DRILLING CONTRACTOR: Tri-State Testing Services, Inc.         DRILLING METHOD AND EQUIPMENT USED: Hollow Stem Auger 4.25 inch ID with CME Sampler         WATER LEVELS:       83.02 feet BTOC (11/201)         START:       09/27/2001         END:       09/28/2001         LOGGER:       Jap Parker (Jacobs)         Image: Start				WELL NUMBER	
PROJECT:       Location:				MW	-96 SHEET 1 OF 1
DFILLING CONTRACTOR. In: State Testing Services, Inc.         WATER LEVELS:       83.02 feet BTOC (112001)       START:       09/27/2001       END:       09/28/2001       LOGGER:       Jay Parker (Jacobs)         30       1       Ground elevation at well       28.67 feet MSL         2       1.0       Ground elevation at well       28.67 feet MSL         31       3.0       Velinead protection cover type a) drain tube?       Plush mount vault       no         31       7.0.5 ft       1.0       Ground elevation at well       28.67 feet MSL         32       1.0       Ground elevation at well       28.67 feet MSL       Plush mount vault         30       1.0       Ground elevation at well       28.67 feet MSL       Plush mount vault         33       1.0       Ground elevation cover type a) drain tube?       Plush mount vault       no         31       1.0       Ground elevation cover type a) drain tube?       Plush mount vault       Plush mount vault         10       Jaka 6 in       1.0       Jaka 6 in       Plush mount vault       Plush mount vault         10       Jaka 6 in       1.0       Jaka 6 in       Plush mount vault	CH2MHILL	WELL COMPLETION DIAGRAM			
DRILLING METHOD AND EQUIPMENT USED: Hollow Stem Auger 4.25 inch ID with CME Sampler         WATER LEVELS:       3.02 feet BTOC (11/2001)       START: 09/27/2001       END: 09/28/2001       LOGGER: Jay Parker (Jacobs)         3b       1       Ground elevation at well       28.02 feet MSL         3c       28.02 feet MSL       28.02 feet MSL         9       70.511       Top of casing elevation       28.02 feet MSL         9       0 dain tube?       0) concrete pad dimensions       31X.31X.6 in         4       Dia.Atype of well casing       2 linch Sch. 40 PVC         6       Type of well casing       2 linch 0.010 slotted PVC         6       Type of seal       Benomit chips         9) Quantity used       2 buckets         8       Grout       20% Portland Grout, 10% bentonle por         9) Welfhood of placement       Tremie Method         0) Quantity used       2 buckets         0) Ournit wueld       90% Portland Grout, 10% bentonle por         0) Origination mix used       90% Portland Grout, 10% bentonle por         0) Origination mix used       90% Portland Grout, 10% bentonle por         0) Origination mix used       90% Portland Grout, 10% bentonle por         0) Origination mix used       90% Portland Grout, 10% bentonle por         0) Developmen	PROJECT : Long Term Operational Areas - Memphis Depot			LOCATION : Memphis, Tennessee	
WATER LEVELS:       33.02 feet BTOC (11/2001)       START:       00/27/2001       END:       02/28/2001       LOGGER:       Jay Parker (Jacobs)         30       1       Ground elevation at well       289.67 feet MSL       289.02 feet MSL         31       1       Ground elevation cover type a) drain tube?       1       Flush mount vauit       1         30       1       70.5 ft       1       0       29.07 feet MSL         31       1       70.5 ft       1       0       29.07 feet MSL         4       Dia./type of well casing       2-inch Sch. 40 PVC       1         5       Type stream filter       2       2-inch Sch. 40 PVC         6       Type of well casing       2-inch Sch. 40 PVC         7       Type of seal       Bentonite chips       2         9       Quantity used       10 bags       1       0         1       Orounity used       2       2       2       00% Portland Grout, 10% bentonite por         9       Newlong of the duart of well casing grout       1       1       0       2         1       Development method       Surge & pump with an electrical, centrit       0       0         1       Biol findid garameters collected on LTOA wordplan (2001) specif					
30       2       1       Ground elevation at well       289.67 feet MSL         30       33       33       289.07 feet MSL       289.07 feet MSL         31       33       33       33       33       1       Ground elevation cover type a) drain tube?       33       73.87 fm         9       9       5       10       Jone based driversions       1       Fush mount vauit       10         31       73.5 fm       75.5 fm       1       Disorbic part of a sense       2       Fush mount vauit       10         9       0       St at 31 it 8 in       1       Disorbic part of a sense       2       Fush mount vauit       10         9       0       St at 31 it 8 in       1       Disorbed Cryptic       Disorbed Cryptic <td></td> <td></td> <td></td> <td></td> <td></td>					
3b       2       1       Ground elevation at well       289.07 feet MSL         3a       1       Ground elevation at well       289.02 feet MSL         3       1       At 3 ft x 6 in         3       1       Ground elevation at well       289.02 feet MSL         3       Top of casing elevation       3 ft x 3 ft x 6 in         3       At 3 ft x 6 in       3         4       Dia./type of well casing       2 inch Sch. 40 PVC         5       Type/slot size of screen       2 inch 0.010 slotted PVC         6       Type screen filter       #2 filter sand         a) Quantity used       2 buckets         8       Grout       a) Quantity used         a) Grout mix used       90% Portland Grout, 10% bentonite point         a) Quantity used       2 buckets         8       Grout         b) Method of placement       () Of well casing grout         Development method       Surge & pump with an electrical, centrifinding pump.         Development time       2.75 hour         Estimated purge volume       41 galons         Commetts       Total Depth (BCS) = 96 feet         Completed based on LTOA workplain (2001) specifications.         Development time       2.392 °C	WATER LEVELS : 83.02 feet BTOC (1	1/2001) START: 09/27/2001	END	09/28/2001	LOGGER : Jay Parker (Jacobs)
3. Wellhead protection cover type a) drain tube? b) concrete pad dimensions 4. Dia/type of well casing 2.inch Sch. 40 PVC 5. Type/slot size of screen 2.inch 0.010 slotted PVC 6. Type screen filter a) Quantity used 5. Type screen filter a) Quantity used 2.inch 0.010 slotted PVC 6. Type screen filter a) Quantity used 2.inch 0.010 slotted PVC 6. Type screen filter a) Quantity used 3. Wellhead protection cover type b) Screen 2.inch 0.010 slotted PVC 6. Type screen filter a) Quantity used 3. Wellhead protection cover type b) Development method 5. Stoot Sump 5. Stoot Sump 5. Stoot Sump 5. Train field parameters collected during well development (1030/2001): 5. Conductivity = 0.382 mis/cm 5. Stoot Sump 5. Stoot Sum		2 1	1- Ground elevat	ion at well	289.67 feet MSL
a) drain tube? b) concrete pad dimensions 3 ft x 3 ft x 6 in 3 ft x 3 ft x 6 in 4 Dia.lype of well casing 2 -inch Sch. 40 PVC 4 Dia.lype of well casing 2 -inch Sch. 40 PVC 5 Type/slot size of screen 2 -inch 0.010 slotted PVC 6 Type of seal a) Quantity used 10 bags 7 - Type of seal a) Quantity used 5 Grout a) Grout mix used b) Method of placement c) Vol. of well casing grout 5 b) Method placement c)			2- Top of casing elevation		289.02 feet MSL
a) drain tube? b) concrete pad dimensions 3 ft x 3 ft x 6 in 3 ft x 3 ft x 6 in 4 Dia.lype of well casing 2 -inch Sch. 40 PVC 4 Dia.lype of well casing 2 -inch Sch. 40 PVC 4 Dia.lype of well casing 2 -inch Sch. 40 PVC 6 Type screen filter 4 2 filter sand 3 Quantity used 5 Usuckets 8 Grout a) Grout mix used 90% Portland Grout, 10% bentonite por b) Method of placement c) Vol. of well casing grout 5 Development time 2.75 hour Estimated purge volume 4 1 galions Comments Total Depth (BGS) = 96 feet Completed based on LTOA workplan (2001) specifications. Final field parameters collected during well development (1030/2001): pi = 728 conductivity = 0.352 mS/cm temperature = 22.92 °C Disolved Oxyopen = 4.455 mg/	32	4	3- Wellbead prot	ection cover type	Flush mount vault
b) concrete pad dimensions 3 ft x 3 ft x 6 in 2 inch Sch. 40 PVC 2 inch 0.010 slotted PVC 4 Dia.Jype of well casing 2 inch Sch. 40 PVC 2 inch 0.010 slotted PVC 5 Type/slot size of screen 2 inch 0.010 slotted PVC 6 Type screen filter 9 Quantity used 10 bags 7 Type of seal 9 Quantity used 10 bags 7 Type of seal 9 Quantity used 9 Wertland Grout, 10% bentonite por 9 Method of placement c) Vol. of well casing grout 1 Tremie Method 2 buckets 8 Grout 9 O% Portland Grout, 10% bentonite por 9 Method of placement 1 m-line pump. Development method 1 m-line pump. Development time 2.75 hour Estimated purge volume 4 1 gallons Completed Dased on LTOA workplan (2001) specifications. 1 m-line pump. 1 m T 728 1 m T 728	5ª/		a) drain tube?		
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a) Quantity used       10 bags         7. Type of seal a) Quantity used       Bentonite chips 2 buckets         5       8- Grout a) Grout mix used       90% Portland Grout, 10% bentonite por         b) Method of placement c) Vol. of well casing grout       Tremie Method         6       Development method       Surge & pump with an electrical, centrif in-line pump.         Development time       2.75 hour         Estimated purge volume       41 galons         Comments       Total Depth (BGS) = 96 feet         Comments       Total Depth (BGS) = 96 feet         Conductivity = 0.382 mS/cm       Estimated purge volume         Final field parameters collected during well development (10/30/2001): pt = 7.28         pt = 7.28       conductivity = 0.382 mS/cm			5- Type/slot size of screen		2-inch 0.010 slotted PVC
a) Quantity used       10 bags         7. Type of seal a) Quantity used       Bentonite chips 2 buckets         5       8- Grout a) Grout mix used       90% Portland Grout, 10% bentonite por         b) Method of placement c) Vol. of well casing grout       Tremie Method         6       Development method       Surge & pump with an electrical, centrif in-line pump.         Development time       2.75 hour         Estimated purge volume       41 galons         Comments       Total Depth (BGS) = 96 feet         Comments       Total Depth (BGS) = 96 feet         Conductivity = 0.382 mS/cm       Estimated purge volume         Final field parameters collected during well development (10/30/2001): pt = 7.28         pt = 7.28       conductivity = 0.382 mS/cm		<u> </u>	6- Type screen filter		#2 filter sand
Image: Constraint of the second se	4	↓ ↓			
a) Quantity used 2 buckets a) Quantity used 2 buckets b) Method of placement c) Vol. of well casing grout c) Vol. of well		<u>`</u>	-,,		
8- Grout       a) Grout mix used       90% Portland Grout, 10% bentonite por         b) Method of placement       Tremie Method         c) Vol. of well casing grout       Development method         Burge & pump with an electrical, centrifinin-line pump.         Development method       Surge & pump with an electrical, centrifinin-line pump.         Development method       Surge & pump with an electrical, centrifinin-line pump.         Development time       2.75 hour         Estimated purge volume       41 gallons         Completed based on LTOA workplan (2001) specifications.         Final field parameters collected during well development (10/30/2001):         pH =       7.28         conductivity =       0.382 mS/cm         itemperature =       23.92 °C         Dissolved Oxygen =       4.85 mg/l					
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0.5 foot Sump         Final field parameters collected during well development (10/30/2001):         pH =       7.28         conductivity =       0.382 mS/cm         temperature =       23.92 °C         Dissolved Oxygen =       4.85 mg/l			Comments		
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pH =         7.28           conductivity =         0.382 mS/cm           temperature =         23.92 °C           Dissolved Oxygen =         4.85 mg/l	<b>↓</b>				
pH =         7.28           conductivity =         0.382 mS/cm           temperature =         23.92 °C           Dissolved Oxygen =         4.85 mg/l	←───►				
temperature =23.92 °CDissolved Oxygen =4.85 mg/l	8 25 in				
Dissolved Oxygen = 4.85 mg/l	<u>8.25 IN</u>		temperature		
	Note: Diagram not to scale.				