET

1. Identification

Product identifier: AMMONIUM PHOSPHATE DIBASIC

Other means of identification

Product No.: 0784

Recommended use and restriction on use

Recommended use: Not available.

Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company Name: Avantor Performance Materials, Inc.
Address: 3477 Corporate Parkway, Suite 200
Center Valley, PA 18034

Telephone: Customer Service: 855-282-6867

Fax:
Contact Person: Environmental Health & Safety
e-mail: info@avantormaterials.com

Emergency telephone number:

24 Hour Emergency: 908-859-2151

Chemtrec: 800-424-9300

2. Hazard(s) identification

Hazard classification

Health hazards

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Specific target organ toxicity - single exposure	Category 3

Environmental hazards

Acute hazards to the aquatic environment	Category 3
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Label elements

Hazard symbol:



Signal word: Warning

Hazard statement: Causes serious eye irritation.
Causes skin irritation.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Harmful to aquatic life.

Precautionary statement

Prevention:	Wash hands thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Avoid release to the environment.
Response:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Storage:	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal:	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: None.

3. Composition/information on ingredients

Substances

Chemical identity	Common name and synonyms	CAS number	Content in percent (%)*
AMMONIUM PHOSPHATE DIBASIC		7783-28-0	98 - 100%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information:	Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
Ingestion:	Call a physician or poison control center immediately. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Inhalation:	Move to fresh air. Call a physician or poison control center immediately. If breathing stops, provide artificial respiration.
Skin contact:	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician or poison control center immediately. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.
Eye contact:	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Symptoms: Irritating to eyes, respiratory system and skin.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General fire hazards: In case of fire and/or explosion do not breathe fumes.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical: Contact with metals may evolve flammable hydrogen gas. Fire may produce irritating, corrosive and/or toxic gases.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Keep unauthorized personnel away. Use personal protective equipment. See Section 8 of the MSDS for Personal Protective Equipment. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods and material for containment and cleaning up: Sweep up and place in a clearly labeled container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures: Dike for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk. Inform authorities if large amounts are involved.

Environmental precautions: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling: Use personal protective equipment as required. Do not breathe mist or vapor. Do not taste or swallow. Do not eat, drink or smoke when using the product. Use only with adequate ventilation. Wash hands thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment. Avoid contact with eyes. Avoid contact with skin.

Conditions for safe storage, including any incompatibilities: Do not store in metal containers. Store in a dry place. Store in a well-ventilated place. Store locked up. Keep container tightly closed.

8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None of the components have assigned exposure limits.

Appropriate engineering controls

No data available.

Individual protection measures, such as personal protective equipment

General information:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area.

Eyeface protection:

Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Hand protection:

Chemical resistant gloves

Other:

Wear suitable protective clothing.

Respiratory protection:

In case of inadequate ventilation use suitable respirator.

Hygiene measures:

Provide eyewash station and safety shower. Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. Do not eat, drink or smoke when using the product. Wash contaminated clothing before reuse.

9. Physical and chemical properties

Appearance

Physical state:

Solid

Form:

Crystals or powder.

Color:

White

Odor:

Odorless

Odor threshold:

No data available.

pH:

Approximate 8

Melting point/freezing point:

155 °C Decomposes

Initial boiling point and boiling range:

No data available.

Flash Point:

No data available.

Evaporation rate:

No data available.

Flammability (solid, gas):

No data available.

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%):

No data available.

Flammability limit - lower (%):

No data available.

Explosive limit - upper (%):

No data available.

Explosive limit - lower (%):

No data available.

Vapor pressure:

No data available.

Vapor density:

No data available.

Relative density:

1.62 (20 °C)

Solubility(ies)

Solubility in water:

588 g/l

SDS_US - SDS000001608

Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.
Other information	
Molecular weight:	132.06 g/mol (H ₃ N.1/2H ₃ O ₄ P)

10. Stability and reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Hazardous polymerization does not occur.
Conditions to avoid:	Heat, sparks, flames. Contact with air. Contact with incompatible materials.
Incompatible materials:	Sodium hypochlorite.
Hazardous decomposition products:	ammonia oxides of phosphorus

11. Toxicological information

Information on likely routes of exposure

Ingestion:	May be harmful if swallowed. May cause irritation of the gastrointestinal tract.
Inhalation:	May be harmful if inhaled. May cause drowsiness or dizziness.
Skin contact:	Causes skin irritation.
Eye contact:	Causes serious eye irritation.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral	
Product:	No data available.
Dermal	
Product:	No data available.
Inhalation	
Product:	No data available.
Repeated dose toxicity	
Product:	No data available.

Skin corrosion/irritation	
Product:	Causes skin irritation.

Serious eye damage/eye irritation	
Product:	Causes serious eye irritation.

Respiratory or skin sensitization	
Product:	Not a skin sensitizer.

Carcinogenicity

Product: This substance has no evidence of carcinogenic properties.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ cell mutagenicity

In vitro

Product: No mutagenic components identified

In vivo

Product: No mutagenic components identified

Reproductive toxicity

Product: No components toxic to reproduction

Specific target organ toxicity - single exposure

Product: Respiratory tract irritation.

Specific target organ toxicity - repeated exposure

Product: No data available.

Aspiration hazard

Product: Not classified

Other effects: None known.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

AMMONIUM
PHOSPHATE DIBASIC
LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 96 h): 252 mg/l Mortality
LC 50 (Fathead minnow (Pimephales promelas), 96 h): 33 mg/l Mortality

Aquatic invertebrates

Product: No data available.

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and degradability

Biodegradation

Product: There are no data on the degradability of this product.

BOD/COD ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration factor (BCF)

Product: No data available on bioaccumulation.

Partition coefficient n-octanol / water (log Kow)

Product: No data available.

Mobility in soil: The product is water soluble and may spread in water systems.

Other adverse effects: Harmful to aquatic organisms.

13. Disposal considerations

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws. Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Contaminated packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated.

IMDG

Not regulated.

IATA

Not regulated.

15. Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

None present or none present in regulated quantities.

Superfund amendments and reauthorization act of 1986 (SARA)

Hazard categories

☒ Acute (Immediate) ☐ Chronic (Delayed) ☐ Fire ☐ Reactive ☐ Pressure Generating

SARA 302 Extremely hazardous substance

None present or none present in regulated quantities.

SARA 304 Emergency release notification

None present or none present in regulated quantities.

SARA 311/312 Hazardous chemical

Chemical identity	Threshold Planning Quantity
AMMONIUM PHOSPHATE DIBASIC	500 lbs

SARA 313 (TRI reporting)

Chemical identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
AMMONIUM PHOSPHATE DIBASIC	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US state regulations
US. California Proposition 65

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

No ingredient regulated by NJ Right-to-Know Law present.

US. Massachusetts RTK - Substance List

No ingredient regulated by MA Right-to-Know Law present.

US. Pennsylvania RTK - Hazardous Substances

No ingredient regulated by PA Right-to-Know Law present.

US. Rhode Island RTK

No ingredient regulated by RI Right-to-Know Law present.

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory
Japan (ENCS) List:	On or in compliance with the inventory
China Inv. Existing Chemical Substances:	Not in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	On or in compliance with the inventory
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.

16. Other information, including date of preparation or last revision

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

Issue date: 08-21-2014

Revision date: No data available.

Version #: 1.0

Further information: No data available.

Disclaimer: THE INFORMATION PRESENTED IN THIS MATERIAL SAFETY DATA SHEET (MSDS/SDS) WAS PREPARED BY TECHNICAL PERSONNEL BASED ON DATA THAT THEY BELIEVE IN THEIR GOOD FAITH JUDGMENT IS ACCURATE. HOWEVER, THE INFORMATION PROVIDED HEREIN IS PROVIDED "AS IS," AND AVANTOR PERFORMANCE MATERIALS MAKES AND GIVES NO REPRESENTATIONS OR WARRANTIES WHATSOEVER, AND EXPRESSLY DISCLAIMS ALL WARRANTIES REGARDING SUCH INFORMATION AND THE PRODUCT TO WHICH IT RELATES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION(>,<)> WARRANTIES OF ACCURACY, COMPLETENESS, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY, STABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS MSDS/SDS IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PROPERLY TRAINED PERSON USING THIS PRODUCT, AND IS NOT INTENDED TO BE COMPREHENSIVE AS TO THE MANNER AND CONDITIONS OF USE, HANDLING, STORAGE, OR DISPOSAL OF THE PRODUCT. INDIVIDUALS RECEIVING THIS MSDS/SDS MUST ALWAYS EXERCISE THEIR OWN INDEPENDENT JUDGMENT IN DETERMINING THE APPROPRIATENESS OF SUCH ISSUES. ACCORDINGLY, AVANTOR PERFORMANCE MATERIALS ASSUMES NO LIABILITY WHATSOEVER FOR THE USE OF OR RELIANCE UPON THIS INFORMATION. NO SUGGESTIONS FOR USE ARE INTENDED AS, AND NOTHING HEREIN SHALL BE CONSTRUED AS, A RECOMMENDATION TO INFRINGE ANY EXISTING PATENTS OR TO VIOLATE ANY FEDERAL, STATE, LOCAL, OR FOREIGN LAWS. AVANTOR PERFORMANCE MATERIALS REMINDS YOU THAT IT IS YOUR LEGAL DUTY TO MAKE ALL INFORMATION IN THIS MSDS/SDS AVAILABLE TO YOUR EMPLOYEES.



SAFETY DATA SHEET



1. IDENTIFICATION OF MATERIAL AND SUPPLIER

Product Identifier: Wilclear Plus® Lactate with Accelerite®
Recommended Use: In-situ Bioremediation
Recommended Restrictions: none known

Supplier Name: JRW Bioremediation, LLC
Address: 14321 W. 96th Terrace
Lenexa, KS 66215
Telephone: 913-438-5544
EMERGENCY Telephone: 800-779-5545 x 116 (Mon-Fri 9am-5pm CST)
913-961-6644 (afterhours)

2. HAZARD IDENTIFICATION

Health & Physical Hazards:

This product contains no substances in their current physical state that are considered to be hazardous to health and has a low order of toxicity. While the chemical, physical, and toxicological properties have not been thoroughly examined, no acute or delayed symptoms or effects have been observed to date.

Flammability Hazards:

This is a Non-Flammable liquid but it is recommended to avoid temperatures above 150°C.

Reactivity Hazards:

This product is considered stable. Thermal decomposition may lead to release of irritating gases and vapors. Hazardous polymerization is not expected to occur. Fermentation can occur when diluted with water.

OSHA Hazards:

This material is not considered hazardous by OSHA. No labels or signage are known to be required.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Components	CAS #	% by Weight
Sodium lactate	72-17-3	33-40%
Sodium propionate	137-40-6	0-8%
Sodium acetate	127-09-3	0-8%
Sodium butyrate	156-54-7	0-8%
Total sodium carboxylates		45-50%
Carbohydrates & fermentation metabolites	68476-78-8	15-20%
Water	7732-18-5	40%

4. FIRST-AID MEASURES

Inhalation:

Inhalation of mist may cause mild irritation of respiratory system. Move to fresh air.

Skin Contact:

In case of contact with skin, immediately wash with plenty of soap and water while removing contaminated clothing. Seek medical attention if skin irritation develops or persists.

Eye Contact:

In case of contact with eyes, immediately flush eyes with water for at least 15 minutes, lifting eyelids to facilitate irrigation. Get medical attention if necessary.

Ingestion:

If swallowed, get medical attention.

Signs and symptoms of exposure:

Mild irritation to skin and eyes upon contact; mild irritation to respiratory system upon inhalation.

Medical Conditions aggravated by exposure:

None determined. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:	Water, carbon dioxide, or dry chemical.
Unsuitable Extinguishing Media:	Do not use heavy water stream as it may spread or scatter.
Specific hazards from substance/mixture:	Thermal decomposition may lead to release of irritating or toxic gases and vapors.
General fire hazards:	No unusual fire or explosion hazards noted

Special protective equipment / precautions for fire-fighters:

Wear full protective clothing and positive pressure breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Methods and Materials for containment and clean up:

Contain spill with absorbent materials such as vermiculite or soil; shovel and place material in drum for disposal. Flush area with water. Surfaces may become slippery after spillage. Dispose of according to all local, state, and federal regulations at an approved waste treatment facility.

Personal precautions / Protective equipment:

Use personal protective equipment. Prevent spills, contamination, and leakage.

Environmental precautions:

No special environmental precautions required.

7. HANDLING AND STORAGE

Precautions for safe handling:

Observe good work and industrial hygiene practices. Use personal protective equipment. Avoid contact with skin, eyes, and clothing. Avoid breathing mists and vapors. Wash hands after use of this product. Do not eat, drink, or smoke while using product. Prevent spills, contamination, and leakage.

Conditions for safe storage, including any incompatibilities:

Keep container tightly closed. Keep in properly labeled containers. Store in a well ventilated, cool, dry area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters:	No exposure or biological limits noted for ingredients(s).
Appropriate engineering controls:	Use adequate mechanical ventilation, especially in confined spaces. Temperatures best kept below 150 ⁰ C.
Individual protection measures, such as Personal Protective Equipment (PPE):	
Eye/Face protection:	Chemical goggles recommended.
Skin / hand / body protection:	Chemical resistant gloves recommended. Suitable protective clothing as defined by employer.
Respiratory protection:	None required under normal use in well ventilated area.
General considerations:	Use good industrial hygiene and best safety practices. When using material, do not eat, drink, or smoke. Remove and wash any contaminated clothing before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	light to medium brown
Physical state:	liquid
Odor:	slight sweet yeast-like aroma
Odor threshold:	not applicable
pH:	not determined
Melting point/freezing point:	not determined
Initial boiling point:	>100°C
Closed cup Flash point:	not applicable
Evaporation rate:	not determined
Flammability (solid, gas):	not determined
Upper/lower flammability or explosive limits:	not determined
Vapor pressure (Mg Hg):	not determined
Vapor density (air = 1):	not determined
Density:	not determined
Viscosity	not determined
Solubility in water:	completely soluble
Auto-ignition temperature:	not determined
Specific Gravity (H₂O = 1):	>1

10. STABILITY AND REACTIVITY

Reactivity:	Non-reactive under conditions of normal use, storage & transport.
Chemical stability:	Stable under conditions of normal use, storage and transport.
Possibility of hazardous reactions:	Hazardous polymerization will not occur.
Conditions to avoid:	Temperatures above >150 ⁰ C.
Incompatible materials:	Fermentation can occur when diluted with water.
Hazardous decomposition products:	Thermal decomposition may lead to release of irritating gases and vapors.

11. TOXICOLOGICAL INFORMATION

No adverse health effects are expected if the product is used as intended and in accordance with this Safety Data Sheet.

Inhalation:	Inhalation of mist may cause mild irritation of respiratory system. Move to fresh air.
Ingestion:	If swallowed, get medical attention.
Skin:	In case of contact with skin, immediately wash with plenty of soap and water while removing contaminated clothing. May cause mild irritation. Seek medical attention if skin irritation develops or persists.
Eye contact:	In case of contact with eyes, immediately flush eyes with water for at least 15 minutes, lifting eyelids to facilitate irrigation. Get medical attention if necessary.
Signs & symptoms of exposure:	Mild irritation to skin and eyes upon contact; mild irritation to respiratory system upon inhalation.
Carcinogenicity:	Contains no known ingredient listed as carcinogen.
Mutagenicity:	No known effect.
Reproductive Toxicity:	No known effect.

12. ECOLOGICAL INFORMATION

Ecotoxicity:	Product is not considered environmentally hazardous and is not expected to cause significant harm to aquatic, animal, or plant life.
Persistence/degradability:	Readily biodegradable.
Bioaccumulative potential:	Not expected to bioconcentrate or bioaccumulate.
Mobility in soil:	No specific information available.

13. DISPOSAL CONSIDERATIONS

Disposal Methods:

Contain spill with absorbent materials such as clay or soil and shovel and place material in drum for disposal. Surfaces may become slippery after spillage. Dispose of according to all local, state, and federal regulations at an approved waste treatment facility.

14. TRANSPORTATION INFORMATION

DOT hazard class:	Not Applicable, non-regulated
Labeling:	Not Applicable
Proper Shipping Name:	Wilclear® Sodium Lactate 60% Solution
NMFC#:	46400.02
Class	70

15. REGULATORY INFORMATION

Restrictions on use:	None.
Other regulations:	No information available or not applicable.

16. OTHER INFORMATION

The information in this SDS summarizes to the best of our knowledge at the date of issue, the chemical health and safety hazards of this material and general guidance for safe handling, use, processing, storage, transportation, disposal, and release. This information is not intended to be considered a warranty or quality specifications. The information contained relates only to the specific material designated and may not be valid if used in conjunction with other materials or in any other processes other than intended use. If further clarification or information is required, please contact JRW Bioremediation.

Safety Data Sheet

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: DHC microbial consortium (SDC-9)

Manufacturer CB&I 17 Princess Road, Lawrenceville,
NJ 08648. Phone (609) 895-5340

CAS #: N/A (Not Applicable)

Product Use: For remediation of contaminated groundwater (environmental applications).

Material Description: Non-toxic, naturally occurring, non-pathogenic, non-genetically altered anaerobic microbes in a water-based medium.

IN CASE OF EMERGENCY CALL CHEMTREC 24 HOUR EMERGENCY RESPONSE PHONE NUMBER (800) 424-9300

SECTION 2 – COMPOSITIONS AND INFORMATION ON INGREDIENTS

Components	%	OSHA PEL	ACGIH TLV	OTHER LIMITS
Non-Hazardous Ingredients	100	N/A	N/A	N/A

DHC microbial consortium (SDC-9) comprised of microorganism of the genus *Dehalococcoides*, *Dehalogenimonas*, *Desulfovibrio*, *Desulfitobacterium*, and methanogenic archaeobacteria.

SECTION 3 – HAZARDS IDENTIFICATION

The available data indicates no known hazards associated with exposure to this product. Nevertheless, individuals who are allergic to enzymes or other related proteins should avoid exposure and handling. Health effects associated with exposure to similar organisms are listed below.

Ingestion: Ingestion of large quantities may result in abdominal discomfort including nausea, vomiting, cramps, diarrhea, and fever.

Inhalation: Hypersensitive individuals may experience breathing difficulties after inhalation of aerosols.

Skin Absorption: May cause irritation upon prolonged contact. Hypersensitive individuals may experience allergic reactions..

Eye contact: May cause irritation unless immediately rinsed.

SECTION 4 – FIRST-AID MEASURES

Ingestion: Thoroughly rinse mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Get immediate medical attention. Never give anything by mouth to an unconscious or convulsing person.

Inhalation: Get medical attention if allergic symptoms develop.

Skin Absorption: N/A

Skin Contact: Wash affected area with soap and water. Get medical attention if allergic symptoms develop.

Eye Contact: Flush eyes with plenty of water for at least 15 minutes using an eyewash fountain, if available. Get medical attention if irritation occurs.

NOTE TO PHYSICIANS: All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this material may have occurred.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammability of the Product: Non-flammable

Flash Point: N/A

Flammable Limits: N/A

Fire Hazard in Presence of Various Substances: N/A

Explosion Hazard in Presence of Various Substances: N/A

Extinguishing Media: Foam, carbon dioxide, water

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: None

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Reportable quantities (in lbs of EPA Hazardous Substances): N/A

No emergency results from spillage. However, spills should be cleaned up promptly. Absorb with an inert material and put the spilled material in an appropriate waste disposal container. All personnel involved in the cleanup must wear protective clothing and avoid skin contact. After clean-up, disinfect all cleaning materials and storage containers that come in contact with the spilled liquid.

SECTION 7 – HANDLING AND STORAGE

Avoid breathing breathe aerosol. Avoid contact with skin. Use personal protective equipment recommended in Section 8.

Keep containers tightly closed in a cool, well-ventilated area. The DHC microbial consortium (SDC-9) can be supplied in stainless steel kegs designed for maximum working pressure of 130 psi and equipped with pressure relief valves. The kegs are pressurized with Nitrogen up to the pressure of 15 psi. Do not exceed pressure of 15 psi during transfer of DHC microbial consortium (SDC-9) from kegs. Don't open keg if content of the keg is under pressure.

DHC microbial consortium (SDC-9) may be stored for up to 3 weeks at temperature 2-4°C without aeration. Avoid freezing.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Hand Protection: Rubber, nitrile, or vinyl gloves.

Eye Protection: Safety goggles or glasses with side splash shields.

Protective Clothing: Use adequate clothing to prevent skin contact.

Respiratory Protection: N95 respirator if aerosols might be generated.

Ventilation: Provide adequate ventilation to remove odors.

Other Precautions: An eyewash station in the work area is recommended.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Light greenish murky liquid. Musty odor.

Boiling Point: 100°C (water)

Specific Gravity (H₂O = 1): 0.9 - 1.1

Vapor Pressure @ 25°C: 24 mm Hg (water)

Melting Point: 0°C (water)

Vapor Density: N/A

Evaporation Rate (H₂O = 1): 0.9 - 1.1

Solubility in Water: Soluble

Water Reactive: No

pH: 6.0 - 8.0

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable

Conditions to Avoid: None

Incompatibility (Materials to Avoid): Water-reactive materials

Hazardous Decomposition Byproducts: None

SECTION 11 – TOXICOLOGICAL INFORMATION

This product contains no toxic ingredients.

SDC-9 consortium has tested negative for pathogenic microorganisms such as *Bacillus cereus*, *Listeria monocytogens*, *Salmonella* sp., Fecal Coliform, Total Coliform, Yeast and Mold and *Pseudomonas* sp.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: this material will degrade in the environment.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method: No special disposal methods are required. The material is compatible with all known biological treatment methods. To reduce odors and permanently inactivate microorganisms, mix 100 parts (by volume) of SDC-9 consortium with 1 part (by volume) of bleach. Dispose of in accordance with local, state and federal regulations.

SECTION 14 – TRANSPORT INFORMATION

DOT Classification: N/A
Labeling: NA
Shipping Name: Not regulated

SECTION 15 – REGULATORY INFORMATION

Federal and State Regulations: N/A

SECTION 16 – OTHER INFORMATION

MSDS Code: ENV 1033
MSDS Creation Date: 10/06/2003
Last Revised: August 17, 2016.

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, CB&I MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106mw 1 I-BL-091817

Site Location: Kirtland AFB, SWMU ST-106/SS-111
Well ID: KAFB-106 Mw 1 I

Date / Time Collected 9/18/17 / 1140

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump

☐ Other

Flow Rate During Purging :

250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Measuring Point

N/A, water level does

Casing ID (in.)

3-inch not fit down

Depth to Water - Initial (DTWI) (ft)

~ 476

Approximate depth of pump inlet (ft): 517 ft

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

523

Screen Interval (ft):

513-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

- ☐ Rain

- Wind

Temperature: $\sim 85^{\circ}\text{F}$

[illegible]☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 1116

Discharge: 25

First Water: 1117

psi (start): 270

GeoTech Controller #: mp10H

psi (finish): 270

YSI #: 106405

Water level #: *NA* *

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Project No.: 500433 Well ID: KAFB-106 MW2I
 Sample ID: 106 MW2I-BL-091917 Date / Time Collected: 09/19/17 / 1337
 Sample Collected by: TK, CC

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 250 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: north side casing*
 Casing ID (in.): 3-inch Approximate depth of pump inlet (ft): 517
 Depth to Water - Initial (DTWI) (ft): 476.46* Length of Casing (ft): N/A
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 * interface won't go down 3-inch well
 & dedicated pump.
 FIELD CONDITIONS: ☒ Sunny ☐ Rain ☒ Wind Temperature: 83°F, 10 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1300	<u>~250 mL / cycle</u>	<u>476.46</u>	<u>0.450</u>	<u>19.7</u>	<u>7.35</u>	<u>2.62</u>	<u>107.3</u>	<u>5.72</u>
1310			<u>0.451</u>	<u>19.5</u>	<u>7.29</u>	<u>3.19</u>	<u>37.0</u>	<u>4.20</u>
1315			<u>0.450</u>	<u>19.7</u>	<u>7.26</u>	<u>3.02</u>	<u>-57.9</u>	<u>2.93</u>
1320			<u>0.451</u>	<u>19.6</u>	<u>7.25</u>	<u>3.19</u>	<u>-95.9</u>	<u>2.08</u>
1325			<u>0.452</u>	<u>20.0</u>	<u>7.25</u>	<u>3.14</u>	<u>-111.9</u>	<u>1.82</u>
1330			<u>0.452</u>	<u>19.7</u>	<u>7.26</u>	<u>3.15</u>	<u>-119.2</u>	<u>1.74</u>
1335	<u>2.5 gal total</u>		<u>0.454</u>	<u>19.7</u>	<u>7.26</u>	<u>3.16</u>	<u>-118.1</u>	<u>1.72</u>
<u>4.76</u>								

☒ Duplicate or MS/MSD Collected: duplicate

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 Pump on: 1248
 Discharge: 24 First Water: 1249
 psi (start): 270 QED GeoTech Controller #: MP10 H
 psi (finish): 270 YSI #: 106405

Water level #: interface (solinst)
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Project No.: 500433

Well ID: KAFB-106 MW25

Sample ID: 106 MW25-BL-091917

Date / Time Collected: 09/19/17 / 1225

EQUIPMENT / NOTES

Sample Collected by: TK, CL

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

northside casing

Casing ID (in.)

4-inch

Approximate depth of pump inlet (ft): 488

Depth to Water - Initial (DTWI) (ft)

476.20*

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

463-498

taken before pump install

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

Temperature:

80°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>250 mL / cycle</u>	<u>*</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>1120</u>			<u>0.744</u>	<u>19.4</u>	<u>7.00</u>	<u>96.8</u>	<u>93.3</u>	<u>5.77</u>
<u>1139</u>			<u>0.761</u>	<u>19.5</u>	<u>6.95</u>	<u>53.2</u>	<u>-148.2</u>	<u>3.03</u>
<u>1153</u>			<u>0.763</u>	<u>19.7</u>	<u>6.94</u>	<u>12.5</u>	<u>-160.6</u>	<u>1.67</u>
<u>1202</u>			<u>0.761</u>	<u>19.7</u>	<u>6.94</u>	<u>11.1</u>	<u>-163.8</u>	<u>1.36</u>
<u>1212</u>			<u>0.765</u>	<u>19.8</u>	<u>6.94</u>	<u>6.79</u>	<u>-165.8</u>	<u>1.11</u>
<u>1217</u>			<u>0.766</u>	<u>19.9</u>	<u>6.94</u>	<u>7.70</u>	<u>-167.8</u>	<u>1.00</u>
<u>1223</u>	<u>~3 gal total</u>		<u>0.765</u>	<u>19.7</u>	<u>6.94</u>	<u>7.17</u>	<u>-167.8</u>	<u>0.98</u>

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 1104

Discharge: 22

First Water: 1106

psi (start): 270

QED

GeoTech

Controller #: MP10H

psi (finish): 270

YSI #: 106405

Water level #: inter* meter does not fit

Turbidity Meter #: FSLVE0203 & pump

Note:
 ** Water remains yellow in color.
 DO seems high for shallow well,
 YSI calibrated and reading well
 at other wells. Well purging in later readings

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-BL-091817

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063
 Date / Time Collected: 9/18/17 / 1309
 Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: North side casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 480.24 ft
 Depth to Well Bottom (ft): 523
 Screen Interval (ft): 508-523
 Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind Temperature: ~85°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1213		480.24	0.549	21.5	7.4	1.05	207.1	6.78
1216		1	0.546	21.0	7.35	1.36	206.5	6.44
1219		1	0.546	20.9	7.33	3.01	205.9	6.13
1223		480.24	0.545	20.9	7.31	1.09	203.6	5.8
1226		1	0.544	20.6	7.3	1.05	202.6	5.39
1231		1	0.544	20.7	7.28	1.27	199.2	5.06
1235		1	0.544	21.1	7.28	1.02	198.8	4.74
1246		480.23	0.544	20.6	7.27	0.94	148	4.86
1245		1	0.540	21.0	7.26	0.89	32.8	3.54
1250		1	0.547	21.2	7.27	0.92	9.0	3.35
1256		480.23	0.546	21.0	7.24	0.83	-11.2	2.86
1300		1	0.544	20.9	7.23	0.74	-14.1	2.79
1305	2.5 gal	480.23	0.543	21.0	7.22	0.72	-13.5	2.80

☐ Duplicate or MS/MSD Collected: Stable

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 6.5

Pump on: 1205

Discharge: 21

First Water: 1206

psi (start): 298 290 xsk

QED
GeoTech Controller #: MP10H

psi (finish): 298 290 bsk

YSI #: 106405

Water level #: interface probe solvent

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-BL-091917

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106064

Date / Time Collected: 09/19/17 / 1042

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: 250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 479.45
 Depth to Well Bottom (ft): 508.513
 Screen Interval (ft): 488-508

Approximate depth of pump inlet (ft): 493

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: 70°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>245mL/cycle</u>		±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>0934</u>		<u>479.45</u>	<u>0.589</u>	<u>19.2</u>	<u>6.98</u>	<u>13.5</u>	<u>-46.3</u>	<u>3.04</u>
<u>0938</u>		<u>"</u>	<u>0.596</u>	<u>19.3</u>	<u>6.94</u>	<u>12.8</u>	<u>-85.6</u>	<u>2.42</u>
<u>0945</u>		<u>"</u>	<u>0.600</u>	<u>19.3</u>	<u>6.90</u>	<u>13.7</u>	<u>-107.7</u>	<u>1.67</u>
<u>0950</u>		<u>"</u>	<u>0.602</u>	<u>19.2</u>	<u>6.90</u>	<u>13.6</u>	<u>-115.1</u>	<u>1.40</u>
<u>0955</u>		<u>"</u>	<u>0.602</u>	<u>19.4</u>	<u>6.90</u>	<u>12.9</u>	<u>-125.4</u>	<u>1.11</u>
<u>1006</u>		<u>"</u>	<u>0.603</u>	<u>19.5</u>	<u>6.90</u>	<u>12.5</u>	<u>-136.4</u>	<u>0.91</u>
<u>1017</u>		<u>479.46</u>	<u>0.603</u>	<u>19.5</u>	<u>6.90</u>	<u>11.7</u>	<u>-150.0</u>	<u>0.74</u>
<u>1026</u>		<u>"</u>	<u>0.603</u>	<u>19.6</u>	<u>6.91</u>	<u>11.0</u>	<u>-157.6</u>	<u>0.64</u>
<u>1031</u>		<u>"</u>	<u>0.604</u>	<u>19.5</u>	<u>6.91</u>	<u>10.3</u>	<u>-164.0</u>	<u>0.60</u>
<u>1036</u>		<u>479.46</u>	<u>0.608</u>	<u>19.6</u>	<u>6.90</u>	<u>10.0</u>	<u>-174.0</u>	<u>0.54</u>
<u>1040</u>	<u>~4.5 gal total</u>		<u>0.607</u>	<u>19.6</u>	<u>6.90</u>		<u>-180.5</u>	<u>0.52</u>
<u>[Signature]</u>								

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 65

Pump on: 0900

Discharge: 22

First Water: 0902

psi (start): 270

QED
GeoTech Controller #: MP10H

psi (finish): 270

YSI #: 106405

Water level #: interface (solinst)

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Project No.: 500433

Well ID: KAFB-106 ~~FX~~ 2

Sample ID 106EX2-BL092617

Date / Time Collected 9/26/12 11:57

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump☐ Other

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.)

Depth to Water - Initial (DTWi) (ft)

Approximate depth of pump inlet (ft): 49.7

Depth to Well Bottom (ft)

Screen Interval (ft):

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature:

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1241		0.871	20.3	7.02	4.48	156.8	0.55
1247		0.875	20.4	7.05	2.48	157.2	0.50
1250		0.874	20.4	7.04	2.30	158.1	0.50
1255		0.873	20.4	7.04	2.27	157.8	0.50
<i>2 End</i> 9/26/17							

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: 1/50

First Water: 1150

YSI #: 100905

Water level #: *dedicated transducer*

Turbidity Meter #: FSLVE0203

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106 Ex 1-BL-092612

Well ID: KAFB-106 Ex 1

Date / Time Collected 09/26/17 / 1218

Sample Collected by: TK CL

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump☐ Other

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.)

Depth to Water - Initial (DTWi) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft):

Approximate depth of pump inlet (ft): 497

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

- ☐ Rain

☒ Wind

Temperature:

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: 1130

First Water: 1130

YSI #: 166705

Water level #: *dedicated transducer*

Turbidity Meter #: FSLVE0205

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 IN1-BL-092617

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 IN1

Date / Time Collected: 9/26/17 / 1105

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.)

Depth to Water - Initial (DTWI) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft):

Approximate depth of pump inlet (ft):

Length of Casing (ft):

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature:

~56°F, wind 15 mph

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
0943	477.04	0.738	18.6	6.91	3.38	-175.0	0.33
0953	477.07	0.734	19.4	6.95	1.95	-178.7	0.31
1003	477.12	0.736	19.8	6.98	2.02	-179.9	0.29
1014	477.15	0.739	20.0	6.99	2.15	-175.6	0.29
1023	477.16	0.742	20.0	6.99	2.20	-173.7	0.28
1033	477.18	0.741	20.1	7.00	2.21	-178.4	0.28
1043	477.20	0.743	20.4	7.00	2.29	-179.5	0.27
1053	477.22	0.736	21.1	7.00	2.78	-179.7	0.27

☐ Duplicate or MS/MSD Collected: NA

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: 0925

First Water: 0937

YSI #: 106405

Water level #: dedicated transducer

Turbidity Meter #: FSLVE0203

3 casing volume
 purged, 90 gallons

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 EX2 ^{TSK}Sample ID: 106 EX2 P2R-100417Date / Time Collected: 10/4/17 / 1553EQUIPMENT / NOTES 106 EX1Sample Collected by: TK, CL

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump☒ Other

Flow Rate During Purging:

500 mil/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 6-inchApproximate depth of pump inlet (ft): 491Depth to Water - Initial (DTWI) (ft) 482.65Length of Casing (ft): N/ADepth to Well Bottom (ft) 507Screen Interval (ft): 487 - 502Pump has been running for 2 days

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☒ Wind

Temperature:

75°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1542	482.65	0.551	20.7	7.05	6.07	-53.5	2.62
1547	482.65	0.549	20.4	7.04	1.89	-52.0	2.72
1552	482.65	0.551	20.6	7.04	1.61	-53.2	2.70

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: 10/2/17 *First Water: NAYSI #: 106405Water level #: transducerTurbidity Meter #: FSLVE 0203

* open sample port @ 1537

fluorometer
1.428 RFU

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106EX2-PIR-100417

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-406EX2

Date / Time Collected: 10/9/17/1616

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

5HP Grundfos Pump

Flow Rate During Purging:

500 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☐ No ☐

PURGING INFORMATION

Casing ID (in.): 6-inch

Approximate depth of pump inlet (ft): 491

Depth to Water - Initial (DTWI) (ft)

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 507

Screen Interval (ft): 487-502

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☒ Wind

Temperature: 75°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1602	480.19	0.929	20.7	7.11	1.10	-69.3	1.06
1607	480.19	0.917	20.6	7.11	1.68	-71.8	0.92
1613	480.19	0.918	20.6	7.12	1.70	-72.8	0.89
<u>2 km</u>							

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

*open sample port @ 1556

Pump on: 10/2/17*

First Water: N/A

YSI #: 106405

Water level #: transducer

Turbidity Meter #: FSLVE0203

fluorometer
0.0841 RFU

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1-I-P1P-100417

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW1-I

Date / Time Collected: 10/4/17, 0920

Sample Collected by: AL

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

265 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing
3"

Casing ID (in.)

Depth to Water - Initial (DTWI) (ft)

476.

- measured @
106MW1-S

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature: 70°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>~265 mL</u>	—	±10%	±10%	±10%	±10%	±10 mV	±10%
<u>0839</u>		<u>476.</u>	<u>0.467</u>	<u>18.7</u>	<u>7.53</u>	<u>2.53</u>	<u>170.9</u>	<u>7.31</u>
<u>0845</u>		—	<u>0.469</u>	<u>18.7</u>	<u>7.50</u>	<u>2.12</u>	<u>168.9</u>	<u>7.23</u>
<u>0850</u>		—	<u>0.472</u>	<u>18.7</u>	<u>7.45</u>	<u>2.36</u>	<u>167.8</u>	<u>7.39</u>
<u>0855</u>		—	<u>0.478</u>	<u>18.6</u>	<u>7.49</u>	<u>1.80</u>	<u>163.3</u>	<u>8.48</u>
<u>0901</u>		—	<u>0.475</u>	<u>18.7</u>	<u>7.52</u>	<u>2.32</u>	<u>157.7</u>	<u>7.80</u>
<u>0906</u>		—	<u>0.468</u>	<u>18.6</u>	<u>7.53</u>	<u>0.94</u>	<u>153.1</u>	<u>7.60</u>
<u>0912</u>		—	<u>0.464</u>	<u>18.5</u>	<u>7.52</u>	<u>0.85</u>	<u>145.2</u>	<u>7.79</u>
<u>AL</u>								

☐ Duplicate or MS/MSD Collected: N/A

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 sec.

Pump on: 0822

Discharge: 22 sec.

First Water: 0823 - let well purge before collecting readings.

psi (start): 260

QED

GeoTech

Controller #: MP10H-408

psi (finish): 285

YSI #: 104358

Water level #: N/A

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106MWI-5Sample ID: 106MWIS-P1R-100417Date / Time Collected: 10/4/17, 1200Sample Collected by: CU

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

210 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point

Top of casing (flush mount) * product at 476.30

Casing ID (in.)

4"

Depth to Water - Initial (DTWI) (ft)

476.31Approximate depth of pump inlet (ft): 488Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

403-498

FIELD CONDITIONS

Weather Conditions:

☐ Sunny☐ Rain☒ Windcloudy

Temperature:

70°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria			±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>1012</u>	<u>210 mL/cycle</u>	<u>476.31</u>	<u>0.691</u>	<u>19.8</u>	<u>7.12</u>	<u>10.90</u>	<u>-59.3</u>	<u>3.83</u>
<u>1022</u>		<u>"</u>	<u>0.684</u>	<u>19.7</u>	<u>7.11</u>	<u>9.42</u>	<u>-105.7</u>	<u>2.50</u>
<u>1032</u>		<u>"</u>	<u>0.689</u>	<u>19.6</u>	<u>7.13</u>	<u>7.29</u>	<u>-116.7</u>	<u>2.12</u>
<u>1042</u>		<u>"</u>	<u>0.694</u>	<u>19.5</u>	<u>7.14</u>	<u>8.18</u>	<u>-123.9</u>	<u>1.66</u>
<u>1052</u>		<u>"</u>	<u>0.694</u>	<u>19.2</u>	<u>7.14</u>	<u>6.01</u>	<u>-128.3</u>	<u>1.38</u>
<u>1102</u>		<u>Change nitrogen cylinder</u>			<u>7.1</u>		<u>-125.4</u>	<u>1.23</u>
<u>1104</u>		<u>"</u>	<u>0.700</u>	<u>20.0</u>	<u>7.15</u>	<u>12.3</u>	<u>-125.4</u>	<u>1.23</u>
<u>1114</u>		<u>"</u>	<u>0.702</u>	<u>19.5</u>	<u>7.16</u>	<u>6.49</u>	<u>-130.6</u>	<u>1.20</u>
<u>1124</u>		<u>"</u>	<u>0.704</u>	<u>19.6</u>	<u>7.16</u>	<u>7.32</u>	<u>-132.6</u>	<u>1.03</u>
<u>1134</u>		<u>"</u>	<u>0.704</u>	<u>19.4</u>	<u>7.17</u>	<u>5.85</u>	<u>-136.7</u>	<u>0.87</u>
<u>1144</u>		<u>"</u>	<u>0.707</u>	<u>19.4</u>	<u>7.17</u>	<u>5.06</u>	<u>-136.8</u>	<u>0.65</u>
<u>1151</u>		<u>"</u>	<u>0.705</u>	<u>19.5</u>	<u>7.17</u>	<u>4.24</u>	<u>-138.1</u>	<u>0.61</u>
<u>1157</u>	<u>5.5 gal</u>	<u>"</u>	<u>0.704</u>	<u>19.4</u>	<u>7.17</u>	<u>5.95</u>	<u>-140.9</u>	<u>0.54</u>

☐ Duplicate or MS/MSD Collected: N/A

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 secPump on: 0936Discharge: 20 secFirst Water: 0940 - let tubing purge before taking reading.psi (start): 270

QED

GeoTech

Controller #: MPH10-1408psi (finish): 280YSI #: 104358Water level #: 2884M Interface/solinistTurbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 mw2ISample ID 106mw2I-PIR-100417Date / Time Collected 10/4/17 / 1142EQUIPMENT / NOTESSample Collected by: TK

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☐No ☐PURGING INFORMATIONMeasuring Point north side casingCasing ID (in.) 3-inchApproximate depth of pump inlet (ft): 517Depth to Water - Initial (DTWI) (ft) ~476*Length of Casing (ft): N/ADepth to Well Bottom (ft) 528Screen Interval (ft): 517 - 523FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☒ Wind

Temperature:

~65°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1018	250 ml / Stroke	NA*	0.455	19.0	7.5	4.89	41.0	6.35
1028	"	NA	0.456	18.7	7.4	4.52	-94.9	5.01
1038	"	NA	0.517	18.7	7.28	3.45	-137.4	3.69
1048	"	NA	0.536	18.5	7.24	4.76	-144.6	3.10
1058	"	NA	0.529	18.6	7.25	4.51	-147.9	2.80
1110	"	NA	0.525	18.6	7.26	3.92	-149.8	2.60
1121	"	NA	0.521	18.6	7.26	3.95	-151.5	2.48
1130	"	NA	0.517	18.6	7.26	3.25	-152.8	2.38
1140	"	NA	0.518	18.6	7.26	3.08	-154.2	2.38

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50Pump on: 1007Discharge: 21First Water: 1008psi (start): 270QED
GeoTech Controller #: MP10Hpsi (finish): 270YSI #: 106405Water level #: NA*Turbidity Meter #: FSLVE0203

*Water level doesn't fit
in 3-inch casing & pump

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 MW15Sample ID 106 MW25-PIR-100917Date / Time Collected 10/4/17 / 0948Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point

northside casing

Casing ID (in.)

4 inchApproximate depth of pump inlet (ft): 488 ft

Depth to Water - Initial (DTWI) (ft)

~476 ft bgs*Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5 ft

Screen Interval (ft):

463-498 ft

FIELD CONDITIONS

Weather Conditions:

☐ Sunny☐ Rain☒ Wind cloudy

Temperature:

~59°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>250 mL</u>	<u>-</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>0826</u>	<u>Stroke</u>	<u>NA*</u>	<u>0.713</u>	<u>18.4</u>	<u>7.21</u>	<u>33.4</u>	<u>162.9</u>	<u>5.00</u>
<u>0838</u>	<u>"</u>	<u>NA</u>	<u>0.701</u>	<u>18.6</u>	<u>7.14</u>	<u>35.1</u>	<u>144.2</u>	<u>3.14</u>
<u>0852</u>	<u>"</u>	<u>NA</u>	<u>0.751</u>	<u>18.7</u>	<u>7.14</u>	<u>9.12</u>	<u>-166.8</u>	<u>1.76</u>
<u>0902</u>	<u>"</u>	<u>NA</u>	<u>0.757</u>	<u>18.7</u>	<u>7.19</u>	<u>7.55</u>	<u>-178.0</u>	<u>1.26</u>
<u>0912</u>	<u>"</u>	<u>NA</u>	<u>0.758</u>	<u>18.7</u>	<u>7.20</u>	<u>3.34</u>	<u>-183.2</u>	<u>1.03</u>
<u>0923</u>	<u>"</u>	<u>NA</u>	<u>0.759</u>	<u>18.6</u>	<u>7.21</u>	<u>2.15</u>	<u>-186.1</u>	<u>0.89</u>
<u>0933</u>	<u>"</u>	<u>NA</u>	<u>0.760</u>	<u>18.7</u>	<u>7.21</u>	<u>2.38</u>	<u>-188.6</u>	<u>0.78</u>
<u>0940</u>	<u>"</u>	<u>NA</u>	<u>0.760</u>	<u>18.7</u>	<u>7.21</u>	<u>2.58</u>	<u>-189.7</u>	<u>0.73</u>
<u>0947</u>	<u>"</u>	<u>NA</u>	<u>0.760</u>	<u>18.7</u>	<u>7.21</u>	<u>2.45</u>	<u>-188.9</u>	<u>0.75</u>
<u>[Signature]</u>								

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55Pump on: 0815Discharge: 22First Water: 0816psi (start): 270QED
GeoTech Controller #: MP10Hpsi (finish): 270YSI #: 106405Water level #: NA*Turbidity Meter #: FSLVE0203

*Water level water doesn't fit pump in.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106063Sample ID 106063-P1R-100417Date / Time Collected 10/4/17, 1510**EQUIPMENT / NOTES**Sample Collected by: TK

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump 160☐ Other

Flow Rate During Purging:

250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐**PURGING INFORMATION**Measuring Point northside casingCasing ID (in.) 5 inch 480.58Approximate depth of pump inlet (ft): 511Depth to Water - Initial (DTWI) (ft) ~478 to cLength of Casing (ft): N/ADepth to Well Bottom (ft) 528Screen Interval (ft): 508-523**FIELD CONDITIONS**Weather Conditions: ☒ Sunny ☐ Rain ☒ WindTemperature: ~70°F, high humidity

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1337	160 250 mL/min	480.58	0.552	20.5	7.51	0.65	75.8	6.71
1349	"	480.58	0.552	20.5	7.37	1.54	110.4	5.38
1400	"	480.58	0.548	20.3	7.29	1.00	0.6	3.92
1410	"	480.58	0.526	20.2	7.23	1.64	-9.1	2.42
1420	"	480.59	0.519	20.6	7.22	1.87	3.7	1.90
1430	"	480.59	0.515	20.1	7.22	1.45	-1.7	1.59
1440	"	480.59	0.512	20.4	7.22	1.57	-5.7	1.42
1450	"	480.59	0.511	20.5	7.23	1.47	-21.0	1.31
1500	"	480.59	0.514	20.6	7.23	2.02	-19.8	1.25
1508	"	480.59	0.512	21.0	7.23	1.98	-24.0	1.27

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50Pump on: 1326
1236 TSKDischarge: 21First Water: 1237 TSK
1327psi (start): 270

QED

GeoTech Controller #:

MP10Hpsi (finish): 270YSI #: 106405Water level #: Solinst WL meterTurbidity Meter #: FSL VE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P1R-100417

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 064

Date / Time Collected: 10/4/17, 1510

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

225 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

5"

Depth to Water - Initial (DTWI) (ft)

480.58

*as measured at 106063.

Approximate depth of pump inlet (ft): 493

Length of Casing (ft): N/A ~3 ft

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-508

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☐ Rain

☒ Wind Partly Cloudy

Temperature:

73°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>225 mL</u>	--	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1335</u>	<u>1.5L</u>	<u>480.58*</u>	<u>0.600</u>	<u>19.7</u>	<u>7.18</u>	<u>110.1</u>	<u>71.2</u>	<u>5.45</u>
<u>1350</u>		<u>—</u>	<u>0.601</u>	<u>19.6</u>	<u>7.02</u>	<u>116.4</u>	<u>83.3</u>	<u>2.74</u>
<u>1400</u>		<u>—</u>	<u>0.724</u>	<u>19.5</u>	<u>7.03</u>	<u>4.93</u>	<u>-104.0</u>	<u>1.29</u>
<u>1410</u>		<u>—</u>	<u>0.761</u>	<u>19.5</u>	<u>7.04</u>	<u>5.38</u>	<u>-114.2</u>	<u>0.79</u>
<u>1420</u>		<u>—</u>	<u>0.760</u>	<u>19.3</u>	<u>7.04</u>	<u>5.85</u>	<u>-121.4</u>	<u>0.55</u>
<u>1430</u>		<u>—</u>	<u>0.760</u>	<u>19.3</u>	<u>7.04</u>	<u>5.108</u>	<u>-126.3</u>	<u>0.43</u>
<u>1440</u>		<u>—</u>	<u>0.757</u>	<u>19.3</u>	<u>7.04</u>	<u>4.96</u>	<u>-131.2</u>	<u>0.33</u>
<u>1450</u>		<u>—</u>	<u>0.750</u>	<u>19.5</u>	<u>7.04</u>	<u>4.84</u>	<u>-137.2</u>	<u>0.26</u>
<u>1451</u>		<u>Change nitrogen cylinder.</u>						<u>0.24 α</u>
<u>1458</u>		<u>—</u>	<u>0.751</u>	<u>19.7</u>	<u>7.05</u>	<u>6.73</u>	<u>-138.5</u>	<u>0.24</u>
<u>1505</u>		<u>—</u>	<u>0.750</u>	<u>19.7</u>	<u>7.04</u>	<u>5.03</u>	<u>-138.7</u>	<u>0.22</u>

☒ Duplicate or MS/MSD Collected: 106064-P1R-100417-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 160 sec

Pump on: 1324

Discharge: 20 sec

First Water: 1328 - Let tubing purge prior to taking readings

psi (start): 270

QED

GeoTech Controller #: MPH10-1408

psi (finish): 280

YSI #: 104358

Water level #: 280409 Interface/SDinst

Turbidity Meter #: FSLVE0203

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106EX2-P1R-100617

Well ID: KAFB-106EX2

Date / Time Collected 10/6/17 / 1551

Sample Collected by: TK. CC

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump

☒ Other

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 6-inch TSK

Depth to Water - Initial (DTWi) (ft)

Approximate depth of pump inlet (ft): 491

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

Screen Interval (ft): 487 - 502

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☒ Wind

Temperature: ~80°F, 20 mph wind

[illegible]

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Sample port open @ 1532

Pump on: pump running since 9/26/17

First Water: NA

YSI #: 106405

Water level #: *transducer*

Turbidity Meter #: F5LVE0203

*note noise in transducer due to RF interference from pump.

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106EX1-P1R-100617

Well ID: KAFB-106Ex1

Date / Time Collected 10/6/17 / 1526

Sample Collected by: TK CC

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 6-in ch

Depth to Water - Initial (DTWi) (ft) 482.31

Depth to Well Bottom (ft) 507

Screen Interval (ft): $487 - 502$

Approximate depth of pump inlet (ft): 491

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

- ☐ Rain

☒ Wind

Temperature: $\sim 80^{\circ}\text{F}$, 15 mph - 20

[illegible]☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: pump running since 9/26/17

First Water: *NH*

YSI #: 106405

Water level #: *transducer*

Turbidity Meter #: FSLVE0203

Sample port open @ 1505

*note noise in transducer due to RF interference from pump.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106063Sample ID 106063-PIR-100617Date / Time Collected 10/6/17 / 0952EQUIPMENT / NOTESSample Collected by: TIC

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump☐ Other

Flow Rate During Purging :

200 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐PURGING INFORMATIONMeasuring Point northside to cCasing ID (in.) 5-inchApproximate depth of pump inlet (ft): 511Depth to Water - Initial (DTWI) (ft) 480.58Length of Casing (ft): N/ADepth to Well Bottom (ft) 528Screen Interval (ft): 508-523FIELD CONDITIONSWeather Conditions: ☐ Sunny ☐ Rain☒ Wind cloudyTemperature: 69°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0823	~200ml stroke	480.58	0.506	17.9	7.20	4.14	143.5	4.27
0833	"	"	0.504	17.8	7.18	1.73	157.1	3.48
0843	"	"	0.502	17.9	7.18	1.26	158.1	2.62
0853	"	"	0.503	18.0	7.18	1.88	141.0	1.93
0906	"	"	0.500	18.0	7.18	1.54	115.2	1.43
0916	"	"	0.499	18.2	7.19	1.68	105.0	1.23
0931	"	"	0.496	18.3	7.20	2.12	92.5	1.06
0940	"	"	0.494	18.3	7.20	1.69	83.1	1.04
0950	"	"	0.495	18.3	7.20	2.01	82.8	1.03
<i>[Signature]</i>								

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50Pump on: 0813Discharge: 22.5First Water: 0814psi (start): 270QED Controller #: MP104psi (finish): 290YSI #: 106405Water level #: Solinst probeTurbidity Meter #: FSLUE0263

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106/MW25-P1R-100617

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106/MW25

Date / Time Collected: 10/6/17 / 1142

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Measuring Point

northside casing

Casing ID (in.)

4-inch

Approximate depth of pump inlet (ft): 488

Depth to Water - Initial (DTWI) (ft) ~476*

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 500.5

Screen Interval (ft): 463-498

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☐ Rain

☒ Wind

cloudy

Temperature:

~73°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
1015	250 mL/min	~476*	0.740	18.1	7.14	27.2	125.8	3.59
1025	"	"	0.740	18.1	7.12	14.0	118.6	2.72
1035	"	"	0.768	18.2	7.18	6.8	164.0	1.69
1045	"	"	0.797	18.3	7.22	7.95	180.3	1.11
1055	"	"	0.799	18.4	7.24	4.63	185.1	0.89
1105	"	"	0.800	18.4	7.24	5.70	187.9	0.78
1115	"	"	0.802	18.5	7.25	7.01	191.1	0.65
1125	"	"	0.802	18.6	7.25	3.99	193.4	0.58
1134	"	"	0.803	18.7	7.26	4.58	195.8	0.50
1140	"	"	0.803	19.0	7.26	4.60	196.9	0.50

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 1005

Discharge: 22

First Water: 1006

psi (start): 270

QED Controller #: MP10H

psi (finish): 270

YSI #: 106405*

Water level #: Solinst

Turbidity Meter #: FSLVE0203

* Water level before pump deployment; doesn't fit with pump in.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106/mw2ISample ID: 106mw2I-PIR-100617Date / Time Collected: 10/6/17 / 1412**EQUIPMENT / NOTES**Sample Collected by: TK

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

~ 250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐**PURGING INFORMATION**Measuring Point: northside casingCasing ID (in.): 3-inchApproximate depth of pump inlet (ft): 517Depth to Water - Initial (DTWI) (ft): ~476*Length of Casing (ft): N/ADepth to Well Bottom (ft): 528Screen Interval (ft): 513-523**FIELD CONDITIONS**

Weather Conditions:

☒ Sunny☐ Rain☒ Wind

Temperature: _____

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1302	250 mL/min	~476*	0.511	19.1	7.29	11.2	68.4	3.92
1312	"	"	0.524	19.0	7.25	12.9	-64.9	3.12
1322 ⁺	"	"	0.567	19.5	7.23	7.85	-144.9	2.46
1332	"	"	0.561	19.7	7.22	5.98	-150.4	2.44
1342	"	"	0.539	19.3	7.24	5.71	-152.3	2.30
1352	"	"	0.532	19.4	7.24	5.42	-154.7	2.27
131402	"	"	0.533	19.4	7.24	4.74	-155.8	2.26
1410	"	"	0.530	19.4	7.24	4.85	-156.7	2.24
<i>[Handwritten signature across the bottom of the table]</i>								

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50 + change N₂
 Discharge: 21 cylinder @
 psi (start): 280 1328
 psi (finish): 280

Pump on: 1250First Water: 1251QED Controller #: MP104HYSI #: 106405Water level #: Solinst*Turbidity Meter #: FSLVE0203

*Water level doesn't fit in pump
 in, WL from pre-pump deployment

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWI-I-P1R-100617

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MWI-I

Date / Time Collected: 10/6/17, 1055

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 230 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 3"
 Depth to Water - Initial (DTWI) (ft): 476.12* *measurement collected prior to pump install*
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 518
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☒ Wind Partly Cloudy Temperature: 66°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>230 mL/stroke</u>		±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>0952</u>	<u>1.0L</u>	<u>476.12*</u>	<u>0.480</u>	<u>18.6</u>	<u>7.12</u>	<u>2.01</u>	<u>123.0</u>	<u>7.90</u>
<u>1002</u>		<u>—</u>	<u>0.479</u>	<u>18.3</u>	<u>7.16</u>	<u>0.85</u>	<u>116.0</u>	<u>7.62</u>
<u>1012</u>		<u>—</u>	<u>0.478</u>	<u>18.4</u>	<u>7.19</u>	<u>1.18</u>	<u>114.9</u>	<u>7.19</u>
<u>1022</u>		<u>—</u>	<u>0.473</u>	<u>18.6</u>	<u>7.15</u>	<u>0.74</u>	<u>116.1</u>	<u>7.14</u>
<u>1032</u>		<u>—</u>	<u>0.463</u>	<u>18.8</u>	<u>7.16</u>	<u>0.79</u>	<u>116.7</u>	<u>7.66</u>
<u>1042</u>		<u>—</u>	<u>0.464</u>	<u>18.8</u>	<u>7.16</u>	<u>0.68</u>	<u>119.3</u>	<u>7.54</u>
<u>1052</u>	<u>3 gallons</u>	<u>—</u>	<u>0.464</u>	<u>18.7</u>	<u>7.16</u>	<u>0.61</u>	<u>117.7</u>	<u>7.69</u>
				<u>CEL</u>				
				<u>10/6/17</u>				

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 sec

Discharge: 22 sec

psi (start): 270

psi (finish): 280

Pump on: 0946

First Water: 0948

QED Controller #: MPH10 1402

YSI #: 104358

Water level #: N/A - cannot get probe down casing

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Project No.: 500433 Well ID: KAFB-106064
 Sample ID: 106004-P1R-100617 Date / Time Collected: 10/6/17, 0925

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 210 ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☐ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 5" Approximate depth of pump inlet (ft): 495
 Depth to Water - Initial (DTWI) (ft): 480.58 Length of Casing (ft): N/A ~ 3-ft
 Depth to Well Bottom (ft): 513
 Screen Interval (ft): 488-500

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☒ Wind Partly Cloudy Temperature: 103°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>210 ml/stroke</u>	—	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>0826</u>	<u>1.7 L</u>	<u>480.58</u>	<u>0.753</u>	<u>17.7</u>	<u>7.12</u>	<u>19.1</u>	<u>149.5</u>	<u>2.13</u>
<u>0836</u>		—	<u>0.754</u>	<u>17.8</u>	<u>7.10</u>	<u>15.6</u>	<u>-24.9</u>	<u>0.94</u>
<u>0846</u>		—	<u>0.758</u>	<u>17.9</u>	<u>7.14</u>	<u>3.74</u>	<u>-118.4</u>	<u>0.41</u>
<u>0856</u>		—	<u>0.758</u>	<u>18.0</u>	<u>7.25</u>	<u>4.49</u>	<u>-126.9</u>	<u>0.26</u>
<u>0905</u>		—	<u>0.757</u>	<u>18.0</u>	<u>7.33</u>	<u>5.95</u>	<u>-138.7</u>	<u>0.16</u>
<u>0912</u>		—	<u>0.757</u>	<u>18.1</u>	<u>7.29</u>	<u>4.76</u>	<u>-144.3</u>	<u>0.12</u>
<u>0917</u>		—	<u>0.759</u>	<u>18.1</u>	<u>7.25</u>	<u>4.42</u>	<u>-147.9</u>	<u>0.10</u>
<u>0922</u>	<u>3.5 gallons</u>	—	<u>0.758</u>	<u>18.2</u>	<u>7.20</u>	<u>4.12</u>	<u>-152.2</u>	<u>0.09</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 sec

Discharge: 20 sec

psi (start): 270

psi (finish): 280

Pump on: 0812

First Water: 0815 let tubing purge prior to taking readings

QED Controller #: MP10H 1408

YSI #: 104358

Water level #: Solinst/Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106MWI-SSample ID: 106MWIS-P1R-100617Date / Time Collected: 10/6/17, 1453

EQUIPMENT / NOTES

Sample Collected by: CL

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

220mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

4"

Depth to Water - Initial (DTWI) (ft)

476.31Approximate depth of pump inlet (ft): 488

Depth to Well Bottom (ft)

500.5Length of Casing (ft): N/A

Screen Interval (ft):

413-498*pH sensor malfunction. Readings likely erroneous.

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☒ Wind

Temperature:

75°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>220mL/stroke</u>		±10%	±10%	±10%	±10%	±10 mV	±10%
<u>1255</u>	<u>100mL</u>	<u>476.31</u>	<u>0.708</u>	<u>20.1</u>	<u>8.24*</u>	<u>13.9</u>	<u>47.8</u>	<u>4.28</u>
<u>1305</u>		<u>—</u>	<u>0.701</u>	<u>19.7</u>	<u>8.07*</u>	<u>12.9</u>	<u>79.1</u>	<u>3.96</u>
<u>1315</u>		<u>—</u>	<u>0.702</u>	<u>19.7</u>	<u>8.15*</u>	<u>13.3</u>	<u>86.4</u>	<u>3.67</u>
<u>1325</u>		<u>—</u>	<u>0.709</u>	<u>19.9</u>	<u>8.11*</u>	<u>4.37</u>	<u>117.7</u>	<u>1.80</u>
<u>1335</u>		<u>—</u>	<u>0.707</u>	<u>20.0</u>	<u>8.08*</u>	<u>3.98</u>	<u>124.9</u>	<u>1.28</u>
<u>1345</u>		<u>—</u>	<u>0.711</u>	<u>20.0</u>	<u>8.32*</u>	<u>12.3</u>	<u>129.1</u>	<u>0.97</u>
<u>1355</u>		<u>nitrogen change</u>						
<u>1358</u>		<u>—</u>	<u>0.725</u>	<u>21.0</u>	<u>8.35*</u>	<u>7.91</u>	<u>126.1</u>	<u>0.89</u>
<u>1408</u>		<u>—</u>	<u>0.716</u>	<u>19.8</u>	<u>8.37*</u>	<u>5.63</u>	<u>131.3</u>	<u>0.83</u>
<u>1417</u>		<u>—</u>	<u>0.720</u>	<u>19.8</u>	<u>8.37*</u>	<u>2.90</u>	<u>134.0</u>	<u>0.65</u>
<u>1425</u>	<u>CL</u>	<u>—</u>	<u>0.724</u>	<u>19.9</u>	<u>8.39*</u>	<u>2.61</u>	<u>134.4</u>	<u>0.62</u>
<u>14335</u>		<u>—</u>	<u>0.731</u>	<u>19.9</u>	<u>8.39*</u>	<u>4.12</u>	<u>138.2</u>	<u>0.38</u>
<u>1443</u>		<u>—</u>	<u>0.730</u>	<u>19.8</u>	<u>8.40*</u>	<u>4.12</u>	<u>139.7</u>	<u>0.36</u>

☒ Duplicate or MS/MSD Collected: 106MWIS-P1R-100617-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60secPump on: 1250Discharge: 20secFirst Water: 1251 - let tubing purge prior to taking readingspsi (start): 270QED Controller #: MPH10 1408psi (finish): 280YSI #: 104358Water level #: Solinst / InterfaceTurbidity Meter #: FSLVE0203

<u>1451</u>	<u>—</u>	<u>0.736</u>	<u>19.9</u>	<u>8.40*</u>	<u>2.43</u>	<u>139.6</u>	<u>0.34</u>
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GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P1R-100917

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 10/9/17, 1450

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Micropurge

☒ Bladder Pump

☐ Other

225 mL/stroke (stroke = 80 seconds)

Yes ☒ No ☐

PURGING INFORMATION

Measuring Point

Casing ID (in.)

Depth to Water - Initial (DTWI) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft):

Approximate depth of pump inlet (ft):

Length of Casing (ft):

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind 19 mph

Temperature: 66°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	225 mL	--	±10%	±10%	±10%	±10%	±10 mV	±10%
1343	1.6 L	479.43	0.757	18.1	7.06	17.1	31.6	2.63
1353		"	0.760	18.2	7.08	5.28	-65.3	1.26
1403		"	0.758	18.1	7.09	2.64	-101.4	0.54
1413		"	0.754	18.2	7.09	3.44	-118.5	0.33
1423		"	0.754	18.1	7.10	2.01	-133.3	0.21
1430		"	0.753	18.4	7.11	1.79	-141.3	0.14
1437		"	0.751	18.3	7.10	2.82	-148.1	0.12
1444		"	0.751	18.3	7.11	1.34	-151.8	0.11

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 sec

Discharge: 20 sec

psi (start): 270

psi (finish): 280

Pump on: 1331

First Water: 1333 - let tubing purge prior to taking readings

QED Controller #: MPH10 1408

YSI #: 104358

Water level #: Solinst / interface

Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 MWI-ESample ID: 106 MWI-E PIR-100917Date / Time Collected: 10/9/17, 0955Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

210 ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

476.12Approximate depth of pump inlet (ft): 518Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☒ Wind

Temperature:

57°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>210 ml/stroke</u>		<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>0906</u>	<u>1.2L</u>	<u>476.12*</u>	<u>0.476</u>	<u>17.8</u>	<u>7.12</u>	<u>0.78</u>	<u>150.0</u>	<u>8.22</u>
<u>0916</u>		<u>—</u>	<u>0.476</u>	<u>17.9</u>	<u>7.13</u>	<u>0.83</u>	<u>153.9</u>	<u>7.57</u>
<u>0926</u>		<u>—</u>	<u>0.474</u>	<u>18.0</u>	<u>7.13</u>	<u>0.87</u>	<u>152.0</u>	<u>7.28</u>
<u>0936</u>		<u>—</u>	<u>0.462</u>	<u>18.1</u>	<u>7.12</u>	<u>1.24</u>	<u>146.5</u>	<u>7.50</u>
<u>0942</u>		<u>—</u>	<u>0.463</u>	<u>18.1</u>	<u>7.13</u>	<u>0.67</u>	<u>144.0</u>	<u>7.81</u>
<u>0948</u>		<u>—</u>	<u>0.464</u>	<u>18.1</u>	<u>7.13</u>	<u>1.12</u>	<u>142.2</u>	<u>7.82</u>
<u>0953</u>	<u>8.7L</u>	<u>—</u>	<u>0.466</u>	<u>18.2</u>	<u>7.13</u>	<u>0.62</u>	<u>140.0</u>	<u>7.81</u>

☒ Duplicate or MS/MSD Collected: 106 MWI-E PIR-100917-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 secPump on: 0855Discharge: 22 secFirst Water: 0858 - let tubing purge prior to taking readingspsi (start): 270QED Controller #: MPH10 1408psi (finish): 280YSI #: 104358Water level #: Solinst/InterfaceTurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWIS-P1R-100917

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MWI-S
 Date / Time Collected: 10/9/17, 1218
 Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 225 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: top of casing
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): 476.19
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A
 Depth to product. = 476.01 ft b/c

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind Temperature: 60°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>225 mL</u>	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>1027</u>	<u>1.2 L</u>	<u>476.19</u>	<u>0.728</u>	<u>18.1</u>	<u>7.19</u>	<u>10.2</u>	<u>136.0</u>	<u>3.45</u>
<u>1037</u>		<u>476.17</u>	<u>0.728</u>	<u>18.2</u>	<u>7.21</u>	<u>10.1</u>	<u>119.8</u>	<u>3.17</u>
<u>1047</u>		<u>476.17</u>	<u>0.725</u>	<u>18.3</u>	<u>7.23</u>	<u>7.02</u>	<u>23.1</u>	<u>2.61</u>
<u>1057</u>		<u>476.17</u>	<u>0.707</u>	<u>18.3</u>	<u>7.22</u>	<u>8.32</u>	<u>-108.7</u>	<u>1.31</u>
<u>1120</u>		<u>476.17</u>	<u>0.716</u>	<u>18.2</u>	<u>7.21</u>	<u>2.85</u>	<u>-127.3</u>	<u>0.65</u>
<u>1130</u>		<u>476.17</u>	<u>0.718</u>	<u>18.3</u>	<u>7.21</u>	<u>2.61</u>	<u>-128.8</u>	<u>0.53</u>
<u>1140</u>		<u>476.17</u>	<u>0.723</u>	<u>18.4</u>	<u>7.22</u>	<u>2.55</u>	<u>-131.3</u>	<u>0.45</u>
<u>1147</u>		<u>476.17</u>	<u>0.723</u>	<u>18.3</u>	<u>7.22</u>	<u>2.51</u>	<u>-132.3</u>	<u>0.40</u>
<u>1155</u>		<u>476.17</u>	<u>0.725</u>	<u>18.4</u>	<u>7.20</u>	<u>2.55</u>	<u>-133.9</u>	<u>0.33</u>
<u>1205</u>		<u>476.17</u>	<u>0.729</u>	<u>18.4</u>	<u>7.21</u>	<u>2.34</u>	<u>-136.9</u>	<u>0.27</u>
<u>1210</u>		<u>476.17</u>	<u>0.729</u>	<u>18.4</u>	<u>7.21</u>	<u>3.48</u>	<u>-137.6</u>	<u>0.25</u>
<u>1215</u>		<u>476.16</u>	<u>0.729</u>	<u>18.3</u>	<u>7.20</u>	<u>2.28</u>	<u>-138.3</u>	<u>0.23</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 sec
 Discharge: 20 sec
 psi (start): 280
 psi (finish): 280

Pump on: 1018
 First Water: 1020 - let tubing purge prior to taking readings
 QED Controller #: MPH10 1408
 YSI #: 104358
 Water level #: Solinst/Interface
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 063Sample ID 106063-PR-100917Date / Time Collected 10/9/17 / 1052**EQUIPMENT / NOTES**

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

165 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☐ No ☐**PURGING INFORMATION**Measuring Point northside casingCasing ID (in.) 5-inchApproximate depth of pump inlet (ft): 511Depth to Water - Initial (DTWI) (ft) 480.55Length of Casing (ft): N/ADepth to Well Bottom (ft) 528Screen Interval (ft): 508 - 523**FIELD CONDITIONS**

Weather Conditions:

☒ Sunny☐ Rain☐ Wind

Temperature:

~55°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0907	165 ml / stroke	480.55	0.493	17.9	7.18	5.88	199.7	4.30
0917	"	"	0.493	18.1	7.26	2.63	190.0	3.64
0927	"	"	0.493	18.1	7.27	2.84	174.4	2.96
0937	"	"	0.495	18.3	7.28	2.23	151.4	2.47
0947	"	"	0.497	18.3	7.28	2.01	119.9	1.89
0957	"	"	0.496	18.4	7.28	1.50	105.0	1.54
* 1007	"	"	0.495	18.4	7.29	1.62	92.8	1.25
1026	"	"	0.496	18.5	7.30	1.54	79.1	1.18
1036	"	"	0.493	18.5	7.30	1.57	68.7	1.09
1043	"	"	0.492	18.6	7.30	1.42	65.9	1.07
1050	"	"	0.493	18.6	7.30	1.48	66.1	1.06

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60Pump on: 0852Discharge: 21First Water: 0853psi (start): 270QED Controller #: MP10Hpsi (finish): 290YSI #: 106405Water level #: 58 inst WL meterTurbidity Meter #: FSLWE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name:	KAFB RAPID ESTCP
Project No.:	500433
Sample ID	106MU2I-PIR-100917

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 *mw 21*

Date / Time Collected 10/9/17 / 1216

EQUIPMENT / NOTES

Sample Collected by: TK

Micropurge

☒ Bladder Pump, ☐ Other

250 mil/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Yes ☒ No ☐

PURGING INFORMATION

Measuring Point *northside casing*

Casing ID (in.) 3-inch

Approximate depth of pump inlet* (ft): 517

Depth to Water - Initial (DTWI) (ft) ~ 476 ft

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 528

Screen Interval (ft): 513-523

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind

Temperature: $\sim 60^\circ\text{F}$

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	±10%
1124	~250 ml/stroke	~476 *	0.536	18.2	7.31	11.7	-45.6	3.39
1134	"	"	0.588	18.3	7.29	8.4	-121.5	2.64
1144	"	"	0.583	18.2	7.30	8.72	-134.4	2.39
1154	"	"	0.571	18.4	7.31	7.54	-137.9	2.30
1204	"	"	0.562	18.4	7.32	6.31	-139.6	2.28
1214	"	"	0.559	18.3	7.32	6.20	-140.5	2.28

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: ⁷¹¹270 50

Discharge: $+5K \overline{270}^{21}$

psi (start): 270

psi (finish): 270

- * water level meter does

Pump on: 1058

First Water: 1059

QED Controller #: MP104

YSI #: 106405

Water level #: Solinst *

Turbidity Meter #: FSLVE 0203

casing &
pump in place
Level is pre-pump
deployment

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MW25-P1R-100917

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MW25

Date / Time Collected: 10/9/17 / 1446

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Measuring Point

north side casing

Casing ID (in.)

4-inch

Approximate depth of pump inlet (ft): 488

Depth to Water - Initial (DTWI) (ft)

~476 ft

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

463-498

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature:

~65°F, wind about 18 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
1334	<u>~250 mL stroke</u>	<u>476*</u>	0.793	18.1	7.31	24.8	82.1	3.18
1344	"	"	0.794	18.4	7.24	10.2	8.4	1.44
1354	"	"	0.788	18.3	7.36	4.11	-180.2	0.82
1404	"	"	0.787	18.3	7.37	3.84	-184.9	0.71
1414	"	"	0.788	18.2	7.39	2.47	-188.8	0.60
1424	"	"	0.788	18.3	7.39	2.35	-192.2	0.53
1434	"	"	0.789	18.2	7.39	2.04	-192.1	0.47
1444	"	"	0.789	18.3	7.39	2.41	-191.4	0.52

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 1322

Discharge: 21

First Water: 1323

psi (start): 270

QED Controller #: MP10H

psi (finish): 280

YSI #: 106405

Water level #: Solinst*

Turbidity Meter #: FSLVED0203

* Water level meter does not fit in casing with pump in place. Water level is from pre-pump deployment.

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID ~~106~~ EX2-P1R-100917

Well ID: KAFB-106 Ex2

Date / Time Collected 10/9/17 / ~~1524~~ 1554

Sample Collected by: TK.CL 02 10/10/17

☐ Other

500 mL/min

Yes ✓ No

Screen Interval (ft):

Approximate depth of pump inlet (ft): 797

Length of Casing (ft): N/A

Weather Conditions:

☒ Sunny

- ☐ Rain

☒ Wind

Temperature:

☐ Duplicate or MS/MSD Collected:

Pump on: On since 9/26/17

First Water: *NA*

YSI #: 106405

Water level #: transducer

Turbidity Meter #: FSLVE0203

Sample port
opened @ 1504

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106EX2-P1R-100917

Well ID: KAFB-106 *Ex 1*

Date / Time Collected 10/9/17 / ~~155~~ 1524

Sample Collected by: TK, CL CL 10/10/17

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump

☒ Other

Flow Rate During Purging :

500 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.)

Depth to Water - Initial (DTWi) (ft)**Depth to Well Bottom (ft)**

Screen Interval (ft):

Approximate depth of pump inlet' (ft):

Length of Casing (ft): N/A

FIELD CONDITIONS

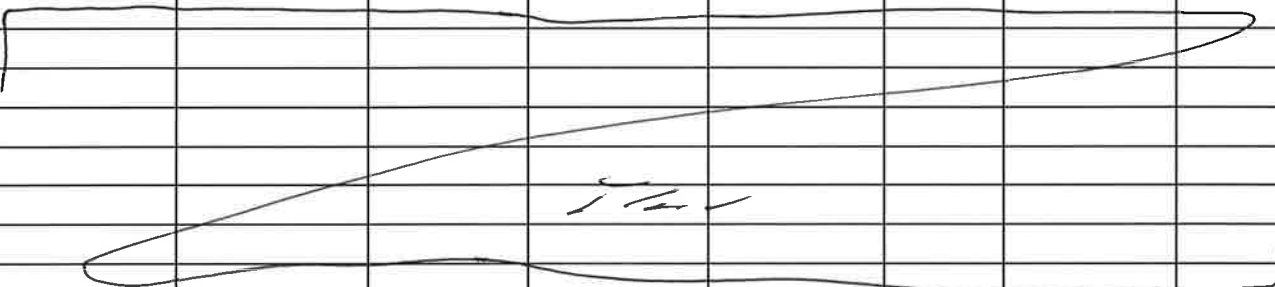
Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature:

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1532	482.4	0.944	20.0	7.12	1.82	-63.4	1.04
1537	"	0.944	20.0	7.12	3.81	-67.3	0.82
1542	"	0.938	20.1	7.14	3.38	-69.5	0.72
1547	"	0.935	20.1	7.14	2.14	-70.1	0.66
1552	"	0.936	20.2	7.14	1.59	-70.8	0.61
							

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: On since 9/26/17

First Water: NA

YSI #: 100703

Water level #: Sotins transducer

Turbidity Meter #: FSLVE0203

Sample port opened
@ 1527

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 EX2Sample ID: 106EX2-PIR-101217Date / Time Collected: 10/12/17 / 1531EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump☒ Other

Flow Rate During Purging:

~500 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐PURGING INFORMATION

Casing ID (in.)

6-inch

Approximate depth of pump inlet (ft):

491

Depth to Water - Initial (DTWI) (ft)

~480.4Length of Casing (ft): N/A

Depth to Well Bottom (ft)

507

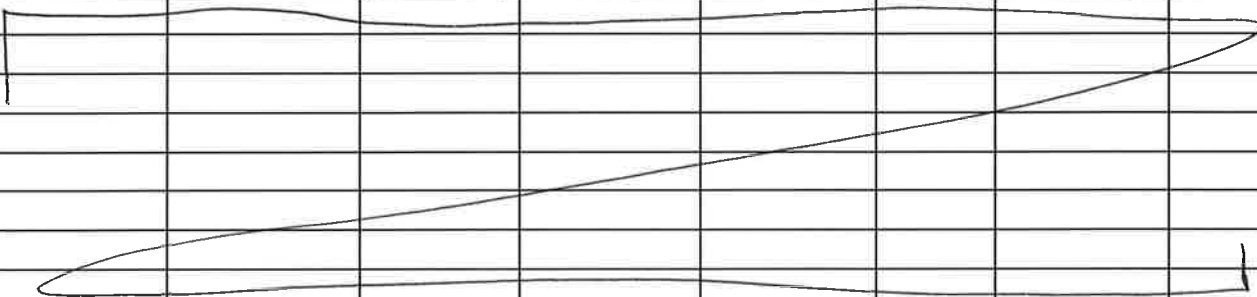
Screen Interval (ft):

487-502FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☐ Wind

Temperature:

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1510	~480.4	0.847	20.6	7.08	0.96	-33.4	0.30
1515	"	0.816	20.6	7.08	0.95	-38.4	0.24
1520	"	0.826	20.6	7.09	0.91	-41.4	0.19
1525	"	0.827	20.6	7.08	0.96	-42.2	0.16
1530	"	0.824	20.6	7.09	0.83	-43.9	0.15
							

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Sample
part open @ 1505

Pump on: on since 9/26/17First Water: NAYSI #: 106405Water level #: Dedicated transducerTurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-PIR-101217

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063

Date / Time Collected: 10/12/17 / 0959
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~160 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 5-inch 480.21
 Depth to Water - Initial (DTWI) (ft): 478.54 TSK
 Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 508-523

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind Temperature: ~55°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
0820	~160 ml/stroke	480.21	0.486	17.2	7.10	1.52	203.0	4.96
0830	"	"	0.484	17.3	7.10	2.01	208.5	4.19
0846	"	"	0.481	17.6	7.09	1.84	196.3	3.16
0857	"	"	0.480	17.7	7.10	1.48	137.0	2.15
0908	"	480.20	0.478	18.0	7.10	1.54	126.7	1.61
0920	"	"	0.477	18.1	7.11	1.65	125.3	1.41
0931	"	"	0.476	18.3	7.11	1.44	122.8	1.26
0940	"	"	0.474	18.5	7.12	1.53	111.3	1.22
0949	"	"	0.473	18.5	7.12	1.59	107.6	1.19
0957	"	"	0.474	18.5	7.12	1.57	108.1	1.18

☐ Duplicate or MS/MSD Collected: _____

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 270 ^{TSK} 55

Discharge: 21

psi (start): 270

psi (finish): 290

Pump on: 0810

First Water: 0811

QED Controller #: MP10H

YSI #: 106405

Water level #: Solinst WL meter

Turbidity Meter #: FSLUE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106/mw2 I-PIR-10/12/17

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106/mw2 I

Date / Time Collected: 10/12/17 / 1130
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 3-inch
 Depth to Water - Initial (DTWI) (ft): ~476*
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523

Approximate depth of pump inlet (ft): 517
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: ~65°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1017	<u>~250 ml/stroke</u>	<u>~476*</u>	0.548	18.0	7.16	10.5	159.2	4.29
1027	"	"	0.541	18.1	7.15	9.81	139.0	3.75
1037	"	"	0.577	18.2	7.14	8.27	-96.3	2.80
1047	"	"	0.585	18.3	7.19	7.52	-126.9	2.35
1057	"	"	0.567	18.2	7.20	6.05	-135.5	2.30
1107	"	"	0.560	18.3	7.21	5.40	-135.0	2.25
1117	"	"	0.559	18.3	7.21	5.31	-137.5	2.24
1127	"	"	0.558	18.4	7.21	5.71	-137.2	2.23

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50 *Note that Pump on: 1007
 Discharge: 23 WL meter First Water: 1008
 psi (start): 270 cannot fit QED Controller #: MP10H
 psi (finish): 280 in casing & pump YSI #: 106405

in. WL is from pre-pump deployment. Water level #: salinst WL meter*
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MW2 S-PIR-101217

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW2 S

Date / Time Collected: 10/12/17 / 1412

Sample Collected by: TR

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 4-inch
 Depth to Water - Initial (DTWI) (ft): ~476 ft *
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: ~74°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	±10%
1300	~250 mL/stroke	~476*	0.776	18.8	7.12	19.3	61.7	1.99
1310	"	"	0.778	19.1	7.09	4.66	-138.8	0.76
1320	"	"	0.771	19.2	7.16	2.99	-175.6	0.61
1330	"	"	0.760	19.3	7.23	2.29	-191.1	0.49
1340	"	"	0.760	19.4	7.24	2.92	-194.6	0.44
1350	"	"	0.761	19.3	7.24	2.39	-197.0	0.38
1400	"	"	0.759	19.5	7.25	2.21	-199.3	0.36
1410	"	"	0.761	19.2	7.24	2.26	-200.4	0.35

☒ Duplicate or MS/MSD Collected: 106 MW2 S-PIR-101217-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 *Water is from pre-pump deployment.
 Discharge: 22 Meter doesn't fit & pump in place.
 psi (start): 270
 psi (finish): 280
 Pump on: 1249
 First Water: 1250
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: Solinst WL meter*
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX1-P1R-101217

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 EX1
 Date / Time Collected: 10/12/17 / 1503
 Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

☐ Bladder Pump

☒ Other

~500 mL/min

SHR Ground For pump

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.):

6-inch

Depth to Water - Initial (DTWi) (ft)

~482.50

Approximate depth of pump inlet (ft):

491

Depth to Well Bottom (ft)

507

Screen Interval (ft):

487-502

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

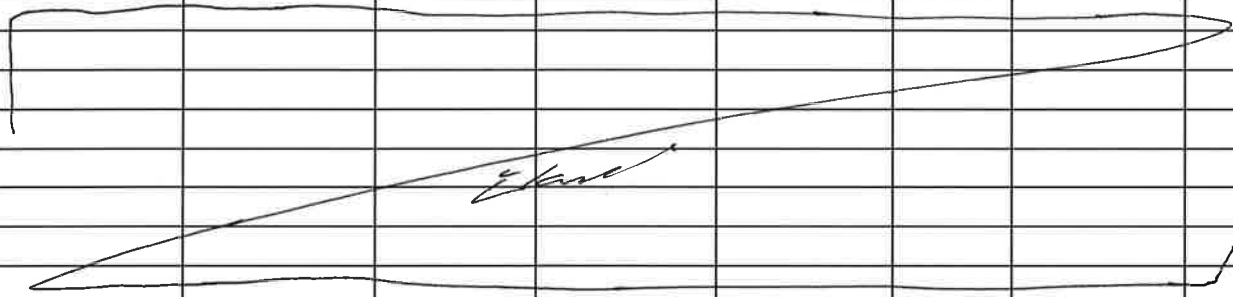
☒ Sunny

☐ Rain

☐ Wind

Temperature:

86°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1441	~482.50	0.488	20.6	7.13	1.2	-23.5	2.60
1446	"	0.482	20.6	7.10	1.02	-25.7	2.44
1451	"	0.505	20.7	7.08	0.99	-22.9	2.27
1456	"	0.496	20.7	7.08	1.02	-26.6	2.22
1501	"	0.497	20.7	7.07	0.93	-26.0	2.21
							

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: Since 9/26/17

First Water: NA

YSI #: 106405

Water level #: transducer

Turbidity Meter #: FSLVE0203

Sample port open @ 1436

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106064
 Date / Time Collected: 10/12/17, 1348
 Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 225 ml/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 5"
 Depth to Water - Initial (DTWI) (ft): 479.43
 Depth to Well Bottom (ft): 513
 Screen Interval (ft): 488-508
 Approximate depth of pump inlet (ft): 495
 Length of Casing (ft): N/A ~ 3 ft.

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind _____ Temperature: 74°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>225 ml/stroke</u>		±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1257	<u>1.2L</u>	<u>479.43</u>	<u>0.762</u>	<u>19.3</u>	<u>7.10</u>	<u>6.87</u>	<u>-65.9</u>	<u>1.51</u>
1307		<u> </u>	<u>0.765</u>	<u>19.2</u>	<u>7.11</u>	<u>1.73</u>	<u>-104.2</u>	<u>0.77</u>
1317		<u> </u>	<u>0.765</u>	<u>19.5</u>	<u>7.13</u>	<u>1.08</u>	<u>-152.0</u>	<u>0.7</u>
1327		<u> </u>	<u>0.761</u>	<u>19.3</u>	<u>7.13</u>	<u>0.85</u>	<u>-214.1</u>	<u>0.04</u>
1334		<u> </u>	<u>0.760</u>	<u>19.4</u>	<u>7.12</u>	<u>0.75</u>	<u>-223.4</u>	<u>0.031</u>
1340		<u> </u>	<u>0.757</u>	<u>19.7</u>	<u>7.12</u>	<u>0.66</u>	<u>-233.1</u>	<u>0.00</u>
1345	<u>2.5 gallons</u>	<u> </u>	<u>0.756</u>	<u>19.7</u>	<u>7.12</u>	<u>0.64</u>	<u>-241.6</u>	<u>0.00</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 160 sec

Discharge: 20 sec

psi (start): 270

psi (finish): 280

Pump on: 1248

First Water: 1250 - let tubing purge prior to collecting readings

QED Controller #: MP10H 1408

YSI #: 73547

Water level #: Solinst / Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWIS-P1R-10217

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MWIS

Date / Time Collected: 10/12/17, 1120

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

215
205 mL/stroke (stroke = 80 sec)

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

4"

Depth to Water - Initial (DTWI) (ft)

476.31

Approximate depth of pump inlet (ft): 488

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

463-498

Depth to product = 476.10 ft bgs

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

Temperature:

59°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>205 mL/stroke</u>		±10%	±10%	±10%	±10%	±10 mV	±10%
<u>0935</u>	<u>1.1L</u>	<u>476.31</u>	<u>0.730</u>	<u>18.0</u>	<u>7.25</u>	<u>8.46</u>	<u>189.8</u>	<u>2.56</u>
<u>0945</u>		<u>476.31</u>	<u>0.732</u>	<u>18.0</u>	<u>7.24</u>	<u>9.05</u>	<u>181.4</u>	<u>2.08</u>
<u>0955</u>		<u>476.31</u>	<u>0.729</u>	<u>18.1</u>	<u>7.24</u>	<u>8.41</u>	<u>17.0</u>	<u>1.26</u>
<u>1005</u>		<u>476.31</u>	<u>0.721</u>	<u>18.3</u>	<u>7.27</u>	<u>2.03</u>	<u>-113.4</u>	<u>0.63</u>
<u>1015</u>		<u>476.31</u>	<u>0.718</u>	<u>18.4</u>	<u>7.27</u>	<u>2.09</u>	<u>-126.7</u>	<u>0.47</u>
<u>1025</u>		<u>476.30</u>	<u>0.724</u>	<u>18.5</u>	<u>7.27</u>	<u>1.95</u>	<u>-137.8</u>	<u>0.33</u>
<u>1035</u>		<u>476.30</u>	<u>0.731</u>	<u>18.5</u>	<u>7.28</u>	<u>2.34</u>	<u>-144.1</u>	<u>0.23</u>
<u>1045</u>		<u>476.30</u>	<u>0.734</u>	<u>18.6</u>	<u>7.28</u>	<u>2.12</u>	<u>-148.4</u>	<u>0.20</u>
<u>1052</u>		<u>476.31</u>	<u>0.735</u>	<u>18.4</u>	<u>7.28</u>	<u>1.93</u>	<u>-153.6</u>	<u>0.15</u>
<u>1100</u>		<u>476.31</u>	<u>0.736</u>	<u>18.5</u>	<u>7.28</u>	<u>2.64</u>	<u>-157.0</u>	<u>0.11</u>
<u>1108</u>		<u>476.31</u>	<u>0.736</u>	<u>18.7</u>	<u>7.28</u>	<u>2.01</u>	<u>-160.7</u>	<u>0.11</u>
<u>1115</u>	<u>50 gallons</u>	<u>476.31</u>	<u>0.736</u>	<u>18.8</u>	<u>7.29</u>		<u>-163.7</u>	<u>0.10</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 sec

Discharge: 20 sec

psi (start): 270

psi (finish): 280

Pump on: 0926

First Water: 0928 - let tubing purge prior to taking readings

QED Controller #: MPH10 1408

YSI #: 73547

Water level #: Solinst/Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWI-I-P1R-101217

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MWI-I

Date / Time Collected: 10/12/17 0915

Sample Collected by: U

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

270ml/stroke (stroke = 77sec)

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

476.12* depth to water measured prior to installation.

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A (flush mount)

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

Cannot fit probe down well

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

Temperature:

55°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0820	1.0L	476.12*	0.470	17.5	7.63	0.72	271.4	7.91
0830		—	0.466	17.5	7.61	0.90	278.5	7.64
0840		—	0.458	17.6	7.62	0.70	279.0	7.66
0847		—	0.449	17.7	7.62	1.09	267.2	8.01
0854		—	0.431	17.8	7.61	0.92	244.7	8.29
0859		—	0.422	17.8	7.61	0.89	238.4	8.31
0905		—	0.417	17.9	7.60	0.65	233.7	8.30
0910	2.9 gallons	—	0.410	17.9	7.60	0.73	230.4	8.33

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 sec

Discharge: 22 sec

psi (start): 270

psi (finish): 280

Pump on: 0814

First Water: 0815 - let tubing purge prior to taking readings

QED Controller #: MPI10 1408

YSI #: 73547

Water level #: Solinst/Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P1R-101617

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 10/16/17, 1423

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

Micropurge

☒ Bladder Pump

☐ Other

2.15 mL/Stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

5"

Approximate depth of pump inlet (ft): 495

Depth to Water - Initial (DTWI) (ft)

479.43*

post-pump install measurement

Length of Casing (ft): N/A ~3 ft.

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-508

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind (breezy)

Temperature: 69°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>2.15 mL/Stroke</u>		<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>±10%</u>
<u>1325</u>	<u>800mL</u>	<u>479.43</u>	<u>0.753</u>	<u>19.0</u>	<u>7.10</u>	<u>6.32</u>	<u>-84.5</u>	<u>0.61</u>
<u>1335</u>		<u>—</u>	<u>0.755</u>	<u>18.9</u>	<u>7.11</u>	<u>1.47</u>	<u>-117.4</u>	<u>0.14</u>
<u>1345</u>		<u>—</u>	<u>0.755</u>	<u>19.0</u>	<u>7.12</u>	<u>0.86</u>	<u>-145.5</u>	<u>0.05</u>
<u>1352</u>		<u>—</u>	<u>0.739</u>	<u>19.0</u>	<u>7.15</u>	<u>0.75</u>	<u>-188.9</u>	<u>0.01</u>
<u>1400</u>		<u>—</u>	<u>0.732</u>	<u>19.0</u>	<u>7.13</u>	<u>0.91</u>	<u>-217.6</u>	<u>0.00</u>
<u>1407</u>		<u>—</u>	<u>0.731</u>	<u>19.1</u>	<u>7.13</u>	<u>0.84</u>	<u>-225.9</u>	<u>0.00</u>
<u>1414</u>		<u>—</u>	<u>0.731</u>	<u>19.0</u>	<u>7.13</u>	<u>0.98</u>	<u>-232.3</u>	<u>0.00</u>
<u>1420</u>	<u>2.6 gallons</u>	<u>—</u>	<u>0.728</u>	<u>18.9</u>	<u>7.13</u>	<u>0.97</u>	<u>-236.0</u>	<u>0.00</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 100 sec

Pump on: 1318

Discharge: 20 sec

First Water: 1320

psi (start): 270

QED Controller #: MPH10 1408

psi (finish): 285

YSI #: 73547

Water level #: Solinst / Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 MWI-6Sample ID 106 MWIS-P1R-101617Date / Time Collected 10/16/17, 1213**EQUIPMENT / NOTES**Sample Collected by: CL

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump☐ Other

Flow Rate During Purging :

200mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐**PURGING INFORMATION**Measuring Point Top of casingCasing ID (in.) 4"Approximate depth of pump inlet (ft): 488Depth to Water - Initial (DTWI) (ft) 476.55Length of Casing (ft): N/ADepth to Well Bottom (ft) 500.5Screen Interval (ft): 463-498Depth to Product = 476.29 ft btoc**FIELD CONDITIONS**

Weather Conditions:

☒ Sunny☐ Rain☒ Wind (breezy)Temperature: 58°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>200mL/stroke</u>		<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1047</u>	<u>1.2L</u>	<u>476.55</u>	<u>0.729</u>	<u>17.6</u>	<u>7.25</u>	<u>8.82</u>	<u>92.3</u>	<u>2.35</u>
<u>1057</u>		<u>476.54</u>	<u>0.729</u>	<u>17.8</u>	<u>7.22</u>	<u>9.77</u>	<u>101.9</u>	<u>1.31</u>
<u>1107</u>		<u>476.54</u>	<u>0.732</u>	<u>18.1</u>	<u>7.20</u>	<u>8.33</u>	<u>-28.9</u>	<u>0.48</u>
<u>1117</u>		<u>476.54</u>	<u>0.729</u>	<u>18.3</u>	<u>7.29</u>	<u>2.46</u>	<u>-129.9</u>	<u>0.28</u>
<u>1127</u>		<u>476.53</u>	<u>0.729</u>	<u>18.2</u>	<u>7.30</u>	<u>2.35</u>	<u>-147.9</u>	<u>0.17</u>
<u>1137</u>		<u>476.53</u>	<u>0.733</u>	<u>18.3</u>	<u>7.30</u>	<u>1.84</u>	<u>-155.7</u>	<u>0.13</u>
<u>1143</u>		<u>476.53</u>	<u>0.735</u>	<u>18.4</u>	<u>7.31</u>	<u>1.74</u>	<u>-160.1</u>	<u>0.10</u>
<u>1150</u>		<u>476.54</u>	<u>0.739</u>	<u>18.6</u>	<u>7.31</u>	<u>1.57</u>	<u>-163.1</u>	<u>0.08</u>
<u>1158</u>		<u>476.54</u>	<u>0.743</u>	<u>18.6</u>	<u>7.31</u>	<u>1.63</u>	<u>-168.6</u>	<u>0.05</u>
<u>1204</u>		<u>476.54</u>	<u>0.743</u>	<u>18.7</u>	<u>7.31</u>	<u>1.73</u>	<u>-171.4</u>	<u>0.05</u>
<u>1209</u>	<u>3.6 gallons</u>	<u>476.54</u>	<u>0.744</u>	<u>18.7</u>	<u>7.31</u>	<u>1.81</u>	<u>-173.6</u>	<u>0.04</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 secPump on: 1037Discharge: 20 secFirst Water: 1039psi (start): 270QED Controller #: MP10H K08psi (finish): 280YSI #: 73547Water level #: Solinst/InterfaceTurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWI-E-P1R-101617

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MWI-I

Date / Time Collected: 10/16/17, 1018

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

250 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

3"

Approximate depth of pump inlet (ft): 518

Depth to Water - Initial (DTWI) (ft)

476.12*

**DTW measured after pump installation.*

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

Cannot fit probe down 3" well.

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind (breezy)

Temperature:

51°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>250 mL/stroke</u>		<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>0930</u>	<u>500 mL</u>	<u>476.12*</u>	<u>0.465</u>	<u>17.7</u>	<u>7.64</u>	<u>0.72</u>	<u>227.7</u>	<u>7.86</u>
<u>0940</u>		<u>—</u>	<u>0.462</u>	<u>17.5</u>	<u>7.62</u>	<u>1.06</u>	<u>226.7</u>	<u>7.49</u>
<u>0950</u>		<u>—</u>	<u>0.458</u>	<u>17.7</u>	<u>7.61</u>	<u>0.80</u>	<u>223.1</u>	<u>7.69</u>
<u>1000</u>		<u>—</u>	<u>0.442</u>	<u>17.7</u>	<u>7.63</u>	<u>0.58</u>	<u>208.7</u>	<u>7.96</u>
<u>1005</u>		<u>—</u>	<u>0.428</u>	<u>17.8</u>	<u>7.63</u>	<u>0.63</u>	<u>195.1</u>	<u>8.51</u>
<u>1010</u>		<u>—</u>	<u>0.419</u>	<u>17.9</u>	<u>7.63</u>	<u>0.89</u>	<u>185.3</u>	<u>8.55</u>
<u>1015</u>	<u>2.5 gallons</u>	<u>—</u>	<u>0.406</u>	<u>18.0</u>	<u>7.62</u>	<u>0.82</u>	<u>180.5</u>	<u>8.58</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 sec

Pump on: 0925

Discharge: 22 sec

First Water: 0927

psi (start): 230

QED Controller #: NP10H 1408

psi (finish): 280

YSI #: 7354.7

Water level #: Solinst / Interfac

Turbidity Meter #: FSLVE 0203

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106EX2-P1R-101617

Well ID: KAFB-106EX2

Date / Time Collected 10/16/17 / 1548

Sample Collected by: TK CL

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 6-inch

Depth to Water - Initial (DTWi) (ft)**Depth to Well Bottom (ft)**

Screen Interval (ft):

Approximate depth of pump inlet (ft):

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

- ☐ Rain

- Wind

Temperature: $\sim 75^{\circ}F$

[illegible]☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: On since 9/26/17

First Water: NA

YSI #: 106405

Water level #: transducer

Turbidity Meter #: FSLVE0203

- Sample port open @ 1516

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106063Sample ID 106063-PZR-101617Date / Time Collected 10/16/17 / 1126**EQUIPMENT / NOTES**Sample Collected by: TK

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump~160☐ Other

Flow Rate During Purging:

~250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐**PURGING INFORMATION**Measuring Point north side casingCasing ID (in.) 5-inchApproximate depth of pump inlet (ft): 511Depth to Water - Initial (DTWI) (ft) 480.42Length of Casing (ft): N/ADepth to Well Bottom (ft) 528Screen Interval (ft): 508 - 523**FIELD CONDITIONS**

Weather Conditions:

☒ Sunny☐ Rain☒ Wind

Temperature:

~45°F, ~5 mph wind

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0938	<u>~160 ml/stroke</u>	<u>480.42</u>	<u>0.471</u>	<u>16.7</u>	<u>7.03</u>	<u>5.67</u>	<u>204.1</u>	<u>5.27</u>
0948	<u>"</u>	<u>"</u>	<u>0.471</u>	<u>16.9</u>	<u>7.06</u>	<u>4.82</u>	<u>205.6</u>	<u>4.70</u>
1000	<u>"</u>	<u>"</u>	<u>0.469</u>	<u>17.0</u>	<u>7.06</u>	<u>3.65</u>	<u>201.5</u>	<u>4.06</u>
1015	<u>"</u>	<u>"</u>	<u>0.470</u>	<u>17.4</u>	<u>7.09</u>	<u>2.07</u>	<u>121.0</u>	<u>2.37</u>
1027	<u>"</u>	<u>"</u>	<u>0.469</u>	<u>17.7</u>	<u>7.09</u>	<u>2.01</u>	<u>124.9</u>	<u>1.97</u>
1040	<u>"</u>	<u>480.41</u>	<u>0.466</u>	<u>18.0</u>	<u>7.10</u>	<u>1.87</u>	<u>133.3</u>	<u>1.68</u>
1052	<u>"</u>	<u>"</u>	<u>0.465</u>	<u>18.0</u>	<u>7.10</u>	<u>1.79</u>	<u>136.8</u>	<u>1.51</u>
1100	<u>"</u>	<u>"</u>	<u>0.465</u>	<u>18.0</u>	<u>7.11</u>	<u>1.65</u>	<u>137.9</u>	<u>1.50</u>
1108 1115	<u>"</u>	<u>"</u>	<u>0.465</u>	<u>18.3</u>	<u>7.12</u>	<u>1.62</u>	<u>138.7</u>	<u>1.41</u>
1125	<u>"</u>	<u>"</u>	<u>0.464</u>	<u>18.3</u>	<u>7.12</u>	<u>1.63</u>	<u>138.0</u>	<u>1.41</u>

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60Pump on: TSK 020927Discharge: 20First Water: 0928psi (start): 270QED Controller #: MP104psi (finish): 290YSI #: 106405Water level #: Solin stTurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106mw2ISample ID: 106mw2I-PIR-101617Date / Time Collected: 10/16/17 / 1251**EQUIPMENT / NOTES**Sample Collected by: TK

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

~250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐**PURGING INFORMATION**

Measuring Point

northside casing

Casing ID (in.)

3-inchApproximate depth of pump inlet (ft): 517

Depth to Water - Initial (DTWI) (ft)

~476*Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523**FIELD CONDITIONS**

Weather Conditions:

☒ Sunny☐ Rain☐ Wind

Temperature:

~60°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1144	<u>~250mL</u>	<u>~476</u>	<u>0.549</u>	<u>18.1</u>	<u>7.10</u>	<u>4.63</u>	<u>126.3</u>	<u>3.35</u>
1154	<u>"</u>	<u>"</u>	<u>0.550</u>	<u>18.4</u>	<u>7.09</u>	<u>3.54</u>	<u>14.4</u>	<u>2.96</u>
1204	<u>"</u>	<u>"</u>	<u>0.602</u>	<u>18.4</u>	<u>7.15</u>	<u>3.50</u>	<u>-130.1</u>	<u>2.20</u>
1215	<u>"</u>	<u>"</u>	<u>0.705</u>	<u>18.5</u>	<u>7.21</u>	<u>4.71</u>	<u>-157.2</u>	<u>1.70</u>
1225	<u>"</u>	<u>"</u>	<u>0.701</u>	<u>18.6</u>	<u>7.22</u>	<u>4.02</u>	<u>-160.6</u>	<u>1.52</u>
1240	<u>"</u>	<u>"</u>	<u>0.701</u>	<u>18.8</u>	<u>7.22</u>	<u>3.77</u>	<u>-158.9</u>	<u>1.51</u>
1250	<u>"</u>	<u>"</u>	<u>0.701</u>	<u>18.8</u>	<u>7.22</u>	<u>3.81</u>	<u>-160.3</u>	<u>1.50</u>

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50Discharge: 23psi (start): 270psi (finish): 280

*WL meter does not fit with pump in place, WL is from pre pump deployment

Pump on: 1133First Water: 1134QED Controller #: MP10HYSI #: 106465Water level #: solinst*Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2S-P4R-601617

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW2S
 Date / Time Collected: 10/16/17 / 1445
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: ~250 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 4-inch
 Depth to Water - Initial (DTWI) (ft): ~476*
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463 - 498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind Temperature: ~75°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1343	250 mL stroke	~476*	0.761	19.4	7.11	11.6	53.5	1.71
1353	"	"	0.765	19.1	7.09	4.65	148.2	0.47
1403	"	"	0.762	19.3	7.18	3.84	172.4	0.40
1413	"	"	0.752	19.4	7.27	3.51	194.4	0.33
1423	"	"	0.751	19.2	7.28	3.12	200.7	0.30
1433	"	"	0.751	19.3	7.28	2.99	203.6	0.29
1443	"	"	0.753	19.3	7.28	2.91	207.2	0.28

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 * WL is from pre-pump deployment.
 Discharge: 21
 psi (start): 270 Pump doesn't allow WL meter down while in place.
 psi (finish): 280
 Pump on: 1332
 First Water: 1333
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: 501inst*
 Turbidity Meter #: FSLVE0203

Switch
N₂
cylinder

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID **106 EX1 - P1R-101617**

Well ID: KAFB-106 *Ex 1*

Date / Time Collected 10/16/17 1514

Sample Collected by: TK, CL

Purging Method/Equipment:

Sampling Equipment: ☐ Bladder Pump

Sampling Equipment:

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

Casing ID (in.) 6-inch

Depth to Water - Initial (DTWI) (ft) ~ 484.2

Approximate depth of pump inlet (ft): 497

Depth to Well Bottom (ft) 507

Screen Interval (ft): 487 - 502

Length of Casing (ft): N/A

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Weather Conditions: ☒ Sunny

- Rain

- Wind

Temperature: ~77°F

[illegible]

✓ Duplicate or MS/MSD Collected: Duplicate, 106EXI-PIR-101617

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: on since 9/26/17

First Water: NA

YSI #: 106405

Water level #: transducer

Turbidity Meter #: FSLVE 0203

- Sample port open @ 1452

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106 EX2-P2R-102017

Well ID: KAFB-106 *EX2*

Date / Time Collected 10/20/17 / 1547

Sample Collected by: TK CC

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 6-inch

Depth to Water - Initial (DTWi) (ft) 478.10

Depth to Well Bottom (ft) 507

Screen Interval (ft): 487 -502

Approximate depth of pump inlet (ft): 991

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny

☐ Rain

✓ Wind

Temperature: $\sim 70^\circ\text{F}$, $\sim 15\text{ mph}$

[illegible]☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: on since 9/26/17

First Water: *NA*

YSI #: 106405

Water level #: dedicated transducer

Turbidity Meter #: *FSLVE0203*

Sample port open @ 1509

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P1R-102017

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106063

Date / Time Collected: 10/20/17 / 1028

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: northside casing

Casing ID (in.): 5-inch

Approximate depth of pump inlet (ft): 511

Depth to Water - Initial (DTWI) (ft): 480.39 ft bto c

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 528

Screen Interval (ft): 508-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

Temperature:

~60°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	ft bto c	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0859	~160 ml/stroke	480.39	0.453	17.3	7.13	1.79	194.6	5.43
0909	"	"	0.453	17.3	7.15	1.79	195.0	4.63
0919	"	"	0.451	17.5	7.14	1.61	193.6	4.01
0929	"	"	0.450	17.5	7.14	1.51	180.7	3.24
0939	"	"	0.446	17.7	7.16	1.40	168.5	2.66
0949	"	"	0.445	17.7	7.16	1.34	160.7	1.96
0959	"	"	0.444	17.6	7.16	1.23	148.2	1.80
1009	"	"	0.442	17.8	7.17	1.19	159.4	1.73
1019	"	"	0.440	17.8	7.17	1.18	158.2	1.74
1027	"	"	0.440	17.8	7.17	1.19	157.7	1.65

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0848

Discharge: 22

First Water: 0849

psi (start): 270

QED Controller #: MP10H

psi (finish): 290

YSI #: 106405

Water level #: 50111st

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2I-PIR-102017

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW2 I
 Date / Time Collected: 10/20/17 / 1155
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 3-inch
 Depth to Water - Initial (DTWI) (ft): ~476 ft bgs ★
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 517
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny / cloudy ☐ Rain ☒ Wind Temperature: ~64°F, ~10 mph wind

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1047	~250 ml stroke	~476 ★	0.691	17.8	7.13	4.65	128.1	2.84
1057	"	"	0.690	18.1	7.13	3.78	105.0	1.99
1107	"	"	0.700	18.2	7.19	9.43	186.9	1.27
1117	"	"	0.715	18.4	7.28	4.56	205.4	0.89
1127	"	"	0.738	18.6	7.30	5.41	219.4	0.59
1137	"	"	0.732	18.6	7.30	5.32	219.7	0.55
1145	"	"	0.733	18.6	7.30	4.89	219.1	0.53
1153	"	"	0.732	18.6	7.30	4.84	218.3	0.52

☒ Duplicate or MS/MSD Collected: 106MW2I-PIR-102017-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50 ★ Note that WL meter does not
 Discharge: 23 fit in well c
 psi (start): 270 pump in ~WL is
 psi (finish): 280 from pre-pump deployment.
 Pump on: 1036
 First Water: 1037
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: Solinst ★
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW25-PIR-102017

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW25
 Date / Time Collected: 10/20/17 / 1431
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 4-inch
 Depth to Water - Initial (DTWI) (ft): ~476* ft bgs
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind Temperature: ~70°F, ~15 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1321	~250 mL	~476*	0.735	18.9	7.13	15.2	-132.9	0.41
1331	"	"	0.737	19.1	7.16	14.28	-164.2	0.31
1341	"	"	0.735	18.9	7.23	4.26	-180.9	0.29
1351	"	"	0.728	19.3	7.30	4.51	-199.5	0.28
1401	"	"	0.728	19.4	7.31	4.85	-206.6	0.26
1411	"	"	0.729	19.3	7.31	4.61	-211.8	0.26
1420	"	"	0.730	19.1	7.32	4.53	-215.2	0.25
1429	"	"	0.728	18.9	7.32	4.42	-218.0	0.25

☐ Duplicate or MS/MSD Collected: _____

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 *WL meter does not fit with pump in place. WL is from pre-pump deployment.
 Discharge: 21
 psi (start): 270
 psi (finish): 280
 Pump on: 1311
 First Water: 1312
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: Solinst*
 Turbidity Meter #: FSLVE0203

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID **106** EX1-P1R-102017

Well ID: KAFB-106 **EX1**

Date / Time Collected 10/20/17 / 1507

Sample Collected by: TK CL

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump

☒ Other

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.)

Depth to Water - Initial (DTWi) (ft)**Depth to Well Bottom (ft)**

Screen Interval (ft):

Approximate depth of pump inlet (ft): 491

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny

- ☐ Rain

Wind

☒ cloudy

Temperature: $\sim 70^\circ\text{F}$, $\sim 15\text{ mph}$ wind

[illegible]☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: on since 9/26/17

First Water: NA

YSI #: 106405

Water level #: dedicated transducer

Turbidity Meter #: FSLUE0203

Sample port open @ 1439

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064 P1R-10207

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 10/20/17, 1423

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

☒ Micropurge

☒ Bladder Pump

☐ Other

215 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Casing ID (in.)

Depth to Water - Initial (DTWI) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft):

Top of casing

5"

476-479.50

513

488-508

Approximate depth of pump inlet (ft): 495

Length of Casing (ft): N/A ~3 ft.

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature: 70°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>215mL</u>	--	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1317</u>	<u>950mL</u>	<u>479.50</u>	<u>0.748</u>	<u>19.1</u>	<u>7.09</u>	<u>2.96</u>	<u>-105.3</u>	<u>0.39</u>
<u>1327</u>		<u>"</u>	<u>0.748</u>	<u>18.8</u>	<u>7.11</u>	<u>1.30</u>	<u>-121.0</u>	<u>0.11</u>
<u>1337</u>		<u>"</u>	<u>0.747</u>	<u>19.0</u>	<u>7.12</u>	<u>1.02</u>	<u>-144.3</u>	<u>0.03</u>
<u>1347</u>		<u>"</u>	<u>0.731</u>	<u>19.0</u>	<u>7.14</u>	<u>0.80</u>	<u>-191.7</u>	<u>0.00</u>
<u>1354</u>		<u>"</u>	<u>0.727</u>	<u>19.0</u>	<u>7.13</u>	<u>1.22</u>	<u>-213.5</u>	<u>0.00</u>
<u>1401</u>		<u>"</u>	<u>0.727</u>	<u>18.9</u>	<u>7.13</u>	<u>0.72</u>	<u>-220.4</u>	<u>0.00</u>
<u>1408</u>		<u>"</u>	<u>0.725</u>	<u>19.0</u>	<u>7.13</u>	<u>0.69</u>	<u>-228.4</u>	<u>0.00</u>
<u>1415</u>		<u>"</u>	<u>0.724</u>	<u>19.0</u>	<u>7.13</u>	<u>0.72</u>	<u>-232.9</u>	<u>0.00</u>
<u>1420</u>	<u>2.9 gallons</u>	<u>"</u>	<u>0.721</u>	<u>19.0</u>	<u>7.13</u>	<u>0.75</u>	<u>-238.2</u>	<u>0.00</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 sec

Discharge: 19 sec

psi (start): 270

psi (finish): 285

Pump on: 1309

First Water: 1311

QED Controller #: MP10H 1408

YSI #: 73547

Water level #: Solinst / Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWIS-P12-102017

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MWI-S

Date / Time Collected: 10/20/17, 1145

Sample Collected by: CU

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

Micropurge:

☒ Bladder Pump

☐ Other

225 ml / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

4"

Depth to Water - Initial (DTWI) (ft)

476-475.92

Approximate depth of pump inlet (ft): 488

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

depth to product: 475.90

Screen Interval (ft):

463-498

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind (10 mph)

Temperature: 60°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>225 mL</u>	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>1014</u>	<u>~850 mL</u>	<u>475.92</u>	<u>0.755</u>	<u>17.9</u>	<u>7.25</u>	<u>7.47</u>	<u>78.6</u>	<u>2.00</u>
<u>1024</u>		<u> </u>	<u>0.755</u>	<u>17.9</u>	<u>7.22</u>	<u>5.16</u>	<u>-50.1</u>	<u>0.90</u>
<u>1034</u>		<u> </u>	<u>0.759</u>	<u>17.8</u>	<u>7.26</u>	<u>2.00</u>	<u>-27.5</u>	<u>0.30</u>
<u>1044</u>		<u> </u>	<u>0.763</u>	<u>18.1</u>	<u>7.32</u>	<u>1.35</u>	<u>-135.8</u>	<u>0.20</u>
<u>1054</u>		<u> </u>	<u>0.763</u>	<u>18.4</u>	<u>7.31</u>	<u>1.32</u>	<u>-143.7</u>	<u>0.15</u>
<u>1104</u>		<u>475.91</u>	<u>0.763</u>	<u>18.5</u>	<u>7.32</u>	<u>1.08</u>	<u>-153.2</u>	<u>0.09</u>
<u>1111</u>		<u> </u>	<u>0.762</u>	<u>18.6</u>	<u>7.32</u>	<u>1.22</u>	<u>-158.0</u>	<u>0.08</u>
<u>1117</u>		<u> </u>	<u>0.763</u>	<u>18.7</u>	<u>7.32</u>	<u>1.17</u>	<u>-163.0</u>	<u>0.06</u>
<u>1127</u>		<u> </u>	<u>0.761</u>	<u>18.6</u>	<u>7.32</u>	<u>1.26</u>	<u>-166.0</u>	<u>0.04</u>
<u>1134</u>		<u> </u>	<u>0.762</u>	<u>18.6</u>	<u>7.32</u>	<u>1.67</u>	<u>-168.9</u>	<u>0.03</u>
<u>1141</u>	<u>4.1 gallons</u>	<u> </u>	<u>0.761</u>	<u>18.6</u>	<u>7.32</u>	<u>1.04</u>	<u>-172.9</u>	<u>0.03</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 20

psi (start): 270

psi (finish): 280

Pump on: 1007

First Water: 1009

QED Controller #: MP10H 1408

YSI #: 7354.7

Water level #: Solinst / interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MWI-E P1R-102017

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MWI-I
 Date / Time Collected: 10/20/17, 1000
 Sample Collected by: a

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump 230 mL / stroke ☐ Other _____
 Flow Rate During Purging: _____
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 3"
 Depth to Water - Initial (DTWI) (ft): 476.12* measured after prior pump install.
 Approximate depth of pump inlet (ft): 518
 Length of Casing (ft): N/A
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
Cannot fit probe down 3" well w/ pump in.

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind Temperature: 55°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>230 mL</u>	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>0853</u>	<u>700 mL</u>	<u>476.12*</u>	<u>0.466</u>	<u>17.7</u>	<u>7.64</u>	<u>1.03</u>	<u>222.2</u>	<u>7.90</u>
<u>0903</u>		—	<u>0.466</u>	<u>17.7</u>	<u>7.63</u>	<u>0.76</u>	<u>221.7</u>	<u>7.65</u>
<u>0913</u>		—	<u>0.465</u>	<u>17.8</u>	<u>7.62</u>	<u>0.92</u>	<u>219.1</u>	<u>7.44</u>
<u>0920</u>		—	<u>0.464</u>	<u>17.9</u>	<u>7.60</u>	<u>0.87</u>	<u>20.4</u>	<u>7.81</u>
<u>0927</u>		—	<u>0.455</u>	<u>18.1</u>	<u>7.60</u>	<u>0.71</u>	<u>186.1</u>	<u>7.99</u>
<u>0934</u>		—	<u>0.444</u>	<u>18.0</u>	<u>7.60</u>	<u>0.74</u>	<u>161.7</u>	<u>8.38</u>
<u>0943-0941</u>		—	<u>0.431</u>	<u>18.1</u>	<u>7.60</u>	<u>0.78</u>	<u>157.5</u>	<u>8.48</u>
<u>0948</u>		—	<u>0.423</u>	<u>18.0</u>	<u>7.60</u>	<u>0.83</u>	<u>150.8</u>	<u>8.52</u>
<u>0955</u>	<u>3.1 gals</u>	—	<u>0.414</u>	<u>18.1</u>	<u>7.60</u>	<u>0.91</u>	<u>147.3</u>	<u>8.51</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 sec

Discharge: 22 sec

psi (start): 270

psi (finish): 285

Pump on: 0847

First Water: 0849

QED Controller #: MP10H 1408

YSI #: 73547

Water level #: Solinst/Interface

Turbidity Meter #: FSWE0203

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106 EX1-PIR-102417

Well ID: KAFB-106EX1

Date / Time Collected 10/24/17 11408

Sample Collected by: TKC!

Purging Method/Equipment:

Sampling Equipment.:

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 6-inch

Depth to Water - Initial (DTWi) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft):

Approximate depth of pump inlet (ft): 8 4 9/16

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

- ☐ Rain

- Wind

Temperature: $\sim 70^\circ\text{F}$

[illegible]

☒ Duplicate or MS/MSD Collected: FD, 106EE X 1-PIR-102917-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: since 9/26/17

First Water: *NA*

YSI #: 73547

Water level #: transducer

Turbidity Meter #: KSLIVE 0203

sample port open @ 1338

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106MWISSample ID 106MWIS-PIR-102412Date / Time Collected 10/24/17 / 1320

EQUIPMENT / NOTES

Sample Collected by: TK, CC

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

~250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point northside casingCasing ID (in.) 4-inchApproximate depth of pump inlet (ft): 488Depth to Water - Initial (DTWI) (ft) 476.29Length of Casing (ft): N/ADepth to Well Bottom (ft) 500.5Screen Interval (ft): 463-498Depth to product 476.13 ft to c

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☒ Wind

Temperature:

~60°F, ~10 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1148	<u>~250 ml stroke</u>	<u>476.29</u>	<u>0.758</u>	<u>18.4</u>	<u>7.21</u>	<u>5.91</u>	<u>-51.4</u>	<u>1.02</u>
1158	"	"	<u>0.763</u>	<u>18.2</u>	<u>7.19</u>	<u>2.95</u>	<u>-191.8</u>	<u>0.30</u>
1208	"	"	<u>0.766</u>	<u>18.4</u>	<u>7.19</u>	<u>1.33</u>	<u>-198.1</u>	<u>0.17</u>
1218	"	"	<u>0.751</u>	<u>18.4</u>	<u>7.27</u>	<u>1.31</u>	<u>-155.8</u>	<u>0.13</u>
1228	"	"	<u>0.750</u>	<u>18.5</u>	<u>7.28</u>	<u>1.21</u>	<u>-163.4</u>	<u>0.09</u>
1238	"	"	<u>0.750</u>	<u>18.6</u>	<u>7.28</u>	<u>1.05</u>	<u>-169.5</u>	<u>0.07</u>
1248	"	"	<u>0.751</u>	<u>18.8</u>	<u>7.29</u>	<u>1.04</u>	<u>-178.9</u>	<u>0.04</u>
1256	"	"	<u>0.750</u>	<u>18.8</u>	<u>7.29</u>	<u>0.97</u>	<u>-181.3</u>	<u>0.04</u>
1304	"	"	<u>0.750</u>	<u>18.7</u>	<u>7.29</u>	<u>0.93</u>	<u>-185.3</u>	<u>0.02</u>
1310	"	"	<u>0.750</u>	<u>18.7</u>	<u>7.29</u>	<u>0.97</u>	<u>-190.1</u>	<u>0.01</u>
1316	"	"	<u>0.750</u>	<u>18.9</u>	<u>7.29</u>	<u>1.11</u>	<u>-192.2</u>	<u>0.00</u>

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60Pump on: 1138Discharge: 20First Water: 1139psi (start): 270QED Controller #: MP10Hpsi (finish): 285YSI #: 73547Water level #: solinst interfaceTurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-PZR-102417

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063

Date / Time Collected: 10/24/17 / 0930
 Sample Collected by: TK, CC

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~180 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

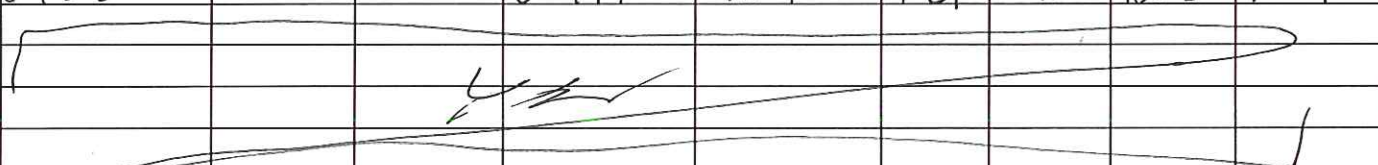
Measuring Point: northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 480.64
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 508-523

Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☒ Wind

Temperature: ~48°F, ~20 mph wind

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0802	~180 mL stroke	480.64	0.447	15.4	7.31	6.18	178.1	5.57
0813	"	"	0.446	15.7	7.27	1.22	183.7	4.77
0824	"	"	0.443	16.1	7.26	1.00	180.6	3.72
0834	"	"	0.436	16.3	7.28	1.10	154.8	2.66
0845	"	"	0.430	16.3	7.28	1.16	152.7	2.23
0856	"	"	0.420	16.5	7.29	1.42	155.6	2.03
0906	"	"	0.411	16.5	7.30	0.92	155.7	1.96
0916	"	"	0.406	16.7	7.30	0.92	155.2	1.94
0928	"	"	0.417	16.7	7.31	1.10	156.3	1.94
								

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 21

psi (start): 270

psi (finish): 290

Pump on: 0750

First Water: 0751

QED Controller #: MP10H

YSI #: 73547

Water level #: solinst

Turbidity Meter #: FSLVE6203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-PIR-102417

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 10/24/17 / 1123

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

northside casing

Casing ID (in.)

5-inch

Depth to Water - Initial (DTWI) (ft)

479.61

Approximate depth of pump inlet (ft):

493

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-508

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature:

~50°F, ~15 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	230 mL/stroke	--	±10%	±10%	±10%	±10%	±10 mV	±10%
1001	"	479.61	0.718	17.0	7.05	2.99	-97.6	0.21
1011	"	"	0.719	17.1	7.06	2.17	-115.8	0.06
1021	"	"	0.716	17.2	7.09	1.61	-144.4	0.02
1031	"	"	0.714	17.3	7.09	1.37	-189.9	0.00
1041	"	"	0.712	17.5	7.08	1.53	-224.3	0.00
1051	"	"	0.711	17.6	7.08	1.46	-235.9	0.00
1058	"	"	0.711	17.7	7.08	1.91	-241.2	0.00
1106	"	"	0.710	17.8	7.08	0.84	-247.6	0.00
1114	"	"	0.708	17.9	7.09	0.92	-252.8	0.00
1120	"	"	0.707	18.0	7.09	0.91	-257.5	0.00

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 270 ^{TSK} 60

Pump on: 0953

Discharge: 20

First Water: 0954

psi (start): 270

QED Controller #: MP10H

psi (finish): 285

YSI #: 73547

Water level #: solinsf

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106EX2

Date / Time Collected 10/25/17 11415

Sample Collected by: CHIK

☒ Other

Grundfos 5hp dedicated pump

Yes ☒ No ☐

Approximate depth of pump inlet (ft): 491

Length of Casing (ft): N/A

Screen Interval (ft): $487 = \frac{501}{14}$

screen interval (11). 1001-302

FIELD CONDITIONS

- Rain

- Rain

☒ Wind

Temperature: ~73°F, ~10 mph

[illegible]

☐ Duplicate or MS/MSD Collected: NA

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on: Since 9/26/17

First Water: N/A

YSI #: 73547

Water level #: N/A-transducer

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWII-P1R-102517

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MWII-1

Date / Time Collected: 10/25/17 / 0948

Sample Collected by: CL, TR

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~250 mil/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

476.12 *as measured

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

prior to pump install

Screen Interval (ft):

513-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature:

40°F, slight breeze ~5 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
0840	<u>~250 mil/stroke</u>	<u>~476.12*</u>	<u>0.443</u>	<u>17.0</u>	<u>7.57</u>	<u>0.94</u>	<u>128.5</u>	<u>7.80</u>
0850	<u>"</u>	<u>"</u>	<u>0.443</u>	<u>17.2</u>	<u>7.57</u>	<u>0.88</u>	<u>132.2</u>	<u>7.45</u>
0900	<u>"</u>	<u>"</u>	<u>0.460</u>	<u>17.2</u>	<u>7.45</u>	<u>1.12</u>	<u>135.0</u>	<u>7.32</u>
0910	<u>"</u>	<u>"</u>	<u>0.514</u>	<u>17.3</u>	<u>7.44</u>	<u>2.01</u>	<u>55.6</u>	<u>7.80</u>
0920	<u>"</u>	<u>"</u>	<u>0.503</u>	<u>17.4</u>	<u>7.46</u>	<u>1.80</u>	<u>50.3</u>	<u>8.39</u>
0930	<u>"</u>	<u>"</u>	<u>0.499</u>	<u>17.5</u>	<u>7.46</u>	<u>1.85</u>	<u>36.9</u>	<u>8.40</u>
0938	<u>"</u>	<u>"</u>	<u>0.492</u>	<u>17.5</u>	<u>7.46</u>	<u>1.98</u>	<u>39.2</u>	<u>8.41</u>
0946	<u>"</u>	<u>"</u>	<u>0.490</u>	<u>17.5</u>	<u>7.47</u>	<u>1.79</u>	<u>41.0</u>	<u>8.40</u>

☐ Duplicate or MS/MSD Collected: N/A

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 21

psi (start): 270

psi (finish): 285

* WL meter does not fit with pump in; WL is pre-pump deployment.

Pump on: 0829

First Water: 0830

QED Controller #: MP10H 1409

YSI #: 73547

Water level #: N/A - cannot measure DTW*

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2I-P1R-102517

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW2-I

Date / Time Collected: 10/25/17 / 1119
 Sample Collected by: CLTR

EQUIPMENT / NOTES

Purging Method/Equipment: ☐ Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 3"
 Depth to Water - Initial (DTWI) (ft): ~476
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 518
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind Temperature: ~55°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	±10%
1017	~250 mL stroke	~476	0.690	17.4	7.23	7.93	60.8	2.44
1027	"	"	0.688	17.6	7.18	5.50	51.5	1.14
1037	"	"	0.720	17.8	7.39	6.14	212.3	0.92
1047	"	"	0.716	17.9	7.41	6.46	225.3	0.27
1057	"	"	0.706	18.0	7.40	6.60	229.5	0.19
1107	"	"	0.685	18.1	7.39	8.98	230.6	0.15
1117	"	"	0.685	18.1	7.38	6.55	228.9	0.14

☐ Duplicate or MS/MSD Collected: N/A

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50
 Discharge: 21
 psi (start): 270
 psi (finish): 285

Pump on: 1007
 First Water: 1008
 QED Controller #: MP10H 140
 YSI #: 735A7
 Water level #: N/A - cannot measure DTW
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2S-P1R-102517

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW2-S

Date / Time Collected: 10/25/17 / 1324

Sample Collected by: CLT/K

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~ 290 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing/northside

Casing ID (in.)

4"

Depth to Water - Initial (DTWI) (ft)

~ 476

Approximate depth of pump inlet (ft): 488

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

403-418

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

Temperature:

~ 70°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1215	<u>~ 290 mL stroke</u>	<u>~ 476</u>	0.706	18.6	7.18	3.37	-143.7	0.71
1225	"	"	0.704	18.5	7.21	1.61	-156.5	0.30
1235	"	"	0.704	18.5	7.30	1.34	-173.7	0.11
1245	"	"	0.708	18.6	7.32	1.31	-191.2	0.05
1255	"	"	0.707	18.6	7.31	1.17	-199.2	0.02
1305	"	"	0.708	18.7	7.31	1.22	-205.9	0.01
1315	"	"	0.708	18.9	7.31	1.27	-210.3	0.00
1323	"	"	0.708	18.9	7.31	1.19	-214.1	0.00

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 21

psi (start): 270

psi (finish): 280

*WL meter does not fit with pump in place, WL is from pre-pump deployment.

Pump on: 1205

First Water: 1206

QED Controller #: MP10H 140

YSI #: 73547

Water level #: N/A - cannot measure DTW

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106EX2-P1R-110117

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX2

Date / Time Collected: 11/01/17 / 1521

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

Flow Rate During Purging:

~200 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.):

6-inch

Depth to Water - Initial (DTWI) (ft)

~484.85

Approximate depth of pump inlet (ft):

491

Depth to Well Bottom (ft)

507

Screen Interval (ft):

487-502

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

~70°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1455	484.85	0.908	20.4	6.94	3.31	-97.7	0.37
1500	"	0.905	20.4	6.96	2.12	-104.8	0.26
1505	"	0.906	20.4	6.96	3.84	-108.2	0.24
1510	"	0.912	20.4	6.95	2.38	-108.3	0.24
1515	"	0.899	20.4	6.96	3.95	-111.3	0.23
1520	"	0.908	20.4	6.96	3.34	-112.7	0.23

☒ Duplicate or MS/MSD Collected: 106EX2-P1R-110117-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

6 gallons

Sample Port Open:

1449

First Water:

N/A

YSI #:

106405

Water level #:

Solinst dedicated transducer

Turbidity Meter #:

FSLVE0203

* pump on since 9/26/17

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-PLR-110117

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063
 Date / Time Collected: 11/01/17 / 0956
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~180 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside filter
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 480.25
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 508-523
 Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: ~45°F, ~5 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
0834	180 mL/min	480.25	0.439	16.2	7.19	7.85	212.1	6.48
0845	"	"	0.439	16.4	7.14	4.29	224.2	5.67
0855	"	"	0.439	16.6	7.11	1.57	226.4	5.01
0905	"	480.24	0.440	16.8	7.12	0.98	219.0	4.02
0915	"	"	0.442	17.1	7.16	1.10	208.6	3.08
0925	"	"	0.441	17.2	7.17	0.87	208.7	2.85
0935	"	"	0.441	17.2	7.18	1.51	208.6	2.80
0945	"	"	0.441	17.5	7.18	1.48	208.2	2.78
0955	"	"	0.440	17.6	7.18	1.56	207.9	2.83

☐ Duplicate or MS/MSD Collected: _____

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 21

psi (start): 270

psi (finish): 290

Pump on: 0822

First Water: 0823

QED Controller #: MP10H

YSI #: 106405

Water level #: Solinst WL

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2I-PIR-110117

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW2I
 Date / Time Collected: 11/01/17 / 1128
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 3-inch
 Depth to Water - Initial (DTWI) (ft): ~476 ft logs*
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 517
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: ~55°F, ~10 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1018	<u>~250 ml/min</u>	<u>NA*</u>	0.733	17.8	7.00	14.7	162.1	2.10
1028	"	"	0.733	17.9	6.96	11.3	13.5	0.95
1038	"	"	0.768	18.1	7.16	5.16	223.2	0.59
1048	"	"	0.776	18.2	7.28	6.01	257.5	0.36
1058	"	"	0.773	18.3	7.30	5.73	266.9	0.32
1108	"	"	0.769	18.1	7.31	5.81	269.7	0.30
1118	"	"	0.770	18.3	7.30	5.71	270.5	0.29
1126	"	"	0.767	18.3	7.31	5.64	271.0	0.28

☐ Duplicate or MS/MSD Collected: _____

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50 *WL meter does not fit in casing
 Discharge: 24 e pump in place
 psi (start): 270 Measurement is from pre-pump deployment.
 psi (finish): 280
 Pump on: 1007
 First Water: 1008
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: solinst *
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106/MW25-PIR-110117

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106/MW25
 Date / Time Collected: 11/01/17 / 1417
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing*
 Casing ID (in.): 4-in ch
 Depth to Water - Initial (DTWI) (ft): ~476 ft 6 in *
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: ~70°F, ~15 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1247	~250 mL min	NA*	0.757	19.7	7.04	8.16	-165.1	0.52
1257	"	"	0.756	19.6	7.03	7.35	-173.9	0.32
1307	"	"	0.756	19.6	7.04	5.41	-172.9	0.31
1317	"	"	0.753	18.5	7.11	4.84	-179.3	0.27
1327	"	"	0.756	18.5	7.13	3.87	-183.5	0.26
1337	"	"	0.759	18.7	7.15	3.52	-195.5	0.25
1347	"	"	0.758	18.6	7.15	3.61	-200.3	0.25
1357	"	"	0.759	18.7	7.16	2.07	-208.0	0.25
1405	"	"	0.758	18.5	7.15	2.65	-211.7	0.24
1413	"	"	0.759	18.7	7.15	1.90	-214.8	0.24

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 *WL meter does not fit - pump in place. WL is from pre-pump deployment.
 Discharge: 22
 psi (start): 270
 psi (finish): 280
 Pump on: 1236
 First Water: 1237
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: Solinst *
 Turbidity Meter #: FSLVE0203

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106 EX1-PIR-100117

Well ID: KAFB-106 EX1

Date / Time Collected 11/01/17 1447

Sample Collected by: TK CL

Purging Method/Equipment:

Sampling Equipment.:

Sampling Equipment.: ☐ Bladder Pump ☒ Other
Flow Rate During Purging : ~ 200 ml/min

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 6-inch

Depth to Water - Initial (DTWi) (ft)**Depth to Well Bottom (ft)**

Screen Interval (ft):

Approximate depth of pump inlet (ft): 491

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

- Wind

- Cloudy

Temperature: 70°F

[illegible]☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 6 gallons

* Sample Port Open: 1424

First Water: NA

YSI #: 106405

Water level #: Dedicated transducer

Turbidity Meter #: FSLVE0203

* pump on since 9/26/17

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P1R-110117

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106064
 Date / Time Collected: 11/1/17, 1342
 Sample Collected by: AL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 275 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 5"
 Depth to Water - Initial (DTWI) (ft): 479
 Depth to Well Bottom (ft): 513
 Screen Interval (ft): 408-500
 Approximate depth of pump inlet (ft): 495
 Length of Casing (ft): N/A ~ 3 ft.

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind 10 mph ☐ Cloudy Temperature: 66°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>275 mL/stroke</u>		±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>1224</u>	<u>1.0L</u>	<u>479.</u>	<u>0.725</u>	<u>18.7</u>	<u>6.98</u>	<u>2.50</u>	<u>-122.9</u>	<u>0.56</u>
<u>1234</u>		<u> </u>	<u>0.724</u>	<u>18.6</u>	<u>6.99</u>	<u>1.76</u>	<u>-129.2</u>	<u>0.21</u>
<u>1244</u>		<u> </u>	<u>0.721</u>	<u>18.6</u>	<u>6.99</u>	<u>1.40</u>	<u>-133.5</u>	<u>0.09</u>
<u>1254</u>		<u> </u>	<u>0.720</u>	<u>18.6</u>	<u>7.03</u>	<u>1.30</u>	<u>-186.2</u>	<u>0.04</u>
<u>1304</u>		<u> </u>	<u>0.721</u>	<u>18.6</u>	<u>7.01</u>	<u>1.09</u>	<u>-204.1</u>	<u>0.03</u>
<u>1314</u>		<u> </u>	<u>0.721</u>	<u>18.6</u>	<u>7.02</u>	<u>1.59</u>	<u>-213.7</u>	<u>0.02</u>
<u>1324</u>		<u> </u>	<u>0.720</u>	<u>18.7</u>	<u>7.02</u>	<u>1.36</u>	<u>-220.6</u>	<u>0.01</u>
<u>1332</u>		<u> </u>	<u>0.719</u>	<u>18.8</u>	<u>7.02</u>	<u>1.08</u>	<u>-226.1</u>	<u>0.01</u>
<u>1340</u>	<u>4.4 gallons</u>	<u> </u>	<u>0.719</u>	<u>18.7</u>	<u>7.02</u>	<u>1.58</u>	<u>-229.6</u>	<u>0.00</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60
 Discharge: 20
 psi (start): 270
 psi (finish): 285

Pump on: 1217
 First Water: 1219
 QED Controller #: MP10H 1408
 YSI #: 73547
 Water level #: Solinst Interface
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWIS-P1R-110117

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MWIS

Date / Time Collected: 11/1/17, 1128
 Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 240 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): 475.65
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A
 No Measurable product

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: 58°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>240 mL/stroke</u>		<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>0953</u>	<u>1.5L</u>	<u>475.65</u>	<u>0.752</u>	<u>17.4</u>	<u>7.06</u>	<u>3.63</u>	<u>-42.5</u>	<u>0.99</u>
<u>1003</u>		<u>475.65</u>	<u>0.759</u>	<u>17.6</u>	<u>7.05</u>	<u>1.59</u>	<u>-130.8</u>	<u>0.24</u>
<u>1013</u>		<u>475.65</u>	<u>0.757</u>	<u>17.8</u>	<u>7.08</u>	<u>1.77</u>	<u>-131.4</u>	<u>0.16</u>
<u>1023</u>		<u>11</u>	<u>0.747</u>	<u>17.8</u>	<u>7.19</u>	<u>1.20</u>	<u>-135.4</u>	<u>0.12</u>
<u>1033</u>		<u>11</u>	<u>0.747</u>	<u>17.8</u>	<u>7.19</u>	<u>1.27</u>	<u>-141.4</u>	<u>0.08</u>
<u>1043</u>		<u>11</u>	<u>0.746</u>	<u>17.9</u>	<u>7.20</u>	<u>1.30</u>	<u>-148.0</u>	<u>0.06</u>
<u>1053</u>		<u>11</u>	<u>0.747</u>	<u>18.4</u>	<u>7.20</u>	<u>1.59</u>	<u>-153.9</u>	<u>0.05</u>
<u>1103</u>		<u>11</u>	<u>0.746</u>	<u>18.0</u>	<u>7.20</u>	<u>1.25</u>	<u>-155.8</u>	<u>0.04</u>
<u>1110</u>		<u>11</u>	<u>0.747</u>	<u>18.0</u>	<u>7.20</u>	<u>1.14</u>	<u>-160.3</u>	<u>0.04</u>
<u>1118</u>		<u>11</u>	<u>0.747</u>	<u>18.1</u>	<u>7.20</u>	<u>1.45</u>	<u>-166.3</u>	<u>0.02</u>
<u>1125</u>	<u>4.7 gallons</u>	<u>11</u>	<u>0.747</u>	<u>18.2</u>	<u>7.21</u>	<u>1.22</u>	<u>-169.1</u>	<u>0.02</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 20

psi (start): 270

psi (finish): 285

Pump on: 0942

First Water: 0944

QED Controller #: Mp10H 1408

YSI #: 73547

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWII-P1R-110117

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MWI-I

Date / Time Collected: 11/1/17, 0932
 Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 275 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 3"
 Depth to Water - Initial (DTWI) (ft): ~476*
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 518
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind breezy ☐ Cloudy Temperature: 45F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>275 mL/stroke</u>		<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>0828</u>	<u>1.2L</u>	<u>~476</u>	<u>0.543</u>	<u>16.9</u>	<u>7.52</u>	<u>1.52</u>	<u>171.3</u>	<u>7.79</u>
<u>0838</u>		<u>—</u>	<u>0.543</u>	<u>16.8</u>	<u>7.51</u>	<u>1.75</u>	<u>177.1</u>	<u>7.50</u>
<u>0848</u>		<u>—</u>	<u>0.556</u>	<u>16.9</u>	<u>7.44</u>	<u>2.35</u>	<u>175.0</u>	<u>7.12</u>
<u>0858</u>		<u>—</u>	<u>0.649</u>	<u>17.2</u>	<u>7.26</u>	<u>2.98</u>	<u>28.8</u>	<u>7.10</u>
<u>0908</u>		<u>—</u>	<u>0.643</u>	<u>17.4</u>	<u>7.25</u>	<u>2.89</u>	<u>29.5</u>	<u>7.14</u>
<u>0922</u>		<u>—</u>	<u>0.625</u>	<u>17.5</u>	<u>7.26</u>	<u>3.44</u>	<u>28.3</u>	<u>7.17</u>
<u>0930</u>	<u>3.8 gallons</u>	<u>—</u>	<u>0.611</u>	<u>17.6</u>	<u>7.26</u>	<u>2.53</u>	<u>26.8</u>	<u>7.18</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 21

psi (start): 270

psi (finish): 285

Pump on: 0820

First Water: 0822

QED Controller #: MP10H 1408

YSI #: 73547

Water level #: N/A*

Turbidity Meter #: FSLVE0203

* Cannot measure DTW at 3" wells. Probe will not fit down casing w/ pump and tubing.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106mw2I-PIP-111517

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW2 I
 Date / Time Collected: 11/15/17 / 1438
 Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☒ Bladder Pump ☐ Other _____
 Sampling Equipment: _____
 Flow Rate During Purging: ~250 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing*
 Casing ID (in.): 3-inch
 Depth to Water - Initial (DTWI) (ft): ~476*
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 517
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: ~60°F, ~5 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water *	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1320	<u>~250 ml stroke</u>	<u>NA</u>	0.724	18.2	7.13	8.25	1.2	2.67
1328	"	"	0.725	18.4	7.10	7.77	119.9	1.00
1338	"	"	0.746	18.3	7.40	4.69	224.2	0.33
1348	"	"	0.744	18.3	7.46	4.81	241.9	0.18
1358	"	"	0.742	18.2	7.46	5.94	247.4	0.13
1408	"	"	0.747	18.1	7.48	3.84	253.2	0.10
1418	"	"	0.746	18.1	7.49	2.36	258.6	0.07
1428	"	"	0.747	18.2	7.50	2.43	264.8	0.04
1438	"	"	0.749	18.2	7.50	2.48	265.4	0.04

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50 *WL meter does not fit with pump in, WL is from pre pump deployment.
 Discharge: 22
 psi (start): 270
 psi (finish): 285
 Pump on: 1308
 First Water: 1309
 QED Controller #: MP10H 1408
 YSI #: 73547
 Water level #: NA *
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P1P-111517

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106064
 Date / Time Collected: 11/15/17 1153
 Sample Collected by: TK, CC

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 479.28
 Depth to Well Bottom (ft): 513
 Screen Interval (ft): 488-508
 Approximate depth of pump inlet (ft): 491
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: ~50°F, ~18 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1022	<u>~250 mL stroke</u>	<u>479.28</u>	<u>0.725</u>	<u>17.9</u>	<u>6.88</u>	<u>5.23</u>	<u>170.4</u>	<u>1.57</u>
1032	"	"	<u>0.729</u>	<u>17.5</u>	<u>6.87</u>	<u>5.13</u>	<u>-88.8</u>	<u>0.58</u>
1042	"	"	<u>0.729</u>	<u>17.6</u>	<u>6.88</u>	<u>6.46</u>	<u>107.9</u>	<u>0.99</u>
1052	"	"	<u>0.743</u>	<u>17.5</u>	<u>6.91</u>	<u>5.79</u>	<u>-150.7</u>	<u>0.33</u>
1102	"	"	<u>0.749</u>	<u>17.6</u>	<u>6.91</u>	<u>4.98</u>	<u>-159.9</u>	<u>0.31</u>
1112	"	"	<u>0.750</u>	<u>17.6</u>	<u>6.91</u>	<u>4.71</u>	<u>-165.6</u>	<u>0.29</u>
1122	"	"	<u>0.750</u>	<u>17.7</u>	<u>6.91</u>	<u>4.84</u>	<u>-170.9</u>	<u>0.29</u>
1132	"	"	<u>0.751</u>	<u>17.8</u>	<u>6.91</u>	<u>4.70</u>	<u>-177.0</u>	<u>0.28</u>
1142	"	"	<u>0.750</u>	<u>17.5</u>	<u>6.92</u>	<u>4.61</u>	<u>-181.5</u>	<u>0.27</u>
1151	"	"	<u>0.749</u>	<u>17.7</u>	<u>6.92</u>	<u>4.59</u>	<u>-185.3</u>	<u>0.27</u>

☐ Duplicate or MS/MSD Collected: _____

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60
 Discharge: 21
 psi (start): 270
 psi (finish): 280

Pump on: 1012
 First Water: 1013
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: Solin st WL meter
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P1P-111517

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063

Date / Time Collected: 11/13/17 / 0951

Sample Collected by: TK, CC

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~100 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: northside casing

Casing ID (in.): 5-inch

Depth to Water - Initial (DTWI) (ft): 480.09

Approximate depth of pump inlet (ft): 511

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 528

Screen Interval (ft): 508-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature:

~45°F, ~10 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
0810	<u>~180 mL stroke</u>	<u>480.09</u>	<u>0.440</u>	<u>16.2</u>	<u>7.24</u>	<u>4.92</u>	<u>217.4</u>	<u>6.76</u>
0820	<u>"</u>	<u>"</u>	<u>0.441</u>	<u>16.5</u>	<u>7.14</u>	<u>4.01</u>	<u>232.6</u>	<u>6.00</u>
0830	<u>"</u>	<u>"</u>	<u>0.441</u>	<u>16.4</u>	<u>7.10</u>	<u>3.46</u>	<u>236.8</u>	<u>5.26</u>
0841	<u>"</u>	<u>"</u>	<u>0.440</u>	<u>16.8</u>	<u>7.12</u>	<u>2.46</u>	<u>128.1</u>	<u>3.59</u>
0852	<u>"</u>	<u>480.08</u>	<u>0.438</u>	<u>16.8</u>	<u>7.13</u>	<u>2.15</u>	<u>137.1</u>	<u>2.77</u>
0902	<u>"</u>	<u>"</u>	<u>0.437</u>	<u>17.0</u>	<u>7.13</u>	<u>2.17</u>	<u>161.3</u>	<u>2.35</u>
0912	<u>"</u>	<u>"</u>	<u>0.437</u>	<u>17.0</u>	<u>7.14</u>	<u>2.08</u>	<u>172.2</u>	<u>2.08</u>
0922	<u>"</u>	<u>"</u>	<u>0.436</u>	<u>16.8</u>	<u>7.14</u>	<u>2.09</u>	<u>180.1</u>	<u>1.99</u>
0932	<u>"</u>	<u>"</u>	<u>0.435</u>	<u>17.1</u>	<u>7.14</u>	<u>2.10</u>	<u>182.2</u>	<u>1.85</u>
0941	<u>"</u>	<u>"</u>	<u>0.435</u>	<u>17.4</u>	<u>7.14</u>	<u>2.05</u>	<u>182.2</u>	<u>1.78</u>
0950	<u>"</u>	<u>"</u>	<u>0.436</u>	<u>17.4</u>	<u>7.15</u>	<u>2.09</u>	<u>181.6</u>	<u>1.78</u>

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 56

Pump on: 0759

Discharge: 21

First Water: 0800

psi (start): 270

QED Controller #: MP10H

psi (finish): 290

YSI #: 106405

Water level #: Solinst WL meter

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWIS-P1P-111517

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MWI-S

Date / Time Collected: 11/15/17, 1136

Sample Collected by: al

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

300 ml / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

4"

Approximate depth of pump inlet (ft): 488

Depth to Water - Initial (DTWI) (ft)

475.85 *no product

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

463-498

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature:

55°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>300 ml / stroke</u>		±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>0949</u>		<u>475.85</u>	<u>0.747</u>	<u>17.3</u>	<u>7.11</u>	<u>2.52</u>	<u>-89.7</u>	<u>1.71</u>
<u>1000</u>		<u>"</u>	<u>0.746</u>	<u>17.3</u>	<u>7.07</u>	<u>5.29</u>	<u>-114.0</u>	<u>0.47</u>
<u>1010</u>		<u>"</u>	<u>0.749</u>	<u>17.3</u>	<u>7.24</u>	<u>4.63</u>	<u>-148.6</u>	<u>0.28</u>
<u>1020</u>		<u>475.80</u>	<u>0.753</u>	<u>17.5</u>	<u>7.26</u>	<u>6.58</u>	<u>-162.6</u>	<u>0.24</u>
<u>1030</u>		<u>"</u>	<u>0.754</u>	<u>17.8</u>	<u>7.27</u>	<u>6.36</u>	<u>-171.8</u>	<u>0.18</u>
<u>1040</u>		<u>"</u>	<u>0.754</u>	<u>17.8</u>	<u>7.27</u>	<u>6.27</u>	<u>-179.9</u>	<u>0.13</u>
<u>1050</u>		<u>"</u>	<u>0.754</u>	<u>18.0</u>	<u>7.28</u>	<u>6.71</u>	<u>-186.6</u>	<u>0.12</u>
<u>1100</u>		<u>"</u>	<u>0.753</u>	<u>17.8</u>	<u>7.28</u>	<u>6.49</u>	<u>-191.5</u>	<u>0.09</u>
<u>1110</u>		<u>"</u>	<u>0.752</u>	<u>17.9</u>	<u>7.28</u>	<u>6.09</u>	<u>-196.2</u>	<u>0.08</u>
<u>1118</u>		<u>"</u>	<u>0.751</u>	<u>17.9</u>	<u>7.28</u>	<u>5.59</u>	<u>-200.1</u>	<u>0.05</u>
<u>1126</u>		<u>"</u>	<u>0.752</u>	<u>18.0</u>	<u>7.28</u>	<u>5.84</u>	<u>-204.9</u>	<u>0.05</u>
<u>1133</u>	<u>gallons</u>	<u>"</u>	<u>0.753</u>	<u>17.9</u>	<u>7.28</u>	<u>5.42</u>	<u>-207.0</u>	<u>0.05</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 0938

Discharge: 20

First Water: 0940

psi (start): 270

QED Controller #: MP10H 1408

psi (finish): 285

YSI #: 73547

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MWI-PIP 111517

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MWI-I

Date / Time Collected: 11/15/17, 0919

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

300 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

NM * cannot fit WL meter

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528 down casing on 3" wells

Screen Interval (ft):

513-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature:

50°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>300 mL / stroke</u>	—	±10%	±10%	±10%	±10%	±10 mV	±10%
<u>0810</u>	<u>1.7L</u>	<u>~476*</u>	<u>0.652</u>	<u>17.1</u>	<u>7.50</u>	<u>2.19</u>	<u>138.9</u>	<u>6.32</u>
<u>0820</u>		—	<u>0.651</u>	<u>17.2</u>	<u>7.46</u>	<u>3.52</u>	<u>141.9</u>	<u>6.08</u>
<u>0830</u>		—	<u>0.617</u>	<u>17.4</u>	<u>7.31</u>	<u>4.25</u>	<u>-103.8</u>	<u>3.93</u>
<u>0840</u>		—	<u>0.571</u>	<u>17.4</u>	<u>7.22</u>	<u>3.69</u>	<u>-123.2</u>	<u>2.30</u>
<u>0850</u>		—	<u>0.560</u>	<u>17.4</u>	<u>7.22</u>	<u>3.82</u>	<u>-122.5</u>	<u>1.78</u>
<u>0900</u>		—	<u>0.557</u>	<u>17.5</u>	<u>7.22</u>	<u>3.85</u>	<u>-126.1</u>	<u>1.69</u>
<u>0908</u>		—	<u>0.555</u>	<u>17.5</u>	<u>7.23</u>	<u>5.05</u>	<u>-127.1</u>	<u>1.67</u>
<u>0916</u>	<u>4 gallons</u>	—	<u>0.553</u>	<u>17.5</u>	<u>7.23</u>	<u>4.11</u>	<u>-124.9</u>	<u>1.72</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0800

Discharge: 21

First Water: 0802

psi (start): 270

QED Controller #: MP10H 1408

psi (finish): 285

YSI #: 73547

Water level #: SN/A

Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106EX1-P1P-111617

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106EX1

Date / Time Collected: 11/16/17 1318

Sample Collected by: ALTK

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

☐ Bladder Pump

☒ Other

Grunfos

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.) 6"

Depth to Water - Initial (DTWI) (ft)

476.11

Depth to Well Bottom (ft)

507

Screen Interval (ft):

487-502

Approximate depth of pump Inlet (ft): 491

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 60°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1236	482.16	0.513	20.0	7.14	25.8	-105.1	1.00
1241	482.17	0.516	20.2	7.11	15.0	-127.8	0.67
1246	482.19	0.514	20.2	7.11	12.5	-131.0	1.07
1251	482.20	0.515	20.2	7.10	7.21	-133.1	1.09
1256	482.21	0.524	20.2	7.10	5.85	-133.8	0.94
1301	482.21	0.528	20.2	7.10	5.78	-134.3	0.88
1306	482.22	0.533	20.2	7.09	6.50	-133.3	0.97
1311	482.22	0.533	20.3	7.09	5.49	-132.0	1.09
1316	482.24	0.534	20.3	7.08		-129.9	1.10

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

~16 gallons
1111

Pump on: 1219

Sample Port Open: 1232

First Water: 1232

YSI #: 73547

Water level #: N/A - Transducer

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 IN1-P1P-111617 + FD

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 IN1

Date / Time Collected: 11/16/17 1105

Sample Collected by: CLIRK

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.): 6"

Depth to Water - Initial (DTWI) (ft): 476.15

Depth to Well Bottom (ft): 502

Screen Interval (ft): 477-497

Approximate depth of pump inlet (ft): 482

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 50°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1006	476.15	0.928	17.4	6.92	47.8	-200.2	0.09
1010	477.63	1.014	18.5	6.87	48.6	-202.9	0.07
1015	477.64	1.056	20.1	6.87	43.5	-206.9	0.06
1020	477.69	1.046	20.8	6.89	41.3	-212.7	0.06
1025	477.74	1.036	21.3	6.90	41.4	-217.3	0.05
1030	477.77	1.024	21.6	6.90	34.8	-219.1	0.05
1035	477.79	1.011	22.0	6.90	29.9	-220.9	0.05
1040	477.81	0.994	22.2	6.91	29.4	-222.4	0.05
1045	477.82	0.987	22.3	6.91	24.3	-223.5	0.04
1050	477.83	0.970	22.3	6.91	20.8	-224.4	0.04
1055	477.84	0.951	22.4	6.92	19.5	-225.0	0.04
1100	477.815	0.937	22.4	6.94	19.2	-225.1	0.04
1105							

☒ Duplicate or MS/MSD Collected: 106 IN1-P1P-111617-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 2117

Baski shut 0953, pump on 0954

Sample Port Open:

First Water: 1005

YSI #: 73547

Water level #: N/A - Transducer

Turbidity Meter #: FSLVE0203

pump off 1119

Higher turbidity observed than recorded during baseline.
 * pump speed set to 89% during purging

Borehole Volume = $\pi r^2 \times h \times 7.48$

= $\pi (0.25)^2 \times 20\text{ft} \times 7.48 = 29\text{ gallons}$

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2S-P1P-111617

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW2-S

Date / Time Collected: 11/16/17 0925

Sample Collected by: CL, TK

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 300mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): NM* Probe cannot fit down well due to tubing obstruction.
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A
 Depth to Well Bottom (ft): 520.5
 Screen Interval (ft): 463-498

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 41°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>300mL/stroke</u>	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>0805</u>		<u>~476*</u>	<u>0.735</u>	<u>17.0</u>	<u>7.06</u>	<u>4.07</u>	<u>-11.4</u>	<u>0.70</u>
<u>0815</u>		<u>—</u>	<u>0.754</u>	<u>17.1</u>	<u>7.09</u>	<u>3.21</u>	<u>-137.9</u>	<u>0.22</u>
<u>0825</u>		<u>—</u>	<u>0.761</u>	<u>17.1</u>	<u>7.20</u>	<u>9.36</u>	<u>-154.5</u>	<u>0.13</u>
<u>0837</u>		<u>—</u>	<u>0.776</u>	<u>17.4</u>	<u>7.31</u>	<u>17.3</u>	<u>-176.1</u>	<u>0.11</u>
<u>0845</u>		<u>—</u>	<u>0.778</u>	<u>17.4</u>	<u>7.31</u>	<u>15.9</u>	<u>-181.6</u>	<u>0.09</u>
<u>0855</u>		<u>—</u>	<u>0.783</u>	<u>17.5</u>	<u>7.30</u>	<u>14.1</u>	<u>-188.3</u>	<u>0.08</u>
<u>0905</u>		<u>—</u>	<u>0.784</u>	<u>17.5</u>	<u>7.30</u>	<u>13.9</u>	<u>-193.0</u>	<u>0.07</u>
<u>0913</u>		<u>—</u>	<u>0.787</u>	<u>17.4</u>	<u>7.30</u>	<u>12.5</u>	<u>-196.2</u>	<u>0.06</u>
<u>0921</u>	<u>4.5 gals</u>	<u>—</u>	<u>0.786</u>	<u>17.5</u>	<u>7.30</u>	<u>12.3</u>	<u>-198.3</u>	<u>0.06</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 20

psi (start): 270

psi (finish): 270

Pump on: 0757

First Water: 0758

QED Controller #: MP10H 1408

YSI #: 73547

Water level #: NA* cannot be measured

Turbidity Meter #: FSLWE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX2-P1P-11/16/17

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX2

Date / Time Collected: 11/16/17 1357

Sample Collected by: ALTK

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment: ☐ Bladder Pump

☒ Other Grinfor

Flow Rate During Purging: _____

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☐ No ☐

PURGING INFORMATION

Casing ID (in.) 6"

Approximate depth of pump inlet (ft): 491

Depth to Water - Initial (DTWI) (ft) 476.09

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 507

Screen Interval (ft): 487-502

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 62°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1330	481.59	0.958	20.2	7.04	3.17	-87.9	0.59
1335	481.60	0.963	20.3	7.04	3.27	-104.6	0.66
1340	481.61	0.955	20.3	7.04	2.96	-108.4	0.61
1345	481.62	0.957	20.3	7.05	3.08	-110.4	0.50
1350	481.63	0.949	20.3	7.04	2.87	-111.7	0.50
1355	481.65	0.945	20.3	7.04	2.78	-112.1	0.49

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): ~12 gallons
111

Pump on: 1219
Sample Port Open: 1329

First Water: 1329

YSI #: 73547

Water level #: N/A - Transducer

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106063Sample ID: 106063-P1P-112817Date / Time Collected: 11/28/17 / 1012

EQUIPMENT / NOTES

Sample Collected by: TK

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

~180 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Measuring Point

Northside casing

Casing ID (in.)

5 inchApproximate depth of pump inlet (ft): 511

Depth to Water - Initial (DTWI) (ft)

479.64 ft to cLength of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

508-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☒ Wind☐ Cloudy

Temperature:

~40°F, ~8 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0815	<u>~180 ml stroke</u>	<u>479.64</u>	<u>0.425</u>	<u>15.6</u>	<u>7.40</u>	<u>5.09</u>	<u>175.9</u>	<u>7.19</u>
0825	"	"	<u>0.428</u>	<u>15.7</u>	<u>7.25</u>	<u>4.86</u>	<u>202.8</u>	<u>5.95</u>
0835	"	"	<u>0.428</u>	<u>15.6</u>	<u>7.21</u>	<u>3.52</u>	<u>209.3</u>	<u>5.33</u>
0845	"	"	<u>0.428</u>	<u>15.8</u>	<u>7.21</u>	<u>3.18</u>	<u>190.8</u>	<u>4.56</u>
0855	"	<u>479.66</u>	<u>0.428</u>	<u>15.9</u>	<u>7.24</u>	<u>2.40</u>	<u>131.2</u>	<u>3.15</u>
0905	"	"	<u>0.428</u>	<u>15.9</u>	<u>7.24</u>	<u>2.58</u>	<u>149.9</u>	<u>2.30</u>
0925	"	"	<u>0.426</u>	<u>16.1</u>	<u>7.25</u>	<u>2.41</u>	<u>154.4</u>	<u>2.01</u>
0942	"	"	<u>0.425</u>	<u>16.2</u>	<u>7.26</u>	<u>2.45</u>	<u>155.6</u>	<u>1.78</u>
0953	"	"	<u>0.425</u>	<u>16.2</u>	<u>7.26</u>	<u>2.40</u>	<u>154.7</u>	<u>1.68</u>
1001	"	<u>479.72</u>	<u>0.425</u>	<u>16.3</u>	<u>7.26</u>	<u>2.41</u>	<u>153.9</u>	<u>1.63</u>
1010	"	"	<u>0.425</u>	<u>16.3</u>	<u>7.26</u>	<u>2.43</u>	<u>152.8</u>	<u>1.59</u>
								

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60Pump on: 0805Discharge: 21First Water: 0806psi (start): 270QED Controller #: MP10Hpsi (finish): 290YSI #: 106405Water level #: Solinst WL MeterTurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P1P

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW1-I

Date / Time Collected: 11/28/17 0940

Sample Collected by: CL, TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment.:

Flow Rate During Purging:

Micropurge

☒ Bladder Pump

☐ Other

300ml / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

~476*

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

Cannot fit WL probe down casing w/ pump installed.

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature:

46°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>300ml/stroke</u>		±10%	±10%	±10%	±10%	±10 mV	±10%
<u>0815</u>	<u>2.2L</u>	<u>476*</u>	<u>0.557</u>	<u>16.6</u>	<u>7.28</u>	<u>10.5</u>	<u>116.0</u>	<u>6.34</u>
<u>0825</u>		<u>—</u>	<u>0.556</u>	<u>17.0</u>	<u>7.27</u>	<u>9.18</u>	<u>116.2</u>	<u>5.90</u>
<u>0835</u>		<u>—</u>	<u>0.515</u>	<u>16.8</u>	<u>7.22</u>	<u>3.75</u>	<u>45.1</u>	<u>5.49</u>
<u>0845</u>		<u>—</u>	<u>0.493</u>	<u>16.9</u>	<u>7.22</u>	<u>2.68</u>	<u>61.6</u>	<u>4.50</u>
<u>0855</u>		<u>—</u>	<u>0.490</u>	<u>16.9</u>	<u>7.23</u>	<u>3.21</u>	<u>57.5</u>	<u>4.21</u>
<u>0905</u>		<u>—</u>	<u>0.488</u>	<u>17.1</u>	<u>7.23</u>	<u>2.48</u>	<u>46.7</u>	<u>4.03</u>
<u>0920</u>		<u>—</u>	<u>0.490</u>	<u>17.3</u>	<u>7.24</u>	<u>2.31</u>	<u>41.0</u>	<u>4.00</u>
<u>0930</u>	<u>5 gallons</u>	<u>—</u>	<u>0.488</u>	<u>17.4</u>	<u>7.24</u>	<u>2.09</u>	<u>36.9</u>	<u>3.95</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0803

Discharge: 20

First Water: 0805

psi (start): 270

QED Controller #: MP10H 1408

psi (finish): 285

YSI #: 73

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106MW1-SSample ID 106MW1S-P1P-112817Date / Time Collected 11/20/17 1130Sample Collected by: CLTR

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

2.75 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point

Top of casing
4"

Casing ID (in.)

Approximate depth of pump inlet (ft): 488

Depth to Water - Initial (DTWI) (ft)

475.46Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

463-498*no measurable product

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☒ Wind☐ CloudyTemperature: 50°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>275 mL/stroke</u>		±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>1010</u>	<u>2.0L</u>	<u>475.46</u>	<u>0.751</u>	<u>17.0</u>	<u>7.05</u>	<u>4.43</u>	<u>-133.0</u>	<u>0.97</u>
<u>1022</u>		<u>"</u>	<u>0.766</u>	<u>17.2</u>	<u>7.04</u>	<u>4.83</u>	<u>-132.5</u>	<u>0.39</u>
<u>1033</u>		<u>"</u>	<u>0.774</u>	<u>17.5</u>	<u>7.14</u>	<u>4.47</u>	<u>-167.1</u>	<u>0.25</u>
<u>1045</u>		<u>"</u>	<u>0.777</u>	<u>17.6</u>	<u>7.15</u>	<u>4.31</u>	<u>-175.1</u>	<u>0.19</u>
<u>1055</u>		<u>"</u>	<u>0.776</u>	<u>17.6</u>	<u>7.15</u>	<u>3.62</u>	<u>-178.6</u>	<u>0.16</u>
<u>1105</u>		<u>"</u>	<u>0.775</u>	<u>17.6</u>	<u>7.15</u>	<u>3.96</u>	<u>-181.9</u>	<u>0.12</u>
<u>1115</u>		<u>"</u>	<u>0.775</u>	<u>17.5</u>	<u>7.15</u>	<u>3.81</u>	<u>-186.2</u>	<u>0.12</u>
<u>1125</u>	<u>4.5 gals</u>	<u>"</u>	<u>0.773</u>	<u>17.4</u>	<u>7.16</u>	<u>3.31</u>	<u>-187.8</u>	<u>0.10</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60Pump on: 0958Discharge: 20First Water: 1000psi (start): 270QED Controller #: MP10H 1408psi (finish): 285YSI #: 73547Water level #: Solinst InterfaceTurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2S-P1P

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW2-S

Date / Time Collected: 11/20/17 1310
 Sample Collected by: A.TK

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☐ Bladder Pump ☐ Other _____
 Sampling Equipment: _____
 Flow Rate During Purging: 290 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): ~496 * Cannot fit probe down well - tubing obstruction
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: 55°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>290 mL/stroke</u>		±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>1207</u>	<u>2L</u>	<u>~496</u>	<u>0.825</u>	<u>17.8</u>	<u>7.21</u>	<u>9.17</u>	<u>-196.0</u>	<u>0.42</u>
<u>1221</u>		<u>—</u>	<u>0.812</u>	<u>17.8</u>	<u>7.24</u>	<u>6.85</u>	<u>-198.6</u>	<u>0.11</u>
<u>1232</u>		<u>—</u>	<u>0.842</u>	<u>18.0</u>	<u>7.23</u>	<u>5.69</u>	<u>-195.5</u>	<u>0.09</u>
<u>1242</u>		<u>—</u>	<u>0.863</u>	<u>18.1</u>	<u>7.21</u>	<u>3.70</u>	<u>-200.0</u>	<u>0.08</u>
<u>1252</u>		<u>—</u>	<u>0.863</u>	<u>18.1</u>	<u>7.21</u>	<u>3.88</u>	<u>-202.0</u>	<u>0.08</u>
<u>1302</u>		<u>—</u>	<u>0.863</u>	<u>18.0</u>	<u>7.21</u>	<u>3.85</u>	<u>-204.3</u>	<u>0.07</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60
 Discharge: 21
 psi (start): 270
 psi (finish): 285

Pump on: 1202
 First Water: 1204
 QED Controller #: MP10H 1408
 YSI #: 735A7
 Water level #: N/A
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P1P-112817

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 11/28/17 / 1212

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

northside casing

Casing ID (in.)

5-inch

Depth to Water - Initial (DTWI) (ft)

479.88

Approximate depth of pump inlet (ft):

493

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-508

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature:

~50°F, 10 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
1050	<u>~250 ml</u>	<u>479.88</u>	<u>0.740</u>	<u>16.6</u>	<u>7.00</u>	<u>13.1</u>	<u>-126.8</u>	<u>0.55</u>
1100	<u>stop</u>	<u>"</u>	<u>0.740</u>	<u>16.7</u>	<u>7.05</u>	<u>4.69</u>	<u>-138.9</u>	<u>0.38</u>
1110	<u>"</u>	<u>"</u>	<u>0.740</u>	<u>16.9</u>	<u>7.04</u>	<u>4.65</u>	<u>-141.5</u>	<u>0.34</u>
1120	<u>"</u>	<u>"</u>	<u>0.742</u>	<u>16.7</u>	<u>7.00</u>	<u>4.01</u>	<u>-151.7</u>	<u>0.33</u>
1130	<u>"</u>	<u>"</u>	<u>0.743</u>	<u>17.0</u>	<u>6.96</u>	<u>4.12</u>	<u>-158.3</u>	<u>0.31</u>
1140	<u>"</u>	<u>"</u>	<u>0.743</u>	<u>17.0</u>	<u>6.96</u>	<u>4.01</u>	<u>-163.9</u>	<u>0.33</u>
1150	<u>"</u>	<u>"</u>	<u>0.742</u>	<u>17.0</u>	<u>6.96</u>	<u>4.25</u>	<u>-169.8</u>	<u>0.29</u>
1200	<u>"</u>	<u>"</u>	<u>0.743</u>	<u>16.9</u>	<u>6.96</u>	<u>4.19</u>	<u>-172.5</u>	<u>0.29</u>
1210	<u>"</u>	<u>"</u>	<u>0.741</u>	<u>17.0</u>	<u>6.96</u>	<u>4.01</u>	<u>-176.3</u>	<u>0.29</u>

☐ Duplicate or MS/MSD Collected:

None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 22

psi (start): 270

psi (finish): 285

Pump on: TSK 1219 1042

First Water: 1043

QED Controller #: MP10H

YSI #: 107405

Water level #: Solinst WL meter

Turbidity Meter #: ECLVE0203

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106EX2-P1P-112917

Well ID: KAFB-106 **EX2**

Date / Time Collected 11/29/17 1327

Sample Collected by: TK, CL

☒ Other

Daily field instrument calibration verification performed?

Yes ☒ No ☐

Screen Interval (ft):

Approximate depth of pump inlet (ft): 491

Length of Casing (ft): N/A

☒ Sunny

☐ Rain

- Wind

☐ Cloudy

Temperature: $\sim 50^{\circ}\text{F}$

[illegible]☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

Sample Port Open: 1300

First Water: NA

YSI #: 75577

Water level #: Dedicated Transducer

Turbidity Meter #: PSZVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 IN1-P1P-112917

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 IN1

Date / Time Collected: 11/29/17 / 1057

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment.:

Flow Rate During Purging:

☐ Bladder Pump

☒ Other

~500 ml/min

Grundfos 2HP

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.): 6-inch

Depth to Water - Initial (DTWI) (ft)

476.14

Approximate depth of pump inlet (ft): 492

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

502

Screen Interval (ft):

477 - 497

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

~40°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1013	477.19	0.950	17.2	6.75	67.2	-149.7	0.29
1024	477.27	1.045	20.7	6.84	34.1	-185.8	0.20
1034	477.31	1.007	21.3	6.86	26.1	-186.3	0.18
1039	477.36	0.991	21.8	6.86	26.0	-185.9	0.17
1045	477.35	0.962	22.1	6.86	20.6	-184.4	0.17
1050	477.39	0.943	22.1	6.87	16.4	-183.0	0.16
1055	477.35	0.934	22.1	6.86	15.9	-180.9	0.16

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

110 gallons

Pump on/

Sample Port Open:

1000

First Water:

1011

YSI #:

74573

Water level #:

dedicated transducer

Turbidity Meter #:

FSLVE0203

1 casing volume = 30 gallon
 Note, water was very dark grey for first 30 second of purge

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106MW2-ISample ID: 106MW2I-P1P-112917Date / Time Collected: 11/29/17 / 0931

EQUIPMENT / NOTES

Sample Collected by: TK, CL

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

~275 mil/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point

northside casing*

Casing ID (in.)

3-inchApproximate depth of pump inlet (ft): 517

Depth to Water - Initial (DTWI) (ft)

~476*Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513 - 523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☐ Wind☐ Cloudy

Temperature:

~33°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0751	<u>~27.5</u>	<u>NA*</u>	0.710	16.4	7.05	2.47	82.3	1.13
0801	"	"	0.712	16.4	7.06	6.14	-108.9	0.96
+ 0811	"	"	0.674	16.7	7.28	2.36	-203.7	0.27
0821	"	"	0.638	16.1	7.37	2.25	-224.6	0.19
0832	"	"	0.646	16.6	7.39	1.75	-233.0	0.14
0842	"	"	0.659	16.8	7.41	4.76	-240.4	0.12
0852	"	"	0.669	17.1	7.42	2.91	-245.4	0.10
0909	"	"	0.683	17.2	7.43	2.27	-251.7	0.08
0920	"	"	0.690	17.3	7.43	3.06	-254.5	0.08
0929	"	"	0.695	17.4	7.45	2.07	-259.1	0.07

☒ Duplicate or MS/MSD Collected: 106MW2I-P1P-112917-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge:

50

Discharge:

21

psi (start):

270

psi (finish):

280

Pump on:

0742

First Water:

0743

QED Controller #:

MP10H

YSI #:

74573

Water level #:

Solinst WL Meter*

Turbidity Meter #:

FSLVE0203

*WL Meter does not fit in casing - pump. WL is pre-pump deployment level.

+ changed N₂ cylinder out.

Project Name:	KAFB RAPID ESTCP	Site Location:	Kirtland AFB, SWMU ST-106/SS-111
Project No.:	500433	Well ID:	KAFB-106 EX1
Sample ID	106 EX1-P1P-112917	Date / Time Collected	11/29/17 11245

Yes ☒ No ☐

Approximate depth of pump inlet (ft): 491
Length of Casing (ft): N/A

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: 90°F

[illegible]

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): NA, + flowing into
injection well

Pump on: 1133 on 11/29/17
Sample Port Open: 1223

First Water: NA

YSI #: 73547

Water level #: dedicated transducer

Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1-I-P2R-010918

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW1-I

Date / Time Collected: 1/9/18 1117

Sample Collected by: C. LaChance

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

200 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

NM * cannot fit w/ probe

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 42°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0950	2.1 L	475*	0.495	16.5	7.42	2.40	128.0	7.09
1000		—	0.545	16.7	7.29	6.66	126.3	6.42
1010		—	0.752	16.8	7.12	13.5	-101.6	3.55
1020		—	0.794	16.9	7.10	5.66	-126.3	2.33
1030		—	0.789	16.8	7.10	5.00	-136.9	1.60
1040		—	0.785	17.0	7.11	4.16	-143.3	1.28
1050		—	0.785	17.0	7.11	4.07	-148.3	1.08
1058		—	0.784	16.9	7.13	4.59	-150.6	0.93
1106		—	0.783	16.9	7.13	4.30	-151.2	0.89
1114	4 gallons	—	0.782	17.0	7.12	4.76	-153.1	0.83

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0937

Discharge: 21

First Water: 0940

psi (start): 270

QED Controller #: MP10H 1409

psi (finish): 285

YSI #: 73547

Water level #: N/A

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW/S-P2R-010918

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW-S

Date / Time Collected: 1/9/18, 1310 1410
 Sample Collected by: C. LaChance

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 2.75 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Top of casing
 Casing ID (in.): 4"
 Depth to Water - Initial (DWI) (ft): 474.55 ft bblc
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 4103 - 490
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A
No measurable LNAPL

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☒ Wind ☒ Cloudy Temperature: 50's

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	(ft bblc)	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1215	1.4L	474.55	0.758	17.3	7.26	3.61	54.6	3.40
1225		"	0.758	17.4	7.20	4.66	50.4	2.23
1235		"	0.773	17.5	7.10	5.85	-106.4	1.20
1245		"	0.800	17.6	7.12	5.98	-130.3	0.85
1255		"	0.817	17.3	7.11	4.88	-134.7	0.60
1305		"	0.822	17.5	7.10	4.04	-139.2	0.45
1315		"	0.828	17.4	7.09	3.88	-143.3	0.35
1325		"	0.840	17.5	7.07	3.75	-145.5	0.29
1335		"	0.844	17.5	7.06	3.53	-148.3	0.24
1343		"	0.848	17.5	7.06	3.12	-149.7	0.22
1351		"	0.850	17.5	7.05	3.05	-151.7	0.20
1359		"	0.853	17.5	7.05	3.03	-152.7	0.19
1307		"	0.856	17.6	7.04	3.28	-153.5	0.18

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 600

Discharge: 20

psi (start): 270

psi (finish): 285

Pump on: 1205

First Water: 1207

QED Controller #: MP10H 1409

YSI #: 73547

Water level #: Solinst Interface Probe

Turbidity Meter #: FSLVE0203

COLLEC

H1-93

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106mw2I-P2R-010918

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106mw2I

Date / Time Collected: 1/9/18 / 1355
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 3-inch
 Depth to Water - Initial (DTWI) (ft): ~476*
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 517
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~48°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1215	<u>~250 ml/stroke</u>	<u>NA*</u>	<u>0.656</u>	<u>17.2</u>	<u>7.23</u>	<u>3.34</u>	<u>25.9</u>	<u>5.95</u>
1225	"	"	<u>0.603</u>	<u>17.3</u>	<u>6.94</u>	<u>3.29</u>	<u>116.4</u>	<u>2.16</u>
1235	"	"	<u>0.849</u>	<u>17.2</u>	<u>6.97</u>	<u>3.17</u>	<u>197.2</u>	<u>1.03</u>
1245	"	"	<u>0.903</u>	<u>17.3</u>	<u>7.00</u>	<u>3.24</u>	<u>211.1</u>	<u>0.69</u>
1255	"	"	<u>0.886</u>	<u>17.3</u>	<u>7.04</u>	<u>3.01</u>	<u>216.9</u>	<u>0.52</u>
1305	"	"	<u>0.878</u>	<u>17.4</u>	<u>7.05</u>	<u>3.18</u>	<u>219.8</u>	<u>0.47</u>
1315	"	"	<u>0.876</u>	<u>17.5</u>	<u>7.06</u>	<u>3.22</u>	<u>222.8</u>	<u>0.42</u>
1325	"	"	<u>0.875</u>	<u>17.6</u>	<u>7.07</u>	<u>3.16</u>	<u>225.8</u>	<u>0.38</u>
1335	"	"	<u>0.873</u>	<u>17.5</u>	<u>7.07</u>	<u>3.18</u>	<u>226.3</u>	<u>0.37</u>
1345	"	"	<u>0.873</u>	<u>17.5</u>	<u>7.07</u>	<u>3.20</u>	<u>226.7</u>	<u>0.35</u>
1353	"	"	<u>0.874</u>	<u>17.5</u>	<u>7.07</u>	<u>3.17</u>	<u>226.8</u>	<u>0.35</u>

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 *WL meter
 Discharge: 22 does not fit
 psi (start): 270 in well =
 psi (finish): 280 pump in, WL is
 from pre-pump
 deployment.
 Pump on: 1205
 First Water: 1206
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: solin st WL probe *
 Turbidity Meter #: FSLVE0205

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P2R-011018

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 1/10/18 1340

Sample Collected by: C. Lachance

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

2.75 mL/Stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☐

No ☐

PURGING INFORMATION

Measuring Point

Top of casing

Casing ID (in.)

5"

Depth to Water - Initial (DTWI) (ft)

477.63 ft bto c

Approximate depth of pump inlet (ft): 495

Length of Casing (ft): N/A 23 ft.

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-508

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☒ Rain

☐ Wind

☒ Cloudy

Temperature:

40°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1209	2L	477.63	0.747	15.9	7.06	6.72	-100.6	1.01
1219		"	0.795	15.8	7.03	5.28	-122.1	0.43
1229		477.60	0.869	16.1	6.95	5.02	-121.9	0.31
1239		"	0.866	15.7	6.92	3.79	-128.9	0.30
1249		"	0.877	16.3	6.90	2.92	-134.2	0.23
1259		"	0.873	16.2	6.90	2.90	-136.4	0.19
1310		"	0.875	16.0	6.90	2.85	-138.7	0.17
1320		"	0.876	16.1	6.90	2.73	-139.7	0.15
1330		"	0.873	16.5	6.90	3.10	-141.8	0.14
1338	4.5 gals	"	0.873	16.3	6.90	2.90	-143.4	0.14

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 20

psi (start): 270

psi (finish): 285

Pump on: 1157

First Water: 1159

QED Controller #: MP10H 1409

YSI #: 73547

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 1061N1-P2R-011018-03

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-1061N1

Date / Time Collected: 1/10/18, 0955
 Sample Collected by: C. Lachance, T. Kunkel

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment: ☐ Bladder Pump ~1L/min ☒ Other Grundfos

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.): 6"

Depth to Water - Initial (DTWI) (ft): 455.71 ft bgs

Depth to Well Bottom (ft): 502

Screen Interval (ft): 497-497

Approximate depth of pump inlet (ft): Pump off*

Length of Casing (ft): N/A

* sampling from port - combined extraction well effluent.

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☒ Rain

☐ Wind

☒ Cloudy

Temperature: 45F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
0934	455.71	0.934	18.2	6.93	3.78	-118.3	1.60
0939	"	0.930	18.8	6.88	3.22	-126.6	1.37
0943	"	0.931	18.8	6.88	3.17	-129.9	1.26
0947	"	0.929	18.7	6.89	4.36	-130.7	1.20

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 3.5 gallons

Sample Port Open: 0932

First Water: 0932

YSI #: 73547

Water level #: NA - Transducer

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 063-P2R-011018

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 063

Date / Time Collected: 1/10/18 / 1443

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 478.62 ft ^{btc}
 Depth to Well Bottom (ft): 528 ^{TSK}
 Screen Interval (ft): 508 - 523
 Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☒ Wind ☒ Cloudy Temperature: ~38°F, wind 8 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	ft <u>btc</u>	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1210	<u>~250 mL</u>	<u>478.62</u>	<u>0.422</u>	<u>14.8</u>	<u>7.28</u>	<u>4.00</u>	<u>67.0</u>	<u>6.69</u>
1220	"	"	<u>0.414</u>	<u>13.9</u>	<u>7.16</u>	<u>3.90</u>	<u>80.5</u>	<u>6.06</u>
1230	"	"	<u>0.430</u>	<u>15.2</u>	<u>7.12</u>	<u>3.78</u>	<u>83.4</u>	<u>5.41</u>
1240	"	"	<u>0.576</u>	<u>15.4</u>	<u>7.14</u>	<u>3.01</u>	<u>22.0</u>	<u>3.64</u>
1250	"	"	<u>0.630</u>	<u>15.7</u>	<u>7.13</u>	<u>3.66</u>	<u>-25.3</u>	<u>2.79</u>
1300	"	"	<u>0.642</u>	<u>15.8</u>	<u>7.12</u>	<u>3.54</u>	<u>-49.8</u>	<u>2.16</u>
1310	"	"	<u>0.644</u>	<u>15.8</u>	<u>7.12</u>	<u>3.59</u>	<u>-66.7</u>	<u>1.67</u>
1320	"	"	<u>0.647</u>	<u>15.7</u>	<u>7.13</u>	<u>3.50</u>	<u>-74.2</u>	<u>1.42</u>
1330	"	"	<u>0.650</u>	<u>16.1</u>	<u>7.13</u>	<u>3.47</u>	<u>-79.9</u>	<u>1.18</u>
1340	"	"	<u>0.650</u>	<u>16.0</u>	<u>7.13</u>	<u>3.44</u>	<u>-84.7</u>	<u>1.10</u>
1355	"	"	<u>0.652</u>	<u>15.7</u>	<u>7.14</u>	<u>3.60</u>	<u>-91.8</u>	<u>0.95</u>
1410	"	"	<u>0.655</u>	<u>15.6</u>	<u>7.14</u>	<u>3.51</u>	<u>-93.4</u>	<u>0.82</u>
1420	"	"	<u>0.656</u>	<u>15.6</u>	<u>7.14</u>	<u>3.47</u>	<u>-96.6</u>	<u>0.78</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 21

psi (start): 270

psi (finish): 285

+ change N_2
cylinder at
1218

Pump on: 1158

First Water: 1159

QED Controller #: MP10H

YSI #: 106405

Water level #: solinst WL probe

Turbidity Meter #: FSLVE0405

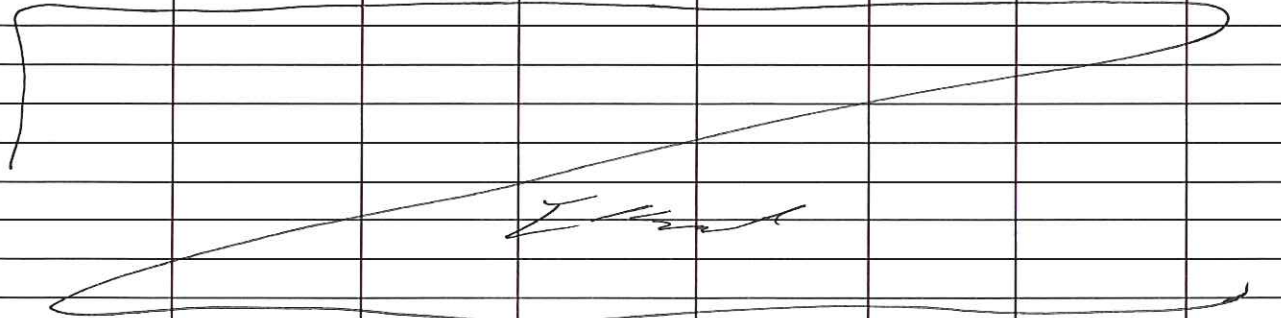
1430	"	"	<u>0.656</u>	<u>15.6</u>	<u>7.14</u>	<u>3.53</u>	<u>-98.5</u>	<u>0.72</u>
1440	"	"	<u>0.658</u>	<u>15.3</u>	<u>7.14</u>	<u>3.50</u>	<u>-99.6</u>	<u>0.70</u>

Project Name:	KAFB RAPID ESTCP	Site Location:	Kirtland AFB, SWMU ST-106/SS-111
Project No.:	500433	Well ID:	KAFB-106EX2
Sample ID	106EX2-P2R-011018	Date / Time Collected	1/10/18 / 1107

No _____

$$487 - \frac{502}{100}$$

~370F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1050	486.17	0.934	19.9	6.94	3.34	-92.8	0.22
1055	486.17	0.933	19.8	6.97	2.61	-101.1	0.13
1100	486.17	0.935	19.9	7.01	2.62	-105.6	0.12
1105	486.17	0.937	19.9	7.02	3.15	-107.8	0.11
							

☒ Duplicate or MS/MSD Collected: 106EX2-P2R-011018-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

2 gallons

Sample Port Open:

1045

First Water:

1045

YSI #:

106405

Water level #:

dedicated transducer

Turbidity Meter #:

FSLVE 0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX1-P2R-011018

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX1

Date / Time Collected: 1/10/18 / 1031

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

Grundfos 5HP

Flow Rate During Purging:

~250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.)

6-inch

Depth to Water - Initial (DTWi) (ft)

481.41 ft bgs

Approximate depth of pump inlet (ft):

491

Depth to Well Bottom (ft)

507

Screen Interval (ft):

487-502

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☒ Rain

☐ Wind

☒ Cloudy

Temperature:

~37°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1003	481.41	0.603	18.4	6.78	7.84	-94.7	0.86
1008	481.41	0.604	16.1	6.77	7.46	-88.3	0.90
1013	481.41	0.598	18.8	6.76	3.19	-88.6	0.83
1018	481.41	0.605	19.0	6.82	3.42	-94.9	0.66
1023	481.41	0.605	19.2	6.90	5.70	-99.4	0.62
1028	481.41	0.600	19.3	6.95	4.05	-101.5	0.61

☐ Duplicate or MS/MSD Collected:

None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

2.5 gallon

Sample Port Open:

1000

First Water:

1000

YSI #:

106405

Water level #:

dedicated transducer

Turbidity Meter #:

FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX2-P2R-011618

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX2

Date / Time Collected: 1/16/18 / 1255

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment: ☐ Bladder Pump

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 6-inch

Depth to Water - Initial (DTWI) (ft) 486.4

Depth to Well Bottom (ft) 507

Screen Interval (ft): 487-502

Approximate depth of pump inlet (ft): 491

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny

☐ Rain

☒ Wind cloudy

Temperature: ~30°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1215	486.4	0.920	20.0	6.99	3.36	-106.9	0.60
1220	"	0.916	20.0	6.98	3.60	-111.9	0.49
1225	"	0.909	20.0	6.99	3.83	-113.9	0.47
1230	"	0.918	19.6	6.99	3.05	-114.7	0.40
1235	"	0.923	19.7	6.99	3.49	-116.5	0.32
1240	"	0.922	19.7	6.99	2.72	-117.7	0.30
1245	"	0.918	19.6	7.00	3.06	-118.5	0.29
1250	"	0.918	19.6	6.99	3.61	-118.8	0.28

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

port open: 1209

Pump on: Yes

First Water: NA

YSI #: 106405

Water level #: dedicated transducer

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MWIS-P2R-011618

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MWIS

Date / Time Collected: 1/16/18 / 0950

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 4-inch
 Depth to Water - Initial (DTWI) (ft): ~476*
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463 - 498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☒ Wind ☒ Cloudy Temperature: ~20°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	±10%
0835	~250 mL/stroke	NA*	0.852	12.8	7.09	5.07	-173.9	0.72
0845	"	"	0.856	13.1	7.12	4.79	-192.7	0.54
0855	"	"	0.862	13.1	7.15	4.02	-208.0	0.44
0905	"	"	0.870	12.8	6.93	3.58	-170.0	0.41
0915	"	"	0.870	13.4	6.92	3.05	-168.5	0.38
0925	"	"	0.868	13.2	6.91	3.16	-169.3	0.36
0935	"	"	0.868	13.6	6.91	3.09	-170.9	0.36
0945	"	"	0.870	13.7	6.91	3.10	-172.1	0.35
<i>[Signature]</i>								

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 *WL meter does Pump on: 0825
 Discharge: 21 not fit c First Water: 0826
 psi (start): 270 pump in place. QED Controller #: MP16H
 psi (finish): 280 WL is from YSI #: 106405
 pre-pump deployment. Water level #: Solinst WL probe*
 Turbidity Meter #: FSLVE0405

Project Name:	KAFB RAPID ESTCP	Site Location:	Kirtland AFB, SWMU ST-106/SS-111
Project No.:	500433	Well ID:	KAFB-106 EX 1
Sample ID	106 EX1-P2R-011618	Date / Time Collected	1/16/18 / 1155

Daily field instrument calibration verification performed?

Yes ☒ No ☐

Casing ID (in.) 6-inch
Depth to Water - Initial (DTWI) (ft) 480.43
Depth to Well Bottom (ft) 507
Screen Interval (ft): 487-502

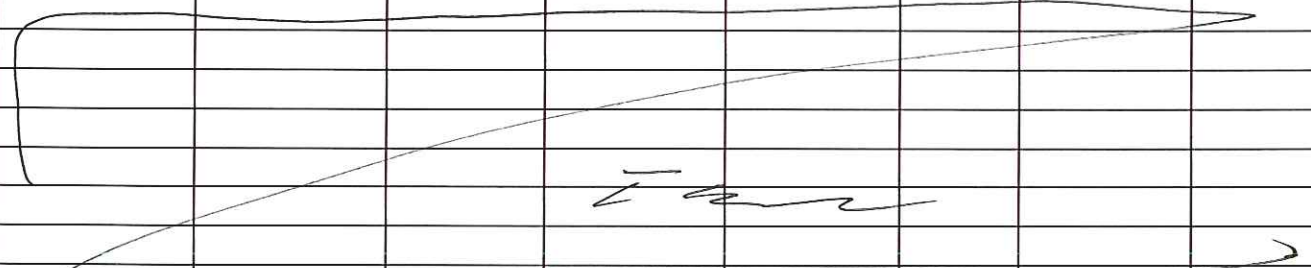
Approximate depth of pump inlet (ft): 797
Length of Casing (ft): N/A

Weather Conditions: ☐ Sunny

☐ Rain

☒ Wind ☒ Cloudy

Temperature: $\sim 30^{\circ}\text{F}$

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1130	480.43	0.605	19.5	6.99	3.47	-108.7	0.96
1135	"	0.609	18.6	6.97	2.96	-112.3	0.53
1140	"	0.607	18.4	6.97	3.09	-113.0	0.46
1145	"	0.607	18.7	6.97	3.22	-114.6	0.42
1150	"	0.604	18.3	6.96	3.65	-115.4	0.41
							

☒ Duplicate or MS/MSD Collected: 106EX1-P2R-011618-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

port open: 1124

Pump on: 125

First Water: *NA*

YSI #: 100905

Water level #: *dedicated transducer*

Turbidity Meter #: 152VE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWI-P2R-011618

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MWI-I

Date / Time Collected: 1/16/18 1035
 Sample Collected by: C. LaChance

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: 290 mL / stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 3"
 Depth to Water - Initial (DTWI) (ft): 474.60* as measured in MWI-5 yesterday
 Approximate depth of pump inlet (ft): 518
 Length of Casing (ft): N/A
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☒ Wind (12mph) ☒ Cloudy Temperature: 20's

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0836	2L	474.60*	0.752	13.9	7.23	13.8	161.5	5.35
0846		—	0.756	14.1	7.22	22.1	55.3	4.31
0856		—	0.792	14.3	7.14	8.03	-130.5	2.30
0906		—	0.822	14.5	7.11	7.52	-142.8	1.42
0916		—	0.807	14.4	7.11	3.38	-145.9	1.09
0926		—	0.804	14.7	7.12	3.03	-148.6	0.88
0936		—	0.804	14.7	7.12	3.30	-151.1	0.75
0946		—	0.804	14.8	7.12	3.48	-152.7	0.67
0958		—	0.803	15.1	7.12	3.35	-155.8	0.58
1006		—	0.809	15.1	7.13	4.04	-157.4	0.54
1014		—	0.809	15.3	7.13	5.20	-156.9	0.48
1022		—	0.808	15.1	7.13	4.83	-157.8	0.47
1030		—	0.810	15.3	7.12	2.81	-158.0	0.43

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0824

Discharge: 21

First Water: 0826

psi (start): 270

QED Controller #: MP104 1408

psi (finish): 285

YSI #: 73547

Water level #: Solinst Interface * cannot measure DTW in 3" wells.

Turbidity Meter #: ESLWE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106004-P2R-01/818

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106064

Date / Time Collected: 1/18/18 1020
 Sample Collected by: C.L.

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 275 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 5"

Depth to Water - Initial (DTWI) (ft): 478.08 ft bto c

Depth to Well Bottom (ft): 513

Screen Interval (ft): 488-508

Approximate depth of pump inlet (ft): 495

Length of Casing (ft): N/A ~ 3 ft.

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 30°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water (ft bto c)	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0925	1.3L	478.08	0.886	15.9	6.91	4.28	-168.7	0.30
0935		"	0.875	15.9	6.87	4.94	-149.9	0.21
0945		"	0.878	15.5	6.82	3.84	-150.3	0.19
0955		478.06	0.882	15.8	6.75	4.30	-146.9	0.16
1005		"	0.887	16.1	6.75	3.92	-149.5	0.16
1015	3.2 gals	"	0.886	16.3	6.74		-150.9	0.15
COL								

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 600

Discharge: 20

psi (start): 270

psi (finish): 280

Pump on: 0916

First Water: 0918

QED Controller #: MP10H

YSI #: 73547

Water level #: Solinst Interface

Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWIS-P2R-011818

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MWI-S
 Date / Time Collected: 1/18/18 1405
 Sample Collected by: C.L.

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 275 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): 474.51 ft btoe
 Depth to Well Bottom (ft): 500.5 *No measurable LNAPL
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 47°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	(ft btoe)	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1256	1.5L	474.51	0.889	16.6	7.32	4.55	-212.7	0.32
1310		"	0.877	16.9	7.23	4.31	-196.7	0.20
1320		"	0.881	17.0	7.10	5.26	-176.4	0.17
1330		474.50	0.887	16.9	7.04	4.89	-172.9	0.14
1340		"	0.887	17.0	7.03	4.73	-175.3	0.14
1350		"	0.889	17.0	7.03	4.26	-178.0	0.13
1400		"	0.890	17.1	7.02	4.12	-180.0	0.13

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60
 Discharge: 20
 psi (start): 270
 psi (finish): 285
 Pump on: 1246
 First Water: 1248
 QED Controller #: NP10H
 YSI #: 73547
 Water level #: Solinst Interface
 Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P2R-011818

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 063

Date / Time Collected: 1/18/18 / 1151
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 478.99
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 508 - 523
 Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☒ Wind ☒ cloudy Temperature: ~24°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0900	~200 mL stroke	478.99	0.663	14.9	7.46	4.13	12.5	6.33
0910	"	"	0.663	14.5	7.27	4.07	36.8	5.00
0920	"	"	0.664	14.3	7.23	4.10	42.6	4.15
0930	"	"	0.668	14.1	7.21	3.86	-56.0	2.64
0940	"	"	0.673	14.3	7.22	3.69	-104.9	1.93
0950	"	"	0.674	14.3	7.21	3.45	-113.6	1.54
1000	"	"	0.676	14.7	7.22	2.87	-118.3	1.29
1010	"	"	0.678	15.1	7.22	3.34	-122.0	1.09
1025	"	"	0.680	15.3	7.22	3.40	-125.7	0.89
1040	"	"	0.680	15.3	7.23	3.37	-128.3	0.74
1055	"	"	0.681	15.7	7.23	3.31	-131.3	0.63
1110	"	"	0.676	15.3	7.22	3.39	-127.5	0.64
1120	"	"	0.685	15.6	7.23	3.40	-130.0	0.58

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 P2 1 of 2

Discharge: 21 * see page

psi (start): 260 2 for

psi (finish): 285 additional

Purged about 8 gallon parameters

Pump on: 0850

First Water: 0851

QED Controller #: MP10H

YSI #: 106405

Water level #: Solinst WL meter

Turbidity Meter #: FSLVE0905

Time	Volume	DT	Cond.	Temp	pH	Turbid	ORP	DO
1130	"	"	0.682	15.5	7.22	3.37	-130.4	0.53

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106 063-P2R-011818

Well ID: KAFB-106 063

Sample ID 106 063-P2R-011818

Date / Time Collected _____

Sample Collected by: _____

Purging Method/Equipment: Micropurge
Sampling Equipment.: ☐ Bladder Pump

☐ Other _____

Flow Rate During Purging : _____

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes No

PURGING INFORMATION

Measuring Point

Casing ID (in.)

Approximate depth of pump inlet (ft):

Depth to Water - Initial (DTWI) (ft)

Length of Casing (ft): N/A

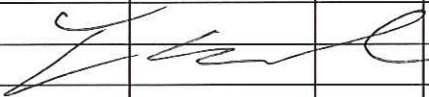
Depth to Well Bottom (ft)

Screen Interval (ft):

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: $\sim 40^\circ \text{F}$

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1130	~200 mL stroke	478.99	0.682	15.5	7.22	3.37	-130.4	0.53
1140	"	"	0.683	15.4	7.23	3.40	-131.3	0.50
1150	"	"	0.681	15.0	7.23	3.42	-130.2	0.50
								

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: _____

Pump on: _____

Discharge: /see

First Water: /

psi (start): 1.19

QED Controller #: / See

psi (finish):

YSI #: 171

Water level #: /

Turbidity Meter #/

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106mw2I-P2R-011818

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106mw2I
 Date / Time Collected: 1/18/18 / 1400
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 3-inch
 Depth to Water - Initial (DTWI) (ft): ~476*
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 517
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~46°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1305	<u>~250 ml/min stroke</u>	<u>NA</u>	<u>0.860</u>	<u>16.7</u>	<u>7.17</u>	<u>6.25</u>	<u>-203.9</u>	<u>0.57</u>
1315	<u>"</u>	<u>"</u>	<u>0.875</u>	<u>16.9</u>	<u>7.18</u>	<u>6.49</u>	<u>-227.7</u>	<u>0.35</u>
1325	<u>"</u>	<u>"</u>	<u>0.886</u>	<u>17.1</u>	<u>7.16</u>	<u>6.83</u>	<u>-229.8</u>	<u>0.33</u>
1335	<u>"</u>	<u>"</u>	<u>0.882</u>	<u>17.2</u>	<u>7.15</u>	<u>5.75</u>	<u>-230.8</u>	<u>0.32</u>
1345	<u>"</u>	<u>"</u>	<u>0.872</u>	<u>17.2</u>	<u>7.15</u>	<u>5.11</u>	<u>-233.0</u>	<u>0.31</u>
1355	<u>"</u>	<u>"</u>	<u>0.870</u>	<u>17.3</u>	<u>7.15</u>	<u>5.19</u>	<u>-234.1</u>	<u>0.30</u>
<u>End</u>								

☐ Duplicate or MS/MSD Collected: _____

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 52 *WL meter
 Discharge: 2021 ^{TSK} does not fit in
 psi (start): 270 casing pump
 psi (finish): 280 in place. It is
 from pre-pump
 deployment
 Pump on: 1253
 First Water: 1254
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: Solinst WL meter*
 Turbidity Meter #: FSLVE0405

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106IN1-P2R-012418-09

Well ID: KAFB-106 *In 1*

Date / Time Collected 1/24/18 / 1127

Sample Collected by: TK, CC

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump☒ Other

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

No

injection well

PURGING INFORMATION

Casing ID (in.)

Depth to Water - Initial (DTWi) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft):

Approximate depth of pump inlet (ft):

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

- ☐ Rain

- Wind

Temperature:

 $\sim 25^\circ \text{F}$ [illegible]☐ Duplicate or MS/MSD Collected:

none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Pump on:

First Water:

YSI #:

Water level #:

Turbidity Meter #:

portopen: 1015

* Close port for off cycle of chem pump

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 MW 2 SSample ID: 106 MW 2 S - P2R-012418Date / Time Collected: 1/24/18 / 1347

EQUIPMENT / NOTES

Sample Collected by: TK

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

~250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point northside casing

Casing ID (in.)

4-inchApproximate depth of pump inlet (ft): 488

Depth to Water - Initial (DWI) (ft)

~476 ft bgsLength of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

463-498

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☐ Wind

Temperature:

~30°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1225	<u>~250 ml/stroke</u>	<u>NA</u>	<u>0.913</u>	<u>15.4</u>	<u>7.06</u>	<u>5.51</u>	<u>-204.1</u>	<u>0.60</u>
1235	"	"	<u>0.925</u>	<u>15.8</u>	<u>7.07</u>	<u>5.40</u>	<u>-218.2</u>	<u>0.49</u>
1245	"	"	<u>0.932</u>	<u>16.0</u>	<u>6.95</u>	<u>3.17</u>	<u>-207.2</u>	<u>0.40</u>
1255	"	"	<u>0.968</u>	<u>16.1</u>	<u>6.77</u>	<u>3.05</u>	<u>-180.6</u>	<u>0.36</u>
1305	"	"	<u>0.970</u>	<u>16.2</u>	<u>6.75</u>	<u>3.00</u>	<u>-174.9</u>	<u>0.34</u>
1315	"	"	<u>0.972</u>	<u>16.1</u>	<u>6.74</u>	<u>3.09</u>	<u>-173.5</u>	<u>0.34</u>
1325	"	"	<u>0.973</u>	<u>16.4</u>	<u>6.74</u>	<u>3.01</u>	<u>-173.7</u>	<u>0.32</u>
1335	"	"	<u>0.971</u>	<u>16.5</u>	<u>6.74</u>	<u>2.96</u>	<u>-173.9</u>	<u>0.32</u>
1345	"	"	<u>0.970</u>	<u>16.3</u>	<u>6.74</u>	<u>2.97</u>	<u>-174.1</u>	<u>0.32</u>
<u>TK</u>								

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge:

60

Discharge:

21

psi (start):

270

psi (finish):

280

Pump on:

1215

First Water:

1216

QED Controller #:

MP104

YSI #:

106405

Water level #:

Solinst WL probe

Turbidity Meter #:

FSL1/E 0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Project No.: 500433

Well ID: KAFB-106 MW1-S

Sample ID 106MWIS-P2P-012418

Date / Time Collected 1/24/18 1320

EQUIPMENT / NOTES

Sample Collected by: A.

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump

☐ Other

Flow Rate During Purging :

er Pump ☐
255 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ✓ No

PURGING INFORMATION

Measuring Point TOC

Casing ID (in.) 4"

Approximate depth of pump inlet (ft): 480

Depth to Water - Initial (DTWi) (ft) 474.75 ft b10c.

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 520.5

No measurable LNAPL

Screen Interval (ft): 463-498

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind

Temperature: 43°F

[illegible]

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 12/4

Discharge: 20

First Water: 12/6

psi (start): 270

QED Controller #: MP104 K08

psi (finish): 285

YSI #: 73547

Water level #: Solinst Interface

Turbidity Meter #: FSLWE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P2R-012418

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW1-I

Date / Time Collected: 1/24/18 1055

Sample Collected by: C.L.

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

275 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 3"

Approximate depth of pump inlet (ft): 518

Depth to Water - Initial (DTWI) (ft): ~474*

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 528

Screen Interval (ft): 513-523

*cannot measure DTW w/ tubing downhole in 3" wells

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

Temperature: 24°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0839	~2L	474*	0.793	15.3	6.88	9.03	108.5	4.02
0849		—	0.798	15.2	6.88	12.0	-35.9	2.48
0859		—	0.828	15.5	6.86	10.3	-138.4	1.32
0909		—	0.823	15.6	6.83	5.13	-136.3	0.92
0919		—	0.818	15.7	6.84	4.89	-139.8	0.76
0936		—	0.825	15.8	6.89	4.37	-148.4	0.55
0951		—	0.833	16.2	6.91	3.84	-151.3	0.44
1001		—	0.837	16.0	6.93	3.73	-152.8	0.38
1011		—	0.835	16.1	6.93	3.61	-153.5	0.35
1021		—	0.840	16.4	6.94	3.34	-154.9	0.32
1031		—	0.839	16.2	6.94	3.70	-155.7	0.29
1042		—	0.838	16.4	6.94	3.62	-155.3	0.30
1052	7.5 gals	—	0.839	16.5	6.94	3.50	-155.7	0.27

☒ Duplicate or MS/MSD Collected: 106MW1I-P2R-012418-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0827

Discharge: 22

First Water: 0829

psi (start): 270

QED Controller #: MP10H 1408

psi (finish): 285

YSI #: 73547

Water level #: N/A - cannot measure DTW

Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX1-P2R-012518

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX1

Date / Time Collected: 1/25/18 / 1307

Sample Collected by: TK CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

☐ Bladder Pump

☒ Other

Grundfos 5 HP

~100 mil/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.): 6-inch

Depth to Water - Initial (DTWI) (ft)

507 ^{TSK} 480.69 ft bgs

Approximate depth of pump inlet (ft): 491

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

507

Screen Interval (ft): 487-502

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

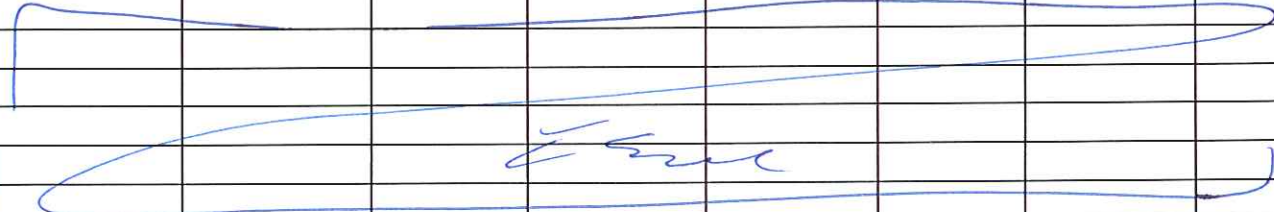
☐ Rain

☒ Wind

☐ Cloudy

Temperature:

~45°F, 6 mph

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1230	480.64	0.636	19.5	6.93	4.18	-109.7	1.06
1235	"	0.634	19.4	6.89	3.32	-113.9	0.76
1240	"	0.635	19.7	6.89	3.59	-117.8	0.51
1245	"	0.638	19.6	6.88	3.78	-119.7	0.45
1255	"	0.635	19.6	6.88	3.34	-120.9	0.42
1300	"	0.635	19.6	6.89	3.16	-121.8	0.39
1305	"	0.637	19.5	6.88	3.28	-122.6	0.39
							

☐ Duplicate or MS/MSD Collected:

none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

4.5 gallons

Sample Port Open:

1226

First Water:

1226

YSI #:

106405

Water level #:

dedicated transducer

Turbidity Meter #:

FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P2R-012518

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063

Date / Time Collected: 1/25/18 / 1142

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 ml

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DWI) (ft): 478.86 ft to c
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 508 - 523
 Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind

Temperature: ~25°F, ~4 mph wind

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0840	~250 ml stroke	478.86	0.687	13.2	7.20	7.74	28.0	4.56
0855	"	"	0.682	13.8	7.09	6.96	37.0	3.22
0910	"	"	0.687	13.6	7.12	7.12	-61.8	1.75
0925	"	"	0.696	13.0	7.18	6.04	-106.4	1.02
0940	"	"	0.690	14.0	7.19	5.11	-119.2	0.77
0955	"	478.84	0.693	14.4	7.19	5.02	-126.5	0.62
1010	"	"	0.694	15.1	7.18	5.12	-132.8	0.52
1025	"	"	0.694	14.9	7.19	4.90	-136.6	0.44
1040	"	478.83	0.694	15.3	7.19	4.86	-142.1	0.40
1055	"	"	0.696	15.8	7.19	4.62	-149.4	0.35
1110	"	"	0.696	15.7	7.19	4.59	-151.6	0.36
1125	"	"	0.696	16.1	7.19	4.58	-154.0	0.34
1140	"	"	0.696	16.0	7.19	4.61	-155.2	0.33

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 0824

Discharge: 21

First Water: 0825

psi (start): 270

QED Controller #: MP10H

psi (finish): 290

YSI #: 106405

Water level #: solinst WL probe

Turbidity Meter #: E5LVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106EX2-P2R-012518

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106EX2

Date / Time Collected: 1/25/18 11347

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

Grundfos SHP

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.): 6-inch

Approximate depth of pump inlet (ft): 491

Depth to Water - Initial (DTWI) (ft): 486.60 ft bgs

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 507

Screen Interval (ft): 487-502

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature: ~45°F, 6 mph wind

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1325	486.60	0.940	20.1	6.90	3.32	-106.2	0.50
1330	"	0.945	20.1	6.89	3.39	-113.7	0.34
1335	"	0.949	20.1	6.88	2.85	-117.6	0.30
1340	"	0.950	20.1	6.90	4.43	-120.8	0.29
1345	"	0.946	20.1	6.90	3.10	-123.1	0.29

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 4.5 gallons

Sample Port Open: 1321

First Water: 1321

YSI #: 106405

Water level #: Dedicated transducer

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106D04-P2R-02518

Site Location: Kirtland AFB, SWMU ST-106/SS-111
Well ID: KAFB-106064

Date / Time Collected 1/25/18 0935

Sample Collected by: C. LaChance

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
Sampling Equipment.: ☒ Bladder Pump ☐ Other
Flow Rate During Purging : 250 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ✓ No

PURGING INFORMATION

Measuring Point 70C

Casing ID (in.) 5"

Depth to Water - Initial (DTWI) (ft) 477.90 ft b10c

Approximate depth of pump inlet (ft): 495

Length of Casing (ft): N/A ~ 3 ft.

Depth to Well Bottom (ft) 513

Screen Interval (ft): 488-508

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: 24.0°C

[illegible]

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 0824

Discharge: 19

First Water: 0826

psi (start): 270

QED Controller #: MP104 1408

psi (finish): 285

YSI #: 73547

Water level #: Solinst Interface

Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P2P-030618

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106063

Date / Time Collected: 3/6/18 11445

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~175 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point northside casing

Casing ID (in.) 5-inch

Depth to Water - Initial (DTWI) (ft) 478.68

Depth to Well Bottom (ft) 528

Screen Interval (ft): 508-523

Approximate depth of pump inlet (ft): 511

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature: ~40°F, 8 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	±10%
1150	<u>~175 ml</u>	<u>478.68</u>	<u>0.685</u>	<u>16.0</u>	<u>7.26</u>	<u>3.78</u>	<u>-14.0</u>	<u>5.37</u>
1205	<u>sample</u>	<u>"</u>	<u>0.689</u>	<u>16.4</u>	<u>7.10</u>	<u>3.58</u>	<u>-24.4</u>	<u>4.15</u>
1220	<u>"</u>	<u>"</u>	<u>0.706</u>	<u>16.4</u>	<u>7.12</u>	<u>3.49</u>	<u>-75.3</u>	<u>2.16</u>
1235	<u>"</u>	<u>"</u>	<u>0.713</u>	<u>16.4</u>	<u>7.10</u>	<u>3.50</u>	<u>-130.5</u>	<u>1.45</u>
1250	<u>"</u>	<u>"</u>	<u>0.714</u>	<u>16.5</u>	<u>7.10</u>	<u>3.35</u>	<u>-137.8</u>	<u>1.12</u>
1305	<u>"</u>	<u>"</u>	<u>0.722</u>	<u>17.5</u>	<u>7.10</u>	<u>3.42</u>	<u>-143.0</u>	<u>0.95</u>
1320	<u>"</u>	<u>"</u>	<u>0.720</u>	<u>16.3</u>	<u>7.11</u>	<u>3.39</u>	<u>-140.0</u>	<u>1.19</u>
1335	<u>"</u>	<u>"</u>	<u>0.724</u>	<u>16.7</u>	<u>7.10</u>	<u>3.32</u>	<u>-146.4</u>	<u>0.92</u>
1350	<u>"</u>	<u>"</u>	<u>0.724</u>	<u>17.0</u>	<u>7.11</u>	<u>3.30</u>	<u>-151.3</u>	<u>0.69</u>
1405	<u>"</u>	<u>"</u>	<u>0.725</u>	<u>17.2</u>	<u>7.11</u>	<u>3.29</u>	<u>-156.3</u>	<u>0.52</u>
1420	<u>"</u>	<u>"</u>	<u>0.725</u>	<u>17.1</u>	<u>7.11</u>	<u>3.27</u>	<u>-161.4</u>	<u>0.44</u>
1430	<u>"</u>	<u>"</u>	<u>0.724</u>	<u>17.1</u>	<u>7.12</u>	<u>3.25</u>	<u>-164.2</u>	<u>0.40</u>
1440	<u>"</u>	<u>"</u>	<u>0.723</u>	<u>17.0</u>	<u>7.11</u>	<u>3.41</u>	<u>-166.7</u>	<u>0.38</u>

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 6.5 *change N₂
 Discharge: 21 bottle
 psi (start): 270
 psi (finish): 290

Pump on: 1135

First Water: 1136

QED Controller #: MP10 H

YSI #: 106465

Water level #: Solinst WL meter

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2I-P2P-030618

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW2I

Date / Time Collected: 3/6/18 / 1015

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

northside casing

Casing ID (in.)

3-inch

Approximate depth of pump inlet (ft): 517

Depth to Water - Initial (DTWI) (ft)

~476*

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513 - 523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature:

~29°F, ~10 mph

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0823	<u>~250ml/shake</u>	<u>NA*</u>	0.794	14.8	6.93	14.2	41.9	2.94
0833	"	"	0.797	15.3	6.92	4.19	40.5	1.50
0843	"	"	0.772	15.5	6.93	4.01	148.4	0.98
0853	"	"	0.591	15.4	7.02	3.85	178.5	0.70
0903	"	"	0.549	15.4	7.04	3.68	188.1	0.57
0913	"	"	0.548	15.4	7.06	3.70	193.2	0.49
0923	"	"	0.551	15.7	7.07	3.71	196.7	0.45
0933	"	"	0.562	15.5	7.07	3.69	200.5	0.42
0943	"	"	0.570	15.9	7.08	3.70	203.6	0.40
0953	"	"	0.578	16.0	7.08	3.69	206.8	0.38
1003	"	"	0.581	16.1	7.08	3.75	208.3	0.37
1013	"	"	0.585	16.5	7.09	3.68	211.3	0.35

☒ Duplicate or MS/MSD Collected: FD, 106MW2I-P2P-030618-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 21

psi (start): 270

psi (finish): 280

* Approximate WL,
WL meter doesn't
fit with pump
tripped in.

Pump on: 0813

First Water: 0814

QED Controller #: MP10H

YSI #: 106405

Water level #: solinst WL meter*

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW15-P2P-C3C618

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW1-S

Date / Time Collected: 5/6/18 1305

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

275 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 4"

Approximate depth of pump inlet (ft): 488

Depth to Water - Initial (DTWI) (ft): 474.48 ft btoc (0900)

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 500.5

Screen Interval (ft): 463-498

*no measurable product

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind (10 mph)

Temperature:

47°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	<u>474.35</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1145</u>	<u>1.8L</u>	<u>474.48</u>	<u>0.918</u>	<u>16.2</u>	<u>7.26</u>	<u>2.27</u>	<u>3.7</u>	<u>1.98</u>
<u>1155</u>		<u>474.35</u>	<u>0.919</u>	<u>16.6</u>	<u>7.18</u>	<u>18.7</u>	<u>-78.7</u>	<u>0.95</u>
<u>1205</u>		<u>11</u>	<u>0.930</u>	<u>16.7</u>	<u>7.14</u>	<u>12.1</u>	<u>-111.9</u>	<u>0.65</u>
<u>1215</u>		<u>11</u>	<u>0.990</u>	<u>16.8</u>	<u>7.09</u>	<u>3.15</u>	<u>-150.0</u>	<u>0.30</u>
<u>1225</u>		<u>11</u>	<u>0.995</u>	<u>16.9</u>	<u>7.09</u>	<u>2.33</u>	<u>-157.5</u>	<u>0.20</u>
<u>1240</u>		<u>11</u>	<u>0.995</u>	<u>16.8</u>	<u>7.09</u>	<u>2.12</u>	<u>-161.8</u>	<u>0.16</u>
<u>1250</u>		<u>11</u>	<u>0.996</u>	<u>16.8</u>	<u>7.08</u>	<u>2.39</u>	<u>-161.2</u>	<u>0.15</u>
<u>1300</u>	<u>4.5 gallons</u>	<u>11</u>	<u>0.995</u>	<u>16.6</u>	<u>7.08</u>	<u>2.49</u>	<u>-166.0</u>	<u>0.14</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 1135

Discharge: 20

First Water: 1137

psi (start): 270

QED Controller #: MP10H 1408

psi (finish): 280

YSI #: 73547

Water level #: Solinst Interface

Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWI-1-P2R-030610

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MWI

Date / Time Collected: 3/6/10 1035

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

275 mL stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

474 * cannot measure DTW in 3" wells.

Approximate depth of pump inlet (ft): 58

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

Measurement is from JAB MW 1-S.

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind (15 mph)

Temperature:

20's

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0820	1.8L	474.48*	0.806	15.8	7.33	3.09	111.9	5.88
0830		—	0.811	15.8	7.39	3.68	21.9	5.30
0840		—	0.832	15.9	7.18	10.0	-162.2	2.35
0850		—	0.836	16.0	7.16	8.51	-174.2	1.48
0900		—	0.840	16.1	7.18	7.49	-180.4	1.05
0910		—	0.839	16.0	7.19	4.87	-184.5	0.87
0925		—	0.842	16.2	7.20	5.24	-190.3	0.68
0935		—	0.841	16.2	7.20	3.52	-192.9	0.53
0945		—	0.841	16.4	7.21	3.84	-195.5	0.48
CL 0955-1000		—	0.842	16.5	7.22	4.05	-198.5	0.36
1010		—	0.840	16.5	7.22	4.86	-202.0	0.32
1025	8 gallons	—	0.838	16.6	7.22	4.17	-200.3	0.33

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0810

Discharge: 20

First Water: 0812

psi (start): 270

QED Controller #: MP10H 1408

psi (finish): 280

YSI #: 73547

Water level #: N/A * cannot fit probe down 3" well.

Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 IN1Sample ID: 106 IN1- P2P-030718Date / Time Collected: 3/7/18 1350Sample Collected by: U, TK**EQUIPMENT / NOTES**

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump☒ OtherGrundfos

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐**PURGING INFORMATION**Casing ID (in.): 6"Approximate depth of pump inlet (ft): 492

Depth to Water - Initial (DTWi) (ft)

474.80 ft bgs (prior to pumping)Length of Casing (ft): N/A

Depth to Well Bottom (ft)

502Screen Interval (ft): 477-497**FIELD CONDITIONS**Weather Conditions: ☒ Sunny☐ Rain☒ Wind☐ Cloudy

Temperature:

41.0°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1040	477.86	2.456	15.4	6.38	235	-175.5	0.40
1045	477.03	2.171	16.5	6.24	245	-177.6	0.35
1050	476.98	2.120	17.2	6.24	296	-182.2	0.34
1055	476.95	2.096	17.8	6.25	307	-190.0	0.33
1100	477.06	2.115	18.3	6.26	421	-198.5	0.31
1105	477.12	2.206	18.8	6.25	826	-204.5	0.30
1110	477.18	2.405	19.2	6.25	990	-212.2	0.29
1115	477.22	2.611	19.4	6.24	71000*	-217.5	0.29
1125	477.23	2.830	19.6	6.22	71000*	-222.3	0.28
1135	478.95	2.889	20.0	6.21	71000*	-223.9	0.28
1145	479.62	2.795	20.6	6.20	887	-222.4	0.27
1155	479.72	2.651	22.3	6.21	601	-222.7	0.26
1205	479.70	2.508	24.6	6.21	369	-221.8	0.25

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 268 gallons

Pump on @ 1022

Sample Port Open: 11First Water: 1036YSI #: 104405Water level #: N/A - transducerTurbidity Meter #: FSLVE0203

One casing volume = 29 gallons.
 out of range

First water purged is grey and smells very foul. (Water stayed cloudy during purge (not transparent when looking thru turbidity vial)).

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106IN1Sample ID: 106IN1-P2P-030718Date / Time Collected: 3/7/18 1350Sample Collected by: CLTK

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump☒ OtherGrundfos

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Casing ID (in.): _____

Approximate depth of pump inlet (ft): _____

Depth to Water - Initial (DTWI) (ft): _____

Length of Casing (ft): N/A

Depth to Well Bottom (ft): _____

Screen Interval (ft): _____

Continuation Page

FIELD CONDITIONS

Weather Conditions:

☐ Sunny☐ Rain☐ Wind☐ Cloudy

Temperature: _____

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1215	479.80	2.450	24.8	6.21	311	-221.2	0.24
1225	479.84	2.321	23.8	6.22	222	-220.0	0.25
1235	479.87	2.217	23.6	6.24	188	-220.4	0.25
1245	479.89	2.102	23.6	6.26	130	-221.0	0.25
1255	479.92	2.037	23.5	6.27	113	-221.5	0.25
1305	479.89	1.958	23.4	6.29	94.7	-222.4	0.25
1315	479.89	1.887	23.4	6.30	81.0	-223.2	0.25
1325	479.90	1.820	23.4	6.32	73.4	-224.5	0.25
1335	479.90	1.780	23.4	6.33	67.3	-224.8	0.25
1343	479.90	1.750	23.5	6.34	64.8	-225.4	0.25

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 268 gallons

Sample Port Open: _____

First Water: _____

YSI #: _____

Water level #: _____

Turbidity Meter #: _____

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P2P-030718

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106064

Date / Time Collected: 3/7/18 0940

Sample Collected by: al

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

275 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

5"

Depth to Water - Initial (DTWI) (ft)

477.82 ft btoC

Approximate depth of pump inlet (ft):

495

Length of Casing (ft): N/A ~ 3 ft.

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-508

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

Temperature:

20's

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>275 mL/stroke</u>	<u>(ft btoC)</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>0855</u>	<u>2.4L</u>	<u>477.82</u>	<u>0.976</u>	<u>15.3</u>	<u>7.21</u>	<u>7.47</u>	<u>-172.8</u>	<u>0.18</u>
<u>0905</u>		<u>11</u>	<u>0.980</u>	<u>15.4</u>	<u>7.01</u>	<u>5.52</u>	<u>-153.2</u>	<u>0.16</u>
<u>0915</u>		<u>11</u>	<u>1.022</u>	<u>16.0</u>	<u>6.81</u>	<u>3.12</u>	<u>-150.9</u>	<u>0.15</u>
<u>0925</u>		<u>11</u>	<u>1.024</u>	<u>16.2</u>	<u>6.81</u>	<u>2.06</u>	<u>-153.1</u>	<u>0.15</u>
<u>0935</u>		<u>11</u>	<u>1.024</u>	<u>16.3</u>	<u>6.80</u>	<u>2.17</u>	<u>-155.4</u>	<u>0.15</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 19

psi (start): 270

psi (finish): 280

Pump on: 0807 0842

First Water: 0809 0843

QED Controller #: MP10H 1408

YSI #: 73547

Water level #: Solinst WL

Turbidity Meter #: FSLVE0205

Restarted well — had to leave site.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106 EX2-P2P-030718

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 *EX 2*

Date / Time Collected 3/7/18 1517

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump

☒ Other

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes _____ No _____

PURGING INFORMATION

Casing ID (in.) 6-inch

Approximate depth of pump inlet (ft): 491

Depth to Water - Initial (DTWi) (ft) 985.5 + 169.3

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 507

Screen Interval (ft): 487 - 502

FIELD CONDITIONS

Weather Conditions: ☐ Sunny

- ☐ Rain

- Wind

☒ Cloudy

Temperature: ~50°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1455	485.5	1.059	19.7	6.79	14.2	-123.7	1.83
1500	"	1.066	19.8	6.79	7.05	-126.0	1.88
1505	"	1.057	19.9	6.80	3.67	-127.3	1.54
1510	"	1.052	19.9	6.80	3.74	-127.9	1.66
1515	"	1.050	19.9	6.80	3.22	-127.3	1.50
Z Level							

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 7 gallons from

70 min at 76 PM, total
of 490 gallons purged

If the water level is below the top of the screen, set the pump on at 1406

Sample Port Open: 1449

First Water: NA

YSI #: 106405

Water level #: Dedicated transducer

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MW25-R2P-030718

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW25

Date / Time Collected: 3/7/18 / 0942

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 4-inch
 Depth to Water - Initial (DTWI) (ft): ~476*
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind Temperature: ~26°F, ~5 mph wind

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0820	~250 ml stroke	NA*	0.956	14.6	7.06	13.1	-101.8	0.60
0830	"	"	0.955	14.7	7.02	16.0	-81.7	0.52
0840	"	"	1.015	15.0	6.82	9.33	-150.3	0.42
0850	"	"	1.033	15.1	6.80	3.34	-166.3	0.40
0900	"	"	1.032	15.2	6.79	3.41	-171.7	0.39
0910	"	"	1.035	15.4	6.79	3.39	-176.4	0.37
0920	"	"	1.037	15.5	6.79	3.38	-181.9	0.36
0930	"	"	1.039	15.9	6.78	3.30	-181.8	0.35
0940	"	"	1.039	15.9	6.78	3.35	-183.1	0.34
<i>[Handwritten signature across the bottom of the table]</i>								

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 *WL meter does not fit in casing to pump in. WL is from nearby wells.
 Discharge: 21
 psi (start): 270
 psi (finish): 280
 Pump on: 0809
 First Water: 0810
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: Solinst WL probe*
 Turbidity Meter #: FSLVE0905

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID **106** *EX1-P2P-030718*

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 BX 1

Date / Time Collected 3/7/18 / 1443

Sample Collected by: TK CZ

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment.:

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.)

Depth to Water - Initial (DTWi) (ft)**Depth to Well Bottom (ft)**

Screen Interval (ft):

Approximate depth of pump inlet (ft): 49.2

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

- ☐ Rain

- Wind

☒ Cloudy

Temperature: ~50° F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1430	481.4	0.699	20.0	6.81	6.75	-148.4	0.60
1435	"	0.703	20.0	6.81	6.03	-152.6	0.62
1440	"	0.707	20.0	6.82	4.75	-153.9	0.60
Zarr							

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 5 gallons

Sample Port Open: 1423

First Water: NA

YSI #: 106703

Water level #: Dedicated Transducer

Turbidity Meter #: F52V20905

purge 40 min at 10 GPM,
so 400 gallon total

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P2P-041018

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106063

Date / Time Collected: 4/10/18 1042

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~200 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Northside casing

Casing ID (in.)

5-inch

Approximate depth of pump inlet (ft): 511

Depth to Water - Initial (DTWI) (ft)

478.54 ft b/c

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

508-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

Temperature:

~45°F, slight breeze

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0805	<u>~200 mL stroke</u>	<u>478.54</u>	<u>0.735</u>	<u>15.6</u>	<u>7.14</u>	<u>7.18</u>	<u>86.9</u>	<u>6.00</u>
0820	<u>"</u>	<u>"</u>	<u>0.740</u>	<u>16.0</u>	<u>6.94</u>	<u>6.94</u>	<u>110.6</u>	<u>4.54</u>
0835	<u>"</u>	<u>"</u>	<u>0.743</u>	<u>16.2</u>	<u>6.88</u>	<u>10.3</u>	<u>96.1</u>	<u>2.80</u>
0850	<u>11</u>	<u>11</u>	<u>0.755</u>	<u>16.5</u>	<u>6.94</u>	<u>10.7</u>	<u>-135.0</u>	<u>1.80</u>
0905	<u>11</u>	<u>478.56</u>	<u>0.762</u>	<u>16.7</u>	<u>6.92</u>	<u>11.4</u>	<u>-153.3</u>	<u>1.26</u>
0926	<u>11</u>	<u>"</u>	<u>0.764</u>	<u>16.5</u>	<u>6.94</u>	<u>8.73</u>	<u>-159.3</u>	<u>0.88</u>
0940	<u>11</u>	<u>478.53</u>	<u>0.764</u>	<u>16.8</u>	<u>6.95</u>	<u>9.31</u>	<u>-163.2</u>	<u>0.72</u>
0955	<u>11</u>	<u>478.53</u>	<u>0.767</u>	<u>17.1</u>	<u>6.97</u>	<u>8.34</u>	<u>-168.2</u>	<u>0.56</u>
1010	<u>"</u>	<u>"</u>	<u>0.768</u>	<u>17.2</u>	<u>6.97</u>	<u>7.63</u>	<u>-170.7</u>	<u>0.52</u>
1025	<u>"</u>	<u>478.53</u>	<u>0.770</u>	<u>17.7</u>	<u>6.98</u>	<u>6.86</u>	<u>-173.8</u>	<u>0.47</u>
1040	<u>"</u>	<u>478.53</u>	<u>0.772</u>	<u>17.7</u>	<u>6.99</u>	<u>6.51</u>	<u>-175.5</u>	<u>0.46</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump off: 1115

Pump on: 0753

Discharge: 22

First Water: 0754

psi (start): 270

QED Controller #: MP10H

psi (finish): 290

YSI #: 106405

Water level #: Soilist WL meter

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106, MW 25-P2P-041018

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW25

Date / Time Collected: 4/10/18 / 1307

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: injection well*
 Casing ID (in.): 4-inch
 Depth to Water - Initial (DTWI) (ft): 474.56*
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463 - 498

Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind

Temperature: ~65°F, ~5 mph wind

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1155	~200 ml stroke	474.56*	1.080	18.7	7.14	11.2	-248.6	0.53
1205	240 ml stroke	"	1.094	18.8	7.14	10.9	-253.2	0.38
1215	"	"	1.088	18.9	7.00	9.81	-225.1	0.34
1225	"	"	1.136	19.2	6.92	7.65	-221.3	0.33
1235	"	"	1.160	19.1	6.91	6.84	-224.8	0.32
1245	"	"	1.165	19.4	6.91	5.44	-227.5	0.31
1255	"	"	1.166	19.1	6.91	5.40	-229.3	0.30
1305	"	"	1.168	19.4	6.91	5.39	-231.1	0.30
[Signature]								

☒ Duplicate or MS/MSD Collected: FD, 106MW25-P2P-041018-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 66

Discharge: 21

psi (start): 270

psi (finish): 280

* Depth is from
 INZ note
 that w/c
 meter does
 not fit in 106mw25
 & pump in place.

Pump on: 1145

First Water: 1146

QED Controller #: MP10H

YSI #: 106405

Water level #: FSLVE0405

Turbidity Meter #: dedicated transducer at injection well.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P2P-041018

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW1-I

Date / Time Collected: 4/10/18 1408

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

☒ Bladder Pump

☐ Other

Sampling Equipment:

Flow Rate During Purging:

290 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TDC

Casing ID (in.): 3"

Depth to Water - Initial (DTWI) (ft): 474.56 ft

474.56 ft *blot * measured from IN1 transducer*

Depth to Well Bottom (ft): 528

Screen Interval (ft): 513-523

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☒ Wind breezy

Temperature: 63°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1158	2.3L	474.56*	0.811	18.2	7.43	2.20	49.1	5.43
1208		—	0.819	18.2	7.32	10.2	-134.3	3.85
1218		—	0.817	18.2	7.20	10.3	-168.4	1.93
1228		—	0.811	18.4	7.17	5.30	-175.1	1.20
1238		—	0.811	18.4	7.17	4.86	-180.2	0.86
1248		—	0.807	18.5	7.17	3.57	-186.6	0.70
1258		—	0.805	18.5	7.17	5.08	-190.6	0.55
1315		—	0.805	18.7	7.18	4.98	-195.7	0.43
1325		—	0.802	18.9	7.18	10.5	-197.9	0.36 _a
1335		—	0.802	18.7	7.18	2.69	-200.8	0.332
1345		—	0.799	18.6	7.19	2.39	-203.2	0.27
1355		—	0.797	18.9	7.20	2.41	-202.8	0.26
1405	7 additions	—	0.796	18.7	7.22	2.31	-206.0	0.25

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 21

psi (start): 270

psi (finish): 280

Pump on: 1146

First Water: 1148

QED Controller #: MP10H 1408

YSI #: 73547

Water level #: N/A*

Turbidity Meter #: FSLVE0203

*water level taken from IN1 transducer. Probe doesn't fit down 3" well.

GROUND WATER SAMPLE COLLECTION LOG

Project Name:	KAFB RAPID ESTCP
Project No.:	500433
Sample ID	106064-P2P-141018

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Project No.: 500433

Well ID: KAFB-106004

Sample ID 106064-P2P-041018

Date / Time Collected 4/10/18 0915

Sample Collected by: CU

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☐ Bladder Pump☐ Other

Flow Rate During Purging :

Bladder Pump
275 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ✓

No ____

PURGING INFORMATION

Measuring Point **TOC**

Casing ID (in.) 51"

Depth to Water - Initial (DTWI) (ft) 477.70-461.00

Approximate depth of pump inlet (ft): 495

Length of Casing (ft): ~~N/A~~ ~ 3"

Depth to Well Bottom (ft) 513

Screen Interval (ft): 489-509

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

- ☐ Rain

✓ Wind (breezy)

✓ Wind (breezy)

Temperature: 43°F

[illegible]

☐ Duplicate or MS/MSD Collected: Nme

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 0451

Discharge: 20

First Water: 0001

psi (start): 270

QED Controller #: MY10H 1408

psi (finish): 290

YSI #: 7354

Water level #: FSLVE0203

Turbidity Meter #:

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106 EX2-P2P-041118

Well ID: KAFB-106 EX2

Date / Time Collected 4/11/18 / 1553

Sample Collected by: TK, CL

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump☒ Other

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ✓ No

PURGING INFORMATION

Casing ID (in.) 6-inch

Depth to Water - Initial (DTWi) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft):

Approximate depth of pump inlet (ft):

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

- ☐ Rain

☒ Wind☐ Cloudy

Temperature:

[illegible]☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

Sample Port Open:

First Water:

YSI #:

Water level #:

Turbidity Meter #:

System turned on
at 1410 on 4/11/18

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 IN1-P2P-041118

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 IN1

Date / Time Collected: 4/11/18 11356

Sample Collected by: TK CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

Gundfos 2HP

Flow Rate During Purging:

~500 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.): 6-inch

Approximate depth of pump inlet (ft): 492

Depth to Water - Initial (DTWI) (ft)

474.53

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

502

Screen Interval (ft):

477-497

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature: ~70°F, ~8 mph

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1107	474.53	2.099	16.8	6.84	177	-196.3	0.35
1117	476.58	1.757	18.6	6.48	187	-203.4	0.31
1128	476.70	1.930	20.0	6.51	529	-228.9	0.29
1137	476.77	2.148	20.5	6.52	711	-244.9	0.28
1150	476.87	2.200	20.9	6.50	468	-252.5	0.27
1205	476.96	2.146	22.0	6.51	245	-257.6	0.26
1220	477.09	2.101	23.6	6.51	179	-260.7	0.25
1235	477.17	2.041	24.1	6.50	129	-261.2	0.25
1250	477.27	1.990	24.3	6.50	103	-261.5	0.25
1305	477.36	1.923	24.5	6.50	86.7	-261.3	0.25
1315	477.40	1.876	24.6	6.50	69.2	-261.3	0.24
1325	477.48	1.846	24.6	6.49	68.6	-261.3	0.24
1335	477.52	1.806	24.7	6.50	59.3	-261.5	0.24

☐ Duplicate or MS/MSD Collected:

none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 185 gallons Pump or/ Sample Port Open: 1048

First Water: 1105

YSI #: 106405

Water level #: dedicated transducer

Turbidity Meter #: FSLUE0905

Water is smelly (sewage) and light grey when first discharging.

1345	477.59	1.781	24.8	6.50	53.0	-261.5	0.24
1355	477.63	1.744	24.8	6.50	50.3	-261.6	0.24

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MW2I-P2P-041118

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW2I

Date / Time Collected: 4/11/18 / 1022

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: ~250 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northeast casing

Casing ID (in.): 3-inch

Approximate depth of pump inlet (ft): 517

Depth to Water - Initial (DTWI) (ft): 474.52 *

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 528

Screen Interval (ft): 513 - 523

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: 25.0°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Specific Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
0810	~250 ml	NA*	0.570	16.3	7.05	6.04	50.9	5.63
0820	"	"	0.575	16.4	6.96	5.45	65.3	4.85
0830	"	"	0.584	16.6	6.90	5.30	105.6	3.35
0840	"	"	0.579	16.6	6.88	4.95	145.2	2.24
0850	"	"	0.570	16.8	6.88	4.87	161.4	1.22
0900	"	"	0.575	16.9	6.89	4.79	168.4	0.99
0910	"	"	0.580	17.0	6.90	4.80	173.2	0.83
0920	"	"	0.587	17.1	6.91	4.75	178.7	0.69
0931	"	"	0.600	17.4	6.92	4.70	184.5	0.60
0940	"	"	0.608	17.4	6.93	4.71	188.4	0.54
0950	"	"	0.612	18.1	6.94	4.69	191.6	0.49
1000	"	"	0.615	18.5	6.96	4.70	194.9	0.43
1010	"	"	0.618	18.6	6.96	4.68	195.5	0.41

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: SS * from injection well, Wt water
 Discharge: 21
 psi (start): 270
 psi (finish): 280
 Pump on: 0800
 First Water: 0801
 QED Controller #: MP10H
 YSI #: 106905

Water level #: Dedicated transducer *

Turbidity Meter #: FSLVE0405

1020	"	"	0.620	18.8	6.96	4.67	193.7	0.38
------	---	---	-------	------	------	------	-------	------

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MW1S-P2P-041118

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW1-S

Date / Time Collected: 4/11/18 0925
 Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

250 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 4"

Depth to Water - Initial (DTWI) (ft): 474.00 ft b/c

Approximate depth of pump inlet (ft): 488

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 500.5

Screen Interval (ft): 463-498

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: 50°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>250 mL/stroke</u>		<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>0810</u>	<u>1.8L</u>	<u>474.00</u>	<u>1.011</u>	<u>16.9</u>	<u>7.11</u>	<u>22.1</u>	<u>-142.2</u>	<u>0.60</u>
<u>0820</u>		<u>11</u>	<u>1.011</u>	<u>17.1</u>	<u>7.12</u>	<u>16.6</u>	<u>-155.5</u>	<u>0.35</u>
<u>0830</u>		<u>11</u>	<u>1.017</u>	<u>17.2</u>	<u>7.07</u>	<u>9.07</u>	<u>-156.0</u>	<u>0.23</u>
<u>0840</u>		<u>11</u>	<u>1.029</u>	<u>17.3</u>	<u>6.98</u>	<u>2.72</u>	<u>-159.4</u>	<u>0.19</u>
<u>0850</u>		<u>11</u>	<u>1.030</u>	<u>17.4</u>	<u>6.98</u>	<u>2.58</u>	<u>-162.9</u>	<u>0.16</u>
<u>0900</u>		<u>11</u>	<u>1.031</u>	<u>17.6</u>	<u>6.99</u>	<u>2.39</u>	<u>-167.8</u>	<u>0.15</u>
<u>0910</u>		<u>11</u>	<u>1.033</u>	<u>17.8</u>	<u>7.00</u>	<u>2.37</u>	<u>-171.9</u>	<u>0.14</u>
<u>0920</u>	<u>4 gallons</u>	<u>11</u>	<u>1.034</u>	<u>17.9</u>	<u>7.00</u>	<u>2.29</u>	<u>-174.9</u>	<u>0.14</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 0759

Discharge: 19

First Water: 0801

psi (start): 270

QED Controller #: MP10H 1408

psi (finish): 280

YSI #: 73547

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

No measurable product.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1S-P2P-050818

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW1-S

Date / Time Collected: 5/8/18, 1432
 Sample Collected by: ca

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☐ Bladder Pump ☐ Other
 Sampling Equipment.: 225 mL/stroke
 Flow Rate During Purging: 225 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): 473.96
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A
 No measurable product

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind Temperature: 84°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	285 mL/stroke	ft b to c	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1205		473.96	1.034	20.6	7.14	11.6	-414.6	0.31
1215			1.027	20.6	7.14	10.5	-397.1	0.39
1226			1.047	20.6	7.00	5.29	-412.8	0.17
1236			1.059	20.7	6.94	4.87	-464.0	0.16
1246			1.058	20.6	6.93	3.66	-483.7	0.15
1256			1.058	20.6	6.92	3.54	-497.8	0.14
1306			1.065	20.5	6.91	3.45	-509.9	0.13
1316			1.066	20.6	6.90	3.14	-522.0	0.13
1326			1.069	20.9	6.90	3.09	-541.9	0.13
1336			1.071	20.4	6.90	2.77	-548.0	0.12
1346*			1.069	20.4	6.89	2.51	-559.9	0.12
1359			1.071	20.7	6.92	2.49	-568.4	0.12
1412			1.067	20.4	6.90	2.37	-579.4	0.12

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

*changed N₂ bottle.

Recharge: 60

Pump on: 1153

Discharge: 20

First Water: 1155

psi (start): 270

QED Controller #: MP10H 1408

psi (finish): 280

YSI #: 73547

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

1419		1.069	20.9	6.89	2.17	-578.6	0.11
1429		1.070	20.8	6.88	2.09	-585.7	0.11

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P2P-050818

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW1-I

Date / Time Collected: 5/8/18, 1020

Sample Collected by: al

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

250 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: T0C

Casing ID (in.): 3"

Depth to Water - Initial (DTWI) (ft):

473.96 * ft b to c

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft):

528

Screen Interval (ft): 513-523

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☐ Wind

Temperature: 70's

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>250 mL/stroke</u>	<u>ft b to c</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>0808</u>	<u>2L</u>	<u>473.96 *</u>	<u>0.740</u>	<u>18.0</u>	<u>7.13</u>	<u>2.11</u>	<u>163.6</u>	<u>5.48</u>
<u>0818</u>		<u>—</u>	<u>0.745</u>	<u>18.1</u>	<u>7.06</u>	<u>5.93</u>	<u>-19.9</u>	<u>4.53</u>
<u>0828</u>		<u>—</u>	<u>0.784</u>	<u>18.5</u>	<u>6.99</u>	<u>4.73</u>	<u>-144.0</u>	<u>2.10</u>
<u>0838</u>		<u>—</u>	<u>0.798</u>	<u>18.6</u>	<u>6.98</u>	<u>4.27</u>	<u>-166.1</u>	<u>1.25</u>
<u>0848</u>		<u>—</u>	<u>0.795</u>	<u>18.8</u>	<u>7.00</u>	<u>4.09</u>	<u>-175.7</u>	<u>0.90</u>
<u>0858</u>		<u>—</u>	<u>0.796</u>	<u>19.1</u>	<u>7.02</u>	<u>4.00</u>	<u>-181.4</u>	<u>0.71</u>
<u>0908</u>		<u>—</u>	<u>0.793</u>	<u>18.9</u>	<u>7.03</u>	<u>3.93</u>	<u>-186.4</u>	<u>0.58</u>
<u>0918</u>		<u>—</u>	<u>0.789</u>	<u>19.1</u>	<u>7.03</u>	<u>4.30</u>	<u>-189.4</u>	<u>0.51</u>
<u>0928</u>		<u>—</u>	<u>0.791</u>	<u>19.3</u>	<u>7.04</u>	<u>4.13</u>	<u>-192.2</u>	<u>0.41</u>
<u>0938</u>		<u>—</u>	<u>0.790</u>	<u>18.9</u>	<u>7.05</u>	<u>3.28</u>	<u>-194.8</u>	<u>0.36</u>
<u>0948</u>		<u>—</u>	<u>0.788</u>	<u>19.0</u>	<u>7.05</u>	<u>3.19</u>	<u>-196.3</u>	<u>0.34</u>
<u>0958</u>		<u>—</u>	<u>0.787</u>	<u>19.3</u>	<u>7.06</u>	<u>2.24</u>	<u>-199.5</u>	<u>0.29</u>
<u>1008</u>	<u>7.3 gallons</u>		<u>0.785</u>	<u>19.5</u>	<u>7.09</u>	<u>2.15</u>	<u>-204.1</u>	<u>0.29</u>
<u>1018</u>			<u>0.780</u>	<u>19.2</u>	<u>7.10</u>	<u>2.09</u>	<u>-203.4</u>	<u>0.27</u>

☐ Duplicate or MS/MSD Collected:

None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0750

Discharge: 20

First Water: 0758

psi (start): 270

QED Controller #: MP10H 1408

psi (finish): 275

YSI #: 73547

Water level #: Solinst Interface *

Turbidity Meter #: FSLVE0203

* measurement taken from 106MW1-S. Cannot fit WL tape down 3" wells.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106.MW2I-P2P-050818

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106.MW2I
 Date / Time Collected: 5/8/18 / 1402
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 3-inch
 Depth to Water - Initial (DTWI) (ft): ~474.8*
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet' (ft): 517
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind slight breeze Temperature: ~90°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1210	250 ml	N/A	0.588	19.5	7.09	9.4	17.2	4.79
1220	"	"	0.591	20.3	6.94	7.51	6.3	3.45
1230	"	"	0.660	20.1	6.89	6.44	-133.8	1.98
1240	"	"	0.760	19.7	6.87	4.19	-173.6	1.01
1250	"	"	0.772	20.2	6.89	3.97	-188.8	0.69
1300	"	"	0.776	20.5	6.90	3.87	-194.6	0.58
1310	"	"	0.789	20.4	6.91	3.71	-200.0	0.50
1320	"	"	0.788	20.5	6.92	3.65	-204.7	0.45
1330	"	"	0.798	20.3	6.92	3.59	-207.8	0.42
1340	"	"	0.794	20.4	6.94	3.49	-210.7	0.38
1350	"	"	0.796	20.7	6.95	3.28	-213.4	0.35
1400	"	"	0.800	20.5	6.96	3.34	-214.8	0.34

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50
 Discharge: 24
 psi (start): 270
 psi (finish): 280
 Pump on: 1159
 First Water: 1201
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: solinst WL meter*
 Turbidity Meter #: FSLVE0405

**WL does not fit - pump deployed*

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P2P-050818

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063

Date / Time Collected: 5/8/18 / 1102
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 160⁺ ~ 200 mil/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 478.22
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 508-523
 Approximate depth of pump inlet' (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☐ Wind cloudy Temperature: 65°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0815	~160 mL	478.22	0.758	18.3	6.91	10.5	160.7	3.92
0830	"	"	0.763	18.4	6.87	11.2	31.2	1.68
0845	"	"	0.777	19.5	6.94	10.4	124.9	1.29
0900	"	"	0.808	19.5	6.92	9.5	157.2	1.03
0915	"	"	0.815	20.6	6.93	7.11	166.8	0.81
0930	"	"	0.813	19.9	6.94	5.92	168.3	0.73
0945	"	"	0.813	19.6	6.94	4.75	172.5	0.59
1000	"	"	0.815	19.7	6.94	4.60	175.5	0.52
1015	"	"	0.815	19.7	6.94	4.17	179.2	0.45
1030	"	"	0.816	20.2	6.94	4.22	182.1	0.41
1045	"	"	0.816	20.5	6.94	4.15	185.4	0.37
1100	"	"	0.817	20.4	6.94	4.17	188.3	0.37

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

*change N₂ bottle Recharge: 60
 Discharge: 21
 psi (start): 270
 psi (finish): 240
 Volume is lower than normal on pump discharge
 Pump on: 0758
 First Water: 0800
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: Solinst WL meter
 Turbidity Meter #: FSLVE0405

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106EX2-P2P-050918

Well ID: KAFB-106 E X 7

Date / Time Collected 5/9/18 11438

Sample Collected by: TK, CL

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump

☒ Other

Flow Rate During Purging :

200 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ✓ No

PURGING INFORMATION

Casing ID (in.) 6-inch

Approximate depth of pump inlet (ft): 491

Depth to Water - Initial (DTWi) (ft) 474.31

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 507

Screen Interval (ft): $487 - 502$

FIELD CONDITIONS

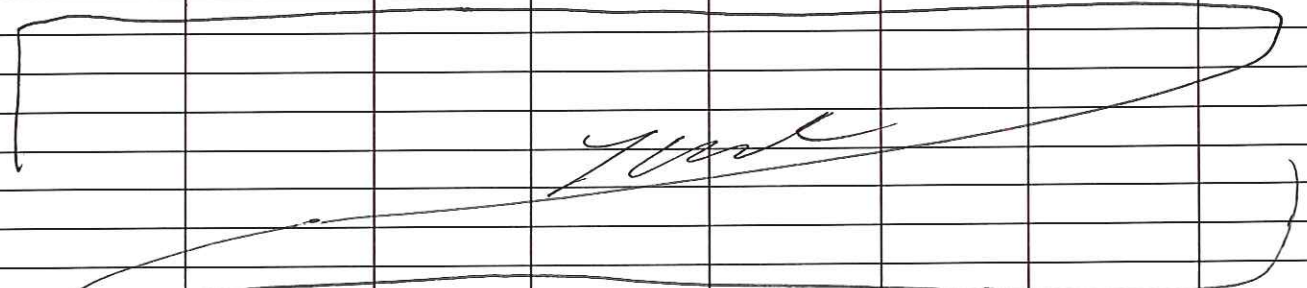
Weather Conditions: ☒ Sunny

☐ Rain

- Wind

☐ Cloudy

Temperature: 90°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1415	~482.01	0.820	20.6	6.88	7.82	-126.7	0.38
1420	"	0.819	20.6	6.85	6.88	-131.1	0.33
1425	"	0.821	20.6	6.84	5.59	-135.9	0.32
1430	"	0.819	20.6	6.84	5.98	-137.9	0.31
1435	"	0.818	20.6	6.84	6.01	-139.8	0.31
							

☐ Duplicate or MS/MSD Collected: *none*

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): ~6 gallons
From sample port

Sample Port Open: 1408

First Water: *NA*

YSI #: 106405

Water level #: Dedicated Transducer

Turbidity Meter #: FSLVE0405

pump on at 1308.
Lots of little bubbles
in water discharging
from sample port.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106.MW25-P2P-050918

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW25

Date / Time Collected: 5/9/18 / 0918
 Sample Collected by: TR

EQUIPMENT / NOTES

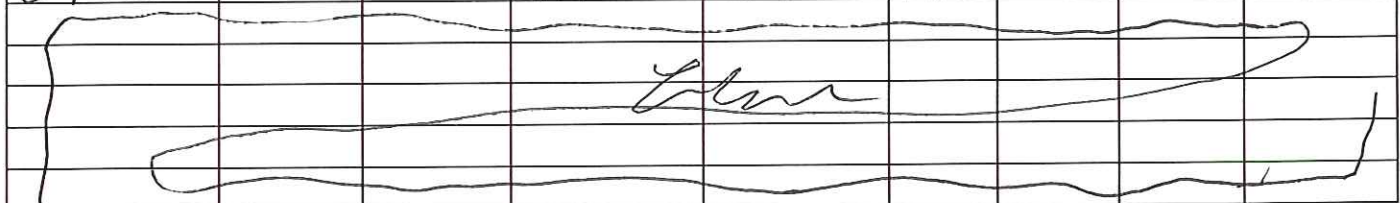
Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Northside casing
 Casing ID (in.): ~974.8
 Depth to Water - Initial (DTWI) (ft): 4-inch
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind Temperature: ~75°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0805	<u>~250 mL / 5 min</u>	<u>NA</u>	<u>1.109</u>	<u>17.9</u>	<u>7.11</u>	<u>36.2</u>	<u>36.1</u>	<u>0.56</u>
0815	"	"	<u>1.110</u>	<u>18.1</u>	<u>7.08</u>	<u>21.9</u>	<u>34.5</u>	<u>0.47</u>
0825	"	"	<u>1.128</u>	<u>18.2</u>	<u>7.03</u>	<u>10.2</u>	<u>-159.9</u>	<u>0.38</u>
0835	"	"	<u>1.127</u>	<u>18.4</u>	<u>7.01</u>	<u>9.71</u>	<u>-206.5</u>	<u>0.36</u>
0845	"	"	<u>1.129</u>	<u>18.5</u>	<u>7.02</u>	<u>8.45</u>	<u>-217.5</u>	<u>0.34</u>
0855	"	"	<u>1.128</u>	<u>18.9</u>	<u>7.02</u>	<u>8.11</u>	<u>-221.8</u>	<u>0.33</u>
0905	"	"	<u>1.132</u>	<u>18.7</u>	<u>7.02</u>	<u>7.74</u>	<u>-225.1</u>	<u>0.33</u>
0915	"	"	<u>1.132</u>	<u>19.0</u>	<u>7.02</u>	<u>7.19</u>	<u>-226.5</u>	<u>0.32</u>
								

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60
 Discharge: 21.5
 psi (start): 270
 psi (finish): 283

*WL meter does not fit & pump deployed

Pump on: 0753
 First Water: 0754
 QED Controller #: MP10H
 YSI #: 106405
 Water level #: Solinst WL probe *
 Turbidity Meter #: KSLVE 0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 IN1-R2P-050918

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 IN1

Date / Time Collected: 5/19/18 / 1237

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment: ☐ Bladder Pump

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

☒ Other Grands 2HP
~500 ml/min

PURGING INFORMATION

Casing ID (in.): 6-inch

Depth to Water - Initial (DTWI) (ft): 474.20

Depth to Well Bottom (ft): 502

Screen Interval (ft): 477 - 497

Approximate depth of pump inlet (ft): 492

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy

Temperature: ~85°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1030	476.31	0.129	18.3	6.51	79.5	-172.2	0.50
1045	476.44	0.829	20.0	6.60	170	-2160	0.31
1100	476.53	1.493	20.9	6.67	216	-250.5	0.29
1115	476.65	1.115	21.7	6.66	119	-257.7	0.28
1130	476.73	1.060	23.4	6.66	88.9	-260.9	0.27
1145	476.77	0.859	24.1	6.64	69.2	-260.3	0.26
1200	476.87	0.811	24.4	6.64	65.6	-259.4	0.26
1215	476.89	0.825	24.5	6.63	40.4	-258.3	0.26
1225	476.92	0.834	24.6	6.63	39.9	-257.9	0.26
1235	478.96	0.846	24.7	6.63	36.3	-257.2	0.26

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 150 gallons

Sample Port Open: 1010

First Water: 1027

YSI #: 106405

Water level #: TSK Solinst dedicated transducer

Turbidity Meter #: FSLVE6405

Water was very slightly grey at first discharge. Pump on at 1010

GROUND WATER SAMPLE COLLECTION LOG

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX2

Date / Time Collected 5/9/18 / 1357

Sample Collected by: TK, CL

☒ Other 6 months S/H

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Yes ✓ No

Casing ID (in.) 6-inch

Casing ID (in.) 6-inch

Approximate depth of pump inlet (ft): 99'

Depth to Water - Initial (DTWi) (ft) 473.91

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 507

Screen Interval (ft): 487-502

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 74°F

Weather Conditions: ☒ Sunny

- ☐ Rain

- Wind

☐ Cloudy

Temperature: 77°K

☐ Duplicate or MS/MSD Collected: none

☐ Duplicate or MS/MSD Collected: *none*

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 7 gallons
from sample port

Sample Port Open: 1331

First Water: NA

YSI #: 106405

Water level #: dedicated transducer

Turbidity Meter #: FSLVE0405

pump on at 1308

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106064-124-050918

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Project No.: 500433

Well ID: KAFB-106064

Sample ID 106064-P2P-050918

Date / Time Collected 5/9/18, 0908

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
Sampling Equipment.: ☒ Bladder Pump

Sampling Equipment.:

Flow Rate During Purging :

260 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ✓ No

PURGING INFORMATION

Measuring Point TOC

Casing ID (in.) 5"

Depth to Water - Initial (DTWi) (ft) 477.40 ft bbl

Approximate depth of pump inlet (ft): 4.95

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 101 513

Screen Interval (ft): 488-508

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: 105 F

[illegible]

☒ Duplicate or MS/MSD Collected: 106064-P2P-050418-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 * N₂ bottle change.
20

Pump on: 0002

Discharge: 20

First Water: 0304

psi (start): 270

QED Controller #: NP10H 1408-^{pinhead} gas line quiz-connect.

psi (finish): 280

YSI #: 73547

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P2P-061218

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106063

Date / Time Collected: 6/12/18 / 1517

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~190 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point northside casing

Casing ID (in.) 5-inch

Approximate depth of pump inlet (ft): 511

Depth to Water - Initial (DTWI) (ft)

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft): 508 - 523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature:

~90°F, wind Smpth

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
1250	<u>~190 mL/min</u>	<u>478.71</u>	<u>0.804</u>	<u>24.7</u>	<u>7.21</u>	<u>14.1</u>	<u>80.2</u>	<u>4.74</u>
1305	"	"	<u>0.805</u>	<u>23.0</u>	<u>7.07</u>	<u>10.9</u>	<u>55.1</u>	<u>2.11</u>
1320	"	"	<u>0.815</u>	<u>23.5</u>	<u>7.07</u>	<u>7.11</u>	<u>54.7</u>	<u>1.19</u>
1335	"	"	<u>0.842</u>	<u>23.9</u>	<u>7.01</u>	<u>7.30</u>	<u>102.4</u>	<u>0.93</u>
1350	"	"	<u>0.862</u>	<u>23.8</u>	<u>6.91</u>	<u>6.84</u>	<u>113.7</u>	<u>0.55</u>
1405	"	"	<u>0.864</u>	<u>23.4</u>	<u>6.89</u>	<u>6.95</u>	<u>118.5</u>	<u>0.42</u>
1420	"	"	<u>0.863</u>	<u>23.6</u>	<u>6.90</u>	<u>5.98</u>	<u>121.9</u>	<u>0.25</u>
1435	"	"	<u>0.865</u>	<u>23.7</u>	<u>6.90</u>	<u>5.87</u>	<u>122.3</u>	<u>0.21</u>
1450	"	"	<u>0.865</u>	<u>23.8</u>	<u>6.91</u>	<u>6.01</u>	<u>128.3</u>	<u>0.15</u>
1505	"	"	<u>0.867</u>	<u>24.6</u>	<u>6.93</u>	<u>6.18</u>	<u>132.1</u>	<u>0.15</u>
1515	"	"	<u>0.869</u>	<u>24.4</u>	<u>6.94</u>	<u>6.14</u>	<u>133.6</u>	<u>0.14</u>

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 1236

Discharge: 22

First Water: 1237

psi (start): 270

QED Controller #: MP10H

psi (finish): 290

YSI #: 106405

Water level #: Solinst WL probe

Turbidity Meter #: KSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106AW2I-P2R-061218

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106AW2-I

Date / Time Collected: 6/12/18 / 1012

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

~260 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

northside casing

Casing ID (in.)

3-inch

Approximate depth of pump inlet (ft): 518

Depth to Water - Initial (DTWI) (ft)

~474.7*

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

~75°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0820	<u>~250 mL</u>	<u>NA</u>	<u>0.727</u>	<u>18.1</u>	<u>7.20</u>	<u>10.7</u>	<u>152.4</u>	<u>4.63</u>
0830	<u>"</u>	<u>"</u>	<u>0.727</u>	<u>18.1</u>	<u>7.14</u>	<u>5.92</u>	<u>153.4</u>	<u>3.27</u>
0840	<u>"</u>	<u>"</u>	<u>0.750</u>	<u>18.2</u>	<u>7.07</u>	<u>5.69</u>	<u>-38.9</u>	<u>1.75</u>
0850	<u>"</u>	<u>"</u>	<u>0.816</u>	<u>18.3</u>	<u>7.03</u>	<u>5.56</u>	<u>-102.9</u>	<u>0.69</u>
0900	<u>"</u>	<u>"</u>	<u>0.814</u>	<u>18.3</u>	<u>7.04</u>	<u>5.69</u>	<u>-120.0</u>	<u>0.41</u>
0910	<u>"</u>	<u>"</u>	<u>0.816</u>	<u>18.2</u>	<u>7.04</u>	<u>6.29</u>	<u>-128.5</u>	<u>0.29</u>
0920	<u>"</u>	<u>"</u>	<u>0.815</u>	<u>18.5</u>	<u>7.05</u>	<u>4.86</u>	<u>-133.5</u>	<u>0.22</u>
0930	<u>"</u>	<u>"</u>	<u>0.819</u>	<u>18.7</u>	<u>7.06</u>	<u>4.54</u>	<u>-138.5</u>	<u>0.16</u>
0940	<u>"</u>	<u>"</u>	<u>0.823</u>	<u>19.1</u>	<u>7.06</u>	<u>5.06</u>	<u>-142.2</u>	<u>0.13</u>
0950	<u>"</u>	<u>"</u>	<u>0.824</u>	<u>19.2</u>	<u>7.06</u>	<u>4.89</u>	<u>-145.6</u>	<u>0.08</u>
1000	<u>"</u>	<u>"</u>	<u>0.824</u>	<u>19.3</u>	<u>7.07</u>	<u>4.50</u>	<u>-148.6</u>	<u>0.06</u>
1010	<u>"</u>	<u>"</u>	<u>0.831</u>	<u>19.8</u>	<u>7.07</u>	<u>4.27</u>	<u>-152.2</u>	<u>0.04</u>
1020	<u>"</u>	<u>"</u>	<u>0.830</u>	<u>19.9</u>	<u>7.07</u>	<u>4.34</u>	<u>-154.8</u>	<u>0.02</u>

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 *WL meter

Pump on: 0811

Discharge: 21 does not fit

First Water: 0812

psi (start): 270 0 pump in.

QED Controller #: MP10H

psi (finish): 280 No dynamic WL available.

YSI #: 10640.5

Water level #: solinst WL Probe *

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P2P 06018

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW1-I

Date / Time Collected: 6/2/18/1500

Sample Collected by: CC

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Micropurge

☒ Bladder Pump

☐ Other

250 mL/stroke

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 3"

Depth to Water - Initial (DTWI) (ft): 474.44* (as measured at 106MW1-S)

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 528

Screen Interval (ft): 513-523

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: _____

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>250 mL/stroke</u>	<u>#1 TOC</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1247</u>		<u>474.44*</u>	<u>0.725</u>	<u>20.7</u>	<u>7.34</u>	<u>4.76</u>	<u>165.6</u>	<u>5.79</u>
<u>1259</u>		<u>—</u>	<u>0.732</u>	<u>20.7</u>	<u>7.22</u>	<u>4.51</u>	<u>-28.9</u>	<u>4.49</u>
<u>1309</u>		<u>—</u>	<u>0.827</u>	<u>21.0</u>	<u>7.04</u>	<u>6.11</u>	<u>-110.3</u>	<u>1.79</u>
<u>1322</u>		<u>—</u>	<u>0.826</u>	<u>20.7</u>	<u>7.04</u>	<u>5.99</u>	<u>-125.5</u>	<u>1.07</u>
<u>1332</u>		<u>—</u>	<u>0.819</u>	<u>21.4</u>	<u>7.05</u>	<u>6.12</u>	<u>-131.6</u>	<u>0.83</u>
<u>1342</u>		<u>—</u>	<u>0.811</u>	<u>21.4</u>	<u>7.05</u>	<u>6.38</u>	<u>-137.0</u>	<u>0.66</u>
<u>1352</u>		<u>—</u>	<u>0.818</u>	<u>20.9</u>	<u>7.06</u>	<u>5.89</u>	<u>-140.7</u>	<u>0.53</u>
<u>1402</u>		<u>—</u>	<u>0.819</u>	<u>21.2</u>	<u>7.07</u>	<u>3.43</u>	<u>-144.1</u>	<u>0.45</u>
<u>1412</u>		<u>—</u>	<u>0.820</u>	<u>21.7</u>	<u>7.07</u>	<u>3.31</u>	<u>-147.0</u>	<u>0.36</u>
<u>1425</u>		<u>—</u>	<u>0.815</u>	<u>21.8</u>	<u>7.09</u>	<u>3.89</u>	<u>-150.7</u>	<u>0.29</u>
<u>1435</u>		<u>—</u>	<u>0.815</u>	<u>21.3</u>	<u>7.09</u>	<u>4.12</u>	<u>-153.1</u>	<u>0.24</u>
<u>1445</u>		<u>—</u>	<u>0.816</u>	<u>21.0</u>	<u>7.10</u>	<u>4.97</u>	<u>-155.7</u>	<u>0.22</u>
<u>1455</u>	<u>↓</u>	<u>—</u>	<u>0.822</u>	<u>21.1</u>	<u>7.11</u>	<u>4.51</u>	<u>-159.1</u>	<u>0.21</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 21

psi (start): 270

psi (finish): 280

Pump on: 1235

First Water: 1237

QED Controller #: MP10H 1408

YSI #: 106410

Water level #: N/A*

Turbidity Meter #: FSLVE0203

*Cannot fit water level probe down 3" wells w/ dedicated tubing.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MW2S-P2P-06/418

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MW2-S

Date / Time Collected: 6/14/18 / 0908

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

290 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

4"

Depth to Water - Initial (DTWI) (ft)

NA*

Approximate depth of pump inlet (ft): 488

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500

Screen Interval (ft):

403-498

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

75°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>290 mL / stroke</u>	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>0749</u>	<u>"</u>	<u>NA*</u>	<u>1.079</u>	<u>18.4</u>	<u>7.19</u>	<u>4.76</u>	<u>141.6</u>	<u>1.57</u>
<u>0759</u>	<u>"</u>	<u>—</u>	<u>1.080</u>	<u>18.4</u>	<u>7.23</u>	<u>4.37</u>	<u>136.0</u>	<u>1.75</u>
<u>0815</u>	<u>"</u>	<u>—</u>	<u>1.076</u>	<u>18.6</u>	<u>6.99</u>	<u>5.75</u>	<u>-117.2</u>	<u>0.25</u>
<u>0825</u>	<u>"</u>	<u>—</u>	<u>1.078</u>	<u>18.6</u>	<u>6.99</u>	<u>6.59</u>	<u>-131.2</u>	<u>0.11</u>
<u>0835</u>	<u>"</u>	<u>—</u>	<u>1.083</u>	<u>18.7</u>	<u>7.00</u>	<u>6.38</u>	<u>-138.9</u>	<u>0.09</u>
<u>0845</u>	<u>"</u>	<u>—</u>	<u>1.086</u>	<u>18.8</u>	<u>7.00</u>	<u>5.91</u>	<u>-144.5</u>	<u>0.08</u>
<u>0855</u>	<u>"</u>	<u>—</u>	<u>1.090</u>	<u>18.8</u>	<u>7.00</u>	<u>5.40</u>	<u>-147.8</u>	<u>0.07</u>
<u>0905</u>	<u>"</u>	<u>—</u>	<u>1.094</u>	<u>18.9</u>	<u>7.00</u>	<u>4.97</u>	<u>-150.2</u>	<u>0.06</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 0738

Discharge: 20

First Water: 0739

psi (start): 270

QED Controller #: MP10H 1408

psi (finish): 280

YSI #: 106410

Water level #: N/A*

Turbidity Meter #: FSLVE0203

* Cannot fit water level down well — tubing obstruction.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX2-R2P-061418

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX2

Date / Time Collected: 6/14/18 / 1528

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.): 6-inch

Depth to Water - Initial (DTWI) (ft): 474.45

Depth to Well Bottom (ft): 507

Screen Interval (ft): 487 - 502

Approximate depth of pump inlet (ft): 491

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

~95°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1500	~484.3	1.113	20.8	6.87	12.9	-84.1	0.08
1506	"	1.117	20.9	6.87	11.7	-89.3	0.07
1513	"	1.139	21.0	6.85	10.1	-94.4	0.06
1520	"	1.132	21.0	6.85	10.3	-98.7	0.05
1526	"	1.131	21.1	6.85	8.88	-102.2	0.05
[Signature]							

☐ Duplicate or MS/MSD Collected:

none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

10 gal

Sample Port Open:

1455

First Water:

1455

YSI #:

106410

Water level #:

Dedicated transducer

Turbidity Meter #:

FSLVE0405

Pump on: 1340

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106 EX1-P2P-061418

Well ID: KAFB-106 *EX 1*

Date / Time Collected 6/18/18 1930

Sample Collected by: JK, CC

Purging Method/Equipment:

Sampling Equipment.:

☐ Bladder Pump

☒ Other

Flow Rate During Purging :

$\sim 200 \text{ mils/min}$

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ✓ No

PURGING INFORMATION

Casing ID (in.)

Depth to Water - Initial (DTWi) (ft)

Approximate depth of pump inlet (ft): 497

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

Screen Interval (ft):

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

- ☐ Rain

- Wind

- ☐ Cloudy

Temperature: 27.5 °C

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1410	~478.89	0.864	20.5	6.92	16.8	-87.1	0.38
1415	~478.89	0.866	20.5	6.89	8.47	-88.9	0.29
1422	"	0.864	20.5	6.88	9.45	-89.4	0.27
1428	"	0.861	20.7	6.88	9.16	-90.0	0.26
41002							

☐ Duplicate or MS/MSD Collected:

none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

10 gallons

Sample Port Open:

140.5

First Water:

1405

YSI #:

106410

Water level #:

dedicated transducer

Turbidity Meter #:

FSLVE0405

Pump on = 1340

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 IN2Sample ID: 106 IN2-PR-061418Date / Time Collected: 6/14/18 / 1312

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump☒ Other

Flow Rate During Purging:

~400 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.)

6-inch

Approximate depth of pump inlet (ft):

492

Depth to Water - Initial (DTWI) (ft)

474.84Length of Casing (ft): N/A

Depth to Well Bottom (ft)

502

Screen Interval (ft):

477-497

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☐ Wind☐ Cloudy

Temperature:

~85°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1100 <u>TSK</u>	<u>476.86</u>	<u>1.980</u>	<u>20.6</u>	<u>6.77</u>	<u>166</u>	<u>-194.5</u>	<u>0.04</u>
<u>1115</u>	<u>476.98</u>	<u>2.212</u>	<u>21.3</u>	<u>6.77</u>	<u>125</u>	<u>-210.7</u>	<u>0.04</u>
<u>1130</u>	<u>477.07</u>	<u>2.111</u>	<u>22.4</u>	<u>6.77</u>	<u>90.0</u>	<u>-215.7</u>	<u>0.04</u>
<u>1145</u>	<u>477.17</u>	<u>1.995</u>	<u>24.0</u>	<u>6.77</u>	<u>64.9</u>	<u>-218.5</u>	<u>0.04</u>
<u>1200</u>	<u>477.22</u>	<u>1.915</u>	<u>24.0</u>	<u>6.77</u>	<u>53.7</u>	<u>-218.6</u>	<u>0.04</u>
<u>1215</u>	<u>477.28</u>	<u>1.844</u>	<u>24.7</u>	<u>6.77</u>	<u>43.4</u>	<u>-218.8</u>	<u>0.04</u>
<u>1230</u>	<u>477.36</u>	<u>1.781</u>	<u>24.8</u>	<u>6.76</u>	<u>38.5</u>	<u>-218.6</u>	<u>0.04</u>
<u>1245</u>	<u>477.41</u>	<u>1.715</u>	<u>24.8</u>	<u>6.76</u>	<u>33.3</u>	<u>-218.8</u>	<u>0.04</u>
<u>1300</u>	<u>477.50</u>	<u>1.700</u>	<u>24.8</u>	<u>6.76</u>	<u>24.7</u>	<u>-219.1</u>	<u>0.04</u>
<u>1310</u>	<u>477.59</u>	<u>1.701</u>	<u>24.8</u>	<u>6.76</u>	<u>36.1</u>	<u>-219.5</u>	<u>0.04</u>

☐ Duplicate or MS/MSD Collected:none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

~220 gallons

Sample Port Open:

1020

First Water:

1038

YSI #:

106410

Water level #:

dedicated transducer

Turbidity Meter #:

FSLVE0405Pump on: 1020first water: 1038

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P2P-061418

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 6/14/18 / 1008

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 477.90 ft to c
 Depth to Well Bottom (ft): 513
 Screen Interval (ft): 488-523
 Approximate depth of pump inlet (ft): 493
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~80°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	±10%
0835	~250 mL	477.90	1.044	19.5	7.21	39.8	122.6	0.13
0845	"	"	1.049	19.8	7.19	32.5	148.2	0.07
0855	"	"	1.052	19.8	7.17	28.7	130.5	0.05
0905	"	"	1.063	19.8	7.05	20.5	114.1	0.05
0915	"	"	1.054	19.8	6.90	15.1	102.6	0.09
0925	"	"	1.055	19.9	6.76	11.6	113.8	0.08
0935	"	"	1.053	20.1	6.76	12.7	119.1	0.07
0945	"	"	1.054	20.3	6.76	13.0	124.6	0.06
0955	"	"	1.057	20.3	6.76	11.9	128.9	0.05
1005	"	"	1.055	20.3	6.76	11.8	131.8	0.05
<i>[Signature]</i>								

☒ Duplicate or MS/MSD Collected: FD; 106064-P2P-061418-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 20

psi (start): 270

psi (finish): 280

Pump on: 0824

First Water: 0825

QED Controller #: MP10H

YSI #: 106405

Water level #: 50 inst WL probe

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MW1S-P2P-061418

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW1-S

Date / Time Collected: 6/14/18 / 0811

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~250 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point northside casing
 Casing ID (in.) 4-inch
 Depth to Water - Initial (DTWI) (ft) 474.53
 Depth to Well Bottom (ft) 500.5
 Screen Interval (ft): 463 - 498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A
No product detected

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~80°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0630	<u>~250 ml/min</u>	<u>474.53</u>	<u>1.024</u>	<u>18.8</u>	<u>7.10</u>	<u>38.5</u>	<u>150.9</u>	<u>2.67</u>
0640	"	"	<u>1.024</u>	<u>18.6</u>	<u>7.09</u>	<u>42.7</u>	<u>-41.7</u>	<u>1.17</u>
0650	"	"	<u>1.022</u>	<u>18.7</u>	<u>7.02</u>	<u>35.6</u>	<u>-41.0</u>	<u>1.57</u>
0700	"	"	<u>1.000</u>	<u>18.9</u>	<u>6.98</u>	<u>21.4</u>	<u>-94.9</u>	<u>0.93</u>
0710	"	"	<u>0.976</u>	<u>19.2</u>	<u>6.88</u>	<u>9.79</u>	<u>-113.6</u>	<u>0.40</u>
0720	"	"	<u>0.979</u>	<u>19.2</u>	<u>6.95</u>	<u>9.02</u>	<u>-115.4</u>	<u>0.34</u>
0730	"	"	<u>0.977</u>	<u>19.2</u>	<u>7.08</u>	<u>8.63</u>	<u>-117.3</u>	<u>0.27</u>
0740	"	"	<u>0.986</u>	<u>19.3</u>	<u>7.11</u>	<u>8.59</u>	<u>-118.6</u>	<u>0.21</u>
0750	"	"	<u>0.998</u>	<u>19.3</u>	<u>7.10</u>	<u>8.58</u>	<u>-118.5</u>	<u>0.15</u>
0800	"	"	<u>0.995</u>	<u>19.3</u>	<u>7.12</u>	<u>8.61</u>	<u>-120.4</u>	<u>0.12</u>
0810	"	"	<u>0.998</u>	<u>19.3</u>	<u>7.11</u>	<u>8.58</u>	<u>-121.5</u>	<u>0.11</u>

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 21

psi (start): 270

psi (finish): 280

Pump on: 0620

First Water: 0621

QED Controller #: MP10H

YSI #: 106405

Water level #: Solinst interface probe

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P3R-080718

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW1-I

Date / Time Collected: 8/7/18 / 1030
 Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: 325 mL / stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 3"
 Depth to Water - Initial (DTWI) (ft): 474.64 ft b/c * as measured at MW1-S
 Approximate depth of pump inlet (ft): 518
 Length of Casing (ft): N/A
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 76°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	(ft b/c)	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0827	325mL / stroke	474.64*	0.759	18.6	7.35	2.92	151.6	5.55
0837	stroke	—	0.794	18.8	7.15	4.96	-90.5	2.50
0847	"	—	0.827	18.8	7.02	3.57	-102.1	1.21
0857	"	—	0.820	18.8	7.03	3.13	-108.7	0.79
0907	"	—	0.815	19.1	7.03	3.09	-112.5	0.65
0917	"	—	0.818	18.9	7.04	2.95	-115.8	0.52
0927	"	—	0.820	19.1	7.04	2.83	-118.0	0.42
0937	"	—	0.816	19.2	7.05	3.50	-120.6	0.37
0947	"	—	0.817	19.2	7.05	3.78	-122.3	0.31
0957	"	—	0.817	19.3	7.05	3.55	-124.7	0.27
1007	"	—	0.817	19.4	7.05	3.08	-126.5	0.21
1017	"	—	0.819	19.3	7.06	3.01	-128.0	0.20
1027	"	—	0.820	19.4	7.06	2.95	-129.5	0.19

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 52

Pump on: 0815

Discharge: 25.5

First Water: 0817

psi (start): 240

QED Controller #: NPI0H 1408

psi (finish): 270

YSI #: 106410

Water level #: N/A*

Turbidity Meter #: FSLVE0203

* Cannot fit water level probe down 3" well w/ tubing bundles

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1S-P3R-080718

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW1-S

Date / Time Collected: 8/7/18 / 1318
 Sample Collected by: CU

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: 350 mL / stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): 474.64 ffbtoc
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-490
 Approximate depth of pump inlet (ft): 480
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 89°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	(ft bto c)	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1140	350 mL / stroke	474.64	1.021	19.6	7.23	17.1	57.6	1.88
1150	stroke	"	1.021	19.6	7.05	9.44	-95.9	0.51
1200	"	"	0.997	19.7	6.90	9.32	-93.9	0.28
1210	"	"	1.002	19.8	6.88	4.01	-94.8	0.20
1220	"	"	1.018	19.7	6.87	5.61	-95.7	0.15
1230	"	"	1.019	19.7	6.87	4.97	-96.8	0.13
1240	"	"	1.022	19.7	6.87	4.57	-98.6	0.11
1255	"	"	1.024	19.9	6.87	4.34	-101.5	0.08
1305	"	"	1.023	20.0	6.87	5.13	-103.6	0.07
1315	"	"	1.029	20.4	6.86	4.99	-104.8	0.07

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55
 Discharge: 25
 psi (start): 240
 psi (finish): 260

Pump on: 1128
 First Water: 1130
 QED Controller #: MP10H 1408
 YSI #: 106410
 Water level #: Solnist Interface
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106mw25-P3R-080718

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106mw25

Date / Time Collected: 8/7/18 / 1021

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~ 950 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

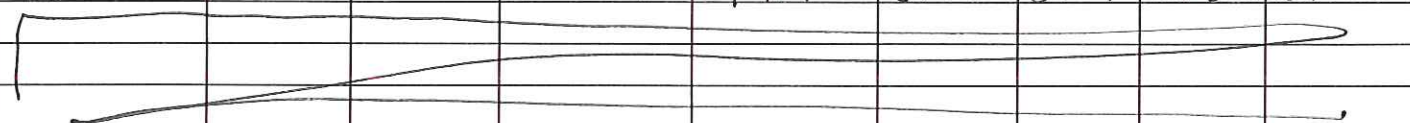
Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 4-inch
 Depth to Water - Initial (DTWI) (ft): ~ 475.00 *
 Depth to Well Bottom (ft): TSK 528 500.5
 Screen Interval (ft): TSK 513-523 TSK
463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~ 78°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0825	<u>~350mL 5 stroke</u>	<u>NA*</u>	1.058	18.3	7.27	15.6	84.1	3.25
0835	"	"	1.050	18.2	7.26	16.0	139.4	2.61
0845	"	"	1.097	18.3	6.82	17.8	-77.5	0.98
0855	"	"	1.097	18.4	6.75	13.7	-82.1	0.81
0905	"	"	1.095	18.5	6.74	15.4	-88.3	0.64
0925	"	"	1.096	18.6	6.74	11.0	-98.4	0.42
0940	"	"	1.096	18.7	6.74	10.5	-101.6	0.37
0955	"	"	1.098	18.7	6.74	11.1	-105.4	0.30
1010	"	"	1.097	18.7	6.74	9.84	-107.2	0.27
1020	"	"	1.097	19.1	6.74	8.79	-108.6	0.25
								

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 *WL is approximate Pump on: 0815
 Discharge: 25 from nearby well. WL probe
 psi (start): 240 does not fit in well casing
 psi (finish): 260
 First Water: 0816
 QED Controller #: MP10H
 YSI #: 106406
 Water level #: Solinst WL probe*
 Turbidity Meter #: FSLVE6405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2I-P3R-080718

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106mw2I
 Date / Time Collected: 8/7/18 / 1411
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☐ Bladder Pump ☐ Other
 Sampling Equipment: ~300 mL/min
 Flow Rate During Purging: ~300 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 3-inch
 Depth to Water - Initial (DTWI) (ft): ~475*
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 517
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~90°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
1145	~300 mL Stroke	N/A*	0.769	20.5	7.46	16.5	69.8	5.25
1155	"	"	0.774	20.2	7.12	16.7	60.8	2.54
1205	"	"	0.899	21.0	6.96	16.4	104.6	1.00
1220	"	"	0.926	21.1	6.98	16.0	112.5	0.69
1230	"	"	0.928	21.4	6.92	14.7	117.4	0.52
1240	"	"	0.927	20.8	6.93	13.1	120.6	0.41
1255	"	"	0.925	20.9	6.93	10.4	125.6	0.31
1300	"	"	0.927	20.9	6.93	9.07	128.4	0.24
1325	"	"	0.922	20.8	6.93	8.54	131.5	0.20
1340	"	"	0.918	22.0	6.93	8.02	129.5	0.30
1350	"	"	0.923	21.7	6.93	8.11	133.5	0.17
1400	"	"	0.920	21.7	6.93	8.09	135.7	0.15
1410	"	"	0.919	21.7	6.93	7.98	137.8	0.14

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 * WL meter
 Discharge: 24 does not fit
 psi (start): 240 pump in place.
 psi (finish): 260 WL is from nearby well.
 Pump on: 1132
 First Water: 1133
 QED Controller #: MP10H
 YSI #: 106406
 Water level #: Solinst WL probe*
 Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P3R-080818

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063

Date / Time Collected: 8/8/18 / 0957
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~300 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 478.99 ft bto c
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 508-523
 Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☒ Cloudy Temperature: ~75°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0815	~300 mL/stroke	478.99	0.831	18.4	7.13	19.3	-2.2	2.26
0830	"	"	0.844	18.7	6.94	17.8	-112.5	0.83
0845	"	"	0.843	18.9	6.90	16.4	-139.4	0.35
0855	"	"	0.847	19.2	6.90	8.74	-150.6	0.31
0905	"	"	0.851	18.9	6.90	3.03	-158.1	0.25
0915	"	"	0.853	18.9	6.90	2.54	-162.6	0.22
0925	"	"	0.855	18.8	6.90	1.86	-168.5	0.22
0935	"	"	0.857	18.7	6.90	1.54	-173.0	0.21
0945	"	"	0.855	19.1	6.91	1.67	-174.2	0.17
0955	"	"	0.856	19.2	6.91	1.59	-175.3	0.17
<i>Time</i>								

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 25

psi (start): 240

psi (finish): 260

Pump on: 0758

First Water: 0800

QED Controller #: MP104

YSI #: 106406

Water level #: Solinst WL probe

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX1-P3R-080818

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX1

Date / Time Collected: 8/8/18 / 1156

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

Grandfos SHP

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.) 6-inch

Approximate depth of pump inlet (ft): 497

Depth to Water - Initial (DTWi) (ft)

480.5 ft bgs

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

507

Screen Interval (ft):

487 - 502

FIELD CONDITIONS

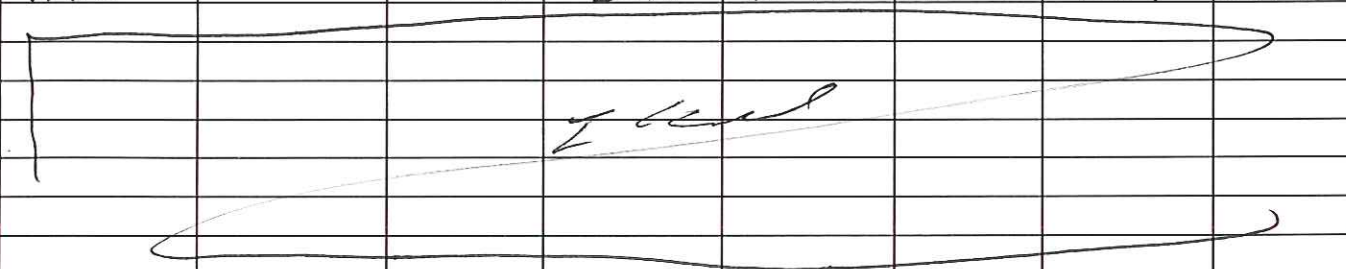
Weather Conditions: ☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature: ~85°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1130	480.5	0.729	20.6	7.03	6.72	-69.7	0.56
1135	"	0.717	20.6	6.95	4.39	-73.0	0.28
1140	"	0.737	20.6	6.92	5.00	-73.6	0.23
1145	"	0.720	20.6	6.92	4.23	-75.0	0.20
1150	"	0.713	20.6	6.92	4.29	-75.5	0.18
1155	"	0.720	20.6	6.92	5.27	-75.9	0.18
							

☐ Duplicate or MS/MSD Collected:

none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 6 gallons

Sample Port Open: 1127

First Water: 1127

*Note that the pump was on since 7/30/18

YSI #: 106406

Water level #: dedicated transducer

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX2-P3R-080818

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 BX2

Date / Time Collected: 8/8/18 / 1236

Sample Collected by: TR, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

Ground for SHP

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.): 6-inch

Depth to Water - Initial (DTWI) (ft): 487 ft + 625 *

Depth to Well Bottom (ft): 507

Screen Interval (ft): 487 - 502

Approximate depth of pump inlet (ft): 497

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: ~94°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1215	487	1.022	20.9	6.94	4.11	-59.6	0.18
1220	"	1.025	21.0	6.93	3.99	-70.5	0.11
1225	"	1.028	20.9	6.92	3.83	-74.7	0.10
1230	"	1.026	20.8	6.92	3.75	-80.1	0.09
1235	"	1.017	21.0	6.92	3.67	-81.6	0.08
<u>Flow</u>							

☒ Duplicate or MS/MSD Collected: 106 EX2-P3R-080818-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 5 gallons

Sample Port Open: 1210

First Water: 1210

YSI #: 106406

Water level #: dedicated transducer

Turbidity Meter #: FSLVE0405

* Note that the pump ^{was} on since 7/30/18

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P32-080818

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 8/8/18 / 0915

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump

Flow Rate During Purging: 300 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: 70C

Casing ID (in.): 5"

Depth to Water - Initial (DTWI) (ft): 478.02 ft btlc

Approximate depth of pump inlet (ft): 495

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 513

Screen Interval (ft): 488-508

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☒ Cloudy Temperature: 72°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>300 mL/stroke</u>	<u>ft btlc</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>0810</u>	<u>Stroke</u>	<u>478.02</u>	<u>1.060</u>	<u>18.4</u>	<u>7.17</u>	<u>12.2</u>	<u>-129.6</u>	<u>0.21</u>
<u>0820</u>	<u>"</u>	<u>"</u>	<u>1.031</u>	<u>18.6</u>	<u>6.71</u>	<u>9.52</u>	<u>-92.3</u>	<u>0.14</u>
<u>0830</u>	<u>"</u>	<u>"</u>	<u>1.028</u>	<u>18.7</u>	<u>6.70</u>	<u>8.31</u>	<u>-91.6</u>	<u>0.13</u>
<u>0840</u>	<u>"</u>	<u>"</u>	<u>1.027</u>	<u>18.8</u>	<u>6.68</u>	<u>7.26</u>	<u>-93.7</u>	<u>0.12</u>
<u>0850</u>	<u>"</u>	<u>"</u>	<u>1.028</u>	<u>18.8</u>	<u>6.68</u>	<u>7.01</u>	<u>-96.9</u>	<u>0.10</u>
<u>0900</u>	<u>"</u>	<u>"</u>	<u>1.028</u>	<u>18.8</u>	<u>6.68</u>	<u>6.94</u>	<u>-100.9</u>	<u>0.09</u>
<u>0910</u>	<u>"</u>	<u>"</u>	<u>1.030</u>	<u>18.9</u>	<u>6.68</u>	<u>6.51</u>	<u>-103.9</u>	<u>0.08</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 57

Discharge: 23

psi (start): 240

psi (finish): 265

Pump on: 0757

First Water: 0759

QED Controller #: MP10H 1408

YSI #: 106410

Water level #: Solnist Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MW25-P3R-081518

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW25

Date / Time Collected: 8/15/18 / 1133
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~380 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 4-inch
 Depth to Water - Initial (DTWI) (ft): ~476 ft bgs
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~82°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
1015	~380 ml/min	NA*	1.222	19.2	7.21	12.1	-239.9	0.16
1025	"	"	1.159	19.4	7.12	9.78	-214.2	0.14
1035	"	"	1.024	19.8	6.81	3.07	-159.6	0.14
1045	"	"	1.020	19.8	6.75	2.95	-150.5	0.12
+ 1109	"	"	1.027	20.7	6.72	2.89	-146.9	0.13
1110	"	"	1.021	19.8	6.73	2.90	-151.5	0.12
1120	"	"	1.018	19.8	6.73	2.74	-156.9	0.10
1130	"	"	1.021	19.7	6.73	2.89	-153.8	0.11

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 *WL is from Pump on: 1001
 Discharge: 25 nearby wells. First Water: 1002
 psi (start): 240 WL meter does not fit in QED Controller #: MP10H
 psi (finish): 260 casing & dedicated pump YSI #: 106406
 Water level #: NA*
 Turbidity Meter #: FSLVE0405
 + change N2 bottle

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWII-P3P-081518

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MWI-I

Date / Time Collected: 8/15/18 0940

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment.:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

350 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

474.63 ft btoC * as

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

measure from 106MWI-S.

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature:

74°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>350 mL/Stroke</u>	<u>ft btoC</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>0825</u>	<u>"</u>	<u>474.63</u>	<u>0.802</u>	<u>18.4</u>	<u>6.99</u>	<u>9.63</u>	<u>-45.3</u>	<u>0.27</u>
<u>0835</u>	<u>"</u>	<u>—</u>	<u>0.849</u>	<u>18.8</u>	<u>7.08</u>	<u>7.81</u>	<u>-116.7</u>	<u>0.15</u>
<u>0845</u>	<u>"</u>	<u>—</u>	<u>0.899</u>	<u>18.7</u>	<u>7.08</u>	<u>4.07</u>	<u>-129.8</u>	<u>0.13</u>
<u>0855</u>	<u>"</u>	<u>—</u>	<u>0.895</u>	<u>18.7</u>	<u>7.09</u>	<u>4.15</u>	<u>-135.6</u>	<u>0.11</u>
<u>0905</u>	<u>"</u>	<u>—</u>	<u>0.890</u>	<u>18.7</u>	<u>7.09</u>	<u>3.98</u>	<u>-139.9</u>	<u>0.10</u>
<u>0915</u>	<u>"</u>	<u>—</u>	<u>0.892</u>	<u>18.8</u>	<u>7.10</u>	<u>4.15</u>	<u>-143.1</u>	<u>0.09</u>
<u>0925</u>	<u>"</u>	<u>—</u>	<u>0.893</u>	<u>19.0</u>	<u>7.10</u>	<u>4.09</u>	<u>-145.6</u>	<u>0.09</u>
<u>0935</u>	<u>"</u>	<u>—</u>	<u>0.894</u>	<u>18.9</u>	<u>7.10</u>	<u>3.95</u>	<u>-147.8</u>	<u>0.08</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 52

Pump on: 0812

Discharge: 27

First Water: 0814

psi (start): 240

QED Controller #: MP10H H08

psi (finish): 2105

YSI #: 106410

Water level #: N/A *

Turbidity Meter #: FSLVE0203

* Cannot fit WL probedown 3" well w/ tubing bundle.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1S-P3R-081518

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW1-S

Date / Time Collected: 8/15/18 1130

Sample Collected by: u

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment.:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

325 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

4"

Approximate depth of pump inlet (ft): 488

Depth to Water - Initial (DTWI) (ft)

474.63 ft btoc. No product

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

463-490

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

80°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	325 mL Stroke	ft btoc	±10%	±10%	±10%	±10%	±10 mV	±10%
1015	"	474.63	1.041	19.0	7.23	7.01	-154.9	0.15
1025	"	"	1.010	19.3	7.10	6.85	-132.5	0.11
1035	"	"	0.986	19.3	6.96	6.53	-117.5	0.10
1045	"	"	0.990	19.3	6.95	6.80	-119.0	0.08
change N2 → 1055	"	"	0.995	19.4	6.94	6.58	-120.1	0.08
1105	"	"	1.000	20.0	6.94	7.98	-122.3	0.07
1115	"	"	1.001	19.4	6.93	7.35	-123.6	0.07
1125	"	"	1.004	19.7	6.93	7.18	-124.9	0.06

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 57

Pump on: 1001

Discharge: 23.5

First Water: 1003

psi (start): 240

QED Controller #: MP10H 1408

psi (finish): 270

YSI #: 106410

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106064Sample ID 106064-P3R-081618Date / Time Collected 8/16/18 0930

EQUIPMENT / NOTES

Sample Collected by: CL

Purging Method/Equipment:

☒ MicropurgeSampling Equipment: ☒ Bladder Pump☐ Other

Flow Rate During Purging:

300 ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point T0CCasing ID (in.) 5"

Depth to Water - Initial (DTWI) (ft)

478.12 ft btoCApproximate depth of pump inlet (ft): 495Length of Casing (ft): N/A

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-508

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☐ Wind☐ Cloudy

Temperature:

71°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ml/stroke</u>	<u>ft btoC</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>0825</u>	<u>300</u>	<u>478.12</u>	<u>1.029</u>	<u>18.5</u>	<u>6.96</u>	<u>9.66</u>	<u>-121.2</u>	<u>0.18</u>
<u>0835</u>	<u>"</u>	<u>"</u>	<u>1.019</u>	<u>18.9</u>	<u>6.79</u>	<u>6.52</u>	<u>-115.0</u>	<u>0.14</u>
<u>0845</u>	<u>"</u>	<u>"</u>	<u>1.008</u>	<u>18.7</u>	<u>6.75</u>	<u>5.59</u>	<u>-111.0</u>	<u>0.12</u>
<u>0855</u>	<u>"</u>	<u>"</u>	<u>1.010</u>	<u>19.0</u>	<u>6.74</u>	<u>6.01</u>	<u>-112.9</u>	<u>0.10</u>
<u>0905</u>	<u>"</u>	<u>"</u>	<u>1.009</u>	<u>19.0</u>	<u>6.74</u>	<u>5.93</u>	<u>-114.8</u>	<u>0.09</u>
<u>0915</u>	<u>"</u>	<u>"</u>	<u>1.010</u>	<u>20.0</u>	<u>6.75</u>	<u>5.28</u>	<u>-116.9</u>	<u>0.09</u>
<u>0925</u>	<u>"</u>	<u>"</u>	<u>1.011</u>	<u>19.3</u>	<u>6.74</u>	<u>5.18</u>	<u>-118.0</u>	<u>0.09</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 58Pump on: 0813Discharge: 23First Water: 0815psi (start): 240QED Controller #: MPIDH 1408psi (finish): 265YSI #: 106410Water level #: Solinst InterfaceTurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P3R-081618

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063

Date / Time Collected: 8/16/18 10947
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~350 ml/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 479.08 ft bgs
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 508-523
 Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~70°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	±10%
0825	~350ml/stroke	479.08	0.858	18.5	6.97	9.23	-88.2	0.34
0835	"	"	0.860	18.6	6.98	8.79	-111.8	0.24
0845	"	"	0.860	18.7	6.91	2.61	-130.5	0.21
0855	"	"	0.860	18.9	6.89	2.45	-144.7	0.18
0905	"	"	0.863	18.8	6.89	2.14	-148.6	0.17
0915	"	"	0.863	18.9	6.89	2.31	-151.5	0.16
0925	"	"	0.863	19.1	6.89	2.08	-154.1	0.15
0935	"	"	0.866	19.1	6.89	2.11	-155.3	0.14
0945	"	"	0.866	19.1	6.89	2.15	-158.6	0.14
<i>[Handwritten signature across the bottom of the table]</i>								

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 25

psi (start): 240

psi (finish): 260

Pump on: 0814

First Water: 0815

QED Controller #: MP10H

YSI #: 106406

Water level #: solinst WL probe

Turbidity Meter #: FSLUEX05

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX1-PSR-081618

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX1

Date / Time Collected: 8/16/18 / 1112

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 6-inch

Depth to Water - Initial (DTWi) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft):

Approximate depth of pump inlet (ft): 497

Length of Casing (ft): N/A

FIELD CONDITIONS

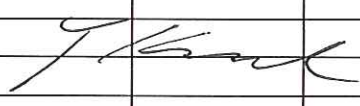
Weather Conditions: ☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: ~80°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1050	~480.5	0.749	20.6	7.02	1.64	-75.8	0.49
1055	"	0.750	20.7	7.00	1.79	-76.7	0.33
1100	"	0.749	20.6	6.92	1.93	-78.4	0.19
1105	"	0.750	20.7	6.90	1.90	-79.2	0.21
1110	"	0.753	20.7	6.89	1.95	-79.2	0.19
							

☒ Duplicate or MS/MSD Collected: 106 EX1-PSR-081618-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 7 gallons

Sample Port Open: 1045

First Water: 1045

YSI #: 10640-6

Water level #: dedicated transducer

Turbidity Meter #: FSLVED405

pump has been running
since 7/30/18

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX2-PR-081618

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX2

Date / Time Collected: 8/16/18 1237

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☐ No ☐

PURGING INFORMATION

Casing ID (in.): 6-inch

Depth to Water - Initial (DTWI) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft):

Approximate depth of pump inlet (ft): 497

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

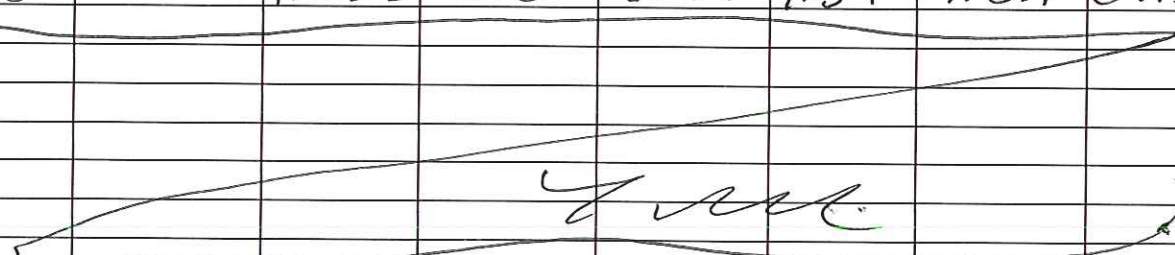
☐ Rain

☐ Wind

☐ Cloudy

Temperature:

~70°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1210	487.5	1.032	21.0	6.94	1.56	-83.3	0.31
1215	"	1.033	21.0	6.90	1.78	-96.8	0.19
1220	"	1.047	21.0	6.88	1.97	-106.4	0.15
1225	"	1.037	21.0	6.88	1.86	-112.1	0.14
1230	"	1.042	21.1	6.88	1.87	-113.6	0.13
1235	"	1.032	21.0	6.88	1.57	-118.1	0.13
							

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

~7 gallons

Sample Port Open:

1206

First Water:

1206

YSI #

Water level #:

Turbidity Meter #:

dedicated transducer

106408

F5LV120405

Pump on since 7/30/18

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2I-P3R-082118

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW2I

Date / Time Collected: 8/21/18 / 0952

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~340 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 3-inch
 Depth to Water - Initial (DTWI) (ft): ~476 ft bgs*
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 517
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~75°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0815	<u>~340 mL stroke</u>	<u>NA*</u>	0.919	18.7	6.82	1.55	-138.8	0.35
0825	"	"	0.969	18.5	6.94	1.40	-176.9	0.22
0835	"	"	0.948	18.7	6.94	1.51	-162.6	0.22
0845	"	"	0.922	18.8	6.88	1.49	-146.9	0.18
0855	"	"	0.909	19.0	6.86	1.38	-142.0	0.17
0905	"	"	0.907	19.2	6.85	1.41	-140.3	0.16
0915	"	"	0.904	19.1	6.85	1.39	-141.0	0.15
0925	"	"	0.907	19.2	6.85	1.35	-140.9	0.15
0950	"	"	0.904	19.2	6.86	1.39	-141.6	0.14

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 AWL does not
 Discharge: 25 fit & pump in
 psi (start): 240 place. WL is
 psi (finish): 260 from nearby
well.
 Pump on: 0807
 First Water: 0808
 QED Controller #: MP10H
 YSI #: 106406
 Water level #: Solinst WL probe*
 Turbidity Meter #: FSLUE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW25-P3R-082118

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106/MW25

Date / Time Collected: 8/21/18 / 1143
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~320 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 4-inch
 Depth to Water - Initial (DTWI) (ft): ~476 ft bgs*
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: ~80°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1020	<u>~320 ml/min</u>	<u>NA*</u>	1.072	22.0	7.07	9.56	189.1	0.64
1030	"	"	1.056	19.6	6.97	7.01	187.5	0.22
1040	"	"	1.033	20.0	6.85	4.71	171.9	0.17
1050	"	"	1.025	20.1	6.75	4.18	148.3	0.17
1100	"	"	1.026	19.7	6.73	3.72	145.5	0.14
1110	"	"	1.019	20.0	6.71	3.02	147.2	0.13
1120	"	"	1.017	20.0	6.71	2.98	148.4	0.13
1130	"	"	1.020	20.0	6.70	2.87	150.8	0.12
1140	"	"	1.017	20.1	6.70	2.88	151.1	0.12

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 *WL meter does Pump on: 1016
 Discharge: 24 hot fit c pump First Water: 1018
 psi (start): 240 in. WL from QED Controller #: MP1014
 psi (finish): 260 nearby well. YSI #: 106406
 † change N₂ bottle Water level #: solinst WL probe*
 Turbidity Meter #: FSLVED405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P3R-082118

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW1-I

Date / Time Collected: 8/21/18 0930

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

335 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

10C

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

474.80

ft btoC * as measured @

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

106MW1-S

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

72°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/stroke</u>	<u>ft btoC</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>0815</u>	<u>335</u>	<u>474.80*</u>	<u>0.894</u>	<u>18.5</u>	<u>6.95</u>	<u>5.25</u>	<u>-129.1</u>	<u>0.25</u>
<u>0825</u>		<u>—</u>	<u>0.900</u>	<u>18.6</u>	<u>7.03</u>	<u>5.78</u>	<u>-141.4</u>	<u>0.18</u>
<u>0835</u>		<u>—</u>	<u>0.952</u>	<u>18.8</u>	<u>6.98</u>	<u>6.37</u>	<u>-136.6</u>	<u>0.14</u>
<u>0845</u>		<u>—</u>	<u>0.946</u>	<u>18.5</u>	<u>6.98</u>	<u>5.06</u>	<u>-137.5</u>	<u>0.12</u>
<u>0855</u>		<u>—</u>	<u>0.945</u>	<u>18.8</u>	<u>6.99</u>	<u>4.81</u>	<u>-139.9</u>	<u>0.11</u>
<u>0905</u>		<u>—</u>	<u>0.943</u>	<u>18.9</u>	<u>7.00</u>	<u>4.59</u>	<u>-143.0</u>	<u>0.10</u>
<u>0915</u>		<u>—</u>	<u>0.942</u>	<u>18.9</u>	<u>7.01</u>	<u>5.49</u>	<u>-145.9</u>	<u>0.09</u>
<u>0925</u>		<u>—</u>	<u>0.943</u>	<u>19.0</u>	<u>7.02</u>	<u>5.03</u>	<u>-148.0</u>	<u>0.09</u>

☐ Duplicate or MS/MSD Collected: 106MW1I-P3R-082118-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 52

Pump on: 0805

Discharge: 27

First Water: 0807

psi (start): 240

QED Controller #: MP10H 1408

psi (finish): 265

YSI #: 106410

Water level #: N/A *

Turbidity Meter #: FSLVE0203

* Cannot fit WL meter down 3" well w/ tubing bundle.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1S-P3R-082118

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW1-S

Date / Time Collected: 8/21/18 1130
 Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: 325 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): 474.80 ft btoC
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: 79°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/stroke</u>	<u>ft btoC</u>	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>1025</u>	<u>325</u>	<u>474.80</u>	<u>1.030</u>	<u>19.5</u>	<u>7.07</u>	<u>6.12</u>	<u>-140.1</u>	<u>0.17</u>
<u>1035</u>	<u>↓</u>	<u> </u>	<u>1.014</u>	<u>19.7</u>	<u>6.95</u>	<u>5.98</u>	<u>-122.6</u>	<u>0.12</u>
<u>1045</u>	<u>↓</u>	<u> </u>	<u>1.006</u>	<u>20.0</u>	<u>6.83</u>	<u>6.65</u>	<u>-103.9</u>	<u>0.11</u>
<u>1055</u>	<u>↓</u>	<u> </u>	<u>1.017</u>	<u>20.3</u>	<u>6.82</u>	<u>6.39</u>	<u>-103.7</u>	<u>0.09</u>
<u>1105</u>	<u>↓</u>	<u> </u>	<u>1.017</u>	<u>20.2</u>	<u>6.82</u>	<u>5.33</u>	<u>-105.4</u>	<u>0.08</u>
<u>1115</u>	<u>↓</u>	<u> </u>	<u>1.018</u>	<u>20.3</u>	<u>6.81</u>	<u>5.18</u>	<u>-106.7</u>	<u>0.08</u>
<u>1125</u>	<u>↓</u>	<u> </u>	<u>1.016</u>	<u>20.1</u>	<u>6.81</u>	<u>5.84</u>	<u>-108.1</u>	<u>0.07</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 57

Discharge: 23.5

psi (start): 240

psi (finish): 265

Pump on: 1013

First Water: 1015

QED Controller #: MP10H 1A08

YSI #: 106410

Water level #: Solnist Interface

Turbidity Meter #: PSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P3R-082218

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 8/22/18 0935

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micro-purge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

320 ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

5"

Depth to Water - Initial (DTWI) (ft)

478.15 ft bto

Approximate depth of pump inlet (ft): 495

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-500

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☒ Rain

☒ Wind

☐ Cloudy

Temperature:

67°F

Time of Reading	Volume Purged (ml)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ml/stroke</u>	<u>ft bto</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>0830</u>	<u>320</u>	<u>478.15</u>	<u>1.008</u>	<u>18.1</u>	<u>6.84</u>	<u>9.64</u>	<u>-115.3</u>	<u>0.22</u>
<u>0840</u>		<u>"</u>	<u>1.010</u>	<u>18.2</u>	<u>6.72</u>	<u>7.22</u>	<u>-111.0</u>	<u>0.16</u>
<u>0850</u>		<u>"</u>	<u>1.023</u>	<u>18.3</u>	<u>6.65</u>	<u>6.89</u>	<u>-106.8</u>	<u>0.13</u>
<u>0900</u>		<u>"</u>	<u>1.025</u>	<u>18.4</u>	<u>6.64</u>	<u>6.34</u>	<u>-108.5</u>	<u>0.11</u>
<u>0910</u>		<u>"</u>	<u>1.024</u>	<u>18.4</u>	<u>6.64</u>	<u>6.12</u>	<u>-110.1</u>	<u>0.10</u>
<u>0920</u>		<u>"</u>	<u>1.022</u>	<u>18.5</u>	<u>6.64</u>	<u>6.45</u>	<u>-111.8</u>	<u>0.09</u>
<u>0930</u>		<u>"</u>	<u>1.023</u>	<u>18.6</u>	<u>6.64</u>	<u>6.25</u>	<u>-112.9</u>	<u>0.09</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 58

Pump on: 0819

Discharge: 23.5

First Water: 0821

psi (start): 240

QED Controller #: MPIDH 1408

psi (finish): 265

YSI #: 106410

Water level #: Solnist Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 ~~5~~ ~~X~~ 2

Date / Time Collected 8/22/18 / 1207

Sample Collected by: TK CL

Sample Collected by: TK CL

☐ Bladder Pump

☒ Other Ground Fos SHP

Yes ☒ No ☐

Yes ☒ No ☐

PURGING INFORMATION

Approximate depth of pump inlet (ft): 9.7

Length of Casing (ft): N/A

507

502

FIELD CONDITIONS

- ☐ Rain

- Wind

☒ Cloudy

Temperature: 28.0°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1130	487.5	1.047	21.0	7.12	2.40	-80.9	0.37
1135	"	1.051	21.0	7.01	2.43	-97.3	0.19
1140	"	1.054	21.0	7.00	2.48	-104.0	0.16
1145	"	1.052	21.0	6.99	2.36	-108.8	0.15
1150	"	1.055	21.0	6.99	2.20	-110.7	0.14
1155	"	1.045	21.0	6.98	2.25	-113.0	0.14
1200	"	1.049	21.0	6.98	3.81	-115.1	0.13
1205	"	1.053	21.0	6.97	2.09	-117.0	0.13

☐ Duplicate or MS/MSD Collected: *none*

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): ~ 7 gallons

Sample Port Open: 1127

First Water: 1127

YSI #: 106406

Water level #: Dedicated transducer

Turbidity Meter #: FSLVE0405

Pump has been running since 7/30/18

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P3R-082218

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106063

Date / Time Collected: 8/22/18 11003

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~320 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 479.25
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 508-523
 Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☒ Rain ☒ Wind ☒ Cloudy Temperature: ~60°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0825	<u>~320 ml/stroke</u>	479.25	0.869	18.5	7.17	9.97	-74.1	0.54
0835	"	"	0.876	18.2	7.05	7.80	-94.0	0.29
0845	"	"	0.878	18.3	7.01	5.85	-98.5	0.23
0855	"	"	0.881	18.3	6.95	4.02	-103.5	0.21
0905	"	"	0.877	18.4	6.94	3.79	-113.9	0.19
0915	"	"	0.883	18.5	6.93	3.68	-118.0	0.18
0925	"	"	0.879	18.5	6.93	3.70	-122.6	0.17
0935	"	"	0.881	18.6	6.93	3.71	-128.1	0.17
0945	"	"	0.882	18.7	6.92	3.72	-129.4	0.16
0955	"	"	0.883	18.7	6.92	3.59	-128.7	0.16
1000	"	"	0.885	18.7	6.92	3.69	-128.2	0.16

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 2.5

psi (start): 240

psi (finish): 260

Pump on: 0819

First Water: 0820

QED Controller #: MP10H

YSI #: 106406

Water level #: against WL probe

Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106EX1-R3R-082218

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106EX1

Date / Time Collected: 8/22/18 / 1107

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment: ☐ Bladder Pump

☒ Other

Flow Rate During Purging:

~200 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.): 6-inch

Depth to Water - Initial (DTWI) (ft): 480.5 ft bgs

Approximate depth of pump inlet (ft): 497

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 507

Screen Interval (ft): 487 - 502

FIELD CONDITIONS

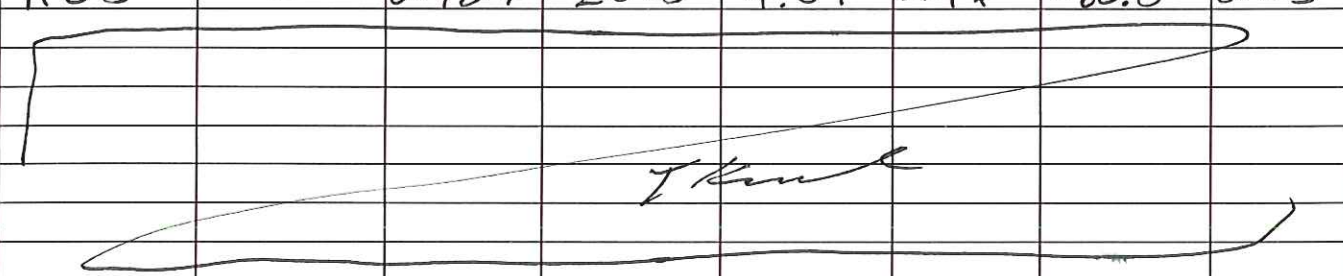
Weather Conditions: ☐ Sunny

☐ Rain

☐ Wind

☒ Cloudy

Temperature: ~75°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1040	480.5	0.763	20.5	7.26	3.01	-113.8	0.47
1045	"	0.755	20.5	7.09	2.59	-103.3	0.31
1050	"	0.752	20.5	7.04	2.37	-93.6	0.27
1055	"	0.751	20.5	7.01	2.63	-87.9	0.25
1100	"	0.753	20.5	7.00	2.60	-85.6	0.25
1105	"	0.757	20.5	7.01	2.47	-85.0	0.25
							

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 6 gallons

Sample Port Open: 1038

First Water: 1038

YSI #: 106406

Water level #: dedicated transducer

Turbidity Meter #: FSLVE0405

Pump on since 7/30/18

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106NW 2I - P3R-082818

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 NW 2I

Date / Time Collected: 8/28/18 / 1002
 Sample Collected by: TK 1145

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: ~320 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 3-inch
 Depth to Water - Initial (DTWI) (ft): ~476 ft logs
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 517
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~84°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>1010</u>	<u>~320 ml stroke</u>	<u>NA</u>	<u>0.917</u>	<u>19.3</u>	<u>7.25</u>	<u>4.06</u>	<u>-131.0</u>	<u>0.52</u>
<u>1020</u>	<u>"</u>	<u>"</u>	<u>0.940</u>	<u>18.7</u>	<u>7.25</u>	<u>4.11</u>	<u>-159.1</u>	<u>0.20</u>
<u>1030</u>	<u>"</u>	<u>"</u>	<u>0.946</u>	<u>19.4</u>	<u>7.22</u>	<u>4.01</u>	<u>-146.4</u>	<u>0.17</u>
<u>1040</u>	<u>"</u>	<u>"</u>	<u>0.954</u>	<u>19.8</u>	<u>7.33</u>	<u>3.88</u>	<u>-132.5</u>	<u>0.16</u>
<u>1050</u>	<u>"</u>	<u>"</u>	<u>0.947</u>	<u>19.2</u>	<u>7.24</u>	<u>3.76</u>	<u>-128.7</u>	<u>0.15</u>
<u>1100</u>	<u>"</u>	<u>"</u>	<u>0.944</u>	<u>19.6</u>	<u>7.27</u>	<u>3.64</u>	<u>-129.1</u>	<u>0.14</u>
<u>1110</u>	<u>"</u>	<u>"</u>	<u>0.939</u>	<u>19.6</u>	<u>7.35</u>	<u>3.48</u>	<u>-129.9</u>	<u>0.14</u>
<u>1120</u>	<u>"</u>	<u>"</u>	<u>0.937</u>	<u>19.7</u>	<u>7.40</u>	<u>3.54</u>	<u>-130.8</u>	<u>0.13</u>
<u>1130</u>	<u>"</u>	<u>"</u>	<u>0.939</u>	<u>19.7</u>	<u>7.47</u>	<u>3.50</u>	<u>-131.1</u>	<u>0.13</u>
<u>1140</u>	<u>"</u>	<u>"</u>	<u>0.938</u>	<u>19.7</u>	<u>7.45</u>	<u>3.47</u>	<u>-132.5</u>	<u>0.13</u>

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 *WL probe does Pump on: 1002
 Discharge: 25 not sit & pump First Water: 1003
 psi (start): 240 in place. QED Controller #: MP10H
 psi (finish): 260 WL is approx. YSI #: 106406

Water level #: Salinest WL probe *
 Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106mw25-P3R-082818

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106mw25

Date / Time Collected: 8/28/18 / 0946
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: ~320 mL/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 4-inch
 Depth to Water - Initial (DTWI) (ft): ~476 ft bgs*
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: ~75°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
0805	<u>~320 mL stroke</u>	<u>N/A*</u>	1.009	19.3	6.95	7.01	148.9	0.71
0815	"	"	1.010	19.4	6.76	5.36	146.0	0.42
0825	"	"	1.016	18.0	6.81	5.39	172.1	0.20
0835	"	"	1.039	18.1	6.70	5.16	152.9	0.18
0845	"	"	1.056	18.2	6.65	5.20	144.0	0.17
0855	"	"	1.058	18.3	6.65	5.11	143.1	0.16
0905	"	"	1.057	18.4	6.66	5.18	145.2	0.15
0915	"	"	1.057	18.4	6.67	5.14	146.9	0.14
0925	"	"	1.058	18.4	6.69	5.12	147.4	0.14
0935	"	"	1.057	18.6	6.72	5.20	149.4	0.13
0945	"	"	1.057	18.6	6.73	5.15	150.0	0.13

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 *WL approximate from nearby wells. WL meter does not fit in casing with pump in place.
 Discharge: 25
 psi (start): 240
 psi (finish): 260
 Pump on: 0800
 First Water: 0801
 QED Controller #: MP10A
 YSI #: 106406
 Water level #: Solinst WL probe*
 Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1S-P3R-082018

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW1-S

Date / Time Collected: 8/28/18 1140
 Sample Collected by: U

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump

Flow Rate During Purging: ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TWC

Casing ID (in.): 4"

Depth to Water - Initial (DTWI) (ft): 474.66 ft bto c

Approximate depth of pump inlet (ft): 488

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 500.5

Screen Interval (ft): 463-498

NO LNAPL

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 78°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ml/stroke</u>	<u>ft bto c</u>	±10%	±10%	±10%	±10%	±10 mV	±10%
<u>1015</u>	<u>350</u>	<u>474.66</u>	<u>1.021</u>	<u>18.6</u>	<u>7.11</u>	<u>7.10</u>	<u>-127.2</u>	<u>0.17</u>
<u>1025</u>		<u>"</u>	<u>1.017</u>	<u>19.0</u>	<u>6.99</u>	<u>6.89</u>	<u>-115.5</u>	<u>0.12</u>
<u>1035</u>		<u>"</u>	<u>1.025</u>	<u>19.2</u>	<u>6.83</u>	<u>6.05</u>	<u>-95.1</u>	<u>0.11</u>
<u>1045</u>		<u>"</u>	<u>1.023</u>	<u>19.2</u>	<u>6.82</u>	<u>6.29</u>	<u>-95.4</u>	<u>0.09</u>
<u>1055</u>		<u>"</u>	<u>1.025</u>	<u>19.1</u>	<u>6.81</u>	<u>6.13</u>	<u>-96.8</u>	<u>0.09</u>
<u>1105</u>		<u>"</u>	<u>1.023</u>	<u>19.1</u>	<u>6.82</u>	<u>6.09</u>	<u>-99.5</u>	<u>0.09</u>
<u>1115</u>		<u>"</u>	<u>1.024</u>	<u>19.4</u>	<u>6.81</u>	<u>5.96</u>	<u>-100.1</u>	<u>0.07</u>
<u>1125</u>		<u>"</u>	<u>1.023</u>	<u>19.7</u>	<u>6.81</u>	<u>5.81</u>	<u>-101.3</u>	<u>0.07</u>
<u>1135</u>		<u>"</u>	<u>1.026</u>	<u>19.5</u>	<u>6.81</u>	<u>5.89</u>	<u>-103.0</u>	<u>0.07</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 23.5

psi (start): 240

psi (finish): 265

Pump on: 1003

First Water: 1005

QED Controller #: MPH 1408

YSI #: 106410

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P3R-082818

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW1-I

Date / Time Collected: 8/28/18 0925

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment.:

☒ Bladder Pump

Flow Rate During Purging:

300 ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

70C

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

474.66 ft btoe * as

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

measured at

Screen Interval (ft):

513-528

106MW1-S

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind breezy

☐ Cloudy

Temperature:

67°F

Time of Reading	Volume Purged (ml)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ml/stroke</u>	<u>ft btoe</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>0810</u>	<u>300</u>	<u>474.66</u>	<u>0.948</u>	<u>18.2</u>	<u>6.98</u>	<u>5.93</u>	<u>-154.9</u>	<u>0.22</u>
<u>0820</u>		<u>—</u>	<u>0.942</u>	<u>18.2</u>	<u>7.01</u>	<u>6.95</u>	<u>-152.1</u>	<u>0.18</u>
<u>0830</u>		<u>—</u>	<u>0.992</u>	<u>18.2</u>	<u>6.93</u>	<u>6.26</u>	<u>-139.8</u>	<u>0.13</u>
<u>0840</u>		<u>—</u>	<u>0.989</u>	<u>18.3</u>	<u>6.94</u>	<u>5.58</u>	<u>-139.7</u>	<u>0.12</u>
<u>0850</u>		<u>—</u>	<u>0.985</u>	<u>18.5</u>	<u>6.96</u>	<u>5.61</u>	<u>-140.6</u>	<u>0.11</u>
<u>0900</u>		<u>—</u>	<u>0.983</u>	<u>18.6</u>	<u>6.97</u>	<u>5.39</u>	<u>-142.3</u>	<u>0.10</u>
<u>0910</u>		<u>—</u>	<u>0.981</u>	<u>18.7</u>	<u>6.99</u>	<u>5.18</u>	<u>-144.6</u>	<u>0.09</u>
<u>0920</u>	<u>↓</u>	<u>—</u>	<u>0.981</u>	<u>18.8</u>	<u>7.00</u>	<u>5.08</u>	<u>-145.4</u>	<u>0.09</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 53

Pump on: 0800

Discharge: 27

First Water: 0802

psi (start): 240

QED Controller #: MP1DH 1408

psi (finish): 265

YSI #: 106410

Water level #: FSLVE0203

Turbidity Meter #: N/A*

* we can't fit down 3" well w/ tubing bundle.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P32-082910

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 8/29/18 0925

Sample Collected by: AL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump

Flow Rate During Purging:

325 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TBC

Casing ID (in.)

5"

Depth to Water - Initial (DTWI) (ft)

478.15 ft btoC

Approximate depth of pump inlet (ft): 495

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-500

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature: 66°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/stroke</u>	<u>ft btoC</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>0822</u>	<u>325</u>	<u>478.15</u>	<u>1.019</u>	<u>18.3</u>	<u>6.85</u>	<u>11.1</u>	<u>-120.5</u>	<u>0.22</u>
<u>0832</u>		<u>"</u>	<u>1.018</u>	<u>18.6</u>	<u>6.72</u>	<u>9.35</u>	<u>-113.6</u>	<u>0.16</u>
<u>0842</u>		<u>"</u>	<u>1.015</u>	<u>18.7</u>	<u>6.64</u>	<u>7.40</u>	<u>-106.0</u>	<u>0.14</u>
<u>0852</u>		<u>"</u>	<u>1.016</u>	<u>18.7</u>	<u>6.64</u>	<u>8.38</u>	<u>-108.4</u>	<u>0.11</u>
<u>0902</u>		<u>"</u>	<u>1.015</u>	<u>18.8</u>	<u>6.64</u>	<u>8.03</u>	<u>-111.0</u>	<u>0.10</u>
<u>0912</u>		<u>"</u>	<u>1.016</u>	<u>19.0</u>	<u>6.64</u>	<u>7.09</u>	<u>-113.0</u>	<u>0.09</u>
<u>0922</u>		<u>"</u>	<u>1.015</u>	<u>19.0</u>	<u>6.64</u>	<u>7.21</u>	<u>-114.2</u>	<u>0.10</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 57

Pump on: 0810

Discharge: 23.5

First Water: 0912

psi (start): 240

QED Controller #: MP10H 1A08

psi (finish): 265

YSI #: 106410

Water level #: Solinst Inter face

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX2-P3R-082918

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX2

Date / Time Collected: 8/29/18/1218

Sample Collected by: TK CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

Flow Rate During Purging:

5 HP Grundfos
~200 gpm

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.) 6-inch

Approximate depth of pump inlet (ft): 497

Depth to Water - Initial (DTWI) (ft) 487.5 ft bgs

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 507

Screen Interval (ft): 487-502

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

~80°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1135	487.5	1.031	21.1	6.86	10.6	-82.1	0.47
1140	"	1.039	21.1	6.86	9.45	-94.8	0.35
1145	"	1.040	21.2	6.86	8.79	-103.0	0.31
1150	"	1.037	21.1	6.86	8.72	-109.7	0.28
1155	"	1.040	21.1	6.87	9.01	-112.3	0.22
1200	"	1.041	21.1	6.87	10.37	-116.2	0.19
1205	"	1.040	21.2	6.87	9.15	-118.3	0.26
1210	"	1.041	21.2	6.87	8.87	-120.7	0.26
1215	"	1.044	21.2	6.87	8.95	-121.4	0.26
<u>Yours</u>							

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): ~8 gallons

Sample Port Open: 1131

First Water: 1131

YSI #: 106410

Water level #: dedicated transducer

Turbidity Meter #: FSLVE0905

Pump on since 7/30,
currently running at
5 GPM

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P3R-082918

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063

Date / Time Collected: 8/29/18 10958

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~330 ml/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: northside casing
 Casing ID (in.): 5-inch
 Depth to Water - Initial (DTWI) (ft): 479.11 ft bto c
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 508-523
 Approximate depth of pump inlet (ft): 511
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: ~65°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0815	<u>~330 ml/min</u>	<u>479.11</u>	<u>0.882</u>	<u>18.5</u>	<u>7.04</u>	<u>15.0</u>	<u>-80.3</u>	<u>0.54</u>
0825	"	"	<u>0.886</u>	<u>18.3</u>	<u>6.81</u>	<u>12.5</u>	<u>-94.2</u>	<u>0.28</u>
0835	"	"	<u>0.886</u>	<u>18.3</u>	<u>6.78</u>	<u>9.34</u>	<u>-95.6</u>	<u>0.25</u>
0845	"	"	<u>0.890</u>	<u>18.5</u>	<u>6.76</u>	<u>7.29</u>	<u>-99.9</u>	<u>0.22</u>
0855	"	"	<u>0.889</u>	<u>18.5</u>	<u>6.79</u>	<u>7.66</u>	<u>-104.2</u>	<u>0.21</u>
0905	"	"	<u>0.888</u>	<u>18.6</u>	<u>6.80</u>	<u>7.51</u>	<u>-110.0</u>	<u>0.19</u>
0915	"	"	<u>0.889</u>	<u>18.5</u>	<u>6.80</u>	<u>7.84</u>	<u>-114.1</u>	<u>0.18</u>
0925	"	"	<u>0.892</u>	<u>18.7</u>	<u>6.80</u>	<u>7.68</u>	<u>-116.1</u>	<u>0.18</u>
0935	"	"	<u>0.895</u>	<u>18.8</u>	<u>6.80</u>	<u>7.59</u>	<u>-117.6</u>	<u>0.17</u>
0945	"	"	<u>0.896</u>	<u>18.8</u>	<u>6.81</u>	<u>7.55</u>	<u>-119.6</u>	<u>0.16</u>
0955	"	"	<u>0.894</u>	<u>18.8</u>	<u>6.81</u>	<u>7.49</u>	<u>-120.6</u>	<u>0.16</u>

☒ Duplicate or MS/MSD Collected: 106063-P3R-082918-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 26

psi (start): 240

psi (finish): 260

Pump on: 0811

First Water: 0812

QED Controller #: MP1014

YSI #: 106406

Water level #: 50 in st WL probe

Turbidity Meter #: PSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 EX1-P3R-082918

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX1

Date / Time Collected: 8/29/18 / 1117

Sample Collected by: TK, CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

☐ Bladder Pump

☒ Other

Flow Rate During Purging:

~200 ml/min

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.): 8-inch

Approximate depth of pump inlet (ft): 497

Depth to Water - Initial (DTWI) (ft): 480.65 ft + logs

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 507

Screen Interval (ft): 487-502

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: ~80°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1040	480.65	0.754	20.6	6.96	11.2	-84.1	0.31
1045	"	0.756	20.6	6.92	10.4	-87.6	0.33
1050	"	0.757	20.5	6.90	9.90	-88.5	0.29
1055	"	0.750	20.6	6.89	8.65	-91.3	0.20
1100	"	0.765	20.6	6.89	9.56	-93.5	0.15
1105	"	0.764	20.6	6.89	6.29	-93.9	0.15
1110	"	0.759	20.7	6.89	9.38	-95.5	0.13
1115	"	0.758	20.7	6.89	9.11	-96.1	0.13

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons):

~7 gallons

Sample Port Open:

1036

First Water:

1037

YSI #:

106410

Water level #:

dedicated transducer

Turbidity Meter #:

FSLVE0405

Pump running since 7/30
at 10 PM

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P3P-091118

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW1-I

Date / Time Collected: 9/11/18 0935

Sample Collected by: AL

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

325 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: T0C

Casing ID (in.): 3"

Depth to Water - Initial (DTWI) (ft): 474.75

Abtloc, as

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 528

Screen Interval (ft): 513-523

measured at 106MW1-S

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: 65°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/stroke</u>	<u>(Abtloc)</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>0821</u>	<u>325</u>	<u>474.75*</u>	<u>0.973</u>	<u>18.1</u>	<u>6.94</u>	<u>7.04</u>	<u>-120.5</u>	<u>0.22</u>
<u>0831</u>	<u> </u>	<u>—</u>	<u>0.982</u>	<u>18.1</u>	<u>7.05</u>	<u>6.87</u>	<u>-125.7</u>	<u>0.18</u>
<u>0841</u>	<u> </u>	<u>—</u>	<u>1.035</u>	<u>18.2</u>	<u>7.03</u>	<u>7.01</u>	<u>-139.3</u>	<u>0.14</u>
<u>0851</u>	<u> </u>	<u>—</u>	<u>1.035</u>	<u>18.4</u>	<u>7.04</u>	<u>6.93</u>	<u>-143.0</u>	<u>0.12</u>
<u>0901</u>	<u> </u>	<u>—</u>	<u>1.031</u>	<u>18.6</u>	<u>7.06</u>	<u>6.87</u>	<u>-145.3</u>	<u>0.11</u>
<u>0912</u>	<u> </u>	<u>—</u>	<u>1.030</u>	<u>18.5</u>	<u>7.07</u>	<u>6.95</u>	<u>-148.5</u>	<u>0.11</u>
<u>0924</u>	<u> </u>	<u>—</u>	<u>1.031</u>	<u>18.7</u>	<u>7.08</u>	<u>6.78</u>	<u>-149.7</u>	<u>0.10</u>
<u>0932</u>	<u>↓</u>	<u>—</u>	<u>1.030</u>	<u>18.6</u>	<u>7.08</u>	<u>7.15</u>	<u>-150.1</u>	<u>0.10</u>
<u>—————</u>								
<u>—————</u>								
<u>—————</u>								
<u>—————</u>								

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0809

Discharge: 26.5

First Water: 0811

psi (start): 240

QED Controller #: MP10H 1408

psi (finish): 265

YSI #: 106410

Water level #: NA*

Turbidity Meter #: FSLVE0203

* cannot fit w/ probe down casing w/ tubing bundle.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1S-P3P-091118

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW1-S

Date / Time Collected: 9/11/18 1135

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 325 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: T0C
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): 474.75 ffbtoc
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind Temperature: _____

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/stroke</u>	<u>ffbtoC</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1015</u>	<u>325</u>	<u>474.75</u>	<u>1.024</u>	<u>18.6</u>	<u>7.18</u>	<u>8.77</u>	<u>-147.4</u>	<u>0.17</u>
<u>1030</u>	<u> </u>	<u>"</u>	<u>1.033</u>	<u>19.0</u>	<u>6.86</u>	<u>8.38</u>	<u>-106.3</u>	<u>0.12</u>
<u>1040</u>	<u> </u>	<u>"</u>	<u>1.032</u>	<u>19.2</u>	<u>6.83</u>	<u>7.19</u>	<u>-105.9</u>	<u>0.11</u>
<u>1050</u>	<u> </u>	<u>"</u>	<u>1.039</u>	<u>18.9</u>	<u>6.84</u>	<u>6.89</u>	<u>-108.7</u>	<u>0.09</u>
<u>1100</u>	<u> </u>	<u>"</u>	<u>1.035</u>	<u>18.8</u>	<u>6.83</u>	<u>6.23</u>	<u>-109.4</u>	<u>0.09</u>
<u>1110</u>	<u> </u>	<u>"</u>	<u>1.035</u>	<u>19.2</u>	<u>6.82</u>	<u>5.43</u>	<u>-111.7</u>	<u>0.08</u>
<u>1120</u>	<u> </u>	<u>"</u>	<u>1.034</u>	<u>19.2</u>	<u>6.82</u>	<u>5.32</u>	<u>-113.9</u>	<u>0.08</u>
<u>1130</u>	<u>↓</u>	<u>"</u>	<u>1.034</u>	<u>19.2</u>	<u>6.82</u>	<u>5.14</u>	<u>-114.9</u>	<u>0.08</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 57

Discharge: 23.5

psi (start): 240

psi (finish): 265

Pump on: 1002

First Water: 1004

QED Controller #: MP10H 1408

YSI #: 106410

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2I-P3P-091118

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW2I
 Date / Time Collected: 9/11/18 / 1017
 Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: ~340 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point northside
 Casing ID (in.) 3-inch
 Depth to Water - Initial (DTWI) (ft) ~474 ft 69.5'
 Depth to Well Bottom (ft) 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 518
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: ~70°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0815	~340 mL/min	NA*	0.898	18.7	6.58	9.63	-79.7	0.63
0825	"	"	0.893	18.2	6.65	5.02	-81.4	0.29
0835	"	"	0.917	18.5	6.71	1.47	-100.1	0.24
0845	"	"	0.946	18.6	6.71	1.39	-109.4	0.21
0855	"	"	0.956	18.7	6.73	1.54	-113.8	0.20
0905	"	"	75K					
0915	"	"	0.963	18.9	6.80	1.47	-119.6	0.17
0925	"	"	0.964	18.9	6.85	1.43	-123.6	0.16
0935	"	"	0.966	19.1	6.92	1.44	-126.6	0.15
0955	"	"	0.968	19.1	6.96	1.45	-128.2	0.15
1005	"	"	0.974	19.1	7.04	1.39	-129.7	0.15
1015	"	"	0.976	19.1	7.06	1.40	-130.1	0.15

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 *WL probe does not fit in well
 Discharge: 25 & pump in place.
 psi (start): 240 WL is approximate
 psi (finish): 260
 Pump on: 0809
 First Water: 0810
 QED Controller #: MP10H
 YSI #: 106406
 Water level #: Solinst WL probe*
 Turbidity Meter #: FSLVE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW25-PSP-091118

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW25
 Date / Time Collected: 9/11/18 11202
 Sample Collected by: TK

EQUIPMENT / NOTES

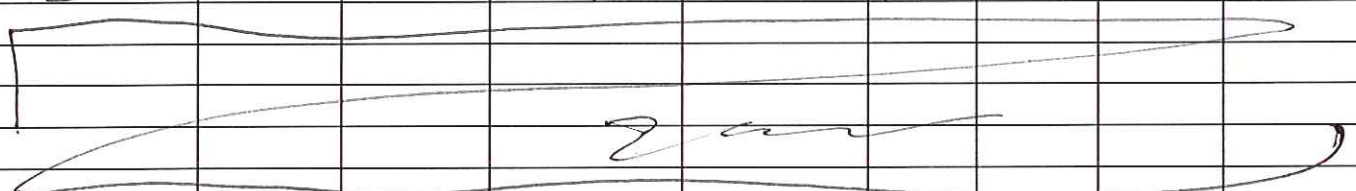
Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~350 mL/min
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point northside casing
 Casing ID (in.) 4-inch
 Depth to Water - Initial (DWI) (ft) ~474 ft 6 in *
 Depth to Well Bottom (ft) 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind Temperature: ~80°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1050	<u>~350 mL stroke</u>	<u>NA *</u>	1.061	18.9	7.02	15.0-192.6	0.22	
1100	"	"	1.064	19.0	7.01	8.95-201.5	0.18	
1110	"	"	0.992	19.1	7.01	4.12-161.8	0.16	
1120	"	"	0.989	19.3	7.10	3.15-155.7	0.15	
1130	"	"	0.992	19.3	7.12	2.98-156.4	0.14	
1140	"	"	0.989	19.4	7.11	2.79-157.1	0.13	
1150	"	"	0.991	19.4	7.09	2.75-158.1	0.13	
1200	"	"	0.992	19.4	7.10	2.77-158.7	0.13	
								

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 *WL meter Pump on: 1040
 Discharge: 26 does not fit First Water: 1041
 psi (start): 240 in casing & QED Controller #: MP10H
 psi (finish): 260 pump in place. YSI #: 106406
 WL is approximate. Water level #: Solinet WL probe
 Turbidity Meter #: FSLUE0405

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106014-P3P-091218

Site Location: Kirtland AFB, SWMU ST-106/SS-111
Well ID: KAFB-1060164

Date / Time Collected 9/12/18 0905
Sample Collected by: ca

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
Sampling Equipment.: ☒ Bladder Pump

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ✓ No

PURGING INFORMATION

Measuring Point TOC

Casing ID (in.) 5"

Depth to Water - Initial (DTWI) (ft) 478.20 ft b7C

Approximate depth of pump inlet (ft): 495

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 53

Screen Interval (ft): 488-500

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: 69°F

[illegible]

☒ Duplicate or MS/MSD Collected: 106064-P3P-091218-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 0738

Discharge: 23.5

First Water: 0740

psi (start): 240

QED Controller #: MP10H 1408

psi (finish): 265

YSI #: 106410

Water level #: Solmist Interface

Turbidity Meter #: FSLVE0203

Project Name: KAFB RAPID ESTCP

Project No.: 500433

Sample ID 106EX2-P3P-091218

Well ID: KAFB-106 *EX2*

Date / Time Collected 9/12/18 11356

Sample Collected by: TK, CL

Purging Method/Equipment:

Sampling Equipment.:

Sampling Equipment.: ☐ Bladder Pump ☒ Other Ground for 5 HP
Flow Rate During Purging : ~200 ml/min

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 6-inch

Approximate depth of pump inlet (ft): 497

Depth to Water - Initial (DTWi) (ft) 475.12 ft bgs

Length of Casing (ft): N/A

Depth to Well Bottom (ft) 507

Screen Interval (ft): 4.87 - 5.02

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

- Wind

- Cloudv

Temperature: ~ 84°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1315	478.54	1.061	22.0	6.95	5.94	-107.5	0.52
1320	"	1.060	21.9	6.92	6.05	-123.0	0.44
1325	"	1.063	22.0	6.92	5.33	-130.5	0.42
1330	"	1.064	22.0	6.93	4.90	-136.3	0.39
1335	"	1.064	22.0	6.93	4.37	-140.5	0.37
1340	"	1.061	22.0	6.93	4.23	-145.8	0.37
1345	"	1.061	22.0	6.93	4.33	-149.1	0.37
1350	"	1.063	22.0	6.94	4.30	-151.6	0.35
1355	"	1.061	22.0	6.93	4.35	-155.4	0.35

☐ Duplicate or MS/MSD Collected: *none*

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 28 gallons

Sample Port Open: 310

First Water: 1310

YSI #: 106410

Water level #: *transducer*

Turbidity Meter #: FSLVE0405

turn pump on about
1145, running at 2.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-R3P-091218

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106063

Date / Time Collected: 9/12/18 / 0936

Sample Collected by: TK

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment.: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: ~ 330 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: Northside casing

Casing ID (in.): 5-inch

Depth to Water - Initial (DTWI) (ft): 479.07 ft

Depth to Well Bottom (ft): 528

Screen Interval (ft): 508-523

Approximate depth of pump inlet (ft): 511

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind

Temperature: ~65°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0746	~330 mL/stroke	479.07	0.892	18.2	6.89	5.49	-67.9	0.41
0755	"	"	0.890	18.2	6.95	1.87	-42.1	0.29
0805	"	"	0.909	18.3	7.09	1.74	-89.6	0.22
0815	"	"	0.910	18.4	7.10	1.70	-95.3	0.20
0825	"	"	0.912	18.4	7.08	1.69	-98.9	0.19
0835	"	"	0.914	18.5	7.14	1.68	-101.8	0.20
0845	"	"	0.913	18.4	7.11	1.66	-103.4	0.18
0855	"	"	0.915	18.5	7.12	1.65	-105.6	0.17
0905	"	"	0.914	18.4	7.12	1.60	-107.1	0.16
0924	"	"	0.916	18.4	7.12	1.64	-108.6	0.16
0935	"	"	0.915	18.4	7.12	1.65	-109.3	0.16
								

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 52

Pump on: 0738

Discharge: 26

First Water: 0739

psi (start): 240

QED Controller #: MP10H

psi (finish): 260

YSI #: 106406

Water level #: Solinst WL probe

Turbidity Meter #: ESLUE0405

GROUND WATER SAMPLE COLLECTION LOG

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 *Ex 1*

Date / Time Collected 9/12/18 / 1257

Sample Collected by: TK, CL

Sample Collected by: TK, CL

☐ Bladder Pump

☒ Other Ground for SHP
~200 mil/parin

Yes ☒ No ☐

Yes ☒ No ☐

PURGING INFORMATION

Approximate depth of pump inlet (ft): 497

$$\frac{474.50}{507} \text{ ft } 695$$

Length of Casing (ft): N/A

$$\begin{array}{r} 407 \\ \hline 507 \end{array}$$

Screen Interval (ft): 987 - 502

FIELD CONDITIONS

- ☐ Rain

- Wind

- ☐ Cloudy

Temperature: $\sim 80^\circ\text{F}$

[illegible]

☐ Duplicate or MS/MSD Collected: none

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Sample Port Open: 1226

First Water: 1226

YSI #: 166406

Water level #: *transducer*

Turbidity Meter #: FSLVE0405

turn pump on about
1145, running at 26PM

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106 MW2I-83P-100218

Site Location: Kirtland AFB, SWMU ST-106/SS-111
Well ID: KAFB-106 MW2-T

Date / Time Collected: 10/2/18 0905
Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
Sampling Equipment.: ☒ Bladder Pump ☐ Other
Flow Rate During Purging : 300 mL / stroke
Note: Flowrate for VOC sampling should be no greater than 1 L/min
Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point TOC
Casing ID (in.) 3"
Depth to Water - Initial (DTWI) (ft) ~474.90 ft bblc *
Depth to Well Bottom (ft) 528
Screen Interval (ft): 513-523

Approximate depth of pump inlet (ft): 518
Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 66°F

[illegible]

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55
Discharge: 25.5
psi (start): 240
psi (finish): 265

Pump on: 0746

First Water: 0748

QED Controller #: MP104 1408

YSI #: 106410

Water level #: N/A *

Turbidity Meter #: FSLVE0203

* WL meter cannot fit down 3" well w/ tubing bundle.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW25-P3P-100218

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW2-S

Date / Time Collected: 10/2/18 1045

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other _____
 Flow Rate During Purging: 315 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TBC
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): ~474.90 ft btoC*
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 67°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	(mL/stroke)	(ft btoC)	±10%	±10%	±10%	±10%	±10 mV	±10%
0930	315	474.90*	0.961	18.0	6.90	17.1	-65.5	0.15
0940		—	0.979	18.3	6.73	8.42	-129.1	0.11
0950		—	0.984	18.5	6.72	9.15	-147.8	0.09
1000		—	0.987	18.6	6.72	8.21	-153.5	0.08
1010		—	0.988	18.7	6.73	6.86	-157.9	0.07
1020		—	0.994	18.9	6.75	6.77	-162.2	0.07
1030		—	0.996	18.9	6.75	6.39	-163.7	0.07
1040		—	0.999	19.0	6.74	7.59	-165.2	0.07

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 100

Pump on: 0917

Discharge: 24

First Water: 0919

psi (start): 240

QED Controller #: MP10H 1408

psi (finish): 265

YSI #: 106410

Water level #: N/A*

Turbidity Meter #: FSLVE0203

*cannot collect WL measurement.

Tubing will not fit down well w/ tubing bundle.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MWIS-P3P-100318

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MWI-S

Date / Time Collected: 10/8/18 1025

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☐ Bladder Pump ☐ Other _____
 Sampling Equipment.: _____
 Flow Rate During Purging: 315 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TBC
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): 474.78 ft btoC
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☒ Cloudy Temperature: 64°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	mL (stroke)	(ft btoC)	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0920	315	474.78	1.040	17.9	7.08	9.81	-142.3	0.17
0930		"	1.055	18.2	6.88	7.56	-117.2	0.12
0940		"	1.066	18.3	6.70	5.12	-102.9	0.11
0950		"	1.066	18.4	6.68	5.17	-104.1	0.10
1000		"	1.066	18.5	6.68	5.23	-105.7	0.10
1010		"	1.068	18.6	6.69	5.19	-108.1	0.09
1020	↓	"	1.068	18.5	6.69	5.07	-110.0	0.09

☒ Duplicate or MS/MSD Collected: 106MWIS-P3P-100318-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 23

psi (start): 240

psi (finish): 265

Pump on: 0907

First Water: 0909

QED Controller #: MP10H 1408

YSI #: 106410

Water level #: Solnist Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX2

Date / Time Collected 10/4/18 1530

Sample Collected by: ALZC

☒ Other

$\sim 1 \text{ L/min}$

Yes, ☒

No

Casing ID (in.)

474.92 ft btrc

Approximate depth of pump inlet (ft): 497

507

$$487 - 502$$

Weather Conditions:

☒ Sunny

- ☐ Rain

- Wind

☑ Cloudy

Temperature: 830

[illegible]

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

~ 80

Sample Port Open: 45

First Water: 145 l

YSI #: 106410

Water level #: N/A - Transducer

Turbidity Meter #: 181VE0703

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P3P-100418

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106064
 Date / Time Collected: 10/4/18 0925
 Sample Collected by: CC

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☐ Bladder Pump ☐ Other
 Sampling Equipment.: 315 mL/stroke
 Flow Rate During Purging: _____
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TDC
 Casing ID (in.): 5"
 Depth to Water - Initial (DTWI) (ft): 478. ft bto c
 Depth to Well Bottom (ft): 513
 Screen Interval (ft): 488-508
 Approximate depth of pump inlet (ft): 495
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 61°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/stroke</u>	<u>(ft bto c)</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>0820</u>	<u>315</u>	<u>~478</u>	<u>1.026</u>	<u>18.0</u>	<u>6.87</u>	<u>20.1</u>	<u>-139.1</u>	<u>0.23</u>
<u>0830</u>	<u>11</u>		<u>1.033</u>	<u>18.1</u>	<u>6.67</u>	<u>12.8</u>	<u>-126.0</u>	<u>0.17</u>
<u>0840</u>	<u>11</u>		<u>1.037</u>	<u>18.2</u>	<u>6.57</u>	<u>7.60</u>	<u>-118.7</u>	<u>0.15</u>
<u>0850</u>	<u>11</u>		<u>1.037</u>	<u>18.3</u>	<u>6.59</u>	<u>7.40</u>	<u>-120.6</u>	<u>0.14</u>
<u>0900</u>	<u>11</u>		<u>1.038</u>	<u>18.4</u>	<u>6.61</u>	<u>6.98</u>	<u>-123.1</u>	<u>0.12</u>
<u>0910</u>	<u>11</u>		<u>1.039</u>	<u>18.5</u>	<u>6.62</u>	<u>6.85</u>	<u>-125.3</u>	<u>0.11</u>
<u>0920</u>	<u>11</u>		<u>1.039</u>	<u>18.6</u>	<u>6.63</u>	<u>7.84</u>	<u>-126.5</u>	<u>0.10</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 57
 Discharge: 23
 psi (start): 250
 psi (finish): 265

Pump on: 0810
 First Water: 0812
 QED Controller #: MP10H 1408
 YSI #: 106410
 Water level #: Solnist Interface
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 Ex1

Date / Time Collected 10/4/18 14.45

Sample Collected by: CU, EC

$\sim 1\text{L/min}$ ☒ Other

Grunfos 5hp

Daily field instrument calibration verification performed?

Yes ☒

No _____

Approximate depth of pump inlet (ft): 497

Depth to Water - Initial (DTWi) (ft)

Length of Casing (ft): N/A

Screen Interval (ft):

Weather Conditions: ☒ Sunny

☐ Rain

- Wind

- ☐ Cloudy

Temperature: 0391-

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1410	~475	0.929	19.7	6.97	25.4	-111.0	0.65
1415	"	0.946	20.2	6.83	22.2	-115.0	0.33
1420	"	0.962	20.5	6.82	20.6	-115.5	0.29
1425	"	0.975	20.6	6.82	20.0	-116.3	0.26
1430	"	0.989	20.6	6.82	17.3	-117.3	0.24
1435	"	0.996	20.8	6.82	15.7	-116.6	0.22
1440	"	0.996	21.0	6.82	9.59	-116.8	0.21

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Sample Port Open: ~~1405~~ 1405

First Water: ^a ~~1405~~ ~~1505~~ 1405

YSI #: 106410

Water level #: NA - transducer

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106063-P3P-100418

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106063

Date / Time Collected: 10/4/18 1025

Sample Collected by: u

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

300 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: T0C

Casing ID (in.): 5"

Depth to Water - Initial (DTWI) (ft): 479 ft bto c

Approximate depth of pump inlet (ft): 516

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 528

Screen Interval (ft): 508-523

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 62°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	mL/stroke	(ft bto c)	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0900	300		0.895	18.1	7.10	5.22	-26.6	0.24
0910	"		0.920	18.2	7.03	5.01	-79.5	0.18
0920	"		0.945	18.3	6.88	4.68	-98.8	0.15
0930	"		0.917	18.3	6.87	4.53	-114.2	0.13
0940	"		0.875	18.5	6.87	4.97	-121.2	0.12
0950	"		0.861	18.6	6.88	5.04	-123.8	0.12
1000	"		0.851	18.6	6.88	4.97	-126.0	0.12
1010	"		0.799	18.7	6.88	4.55	-129.7	0.11
1020	"		0.839	18.9	6.88	4.24	-133.6	0.10

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: CB46

Discharge: 26

First Water: 0840

psi (start): 250

QED Controller #: MP10H 1409

psi (finish): 265

YSI #: 106405

Water level #:

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 MW1S-P3P-111418

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106

Date / Time Collected: 11/14/18 1215

Sample Collected by: CU

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

315 mL/Stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 4"

Depth to Water - Initial (DTWI) (ft): 474.60 ft btoc

Approximate depth of pump inlet (ft): 488

Length of Casing (ft): N/A

Depth to Well Bottom (ft): 500.5

No LNAPL

Screen Interval (ft): 463-490

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind breezy

☐ Cloudy

Temperature: 37°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/Stroke</u> <u>315</u>	<u>ft btoc</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>±10%</u>
<u>1057</u>	<u>"</u>	<u>474.60</u>	<u>1.047</u>	<u>15.4</u>	<u>7.30</u>	<u>17.3</u>	<u>2.1</u>	<u>0.97</u>
<u>1107</u>	<u>"</u>	<u>"</u>	<u>1.058</u>	<u>16.1</u>	<u>7.19</u>	<u>13.5</u>	<u>-69.1</u>	<u>0.66</u>
<u>1117</u>	<u>"</u>	<u>"</u>	<u>1.088</u>	<u>16.3</u>	<u>6.92</u>	<u>9.73</u>	<u>-85.7</u>	<u>0.23</u>
<u>1127</u>	<u>"</u>	<u>"</u>	<u>1.089</u>	<u>16.4</u>	<u>6.89</u>	<u>6.56</u>	<u>-95.2</u>	<u>0.16</u>
<u>1137</u>	<u>"</u>	<u>"</u>	<u>1.089</u>	<u>16.3</u>	<u>6.88</u>	<u>6.87</u>	<u>-103.2</u>	<u>0.14</u>
<u>1147</u>	<u>"</u>	<u>"</u>	<u>1.089</u>	<u>16.4</u>	<u>6.88</u>	<u>6.23</u>	<u>-109.9</u>	<u>0.13</u>
<u>1157</u>	<u>"</u>	<u>"</u>	<u>1.089</u>	<u>16.4</u>	<u>6.87</u>	<u>6.15</u>	<u>-115.8</u>	<u>0.12</u>
<u>1207</u>	<u>"</u>	<u>"</u>	<u>1.089</u>	<u>16.5</u>	<u>6.87</u>	<u>5.56</u>	<u>-119.5</u>	<u>0.12</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 1045

Discharge: 23

First Water: 1047

psi (start): 240

QED Controller #: NP10H 1408

psi (finish): 265

YSI #: 106405

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P3P-11/14/18

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW1-I

Date / Time Collected: 11/14/18 1035

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

325 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

474.60 ft btoe*

Approximate depth of pump inlet (ft): 518

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

** DO probe malfunctioned. It calibrated ok yesterday.

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind breezy

☐ Cloudy

Temperature:

31°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	mL/stroke	ft btoe	±10%	±10%	±10%	±10%	±10 mV	±10%
0907	325	474.60*	0.921	16.4	6.74	5.82	133.0	0.02**
0917	11	—	0.956	16.9	6.80	5.65	-72.5	0.02
0927	11	—	0.997	16.8	6.77	5.20	-94.3	0.02
0937	11	—	0.993	16.7	6.79	4.83	-106.0	0.02
0947	11	—	0.987	16.9	6.82	4.94	-111.7	0.02
0957	11	—	0.981	17.0	6.83	4.54	-115.3	0.02
1007	11	—	0.977	17.1	6.85	4.69	-119.5	0.02
1017	11	—	0.975	16.8	6.86	4.83	-121.4	0.02
1027	11	—	0.971	17.1	6.87	4.74	-123.6	0.02

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 53

Pump on: 0855

Discharge: 24.5

First Water: 0857

psi (start): 240

QED Controller #: MPL011408

psi (finish): 265

YSI #: 106410

Water level #: Sdnist Interface*

Turbidity Meter #: FSLVE0203

*cannot fit WL meter downhole w/ tubing bundle.
 Measurement is from 106MW1-S.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P3P-111418

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106064

Date / Time Collected: 11/14/18 0958

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

325 ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

JOC

Casing ID (in.)

5"

Depth to Water - Initial (DTWI) (ft)

478.25 ft bblc

Approximate depth of pump inlet (ft):

493

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-508

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

31°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ml/stroke</u>	<u>ft bblc</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>0842</u>	<u>325</u>	<u>478.25</u>	<u>1.027</u>	<u>16.6</u>	<u>7.08</u>	<u>6.51</u>	<u>-74.8</u>	<u>0.40</u>
<u>0852</u>	<u>11</u>	<u>11</u>	<u>1.043</u>	<u>16.8</u>	<u>6.90</u>	<u>5.49</u>	<u>-89.9</u>	<u>0.22</u>
<u>0902</u>	<u>11</u>	<u>11</u>	<u>1.080</u>	<u>16.9</u>	<u>6.86</u>	<u>4.32</u>	<u>-123.8</u>	<u>0.18</u>
<u>0912</u>	<u>11</u>	<u>11</u>	<u>1.074</u>	<u>16.7</u>	<u>6.86</u>	<u>2.70</u>	<u>-148.4</u>	<u>0.15</u>
<u>0922</u>	<u>11</u>	<u>11</u>	<u>1.071</u>	<u>17.0</u>	<u>6.86</u>	<u>2.53</u>	<u>-157.6</u>	<u>0.14</u>
<u>0932</u>	<u>11</u>	<u>11</u>	<u>1.059</u>	<u>17.1</u>	<u>6.86</u>	<u>3.05</u>	<u>-162.7</u>	<u>0.13</u>
<u>0942</u>	<u>11</u>	<u>11</u>	<u>1.049</u>	<u>17.0</u>	<u>6.86</u>	<u>3.12</u>	<u>-167.1</u>	<u>0.12</u>
<u>0952</u>	<u>11</u>	<u>11</u>	<u>1.049</u>	<u>17.0</u>	<u>6.86</u>	<u>2.50</u>	<u>-172.0</u>	<u>0.12</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 0830

Discharge: 24

First Water: 0832

psi (start): 240

QED Controller #: MP10H 140A

psi (finish): 265

YSI #: 106405

Water level #: _____

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2S-P3P-111518

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW2-S

Date / Time Collected: 11/15/18 1430
 Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: ☐ Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: 305 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TDC
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): ~474 ft bto c
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 53°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>305 mL/stroke</u>	<u>ft bto c</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
<u>303</u>	<u>11</u>	<u>474 *</u>	<u>0.959</u>	<u>17.5</u>	<u>7.38</u>	<u>7.94</u>	<u>54.2</u>	<u>4.09</u>
<u>313</u>	<u>11</u>	<u>—</u>	<u>1.018</u>	<u>17.7</u>	<u>7.03</u>	<u>25.3</u>	<u>-77.5</u>	<u>2.48</u>
<u>323</u>	<u>11</u>	<u>—</u>	<u>1.045</u>	<u>17.9</u>	<u>6.86</u>	<u>50.7</u>	<u>-78.1</u>	<u>0.68</u>
<u>333</u>	<u>11</u>	<u>—</u>	<u>1.047</u>	<u>17.9</u>	<u>6.85</u>	<u>42.5</u>	<u>-91.2</u>	<u>0.22</u>
<u>343</u>	<u>11</u>	<u>—</u>	<u>1.046</u>	<u>17.9</u>	<u>6.85</u>	<u>39.7</u>	<u>-93.3</u>	<u>0.18</u>
<u>353</u>	<u>11</u>	<u>—</u>	<u>1.048</u>	<u>17.9</u>	<u>6.85</u>	<u>30.3</u>	<u>-109.5</u>	<u>0.14</u>
<u>403</u>	<u>11</u>	<u>—</u>	<u>1.053</u>	<u>18.0</u>	<u>6.85</u>	<u>21.1</u>	<u>-122.8</u>	<u>0.13</u>
<u>413</u>	<u>11</u>	<u>—</u>	<u>1.054</u>	<u>18.1</u>	<u>6.85</u>	<u>15.4</u>	<u>-130.1</u>	<u>0.12</u>
<u>423</u>	<u>11</u>	<u>—</u>	<u>1.052</u>	<u>17.9</u>	<u>6.85</u>	<u>9.91</u>	<u>-132.0</u>	<u>0.12</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60
 Discharge: 24.5
 psi (start): 240
 psi (finish): 265
 Pump on: 1251
 First Water: 1253
 QED Controller #: MP10H 1408
 YSI #: 106405
 Water level #: N/A *
 Turbidity Meter #: FSLVE 0203

* Cannot measure DTW. Tubing obstructs w/ meter.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW2I-P3P-111518

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW2-I

Date / Time Collected: 11/15/18 0950

Sample Collected by: W B

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

305 ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

~474 ft to C *

Approximate depth of pump inlet (ft): 517

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

****Do probe malfunctioned. Readings are not accurate.**

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 31°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ml/stroke</u>	<u>ft to C</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>0832</u>	<u>305</u>	<u>~474 *</u>	<u>0.835</u>	<u>16.8</u>	<u>7.04</u>	<u>11.9</u>	<u>109.0</u>	<u>0.02 **</u>
<u>0842</u>	<u>11</u>	<u>—</u>	<u>0.835</u>	<u>16.8</u>	<u>6.89</u>	<u>7.98</u>	<u>-106.7</u>	<u>0.02</u>
<u>0852</u>	<u>11</u>	<u>—</u>	<u>0.834</u>	<u>16.8</u>	<u>6.85</u>	<u>5.46</u>	<u>-115.4</u>	<u>0.02</u>
<u>0902</u>	<u>11</u>	<u>—</u>	<u>0.836</u>	<u>16.7</u>	<u>6.84</u>	<u>6.82</u>	<u>-127.0</u>	<u>0.02</u>
<u>0912</u>	<u>11</u>	<u>—</u>	<u>0.842</u>	<u>16.7</u>	<u>6.85</u>	<u>6.85</u>	<u>-133.3</u>	<u>0.02</u>
<u>0922</u>	<u>11</u>	<u>—</u>	<u>0.849</u>	<u>17.0</u>	<u>6.85</u>	<u>5.38</u>	<u>-137.2</u>	<u>0.02</u>
<u>0932</u>	<u>11</u>	<u>—</u>	<u>0.857</u>	<u>17.0</u>	<u>6.86</u>	<u>4.42</u>	<u>-138.9</u>	<u>0.02</u>
<u>0942</u>	<u>11</u>	<u>—</u>	<u>0.861</u>	<u>17.1</u>	<u>6.86</u>	<u>4.13</u>	<u>-140.1</u>	<u>0.02</u>

☒ Duplicate or MS/MSD Collected: 106MW2I-P3P-111518-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 53

Pump on: 0820

Discharge: 26

First Water: 0822

psi (start): 240

QED Controller #: MP10H 1408

psi (finish): 265

YSI #: 106410 * Do probe malfunction

Water level #: N/A *

Turbidity Meter #: FSLVE0203

***WL probe cannot fit in 3" wells w/ tubing bundle. WL is estimated based on 106MW1-S level on 11/14.**

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106063Sample ID 106063-P3P-111578Date / Time Collected 11/15/18Sample Collected by: U 0920**EQUIPMENT / NOTES**

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

315 ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐**PURGING INFORMATION**Measuring Point TBCCasing ID (in.) 5"

Depth to Water - Initial (DTWI) (ft)

471. AftocApproximate depth of pump inlet (ft): 511Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

508 - 523**FIELD CONDITIONS**

Weather Conditions:

☒ Sunny☐ Rain☐ Wind☐ CloudyTemperature: 30°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	ml/stroke	Aftoc	±10%	±10%	±10%	±10%	±10 mV	±10%
0805	315	479.	0.913	16.2	7.17	1.96	21.5	0.39
0815	"	"	0.936	16.7	7.07	1.58	-94.0	0.26
0825	"	"	0.958	16.7	6.89	1.03	-100.7	0.20
0835	"	"	0.935	16.7	6.89	1.18	-104.0	0.18
0845	"	"	0.930	16.6	6.89	1.26	-105.9	0.17
0855	"	"	0.908	16.9	6.88	1.37	-108.7	0.15
0905	"	"	0.905	16.8	6.88	1.21	-110.0	0.14
0915	"	"	0.913	16.8	6.88	1.81	-111.3	0.14

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 54Discharge: 25.5psi (start): 240psi (finish): 265Pump on: 0753First Water: 0755QED Controller #: MPIDH 1409YSI #: 106405Water level #: Solinst InterfaceTurbidity Meter #: FSLVE0203

Project Name:	KAFB RAPID ESTCP	Site Location:	Kirtland AFB, SWMU ST-106/SS-111
Project No.:	500433	Well ID:	KAFB-106EX2
Sample ID	106EX2-P3B-111918	Date / Time Collected	11/19/18 1445

Yes ☒ No ☐

Grundfos 5HP

Length of Casing (ft): N/A

[illegible]

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

8 gallons

1405

1405

106405

N/A-transducer

FSWE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106 Ex1-P3P-111918

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 Ex1

Date / Time Collected: 11/19/18 1350

Sample Collected by: CC JV

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

☐ Bladder Pump

< 1 L/min

Gruntfos SHP

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Casing ID (in.): 6"

Depth to Water - Initial (DTWI) (ft)

474.50 ft to C

Approximate depth of pump inlet (ft): 497

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

507

Screen Interval (ft):

497-502

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

51°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1300	474.50	0.847	18.9	6.93	9.55	-78.7	1.97
1310	480.32	0.866	19.2	6.92	7.79	-81.4	1.60
1320	"	0.880	19.2	6.93	7.62	-81.5	1.39
1330	"	0.890	19.6	6.93	6.67	-81.9	1.30
1335	"	0.898	19.9	6.93	6.39	-83.0	1.25
1340	"	0.898	19.8	6.93	5.97	-82.9	1.24
1345	"	0.911	20.1	6.93		-83.2	1.22

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Vol Removed (gallons): 8 gallons

Sample Port Open: 1253

system on @: 1235

First Water: 1253

Running pump @ 2gpm.

YSI #: 106405

Water level #: N/A - transducer

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106064-P4P-011619

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 7/16/19 0955

Sample Collected by: CU

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

300 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

5"

Depth to Water - Initial (DTWI) (ft)

478.15 ft btoC

Approximate depth of pump inlet (ft): 493

Length of Casing (ft): N/A 3 ft

Depth to Well Bottom (ft)

513

Screen Interval (ft):

488-508

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☐ Rain

☒ Wind

☒ Cloudy

Temperature:

34°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL / stroke</u>	<u>ft btoC</u>	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>0822</u>	<u>300mL</u>	<u>478.15</u>	<u>1.071</u>	<u>15.3</u>	<u>7.01</u>	<u>4.47</u>	<u>115.6</u>	<u>1.65</u>
<u>0832</u>	<u>11</u>	<u>11</u>	<u>1.073</u>	<u>15.9</u>	<u>6.78</u>	<u>3.98</u>	<u>-104.3</u>	<u>0.54</u>
<u>0842</u>	<u>11</u>	<u>11</u>	<u>1.075</u>	<u>15.7</u>	<u>6.71</u>	<u>3.64</u>	<u>-112.1</u>	<u>0.37</u>
<u>0852</u>	<u>11</u>	<u>11</u>	<u>1.077</u>	<u>15.5</u>	<u>6.71</u>	<u>2.16</u>	<u>-116.4</u>	<u>0.28</u>
<u>0902</u>	<u>11</u>	<u>11</u>	<u>1.081</u>	<u>15.9</u>	<u>6.71</u>	<u>2.10</u>	<u>-120.2</u>	<u>0.23</u>
<u>0912</u>	<u>11</u>	<u>11</u>	<u>1.083</u>	<u>16.4</u>	<u>6.71</u>	<u>2.03</u>	<u>-122.8</u>	<u>0.19</u>
<u>0922</u>	<u>11</u>	<u>11</u>	<u>1.085</u>	<u>16.3</u>	<u>6.72</u>	<u>2.12</u>	<u>-123.9</u>	<u>0.17</u>
<u>0932</u>	<u>11</u>	<u>11</u>	<u>1.085</u>	<u>16.1</u>	<u>6.72</u>	<u>2.04</u>	<u>-125.3</u>	<u>0.14</u>
<u>0942</u>	<u>11</u>	<u>11</u>	<u>1.087</u>	<u>16.4</u>	<u>6.72</u>	<u>2.53</u>	<u>-126.8</u>	<u>0.13</u>
<u>0952</u>	<u>11</u>	<u>11</u>	<u>1.085</u>	<u>16.5</u>	<u>6.71</u>	<u>3.09</u>	<u>-126.5</u>	<u>0.12</u>

☒ Duplicate or MS/MSD Collected: 106064-P4P-011619-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge:

60

Pump on:

0810

Discharge:

23

First Water:

0812

psi (start):

240

QED Controller #:

MP10H 1408

psi (finish):

265

YSI #:

73546

Water level #:

Solmist Interface

Turbidity Meter #:

FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1I-P4P-011619

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW1-I
 Date / Time Collected: 1/16/19 1122
 Sample Collected by: A

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: 325 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: 79C
 Casing ID (in.): 3"
 Depth to Water - Initial (DTWI) (ft): 473.60 *ft bto c **
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 518
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☒ Wind ☒ Cloudy Temperature: 34°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/stroke</u>	<u>ft bto c</u>	<u>±10%</u>	<u>± 10%</u>	<u>±10%</u>	<u>± 10%</u>	<u>± 10 mV</u>	<u>± 10%</u>
0906	325	473.60 *	0.926	16.0	7.39	1.88	186.2	4.71
0916	11	—	0.922	16.5	7.35	1.59	-31.5	2.60
0926	11	—	0.821	16.4	7.24	1.08	-90.6	0.90
0936	11	—	0.811	16.4	7.22	1.02	-103.1	0.61
0946	11	—	0.807	16.2	7.21	0.96	-112.5	0.44
1019	11	—	0.808	16.5	7.19	0.85	-124.7	0.23
1029	11	—	0.812	16.7	7.20	0.96	-132.0	0.17
1039	11	—	0.817	16.9	7.20	1.00	-133.8	0.15
1049	11	—	0.819	16.9	7.19	1.45	-135.0	0.12
1059	11	—	0.822	17.0	7.20	0.68	-137.3	0.10
1109	11	—	0.825	16.8	7.20	0.89	-138.3	0.10
1119	11	—	0.827	17.0	7.20	1.11	-138.2	0.09

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0854

Discharge: 26

First Water: 0856

psi (start): 240

QED Controller #: MP10H1409

psi (finish): 265

YSI #: 104356

Water level #: N/A *

Turbidity Meter #: FSLVE0203

* Cannot fit WL probe down 3" wells w/ tubing bundle.
 Water level was measured at 106 MW1-S.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCP
 Project No.: 500433
 Sample ID: 106MW1S-P4P-011619

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106MW1-S
 Date / Time Collected: 4/16/19 1320
 Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☐ Other
 Sampling Equipment.: ☒ Bladder Pump
 Flow Rate During Purging: 315 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): 463.60 ft to TOC; No LNAPL
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A
 Depth to Well Bottom (ft): 500.5
 Screen Interval (ft): 463-498

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☒ Wind ☒ Cloudy Temperature: 47°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	mL/stroke	ft to TOC	±10%	±10%	±10%	±10%	±10 mV	±10%
1204	315	463.60	1.086	16.4	7.34	21.1	34.9	0.50
1214	"	"	1.105	16.8	7.14	9.78	-112.9	0.17
1224	"	"	1.125	17.0	6.99	3.81	-112.1	0.11
1234	"	"	1.126	17.0	6.98	1.99	-115.4	0.08
1244	"	"	1.128	17.4	6.98	1.65	-118.0	0.07
1254	"	"	1.123	17.0	6.97	1.73	-121.3	0.04
1304	"	"	1.124	17.1	6.97	1.51	-123.3	0.03
1314	"	"	1.124	17.3	6.97	1.43	-126.2	0.03

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60
 Discharge: 24
 psi (start): 240
 psi (finish): 265

Pump on: 1152
 First Water: 1154
 QED Controller #: MP10H 1409
 YSI #: 104356
 Water level #: Solnist Interface
 Turbidity Meter #: FSLVE 0203

Project Name:	<u>KAFB RAPID ESTCP</u>	Site Location:	<u>Kirtland AFB, SWMU ST-106/SS-111</u>
Project No.:	<u>500433</u>	Well ID:	<u>KAFB-1060103</u>
Sample ID	<u>10603-P4P-011719</u>	Date / Time Collected	<u>1/17/19 0955</u>
EQUIPMENT / NOTES		Sample Collected by:	<u>ac</u>

Purging Method/Equipment: ☒ Micropurge ☐ Bladder Pump ☐ Other _____

Sampling Equipment: _____

Flow Rate During Purging : 300 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

Measuring Point TOC
Casing ID (in.) 5"
Depth to Water - Initial (DTWI) (ft) 479.03
Depth to Well Bottom (ft) 528
Screen Interval (ft): 508 - 523

Approximate depth of pump inlet (ft): 516
Length of Casing (ft): N/A

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 34°f

[illegible]

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55
Discharge: 23
psi (start): 240
psi (finish): 265

Pump on: 0827

First Water: 0829

QED Controller #: MP10H 1408

YSI #: 73546

Water level #: Solinst

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106MW2-ISample ID: 106-MW2I-P4P-011719Date / Time Collected: 01-17-19 1025

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

310 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point: TOCCasing ID (in.): 3 inApproximate depth of pump inlet (ft): 518'Depth to Water - Initial (DTWI) (ft): ~473' TOCLength of Casing (ft): N/ADepth to Well Bottom (ft): 528'Screen Interval (ft): 513' - 523'

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☐ Wind☐ CloudyTemperature: 41°

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	±10%	±10%	±10%	±10 mV	±10%
0825	310	NA	0.8006	16.1	7.34	2.42	174.4	3.99
0835			0.802	16.2	7.27	2.69	-88.4	2.52
0845			0.570	16.2	7.23	0.79	-110.2	1.03
0855			0.524	16.4	7.22	1.08	-122.0	0.64
0905			0.542	16.6	7.22	0.89	-127.5	0.50
0915			0.540	16.6	7.21	0.60	-133.6	0.33
0925			0.548	16.7	7.21	0.48	-136.0	0.33
0935			0.557	16.8	7.20	0.51	-137.6	0.26
0945			0.562	16.8	7.20	0.48	-146.6	0.23
0955			0.567	16.8	7.20	0.49	-142.7	0.17
1005			0.569	16.8	7.20	0.31	-142.5	0.16
1015			0.573	16.9	7.20	0.45	-145.6	0.15
1025	↓	↓	0.575	16.8	7.26	0.32	-146.4	0.15

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 secPump on: @ 0813Discharge: 28First Water: @ 0815psi (start): 240QED Controller #: MP10H1409psi (finish): 265YSI #: 104356Water level #: NATurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB RAPID ESTCPSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 500433Well ID: KAFB-106 MW2-SSample ID: 106MW2S-P4P-011719Date / Time Collected: 1/17/19 1310Sample Collected by: CL, CH

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
Sampling Equipment: ☒ Bladder PumpFlow Rate During Purging: 325 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOCCasing ID (in.): 4"Depth to Water - Initial (DTWI) (ft): ~473 *measured at 106MW1-SDepth to Well Bottom (ft): 500.5Screen Interval (ft): 463-498Approximate depth of pump inlet (ft): 488Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 48°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1127	325	~473	1.038	16.6	7.79	16.7	83.7	5.97
1137	11	—	1.077	17.1	7.00	15.9	83.8	2.65
1147	11	—	1.085	17.1	6.92	58.8	-15.6	1.08
1157	11	—	1.091	17.3	6.91	43.7	-67.3	0.35
1207	11	—	1.099	17.3	6.92	30.6	-90.8	0.19
1217	11	—	1.112	17.4	6.90	23.8	-109.9	0.13
1227	11	—	1.117	17.5	6.90	18.2	-124.3	0.09
1237	11	—	1.121	17.5	6.90	18.6	-134.7	0.06
1247	11	—	1.126	17.6	6.90	15.2	-141.2	0.04
1257	11	—	1.127	17.5	6.90	12.9	-147.8	0.02
1307	11	—	1.129	17.6	6.89	9.4	-151.0	0.02

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 160Pump on: 1115Discharge: 26First Water: 1117psi (start): 240QED Controller #: MP10H1409psi (finish): 265YSI #: 104356Water level #: N/ATurbidity Meter #: FSLVE0203

Project Name: KAFB RAPID ESTCP
Project No.: 500433
Sample ID 106 Ex2-P4P-012119

Well ID: KAFB-106EX2

Date / Time Collected 1/21/19 1308

Sample Collected by: AKJT

Purging Method/Equipment:

Sampling Equipment.:

Bladder Pump

☒ Other

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Casing ID (in.) 10.0

Depth to Water - Initial (DTWi) (ft) 6.1

Depth to Well Bottom (ft) 507

Screen Interval (ft): 487-502

Approximate depth of pump inlet (ft): 4.7

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny

- ☐ Rain

✓ Wind

Partu
x Cloudy

Temperature: 55°F

Time of Reading	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
12:27	479.02	1.122	19.1	6.98	3.10	-109.1	0.48
12:32	"	1.124	19.2	6.98	2.63	-113.8	0.42
12:37	"	1.137	19.3	6.98	2.43	-116.8	0.39
12:45	"	1.142	19.2	6.99	2.31	-121.1	0.35
12:50	"	1.144	19.2	6.99	2.29	-122.3	0.33
12:55	"	1.146	19.3	6.98	2.20	-123.8	0.31
13:00	"	1.151	19.4	6.98	2.26	-125.6	0.29
13:05	"	1.154	19.4	6.99	2.28	-126.7	0.29

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

System on @ : 1130 running @ 2gpm.
Volume purged: 8 gallons

Pump on: 1218

First Water: 1218

YSI #: 104356

Water level #: Transducer

Turbidity Meter #: FSLVE0203

Project Name:	KAFB RAPID ESTCP	Site Location:	Kirtland AFB, SWMU ST-106/SS-111
Project No.:	500433	Well ID:	KAFB-106 EX1
Sample ID	106 EX1 - P4P-012119	Date / Time Collected	1/21/19 1210

Yes ☒ No ☐

Length of Casing (ft): N/A

Temperature: 53°F

☐ Duplicate or MS/MSD Collected: *None*

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

System on @: 1130 running @ 2gpm.
gallons purged: 8 gallons

Sample port open: 1140

Pump on: _____

First Water: 1140

YSI #: 104356

Water level #: Transducer

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106063-LTM-031120

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106063

Date / Time Collected: 3/11/20 1425

Sample Collected by: W

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

300 mL/Stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 5"

Depth to Water - Initial (DTWI) (ft):

474.18 ft btoC

Approximate depth of pump inlet (ft): 511

Length of Casing (ft): N/A 31

Depth to Well Bottom (ft):

528

Screen Interval (ft): 508-523

No LNAPL

FIELD CONDITIONS

Weather Conditions: ☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature: 60°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/Stroke</u>	<u>ft btoC</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1230</u>	<u>300</u>	<u>474.18</u>	<u>0.948</u>	<u>17.2</u>	<u>7.53</u>	<u>4.97</u>	<u>134.6</u>	<u>6.30</u>
<u>1240</u>		<u>"</u>	<u>0.989</u>	<u>17.3</u>	<u>7.31</u>	<u>4.03</u>	<u>157.8</u>	<u>3.82</u>
<u>1250</u>		<u>"</u>	<u>1.086</u>	<u>17.4</u>	<u>6.95</u>	<u>5.06</u>	<u>-35.1</u>	<u>1.04</u>
<u>1300</u>		<u>"</u>	<u>1.084</u>	<u>17.5</u>	<u>6.94</u>	<u>4.93</u>	<u>-42.7</u>	<u>0.80</u>
<u>1310</u>		<u>"</u>	<u>1.079</u>	<u>17.5</u>	<u>6.93</u>	<u>1.88</u>	<u>-56.4</u>	<u>0.52</u>
<u>1320</u>		<u>"</u>	<u>1.076</u>	<u>17.7</u>	<u>6.93</u>	<u>1.52</u>	<u>-63.6</u>	<u>0.43</u>
<u>1330</u>		<u>"</u>	<u>1.078</u>	<u>17.6</u>	<u>6.93</u>	<u>1.65</u>	<u>-70.0</u>	<u>0.36</u>
<u>1340</u>		<u>"</u>	<u>1.079</u>	<u>17.5</u>	<u>6.93</u>	<u>1.72</u>	<u>-75.2</u>	<u>0.31</u>
<u>1350</u>		<u>"</u>	<u>1.076</u>	<u>17.8</u>	<u>6.93</u>	<u>1.88</u>	<u>-78.2</u>	<u>0.22</u>
<u>1400</u>		<u>"</u>	<u>1.077</u>	<u>17.7</u>	<u>6.93</u>	<u>1.65</u>	<u>-81.5</u>	<u>0.17</u>
<u>1410</u>		<u>"</u>	<u>1.081</u>	<u>17.7</u>	<u>6.93</u>	<u>1.33</u>	<u>-82.6</u>	<u>0.16</u>
<u>1420</u>	<u>✓</u>	<u>"</u>	<u>1.079</u>	<u>17.6</u>	<u>6.92</u>	<u>1.46</u>	<u>-84.6</u>	<u>0.16</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 1222

Discharge: 25

First Water: 1224

psi (start): 210

QED Controller #: MP1104 1409

psi (finish): 275

YSI #: 104357

Water level #: Solnist Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106064-LTM-031120

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106064

Date / Time Collected: 3/11/20 1030

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

300 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC (3' stickup)

Casing ID (in.)

5"

Approximate depth of pump inlet (ft): 493

Depth to Water - Initial (DTWI) (ft)

473.35 ft b/c

Length of Casing (ft): N/A 3'

Depth to Well Bottom (ft)

513 CL ~~513.52~~

NO LNAPL

Screen Interval (ft):

488-508

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☒ Rain

☐ Wind

☒ Cloudy

Temperature:

50^a 46^oF

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/stroke</u>	--	±10%	± 10%	±10%	± 10%	± 10 mV	±10%
<u>0845</u>	<u>300mL</u>	<u>473.35</u>	<u>1.062</u>	<u>16.1</u>	<u>7.07</u>	<u>4.61</u>	<u>117.1</u>	<u>2.36</u>
<u>0850</u>		"	<u>1.080</u>	<u>16.1</u>	<u>6.89</u>	<u>4.07</u>	<u>9.5</u>	<u>0.57</u>
<u>0855</u>		"	<u>1.096</u>	<u>16.3</u>	<u>6.86</u>	<u>2.62</u>	<u>-37.1</u>	<u>0.41</u>
<u>0905</u>		"	<u>1.110</u>	<u>16.6</u>	<u>6.84</u>	<u>2.96</u>	<u>-84.4</u>	<u>0.25</u>
<u>0915</u>		"	<u>1.108</u>	<u>16.6</u>	<u>6.83</u>	<u>1.80</u>	<u>-90.7</u>	<u>0.19</u>
<u>0925</u>		"	<u>1.108</u>	<u>16.7</u>	<u>6.83</u>	<u>2.01</u>	<u>-97.6</u>	<u>0.16</u>
<u>0935</u>		"	<u>1.104</u>	<u>16.8</u>	<u>6.83</u>	<u>1.74</u>	<u>-102.7</u>	<u>0.12</u>
<u>0945</u>		"	<u>1.107</u>	<u>16.9</u>	<u>6.82</u>	<u>2.06</u>	<u>-105.6</u>	<u>0.10</u>
<u>0955</u>		"	<u>1.111</u>	<u>17.1</u>	<u>6.83</u>	<u>1.93</u>	<u>-109.9</u>	<u>0.07</u>
<u>1005</u>		"	<u>1.110</u>	<u>17.2</u>	<u>6.82</u>	<u>1.49</u>	<u>-113.7</u>	<u>0.06</u>
<u>1015</u>		"	<u>1.111</u>	<u>17.2</u>	<u>6.82</u>	<u>1.92</u>	<u>-115.0</u>	<u>0.05</u>
<u>1025</u>	<u>✓</u>	"	<u>1.108</u>	<u>17.3</u>	<u>6.82</u>	<u>1.27</u>	<u>-116.4</u>	<u>0.05</u>

☒ Duplicate or MS/MSD Collected: 106064-LTM-031120-FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 600

Pump on: 0836

Discharge: 24

First Water: 0840

psi (start): 160

QED Controller #: MP10H 1409

psi (finish): 270

YSI #: 104357

Water level #: Solinst Interface

Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106 MW2S-LTM-031120

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MW2-S

Date / Time Collected: 3/11/20 1545

Sample Collected by: CU

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

300 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC
4"

Casing ID (in.)

Depth to Water - Initial (DTWI) (ft)

NM - Cannot get w/ meter down well due to tubing obstruction

Approximate depth of pump inlet (ft): 488

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

463-498

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☐ Rain

☒ Wind

☒ Cloudy

Temperature: 64

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	±10%
1235	300	NA	0.886	17.2	8.38	7.61	92.6	7.20
1245			1.062	17.5	7.07	8.30	-55.3	2.74
1257			1.080	17.5	6.91	5.92	-89.8	1.31
1306			1.079	17.8	6.90	6.05	-98.4	0.96
1315			1.082	17.8	6.90	5.64	-103.4	0.75
1325			1.079	17.7	6.90	5.30	-107.7	0.60
1335			1.078	17.7	6.90	4.35	-110.6	0.48
1345			1.079	17.6	6.90	6.35	-113.4	0.39
1355			1.080	17.8	6.90	5.46	-115.9	0.33
1405			1.081	17.8	6.90	4.42	-117.8	0.26
1416			1.082	17.5	6.90	4.59	-116.5	0.28
1428			1.083	17.8	6.90	4.11	-119.8	0.19
1438			1.085	17.6	6.90	4.89	-122.5	0.16
1448			1.086	17.8	6.90	3.48	-124.1	0.12
1458			1.089	17.9	6.91	3.29	-126.1	0.10

☐ Duplicate or MS/MSD Collected:

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60 secs

Pump on: 1218

Discharge: 24 secs

First Water: 1225

psi (start): 150

QED Controller #: MP10 H-1408

psi (finish): 270

YSI #: 73544

Water level #: NA - tubing obstruction in well

Turbidity Meter #: FSLVE0203

1511	300		1.093	17.9	6.90	3.58	-127.8	0.09
1523			1.093	17.7	6.91	3.36	-129.0	0.07
1533			1.093	17.6	6.91	3.01	-129.9	0.06
1542			1.093	17.5	6.91	3.69	-130.7	0.06

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106 MW2I-LTM-031120

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MW2-I

Date / Time Collected: 3/11/20 1115

Sample Collected by: CL, SN

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

340 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

NM - cannot fit w/ meter down 3' wells

Approximate depth of pump inlet (ft):

517

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

513-523

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☒ Rain

☐ Wind

☒ Cloudy

Temperature:

46

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
0833	340		0.533	16.1	7.33	3.20	160.0	5.03
0839			0.420	16.2	7.18	2.59	141.0	3.56
0843			0.385	16.5	7.14	4.45	60.0	2.75
0848			0.369	16.4	7.16	5.66	68.0	2.27
0859			0.358	16.5	7.19	4.58	45.6	1.72
0909			0.369	16.6	7.19	3.38	22.4	1.38
0919			0.382	16.7	7.19	2.90	2.5	1.19
0928			0.391	16.6	7.19	3.02	-9.6	1.09
0938			0.405	16.8	7.19	3.10	-23.7	0.92
0949			0.415	17.0	7.20	2.22	-34.2	0.80
0959			0.426	17.1	7.20	2.13	-41.4	0.75
1010			0.433	17.0	7.21	2.17	-46.2	0.73
1020			0.438	17.2	7.21	1.93	-50.8	0.82

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 0819

Discharge: 24

First Water: 0824

psi (start): 180

QED Controller #: MP10H-1408

psi (finish): 270

YSI #: 73544

Water level #: NA

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
Project No.: 501397
Sample ID 106 MW2I-LTM-03120

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MW2-I

Date / Time Collected 3/11/20 1115

Sample Collected by: Ch, SN

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
Sampling Equipment.: ☒ Bladder Pump

☐ Other

Flow Rate During Purging :

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒ No ☐

PURGING INFORMATION

Measuring Point TOC

Casing ID (in.) 3"

Depth to Water - Initial (DTWI) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft): 513-523

Approximate depth of pump inlet (ft): 517

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☒ Rain ☐ Wind ☒ Cloudy Temperature: 46°F

Temperature: 46°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
1034	340	NM	0.449	17.2	7.21	1.67	-53.9	0.81
1051	↓	↓	0.458	16.6	7.22	1.83	-55.7	0.99
1201 1101 ^{SN}	↓	↓	0.453	17.2	7.21	1.99	-49.6	0.83
1210 1110 ^{SN}	↓	↓	0.457	17.4	7.21	2.75	-50.2	0.80

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: _____

Pump on: _____

Discharge:

First Water:

psi (start):

QED Controller #:

psi (finish):

YSI #:

Water level #:

Turbidity Meter #:

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106IN1-LTM-031220

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106IN1

Date / Time Collected: 3/12/20 1545

Sample Collected by: CLSN

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

220ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: 10C

Casing ID (in.): 6"

Depth to Water - Initial (DTWI) (ft): 468.29 ft btoC

Approximate depth of pump inlet (ft): 492

Length of Casing (ft): N/A (focus ~3.9 ft bgs)

Depth to Well Bottom (ft): 502

Screen Interval (ft): 497-497

No measurable LNAPL

FIELD CONDITIONS

Weather Conditions: ☐ Sunny

☐ Rain

☒ Wind

☒ Cloudy

Temperature: 64°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/stroke</u>	<u>ft btoC</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1305</u>	<u>220</u>	<u>468.29</u>	<u>3.918</u>	<u>17.6</u>	<u>7.02</u>	<u>92.4</u>	<u>-7.0</u>	<u>1.58</u>
<u>1320</u>		<u>11</u>	<u>3.884</u>	<u>17.8</u>	<u>7.00</u>	<u>96.2</u>	<u>8.9</u>	<u>0.99</u>
<u>1335</u>		<u>11</u>	<u>3.829</u>	<u>17.8</u>	<u>7.00</u>	<u>92.0</u>	<u>51.7</u>	<u>0.70</u>
<u>1350</u>		<u>11</u>	<u>3.783</u>	<u>17.6</u>	<u>7.01</u>	<u>92.2</u>	<u>58.3</u>	<u>0.56</u>
<u>1405</u>		<u>11</u>	<u>3.724</u>	<u>17.4</u>	<u>7.02</u>	<u>91.7</u>	<u>-110.6</u>	<u>0.45</u>
<u>1415</u>		<u>11</u>	<u>3.709</u>	<u>17.5</u>	<u>7.02</u>	<u>90.1</u>	<u>-113.5</u>	<u>0.40</u>
<u>1425</u>		<u>11</u>	<u>3.728</u>	<u>17.4</u>	<u>7.02</u>	<u>89.3</u>	<u>-113.9</u>	<u>0.35</u>
<u>1435</u>		<u>11</u>	<u>3.705</u>	<u>17.4</u>	<u>7.02</u>	<u>93.3</u>	<u>-115.0</u>	<u>0.31</u>
<u>1445</u>	<u>1450</u>	<u>11</u>	<u>3.689</u>	<u>17.1</u>	<u>7.03</u>	<u>89.2</u>	<u>-114.9</u>	<u>0.27</u>
<u>1500</u>		<u>11</u>	<u>3.717</u>	<u>17.3</u>	<u>7.03</u>	<u>91.5</u>	<u>-120.6</u>	<u>0.24</u>
<u>1510</u>		<u>11</u>	<u>3.688</u>	<u>17.5</u>	<u>7.03</u>	<u>87.0</u>	<u>-130.4</u>	<u>0.18</u>
<u>1520</u>		<u>11</u>	<u>3.737</u>	<u>17.7</u>	<u>7.03</u>	<u>88.2</u>	<u>-131.7</u>	<u>0.13</u>
<u>1530</u>		<u>11</u>	<u>3.717</u>	<u>17.8</u>	<u>7.03</u>	<u>87.1</u>	<u>-132.0</u>	<u>0.12</u>
<u>1540</u>		<u>11</u>	<u>3.707</u>	<u>7.5</u>	<u>7.03</u>	<u>93.8</u>	<u>-132.1</u>	<u>0.12</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Pump on: 1227

Discharge: 24

First Water: 1252*

psi (start): 180

QED Controller #: MP10H1409

psi (finish): 280

YSI #: 104357

Water level #: Sdinst Interface

Turbidity Meter #: FSLVE0203

*tubing did not hold water at sfc.
 Water had reseeded to approx. 300 ft bgs.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397 1J
 Sample ID: 106 MW1-LTM-081220

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MW1-I

Date / Time Collected: 3/12/20 1530

Sample Collected by: CL, SN

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

380 ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

469.80' ft

Approximate depth of pump inlet (ft): 517

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

Screen Interval (ft):

53-523

No LNAPL

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☐ Rain

☐ Wind

☒ Cloudy

Temperature:

60°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ml/stroke</u>	<u>ft</u>	±10%	±10%	±10%	±10%	±10 mV	±10%
<u>1243</u>	<u>469.80</u>	<u>380</u>	<u>0.835</u>	<u>17.3</u>	<u>7.37</u>	<u>5.50</u>	<u>110.7</u>	<u>46.1</u>
<u>1253</u>			<u>0.828</u>	<u>17.5</u>	<u>7.11</u>	<u>2.53</u>	<u>-53.7</u>	<u>19.8</u>
<u>1303</u>			<u>0.822</u>	<u>17.6</u>	<u>7.03</u>	<u>1.37</u>	<u>-73.7</u>	<u>7.5^{SN}</u>
<u>1313</u>			<u>0.825</u>	<u>17.7</u>	<u>7.03</u>	<u>1.21</u>	<u>-85.7</u>	<u>0.49</u>
<u>1323</u>			<u>0.828</u>	<u>17.7</u>	<u>7.03</u>	<u>1.15</u>	<u>-92.4</u>	<u>0.40</u>
<u>1338</u>			<u>0.837</u>	<u>17.7</u>	<u>7.03</u>	<u>1.19</u>	<u>-99.6</u>	<u>0.30</u>
<u>1353</u>			<u>0.838</u>	<u>17.6</u>	<u>7.03</u>	<u>1.69</u>	<u>-104.9</u>	<u>0.24</u>
<u>1408</u>			<u>0.841</u>	<u>17.6</u>	<u>7.03</u>	<u>1.38</u>	<u>-109.6</u>	<u>0.20</u>
<u>1423</u>			<u>0.842</u>	<u>17.4</u>	<u>7.03</u>	<u>1.55</u>	<u>-107.9</u>	<u>0.22</u>
<u>1438</u>			<u>0.842</u>	<u>17.5</u>	<u>7.04</u>	<u>2.08</u>	<u>-112.2</u>	<u>0.14</u>
<u>1448</u>			<u>0.845</u>	<u>17.5</u>	<u>7.03</u>	<u>1.40</u>	<u>-115.3</u>	<u>0.13</u>
<u>1458</u>			<u>0.846</u>	<u>17.6</u>	<u>7.03</u>	<u>1.18</u>	<u>-117.8</u>	<u>0.11</u>
<u>1508</u>			<u>0.848</u>	<u>17.6</u>	<u>7.03</u>	<u>1.51</u>	<u>-119.9</u>	<u>0.10</u>

1518 ☐ Duplicate or MS/MSD Collected: None 0.950 18.0 7.03 1.69 -120.6 0.09

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60^{SN} 55

Pump on: 1227

Discharge: 24

First Water: 1233

psi (start): 150

QED Controller #: MP10H-1408

psi (finish): 270

YSI #: 73544

Water level #: Solinst

Turbidity Meter #: FSLVE 0203

* measured at 106 MW1S; cannot fit WL meter in 3" wells.

<u>1528</u>	<u>380</u>	<u>467.80</u>	<u>0.852</u>	<u>17.9</u>	<u>7.03</u>	<u>1.48</u>	<u>-122.8</u>	<u>0.08</u>
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GROUND WATER SAMPLE COLLECTION LOG

PAGE 1

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106MW2S-LTM-031220

Site Location: Kirtland AFB, SWMU ST-106/SS-111Well ID: KAFB-106MW2-SDate / Time Collected: 3/12/20 11:05Sample Collected by: CLSN

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

310 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point:

TOC

Casing ID (in.):

4"

Depth to Water - Initial (DTWI) (ft)

469.80 ft btoC

Approximate depth of pump inlet (ft):

488Length of Casing (ft): N/A

Depth to Well Bottom (ft)

500.5

Screen Interval (ft):

463-498No LNAPL

FIELD CONDITIONS

Weather Conditions:

☐ Sunny☐ Rain☐ Wind☒ Cloudy

Temperature:

55° F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/stroke</u>	<u>ft btoC</u>	$\pm 10\%$	$\pm 10\%$	$\pm 10\%$	$\pm 10\%$	± 10 mV	$\pm 10\%$
<u>0814</u>	<u>310</u>	<u>469.80</u>	<u>0.914</u>	<u>16.5</u>	<u>8.22</u>	<u>10.6</u>	<u>113.3</u>	<u>6.64</u>
<u>0824</u>	<u>0814 SN</u>		<u>1.150</u>	<u>16.9</u>	<u>7.09</u>	<u>5.46</u>	<u>-69.0</u>	<u>1.60</u>
<u>0834</u>			<u>0.979</u>	<u>17.1</u>	<u>7.02</u>	<u>2.57</u>	<u>-74.9</u>	<u>0.95</u>
<u>0849</u>			<u>0.966</u>	<u>16.8</u>	<u>7.02</u>	<u>2.37</u>	<u>-73.2</u>	<u>1.07</u>
<u>0859</u>			<u>1.151</u>	<u>17.0</u>	<u>7.02</u>	<u>2.41</u>	<u>-76.8</u>	<u>0.79</u>
<u>0909</u>			<u>1.152</u>	<u>17.1</u>	<u>7.01</u>	<u>2.09</u>	<u>-79.7</u>	<u>0.48</u>
<u>0919</u>			<u>1.153</u>	<u>17.3</u>	<u>7.01</u>	<u>2.06</u>	<u>-82.5</u>	<u>0.37</u>
<u>0929</u>			<u>1.152</u>	<u>17.3</u>	<u>7.01</u>	<u>2.79</u>	<u>-84.3</u>	<u>0.31</u>
<u>0944</u>			<u>1.155</u>	<u>17.3</u>	<u>7.00</u>	<u>2.45</u>	<u>-85.7</u>	<u>0.25</u>
<u>0959</u>			<u>1.154</u>	<u>17.7</u>	<u>7.00</u>	<u>1.86</u>	<u>-87.5</u>	<u>0.18</u>
<u>1009</u>			<u>1.155</u>	<u>17.6</u>	<u>7.00</u>	<u>1.64</u>	<u>-88.0</u>	<u>0.15</u>
<u>1019</u>			<u>1.157</u>	<u>17.7</u>	<u>7.00</u>	<u>2.10</u>	<u>-88.5</u>	<u>0.13</u>
<u>1029</u>	<u>↓</u>	<u>↓</u>	<u>1.157</u>	<u>17.7</u>	<u>7.00</u>	<u>2.38</u>	<u>-89.5</u>	<u>0.12</u>

☒ Duplicate or MS/MSD Collected: 106MW2S-LTM-031220-MS and -MSD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 600Pump on: 0758Discharge: 24First Water: 0801psi (start): 210QED Controller #: MP10H 1408psi (finish): 270YSI #: 73544Water level #: Solnist WLTurbidity Meter #: FSLWE0203

PAGE 2

Sample Collected by: ALSN

Yes ☒ No ☐

Length of Casing (ft): N/A

Temperature: 50°

☐ Duplicate or MS/MSD Collected: None

Turbidity Meter #:

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106EX1-LTM-031220

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX1

Date / Time Collected: 3/12/20 1040

Sample Collected by: CLSN

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: 200 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 6"

Depth to Water - Initial (DTWI) (ft): 468.25 ft btoC

Depth to Well Bottom (ft): 507

Screen Interval (ft): 487-502

Approximate depth of pump inlet (ft): 491

Length of Casing (ft): N/A (3.5 ft bgs)

LNAPL = 467.85 ft btoC

FIELD CONDITIONS

Weather Conditions: ☐ Sunny ☐ Rain ☐ Wind ☒ Cloudy Temperature: 49°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ML/stroke</u>	<u>ft btoC</u>	±10%	±10%	±10%	±10%	±10 mV	±10%
<u>0845</u>	<u>200</u>	<u>468.25</u>	<u>1.080</u>	<u>16.2</u>	<u>7.09</u>	<u>75</u>	<u>170.4</u>	<u>3.25</u>
<u>0855</u>	<u> </u>	<u>"</u>	<u>1.080</u>	<u>16.3</u>	<u>6.98</u>	<u>64</u>	<u>8.1</u>	<u>1.45</u>
<u>0905</u>	<u> </u>	<u>"</u>	<u>1.105</u>	<u>16.4</u>	<u>6.97</u>	<u>8.80</u>	<u>-62.5</u>	<u>1.05</u>
<u>0920</u>	<u> </u>	<u>468.26</u>	<u>1.106</u>	<u>16.6</u>	<u>6.90</u>	<u>4.52</u>	<u>-66.1</u>	<u>0.76</u>
<u>0935</u>	<u> </u>	<u>"</u>	<u>1.108</u>	<u>16.7</u>	<u>6.90</u>	<u>4.15</u>	<u>-67.8</u>	<u>0.58</u>
<u>0950</u>	<u> </u>	<u>"</u>	<u>1.106</u>	<u>16.7</u>	<u>6.90</u>	<u>8.23</u>	<u>-70.9</u>	<u>0.43</u>
<u>1005</u>	<u> </u>	<u>"</u>	<u>1.110</u>	<u>17.0</u>	<u>6.90</u>	<u>4.34</u>	<u>-73.1</u>	<u>0.38</u>
<u>1015</u>	<u> </u>	<u>"</u>	<u>1.109</u>	<u>17.2</u>	<u>6.90</u>	<u>4.70</u>	<u>-73.6</u>	<u>0.30</u>
<u>1025</u>	<u> </u>	<u>"</u>	<u>1.108</u>	<u>17.2</u>	<u>6.90</u>	<u>4.10</u>	<u>-75.6</u>	<u>0.30</u>
<u>1035</u>	<u> </u>	<u>"</u>	<u>1.107</u>	<u>17.1</u>	<u>6.89</u>	<u>4.23</u>	<u>-74.6</u>	<u>0.29</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 25

psi (start): 240

psi (finish): 280

Pump on: 0814

First Water: 0832

QED Controller #: Np10H 1409

YSI #: 104357

Calculated by: CLSN

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106 MW11-LTM-051920

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW1-I

Date / Time Collected: 5/19/20
 Sample Collected by: LB 1455

EQUIPMENT / NOTES

Purging Method/Equipment: Micropurge
 Sampling Equipment: ☒ Bladder Pump ☐ Other
 Flow Rate During Purging: 300 mL Per Stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 3in
 Depth to Water - Initial (DTWI) (ft): 469.65
 Depth to Well Bottom (ft): 528
 Screen Interval (ft): 513-523
 Approximate depth of pump inlet (ft): 518
 Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: _____

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>300 mL</u>	-	±10%	±10%	±10%	±10%	±10 mV	±10%
1238		469.66	0.831	19.2	7.30	8.55	0.831	5.65
1250		469.66	0.836	19.2	7.09	5.75	-110.8	3.2
1300		469.65	0.815	19.5	6.94	3.47	-132.9	1.15
1310		469.62	0.802	19.3	6.91	1.77	-160.9	0.75
1320		469.63	0.792	19.7	6.90	2.05	-179.6	0.54
1330		469.62	0.795	19.2	6.90	1.40	-185.4	0.47
1340		469.64	0.790	19.1	6.90	1.68	-189.8	0.44
1350		469.65	0.792	19.4	6.90	3.39	-194.7	0.35
1402		469.65	0.798	19.5	6.90	1.52	-198.2	0.33
1412		469.65	0.801	19.6	6.89	2.12	-202.1	0.29
1422		469.65	0.800	19.7	6.89	2.56	-205.2	0.25
1433	<u>7.5 gal</u>	469.67	0.824	23.1	6.89	2.22	-204.1	0.27

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50.0

Discharge: 25.0

psi (start): 240

psi (finish): 280 ^{L13}
280

Pump on: 1220

First Water: 1226

QED Controller #: 1409

YSI #: 106409

Water level #: Solinst

Turbidity Meter #: FSWE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106 063-LTM-051920

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-10603

Date / Time Collected: 5/19/20 1025

Sample Collected by: LB

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

325 mL Per Stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 5.11

Depth to Water - Initial (DTWI) (ft): 473.91

Depth to Well Bottom (ft): 528

Screen Interval (ft): 508-523

Approximate depth of pump inlet (ft): 511

Length of Casing (ft): N/A 3 FT

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 80's

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>325 mL</u>	<u>1 stroke per 6 sec</u>	±10%	±10%	±10%	±10%	±10 mV	±10%
0817		473.92	1.063	18.1	7.20	5.57	138.7	4.21
0827		473.94	1.079	18.2	7.10	3.97	-111.2	1.93
0837		473.92	1.078	18.2	6.92	2.35	-112.2	0.98
0847		473.94	1.062	18.3	6.89	1.54	-126.5	0.58
0857		473.93	1.063	18.2	6.90	2.29	-134.0	0.47
0907		473.92	1.061	18.4	6.90	2.41	-140.5	0.35
0918		473.92	1.057	18.4	6.90	1.65	-143.6	0.29
0928		473.92	1.059	18.4	6.90	1.47	-149.4	0.24
0938		473.93	1.060	18.5	6.90	1.87	-152.9	0.22
0948		473.95	1.048	18.7	6.90	2.17	-157.5	0.18
0958		473.94	1.055	18.6	6.90	1.89	-161.1	0.15
1008	↓	473.93	1.056	18.7	6.90	1.78	-164.9	0.13
1018	8 gals	473.95	1.048	18.9	6.90	1.98	-168.6	0.13

☒ Duplicate or MS/MSD Collected: N/A FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 0805

Discharge: 23

First Water: 0807

psi (start): 150

QED Controller #: 1409

psi (finish): 270

YSI #: 106409

Water level #: Solinst

Turbidity Meter #: Solinst LA FLEET

0203 PSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106IN1-LTM-051920

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106IN1

Date / Time Collected: 5/19/20 1500

Sample Collected by: CLB

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge
 Sampling Equipment: ☒ Bladder Pump
 Flow Rate During Purging: 250 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? ☒ Yes ☐ No

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 6"

Depth to Water - Initial (DWT) (ft): 467.55

Depth to Well Bottom (ft): 502

Screen Interval (ft): 497-499

Approximate depth of pump inlet (ft): 492

Length of Casing (ft): N/A

No LNAPL

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: 80's

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ML/stroke 250</u>	<u>b/c</u>	±10%	±10%	±10%	±10%	±10 mV	±10
<u>1255</u>		<u>467.55</u>	<u>3.828</u>	<u>19.6</u>	<u>6.98</u>	<u>86.6</u>	<u>-160.8</u>	<u>0.66</u>
<u>1305</u>		<u>4</u>	<u>3.880</u>	<u>20.3</u>	<u>6.98</u>	<u>85.1</u>	<u>-172.7</u>	<u>0.56</u>
<u>1315</u>		<u>11</u>	<u>3.904</u>	<u>19.0</u>	<u>6.97</u>	<u>79.8</u>	<u>-177.2</u>	<u>0.52</u>
<u>1325</u>		<u>11</u>	<u>3.934</u>	<u>19.7</u>	<u>6.99</u>	<u>74.9</u>	<u>-187.6</u>	<u>0.34</u>
<u>1335</u>		<u>11</u>	<u>3.942</u>	<u>20.0</u>	<u>6.99</u>	<u>76.3</u>	<u>-190.5</u>	<u>0.29</u>
<u>1345</u>		<u>11</u>	<u>3.942</u>	<u>20.0</u>	<u>6.97</u>	<u>74.3</u>	<u>-193.0</u>	<u>0.26</u>
<u>1355</u>		<u>11</u>	<u>3.960</u>	<u>20.1</u>	<u>6.99</u>	<u>73.2</u>	<u>-198.8</u>	<u>0.18</u>
<u>1405</u>		<u>11</u>	<u>3.950</u>	<u>20.0</u>	<u>6.98</u>	<u>72.0</u>	<u>-201.6</u>	<u>0.14</u>
<u>1415</u>		<u>11</u>	<u>3.950</u>	<u>20.2</u>	<u>7.01</u>	<u>73.1</u>	<u>-209.6</u>	<u>0.09</u>
<u>1425</u>	<u>↓</u>	<u>11</u>	<u>3.946</u>	<u>20.2</u>	<u>6.99</u>	<u>73.5</u>	<u>-210.5</u>	<u>0.08</u>
<u>1435</u>	<u>5.2 gals</u>	<u>11</u>	<u>3.950</u>	<u>20.4</u>	<u>7.01</u>	<u>72.0</u>	<u>-215.5</u>	<u>0.08</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 21

psi (start): 90

psi (finish): 275

Pump on: 1218

First Water: 1246

QED Controller #: 1408

YSI #: 106410

Water level #: Solinst Interface

Turbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106064-LTM-051920

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106064

Date / Time Collected: 5/19/20 1000

Sample Collected by: CLB

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☐ Bladder Pump ☐ Other
 Sampling Equipment: 300 mL / stroke
 Flow Rate During Purging: 300 mL / stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 5"
 Depth to Water - Initial (DTWI) (ft): 473.08
 Depth to Well Bottom (ft): 513
 Screen Interval (ft): 400-500
 Approximate depth of pump inlet (ft): 493
 Length of Casing (ft): 3'
 No measurable LNAPL

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☐ Wind ☐ Cloudy Temperature: 70's

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	300 mL / stroke	473.08	±10%	±10%	±10%	±10%	±10 mV	±10%
0807		473.08	1.117	17.9	7.11	2.33	-80.2	0.57
0827		"	1.170	17.8	6.97	3.54	-127.2	0.38
0837		"	1.218	17.9	6.87	3.11	-143.1	0.24
0847		"	1.211	18.0	6.86	3.78	-151.0	0.20
0857		"	1.200	17.9	6.85	3.51	-159.1	0.15
0907		"	1.204	18.2	6.84	4.35	-166.1	0.12
0917		"	1.220	18.1	6.83	4.10	-172.6	0.09
0927		"	1.214	18.3	6.82	4.99	-178.0	0.08
0937		"	1.210	18.4	6.82	4.29	-183.0	0.06
0947		"	1.205	18.2	6.82	4.60	-186.7	0.05
0957	6.1 gals	"	1.215	18.3	6.81	4.64	-193.6	0.05

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55
 Discharge: 22
 psi (start): 240
 psi (finish): 270

Pump on: 0805
 First Water: 0807
 QED Controller #: 1408
 YSI #: 106410
 Water level #: Solnist Interfac
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106 EX1-LTM-052020

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 EX1
 Date / Time Collected: 5/20/20 1450
 Sample Collected by: α

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☐ Bladder Pump ☐ Other
 Sampling Equipment: 200 mL / stroke
 Flow Rate During Purging: _____
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 6"
 Depth to Water - Initial (DTWI) (ft): 467.98 ft btoC
 Depth to Well Bottom (ft): 507
 Screen Interval (ft): 467-502
 Approximate depth of pump inlet (ft): 497
 Length of Casing (ft): N/A
 LNAPL: 467.45 ft btoC

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: 80's

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>200</u>	<u>ft btoC</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1225</u>		<u>467.98</u>	<u>1.131</u>	<u>19.2</u>	<u>7.06</u>	<u>9.81</u>	<u>-97.0</u>	<u>1.12</u>
<u>1235</u>		<u>11</u>	<u>1.131</u>	<u>19.6</u>	<u>6.97</u>	<u>7.20</u>	<u>-100.6</u>	<u>0.97</u>
<u>1245</u>		<u>11</u>	<u>1.129</u>	<u>19.5</u>	<u>6.93</u>	<u>8.01</u>	<u>-103.2</u>	<u>0.85</u>
<u>1255</u>		<u>11</u>	<u>1.124</u>	<u>19.9</u>	<u>6.91</u>	<u>8.27</u>	<u>-107.7</u>	<u>0.66</u>
<u>1315</u>		<u>11</u>	<u>1.127</u>	<u>19.8</u>	<u>6.91</u>	<u>9.23</u>	<u>-112.9</u>	<u>0.53</u>
<u>1325</u>		<u>11</u>	<u>1.122</u>	<u>19.7</u>	<u>6.90</u>	<u>4.26</u>	<u>-113.3</u>	<u>0.45</u>
<u>1335</u>		<u>11</u>	<u>1.130</u>	<u>20.6</u>	<u>6.92</u>	<u>5.37</u>	<u>-119.0</u>	<u>0.47</u>
<u>1345</u>		<u>11</u>	<u>1.120</u>	<u>19.9</u>	<u>6.92</u>	<u>4.98</u>	<u>-116.8</u>	<u>0.51</u>
<u>1400</u>		<u>11</u>	<u>1.118</u>	<u>20.2</u>	<u>6.90</u>	<u>4.76</u>	<u>-117.6</u>	<u>0.35</u>
<u>1410</u>		<u>11</u>	<u>1.122</u>	<u>20.2</u>	<u>6.90</u>	<u>4.15</u>	<u>-120.4</u>	<u>0.28</u>
<u>1425</u>		<u>11</u>	<u>1.127</u>	<u>20.0</u>	<u>6.90</u>	<u>3.60</u>	<u>-122.1</u>	<u>0.24</u>
<u>1435</u>	<u>✓</u>	<u>11</u>	<u>1.125</u>	<u>20.0</u>	<u>6.89</u>	<u>3.97</u>	<u>-123.1</u>	<u>0.22</u>
<u>1445</u>	<u>5.5 gal</u>	<u>11</u>	<u>1.118</u>	<u>20.1</u>	<u>6.89</u>		<u>-124.1</u>	<u>0.22</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60
 Discharge: 20
 psi (start): 90
 psi (finish): 280

Pump on: 1138
 First Water: 1208
 QED Controller #: 1408
 YSI #: 106410
 Water level #: Solinst Interface
 Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106 MW2I-LTM-052020

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW2-I

Date / Time Collected: 5/20/20 1355

Sample Collected by: CL, LB

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

☐ Other

Flow Rate During Purging:

325

ML/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

3"

Depth to Water - Initial (DTWI) (ft)

NM* cannot fit

Approximate depth of pump inlet (ft): 517

Length of Casing (ft): N/A

Depth to Well Bottom (ft)

528

probe down

Screen Interval (ft):

513-523

3" wells

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

☐ Cloudy

Temperature:

80°

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>325</u>	<u>Abt</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1220</u>		<u>NW</u>	<u>0.457</u>	<u>19.3</u>	<u>7.00</u>	<u>10.1</u>	<u>-62.4</u>	<u>2.6</u>
<u>1240</u>			<u>0.490</u>	<u>19.3</u>	<u>6.97</u>	<u>9.72</u>	<u>-74.8</u>	<u>1.07</u>
<u>1250</u>			<u>0.526</u>	<u>19.5</u>	<u>6.96</u>	<u>7.96</u>	<u>-88.2</u>	<u>0.78</u>
<u>1300</u>			<u>0.551</u>	<u>19.3</u>	<u>6.96</u>	<u>7.96</u>	<u>-95.1</u>	<u>0.67</u>
<u>1315</u>			<u>0.577</u>	<u>19.7</u>	<u>6.96</u>	<u>6.47</u>	<u>-109.3</u>	<u>0.56</u>
<u>1330</u>			<u>0.587</u>	<u>19.5</u>	<u>6.97</u>	<u>6.47</u>	<u>-109.0</u>	<u>0.48</u>
<u>1340</u>			<u>0.600</u>	<u>20.1</u>	<u>6.97</u>	<u>5.46</u>	<u>-12.6</u>	<u>0.46</u>
<u>1350</u>	<u>9.65 gals</u>		<u>0.603</u>	<u>19.7</u>	<u>6.90</u>	<u>3.60</u>	<u>-114.4</u>	<u>0.45</u>

☒ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50

Pump on: 1140

Discharge: 25

First Water: 1146

psi (start): 220

QED Controller #: 1408

psi (finish): 270

YSI #: 106409

Water level #: Satinst NA

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROSSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 501397Well ID: KAFB-106 MW2-SSample ID: 106 MW2S-LTM-052020Date / Time Collected: 5/20/20 1105Sample Collected by: ALB

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

325ML/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

4"

Depth to Water - Initial (DTWI) (ft)

NM*

Depth to Well Bottom (ft)

50.5

Screen Interval (ft):

463-498Approximate depth of pump inlet (ft): 488Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☐ Wind☐ Cloudy

Temperature:

70°

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ML/stroke</u> <u>325</u>	<u>ft to TOC</u>	$\pm 10\%$	$\pm 10\%$	$\pm 10\%$	$\pm 10\%$	± 10 mV	$\pm 10\%$
<u>0805</u>		<u>NM*</u>	<u>0.998</u>	<u>17.6</u>	<u>7.83</u>	<u>73.2</u>	<u>93.2</u>	<u>6.51</u>
<u>0830</u>			<u>1.075</u>	<u>17.9</u>	<u>6.73</u>	<u>4.52</u>	<u>-130.3</u>	<u>1.65</u>
<u>0840</u>			<u>0.069</u>	<u>18.1</u>	<u>6.73</u>	<u>5.83</u>	<u>-136.4</u>	<u>1.15</u>
<u>0850</u>			<u>0.064</u>	<u>18.2</u>	<u>6.72</u>	<u>5.19</u>	<u>-140.6</u>	<u>0.93</u>
<u>0900</u>			<u>1.057</u>	<u>18.4</u>	<u>6.75</u>	<u>3.45</u>	<u>-144.1</u>	<u>0.73</u>
<u>0910</u>			<u>1.052</u>	<u>18.5</u>	<u>6.73</u>	<u>3.87</u>	<u>-146.9</u>	<u>0.61</u>
<u>0920</u>			<u>1.045</u>	<u>18.5</u>	<u>6.73</u>	<u>3.03</u>	<u>-147.7</u>	<u>0.56</u>
<u>0930</u>			<u>1.049</u>	<u>18.3</u>	<u>6.73</u>	-	<u>-149.3</u>	<u>0.47</u>
<u>0945</u>			<u>1.058</u>	<u>18.8</u>	<u>6.73</u>	-	<u>-150.2</u>	<u>0.46</u>
<u>1000</u>			<u>1.060</u>	<u>18.9</u>	<u>6.73</u>	<u>2.30</u>	<u>-152.1</u>	<u>0.37</u>
<u>1015</u>			<u>1.062</u>	<u>19.1</u>	<u>6.73</u>	<u>3.83</u>	<u>-156.7</u>	<u>0.28</u>
<u>1025</u>			<u>1.058</u>	<u>19.0</u>	<u>6.73</u>	<u>5.02</u>	<u>-158.2</u>	<u>0.26</u>
<u>1035</u>			<u>1.045</u>	<u>19.0</u>	<u>6.74</u>	<u>3.56</u>	<u>-160.2</u>	<u>0.23</u>

☒ Duplicate or MS/MSD Collected: MS/MSD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50.0Pump on: 0750Discharge: 25.0First Water: 0758psi (start): 210QED Controller #: 1409psi (finish): 270YSI #: 106409Water level #: Solinst NATurbidity Meter #: FSLVE0203

*tubing obstruction in well
prevented WL measurement.

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106MW2S-LTM-052020

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW2-S

Date / Time Collected: 1105 5/20/20

Sample Collected by: CL, LB

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

☒ Micro-purge

☒ Bladder Pump

☐ Other

325 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Casing ID (in.)

Depth to Water - Initial (DTWI) (ft)

Depth to Well Bottom (ft)

Screen Interval (ft):

Approximate depth of pump inlet (ft):

Length of Casing (ft): N/A

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>325</u>	<u>ft b to c</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1045</u>	<u>↓</u>	<u>NM</u>	<u>1.039</u>	<u>19.0</u>	<u>6.76</u>	<u>3.24</u>	<u>-162.0</u>	<u>0.21</u>
<u>1055</u>	<u>↓</u>	<u>↓</u>	<u>1.033</u>	<u>19.0</u>	<u>6.76</u>	<u>3.24</u>	<u>-163.5</u>	<u>0.19</u>
<u>1105</u>	<u>gal</u>	<u>↓</u>	<u>1.029</u>	<u>19.0</u>	<u>6.77</u>	<u>3.24</u>	<u>-164.4</u>	<u>0.18</u>
<u>12</u>								

☒ Duplicate or MS/MSD Collected: MS/MSD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: _____

Discharge: _____

psi (start): _____

psi (finish): _____

Pump on: _____

First Water: _____

QED Controller #: _____

YSI #: _____

Water level #: _____

Turbidity Meter #: _____

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Project No.: 501397 Well ID: KAFB-106 MW1-S
 Sample ID: 106 MW1S-LTM-052020 Date / Time Collected: 5/20/20 1005
 Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☐ Bladder Pump ☐ Other
 Sampling Equipment: 300 mL/stroke
 Flow Rate During Purging: 300 mL/stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: TOC
 Casing ID (in.): 4"
 Depth to Water - Initial (DTWI) (ft): 469.70
 Depth to Well Bottom (ft): 590.5
 Screen Interval (ft): 463-498
 Approximate depth of pump inlet (ft): 488
 Length of Casing (ft): N/A
No LNAPL

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: 61°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ML/stroke</u>	<u>ft/btoc</u>	±10%	±10%	±10%	±10%	±10 mV	±10%
<u>0805</u>	<u>300</u>	<u>469.70</u>	<u>1.109</u>	<u>17.6</u>	<u>7.69</u>	<u>5.36</u>	<u>56.9</u>	<u>4.88</u>
<u>0830</u>		<u>11</u>	<u>1.193</u>	<u>18.2</u>	<u>6.97</u>	<u>2.24</u>	<u>-99.8</u>	<u>0.84</u>
<u>0840</u>		<u>11</u>	<u>1.193</u>	<u>18.2</u>	<u>6.94</u>	<u>2.15</u>	<u>-105.1</u>	<u>0.60</u>
<u>0850</u>		<u>11</u>	<u>1.911</u>	<u>18.2</u>	<u>6.92</u>	<u>2.17</u>	<u>-108.1</u>	<u>0.47</u>
<u>0900</u>		<u>11</u>	<u>1.194</u>	<u>18.3</u>	<u>6.91</u>	<u>2.09</u>	<u>-110.7</u>	<u>0.39</u>
<u>0910</u>		<u>11</u>	<u>1.193</u>	<u>18.5</u>	<u>6.91</u>	<u>2.50</u>	<u>-114.3</u>	<u>0.30</u>
<u>0920</u>		<u>11</u>	<u>1.192</u>	<u>18.6</u>	<u>6.89</u>	<u>2.73</u>	<u>-116.6</u>	<u>0.20</u>
<u>0930</u>		<u>11</u>	<u>1.191</u>	<u>18.5</u>	<u>6.89</u>	<u>2.82</u>	<u>-117.6</u>	<u>0.19</u>
<u>0940</u>		<u>11</u>	<u>1.190</u>	<u>18.5</u>	<u>6.89</u>	<u>2.89</u>	<u>-119.2</u>	<u>0.14</u>
<u>0950</u>	<u>↓</u>	<u>11</u>	<u>1.190</u>	<u>18.6</u>	<u>6.90</u>	<u>2.46</u>	<u>-121.2</u>	<u>0.14</u>
<u>1000</u>	<u>7 gals</u>	<u>11</u>	<u>1.189</u>	<u>18.5</u>	<u>6.89</u>	<u>2.35</u>	<u>-121.2</u>	<u>0.13</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 Pump on: 0746
 Discharge: 23 First Water: 0748
 psi (start): 240 QED Controller #: 1409
 psi (finish): 275 YSI #: 106410
 Water level #: Solnist
 Turbidity Meter #: FSLVE8203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106063-LTM-080420

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106063

Date / Time Collected: 8/4/20, 1408

Sample Collected by: CLSN

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

260 ML/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

5"

Depth to Water - Initial (DTWI) (ft btoc)

474.95

Depth to Well Bottom (ft btoc)

528

Screen Interval (ft btoc)

508-523

Approximate depth of pump inlet (ft btoc):

511

Length of Casing (ft): NA 3 ft.

Depth to LNAPL (ft btoc)

NA

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

91°F

Time of Reading	Volume Purged (ml)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	ml/stroke	ft btoc	±10%	±10%	±10%	±10%	±10 mV	±10%
1140	260	474.95	1.034	19.1	7.26	3.25	60.2	5.15
1150			1.082	19.4	7.14	3.65	18.0	2.44
1200			1.085	19.3	6.97	2.63	-77.1	1.67
1210			1.059	19.4	6.87	1.98	-89.9	0.64
1220			1.050	19.4	6.86	4.94	-100.3	0.45
1230	300		1.057	19.5	6.86	4.74	-109.4	0.30
1240			1.050	19.4	6.86	1.64	-116.3	0.25
1250			1.045	19.5	6.86	4.71	-120.0	0.21
1300			1.055	19.7	6.86	2.74	-124.1	0.14
1310		474.80	1.049	19.7	6.85	5.17	-127.2	0.12
1320 ^{SW} 1325			1.054	19.6	6.86	4.11	-130.4	0.10
1340			1.042	19.8	6.85	2.25	-131.2	0.07
1355	260		1.055	20.7	6.85	7.16	-135.3	0.06
1405	260		1.053	20.0	6.85	9.32	-134.3	0.06

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Pump on: 1128

Discharge: 25

First Water: 1133

psi (start): 230

QED Controller #: MP10H-1409

psi (finish): 270

YSI #: 104357

Water level #: Solnist

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROSSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 501397Well ID: KAFB-106 D64Sample ID: 106064-LTM-080420Date / Time Collected: 8/4/20, 0926

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

270 ml/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

5"

Depth to Water - Initial (DTWI) (ft btoc)

473.90

Approximate depth of pump inlet (ft btoc):

493

Depth to Well Bottom (ft btoc)

93

Length of Casing (ft):

NA 31

Screen Interval (ft btoc)

400-500

Depth to LNAPL (ft btoc)

NA

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☐ Wind☒ Cloudy

Temperature:

76°F

Time of Reading	Volume Purged (ml)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ml/stroke</u>	<u>ft btoc</u>	±10%	±10%	±10%	±10%	±10 mV	±10%
0754	270	473.90	1.214	18.6	6.90	3.03	-49.5	1.38
0804			1.237	18.6	6.79	4.34	-126.1	0.49
0814			1.242	18.7	6.71	3.99	-130.7	0.29
0824			1.231	18.7	6.68	5.84	-137.1	0.14
0834			1.222	18.7	6.68	10.2	-140.2	0.10
0844			1.234	18.7	6.68	6.56	-142.6	0.07
0853			1.233	19.1	6.67	6.78	-144.5	0.06
0904			1.242	19.1	6.67	9.51	-145.0	0.05
0914			1.244	19.0	6.66	9.47	-147.0	0.04
0924			1.264	19.3	6.66	7.64	-148.3	0.04

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55Pump on: 0741Discharge: 22First Water: 0744psi (start): 240QED Controller #: MP10H-1409psi (finish): 270YSI #: 104357Water level #: SolmistTurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROSSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 501397Well ID: KAFB-106IN1Sample ID: 106IN1-LTM-060420Date / Time Collected: 8/4/20Sample Collected by: 1005 CLSN**EQUIPMENT / NOTES**

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

200 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐**PURGING INFORMATION**Measuring Point: TUCCasing ID (in.): 6"

Depth to Water - Initial (DTWI) (ft btoc)

477.90

Depth to Well Bottom (ft btoc)

502

Screen Interval (ft btoc)

477-497Approximate depth of pump inlet (ft btoc): 492Length of Casing (ft): N/A

Depth to LNAPL (ft btoc)

NA**FIELD CONDITIONS**

Weather Conditions:

☒ Sunny☐ Rain☐ Wind☒ Cloudy

Temperature:

75°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ML/stroke</u>	<u>ft btoc</u>	±10%	±10%	±10%	±10%	±10 mV	±10%
<u>0825</u>	<u>200</u>	<u>477.90</u>	<u>3.900</u>	<u>18.8</u>	<u>7.11</u>	<u>67.1</u>	<u>-170.9</u>	<u>0.54</u>
<u>0835</u>	<u>11</u>	<u>11</u>	<u>3.903</u>	<u>19.1</u>	<u>7.11</u>	<u>69.3</u>	<u>-175.4</u>	<u>0.43</u>
<u>0845</u>	<u>11</u>	<u>11</u>	<u>3.931</u>	<u>19.3</u>	<u>7.10</u>	<u>62.8</u>	<u>-178.6</u>	<u>0.36</u>
<u>0855</u>	<u>11</u>	<u>11</u>	<u>3.930</u>	<u>19.5</u>	<u>7.09</u>	<u>63.8</u>	<u>-179.6</u>	<u>0.35</u>
<u>0905</u>	<u>11</u>	<u>11</u>	<u>3.933</u>	<u>19.5</u>	<u>7.09</u>	<u>67.2</u>	<u>-181.6</u>	<u>0.29</u>
<u>0915</u>	<u>11</u>	<u>11</u>	<u>3.932</u>	<u>19.3</u>	<u>7.08</u>	<u>65.4</u>	<u>-184.4</u>	<u>0.22</u>
<u>0925</u>	<u>11</u>	<u>11</u>	<u>3.926</u>	<u>19.5</u>	<u>7.09</u>	<u>64.3</u>	<u>-187.3</u>	<u>0.22</u>
<u>0940</u>	<u>11</u>	<u>11</u>	<u>3.921</u>	<u>20.3</u>	<u>7.13</u>	<u>68.1</u>	<u>-192.8</u>	<u>0.17</u>
<u>0950</u>	<u>11</u>	<u>11</u>	<u>3.911</u>	<u>19.5</u>	<u>7.11</u>	<u>61.7</u>	<u>-192.3</u>	<u>0.17</u>
<u>1000</u>	<u>11</u>	<u>11</u>	<u>3.940</u>	<u>19.9</u>	<u>7.10</u>	<u>62.3</u>	<u>-195.8</u>	<u>0.15</u>

☒ Duplicate or MS/MSD Collected: FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55Discharge: 20psi (start): 90psi (finish): 275Pump on: 0742First Water: 0810QED Controller #: MPH10 1408YSI #: 104356Water level #: Solnist InterfaceTurbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106EX1-LTM-080420W

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106EX1
 Date / Time Collected: 8/4/20 1457
 Sample Collected by: CU, SN

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

☒ Bladder Pump

☐ Other

Sampling Equipment:

Flow Rate During Purging:

200 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 6"

Depth to Water - Initial (DTWI) (ft btoc): 468.44

Depth to Well Bottom (ft btoc): 507

Screen Interval (ft btoc): 407-502

Approximate depth of pump inlet (ft btoc): 497

Length of Casing (ft): N/A

Depth to LNAPL (ft btoc): 468.41

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature:

89°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ML/stroke</u>	<u>ft btoc</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1230</u>	<u>200</u>	<u>468.44</u>	<u>1.080</u>	<u>21.1</u>	<u>7.03</u>	<u>15.9</u>	<u>-1.5</u>	<u>2.24</u>
<u>1240</u>	<u>"</u>	<u>"</u>	<u>1.071</u>	<u>21.5</u>	<u>6.85</u>	<u>13.3</u>	<u>-52.9</u>	<u>1.38</u>
<u>1250</u>	<u>"</u>	<u>"</u>	<u>1.041</u>	<u>21.4</u>	<u>6.78</u>	<u>8.50</u>	<u>-53.4</u>	<u>1.07</u>
<u>1300</u>	<u>"</u>	<u>"</u>	<u>1.012</u>	<u>21.6</u>	<u>6.74</u>	<u>7.23</u>	<u>-55.6</u>	<u>0.90</u>
<u>1310</u>	<u>"</u>	<u>"</u>	<u>0.999</u>	<u>21.6</u>	<u>6.73</u>	<u>7.98</u>	<u>-57.3</u>	<u>0.85</u>
<u>1320</u>	<u>"</u>	<u>"</u>	<u>0.966</u>	<u>21.9</u>	<u>6.71</u>	<u>8.26</u>	<u>-59.8</u>	<u>0.75</u>
<u>1330</u>	<u>"</u>	<u>"</u>	<u>0.946</u>	<u>22.1</u>	<u>6.75</u>	<u>7.86</u>	<u>-64.9</u>	<u>0.76</u>
<u>1340</u>	<u>"</u>	<u>"</u>	<u>0.905</u>	<u>21.9</u>	<u>6.75</u>	<u>6.56</u>	<u>-69.0</u>	<u>0.70</u>
<u>1350</u>	<u>"</u>	<u>"</u>	<u>0.867</u>	<u>21.9</u>	<u>6.77</u>	<u>6.43</u>	<u>-69.9</u>	<u>0.72</u>
<u>1400</u>	<u>"</u>	<u>"</u>	<u>0.827</u>	<u>22.6</u>	<u>6.81</u>	<u>7.48</u>	<u>-75.2</u>	<u>0.67</u>
<u>1415</u>	<u>"</u>	<u>"</u>	<u>0.845</u>	<u>22.6</u>	<u>6.83</u>	<u>6.88</u>	<u>-78.2</u>	<u>0.61</u>
<u>1425</u>	<u>"</u>	<u>"</u>	<u>0.800</u>	<u>22.5</u>	<u>6.83</u>	<u>5.77</u>	<u>-81.0</u>	<u>0.57</u>
<u>1435</u>	<u>"</u>	<u>"</u>	<u>0.750</u>	<u>22.2</u>	<u>6.84</u>	<u>5.11</u>	<u>-81.4</u>	<u>0.52</u>
<u>1445</u>	<u>"</u>	<u>"</u>	<u>0.707</u>	<u>22.2</u>	<u>6.85</u>	<u>4.87</u>	<u>-82.6</u>	<u>0.49</u>

1455 ☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 60

Discharge: 20

psi (start): 90

psi (finish): 280

Pump on: 1147

First Water: 1218

QED Controller #: MP10H 1408

YSI #: 104356

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Project No.: 501397 Well ID: KAFB-106MW1-I
 Sample ID: 106MW1I-LTM-080520 Date / Time Collected: 8/5/20 1525
 Sample Collected by: ALSN

EQUIPMENT / NOTES

Purging Method/Equipment: ☒ Micropurge ☐ Bladder Pump ☐ Other
 Sampling Equipment: 350 mL Stroke
 Flow Rate During Purging: 350 mL/Stroke
 Note: Flowrate for VOC sampling should be no greater than 1 L/min
 Daily field instrument calibration verification performed? Yes ☒ No ☐

PURGING INFORMATION

Measuring Point: 10C
 Casing ID (in.): 3"
 Depth to Water - Initial (DTWI) (ft btoc): 470.70*
 Approximate depth of pump inlet (ft btoc): 518
 Length of Casing (ft): N/A
 Depth to Well Bottom (ft btoc): 528
 Screen Interval (ft btoc): 53-523
 Depth to LNAPL (ft btoc): NA

FIELD CONDITIONS

Weather Conditions: ☒ Sunny ☐ Rain ☒ Wind ☐ Cloudy Temperature: 90°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>mL/Stroke</u>	<u>ft btoc</u>	±10%	±10%	±10%	±10%	±10 mV	±10%
1230	350	470.70	0.835	19.2	7.20	5.59	109.8	5.44
1245			0.845	19.1	6.83	3.17	-117.7	1.19
1300			0.815	18.8	6.81	2.09	-129.1	0.63
1315			0.816	19.0	6.80	2.83	-134.2	0.46
1330			0.817	19.6	6.80	3.25	-135.7	0.44
1345			0.815	19.3	6.81	3.02	-138.5	0.32
1400			0.821	19.0	6.81	2.23	-143.5	0.24
1415			0.827	19.2	6.82	1.82	-147.5	0.21
1430			0.833	19.1	6.82	2.30	-150.2	0.18
1500, 1445			0.824	19.1	6.82	1.31	-153.3	0.15
1500			0.831	19.5	6.82	1.47	-156.8	0.13
1510			0.832	19.2	6.83	3.14	-158.1	0.13
1520	✓	↓	0.831	19.6	6.82	2.52	-152.7	0.12

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50 Pump on: 1215
 Discharge: 27 First Water: MP10H-1449N 1219
 psi (start): 240 QED Controller #: MP10H-1449
 psi (finish): 280 YSI #: 10439
 Water level #: Solnist
 Turbidity Meter #: FSLVE0203

* WL measured from 106MW1-S.
 Probe doesn't fit down 3" wells

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106 MW2S-LTM-080520

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MW2S

Date / Time Collected: 8/5/20 1100

Sample Collected by: CL SN

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

☒ Micro-purge

☒ Bladder Pump

300 mL stroke

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 4"

Depth to Water - Initial (DTWI) (ft btoc): 470.82

Depth to Well Bottom (ft btoc): 520.5

Screen Interval (ft btoc): 463-498

Approximate depth of pump inlet (ft btoc): 488

Length of Casing (ft): N/A

Depth to LNAPL (ft btoc): NA

FIELD CONDITIONS

Weather Conditions:

☐ Sunny

☐ Rain

☒ Wind

☒ Cloudy

Temperature:

76°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ML stroke</u>	<u>ft btoc</u>	±10%	±10%	±10%	±10%	±10 mV	±10%
0807	<u>470.82</u>	<u>300</u>	<u>0.934</u>	<u>18.6</u>	<u>8.06</u>	<u>19.1</u>	<u>102.7</u>	<u>5.29</u>
0817	<u>"</u>	<u>"</u>	<u>1.006</u>	<u>18.5</u>	<u>7.23</u>	<u>7.38</u>	<u>-68.9</u>	<u>1.95</u>
0827	<u>"</u>	<u>"</u>	<u>0.980</u>	<u>18.5</u>	<u>6.98</u>	<u>4.19</u>	<u>-83.3</u>	<u>1.33</u>
0837	<u>"</u>	<u>"</u>	<u>0.963</u>	<u>18.7</u>	<u>6.91</u>	<u>3.75</u>	<u>-89.2</u>	<u>1.03</u>
0847	<u>"</u>	<u>"</u>	<u>0.947</u>	<u>18.8</u>	<u>6.87</u>	<u>3.58</u>	<u>-84.6</u>	<u>0.86</u>
0857	<u>"</u>	<u>"</u>	<u>0.929</u>	<u>19.1</u>	<u>6.85</u>	<u>3.81</u>	<u>-91.7</u>	<u>0.74</u>
0907	<u>"</u>	<u>"</u>	<u>0.913</u>	<u>18.9</u>	<u>6.83</u>	<u>3.67</u>	<u>-93.1</u>	<u>0.64</u>
0917	<u>"</u>	<u>"</u>	<u>0.897</u>	<u>19.1</u>	<u>6.82</u>	<u>3.51</u>	<u>-94.8</u>	<u>0.54</u>
0927	<u>"</u>	<u>"</u>	<u>0.886</u>	<u>19.3</u>	<u>6.81</u>	<u>2.74</u>	<u>-96.7</u>	<u>0.46</u>
0940	<u>"</u>	<u>"</u>	<u>0.859</u>	<u>19.2</u>	<u>6.80</u>	<u>2.95</u>	<u>-102.0</u>	<u>0.39</u>
0955	<u>"</u>	<u>"</u>	<u>0.854</u>	<u>19.5</u>	<u>6.80</u>	<u>3.54</u>	<u>-107.9</u>	<u>0.35</u>
1005	<u>"</u>	<u>"</u>	<u>0.843</u>	<u>19.5</u>	<u>6.79</u>	<u>3.11</u>	<u>-108.8</u>	<u>0.33</u>
1020	<u>"</u>	<u>"</u>	<u>0.839</u>	<u>19.4</u>	<u>6.80</u>	<u>3.64</u>	<u>-112.5</u>	<u>0.26</u>
1035	<u>"</u>	<u>"</u>	<u>0.812</u>	<u>19.5</u>	<u>6.80</u>	<u>2.82</u>	<u>-115.6</u>	<u>0.19</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 24

psi (start): 90

psi (finish): 295

Pump on: 0730

First Water: 0752

QED Controller #: MAIDH 1408

YSI #: 10356

Water level #: Solinst

Turbidity Meter #: PSLWE0203

1045 " " 0.815 19.6 6.81 2.65 -117.0 0.18
 1055 " " 0.799 19.8 6.81 2.51 -118.8 0.18

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROSSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 501397Well ID: KAFB-106 MW1-SSample ID 106 MW1S-LTM-080520Date / Time Collected 8/5/20, 1058Sample Collected by: ALSN

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micro purge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

350 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

4"

Approximate depth of pump inlet (ft btoc):

408Depth to Water - Initial (DTWI) (ft btoc) 470.70Length of Casing (ft): N/A

Depth to Well Bottom (ft btoc)

500.5

Depth to LNAPL (ft btoc)

NA

Screen Interval (ft btoc)

403-498

FIELD CONDITIONS

Weather Conditions:

☐ Sunny☐ Rain☒ Wind☒ Cloudy

Temperature:

70°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	mL/stroke	ft btoc	±10%	±10%	±10%	±10%	±10 mV	±10%
0755	350	470.70	1.062	18.4	7.53	4.84	89.0	6.16
0805			0.979	18.6	6.80	3.56	-111.0	2.38
0820			0.981	18.6	6.78	3.22	-120.5	1.16
0835			0.996	18.5	6.78	2.75	-123.3	0.77
0850			1.016	18.8	6.77	3.49	-125.5	0.56
0905			1.035	18.8	6.76	3.53	-126.5	0.39
0920			1.042	19.0	6.76	3.67	-128.0	0.30
0935			1.052	19.0	6.76	3.71	-129.6	0.22
0950			1.057	19.1	6.76	3.24	-132.0	0.16
1005			1.050	19.3	6.77	2.92	-132.8	0.15
1020			1.072	19.1	6.76	3.82	-134.1	0.09
1035			1.065	19.4	6.76	3.42	-136.4	0.07
1045			1.077	19.5	6.76	3.76	-137.1	0.07
1055			1.072	19.5	6.76	3.72	-138.6	0.06

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55Pump on: 0735Discharge: 27First Water: 0740psi (start): 240QED Controller #: MP10H-1409psi (finish): 275YSI #: 104357Water level #: SolhistTurbidity Meter #: FSLRE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106MW2I-LTM-080520

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 MW2-I

Date / Time Collected: 8/5/20 1440

Sample Collected by: CLSN

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

☒ Micropurge

☒ Bladder Pump

☐ Other

300 mL/stroke

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

Casing ID (in.)

Depth to Water - Initial (DTWI) (ft btoc)

Depth to Well Bottom (ft btoc)

Screen Interval (ft btoc)

Approximate depth of pump inlet (ft btoc):

Length of Casing (ft):

Depth to LNAPL (ft btoc)

TOC

3"

470.82*

528

523-523

517

N/A

NA

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind

☒ Cloudy

Temperature:

90°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>ML/stroke</u>	<u>ft btoc</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10%</u>	<u>±10 mV</u>	<u>±10%</u>
<u>1230</u>	<u>300</u>	<u>470.82</u>	<u>0.623</u>	<u>19.6</u>	<u>7.30</u>	<u>2.71</u>	<u>87.2</u>	<u>3.25</u>
<u>1240</u>	<u>"</u>	<u>"</u>	<u>0.869</u>	<u>19.2</u>	<u>7.10</u>	<u>2.52</u>	<u>-30.7</u>	<u>1.47</u>
<u>1255</u>	<u>"</u>	<u>"</u>	<u>0.935</u>	<u>19.2</u>	<u>7.01</u>	<u>2.30</u>	<u>-75.6</u>	<u>0.69</u>
<u>1317</u>	<u>"</u>	<u>"</u>	<u>0.873</u>	<u>22.2</u>	<u>6.97</u>	<u>1.98</u>	<u>-87.2</u>	<u>0.49</u>
<u>1330</u>	<u>"</u>	<u>"</u>	<u>0.778</u>	<u>19.9</u>	<u>6.94</u>	<u>1.73</u>	<u>-85.0</u>	<u>0.45</u>
<u>1340</u>	<u>"</u>	<u>"</u>	<u>0.776</u>	<u>19.8</u>	<u>6.93</u>	<u>2.20</u>	<u>-87.5</u>	<u>0.38</u>
<u>1350</u>	<u>"</u>	<u>"</u>	<u>0.768</u>	<u>19.5</u>	<u>6.92</u>	<u>1.98</u>	<u>-87.8</u>	<u>0.31</u>
<u>1405</u>	<u>"</u>	<u>"</u>	<u>0.794</u>	<u>19.7</u>	<u>6.91</u>	<u>1.52</u>	<u>-90.7</u>	<u>0.27</u>
<u>1415</u>	<u>"</u>	<u>"</u>	<u>0.712</u>	<u>19.7</u>	<u>6.90</u>	<u>1.87</u>	<u>-93.4</u>	<u>0.23</u>
<u>1425</u>	<u>"</u>	<u>"</u>	<u>0.793</u>	<u>19.8</u>	<u>6.89</u>	<u>2.55</u>	<u>-94.3</u>	<u>0.23</u>
<u>1435</u>	<u>"</u>	<u>"</u>	<u>0.790</u>	<u>19.5</u>	<u>6.89</u>	<u>1.98</u>	<u>-94.4</u>	<u>0.22</u>

☒ Duplicate or MS/MSD Collected: MS, MSD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 50

Discharge: 25

psi (start): 240

psi (finish): 275

Pump on: 1215

First Water: 1217

QED Controller #: MP10H 1408

YSI #: 104350

Water level #: Sohmist

Turbidity Meter #: FSLVE0203

* WL measurement is from 106MW2-I. Probe cannot fit down 311 ft

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106MW1I-LTM-101320

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW1-I

Date / Time Collected: 10/13/20 0950

Sample Collected by: CL

EQUIPMENT / NOTES

Purging Method/Equipment:

Sampling Equipment:

Flow Rate During Purging:

☒ Micropurge

☒ Bladder Pump

☐ Other

300 mL/Stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 3"

Depth to Water - Initial (DTWI) (ft btoc): 471.60 ft btoc*

Approximate depth of pump inlet (ft btoc): 518

Depth to Well Bottom (ft btoc): 528

Length of Casing (ft): N/A

Screen Interval (ft btoc): 513-523

Depth to LNAPL (ft btoc): NA

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 46°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>300 mL/Stroke</u>	--	±10%	±10%	±10%	<u><10</u>	±10 mV	±10%
<u>0750</u>		<u>471.60</u>	<u>0.815</u>	<u>17.4</u>	<u>7.41</u>	<u>8.02</u>	<u>88.9</u>	<u>6.62</u>
<u>0800</u>		<u> </u>	<u>0.823</u>	<u>17.5</u>	<u>7.21</u>	<u>8.50</u>	<u>102.7</u>	<u>5.57</u>
<u>0810</u>		<u> </u>	<u>0.825</u>	<u>17.5</u>	<u>6.98</u>	<u>8.61</u>	<u>-105.0</u>	<u>2.61</u>
<u>0820</u>		<u> </u>	<u>0.813</u>	<u>17.7</u>	<u>6.80</u>	<u>6.90</u>	<u>-118.9</u>	<u>1.03</u>
<u>0830</u>		<u> </u>	<u>0.795</u>	<u>17.7</u>	<u>6.79</u>	<u>5.52</u>	<u>-123.5</u>	<u>0.79</u>
<u>0840</u>		<u> </u>	<u>0.794</u>	<u>17.9</u>	<u>6.79</u>	<u>4.05</u>	<u>-126.6</u>	<u>0.66</u>
<u>0850</u>		<u> </u>	<u>0.796</u>	<u>18.0</u>	<u>6.79</u>	<u>4.25</u>	<u>-129.1</u>	<u>0.57</u>
<u>0900</u>		<u> </u>	<u>0.789</u>	<u>18.0</u>	<u>6.80</u>	<u>5.24</u>	<u>-132.0</u>	<u>0.52</u>
<u>0910</u>		<u> </u>	<u>0.791</u>	<u>18.1</u>	<u>6.80</u>	<u>5.12</u>	<u>-134.9</u>	<u>0.45</u>
<u>0920</u>		<u> </u>	<u>0.794</u>	<u>18.1</u>	<u>6.80</u>	<u>4.96</u>	<u>-136.6</u>	<u>0.42</u>
<u>0930</u>		<u> </u>	<u>0.793</u>	<u>18.2</u>	<u>6.81</u>	<u>4.10</u>	<u>-139.6</u>	<u>0.38</u>
<u>0940</u>		<u> </u>	<u>0.803</u>	<u>18.2</u>	<u>6.81</u>	<u>3.40</u>	<u>-141.6</u>	<u>0.37</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 24

psi (start): 240

psi (finish): 275

*WL measured from nested shallow well 106MW1-S.
 WL probe can't fit down 3" wells.

Pump on: 0741

First Water: 0743

QED Controller #: MP10H 1409

YSI #: 106409

Water level #: Solinst Interface

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROSSite Location: Kirtland AFB, SWMU ST-106/SS-111Project No.: 501397Well ID: KAFB-106MW1-SSample ID 106MW1S-LTM-101320Date / Time Collected 10/13/20 1215

EQUIPMENT / NOTES

Sample Collected by: CU

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

325 mL / Stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point TOCCasing ID (in.) 4"

Depth to Water - Initial (DTWI) (ft btoc)

471.60 ftbtocApproximate depth of pump inlet (ft btoc): 488Length of Casing (ft): N/A

Depth to Well Bottom (ft btoc)

500.5Depth to LNAPL (ft btoc) NA

Screen Interval (ft btoc)

463-498

FIELD CONDITIONS

Weather Conditions:

☒ Sunny☐ Rain☐ Wind☐ Cloudy

Temperature:

65°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>325 mL / Stroke</u>	<u>ftbtoc</u>	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>1019</u>		<u>471.60</u>	<u>0.972</u>	<u>18.1</u>	<u>7.54</u>	<u>10.7</u>	<u>-25.6</u>	<u>6.22</u>
<u>1029</u>		<u>"</u>	<u>0.981</u>	<u>18.2</u>	<u>6.99</u>	<u>11.0</u>	<u>-105.6</u>	<u>3.88</u>
<u>1039</u>		<u>"</u>	<u>0.845</u>	<u>18.6</u>	<u>6.85</u>	<u>9.98</u>	<u>152.2</u>	<u>1.88</u>
<u>1049</u>		<u>"</u>	<u>0.842</u>	<u>18.5</u>	<u>6.84</u>	<u>7.74</u>	<u>-116.4</u>	<u>1.50</u>
<u>1059</u>		<u>"</u>	<u>0.847</u>	<u>18.6</u>	<u>6.84</u>	<u>6.93</u>	<u>-117.7</u>	<u>1.20</u>
<u>1109</u>		<u>"</u>	<u>0.844</u>	<u>18.7</u>	<u>6.83</u>	<u>6.75</u>	<u>-119.1</u>	<u>0.97</u>
<u>1119</u>		<u>"</u>	<u>0.856</u>	<u>18.8</u>	<u>6.83</u>	<u>6.19</u>	<u>-120.3</u>	<u>0.80</u>
<u>1129</u>		<u>"</u>	<u>0.873</u>	<u>18.9</u>	<u>6.82</u>	<u>5.48</u>	<u>-120.9</u>	<u>0.64</u>
<u>1149</u>		<u>"</u>	<u>0.907</u>	<u>19.0</u>	<u>6.81</u>	<u>6.13</u>	<u>-121.7</u>	<u>0.46</u>
<u>1159</u>		<u>"</u>	<u>0.917</u>	<u>19.0</u>	<u>6.80</u>	<u>6.14</u>	<u>-122.1</u>	<u>0.43</u>
<u>1209</u>	<u>✓</u>	<u>"</u>	<u>0.927</u>	<u>19.2</u>	<u>6.80</u>	<u>6.23</u>	<u>-122.3</u>	<u>0.41</u>

☒ Duplicate or MS/MSD Collected: FD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 57Pump on: 1003Discharge: 24First Water: 1005psi (start): 240QED Controller #: MP10H 1409psi (finish): 280YSI #: 106409Water level #: Solnist InterfaceTurbidity Meter #: FSLVE 0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106MW2I-1TM-101420

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106MW2-I

Date / Time Collected: 10/14/20 1425

Sample Collected by: CLSN

EQUIPMENT / NOTES

Purging Method/Equipment:

☒ Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

300 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: 10C

Casing ID (in.): 3"

Depth to Water - Initial (DTWI) (ft btoc)

NM*

Depth to Well Bottom (ft btoc)

520

Screen Interval (ft btoc)

513-523

Approximate depth of pump inlet (ft btoc): 517

Length of Casing (ft): N/A

Depth to LNAPL (ft btoc)

NA

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☒ Wind light

☐ Cloudy

Temperature: 81°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	<u>300</u>	<u>16btoc</u>	$\pm 10\%$	$\pm 10\%$	$\pm 10\%$	$\pm 10\%$	± 10 mV	$\pm 10\%$
1212		NM	0.931	17.8	7.33	7.17	137.7	5.13
1227		"	1.009	17.8	7.01	9.10	134.5	1.94
1243		"	1.059	18.4	6.90	6.96	31.7	0.75
1258		"	1.056	18.4	6.91	6.60	-18.3	0.54
1313		"	1.054	18.5	8.61	6.92	-38.5	0.33
1323		"	1.060	18.6	6.92	6.45	-54.7	0.30
1333		"	1.055	18.5	6.93	9.85	-64.9	0.21
1343		"	1.055	18.8	6.93	8.16	-74.3	0.15
1353		"	1.054	18.8	6.93	7.58	-79.8	0.16
1403		"	1.054	18.9	6.93	8.25	-85.1	0.11
1413		"	1.055	18.9	6.94	7.82	-88.5	0.10
1423		"	1.057	19.1	6.94	7.53	-92.1	0.09

☐ Duplicate or MS/MSD Collected: MS/MSD

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55

Discharge: 23

psi (start): 240

psi (finish): 275

Pump on: 1200

First Water: 1202

QED Controller #: MP10H 1408

YSI #: 104350

Water level #: Solinst Interface

Turbidity Meter #: PSLVE0203

*NM-WL probe got stuck on tubing @ 375!

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106 MW2S-LTM-101420

Site Location: Kirtland AFB, SWMU ST-106/SS-111
 Well ID: KAFB-106 MW2-S

Date / Time Collected: 10/14/2020 1400

Sample Collected by: _____

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment: _____

☒ Bladder Pump

☐ Other

Flow Rate During Purging: _____

325 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed? _____

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point: TOC

Casing ID (in.): 4"

Depth to Water - Initial (DTWI) (ft btoc) NM*

Depth to Well Bottom (ft btoc) 500.5

Screen Interval (ft btoc) 463-498

Approximate depth of pump inlet (ft btoc): 488

Length of Casing (ft): N/A

Depth to LNAPL (ft btoc) NM

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 81°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>1135</u>	<u>325</u>	<u>NM*</u>	<u>0.860</u>	<u>18.2</u>	<u>7.80</u>	<u>29.9</u>	<u>28.0</u>	<u>6.45</u>
<u>1150</u>			<u>0.923</u>	<u>18.1</u>	<u>7.67</u>	<u>12.0</u>	<u>-109.9</u>	<u>3.76</u>
<u>1205</u>			<u>0.935</u>	<u>18.5</u>	<u>6.83</u>	<u>11.0</u>	<u>-129.1</u>	<u>1.62</u>
<u>1220</u>			<u>0.919</u>	<u>18.3</u>	<u>6.82</u>	<u>10.0</u>	<u>-134.4</u>	<u>1.15</u>
<u>1235</u>			<u>0.906</u>	<u>18.5</u>	<u>6.83</u>	<u>11.4</u>	<u>-139.4</u>	<u>0.86</u>
<u>1250</u>			<u>0.888</u>	<u>18.8</u>	<u>6.84</u>	<u>11.0</u>	<u>-144.4</u>	<u>0.63</u>
<u>1305</u>			<u>0.885</u>	<u>18.7</u>	<u>6.84</u>	<u>11.5</u>	<u>-147.2</u>	<u>0.50</u>
<u>1320</u>			<u>0.881</u>	<u>18.8</u>	<u>6.84</u>	<u>8.12</u>	<u>-149.2</u>	<u>0.43</u>
<u>1335</u>			<u>0.887</u>	<u>18.9</u>	<u>6.84</u>	<u>9.32</u>	<u>-153.0</u>	<u>0.32</u>
<u>1350</u>			<u>0.897</u>	<u>19.1</u>	<u>6.84</u>	<u>10.9</u>	<u>-154.5</u>	<u>0.32</u>
<u>1400</u>	<u>✓</u>	<u>✓</u>	<u>0.885</u>	<u>18.8</u>	<u>6.84</u>	<u>8.73</u>	<u>-154.0</u>	<u>0.30</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

*** Could not get ul probe past 375 ft bgs.**

Recharge: 55

Pump on: 1125

Discharge: 26

First Water: 1128

psi (start): 240

QED Controller #: MP10H-1409

psi (finish): 275

YSI #: 106409

Water level #: Solinst

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS
 Project No.: 501397
 Sample ID: 106063-LTM-101420

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106063

Date / Time Collected: 10/14/20 1000

Sample Collected by: CL, SN

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment:

☒ Bladder Pump

Flow Rate During Purging:

300 mL / stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒

No ☐

PURGING INFORMATION

Measuring Point

100

Casing ID (in.)

5"

Depth to Water - Initial (DTWI) (ft btoc) 475.70

Depth to Well Bottom (ft btoc) 528

Screen Interval (ft btoc) 508-523

Approximate depth of pump inlet (ft btoc): 511

Length of Casing (ft): N/A

Depth to LNAPL (ft btoc) NA

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

☐ Wind

☐ Cloudy

Temperature: 52°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	--	--	±10%	± 10%	±10%	± 10%	± 10 mV	± 10%
<u>0748</u>	<u>300</u>	<u>475.70</u>	<u>0.952</u>	<u>17.1</u>	<u>7.25</u>	<u>10.5</u>	<u>59.2</u>	<u>3.55</u>
<u>0758</u>	<u>300</u>	<u>475.75</u>	<u>0.959</u>	<u>17.1</u>	<u>7.05</u>	<u>9.41</u>	<u>-81.7</u>	<u>1.51</u>
<u>0808</u>	<u>1</u>	<u>475.75</u>	<u>0.915</u>	<u>17.4</u>	<u>6.91</u>	<u>7.80</u>	<u>-85.5</u>	<u>0.85</u>
<u>0823</u>	<u>1</u>	<u>475.75</u>	<u>0.888</u>	<u>17.6</u>	<u>6.88</u>	<u>9.20</u>	<u>-105.2</u>	<u>0.52</u>
<u>0838</u>	<u>1</u>	<u>475.75</u>	<u>0.877</u>	<u>17.7</u>	<u>6.87</u>	<u>7.03</u>	<u>-113.7</u>	<u>0.39</u>
<u>0848</u>	<u>1</u>	<u>475.75</u>	<u>0.876</u>	<u>17.8</u>	<u>6.87</u>	<u>7.15</u>	<u>-116.3</u>	<u>0.34</u>
<u>0858</u>	<u>1</u>	<u>475.75</u>	<u>0.867</u>	<u>17.9</u>	<u>6.87</u>	<u>8.69</u>	<u>-118.5</u>	<u>0.31</u>
<u>0908</u>	<u>1</u>	<u>475.75</u>	<u>0.867</u>	<u>18.0</u>	<u>6.87</u>	<u>6.57</u>	<u>-121.5</u>	<u>0.27</u>
<u>0918</u>	<u>1</u>	<u>475.75</u>	<u>0.872</u>	<u>18.0</u>	<u>6.86</u>	<u>6.63</u>	<u>-123.1</u>	<u>0.25</u>
<u>0928</u>	<u>1</u>	<u>475.75</u>	<u>0.867</u>	<u>18.1</u>	<u>6.86</u>	<u>6.53</u>	<u>-124.3</u>	<u>0.23</u>
<u>0938</u>	<u>1</u>	<u>475.75</u>	<u>0.865</u>	<u>18.2</u>	<u>6.87</u>	<u>7.78</u>	<u>-127.0</u>	<u>0.21</u>
<u>0948</u>	<u>1</u>	<u>475.75</u>	<u>0.864</u>	<u>18.2</u>	<u>6.87</u>	<u>7.92</u>	<u>-128.2</u>	<u>0.20</u>
<u>0958</u>	<u>1</u>	<u>475.75</u>	<u>0.868</u>	<u>18.3</u>	<u>6.87</u>	<u>9.38</u>	<u>-129.9</u>	<u>0.21</u>

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge: 55 sec

Discharge: 25 sec

psi (start): 240

psi (finish): 275

Pump on: 0728

First Water: 0735

QED Controller #: MP10H-1409

YSI #: 106409

Water level #: Solinst

Turbidity Meter #: FSLVE0203

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS

Project No.: 501397

Sample ID 106 Ex1-LTM-101520

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Well ID: KAFB-106 EX-1

Date / Time Collected 10/15/20 1235

Sample Collected by: CL, SN

EQUIPMENT / NOTES

Purging Method/Equipment:

Micropurge

Sampling Equipment.:

☒ Bladder Pump

Flow Rate During Purging :

50 mL / ☐ Other stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ✓

No _____

PURGING INFORMATION

Measuring Point

Casing ID (in.)

Depth to Water - Initial (DTWI) (ft btoc)

Depth to Well Bottom (ft btoc)

Screen Interval (ft btoc)

Approximate depth of pump inlet (ft btoc):

Length of Casing (ft): N/A

Depth to LNAPL (ft btoc) NA

FIELD CONDITIONS

Weather Conditions:

☒ Sunny

☐ Rain

- Wind

☐ CloudyTemperature: 70°F[illegible]

☐ Duplicate or MS/MSD Collected: None

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

0830

Recharge:

Discharge:

psi (start):

psi (finish):

Pump on:

First Water:

QED Controller #:

YSI #:

Water level #:

Turbidity Meter #:

GROUND WATER SAMPLE COLLECTION LOG

Project Name: KAFB ROS

Project No.: 501397

Site Location: Kirtland AFB, SWMU ST-106/SS-111

Sample ID: 106 IN1-LTM-102820

Well ID: KAFB-106 IN1

Date / Time Collected: 10/28/20 1220

Sample Collected by: C

EQUIPMENT / NOTES

Purging Method/Equipment:

Microspurge

Sampling Equipment:

☒ Bladder Pump☐ Other

Flow Rate During Purging:

325 mL/stroke

Note: Flowrate for VOC sampling should be no greater than 1 L/min

Daily field instrument calibration verification performed?

Yes ☒No ☐

PURGING INFORMATION

Measuring Point

TOC

Casing ID (in.)

6"

Depth to Water - Initial (DTWI) (ft btoc)

470.90 ft btoc

Approximate depth of pump inlet (ft btoc): 492

Length of Casing (ft): N/A

Depth to Well Bottom (ft btoc)

502

Depth to LNAPL (ft btoc): NA

Screen Interval (ft btoc)

477-497

FIELD CONDITIONS

Weather Conditions:

☐ Sunny☐ Rain☐ Wind☒ Cloudy

Temperature:

25°F

Time of Reading	Volume Purged (mL)	Dynamic Depth to Water	Conductivity (mS/cm)	Temperature (°C)	pH	Turbidity (NTU)	ORP (mV)	DO (mg/L)
Purge Stabilization Criteria	mL/stroke	ft btoc	±10%	±10%	±10%	±10%	±10 mV	±10%
1018	325	470.90	3.682	16.1	7.15	97.3	103.0	1.97
1028		"	3.636	16.4	7.11	95.9	92.4	0.72
1038		"	3.562	16.5	7.11	94.7	31.1	0.30
1048		"	3.460	16.3	7.11	98.5	-16.5	0.17
1058		"	3.375	16.6	7.11	97.2	-62.1	0.07
1108		"	3.303	16.9	7.11	92.9	-81.6	0.03
1128		"	3.342	16.9	7.11	94.6	-106.2	0.00
1148		"	3.274	17.1	7.10	97.0	-120.1	0.00
1158		"	3.216	17.1	7.10	96.5	-127.4	0.00
1208		"	3.218	17.1	7.10	100.1	133.2	0.00
1218	↓	"	3.162	17.2	7.10	99.8	-136.6	0.00

☐ Duplicate or MS/MSD Collected: None

If the water level is above the top of the screen, the pump should be set at the approximate mid-point of the screen. If the water level is below the top of the screen, set the pump between the water level and the bottom of the screen.

Recharge:

60

Pump on:

H23 0930

Discharge:

23

First Water:

1015

psi (start):

150.30

QED Controller #:

MPI0H 1408

psi (finish):

275

YSI #:

104358

Water level #:

Solnist WL

Turbidity Meter #:

FSLVE0203



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Baseline

Location Code KAFB-106MWI

RFA/COC Number 500433EDBPT-GW0006

Sample Number 106MWI-BL-091817

Collection Date 9/18/17

Sampling Method Low Flow

Collection Time 1140

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CLTK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Salinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Nitrate, and nitrite/nitrate as N) by EPA 9056						
Ammonia by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by SOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
FA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Cannot measure DTW at 3" intermediate well. Recollection of Baseline

Logged By/Date:

J. Allen 9/18/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Baseline

Location Code KAFB-106MW15 RFA/COC Number 500433 EDBPT-GW007
Sample Number 106MW15-BL-091917 Collection Date 9/19/17
Sampling Method low flow Collection Time 1512
Sample Type Grab Start Depth 463
QC Code normal End Depth 498
Sampling Equipment bladder pump Sample Matrix GW
QC Partners N/A Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Bottle	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Recollection of baseline event.
product ~ 0.24 ft.

Logged By/Date:

L. Kovel
9/19/17

Reviewed By/Date:

Shallew 9/19/17



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Baseline

Location Code KAFB-106MW2-I

RFA/COC Number 500433EDBPT-GW007

Sample Number 106MW2I-BL-091917

Collection Date 9/19/17

Sampling Method Low Flow

Collection Time 1337

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder pump

Sample Matrix GW

QC Partners 106MW2I-BL-FD-091917

Sample Team A. TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, and nitrate/nitrite as N) by EPA 9056						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
TK QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
TK EDB-GSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions.

Recollection of baseline. Can't direct measure water level, 3-inch well too small with dedicated pump.

Logged By/Date: Galler 9/19/17

Reviewed By/Date: [Signature] 9/19/17



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Baseline

Location Code KAFB-106MW2-S

RFA/CCC Number 500433EDBPT-GW007

Sample Number 106MW2S-BL-091917

Collection Date 9/19/17

Sampling Method Low Flow

Collection Time 1225

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team CL, TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, and nitrate/nitrite as N) by EPA 9056						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Unable to measure water level. Probe gets hung up @ about 180ft.

Purge water is yellowish w/ rust flakes; fuel odor.

Re-collection of Baseline.

Logged By/Date: [Signature] 9/19/17

Reviewed By/Date: [Signature]

9/19/17



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Baseline

Location Code KAFB-100013

RFA/COC Number 500433EDBPT-GW006

Sample Number 100013-BL-091017

Collection Date 9/10/17

Sampling Method Low Flow

Collection Time 1309

Sample Type Grab

Start Depth 508

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners NA

Sample Team AITK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, and nitrate/nitrite as N) by EPA 9056						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Jar VOA Vials	None	USGS
EDB-CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions.

DTW = 480.24 ft btoe. Recollect Baseline

Small bubbles in tubing and VSI.

Logged By/Date:

Gallen 9/10/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Baseline

Location Code KAFB-106EX2 RFA/COC Number 500433-EDBPT-GW00
 Sample Number 106EX2-BL-092617 Collection Date 9/26/17
 Sampling Method dedicated pump Collection Time 1257
 Sample Type grab Start Depth 487
 QC Code normal End Depth 502
 Sampling Equipment brandos pump Sample Matrix GW
 QC Partners normal disposable Sample Team TK, CC
sample equipment

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
TSK QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Bottle	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

2nd baseline event, a few small bubbles
in VOAs

Logged By/Date:

L. J. J. J.
9/26/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Baseline

Location Code KAFB-106EX1

RFA/COC Number 560433EDBPT-6W00

Sample Number 106EX1-BL-092617

Collection Date 09/26/17

Sampling Method dedicated pump

Collection Time 1218

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment Grundfos pump

Sample Matrix GW

QC Partners N/A disposable sample equipment

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
TSK QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Bottle	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

small
2nd baseline event, bubbles in sample line and VOA's

Logged By/Date:

L. K. [Signature]
9/26/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Baseline

Location Code KAFB-106IN1 RFA/COC Number 500433EDBPT-GW00

Sample Number 106IN1-BL-092617 Collection Date 09/26/17

Sampling Method dedicated pump Collection Time 1105

Sample Type grab Start Depth 477

QC Code normal End Depth 497

Sampling Equipment Grundfos pump, Sample Matrix GW

QC Partners N/A disposable sample equipment Sample Team TKEL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Bottle	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions

2nd baseline event

Logged By/Date:

[Signature]
9/26/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 0

Location Code KAFB-106IN1 RFA/COC Number 500433EDBPT-GW 009
Sample Number 106IN1-PIR-100217-2 Collection Date 10/2/17
Sampling Method Sample port Collection Time 1642
Sample Type Grab Start Depth NA
QC Code Normal End Depth NA
Sampling Equipment Tubing, Port Sample Matrix GW
QC Partners N/A Sample Team CL, TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions

Second sample collected from IN1 after introduction of dye and deuterated water. Dye test started @ 1211. This sample is not part of the pilot test sample regime.

Logged By/Date:

[Signature] 10/2/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 0

Location Code KAFB-106IN1 RFA/COC Number 500433EDBPT-GW009
Sample Number 106IN1-PIR-100217-1 Collection Date 10/2/17
Sampling Method Sample port Collection Time 1342
Sample Type Grab Start Depth NA
QC Code Normal End Depth NA
Sampling Equipment Tubing, Port Sample Matrix GW
QC Partners N/A Sample Team A.TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

Sample collected after dye and deuterium introduced to injection well. Dye test started at 1211
Not part of pilot test sample regime.

Logged By/Date:

[Signature] 10/2/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-10bINI RFA/COC Number 500433EDBPT-GW009
Sample Number 10bINI-PIR-100317-3 Collection Date 10/3/17
Sampling Method Sample Port Collection Time 0820
Sample Type Grab Start Depth —
QC Code Normal End Depth —
Sampling Equipment Tubing, Port Sample Matrix GW
QC Partners N/A Sample Team ALT

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS

Comments/Descriptions:
3rd Sample collected from 10bINI after start of dye/deuterium test on 10/2/17 @ 1211. This sample is not part of the pilot study sample regime. Fluorometer field reading: 107.0 relative fluorescence units compared to calibration standard.

Logged By/Date:

Galle 10/3/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX1 RFA/COC Number 500433EDBPT-GW009
Sample Number 106EX1-P1R-100417 Collection Date 10/4/17
Sampling Method Sample Collection Time 1553
Sample Type Grab Start Depth 487
QC Code Normal End Depth 502
Sampling Equipment Sample port, tubing Sample Matrix GW
QC Partners None Sample Team CR, TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

Collected from sample port in connex.
DTW = 482.65-ft bgs. Day 2 Sample. Pump was turned on
@ 10/2/17.
1.428 RFU @ 11/6/12

Logged By/Date:

[Signature] 10/4/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX2 RFA/COC Number 500433EDB PT- GW009
Sample Number 106EX2-P1R-100417 Collection Date 10/4/17
Sampling Method Sample Port Collection Time 1616
Sample Type Grab Start Depth 487
QC Code Normal End Depth 502
Sampling Equipment Port, Tubing Sample Matrix GW
QC Partners None Sample Team CLTK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

Collected from sample port in connex. Day 2 sample.
Pump was turned on 10/2/17. DTW = 480.19 ft bgs
0.0841 PFUs @ 1615.

Logged By/Date:

G. J. Miller 10/4/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MWI-I
Sample Number 106MWI-E-P12-100417
Sampling Method Low Flow
Sample Type Grab
QC Code Normal
Sampling Equipment Bladder Pump
QC Partners None

RFA/COC Number 500433EDBPT-GW009
Collection Date 10/4/17
Collection Time 0920
Start Depth 513
End Depth 528
Sample Matrix GW
Sample Team AL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

Water level meter won't fit down casing. DTW = 476. Atbloc as measured at 106MWI-S.

Some bubbles in YSI and Tubing.

Logged By/Date:

[Signature] 10/4/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW1-S

RFA/COC Number 500433EDBPT-GW009

Sample Number 106MW1S-P1R-100417

Collection Date 10/4/17

Sampling Method Low flow

Collection Time 1200

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team al

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

Water has strong fuel odor.

DTW = 476.56 ft bto.

0.331 RFU measured @ 1125

Logged By/Date:

J. J. J. 10/4/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-GW009

Sample Number 106MW2I-P1R-100417

Collection Date 10/4/17

Sampling Method low-flow

Collection Time 1142

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix groundwater

QC Partners N/A

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

Fluorometer reading 0.863 RFU, no dye here yet
"day 2" phase I recirc sample

Logged By/Date:

L. Kuch
10/4/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW25 RFA/COC Number 500433EDBPT-GW009
Sample Number 106MW25-PIR-100417 Collection Date 10/4/17
Sampling Method Grab, low-flow Collection Time 0948
Sample Type normal Start Depth 463
QC Code normal End Depth 498
Sampling Equipment bladder pump, disposable equipment Sample Matrix Groundwater
QC Partners N/A Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

fluorometer reading 0.216 RFU, no dye here yet.
"day 2" phase 1 sample

Logged By/Date:

L. Kuhl

10/4/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106063 RFA/COC Number 500433EDRPT-GW009
Sample Number 106063-P1R-100417 Collection Date 10/4/17
Sampling Method low-flow Collection Time 1510
Sample Type grab Start Depth 508
QC Code normal End Depth 523
Sampling Equipment bladder pump Sample Matrix GW
QC Partners None Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

Fluorometer reading 0.154 RFU, no dye
"day 2" phase 1 recirc sample

Logged By/Date:

[Signature]
10/4/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW009

Sample Number 106064-P1R-100417

Collection Date 10/4/17

Sampling Method Low Flow

Collection Time 1510

Sample Type Grab

Start Depth 488

QC Code Normal

End Depth 508

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners 106064-P1R-100417

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

DTW = 480.58 ft btoC measured @ 106063.

0.013 RFU @ 1436

Bubbles in YSI and tubing.

Logged By/Date:

[Signature] 10/4/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX2 RFA/COC Number 500433EDRPT-GW009
Sample Number 106EX2-P1R-100617 Collection Date 10/6/17
Sampling Method Dedicated Granfos Collection Time 1551
Sample Type grab amp Start Depth 487
QC Code normal End Depth 502
Sampling Equipment Sample port in conex Sample Matrix GW
QC Partners none Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"day 4" phase I recirc

Fluoro: 0.04 RFU

Logged By/Date: L. K. L.
10/6/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX1 RFA/COC Number 500433EDBPT-GW009
Sample Number 106EX1-PIR-100617 Collection Date 10/6/17
Sampling Method dedicated Groundwater pump Collection Time 1526
Sample Type grab Start Depth 487
QC Code normal End Depth 502
Sampling Equipment sample port in coner Sample Matrix GW
QC Partners none Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"day 4" phase 1 recirc

Fluoro: 0.01 RFU

Logged By/Date:

L. K...
10/6/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW009

Sample Number 106063-PZR-100617

Collection Date 10/6/17

Sampling Method low-flow

Collection Time 0952

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"Day 4", phase I recirc.

Fluro: 0.295 RFU, no dye here that can be
detected - instrument

Logged By/Date:

L. Kunt
10/6/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW25 RFA/COC Number 500433EDBPT-GW009
Sample Number 106MW25-PIR-100617 Collection Date 10/6/17
Sampling Method low-flow Collection Time 1142
Sample Type grab Start Depth 463 ⁴⁷⁶
QC Code normal End Depth 498
Sampling Equipment bladder pump Sample Matrix GW
QC Partners None Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"day 4" phase 1 recirc

fluoro: 42.39 RFU, dye is here!

Logged By/Date:

[Signature]
10/6/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-GW009

Sample Number 106MW2I-P1R-100617

Collection Date 10/6/17

Sampling Method low-flow

Collection Time 1412

Sample Type ^{TSK} ~~normal~~ grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners None

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"day 4" phase 1 recirc

Fluoro: 1.232 RFU

Logged By/Date:

L. Kuhl
10/6/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 4

Location Code KAFB-106MWI-I

RFA/COC Number 500433EDBPT-GW009

Sample Number 106MWI-P1R-100617

Collection Date 10/6/17

Sampling Method Low Flow

Collection Time 1055

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

Day 4 Sampling event.
1.631 RFUs @ 1040.

Logged By/Date:

J. Allen 10/6/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 4

Location Code KAFB-106064
Sample Number 106064-PIR-100617
Sampling Method Low Flow
Sample Type Grab
QC Code Normal
Sampling Equipment Bladder Pump
QC Partners None

RFA/COC Number 500433EDBPT-GW009
Collection Date 10/6/17
Collection Time 0925
Start Depth 488
End Depth 508
Sample Matrix GW
Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

DTW = 480.58 ft btoe, as measured @ 106063.
Day 4 sampling event. 41.63 RFUs @ 0901. No tint of color observed.

Logged By/Date:

Galler 10/6/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 4

Location Code KAFB-106MWI-S

RFA/COC Number 500433EDBPT-GW009

Sample Number 106MWI-S-P1R-100617

Collection Date 10/6/17

Sampling Method LCW Flow

Collection Time 1453

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners 106MWI-S-P1R-100617-FD

Sample Team α

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

Day 4 sampling event. DTW=476.31 ft bto c
0.03 RFU @ 1343

Logged By/Date:

[Signature] 10/6/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Day 7

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW009

Sample Number 106064-PIR-100917

Collection Date 10/9/17

Sampling Method Low Flow

Collection Time 1450

Sample Type Grab

Start Depth 488

QC Code Normal

End Depth 508

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

Water has green tint - from fluorescein dye.

5.229 RFUs @ 1419.

Logged By/Date:

[Signature] 10/9/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Day 7

Location Code KAFB-106MWI-I

RFA/COC Number 500433EDBPT-GW009

Sample Number 106MWI-P1R-100917

Collection Date 10/9/17

Sampling Method Low Flow

Collection Time 0955

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners 106MWI-P1R-100917-FD

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

no DTW measurement. Cannot get probe down casing.

1.605 RFUs @ 0935

Logged By/Date:

[Signature] 10/9/17

Reviewed By/Date: _____



Sample Collection Log Day 7

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW1-S
Sample Number 106MW1S-PIR-100917
Sampling Method Low Flow
Sample Type Grab
QC Code Normal
Sampling Equipment Bladder Pump
QC Partners N/A

RFA/COC Number 500433EDBPT-GW009
Collection Date 10/9/17
Collection Time 1218
Start Depth 463
End Depth 498
Sample Matrix GW
Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

Depth to Product = 476.01, DTW = 476.19 ft bto c
0.139 RFU @ 1136. Strong Fuel Odor.

Logged By/Date:

[Signature] 10/9/17

Reviewed By/Date: _____

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW009

Sample Number 106063-P1R-100917

Collection Date 10/9/17

Sampling Method low-flow

Collection Time 1052

Sample Type grab

Start Depth 508

QC Code *normal*

End Depth 523

Sampling Equipment bladder pump

Sample Matrix *GW*

QC Partners none

Sample Team *TK*

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"Day 7" Phase 1 recirc

fluoro: 0.879 RFUs

Logged By/Date:

E. Knut
10/9/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW2I RFA/COC Number 500433EDBPT-GW009
Sample Number 106MW2I-P1R-100917 Collection Date 10/9/17
Sampling Method low-flow Collection Time 1216
Sample Type grab Start Depth 513
QC Code normal End Depth 523
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"day 7" phase I recirc
fluoro: 17.48 RFU, dye is here!

Logged By/Date:

[Signature]
10/9/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

^{KAFB}
Location Code 106MW25 RFA/COC Number 500433EDBPT-BW009
Sample Number 106MW25-PIR-100917 Collection Date 10/9/17
Sampling Method low-flow Collection Time 1446
Sample Type grab Start Depth 463
QC Code normal End Depth 498
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions

"day 7" phase 1 recirc

Fluoro: 2.416 RFU

Logged By/Date:

L. Kuhl
10/9/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX1 RFA/COC Number 500433EDBPT-GW009
Sample Number 106EX1-P1R-100917 Collection Date 10/9/17
Sampling Method sample port Collection Time ^a 1554 1524
Sample Type grab Start Depth 487
QC Code normal End Depth 502
Sampling Equipment sample port/conveyance Sample Matrix GW
QC Partners none pipe Sample Team GW TK CL
TSK 1

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"day 7" phase 1 recirc

fluoro : 0.214 RFU

Logged By/Date:

10/9/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX2 RFA/COC Number 500433EDBPT-GW009
Sample Number 106EX2-P1R-100917 Collection Date 10/19/17
Sampling Method sample port Collection Time 1524 1554
Sample Type grab Start Depth 487
QC Code normal End Depth 502
Sampling Equipment sample port / conveyance Sample Matrix GW
QC Partners none piping Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"day 7" phase I recirc
Fluoro: 0.248 RFU

Logged By/Date:

E. K. M.
10/19/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX2 RFA/COC Number 500433EDBPT-GW010
Sample Number 106EX2-PIR-101217 Collection Date 10/12/17
Sampling Method Shp pump in well Collection Time 1531
Sample Type grab Start Depth 487
QC Code normal End Depth 502
Sampling Equipment Sample port in Sample Matrix GW
QC Partners none Conex Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"Day 10" phase 1 recirc

fluoro: 0.127 RFU

Logged By/Date:

I. Hunt 10/12/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106063 RFA/COC Number 500433EDBPT-6W010
Sample Number 106063-PIR-10/12/17 Collection Date 10/12/17
Sampling Method low flow Collection Time 0959
Sample Type grab Start Depth 508
QC Code normal End Depth 523
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"day 10", Phase I recirc
Fluoro: 0.716 RFU

Logged By/Date: E. Knud 10/12/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW2I RFA/COC Number 500433EDBPT-GW010
Sample Number 106MW2I-P1R-101217 Collection Date 10/12/17
Sampling Method low-flow Collection Time 1130
Sample Type grab Start Depth ^{TSK}463 513
QC Code normal End Depth ^{TSK}498 523
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"day 10", phase I recirc
fluoro: 3.596 RFU

Logged By/Date: 
10/12/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW25 RFA/COC Number 500433EDBPT-GW010
Sample Number 106MW25-PIR-101217 Collection Date 10/12/17
Sampling Method low-flow Collection Time 1412
Sample Type grab Start Depth 463
QC Code FD End Depth 498
Sampling Equipment bladder pump Sample Matrix GW
QC Partners 106MW25-PIR-101217 Sample Team TK
FD

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"day 10", phase 1 recirc

Fluoro: 0.019 RFU

Logged By/Date: TK 10/12/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX1 RFA/COC Number 500433EDBPT-6W010
Sample Number 106EX1-P1R-101217 Collection Date 10/12/17
Sampling Method 5HP pump in well Collection Time 1503
Sample Type grab Start Depth 487
QC Code normal End Depth 502
Sampling Equipment Sample port in cone Sample Matrix GW
QC Partners none Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"Day 10" phase I recirc

Fluoro: 0.335 RFU

Logged By/Date: L. Kunt 10/12/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106064 RFA/COC Number 500433EDBPT-GW010
Sample Number 106064-PYR-101217 Collection Date 10/12/17
Sampling Method Low Flow Collection Time 1348
Sample Type Grab Start Depth 488
QC Code Normal End Depth 508
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

DTW = 479.43 ft btoC
Slight green tint to water. 0.837 RFUs @ 1338

Logged By/Date:

G. Heller 10/12/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 10

Location Code KAFB-106MWI-S RFA/COC Number 500433EDBPT-GW010
Sample Number 106MWIS-P1R-101217 Collection Date 10/12/17
Sampling Method Low Flow Collection Time 1120
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

DTW=476.31 ft btoc, Depth to Product=476.10 ft btoc
7.920 RFL/s @ 1039. No observable green tint to water.

Logged By/Date:

Galler 10/12/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 10

Location Code KAFB-106MWI-I

RFA/COC Number 500433EDBPT-GW010

Sample Number 106MWI-I-P1R-101217

Collection Date 10/12/17

Sampling Method Low Flow

Collection Time 0915

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

DTW = 476.12 ft btoe, as measured after pump installation.

Cannot fit probe down well to obtain measurement.

1.166 RFUs @ 0.245

Bubbles in tubing and YSI.

Logged By/Date:

[Signature] 10/12/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 14

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW010

Sample Number 106064-PIR-10617

Collection Date 10/16/17

Sampling Method Low Flow

Collection Time 1423

Sample Type Grab

Start Depth 488

QC Code Normal

End Depth 4508

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team AL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

DTW=479.43 ft btoC - unable to measure water level
Slight fuel odor. No green tint to water. during sampling. This is
post-pump installation DTW.

Logged By/Date:

[Signature] 10/16/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 14

Location Code KAFB-106MW1-S
Sample Number 106MW1S-P1R-101617
Sampling Method Low Flow
Sample Type Grab
QC Code Normal
Sampling Equipment Bladder Pump
QC Partners N/A

RFA/COC Number 500433EDBPT-GW010
Collection Date 10/16/17
Collection Time 1213
Start Depth 463
End Depth 498
Sample Matrix GW
Sample Team AL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

Depth to Product = 476.29 ft btoc. DTW = 476.55 ft btoc
Green tint to water from fluorescein dye.
Strong fuel odor.

Logged By/Date:

[Signature] 10/16/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 14

Location Code KAFB-106MWI-I
Sample Number 106MWI-PIR-101617
Sampling Method Low Flow
Sample Type Grab
QC Code Normal
Sampling Equipment Bladder Pump
QC Partners N/A

RFA/COC Number 500433EDBPT-GW010
Collection Date 10/16/17
Collection Time 1018
Start Depth 513
End Depth 523
Sample Matrix GW
Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

DTW = 476.12 ft btoe as measured after pump installation.
Cannot fit probe down 3" well.

Logged By/Date:

[Signature] 10/16/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX2

RFA/COC Number 500433EDBPT-101617 ^{GW010}
_{TSK}

Sample Number 106EX2-PIR-101617

Collection Date 10/16/17

Sampling Method conveyance pipe

Collection Time 1548

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment Sample port in
conex

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"day 14" phase I recirc

Logged By/Date: L Kuhl 10/16/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW010

Sample Number 106063-P2R-101617

Collection Date 10/16/17

Sampling Method low-flow

Collection Time 1126

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions

"day 14" phase I recirc

Logged By/Date:

L. Kuhl
10/16/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-GW 010

Sample Number 106MW2I-TKR-101617

Collection Date 10/16/17

Sampling Method low-flow

Collection Time 1251

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"day 14" phase I recirc

Logged By/Date: T. Hart 10/16/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106NW25 RFA/COC Number 500433EDBPT-101617 ^{6W010}
Sample Number 106NW25-P1R-101617 Collection Date 10/16/17 ^{TSK}
Sampling Method low-flow Collection Time 1445
Sample Type grab Start Depth 463
QC Code normal End Depth 498
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions

"day 14" phase I recirc

Logged By/Date: ELM 10/16/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX1 RFA/COC Number 500433EDBPT-GW010
Sample Number 106EX1-PIR-101617 Collection Date 10/16/17
Sampling Method conveyance pipe Collection Time 1514
Sample Type grab Start Depth 487
QC Code ^{TSK} ~~None~~ Field Duplicate End Depth 502
Sampling Equipment Sample port in conex Sample Matrix GW
QC Partners ^{TSK} ~~None~~ 106EX1-PIR-101617-FD Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"day 14" phase 2 recirc

Logged By/Date: L. Kunt 10/16/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Day 18

Location Code KAFB-106MWI-I

RFA/COC Number 500433EDBPT-GW012

Sample Number 106MWI-PIR-102017

Collection Date 10/20/17

Sampling Method Low Flow

Collection Time 1000

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

DTW = 476.12 ft bblc, as measured prior to pump installation.
Cannot measure DTW at 3" well b/c probe won't fit downwell w/ pump.

Logged By/Date:

[Signature] 10/20/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 18

Location Code KAFB-106MWI-S
Sample Number 106MWI-S-P1R-102017
Sampling Method Low Flow
Sample Type Grab
QC Code Normal
Sampling Equipment Bladder Pump
QC Partners N/A

RFA/COC Number 500433EDBPT-GW001
Collection Date 10/20/17
Collection Time 1145
Start Depth 463
End Depth 498
Sample Matrix GW
Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

DW = 475.92
476.00 ft btlc. Depth to Product = 475.90 ft btlc
Slight green tint to water.

Logged By/Date:

CL 10/20/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation, Day 18

Location Code KAFB-106064
Sample Number 106064-P1R-102017
Sampling Method Low Flow
Sample Type Grab
QC Code Normal
Sampling Equipment Bladder Pump
QC Partners N/A

RFA/COC Number 500433EDBPT-GW017
Collection Date 10/20/17
Collection Time 1423
Start Depth 488
End Depth 508
Sample Matrix GW
Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions: Strong fuel odor. DTW = 4.79. 50 ft btoe.

Logged By/Date:

[Signature] 10/20/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW 019

Sample Number 106EX1-PIR-102017

Collection Date 10/20/17

Sampling Method conveyance pipe

Collection Time 1507

Sample Type Grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment sample port

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"day 18" phase 1 recirculation

Logged By/Date: [Signature] 10/20/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW25

RFA/COC Number 500433EDBPT-GW012

Sample Number 106MW25-PIR-102017

Collection Date 10/20/17

Sampling Method low-flow

Collection Time 1431

Sample Type grab

Start Depth 463

QC Code normal

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"day 18" phase 1 recirculation

Logged By/Date: L Kunal 10/20/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-GW012

Sample Number 106MW2I-PIR-102017

Collection Date 10/20/17

Sampling Method low-flow

Collection Time 1155

Sample Type grab

Start Depth 513

QC Code duplicate

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners 106MW2I-PIR-102017-FD

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"Day 18" of phase I recirculation

Logged By/Date: L Kurfel, 10/20/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX2

RFA/COC Number 500433EDBPT-GW012

Sample Number 106EX2-P1R-102017

Collection Date 10/20/17

Sampling Method conveyance pipe

Collection Time 1542

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment sample port

Sample Matrix GW

QC Partners none

Sample Team TK, CC

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"day 18" of phase I recirculation

Logged By/Date:

L. L. L.
10/20/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW012

Sample Number 106063-P1R-102017

Collection Date 10/20/17

Sampling Method low-flow

Collection Time 1028

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions

"Day 18" of phase 1 recirculation

Logged By/Date: E. Kul 10/20/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW011

Sample Number 106EX1-PIR-102417

Collection Date 10/24/17

Sampling Method convergence piping

Collection Time 1408

Sample Type grab

Start Depth 487

QC Code field duplicate (FD)

End Depth 502

Sampling Equipment Sample port in conex

Sample Matrix GW

QC Partners 106EX1-PIR-102417-FD

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials <u>Glass Jar</u>	None	USGS

Comments/Descriptions:

"Day 22" phase I recirculation

Logged By/Date:

L. K. M. 10/24/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW15

RFA/COC Number 500433EDBPT-GW011

Sample Number 106MW15-PIR-102417

Collection Date 10/24/17

Sampling Method low-flow

Collection Time 1320

Sample Type grab

Start Depth 463

QC Code normal

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	<u>Glass Jar</u> VOA Vials	None	USGS

Comments/Descriptions:

"day 22" phase 1 recirc

Logged By/Date: E. Kn. 10/24/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-6W011

Sample Number 106063-P1R-102417

Collection Date 10/24/17

Sampling Method low-flow

Collection Time 0930

Sample Type grabs

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK, CC

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar VOA Vials	None	USGS

Comments/Descriptions:

"Day 22" phase 1 recirc

Logged By/Date:

[Signature]
10/24/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW011

Sample Number 106064-PIR-102417

Collection Date 10/24/17

Sampling Method Low-flow

Collection Time 11 23

Sample Type Grab

Start Depth 488

QC Code normal

End Depth 508

Sampling Equipment Sladder pump

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	<u>Glass Jar</u> VOA Vials	None	USGS

Comments/Descriptions:

"Day 22" phase I recirc

Logged By/Date:

Y. Kunt
10/24/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KHFB-106EX2 RFA/COC Number 500433EDBPT-6W012
 Sample Number 106EX2-PIR-102517 Collection Date 10/25/17
 Sampling Method conveyance piping Collection Time 1415
 Sample Type grab Start Depth 487
 QC Code normal End Depth 502
 Sampling Equipment Sample port in conex Sample Matrix GW
 QC Partners none Sample Team TK, CC

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials Glass Jar	None	USGS

Comments/Descriptions.

"Day 23" phase 1 recirculation

Logged By/Date:

Y Krip 10/25/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation Day 23

Location Code KAFB-106MWI-I

RFA/COC Number 500433EDBPT-GW012

Sample Number 106MWI-I-P1P-102517

Collection Date 10/25/17

Sampling Method Low Flow

Collection Time 0948

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team al

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	<u>Glass Jar</u> VOA Vials	None	USGS

Comments/Descriptions

"Day 23" recirc for phase 1. Many small bubbles in
YSI flow cell and sample containers

Logged By/Date: J. Allen 10/25/17

Reviewed By/Date: E. Kent 10/25/17



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW2 I

RFA/COC Number 500433EDB PT-GW012

Sample Number 106MW2I-P1R-102517

Collection Date 10/25/17

Sampling Method low-flow

Collection Time 1119

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK, CC

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials Glass Jar	None	USGS

Comments/Descriptions.

"day 23" phase I recirculation

Logged By/Date: I/km 10/25/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW25

RFA/COC Number 500433EDBPT-GW012

Sample Number 106MW25-P1R-102517

Collection Date 10/25/17

Sampling Method low-flow

Collection Time 1324

Sample Type Grab

Start Depth 463

QC Code normal

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials <u>Glass Jar</u>	None	USGS

Comments/Descriptions:

"Day 23" phase 1 recirculation phase

Logged By/Date: L. Munn 10/25/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX2

RFA/COC Number 500433EDBPT-GW 013

Sample Number 106EX2-P1R-110117

Collection Date 11/01/17

Sampling Method conveyance piping

Collection Time 1521

Sample Type grab

Start Depth 487

QC Code FD

End Depth 502

Sampling Equipment sample port

Sample Matrix GW

QC Partners 106EX2-P1R-110117-FD

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

"Day 30" recirculation part of phase I

FD collected, 106EX2-P1R-110117-FD

Logged By/Date: LK 11/01/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW013

Sample Number 106063-PIR-110117

Collection Date 11/01/17

Sampling Method low-flow

Collection Time 0956

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions

"Day 30" of recirculation for Phase I

Logged By/Date:

L. Knaus
11/1/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-6W013

Sample Number 106MW2I-P1R-110117

Collection Date 11/01/17

Sampling Method low-flow

Collection Time 1128

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions

"Day 30" recirculation for phase I

Logged By/Date: [Signature]
11/01/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW2S

RFA/COC Number 500433EDBPT-GW013

Sample Number 106MW2S-P1R-110117

Collection Date 11/01/17

Sampling Method low-flow

Collection Time 1417

Sample Type grab

Start Depth 463

QC Code normal

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions

"Day 30" recirculation part of phase I

Logged By/Date: T. Kroll 11/01/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW013

Sample Number 106EX1-P1R-110117

Collection Date 11/01/17

Sampling Method Conveyance pipe

Collection Time 1447

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment Sample port

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions.

"Day 30" phase 1 recirculation part

Logged By/Date: Y. Kunt 11/01/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW01.3

Sample Number 106064-P1R-110117

Collection Date 11/1/17

Sampling Method Low Flow

Collection Time 1342

Sample Type Grab

Start Depth 488

QC Code Normal

End Depth 508

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team OL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

DTW = 479.

Water is yellow from fluorescein dye (initially)

Logged By/Date:  11/1/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation

Location Code KAFB-106MW1-S

RFA/COC Number 500433EDBPT-GW013

Sample Number 106MW1S-PIR-110117

Collection Date 11/1/17

Sampling Method Low Flow

Collection Time 1128

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H ₂ O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

DTW=775.65 ft b₁₀₀; Depth to product = None ft b₁₀₀
Strong fuel odor.

Logged By/Date:

[Signature] 11/1/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Recirculation Day 30

Location Code KAFB-106MWI-I

RFA/COC Number 500433EDBPT-GW013

Sample Number 106MWI-PIR-110117

Collection Date 11/1/17

Sampling Method Low Flow

Collection Time 0932

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Fluorescein	NA	1	20 mL	VOA Vial	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	Glass Jar	None	USGS

Comments/Descriptions:

Cannot measure DTW at 3" well - probe will not fit
downhole w/ pump.

Logged By/Date: [Signature] 11/1/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 2

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-6W014

Sample Number 106MW2I-PIR-111517

Collection Date 11/15/17

Sampling Method low-flow

Collection Time 1438

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS

Comments/Descriptions:

106MW2I has tint of green fluorescent color to it.

Logged By/Date:

L. [Signature] 11/15/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 2

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW014

Sample Number 106063-PIP-111517

Collection Date 11/15/17

Sampling Method low-flow

Collection Time 0951

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK, CC

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B Anions (Chloride, Sulfate, Bromide) by EPA 300	NA	1	250 mL	Poly Bottle	None	Empirical
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS

Comments/Descriptions

Logged By/Date:

[Signature] 11/15/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 2

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW014

Sample Number 106064-PIP-111517

Collection Date 11/15/17

Sampling Method low-flow

Collection Time 1153

Sample Type grab

Start Depth 488

QC Code normal

End Depth 508

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS

Comments/Descriptions:

water has slight fluorescent green tint to it.

Logged By/Date: E. Kuntz 11/15/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 2

Location Code KAFB-10bMW1-S

RFA/COC Number 500433EDBPT-GW014

Sample Number 10bMW1S-P1P-111517

Collection Date 11/15/17

Sampling Method Low Flow

Collection Time 1136

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS

Comments/Descriptions:

DTW=475.85-ft btoC. No measurable product
Water is a dirty yellow tint and smells like fuel and sewage.

Logged By/Date:

Geller 11/15/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 2

Location Code KAFB-106MWI-I
Sample Number 106MWI-PIR-111517
Sampling Method Low Flow
Sample Type Grab
QC Code Normal
Sampling Equipment Bladder Pump
QC Partners None

RFA/COC Number 500433EDBPT-GW014
Collection Date 11/15/17
Collection Time 0919
Start Depth 513
End Depth 523
Sample Matrix GW
Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS

Comments/Descriptions:

Cannot measure DTW - probe won't fit down 3" wells.

Logged By/Date:

CL 11/15/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 2

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW015

Sample Number 106EX1-PIP-111617

Collection Date 11/16/17

Sampling Method Low Flow

Collection Time 1318

Sample Type Grab

Start Depth 487

QC Code Normal

End Depth 487502

Sampling Equipment Gruntfos pump, port

Sample Matrix 502 GW

QC Partners N/A

Sample Team CLTK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS

Comments/Descriptions:

DTW pre pump on = 476.11 ft bgs. Water is fairly clear and aerated.

Logged By/Date:

[Signature] 11/16/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 2

Location Code KAFB-1061N1
Sample Number 1061N1-P1P-111617
Sampling Method Low Flow
Sample Type Grab
QC Code Normal
Sampling Equipment Grundfos Pump
QC Partners 1061N1-P1P-111617-FD

RFA/COC Number 500433EDBPT-GW015
Collection Date 11/16/17
Collection Time 1105
Start Depth 477
End Depth 497
Sample Matrix GW
Sample Team CLTK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS

Comments/Descriptions:

DTW pre purge = 476.15-ft bgs. Water is very dark brown/gray initially. Fuel and sewage odor noted.

Logged By/Date:

Galler 11/16/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 2

Location Code KAFB-106MW2-S

RFA/COC Number 500433EDBPT-GW0015

Sample Number 106MW2S-P1P-111617

Collection Date 11/16/17

Sampling Method Low Flow

Collection Time 0925

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team CLTR

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS

Comments/Descriptions:

DTW cannot be measured due to pump tubing obstruction.

Logged By/Date:

Geller 11/16/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 2

Location Code KAFB-106EX2 RFA/COC Number 500433EDBPT-GW015
Sample Number 106EX2-P1P-11/16/17 Collection Date 11/16/17
Sampling Method Low Flow / Sample Port Collection Time 1357
Sample Type No Grab Start Depth 487
QC Code Normal End Depth 502
Sampling Equipment Gruntfos Pump, port Sample Matrix GW
QC Partners N/A Sample Team AL, TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS

Comments/Descriptions:

DTW pre pump on = 476.09 ft bgs. Fuel odor
water is aerated

Logged By/Date:

Miller 11/16/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 4

Location Code KAFB-106MW2-S

RFA/COC Number 500433EDBPT-GW016

Sample Number 106MW2S- P1P-

Collection Date 11/20/17

Sampling Method Low Flow

Collection Time 1310

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team CLIK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Cannot measure DTW at well due to tubing obstruction

Logged By/Date:

Galler 11/20/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 4

Location Code KAFB-106MW1-S

RFA/COC Number 500433EDBPT-GW016

Sample Number 106MW1S-P1P-

Collection Date 11/28/17

Sampling Method Low Flow

Collection Time 1130

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team CLTR

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

DTW=475.46 ft btoe, no measurable product.

Purge water smells like fuel and failing.

Logged By/Date: Q. Jaller 11/28/17

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 4

Location Code KAFB-106 MW1-I

RFA/COC Number 500433EDBPT-GW016

Sample Number 106MW1-I-P1P-112817

Collection Date 11/28/17

Sampling Method Low Flow

Collection Time 0940

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CLTK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Cannot measure DTW in 3" wells when pump is installed.

Logged By/Date:

[Signature] 11/28/17

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 4

Location Code KAFB-106063

RFA/COC Number 500433ESTCP-GW016

Sample Number 106063-P1P-112817

Collection Date 11/28/17

Sampling Method low-flow

Collection Time 1012

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
EDB GSIA ^{TSK}	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions. not done on intermediate wells

Logged By/Date: TK 11/28/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 4

Location Code KAFB-106064 RFA/COC Number 500433EDBPT-GW016
Sample Number 106064-PIP-112817 Collection Date 11/28/17
Sampling Method low-flow Collection Time 1212
Sample Type grab Start Depth 488
QC Code normal End Depth 508
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions.

Logged By/Date:

[Signature]
11/28/17 H2-89

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 4

Location Code KAFB-106EX1 RFA/COC Number 500433EDBPT-GW017
 Sample Number 106EX1-PIP-11/29/17 Collection Date 11/29/17
 Sampling Method conveyance pipe Collection Time 1245
 Sample Type grab Start Depth 487
 QC Code normal End Depth 502
 Sampling Equipment sample port, grinder pump Sample Matrix GW
 QC Partners none Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions.

Logged By/Date: [Signature] 11/29/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 4

Location Code KAFB-106MW2-I RFA/COC Number 500433-EDBPT-GW 017
 Sample Number 106MW2I-P1P-112917 Collection Date 11/29/17
 Sampling Method low-flow Collection Time 0931
 Sample Type grab Start Depth 513
 QC Code ^{TSK}normal FD End Depth 523
 Sampling Equipment bladder pump Sample Matrix GW
 QC Partners KAFB-^{TSK}106MW2-I Sample Team TK, CC
106MW2I-P1P-112917-FD
 Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
* QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
* EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions: * FD collected for all but microbial

* Not collected at intermediate well

Logged By/Date: TK

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 4

Location Code KAFB-106IN1 RFA/COC Number 500433EDBPT-GW 017
Sample Number 106IN1-P1P-11/29/17 Collection Date 11/29/17
Sampling Method sample port/conveyance Collection Time 1057
Sample Type grab Piping Start Depth 477
QC Code Normal End Depth 497
Sampling Equipment sample port/6mud for Sample Matrix GW
QC Partners none 2HP Sample Team TK, CC

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Logged By/Date:

[Signature]

Reviewed By/Date:

11/29/17 TH2-92



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase I, Passive, Week 4

Location Code KAFB-106EX2 RFA/COC Number 500433EDBPT-62017
 Sample Number 106EX2-P1P-11/29/17 Collection Date 11/29/17
 Sampling Method conveyance pipe / sample point Collection Time 1327
 Sample Type grab Start Depth 487
 QC Code normal End Depth 502
 Sampling Equipment sample point, ground for pump Sample Matrix GW
 QC Partners none Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	NA	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 300						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
Fluorescein	NA	1	20 mL	VOA Vials	None	Crawford
Hydrogen/H2O Isotope Ratio	NA	1	60 mL	VOA Vials	None	USGS
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Logged By/Date: L. K. 11/29/17 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106IN1 RFA/COC Number 500433 EDB PT- GW018
Sample Number 106IN1-P2R-010218-02 Collection Date 1/2/18
Sampling Method Sample Port Collection Time 1427
Sample Type Grab Start Depth —
QC Code Normal End Depth —
Sampling Equipment Tubing Sample Matrix GW
QC Partners None Sample Team CL, JK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
VFAS by EPA 300m	NA	2	40mL	VOA Vial	None	CBI

Comments/Descriptions:

Second Sample collected during Chem pump on cycle. Sample collected after 225 gallons of diluted mixture was added to the tank (480-485 gallons total in tank).

Logged By/Date:

[Signature] 1/2/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106IN1 RFA/COC Number 500433EDBPT-GW018
Sample Number 106IN1-P2R-010218-01 Collection Date 1/2/18
Sampling Method Sample Port Collection Time 1053
Sample Type Grab Start Depth —
QC Code Normal End Depth —
Sampling Equipment Tubing Sample Matrix GW
QC Partners None Sample Team CL, TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America

Comments/Descriptions:

Sampled during Chem pump "on cycle" – pumping @
0.83 sec/pulse. Chem pump has been running/injecting since 12/29 ~ 8:00am
Has injected approx. 175 gallons of amendment.

Logged By/Date:

Galler 1/2/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106MW2I RFA/COC Number 500433EDBPT-6W019
Sample Number 106MW2I-P2R-010918 Collection Date 1/9/18
Sampling Method low-flow Collection Time 1355
Sample Type grab Start Depth 513
QC Code normal End Depth 523
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

Logged By/Date:

[Signature]
1/9/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106NW25

RFA/COC Number 500433EDBPT-GW 019

Sample Number 106NW25-P2R-010918

Collection Date 1/9/18

Sampling Method low-flow

Collection Time 1046

Sample Type grab

Start Depth 463

QC Code normal

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

Water has a slight sewage smell to it.

Logged By/Date: E. L. [Signature] 1/9/18

Reviewed By/Date: _____



Sample Collection Log * Week 2 event

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106MW1-I

RFA/COC Number 500433EDBPT-GW019

Sample Number 106MW1-I-P2R-010918

Collection Date 1/9/18

Sampling Method Low Flow

Collection Time 1117

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

WL cannot be measured at this well – cannot fit down 3" casing w/ tubing. Water is clear w/ no odor.

Logged By/Date:

[Signature] 1/9/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-100MW1-S RFA/COC Number 500433EDBPT-GW019
Sample Number 100MW1S-P2R-010918 Collection Date 1/9/18
Sampling Method Low Flow Collection Time 1310 1410 a
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions: DTW = 474.55 ft btoe. Nonmeasurable LNAPL.
Water has slight yellow tint and smells like fuel and fouling.

Logged By/Date:

[Signature] 1/9/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106EX1

RFA/COC Number 500433 EDBPT - GWO 20

Sample Number 106EX1-P2R-011018

Collection Date 1/10/18

Sampling Method Sample port

Collection Time 1031

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment conveyance piping/
port

Sample Matrix GW

QC Partners none

Sample Team TK CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

Logged By/Date:

T. Kunt
1/10/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106EX2

RFA/COC Number 500433EDBPT-GW020

Sample Number 106EX2-P2R-011018

Collection Date 1/10/18

Sampling Method conveyance piping

Collection Time 1107

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping

Sample Matrix GW

QC Partners 106EX2-P2R-011018-FD

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

field duplicate collected

Logged By/Date:

[Signature]
1/10/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-6W020

Sample Number 106063-P2R-011018

Collection Date 1/10/18

Sampling Method low flow

Collection Time 1443

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B Anions (Chloride, Sulfate, Bromide) by EPA 9056	NA	1	250 mL	Poly Bottle	None	Empirical
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions

Logged By/Date:

TK
1/10/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KA FB-106 IN1 RFA/COC Number 500433 ED BPT-GW020
Sample Number 106 IN1-P2R-011018-03 Collection Date 1/10/18
Sampling Method Sample Port Collection Time 0955
Sample Type Grab Start Depth NA
QC Code Normal End Depth NA
Sampling Equipment Tubing Sample Matrix GW
QC Partners None Sample Team CLIK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
VFAs by EPA 300m	NA	2	40 mL	VOA Vials	None	CBI

Comments/Descriptions:

Sample collected from IN1 port w/ pump off -
sample of combined extraction well effluent w/ amendments.
Third sample collected from IN1 during Phase 2 Recirculation

Logged By/Date:

[Signature] 1/10/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW020

Sample Number 106064-P2R-011018

Collection Date 1/10/18

Sampling Method Low Flow

Collection Time 1340

Sample Type Grab

Start Depth 488

QC Code Normal

End Depth 508

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions: Week 2 event. DTW = 477.63 ft btlc
Water is clear w/ fuel and fouling odor.

Logged By/Date:

[Signature] 1/10/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106MWI-I

RFA/COC Number 500433EDBPT-GW021

Sample Number 106MWI-I-P2R-011618

Collection Date 1/16/18

Sampling Method Low Flow

Collection Time 1035

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners N/A

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions

Week 3 event. DTW cannot be measured in 3" wells.

Logged By/Date:

Galler 1/16/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW021

Sample Number 106EX1-P2R-011618

Collection Date 1/16/18

Sampling Method conveyance piping

Collection Time 1155

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping/port

Sample Matrix GW

QC Partners 106EX1-P2R-011618-FD

Sample Team TKCL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

FD collected

Logged By/Date:

[Signature]
1/16/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106MW15

RFA/COC Number 500433EDBPT-GW021

Sample Number 106MW15-P2R-011618

Collection Date 1/16/18

Sampling Method low-flow

Collection Time 0950

Sample Type grab

Start Depth 463

QC Code normal

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

Logged By/Date:

E. Kunt
1/16/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code 106EX2-B2R-011618

RFA/COC Number 500433EDBPT-GW021

Sample Number KAFB-106EX2

Collection Date 1/16/18

Sampling Method conveyance piping

Collection Time 1255

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping/port

Sample Matrix GW

QC Partners None

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions

Logged By/Date: L. K. [Signature]
1/16/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-GW022

Sample Number 106MW2I-P2R-011818

Collection Date 1/18/18

Sampling Method low flow

Collection Time 1400

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions

Logged By/Date:

[Signature]
1/18/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW022

Sample Number 106063-P2R-011818

Collection Date 1/18/18

Sampling Method low flow

Collection Time 1151

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

Logged By/Date:

[Signature]
1/18/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106MWI-S

RFA/COC Number 500433EDBPT-GW022

Sample Number 106MWIS-P2R-01

Collection Date 1/18/18

Sampling Method Low Flow

Collection Time 1405

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team AL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

Week 3 Event. DTW = 474.51 ft b.t.c. No measurable LNAPL.
Water has strong fuel and fouling (sewage) odor.

Logged By/Date:

Q. J. J. 1/18/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106064 RFA/COC Number 500433EDBPT-GW022
Sample Number 106064-P2R-01 Collection Date 1/18/18
Sampling Method Low Flow Collection Time 1020
Sample Type Grab Start Depth 50-488
QC Code Normal End Depth 508
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

Week 3 Event. DTW = 478.08 ft bwc
Water smells like fuel and fouling (sewage)

Logged By/Date:

[Signature]

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-GW023

Sample Number 106MW2I-P2R-012418

Collection Date 1/24/18

Sampling Method low flow

Collection Time 0942

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
TSR EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions.

Note, no CSIA sample on intermediate wells.

Logged By/Date: L Knud 1/24/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106IN1 RFA/COC Number 500433EDBPT-GW023
Sample Number 106IN1-P2P-012418-04 Collection Date 1/24/18
Sampling Method conveyance piping Collection Time 1127
Sample Type grab Start Depth NA
QC Code normal End Depth NA
Sampling Equipment port, piping Sample Matrix GW
QC Partners none Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Phosphate	Yes	1	250mL	poly Bottle	None	Empirical
VFA	No	2	40 mL	VOA	None	Aptim

Comments/Descriptions:

Injection well sample port in Conex,
pump is off, this is an influent sample
with comingled EX well water

Logged By/Date: L. Krum
1/24/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106MW2S

RFA/COC Number 500433EDBPT-GW023

Sample Number 106MW2S-P2R-012418

Collection Date 1/24/18

Sampling Method low flow

Collection Time 1347

Sample Type grab

Start Depth 463

QC Code normal

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions.

Logged By/Date: TK
1/24/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106MW1-S

RFA/COC Number 500433EDBPT-GW023

Sample Number 106MW1S-P2P-012418

Collection Date 1/24/18

Sampling Method Low Flow

Collection Time 1320

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team ALT

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions

Week 4 event. DTW = 474.75 ft btec. No measurable LNAPL.

Water smells foul (sewage). Black string-like objects floating in discharge water.

Logged By/Date:

G. Allen 1/24/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106MW1-I

RFA/COC Number 500433EDBPT-GW023

Sample Number 106MW1I-P2R-012418

Collection Date 1/24/18

Sampling Method Low Flow

Collection Time 1055

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners 106MW1I-P2R-012418-FD

Sample Team CLTR

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Week 4 event. Cannot measure DTW in 3" wells.

Did not collect FD for QuantArray analysis. No CSIA @ Intermediate Wells.

Logged By/Date:

[Signature] 1/24/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW024

Sample Number 106EX1-P2R-012518

Collection Date 1/25/18

Sampling Method Conveyance piping

Collection Time 1307

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping, sample port

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Logged By/Date:

L. K. K. K.
1/25/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW029

Sample Number 106063-P2R-012518

Collection Date 1/25/18

Sampling Method low flow

Collection Time 1142

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Note, no CSIA sample collected on intermediate wells

Logged By/Date:

L Knud 1/25/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106EX2

RFA/COC Number 500433EDBPT-6W024

Sample Number 106EX2-P2R-012518

Collection Date 1/25/18

Sampling Method Conveyance piping

Collection Time 1347

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping, sample port

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions

Logged By/Date:

L. Kraut
1/25/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Recirculation

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW024

Sample Number 106064-P2R-0125B

Collection Date 1/25/18

Sampling Method Low Flow

Collection Time 0935

Sample Type Grab

Start Depth 488

QC Code Normal

End Depth 508

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team α

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Week 4 event. DTW = 477.90 ft btoe.

Logged By/Date:

[Signature] 1/25/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-6W025

Sample Number 106063-P2P-030618

Collection Date 3/6/18

Sampling Method low flow

Collection Time 1445

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 1 Event.

Logged By/Date:

[Signature]
3/6/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106MW2I

RFA/COC Number 500433 EDBPT-GW 025

Sample Number 106MW2I-P2P-030618

Collection Date 3/6/18

Sampling Method low flow

Collection Time 1015

Sample Type grab

Start Depth 513

QC Code FD

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners 106MW2I-P2P-030618-FD

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions: Month 1 Event. during passive of phase 2

FD collected too, 106MW2I-P2P-030618-FD

Logged By/Date: Zhu

3/6/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106MW1-S

RFA/COC Number 500433EDBPT-GW025

Sample Number 106MW1S-P2P-030618

Collection Date 3/6/18

Sampling Method Low Flow

Collection Time 1305

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL, TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 1 Event.

DTW= 474.48 ft btoe. No measurable product. Fuel odor.

Logged By/Date:

Qdall 3/6/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106MWI-I

RFA/COC Number 500433 EDBPT-GW025

Sample Number 106MWI-I-P2P-030618

Collection Date 3/6/18

Sampling Method Low Flow

Collection Time 1035

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CLTK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions: Month 1 Event.

Cannot measure PTW in 3" wells due to tubing bundle obstruction.
Slight fuel odor.

Logged By/Date:

[Signature] 3/6/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106EX1

RFA/COC Number 500433EDPPT-GW026

Sample Number 106EX1-P2P-030718

Collection Date 3/7/18

Sampling Method conveyance piping

Collection Time 1443

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping/sample

Sample Matrix GW

QC Partners none port

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 1 Event. passive phase 2

Logged By/Date:

L Paul
3/7/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106EX2

RFA/COC Number 500433EDBPT-GW026

Sample Number 106EX2-P2P-030718

Collection Date 3/7/18

Sampling Method conveyance piping

Collection Time 1517

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping/sample port

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 1 Event. passive for phase 2

Logged By/Date: Zkrum

3/7/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106MW25 RFA/COC Number 500433EDBPT-GW026
Sample Number 106MW25-P2P-030718 Collection Date 3/7/18
Sampling Method low flow Collection Time 0942
Sample Type grab Start Depth 463
QC Code normal End Depth 498
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions: Month 1 Event passive for phase 2

Logged By/Date:

[Signature]
3/7/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106064

Sample Number 106064-P2P-030718

Sampling Method Low Flow

Sample Type Grab

QC Code Normal

Sampling Equipment Bladder Pump

QC Partners None

RFA/COC Number 500433EDBPT-GW026

Collection Date 3/7/18

Collection Time 0940

Start Depth 488

End Depth 508

Sample Matrix GW

Sample Team ALTK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 1 Event.

DTW = 477.82 ft bblc (3A stick-up).

Logged By/Date:

[Signature] 3/7/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106IN1

RFA/COC Number 500433EDBPT-GW026

Sample Number 106IN1-P2P-030718

Collection Date 3/7/18

Sampling Method Low Flow

Collection Time 1350

Sample Type Grab

Start Depth 477

QC Code Normal

End Depth 497

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL, TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 1 Event.

Transducer reading DTW = 474.80 ft (pre-purge.)
Water smells foul. First water is grey w/ sewage odor.

Logged By/Date:

[Signature] 3/7/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW027

Sample Number 106064-P2P-041018

Collection Date 4/10/18

Sampling Method Low Flow

Collection Time 0915

Sample Type Grab

Start Depth 408

QC Code Normal

End Depth 503

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team AL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 2 Event.

DTW=477.70 ft btoe. Slight fuel odor. Water is clear.

Logged By/Date:

[Signature] 4/10/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106MW1-I

RFA/COC Number 50433EDBPT-GW027

Sample Number 106MW1I-P2P-

Collection Date 4/10/18

Sampling Method Low Flow

Collection Time 1408

Sample Type Grab

Start Depth 513

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions: Month 2 Event.

Cannot measure DTW in 3" wells. Water is clear. Very slight fuel odor.

Logged By/Date:

Galler 4/10/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106NW25

RFA/COC Number 500433EDBPT-GW027

Sample Number 106NW25-P2P-041018

Collection Date 4/10/18

Sampling Method low flow

Collection Time 1307

Sample Type grab

Start Depth 463

QC Code FD

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners 106NW25-P2P-041018-FD

Sample Team TK CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 2 Event.

FD collected here for all parameters

Logged By/Date:

L. Krum
4/10/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW027

Sample Number 106063-P2P-041018

Collection Date 4/10/18

Sampling Method low flow

Collection Time 1042

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 2 Event.

Phase 2 passive, 2nd event

Logged By/Date:

[Signature]

4/10/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106MW1-S

RFA/COC Number 500433EDBPT-GW028

Sample Number 106MW1S-P2P-041118

Collection Date 4/11/18

Sampling Method Low Flow

Collection Time 0925

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CU

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 2 Event.

DNW = 474.00-ft btx. Water has fuel odor. Water is cloudy at start of purge - cleared @ 0840.

Logged By/Date:

[Signature] 4/11/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW028

Sample Number 106EX1-P2P-041118

Collection Date 4/11/18

Sampling Method conveyance piping

Collection Time 1453

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping/sample

Sample Matrix GW

QC Partners none port

Sample Team TK, CC

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 2 Event.

phase 2, passive Event #2

Logged By/Date:

Lund

4/11/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-GW028

Sample Number 106MW2I-P2P-041118

Collection Date 4/11/18

Sampling Method low flow

Collection Time 1022

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 2 Event.

phase 2 passive event #2

Logged By/Date:

L. Paul
4/11/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106 IN 1 RFA/COC Number 500433EDBPT-6W028
Sample Number 106 IN 1-P2P-041118 Collection Date 4/10/18
Sampling Method purge / low flow Collection Time 1356
Sample Type grab Start Depth 477
QC Code normal End Depth 497
Sampling Equipment Groundwater Pump / tubing at surface Sample Matrix GW
QC Partners none Sample Team TU, CC

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 2 Event.

phase 2 passive Event #2

Logged By/Date:

[Signature]
4/10/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 2, Passive

Location Code KAFB-106EX2

RFA/COC Number 500433EDBPT-GW028

Sample Number 106EX2-P2P-041118

Collection Date 4/11/18

Sampling Method Conveyance piping

Collection Time 1535

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping/sample

Sample Matrix GW

QC Partners none port

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Nitrate by EPA 353.2	NA	1	250 mL	Poly Bottle	H2SO4	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 2 Event.

phase 2, passive Event #2

Logged By/Date:

TK
4/11/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106MW1-S RFA/COC Number 500433EDPBT-GW029
Sample Number 106MW1S-P2P-050818 Collection Date 5/8/18
Sampling Method Low Flow Collection Time 1432
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CA

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions. Month 3 Event.

DTW=473.96ft bto c. No measurable product. Water has fuel odor.

Logged By/Date:

[Signature] 5/8/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106MW1-I RFA/COC Number 500433EDBPT-GW029
Sample Number 106MW1I-P2P-050818 Collection Date 5/8/18
Sampling Method Low Flow Collection Time 1020
Sample Type Grab Start Depth 513
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team cl

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions. Month 3 Event.

Cannot measure DTW @ 3" wells. DTW @ 106MW1-S = 473.96 ft btoe.
Water has fuel odor.

Logged By/Date:

J. J. J. 5/8/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106MW2I RFA/COC Number 500433EDBPT-GW029
Sample Number 106MW2I-P2P-050818 Collection Date 5/8/18
Sampling Method low flow Collection Time 1402
Sample Type grab Start Depth 513
QC Code normal End Depth 523
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions. Month 3 Event.

Logged By/Date: [Signature]

5/8/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW029

Sample Number 106063-P2P-050818

Collection Date 5/8/18

Sampling Method low flow

Collection Time 1102

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions. Month 3 Event.

Water has slightly foul odor.

Logged By/Date:

L Knul

5/8/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW030

Sample Number 106EX1-P2P-050918

Collection Date 5/9/18

Sampling Method conveyance pipe

Collection Time 1438

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping, port

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions Month 3 Event.

Logged By/Date: [Signature] 5/9/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106MW25 RFA/COC Number 500433EDBPT-CW030
Sample Number 106MW25-P2P-050918 Collection Date 5/9/18
Sampling Method low flow Collection Time 0918
Sample Type grab Start Depth 463
QC Code normal End Depth 498
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions Month 3 Event.

Logged By/Date:

TK 5/9/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106IN1

RFA/COC Number 500433EDBPT-GW030

Sample Number 106IN1-R2P-050918

Collection Date 5/9/18

Sampling Method purge & 2HP pump

Collection Time 1237

Sample Type grab

Start Depth 477

QC Code normal

End Depth 497

Sampling Equipment dedicated pump

Sample Matrix GW

QC Partners none conveyance

Sample Team TK, CL

Containers:

ripping

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions Month 3 Event.

Logged By/Date:

ZML 5/9/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106EX2 RFA/COC Number 500433EDBPT-6W030
Sample Number 106EX2-P2R-050918 Collection Date 5/9/18
Sampling Method conveyance pipe Collection Time 1357
Sample Type grab Start Depth 487
QC Code normal End Depth 502
Sampling Equipment pipng port Sample Matrix GW
QC Partners none Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions. Month 3 Event.

Logged By/Date: [Signature] 5/9/18 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106064 RFA/COC Number 500433EDBPT-GW030
Sample Number 106064-P2P-050918 Collection Date 5/9/18
Sampling Method Low Flow Collection Time 0908
Sample Type Grab Start Depth 508 400
QC Code Normal End Depth 508
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners 106064-P2P-050918-FD Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions. Month 3 Event.

DTW=477. 40 ft btoc. Water has fuel odor.

Logged By/Date:

[Signature] 5/9/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106MW2-I RFA/COC Number 500433EDBPT-GWO
Sample Number 106MW2I-P2P-06 Collection Date 6/12/18
Sampling Method Low Flow Collection Time 1500
Sample Type Grab Start Depth 513
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners N/A Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions: Month 4 Event.

Cannot measure DTW in 3" wells w/ dedicated tubing.

Logged By/Date:

[Signature] 6/12/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106MW2I

RFA/COC Number 500433-EDBPT-6W031

Sample Number 106MW2I-P2P-061218

Collection Date 6/12/18

Sampling Method low flow

Collection Time 1012

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions, Month 4 Event.

Logged By/Date:

T. K. Paul
6/12/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW03

Sample Number 106063-P2P-061218

Collection Date 6/12/18

Sampling Method low flow

Collection Time 1517

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 4 Event.

Logged By/Date:

[Signature]
6/12/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106MW2-S RFA/COC Number 500433EDBPT-GW032
Sample Number 106MW2S-P2P-061418 Collection Date 6/14/18
Sampling Method Low Flow Collection Time 0908
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners N/A Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions, Month 4 Event.

Cannot measure DTW at this well. There is a tubing obstruction.

Logged By/Date:

[Signature] 6/14/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106EX2

RFA/COC Number 500433EDPT-GW032

Sample Number 106EX2-P2P-061418

Collection Date 6/14/18

Sampling Method conveyance pipe, SHP

Collection Time TSK 487 1528

Sample Type grab pump

Start Depth TSK 502 487

QC Code normal

End Depth 502

Sampling Equipment pipe port

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions, Month 4 Event.

turbidity higher than normal starting purge,
~16 NTU

Logged By/Date:

TK/CL
6/14/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW032

Sample Number 106EX1-P2R-061418

Collection Date 6/14/18

Sampling Method conveyance piping

Collection Time 1430

Sample Type grab SHP pump

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment pipe, port

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions, Month 4 Event.

Logged By/Date:

T. Kuhl
6/14/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106INV1

RFA/COC Number 500433EDBPT-GW032

Sample Number 106INV1-P2P-061418

Collection Date 6/14/18

Sampling Method low flow/piping

Collection Time 1312

Sample Type grab conveyance line

Start Depth 477

QC Code normal

End Depth 497

Sampling Equipment conveyance line

Sample Matrix GW

QC Partners sample port

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions Month 4 Event.

Logged By/Date:

L. K. [Signature]
6/14/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW032

Sample Number 106064-P2P-061418

Collection Date 6/14/18

Sampling Method low flow

Collection Time 1008

Sample Type grab

Start Depth 488

QC Code normal FD

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners 106064-P2P-061418-FD

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 4 Event.

FD collected here. PH seems lower than previous events (more acidic). Turbidity high to start, finally dropping over 1 hr into purge time, stable around 12 NTU

Logged By/Date: L. Kuhl
6/14/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106MW1-5

RFA/COC Number 500433EDBPT-GW032

Sample Number 106MW15-R2P-061418

Collection Date 6/14/18

Sampling Method low flow

Collection Time 0811

Sample Type grab

Start Depth 463

QC Code normal

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions Month 4 Event.

Note: high turbidity during purge. Observed thin, light filaments of biological material floating in turbidity vial. Cleared up to below 10 NTU after about

Logged By/Date: [Signature]

Reviewed By/Date: _____

6/14/18

50 min of purge.



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-GW033

Sample Number 106MW2I-P3R-020718

Collection Date 8/7/18

Sampling Method low flow

Collection Time 1411

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions, Month 4 Event.

Phase 3 (biostim), 1st sample event of active injection portion.

Logged By/Date:

L. Kinnel
8/7/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106MW25

RFA/COC Number 500433EDBPT-6W033

Sample Number 106MW25-P3R-080718

Collection Date 8/7/18

Sampling Method low flow

Collection Time 1021

Sample Type grab

Start Depth 463

QC Code normal

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

phase 3 (biostim), 1st sample event of active injection portion. Water has slight odor of fuel and fouling. No abnormal color noted, no obvious suspended solids.

Logged By/Date: TKM
8/7/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106MW1-S

RFA/COC Number 500433EDBPT-GW033

Sample Number 106MW1S-P32-080718

Collection Date 8/07/18

Sampling Method Low Flow

Collection Time 1318

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL, TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

DTW_i = 474.64 ft btlc.

Logged By/Date:

[Signature] 8/7/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106MW1-L

RFA/COC Number 500433EDBPT-GW033

Sample Number 106MW1I-P3R-080718

Collection Date 8/7/18

Sampling Method Low Flow

Collection Time 1030

Sample Type Grab

Start Depth 513

QC Code None/Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL, TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

DTW = 474.864 ft bfgc, as measured at 106MW1-S.
Cannot fit probe down 3" well w/ tubing bundle.
Slight fuel odor. Water is clear.

Logged By/Date:

G. J. [Signature] 8/7/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase II, Passive

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW034

Sample Number 106063-P3R-080818

Collection Date 8/8/18

Sampling Method low flow

Collection Time 0957

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions. Month 4 Event.

1st event active recirculation part of phase 3.
Water has slight foul odor, sewage smell.

Logged By/Date: TK
8/8/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-6W034

Sample Number 106EX1-P3R-080818

Collection Date 8/8/18

Sampling Method low flow

Collection Time 1156

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment conveyance pipe
~~bladder pump~~

Sample Matrix GW

QC Partners none

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions.

1st sample event of active part of phase 3 (biostim).
Slight fuel odor.

Logged By/Date:

T. K. K.
8/8/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106EX2

RFA/COC Number 500433EDBPT-GW034

Sample Number 106EX2-P3R-080818

Collection Date 8/8/18

Sampling Method low-flow

Collection Time 1236

Sample Type grab

Start Depth 487

QC Code FD

End Depth 502

Sampling Equipment conveyance pipe

Sample Matrix GW

QC Partners 106EX2-P3R-080818-FD

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

1st sample event active recirc part of Phase 3 (biostim)
Foul odor of sewage.

Logged By/Date:

LK
8/8/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106064

RFA/COC Number 500433EDBPT-GW034

Sample Number 106064-P32-080818

Collection Date 8/8/18

Sampling Method Low Flow

Collection Time 0915

Sample Type Grab

Start Depth 488

QC Code Normal

End Depth 508

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team α

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Empirical
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Empirical
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Empirical
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Empirical
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Empirical
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056						
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

DTWi = 478.02 ft bblc. Slight fuel odor.

Logged By/Date:

G. J. Jelle 8/8/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106MW2 I

RFA/COC Number 500433EDBPT-GW035

Sample Number 106MW2I-P3R-08518

Collection Date 8/15/18

Sampling Method low flow

Collection Time 0946

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	150 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

Phase 3 recirc, event #2. Note new labs for
some analyses

Logged By/Date:

[Signature]

Reviewed By/Date:

8/15/18



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106MW25

RFA/COC Number 500433EDRPT-6W035

Sample Number 106MW25-P3R-081518

Collection Date 8/15/18

Sampling Method low flow

Collection Time 1133

Sample Type grab

Start Depth 463

QC Code normal

End Depth 498

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	2	40 mL	VOA Vials	None	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	150 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Comments/Descriptions:

phase 3 recirc, sample event #2. Note new lag for several analyses.

Note: small, pale filaments suspended in purge water, appear biological.

Logged By/Date:

TK
8/15/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106MW1-I

RFA/COC Number 500433EDBPT-GW035

Sample Number 106MW1I-P3R-081518

Collection Date 8/15/18

Sampling Method Low Flow

Collection Time 0940

Sample Type Grab

Start Depth 53

QC Code Normal

End Depth 523

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	<u>23</u>	40 mL	VOA Vials	None <u>HCl</u>	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	150 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Week 3 event

Comments/Descriptions:

Cannot fit WL probe down 3" well w/ tubing bundle.

Slight fuel odor.

Logged By/Date:

G. Miller 8/15/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106MW1-S

RFA/COC Number 500433EDBPT-GW035

Sample Number 106MW1S-P3R-081578

Collection Date 8/15/18

Sampling Method Low Flow

Collection Time 1130

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder pump

Sample Matrix GW

QC Partners None

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	<u>23</u>	40 mL	VOA Vials	None <u>HCl</u>	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	150 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	CB&I
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	CB&I

Week 3 event

Comments/Descriptions:

DTWi = 474.63 ft btoe. Slight fuel odor.

Logged By/Date:

[Signature] 8/15/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106064</u>	RFA/COC Number <u>500433EDBPT-GW036</u>
Sample Number <u>106064-P3P-081618</u>	Collection Date <u>8/16/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0930</u>
Sample Type <u>Grab</u>	Start Depth <u>488</u>
QC Code <u>Normal</u>	End Depth <u>508</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>et GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 <u>PE 9056</u>	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions:

DTW: 478.12 ft btpc
Water has slight fauling smell.

Logged By/Date:

[Signature] 8/16/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106063

RFA/COC Number 500433EDBPT-GW036

Sample Number 106063-P3R-081618

Collection Date 8/16/18

Sampling Method low flow

Collection Time 0947

Sample Type grab

Start Depth 508

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions:

phase 3 recirc, event #2. Note new lab for many analyses.

Logged By/Date:

L. K. [Signature]
8/16/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW03-6

Sample Number 106EX1-P3R-081618

Collection Date 8/16/18

Sampling Method piping/conveyance line

Collection Time 1112

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment sample port

Sample Matrix GW

QC Partners 106EX1-P3R-081618 ^{piping}
FD

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions:

Phase 3 recirc, event #2. Note new labs for some analyses. FD collected. Note, water has foul, biological odor.

Logged By/Date: [Signature]

8/16/18

Reviewed By/Date: _____

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106EX2</u>	RFA/COC Number <u>560433EDBPT-GW036</u>
Sample Number <u>106EX2-B3R-081618</u>	Collection Date <u>8/16/18</u>
Sampling Method <u>conveyance piping/</u>	Collection Time <u>1237</u>
Sample Type <u>grab</u> <u>port</u>	Start Depth <u>487</u>
QC Code <u>normal</u>	End Depth <u>502</u>
Sampling Equipment <u>sample port</u>	Sample Matrix <u>GW</u>
QC Partners <u>none</u>	Sample Team <u>TK CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions:

Phase 3 recirc, sample event #2.
Note new lab for some analyses

Logged By/Date:

TK
8/16/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106MW2I

RFA/COC Number 500433EDBPT-6W037

Sample Number 106MW2I-P3R-082118

Collection Date 8/21/18

Sampling Method low flow

Collection Time 0952

Sample Type grab

Start Depth 513

QC Code normal

End Depth 523

Sampling Equipment bladder pump

Sample Matrix GW

QC Partners none

Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Dissolved O-Phosphate by EPA 9056	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO ₃	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB-GSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

not collected at intermediate wells.

Comments/Descriptions:

Phase 3 recirc, 3rd passive event

Logged By/Date:

E. Knaul
8/21/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106MW25 RFA/COC Number 560433EDBPT-GW037
 Sample Number 106MW25-P3R-082118 Collection Date 8/21/18
 Sampling Method low flow Collection Time 1143
 Sample Type grab Start Depth 463
 QC Code normal End Depth 498
 Sampling Equipment bladder pump Sample Matrix GW
 QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Dissolved O-Phosphate by EPA 9056	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Phase 3 recirc, sample event #3

Logged By/Date:

TK
8/21/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106MW1-I</u>	RFA/COC Number <u>500433EDBPT-GW0307</u>
Sample Number <u>106MW1I-P3R-082118</u>	Collection Date <u>8/21/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0930</u>
Sample Type <u>Grab</u>	Start Depth <u>513</u>
QC Code <u>Normal</u>	End Depth <u>523</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>106MW1I-P3R-082118-FP</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Dissolved O-Phosphate by EPA 9056	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	400 ²⁵⁰ mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Week 4 event

Comments/Descriptions: Cannot fit WL meter down 3" well w/ tubing bundle
DTW @ 106MW1-S = 474.80 ft btoe.

Logged By/Date:

[Signature] 8/21/18

Reviewed By/Date: _____

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106MW1-S</u>	RFA/COC Number <u>500433EDBPT-GW0307</u>
Sample Number <u>106MW1S-P3P-002118</u>	Collection Date <u>8/21/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>1130</u>
Sample Type <u>Grab</u>	Start Depth <u>463</u>
QC Code <u>Normal</u>	End Depth <u>498</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Dissolved O-Phosphate by EPA 9056	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	100 ²⁵⁰ mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Week 4 event

DTWi = 474.80 ft btoC

Slight foul odor.

Logged By/Date:

Galler 8/21/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106064</u>	RFA/COC Number <u>500433EDBPT-GW038</u>
Sample Number <u>106064-P3P-082218</u>	Collection Date <u>8/22/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0935</u>
Sample Type <u>Grab</u>	Start Depth <u>488</u>
QC Code <u>Normal</u>	End Depth <u>500</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Dissolved O-Phosphate by EPA 9056	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA ^{CA}
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	400 ²⁵⁰ mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Week 4 event
DTW_i = 478.15 ft btoe

Slight fuel and fouling odor.

Logged By/Date:

[Signature] 8/22/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106EX2</u>	RFA/COC Number <u>500433EDBPT-GW038</u>
Sample Number <u>106EX2-R3R-082218</u>	Collection Date <u>8/22/18</u>
Sampling Method <u>conveyance pipe</u>	Collection Time <u>1207</u>
Sample Type <u>grab</u>	Start Depth <u>487</u>
QC Code <u>normal</u>	End Depth <u>502</u>
Sampling Equipment <u>pipng, port</u>	Sample Matrix <u>GW</u>
QC Partners <u>none</u>	Sample Team <u>TK, CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Dissolved O-Phosphate by EPA 9056	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Phase 3 recirc, 3rd sample event
Water has foul biological smell.

Logged By/Date:

Y. [Signature]
8/22/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106063</u>	RFA/COC Number <u>500433EDBPT-6W038</u>
Sample Number <u>106063-P3R-082218</u>	Collection Date <u>8/22/18</u>
Sampling Method <u>low flow</u>	Collection Time <u>1003</u>
Sample Type <u>grab</u>	Start Depth <u>508</u>
QC Code <u>normal</u>	End Depth <u>523</u>
Sampling Equipment <u>bladder pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>none</u>	Sample Team <u>TK</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Dissolved O-Phosphate by EPA 9056	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

phase 3 recirc, 3rd sample event

Logged By/Date:

J. [Signature]
8/22/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106EX1</u>	RFA/COC Number <u>500433EDBPT-6W038</u>
Sample Number <u>106EX1-P3R-082218</u>	Collection Date <u>8/22/18</u>
Sampling Method <u>conveyance piping</u>	Collection Time <u>1107</u>
Sample Type <u>grab</u>	Start Depth <u>487</u>
QC Code <u>normal</u>	End Depth <u>502</u>
Sampling Equipment <u>pipe, port</u>	Sample Matrix <u>GW</u>
QC Partners <u>none</u>	Sample Team <u>TK, CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Dissolved O-Phosphate by EPA 9056	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

phase 3 recirc, 3rd sample event

Logged By/Date:

T/Km
8/22/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106NW2I RFA/COC Number 500433EDBPT-GW039
 Sample Number 106NW2I-PSR-082818 Collection Date 8/28/18
 Sampling Method low flow Collection Time 1145
 Sample Type grab Start Depth 513
 QC Code normal End Depth 523
 Sampling Equipment bladder pump Sample Matrix GW
 QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions:

Phase 3 recirc, 4th active sample event

Logged By/Date:

TK
8/28/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106MW25 RFA/COC Number 500433EDBPT-GW039
 Sample Number 106MW25-PSR-082818 Collection Date 8/28/18
 Sampling Method low flow Collection Time 0946
 Sample Type grab Start Depth 463
 QC Code normal End Depth 478
 Sampling Equipment bladder pump Sample Matrix GW
 QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions:

phase 3 recirc, 4th active sample event
Note: water has foul biological odor.

Logged By/Date:

TK
8/28/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106MW1-S</u>	RFA/COC Number <u>500433EDBPT-GW039</u>
Sample Number <u>106MW1S-P3R-082818</u>	Collection Date <u>8/28/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>1140</u>
Sample Type <u>Grab</u>	Start Depth <u>463</u>
QC Code <u>Normal</u>	End Depth <u>498</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CE</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Week 5

Comments/Descriptions:

DTWi = 474.66 ft btoc. Slight fuel and fawling
odor.

Logged By/Date:

[Signature] 8/28/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106MW1-I</u>	RFA/COC Number <u>500433EDBPT-GW039</u>
Sample Number <u>106MW1I-P3R-082818</u>	Collection Date <u>8/28/18</u> <u>CA</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0925</u>
Sample Type <u>Grab</u>	Start Depth <u>513</u>
QC Code <u>Normal</u>	End Depth <u>523</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	250 mL <u>OK 125-mL</u>	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Week 5

Comments/Descriptions:

DTW = 474.66 ft bbl, as measured @ 106MW1-S.

WL meter cannot fit down 3" well w/ tubing bundle.

Slight fuel odor.

Logged By/Date:

[Signature] 8/28/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106064</u>	RFA/COC Number <u>500433EDBPT-GW040</u>
Sample Number <u>106064-P3R-082918</u>	Collection Date <u>8/29/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0925</u>
Sample Type <u>Grab</u>	Start Depth <u>488</u>
QC Code <u>Normal</u>	End Depth <u>503</u>
Sampling Equipment <u>Bladder Pumps</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions:

DTWi = 478.15 ft bte. Water smells
funky.

Logged By/Date:

[Signature] 8/29/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106EX 2

RFA/COC Number 500433EDRPT-GW040

Sample Number 106EX2-PR-082918

Collection Date 8/29/18

Sampling Method conveyance piping

Collection Time 1218

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping sample

Sample Matrix GW

QC Partners none port

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions:

Phase 3 recirc 4th sample event.
Water has quite foul biological odor.

Logged By/Date:

J. Krul
8/29/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code <u>KAFB-106063</u>	RFA/COC Number <u>500433EDBPT-GW040</u>
Sample Number <u>106063-P3R-082918</u>	Collection Date <u>8/29/18</u>
Sampling Method <u>low flow</u>	Collection Time <u>0958</u>
Sample Type <u>grab</u>	Start Depth <u>508</u>
QC Code <u>FD</u>	End Depth <u>523</u>
Sampling Equipment <u>bladder pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>106063-P3R-082918-FD</u>	Sample Team <u>TK</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions:

Phase 3 recirc, active sample event #4

Logged By/Date:

TK
8/29/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Recirculation

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW040

Sample Number 106EX1-P3R-082918

Collection Date 8/29/18

Sampling Method conveyance pipe

Collection Time 1117

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment piping sample

Sample Matrix GW

QC Partners none port

Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions.

phase 3 recirc 4th sample event.
Water has v. strong foul odor

Logged By/Date:

TK
8/29/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106MW1-T</u>	RFA/COC Number <u>500433EDBPT-GW041</u>
Sample Number <u>106MW1I-P3P-091118</u>	Collection Date <u>9/11/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0935</u>
Sample Type <u>Grab</u>	Start Depth <u>513</u>
QC Code <u>Normal</u>	End Depth <u>523</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

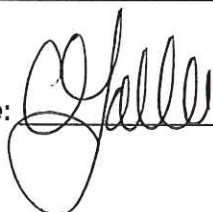
Comments/Descriptions:

Month 1 event

DTW = 474.75 ft bblc, as measured at 106MW1-S.

Water has slight fuel odor.

Logged By/Date:

 9/11/18

Reviewed By/Date: _____

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106MW1-S</u>	RFA/COC Number <u>500433EDBPT-GW041</u>
Sample Number <u>106MW1S-P3R-M1118</u>	Collection Date <u>9/11/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>1135</u>
Sample Type <u>Grab</u>	Start Depth <u>463</u>
QC Code <u>Normal</u>	End Depth <u>498</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Month 1 Event
DTWi = 474.75 ft/btc.

Water smells slightly foul.

Logged By/Date:

[Signature] 9/11/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106MW2I</u>	RFA/COC Number <u>500433EDBPT-GW041</u>
Sample Number <u>106MW2I-PSP-091118</u>	Collection Date <u>9/11/18</u>
Sampling Method <u>low flow</u>	Collection Time <u>1017</u>
Sample Type <u>grab</u>	Start Depth <u>513</u>
QC Code <u>normal</u>	End Depth <u>523</u>
Sampling Equipment <u>bladder pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>none</u>	Sample Team <u>TK</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

phase 3 recirc ended on 9/9. First event
phase 3 passive

Logged By/Date: TKM 9/11/18 Reviewed By/Date: _____

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106MW25</u>	RFA/COC Number <u>500433EDBPT-GW041</u>
Sample Number <u>106MW25-R3P-091118</u>	Collection Date <u>9/11/18</u>
Sampling Method <u>low flow</u>	Collection Time <u>1202</u>
Sample Type <u>grab</u>	Start Depth <u>463</u>
QC Code <u>normal</u>	End Depth <u>498</u>
Sampling Equipment <u>bladder pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>none</u>	Sample Team <u>TK</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Phase recirc ended on 9/9.

1st passive event for phase 3.

Logged By/Date:

[Signature]
9/11/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106064</u>	RFA/COC Number <u>500433EDBPT-GW042</u>
Sample Number <u>106064-P3P-091218</u>	Collection Date <u>9/12/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0905</u>
Sample Type <u>Grab</u>	Start Depth <u>488</u>
QC Code <u>Normal</u>	End Depth <u>508</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>106064-P3P-091218-FD</u>	Sample Team <u>CU</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

DTWi = 478.20 ft btoe.

Water smells slightly foul.

Logged By/Date:

Geller 9/12/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106EX2 RFA/COC Number 500433EDBPT-6W042
Sample Number 106EX2-R3P-091218 Collection Date 9/12/18
Sampling Method conveyance pipe Collection Time 1356
Sample Type grab Start Depth 487
QC Code Normal End Depth 502
Sampling Equipment pipe, sample Sample Matrix GW
QC Partners none port Sample Team TK, CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Phase 3 passive, 1st sample event
Very foul biological odor

Logged By/Date:

[Signature]
9/12/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106063 RFA/COC Number 500433EDBPT-GW042
Sample Number 106063-P3P-091218 Collection Date 9/12/18
Sampling Method low flow Collection Time 0936
Sample Type grab Start Depth 508
QC Code normal End Depth 523
Sampling Equipment bladder pump Sample Matrix GW
QC Partners none Sample Team TK

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions:

Phase 3 passive, sample event #1

Logged By/Date:

TK
9/12/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-6W042

Sample Number 106EX1-R3P-091218

Collection Date 9/12/18

Sampling Method conveyance pipe

Collection Time 1257

Sample Type grab

Start Depth 487

QC Code normal

End Depth 502

Sampling Equipment pipe, sample port

Sample Matrix GW

QC Partners none

Sample Team TK, CC

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
EDB CSIA	NA	2	1 L	Amber Bottle	HCl	University of Oklahoma

Comments/Descriptions.

TSK
Phase 3 ~~active~~ passive first sample event

Logged By/Date:

TK
9/12/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106MW2-I</u>	RFA/COC Number <u>500433 EDB PT-GW043</u>
Sample Number <u>106MW2I-P3P-100218</u>	Collection Date <u>10/2/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0905</u>
Sample Type <u>Grab</u>	Start Depth <u>513</u>
QC Code <u>Normal</u>	End Depth <u>523</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Second Passive event.

Comments/Descriptions:

Cannot measure DTW @ 3" wells. Slight fuel odor.

Logged By/Date:

G. Jelle 10/2/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106MW2-S</u>	RFA/COC Number <u>500433EDBPT-GW043</u>
Sample Number <u>106MW2S-P3P-100218</u>	Collection Date <u>10/2/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>1045</u>
Sample Type <u>Grab</u>	Start Depth <u>463</u>
QC Code <u>Normal</u>	End Depth <u>498</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CU</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions: Second passive event.
Cannot fit WL meter downhole w/ tubing bundle.
Water has fuel odor and is slightly yellow in color.

Logged By/Date: G. J. Allen 10/2/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106MW1-S RFA/COC Number 500433EDBPT-GW044
Sample Number 106MW1S-P3P-100318 Collection Date 10/3/18
Sampling Method Low Flow Collection Time 1025
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners 106MW1S-P3P-100318-FD Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Second passive event

Comments/Descriptions:

DTWi = 474.78 ftbtoc. Slight fuel odor.

Logged By/Date:

CL 10/3/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106MW1-I RFA/COC Number 500433EDB PT-GW044
Sample Number 106MW1I-P3P-100318 Collection Date 10/3/18
Sampling Method Low Flow Collection Time 0900
Sample Type Grab Start Depth 53
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Second passive event.

Comments/Descriptions:

Cannot measure DTW in 3" wells. Water has
slight fuel odor.

Logged By/Date:

[Signature] 10/3/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106EX2 RFA/COC Number 500433EDBPT-GW045
Sample Number 106EX2-P3P-100418 Collection Date 10/4/18
Sampling Method Sample port Collection Time 1530
Sample Type Grab Start Depth 487
QC Code Normal End Depth 502
Sampling Equipment Sample port Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions.

Event 2

DTW_i = 474.98 ftbtoc. Water smells foul

Logged By/Date:

Galler 10/4/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106064</u>	RFA/COC Number <u>500433EDBPT-GW045</u>
Sample Number <u>106064-P3P-100418</u>	Collection Date <u>10/4/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0925</u>
Sample Type <u>Grab</u>	Start Depth <u>488</u>
QC Code <u>Normal</u>	End Depth <u>508</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Event 2

Comments/Descriptions:

DTW $\approx$ 478.10 ft bblc - WL meter was obstructed by tubing @ about 455 ft. Water has slight fuel and biological odor.

Logged By/Date:

G. Jellu 10/4/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106EX1

RFA/COC Number 500433EDBPT-GW045

Sample Number 106EX1-P3P-100418

Collection Date 10/4/18

Sampling Method Sample port

Collection Time 1445

Sample Type Grab

Start Depth 487

QC Code Normal ca

End Depth 502

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None Sample port

Sample Team ca

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Event 2

Comments/Descriptions:

DTW = 475.35 ft bblc. Water smells funky

Logged By/Date:

Geller 10/4/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106063 RFA/COC Number 500433EDBPT-GW045
Sample Number 106063-P3P-100418 Collection Date 10/4/18
Sampling Method Low Flow Collection Time 1025
Sample Type Grab Start Depth 508
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CU

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Event 2

Comments/Descriptions: DTW $\approx$ 479 ft bto c.

Logged By/Date:

G. J. Jell 10/4/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106IN1

RFA/COC Number 500433EDBPT-GW045

Sample Number 106IN1-P3P-100419

Collection Date 10/4/18

Sampling Method Bailer

Collection Time 1230

Sample Type Grab

Start Depth 476

QC Code Normal

End Depth 481

Sampling Equipment Bailer

Sample Matrix GW

QC Partners None

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM

Comments/Descriptions:

Event 2
DTW_i = 475.35 ft bgs. Water smells
extremely foul and is brown/gray w/ floating biological material.

Logged By/Date:

Gallen 10/4/18

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106MW1-S RFA/COC Number 500433EDBPT-GW0
Sample Number 106MW1S-P3P-111418 Collection Date 11/14/18
Sampling Method Low Flow Collection Time 1215
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team AL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions. Month 3 Event.

DTW = 474.60 ft bto c.

Logged By/Date:

[Signature] 11/14/18

Reviewed By/Date: _____

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106MW1-I</u>	RFA/COC Number <u>500433EDBPT-GW046</u>
Sample Number <u>106MW1I-P3P-111418</u>	Collection Date <u>11/14/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>1035</u>
Sample Type <u>Grab</u>	Start Depth <u>513</u>
QC Code <u>Normal</u>	End Depth <u>523</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions: Month 3 Event.

Cannot measure DTW at 3" wells.

Logged By/Date:

[Signature] 11/14/18

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106064 RFA/COC Number 500433EDBPT-GW046
Sample Number 106064-P3P-11418 Collection Date 11/14/18
Sampling Method Low Flow Collection Time 0950
Sample Type Grab Start Depth 488
QC Code Normal End Depth 508
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions. Month 3 Event.

DTW= 478.25 ft btoe. Water smells funky.

Logged By/Date:

[Signature] 11/14/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106MW2-S</u>	RFA/COC Number <u>500433EDB PT-GW047</u>
Sample Number <u>106MW2-S-P3P-111518</u>	Collection Date <u>11/15/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>1430</u>
Sample Type <u>Grab</u>	Start Depth <u>463</u>
QC Code <u>Normal</u>	End Depth <u>498</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions. Month 3 Event.

Cannot measure PTW — tubing obstructs WL meter. Waters smells
funky and like fuel.

EA is drilling approx. 75 feet to the SW of this well.

Logged By/Date:

[Signature] 11/15/18

Reviewed By/Date: _____

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106MW2-I</u>	RFA/COC Number <u>500433EPBPT-GW047</u>
Sample Number <u>106MW2I-P3P-111518</u>	Collection Date <u>11/15/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0950</u>
Sample Type <u>Grab</u>	Start Depth <u>513</u>
QC Code <u>Normal</u>	End Depth <u>523</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>106MW2I-P3P-111518-FD</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions. Month 3 Event.

DTW cannot be measured @ 3" wells. Water has slight fuel odor.

Logged By/Date:

Galle 11/15/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-106063</u>	RFA/COC Number <u>500433EDB PT-GW047</u>
Sample Number <u>106063-P3P-111518</u>	Collection Date <u>11/15/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0920</u>
Sample Type <u>Grab</u>	Start Depth <u>508</u>
QC Code <u>Normal</u>	End Depth <u>523</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>cl</u>

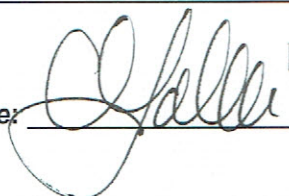
Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions. Month 3 Event.

DTW=479. f/tloc. Water has slight fuel odor.

Logged By/Date:

 11/15/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code KAFB-106EX2

RFA/COC Number 500433EDBPT-GW049

Sample Number 106EX2-P3P-111918

Collection Date 11/19/18

Sampling Method Low Flow

Collection Time 1445

Sample Type Grab

Start Depth 487

QC Code Normal

End Depth 502

Sampling Equipment Sample port

Sample Matrix GW

QC Partners None

Sample Team CL, JV

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions. Month 3 Event.

DTWi = 474.61 ft bblc. EA is drilling w/ Akecting approx. 100 ft away. Running well @ 2gpm.

Logged By/Date:

[Signature] 11/19/18

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

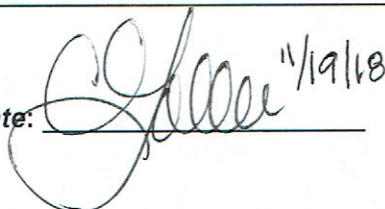
Location Code <u>KAFB-106EX1</u>	RFA/COC Number <u>500433EDBPT-GW049</u>
Sample Number <u>106EX1-P3P-11/19/18</u>	Collection Date <u>11/19/18</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>1350</u>
Sample Type <u>Grab</u>	Start Depth <u>487</u>
QC Code <u>Normal</u>	End Depth <u>502</u>
Sampling Equipment <u>Sample port</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CLJV</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions. Month 3 Event.

DTW_i = 474.50 ft bblc. EA is drilling w/ ARCH rig approx. 100 ft away. Running pump @ 2gpm. Water smells like fuel.

Logged By/Date:  11/19/18

Reviewed By/Date: _____

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase III, Passive

Location Code <u>KAFB-10VIN1</u>	RFA/COC Number <u>500433EDBPT-GW049</u>
Sample Number <u>10VIN1-PBP-11/19/18</u>	Collection Date <u>11/19/18</u>
Sampling Method <u>Bailing</u>	Collection Time <u>1045</u>
Sample Type <u>Grab</u>	Start Depth <u>476</u>
QC Code <u>Normal</u>	End Depth <u>481</u>
Sampling Equipment <u>Bailer</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CL, JV</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes No	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes No	1	250 mL	Poly Bottle	HNO3 None	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions. Month 3 Event.

DTWi = 474.51 ft b bc. Water is dark brown and smells like sewage. No associated purge log.

Logged By/Date:

Galle 11/19/18

Reviewed By/Date: _____

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 4, Passive

Location Code <u>KAFB-106064</u>	RFA/COC Number <u>500433 EPB PT- GW050</u>
Sample Number <u>106064-PAP-011619</u>	Collection Date <u>1/16/19</u>
Sampling Method <u>Blow Flow</u>	Collection Time <u>0955</u>
Sample Type <u>Grab</u>	Start Depth <u>488</u>
QC Code <u>106064-PAP-011619-PD</u>	End Depth <u>508</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>Normal</u>	Sample Team <u>AL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Microbial	NA	1	1L	Poly bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 478.15 ft b.t.c. Water has slight fuel odor, yellow tint.

Logged By/Date:

[Signature] 1/16/19

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 4, Passive

Location Code KAFB-106MW1-I RFA/COC Number 500433EPBPT-GW050
Sample Number 106MW1I-PAP-011619 Collection Date 1/16/19
Sampling Method Low Flow Collection Time 1122
Sample Type Grab Start Depth 513
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team al

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Microbial	NA	1	1L	poly bottle	None	Microbial Insight

Comments/Descriptions: Cannot measure DTW at 3" wells - tubing bundle obstructs.

Logged By/Date:

Galler 1/16/19

Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 4, Passive

Location Code KAFB-106MW1-S RFA/COC Number 500433EDBPT-GW050
Sample Number 106MW1S-P4P-011619 Collection Date 1/16/19
Sampling Method Low Flow Collection Time 1320
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners N/A Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 473.60 ft btoC. No LNAPL.

Logged By/Date:

[Signature] 1/16/19

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 4, Passive

Location Code <u>KAFB-106063</u>	RFA/COC Number <u>500433EDBPT-050</u>
Sample Number <u>106063-P4P-011719</u>	Collection Date <u>1/17/19</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>0955</u>
Sample Type <u>Grab</u>	Start Depth <u>508</u>
QC Code <u>Normal</u>	End Depth <u>523</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CC</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 479.03 ft bto c.

Logged By/Date:

[Signature] 1/17/19

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 4, Passive

Location Code KAFB-106MW2I RFA/COC Number 500433 EAB PT-GW061
 Sample Number 106MW2I-P4P-011719 Collection Date 01/17/19
 Sampling Method Low flow Collection Time 1025
 Sample Type Grab Start Depth 513'
 QC Code Normal End Depth 523
 Sampling Equipment Bladder Pump Sample Matrix GW
 QC Partners N/A Sample Team CH + CL

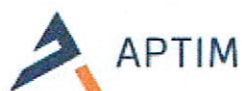
Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

Cannot measure DTW @ 3" wells

Logged By/Date: E. Handee 1/17/19 Reviewed By/Date: _____



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 4, Passive

Location Code KAFB-106MW2-S RFA/COC Number 500433EDBPT-GW051
Sample Number 106MW2S-P4P-011719 Collection Date 1/17/19
Sampling Method Low Flow Collection Time 1310
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners N/A Sample Team CV, CH

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

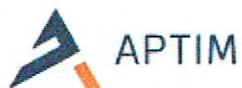
Comments/Descriptions:

Cannot measure DTW at 3" wells.
Water is turbid to start.

Logged By/Date:

[Signature] 1/17/19

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 4, Passive

Location Code KAFB-106EX2 RFA/COC Number 500433EPBPT-GW052
Sample Number 106EX2-P4P-012119 Collection Date 1/21/19
Sampling Method Low Flow Collection Time 1308
Sample Type Grab Start Depth 487
QC Code Normal End Depth 502
Sampling Equipment Sample Port Sample Matrix GW
QC Partners N/A Sample Team ALJT

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW_i = 473.35 ft bgs

Logged By/Date:

[Signature] 1/21/19

Reviewed By/Date:



Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 4, Passive

Location Code KAFB-106EX1 RFA/COC Number 500433EDB PT-GW052
Sample Number 106EX1-P4P-012119 Collection Date 1/21/19
Sampling Method Low Flow Collection Time 1210
Sample Type Grab Start Depth 487
QC Code Normal End Depth 502
Sampling Equipment Sample Port Sample Matrix GW
QC Partners N/A Sample Team CL, JT

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	Yes	1	250 mL	Poly Bottle	HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW_i = 473.52 ft bgs.

Logged By/Date:

[Signature] 1/21/19

Reviewed By/Date:

Sample Collection Log

500433 KAFB Rapid Response ESTCP – Groundwater, Phase 4, Passive

Location Code <u>KAFB-106IN1</u>	RFA/COC Number <u>500433EDBPT-GW052</u>
Sample Number <u>106IN1-P4P-012119</u>	Collection Date <u>1/21/19</u>
Sampling Method <u>Bailing</u>	Collection Time <u>0900</u>
Sample Type <u>Grab</u>	Start Depth <u>477</u>
QC Code <u>Normal</u>	End Depth <u>497</u>
Sampling Equipment <u>Bailer</u>	Sample Matrix <u>GW</u>
QC Partners <u>N/A</u>	Sample Team <u>CLJT</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	HCl	Test America GA
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	Test America GA
Alkalinity by SM2320B	NA	1	250 mL	Poly Bottle	None	Test America CA
O-Phosphate by SM4500 PE	NO Yes	1	250 mL	Poly Bottle	None	Test America CA
Dissolved Fe and Mn by 6010	NO Yes	1	250 mL	Poly Bottle	None HNO3	Test America GA
Anions (Chloride, Sulfate, Bromide, Nitrate-Nitrite) by EPA 9056	NA	1	125 mL	Poly Bottle	None	Test America GA
Iodide by EPA 300	NA	1	100 mL	Poly Bottle	None	Test America MO
Reduced Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
QuantArray-Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW_i = 473.60 ft bgs

Water is grey and smells like sewage. No purge log.

Logged By/Date:  1/21/19

Reviewed By/Date: _____



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106063 RFA/COC Number 501397-GW-001
Sample Number 106063-LTM-031120 Collection Date 3/11/20
Sampling Method Low Flow Collection Time 1425
Sample Type Grab Start Depth 508
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 ml	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials Falcon	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 474.18 ft btoc. No measurable product

Logged By/Date:

Gallen 3/11/20

Reviewed By/Date:

Sample Collection Log

501397 ISB LTM – Groundwater

Location Code <u>KAFB-106064</u>	RFA/COC Number <u>501397-GW-001</u>
Sample Number <u>106064-LTM-031120</u>	Collection Date <u>3/11/20</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>1030</u>
Sample Type <u>Grab</u>	Start Depth <u>400</u>
QC Code <u>Normal</u>	End Depth <u>a 523 500</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>106064-LTM-031120-FD</u>	Sample Team <u>CL</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 ml	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	¹⁴ 40 mL	VOA Vials <u>Falcon</u>	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 473.35 ft bto c ; no measurable LNAPL.

Slight fuel odor.

Logged By/Date:

Galler 3/11/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW2-S

RFA/COC Number 501397-GW-001

Sample Number 106MW2S-LTM-031120

Collection Date 3/11/20

Sampling Method Low Flow

Collection Time 1545

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials <u>Falcon</u>	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = not measured due to tubing obstruction

Logged By/Date:

Galle 3/11/20

Reviewed By/Date:

Sample Collection Log

501397 ISB LTM – Groundwater

Location Code <u>KAFB-106MW2-I</u>	RFA/COC Number <u>501397-GW-001</u>
Sample Number <u>106MW2I-LTM-031120</u>	Collection Date <u>3/11/20</u>
Sampling Method <u>Low Flow</u>	Collection Time <u>1115</u>
Sample Type <u>Grab</u>	Start Depth <u>513</u>
QC Code <u>Normal</u>	End Depth <u>523</u>
Sampling Equipment <u>Bladder Pump</u>	Sample Matrix <u>GW</u>
QC Partners <u>None</u>	Sample Team <u>CU</u>

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials <u>Falcon</u>	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW= not measured – doesn't fit downhole in 3" wells.

Logged By/Date:

Galle 3/11/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106IN1

RFA/COC Number 501397-GW-002

Sample Number 106IN1-LTM-081220

Collection Date 3/12/20

Sampling Method Low Flow

Collection Time 1545

Sample Type Grab

Start Depth 477

QC Code Normal

End Depth 497

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team ALSN

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials <u>Falcon</u>	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 468.29 ft b.t.c. No measurable LNAPL.
Water is yellowish/brown w/ sewage-like odor.

Logged By/Date: Q. Allen 3/12/20

Reviewed By/Date: _____



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW1-I RFA/COC Number 501397-GW-002
Sample Number 106MW1-I-LTM-031220 Collection Date 3/12/20
Sampling Method Low Flow Collection Time 1530
Sample Type Grab Start Depth 513
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CSN

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials <u>Falcon</u>	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 467.80 ft ^a as measured at
106MW1-5 (nested well).

Logged By/Date:

Gall 3/12/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MWIS-1-S RFA/COC Number 501397-GW-002
Sample Number 106MWIS-LTM-031220 Collection Date 3/12/20
Sampling Method Low Flow Collection Time 1105
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners 106MWIS-LTM-031220-MS Sample Team CLSN
" - MSD

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	14-40 mL	VOA Vials Falcon	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DW=469.80 ft btoe. No measurable LNAPL
Water has slight yellow tint.

Logged By/Date: [Signature] 3/12/20

Reviewed By/Date: _____



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106EX1 RFA/COC Number 501397-GW-002
Sample Number 106EX1-LTM-031220 Collection Date 3/12/20
Sampling Method Low Flow Collection Time 1040
Sample Type Grab Start Depth 487
QC Code Normal End Depth 502
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials <u>Falcon</u>	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 468.25 ft bto c, D to LNAPL = 467.85 ft bto c
Water has light yellow tint and smells like fuel. Copper-colored floating material in ysr.

Logged By/Date: Galler 3/12/20

Reviewed By/Date: _____



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW1-I RFA/COC Number 501397-GW-003
Sample Number 106MW1-I-LTM-051920 Collection Date 5/19/20
Sampling Method Low Flow Collection Time 1455
Sample Type Grab Start Depth 513
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CLLB

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	Falcon Tube	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTWi = 469.65 ft btlc; No LNAPL

Logged By/Date:

Q. Lalle 5/19/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106063 RFA/COC Number 501397-GW-003
Sample Number 106063-LTM-051920 Collection Date 5/19/20
Sampling Method Low Flow Collection Time 1025
Sample Type Grab Start Depth 508
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners 106063-LTM-106063 Sample Team CL, LB
Containers: 051920-FD

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW initial = 473.91 ft bto c. No LNAPL

Logged By/Date:

Glenn 5/19/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106IN1

RFA/COC Number 501397-GW-003

Sample Number 106IN1-LTM-051920

Collection Date 5/19/20

Sampling Method Low Flow

Collection Time _____

Sample Type Grab

Start Depth 477

QC Code Normal

End Depth 497

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team ALB

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL <u>14 mL</u>	Falcon Tube <u>VOA's</u>	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 467.55 ft btoe. No LNAPL.

Water smells like sewage and has yellowish brown color.

Logged By/Date:

[Signature] 5/19/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code 106064 RFA/COC Number 501397-GW
Sample Number 106064-LTM-051920 Collection Date 5/19/20
Sampling Method Low Flow Collection Time 1000
Sample Type Grab Start Depth 488
QC Code Normal End Depth 508
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team A, LB

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 473.08 ft bto c. No LNAPL.
Slight fuel odor.

Logged By/Date:

Galler 5/19/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106EX1

RFA/COC Number 501397-GW-004

Sample Number 106EX1-LTM-052020

Collection Date 5/20/20

Sampling Method LowFlow

Collection Time 1450

Sample Type Grab

Start Depth 487

QC Code Normal

End Depth 502

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team ALB

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 14 mL	Falcon Tube VOA	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW_i = 467.98 ft bto; D_{to} LNAPL = 467.45 ft bto
Strong fuel odor.

Logged By/Date:

[Signature] 5/20/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM - Groundwater

Location Code KAFB-106MW2-I RFA/COC Number 501397-GW-004
Sample Number 106MW2-I-LTM-052020 Collection Date 5/20/20
Sampling Method Low Flow Collection Time 1355
Sample Type Grab Start Depth 513
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CLB

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 ml	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL ^{40 mL}	Falcon Tube ^{VOA}	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW cannot be measured in 3" wells.

Logged By/Date:

Shellen 5/20/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW2-S RFA/COC Number 501397-GW-004
Sample Number 106MW2S-LTM-052020 Collection Date 5/20/20
Sampling Method Low Flow Collection Time 1105
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners Not MS/MSD Sample Team CL, LB

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	Falcon Tube	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

Obstruction. DTWi = not measured due to tubing

Logged By/Date:

Galler 5/20/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW1-S

RFA/COC Number 501397-GW-004

Sample Number 106MW1S-LTM-052020

Collection Date 5/20/20

Sampling Method Low Flow

Collection Time 1005

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team CU, LB

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40-44 mL	Falcon Tube	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions

DTW_i = 469.70 ft bto c ; No LNAPL

Logged By/Date:

[Signature] 5/20/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106063 RFA/COC Number 501397-GW-005
Sample Number 106063-LTM-080420 Collection Date 8/4/20
Sampling Method Low Flow Collection Time 1408
Sample Type Grab Start Depth 508
QC Code Normal End Depth 523
Sampling Equipment Bladder pump Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 474.95 ft btlc; no measurable LNAPL

Logged By/Date:

Shelle 8/4/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106064 RFA/COC Number 501397-GW-005
Sample Number 106064-LTM-080420 Collection Date 8/4/20
Sampling Method Low Flow Collection Time 0926
Sample Type Grab Start Depth 488
QC Code Normal End Depth 508
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners _____ Sample Team CU

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 473.90 ft btoe; no LNAPL

Logged By/Date:

Galler 8/4/20

Reviewed By/Date: _____



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106IN1 RFA/COC Number 501397-GW-005
Sample Number 106IN1-LTM-080420 Collection Date 8/4/20
Sampling Method Low Flow Collection Time 1005
Sample Type Grab Start Depth 477
QC Code Normal End Depth 497
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners 106IN1-LTM-080420-FD Sample Team CU

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 477.90 ft btoe; no measurable LNAPL
Water is brown and smells like fouling.

Logged By/Date:

Geller 8/4/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAPB-106EX1 RFA/COC Number 501397-GW-005
Sample Number 106EX1-LTM-08 Collection Date 8/4/20
Sampling Method Low Flow Collection Time 1457
Sample Type Grab Start Depth 487
QC Code Normal End Depth 502
Sampling Equipment Bladder pump Sample Matrix GW
QC Partners None Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 468.44 ft btlc; LNAPL: 468.41 ft btlc
fuel odor.

Logged By/Date:

Galler 8/4/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW1-I RFA/COC Number 501397-GW-006
Sample Number 106MW1-I-LTM-080520 Collection Date 8/5/20
Sampling Method Low Flow Collection Time 1525
Sample Type Grab Start Depth 513
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners _____ Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 470.70 ft btoe – as measured from
106MW1-S. WL probe doesn't fit down 3"
Wells.

Logged By/Date:

G. Hall 8/5/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW2-S RFA/COC Number 501397-GW-006
Sample Number 106MW2S-LTM-080520 Collection Date 8/5/20
Sampling Method Low Flow Collection Time 1100
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team u

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 470.82 ft bwc; no measurable LNAPL
Slight fuel odor.

Logged By/Date:

afella 8/5/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW1-5 RFA/COC Number 501397-GW-006
Sample Number 106MW15-LTM-080520 Collection Date 8/5/20
Sampling Method Low Flow Collection Time 1058
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners _____ Sample Team CU

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 470.70 ft btoe; no measurable LNAPL

Logged By/Date:

G. J. Allen 8/5/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW2-I RFA/COC Number 501397-GW-006
Sample Number 106MW2-I-LTM-000520 Collection Date 8/5/20
Sampling Method Low Flow Collection Time 1440
Sample Type Grab Start Depth 53
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners MS, MSD Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 470.82 ft btoe; as measured @ 106MW2-S.

Logged By/Date:

Galler 8/5/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAPB-106EX2 RFA/COC Number 501397-BW-007
Sample Number 106EX2-LTM-0801220 Collection Date 8/12/20
Sampling Method Low Flow Collection Time 1055
Sample Type Grab Start Depth 487
QC Code Normal End Depth 502
Sampling Equipment Bladder pump Sample Matrix GW
QC Partners None Sample Team a

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by SM4500 PE	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 466.38 ft btoe; Depth to LNAPL: 466.30 ft
btoe. Fuel odor.

Logged By/Date:

G. Jelle 8/12/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW1-T RFA/COC Number 501397-GW-008
Sample Number 106MW1I-LTM-101320 Collection Date 10/13/20
Sampling Method Low Flow Collection Time 0950
Sample Type Normal Grab Start Depth 513
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team A.

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by EPA Method 365.3	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 471.60 ft btoe, as measured at 106MW1-S.
Slight foul odor.

Logged By/Date:

Galle 10/13/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW1-S

RFA/COC Number 501397-GW-008

Sample Number 106MW1S-LTM-101320

Collection Date 10/13/20

Sampling Method Low Flow

Collection Time 1215

Sample Type Grab

Start Depth 463

QC Code Normal

End Depth 498

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners 106MW1S-LTM-101320-FD

Sample Team CL

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by EPA Method 365.3	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTWi = 471.60 ft btoe. Slight fuel odor.

Logged By/Date:

CL 10/13/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW2-I RFA/COC Number 501397-GW-009
Sample Number 106MW2I-LTM-10420 Collection Date 10/14/20
Sampling Method Low Flow Collection Time 1425
Sample Type Grab Start Depth 513
QC Code Normal End Depth 523
Sampling Equipment Bladder pump Sample Matrix GW
QC Partners MS/MSD Sample Team CLSN

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by EPA Method 365.3	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW not obtained. Tubing obstruction @
375' that would not allow probe past.

Logged By/Date:

Shelli 10/14/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106064 RFA/COC Number 501397-GW-009
Sample Number 106064-LTM-101420 Collection Date 10/14/20
Sampling Method Low Flow Collection Time 0910
Sample Type Grab Start Depth 488
QC Code Normal End Depth 508
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CHSN

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by EPA Method 365.3	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTWi = 474.93 ft btoC.

Logged By/Date:

Jallu 10/14/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106MW2-S RFA/COC Number 501397-GW-009
Sample Number 106MW2S-LTM-101420 Collection Date 10/14/20
Sampling Method Low Flow Collection Time 1400
Sample Type Grab Start Depth 463
QC Code Normal End Depth 498
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CSN

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by EPA Method 365.3	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Cincinnati
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	APTIM
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

Probe is getting stuck around 375 ft bgs.

Logged By/Date:

[Signature] 10/14/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106063 RFA/COC Number 501397-GW-009
Sample Number 106063-LTM-101420 Collection Date 10/14/20
Sampling Method Low Flow Collection Time 1000
Sample Type Grab Start Depth 508
QC Code Normal End Depth 523
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CL, SN

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by EPA Method 365.3	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO ₃	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

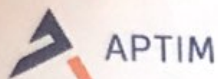
Comments/Descriptions:

DTWi = 475.70 ft bblc

Logged By/Date:

Jalle 10/14/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106EX2 RFA/COC Number 501397-AW-010
Sample Number 106EX2-LTM-101520 Collection Date 10/15/20
Sampling Method Low Flow Collection Time 1215
Sample Type Grab Start Depth 467
QC Code Normal End Depth 502
Sampling Equipment Bladder Pump Sample Matrix GW
QC Partners None Sample Team CU, SN

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by EPA Method 365.3	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTWi = 467.20 ft bto c. No measurable LNAPL.
Water has strong fuel odor and yellow tint.

Logged By/Date:

[Signature] 10/15/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-106EX1 RFA/COC Number 501397-GW-010
 Sample Number 106EX1-LTM-101520 Collection Date 10/15/20
 Sampling Method Low Flow Collection Time 1235
 Sample Type Grab Start Depth 487
 QC Code Normal End Depth 502
 Sampling Equipment Bladder Pump Sample Matrix GW
 QC Partners None Sample Team ALSN

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by EPA Method 365.3	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Cincinnati
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	APTIM
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTWi = 469.54 ft/btc. No measurable LNAPL.
Water has fuel odor and Copper-colored floating material

Logged By/Date:

[Signature] 10/15/20

Reviewed By/Date:



Sample Collection Log

501397 ISB LTM – Groundwater

Location Code KAFB-1061N1

RFA/COC Number 501397-GW-0101

Sample Number 1061N1-LTM-102820

Collection Date 10/28/20

Sampling Method Low Flow

Collection Time 1220

Sample Type Grab

Start Depth 477

QC Code Normal

End Depth 497

Sampling Equipment Bladder Pump

Sample Matrix GW

QC Partners None

Sample Team A

Containers:

Analytical Suite	Filtered	Qty	Size	Container Type	Preservative	Lab
EDB by 8011	NA	3	40 mL	VOA Vials	None	ALS Houston
VOCs by 8260	NA	3	40 mL	VOA Vials	HCl	ALS Houston
Dissolved O-Phosphate by EPA Method 365.3	Yes	1	250 mL	Poly Bottle	None	ALS Houston
Dissolved Fe and Mn by 6020A	Yes	1	125 mL	Poly Bottle	HNO3	ALS Houston
Total Lead by 6020	NA	1	125 mL	Poly Bottle	HNO3	ALS Houston
Anions (Chloride, Sulfate, Bromide, Nitrate and Nitrite) by EPA 300 and Alkalinity by SM2320B	NA	1	125 mL	Poly Bottle	None	ALS Houston
Iodide by EPA 300	NA	1	250 mL	Poly Bottle	None	ALS Cincinnati
Reduced/Dissolved Gases by RSKSOP-175/EPA 3810	NA	2	40 mL	VOA Vials	HCl	APTIM
VFA by EPA 300m	NA	2	40 mL	VOA Vials	None	APTIM
Quant-Array Chlor	NA	1	1 L	Poly Bottle	None	Microbial Insights

Comments/Descriptions:

DTW = 470.99 ft bto c. Water is brown and is very reactive w/ HCl preservative.

Logged By/Date:

J. Haller 10/28/20

Reviewed By/Date: