## KLEINFELDER

November 1, 2007 Revised: November 29, 2007 Project No: 83173.15

Ranajit (Ron) Sahu, Ph.D., CEM Director of Environmental Services Basic Remediation Company 875 West Warm Springs Road Henderson, Nevada 89011

## Subject: Slug Test Results BMI Common Area Henderson, Nevada

Dear Dr. Sahu:

This revised letter report describes the results of slug tests performed in ten monitoring wells located within the BMI Common Area. The slug tests were conducted using the SOP guidelines outlined in the Aquifer Testing Work Plan submitted to the Nevada Department of Environmental Protection (NDEP) in 2006. This report has been revised per NDEP's November 26, 2007 comments (see Appendix C).

Kleinfelder performed aquifer slug tests in ten locations selected from the new monitoring wells installed during the 2007 field season. The locations for the monitoring wells tested were determined based on the lateral spacing between the wells and the formations screened in the wells. The slug tested wells included screened intervals in both the alluvial sediments and the underlying Muddy Creek Formation.

The slug tests were performed using either a 10-foot displacement slug or 5-foot displacement slug. These displacement slugs were made by filling 2-inch diameter PVC pipe with sand and sealing both ends. The slug was quickly lowered into the wells creating rapid changes in groundwater levels that were recorded until groundwater levels had returned to or near the original or pre-test levels. Both the slug-in and slug-out responses to groundwater level changes were recorded. Two complete slug-in and slug-out test cycles were completed on the monitoring wells with the exception of wells that had very slow recovery responses in which only one slug-in and slug-out sequence was performed.

An In-Situ Troll 700 data logger was used to record the water level changes occurring in the well during the test. The data logger was programmed to record water level changes once per second during the testing period. The groundwater level changes recorded by the data logger during the tests were uploaded for analysis into Aquifer Test Pro software from Waterloo Hydrogeologic. The Bouwer-Rice solution in Aquifer Test Pro was used to calculate the hydraulic conductivities listed in Table 1.

The Bouwer & Rice Equation is:

A) For partially penetrating wells the term In(Re/Rw) is:

1

B) For fully penetrating wells the term ln(Re/Rw) is:

1

where K = hydraulic conductivity

Rc = radius of well/screen casing

- Re = effective radial distance over which delta-y is dissipated
- Rw = borehole radius
- H = saturated thickness of aquifer
- A = the Bouwer and Rice 'A' parameter
- B = the Bouwer and Rice 'B' parameter
- C = the Bouwer and Rice 'C' parameter
- Lw = depth below water table to bottom of screen
- Le = length of wetted screen
- Y1 = drawdown (or up) at time T1
- Y2 = drawdown (or up) at time T2
- T = time between T1 and T2

Plots of the test data are shown in Appendix A. Boring logs for the wells tested are provided in Appendix B.

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Well Number	Test	Slug Length	Hydraulic Conductivity (feet/day)	Screened Lithology
AA-23R	Slug In 1	10 feet	8.84	Sand, Silty Sand, and Silt
AA-23R	Slug Out 1		10.00	(Alluvium)
AA-23R	Slug In 2	]	8.60	
AA-23R	Slug Out 2		12.5	
DBMW-2	Slug In 1	10 feet	0.043	Sandy Clay, Clayey Sand
DBMW-2	Slug Out 1		0.060	(Alluvium and MCF <sup>1</sup> )
DBMW-4	Slug In 1	10 feet	2.00	Well Graded Sand with
DBMW-4	Slug Out 1		2.10	Gravel, Silty Sand
DBMW-4	Slug In 2		1.90	(Alluvium and MCF)
DBMW-4	Slug Out 2		2.00	
DBMW-8	Slug In 1	10 feet	0.50	Sandy Clay, Silty Sand, Silt
DBMW-8	Slug Out 1	]	0.59	with Clay
DBMW-8	Slug In 2		0.52	(MCF)
DBMW-8	Slug Out 2		0.59	
DBMW-9	Slug In 1	5 feet	0.080	Silty Clay
DBMW-9	Slug Out 1		0.079	(MCF)
DBMW-16	Slug In 1	10 feet	0.87	Silty Sand, Clay, Clay with
DBMW-16	Slug Out 1		0.38	Silt (Alluvium and MCF)
DBMW-19	Slug In 1	10 feet	1.35	Well Graded Sand, Silty
DBMW-19	Slug Out 1		2.75	Clay, Clayey Silt
DBMW-19	Slug In 2		0.83	(Alluvium)
DBMW-19	Slug Out 2		2.90	
DBMW-22	Slug In 1	10 feet	0.06	Silt with Sand
DBMW-22	Slug Out 1		0.08	(MCF)
AA-26	Slug In 1	5 feet	4.10	Poorly Graded Sand with
AA-26	Slug Out 1	]	1.58	Gravel
AA-26	Slug In 2		2.45	(Alluvium)
AA-26	Slug Out 2		1.65	
AA-08B	Slug In 1	10 feet	50.00	Silty Sand with Gravel
AA-08B	Slug Out 1		70.10	(Alluvium)
AA-08B	Slug In 2		40.00	
AA-08B	Slug Out 2	L	62.10	

Table 1. Slug Test Results for the BMI Common Area, Henderson, Nevada

<sup>1</sup> MCF – Muddy Creek Formation

Comparison of the slug-in and slug-out test results indicates consistent results with only small variations in the resultant hydraulic conductivities. The tested hydraulic conductivities for each monitoring well generally correlates favorably with the screened lithologies.

Several of the monitoring wells are screened across two or more lithologies as in DBMW-4, where the aquifer occurs in a well-graded gravel and silty clay. The slug test in DBMW-4 resulted in values ranging from 1.9 to 2.10 feet/day. The hydraulic conductivity values in DBMW-4, which are generally lower than normally associated with gravel and a little high for silty sand, may be an aggregate value for the two lithologies.

Monitoring well DBMW-2 is screened from 20 to 50 feet below ground surface (bgs). The lithologies found in the upper part of the screen include silty sand from 20 to 31 feet bgs and clayey sand/sandy clay from 31 to 44.5 feet bgs. Both of these units have been interpreted as alluvial sediment. The clayey sand/sandy clay from 31 to 44.5 feet bgs has a reddish-brown color commonly associated with Muddy Creek Formation units. The clayey sand/sandy clay unit may represent reworked sediments derived from the Muddy Creek Formation commonly interbedded within the alluvium in the Henderson area. The lithology from 44.5 to 50 feet bgs is a silty, clayey sandstone of the Muddy Creek Formation. The tested hydraulic conductivities in DBMW-2 are 0.043 and 0.060 feet/day which suggests a response commonly associated with clayey sands.

Monitoring well DBMW-8 is screened across sandy clay, silty sand, and silt with clay. The range of test results for monitoring well DBMW-8 is a hydraulic conductivity of 0.50 to 0.59 feet/day that matches the value commonly associated with silty sands and is not characteristic of silt with clay.

The range of hydraulic conductivities tested in monitoring well DBMW-16 is similar to values associated with silty sands and is not typical of clay and clay with silt present in the screened section of the well. Monitoring well DBMW-16 is screened from 85 to 110 feet bgs. The screened interval includes 10 feet of alluvial silty sands from 85 to 95 feet bgs. The screened interval from 95 to 110 feet bgs includes interlayered clays and silty clays of the Muddy Creek formation. The screened interval crosses the Alluvial/Muddy Creek Formation contact. Groundwater first occurs at 94 feet bgs in the alluvial silty sands in this monitoring well. The hydraulic conductivities for the two slug tests in DBMW-16 were 0.87 and 0.38 feet/day which is within the range of expected values for silty sands found in the upper section of the screen. The MCF silts and clays screened in the lower section of the well should have a value within the  $10^{-3}$  to  $10^{-6}$  feet/day range.

The range of hydraulic conductivity values of 0.83 to 2.90 feet/day from the tests performed in monitoring well DBMW-19 is more commonly associated with well graded sands and not the silty clay or clayey silt within the screened interval.

We sincerely appreciate the opportunity to be of service. If you have any questions regarding the enclosed information, please contact us.

Respectfully submitted,

## **KLEINFELDER**

Dugny P. Witt

Gregory P. Wittman, P.G. Senior Hydrogeologist

Gary Á. Carter, P.E., C.E.M. Environmental Group Manager

GPW/jrs

Appendix A Appendix B Appendix C

## **APPENDIX A**
































































## **APPENDIX B**

K	L	E	I	N	F	E	L	D	E	R	6380 Las \ (702	) Polari Vegas, ) 736-2	is Av Nev 2936	enue ada 89 Fax (7	)118 02)	361-90	094	DRILLING LOG Well No. AA-23R
Proj Site Proj Clie Drill Drill Drill San	ect Na Locat ect No nt: ing Co Rig T ing Me npling	ame: ion: o: ompar ype: ethod. Metho	ny: od:	BRC A Hende 83173 BRC Boart I Boart I Roto-S Contin	Aquife erson, Longy Longy Sonic huous	r Tes NV /ear /ear Core	ting	Si Ei Hi W Si G	tart D nd Da otal H ole D /ell D /ater creer round	Date: ate: Hole D Diamet iamet Level n Leng d Suri	Depth ter (in, er (in, (Initia gth (ft, face E	(ft): ): ): al, Ft): ): Elev.:	6/02 6/02 45 8 4 23 20 - UNK	/07 /07 45				Logged By: Davis Checked By:G. Carter Permit No.:
Depth (feet)	Grap Lo	ohic og			Soil De	/ Geol	ogic on			Sam No	ple ).	Penetration / Recovery	Blows / 6"	PID Headspace (ppm)				Well Completion Details
0		o o o o	SI bro Gr Me	SPHALT LTY GR own Silt AND (SV raded Sa edium S	V): Re and wi and	(GM) vel (Fi ddish ith Gra	: Red II Mat	dish erial) n Well Fine to										Bentonite chip seal 2" diameter Schedule 40 PVC casing, 0.020" slot well screen
-			S/ Sa Gr	AND (SV and with rained s	V-SM): Grave and, T	: Redo el, Fin ſrace	dish b le to M silt	rown Aedium										
30-			SI Si Me S/	LTY SA Ity Sance edium G AND (SV raded Se	ND (S I with trained W: Re and wi	M): Ro Grave d sanc ddish ith Gra	eddisl el, Fin l brown avel.	n brown e to n Well Fine to										
			SI	LT (ML) ay (Top	Sand : Brow of Mu	vn Silt iddy C	with Creek	Sand an Fm.)	d									#10/20 Colorado Silica Sand

<	LE	INFEL	DE	R 6380 Las (702	) Polar Vegas, 2) 736-2	is Av Nev 2936	enue ada 89 Fax (70	118 02) 361-9094	DRILLING LOG Well No. AA-23R
roje	ect Name:	<b>BRC Aquifer Testing</b>	Start	Date:		6/02	/07		Logged By: Davis
Site L	Location:	Henderson, NV	End L	Date:		6/02	/07		Checked By: G. Carter
Proje	ect No:	83173	Total	Hole Depth	(ft):	45			Permit No.:
Clien	t:	BRC	Hole	Diameter (in	):	8			
Drillin	ng Compan	y: Boart Longyear	Well	Diameter (in	):	4			
Drill F	Rig Type:	Boart Longyear	Wate	r Level (Initia	al, Ft):	23			
Drillin	ng Method:	Roto-Sonic	Scree	en Length (ft	):	20 -	45		
amp	oling Metho	d: Continuous Core	Grou	nd Surface E	:lev.:	UNK	( 		
(feet)	Graphic Log	Soil / Geologic Description		Sample No.	enetration /	lows / 6"	ND feadspace ppm)		Well Completion Details
Chinese and		SILTY CLAY (CL): Pale Yellor Plastic Clay	w High				LTS		
		SILT (ML): Brown Silt with Sa Clay SILTY CLAY (CL): Pale Yellov Plastic Clay	nd and w High		「「「「「「「」」」				

K	L	E	I	N	F	E	L	D	E	R	6380 Las \ (702)	Polar /egas, 736-2	is Av Nev 2936	enue ada 891 Fax (70	18 2) 361-90	94	DRILLING LOG Well No. DBMW-2
Proje Site Proje Clier Drilli Drilli Sam	ect Nai Locati ect No. nt: ing Coi Rig Ty ing Me ing Me	me: on: : mpar /pe: thod: Metho	ny: od:	BRC A Hende 83173 BRC Boart B.L Roto-S Contir	Aquife erson, Longy GP24 Sonic nuous	r Tes NV /ear -300F Core	ting	S E H W S G	tart D nd Da otal H ole D /ell D /ater creen	Pate: ate: lole D liamete iamete Level h Leng d Surfa	epth er (in, er (in) (Initia (Initia (ft) ace E	(ft): ): : : : : :lev.:	6/18/ 6/18/ 50 8 4 21 20-5 1625	/07 /07 0 5.16 fee	t NAVD88	3	Logged By: Davis Checked By:G. Carter Permit No.:
Depth (feet)	Grap Log	hic g			Soil De	/ Geolo scriptio	ogic on			Samp No.	ole	Denetration /	3lows / 6"	PID Teadspace (ppm)			Well Completion Details
0			SI Br Sa <4	LTY SA own wit Inds. Th ".	ND (S h Grav nin Gra	W/SM vel, W avel b	): Rec ell Gra eds pr	ldish aded esent									Locking Stove-Pipe Monument w/ Concrete Vault and Ballards. 2.6' Stick-up Bentonite chip seal
20			SA	ANDY C	LAY ((	CL): R	eddisl	n Brown	I.								4" Diameter Schedule 40 PVC Casing, 0.020" Slot Well Screen
30									)В	MW-2,	<mark>30-31</mark> .						#10/20 Colorado Silica Sand

K	LE	INFELD	<b>E R</b> 6380 Las V (702)	Polar /egas, 736-2	is Av Nev 2936	enue ada 891 Fax (70	18 2) 361-9094	DRILLING LOG Well No. DBMW-2
Proje	ect Name:	<b>BRC</b> Aquifer Testing	Start Date:		6/18	/07		Logged By: Davis
Site	Location:	Henderson, NV	End Date:		6/18	/07		Checked By: G. Carter
Proje	ect No:	83173	Total Hole Depth	(ft):	50			Permit No.:
Clier	nt:	BRC	Hole Diameter (in)	:	8			
Drilli	ing Compar	y: Boart Longyear	Well Diameter (in)	:	4			
Drill	Rig Type:	B.L GP24-300RS	Water Level (Initia	I, Ft):	21			
Drilli	ing Method:	Roto-Sonic	Screen Length (ft)	:	20-5	0		
Sam	pling Metho	od: Continuous Core	Ground Surface E	lev.:	1625	5.16 feet	NAVD88	
Depth (feet)	Graphic Log	Soil / Geologic Description	Sample No.	Penetration / Recovery	Blows / 6"	PID Headspace (ppm)		Well Completion Details
40-		CLAYEY SAND/SANDY CLAY (SC/CL): Reddish Brown, Wet						4" Diameter, 0.020" Slot
50		MUDDY CREEK FORMATION (TMC):Silty Clayey Sandstone, Light Reddish Brown to Light Greenish Gray	)BMW-2, 50-51.					Stop sampling at 50 feet bgs.

K	L	E		N	F	E	L	D	E	R	6380 Las \ (702)	Polar /egas 736-2	is Av Nev 2936	enue ada 89 Fax (7	9118 02) 361-9	094	DRILLING LOG Well No. DBMW-4
Proje Site Proje Clien Drilli Drilli Sam	ect Na Locati ect No nt: ing Co Rig T <u>j</u> ing Me ppling	ame: ion: o: ompar ype: ethod: Metho	ny: od:	BRC A Hende 83173 BRC Boart I B.L ( Roto-S Contin	Longy GP24 Sonic uous	r Test NV vear -300F Core	ting	S E F V V S S C	Start End E Fotal Hole I Vell I Vatel Scree Broui	Date: Date: Hole I Diame Diame r Level n Leng nd Sur	Depth ( ter (in) ter (in) (Initia gth (ft) face E	(ft): : : I, Ft): : lev.:	7/23/ 7/23/ 40 8 4 11 10-3 1602	/07 /07 0 2.98 fe	et NAVD8	38	Logged By: Davis Checked By:G. Carter Permit No.:
Depth (feet)	Grap Lo	ohic g			Soil / De	/ Geolo scriptio	ogic on			Sam No	ple ).	Penetration / Recovery	Blows / 6"	PID Headspace (ppm)			Well Completion Details
0			FIL	L: Road	d Fill												Locking Stove-Pipe Monument w/ Concrete Vault and Ballards. 3' Stick-up
10	Α	2	WE GR (5Y me <2' silt	ELL GR/ AVEL ( (R 4/4), dium gr ' subrou , Dry, I	ADED SW): Trace ained unded Non p	SANE Reddia Silt, sand, and v lastic	0 WITI sh Bro 75% 20% olcan	H own fine to gravel ic, 5%				二十二日 二十二日 二十二日 二十二日 二十二日 二十二日 二十二日 二十二日					Bentonite chip seal 4" Diameter Schedule 40 PVC Casing, 0.020" Slot Well Screen
20			SII Re to gra sul We Sa	TY SAI ddish B medium avel <2" brounde t, Low ndy Fac	ND W rown sand subar ed/volo to me cies of	TH GI (5YR 4 ngular canic, dium p f Mudo	RAVE 4/4), 6 silt, to trace blastic dy Cre	L (SM): 55% fin 15% clay, city, eek Fm	e	BMW-4,	15-16.						#10/20 Colorado Silica Sand
30			CL Foi Tra 25' to	AYEY S rmation, ace gyp % clay, 2", Wet	GILT (I , Brow sum c <2% , Medi	ML): M /n (7.5 rystal gypsu ium pl	fuddy YR 4, s, 75 im cry astici	Creek /4), % silt, vstals u ty	ıp								#10/20 Colorado Silica Sand

KLEI	NFEL	DE	6380 Polar Las Vegas (702) 736-2	is Avenue , Nevada 89118 2936 Fax (702) 361-9(	DRILLING LOG Well No. DBMW-4
Project Name: Site Location: Project No: Client: Drilling Company: Drill Rig Type: Drilling Method: Sampling Method:	BRC Aquifer Testing Henderson, NV 83173 BRC Boart Longyear B.L GP24-300RS Roto-Sonic Continuous Core	Start Da End Date Total Ho Hole Dia Well Dia Water Le Screen L Ground	te: e: le Depth (ft): meter (in): meter (in): evel (Initial, Ft): _ength (ft): Surface Elev.:	7/23/07 7/23/07 40 8 4 11 10-30 1602.98 feet NAVD8	Logged By: Davis Checked By:G. Carter Permit No.:
Graphic Log	Soil / Geologic Description		Penetration / Secovery	Blows / 6" PID Headspace (ppm)	Well Completion Details
40			DBMW-4, 40		4" Diameter, 0.020" Slot Stop sampling at 40 feet bgs.

K	LE	INFELDE		380 Polari as Vegas, 702) 736-2	s Ave Nev	enue ada 89118 Fax (702) 361-9094	DRILLING LOG Well No. DBMW-8
Proj Site Proj Clie Drill Drill Drill San	ect Name: Location: ect No: nt: ing Compan Rig Type: ing Method: npling Method	BRC Aquifer TestingStartHenderson, NVEnd83173TotaBRCHoley:Boart LongyearWellB.L GP24-300RSWateRoto-sonicScreetod:Continuous CoreGrout	t Date: Date: I Hole De Diamete Diametei er Level (i en Lengti ind Surfa	pth (ft): r (in): r (in): Initial, Ft): h (ft): ce Elev.:	6/23/ 6/24/ 70 8 4 57 47.5 1628	07 07 67.5 9.95 feet NAVD88	Logged By: Davis Checked By:G. Carter Permit No.:
Depth (feet)	Graphic Log	Soil / Geologic Description	Sample No.	a Penetration / Recovery	Blows / 6"	PID Headspace (ppm)	Well Completion Details
0	0	SILTY GRAVEL (GM): Reddish Brown with Sand, 60-80% Fine to Medium Grained Gravel, Fine to Medium Grained Sand, Dry, Non Plastic					Locking Stove-Pipe Monument w/ Concrete Vault and Ballards. 3' Stick-up
		SILTY SAND (SM): Reddish Brown with Gravel, 60-75% Fine to Medium Grained Sand, Dry, Very Low Plasticity					
10-	0	WELL GRADED GRAVEL (GM): With Silt and Sand, 50-60% Medium to Coarse Gravel, 30-40% Sand, Non Plastic					
		WELL GRADED SILTY SAND (SM): Reddish Brown with Gravel, 60-80% Fine to Medium Grained Sand					
20-	· · · · · · · · · · · · · · · · · · ·	WELL GRADED GRAVEL (GM): Reddish Brown with Silt and Sand, 50-80% Gravel, Trace Coarse Gravel and Cobbles <4", Non to Very Low Plasticity, Poorly Defined Bedding 2-6" Thick WELL GRADED SILTY SAND (SM):					
	· • · · · ·	Reddish Brown with Gravel, 60-80% Sand, Dry, Very Low Plasticity WELL GRADED GRAVEL (GM): Reddish Brown with Silt and Sand, 50-80% Gravel, Trace Coarse Gravel and Cobbles <4", Non to					Bentonite chip seal
	· · · · o ·	Very Low Plasticity, Poorly Defined Bedding 2-6" Thick WELL GRADED SILTY SAND (SM): Reddish Brown with Gravel, 60-80% Sand, Dry, Very Low Plasticity WELL GRADED GRAVEL (GM):					
30- - -		Reddish Brown with Silt and Sand, 50-80% Gravel, Trace Coarse Gravel and Cobbles <4", Non to Very Low Plasticity, Poorly Defined Bedding 2-6" Thick, Sands and Gravels Sub Angular to Sub Rounded and Volcanic Derived					
-		WELL GRADED SILTY SAND (SM): Reddish Brown with Gravel, 60-80% Sand, Dry, Very Low Plasticity, Sand					

Κ	L	E		N	F	E	L	D	E	R	638 Las (70)	0 Pola Vegas 2) 736-	ris Av , Nev 2936	enue ada 891 Fax (70	18 2) 361-909	4	DRILLING LOG Well No. DBMW-8
Proj Site Proj Cliei Drilli Drilli Sam	ect Na Locati ect No nt: ing Co Rig Ty ing Me apling I	me: on: : mpar /pe: thod: Metho	ny: od:	BRC A Hende 83173 BRC Boart I B.L 0 Roto-s Contin	Longy GP24 onic uous	r Test NV ear -300F Core	ting	S E F F V V S S O	Start End L Total Hole Well I Wate Scree Groui	Date: Date: Hole I Diame Diame r Leve en Len nd Sui	Depth eter (i eter (in eter (in eter (in egth (i face	n (ft): n): n): ial, Ft): ft): Elev.:	6/23 6/24 70 8 4 57 47.5 1628	/07 /07 -67.5 3.95 fee	t NAVD88	L C F	Logged By: Davis Checked By:G. Carter Permit No.:
Depth (feet)	Grap Loç	hic 9			Soil De	/ Geolo scriptio	ogic			San N	nple o.	Penetration / Recovery	Blows / 6"	PID Headspace (ppm)			Well Completion Details
40			ar Su Re 50 G V B B W Re Sa ar	nd Grave brounde ELL GR eddish B 0-80% G ravel and ery Low edding 2 ELL GR eddish B and, Dry od Grave	el Suba ad anci ADED rown y ravel, d Cobl Plastic -6" Th ADED rown y , Very el Suba	angula GRAV with S Trace bles < city, F cick SILTY with G Low I angula	ar to anic [ /EL (( ilt and Coar 4", No Poorly ( SAN Gravel Plasti ar to	Derived GM): d Sand se on to Define ID (SM , 60-80 city, S	, ed ): % and								
			SICI Tr PI SJ BI SJ BI SJ BI SJ BI SJ SJ BI SJ SJ SJ SJ SJ SJ SJ SJ SJ SJ SJ SJ SJ	AY (CL) ace Silt, asticity, //8" ANDY Cl own and ace Silt, asticity, //8", Slig UDDY Cl MC): Lig Ity Claye and, Slig gh Plast ypsum F	A and Ligh Mode 15-30 AY (C Pale Mode 15-30 htly M REEK ht Bro Sar htly N icity. Presen	I Volca t Gray erate t 0% Fin OL): M Green erate t 0% Fin loist FORM own/Re nd, 60 loist, I Trace t.	anic I yish C o Hig ie Gy ottled nish C o Hig ie Gy MATIC eddisl -80% Mode Fine	Derived Breen h psum I Reddi Gray h psum N N Fine rate to Graine	sh n d							B4'C4'C\$ #	entonite chip seal " Diameter Schedule 40 PVC casing " Diameter Schedule 40 PVC casing, 0.020" Slot Well Screen
  60			Si Re G	lty Sand eddish B ray, 15-4 /4" Pres	with rown 40% F sent, N	Clay, I and Pa ine Gr Moist t	Mottle ale G rained to We	ed reenish I Gypsi t	n um							#	10/20 Colorado Silica Sand
			Si Li 3- Pl	lt with C ght Gree 8% Fine asticity.	lay, Ti enish ( Grain	race F Gray, led Gy	fine S 80-90 /psun	and, % Fine ı, Low	es,	DBN	/IVV-8,	62	6			4'	" Diameter, 0.020" Slot
70			Si Bi Pl G	lty Sand rown/Rec asticity, ypsum	with ddish 15-25	Clay, I Brown 5% Fin	Light , Low ie Gra	ained		BMW-8	8, 70-7	1.t				S	itop sampling at 70 feet bgs.

K	L	E		N	F	E	L	D	E	R	6380 Las \ (702	) Polari √egas, ) 736-2	is Av Nev 2936	enue ada 8 Fax (	9118 702) 361	-9094	DRILLING LOG Well No. DBMW-9
Proje Site Proje Clier Drilli Drilli Sam	ect Na Locat ect No nt: ing Co Rig T ing Me ppling	ame: ion: o: ompar ype: othod: Metho	B H 8 B H B B R C C C C	RC A lender 3173 RC oart L 3.L. GI Roto-S Continu	quife rson, ongy 24-3 onic uous	r Tesi NV ear 800RS Core	ting S	Si Ei H W Si G	tart D nd Da otal H ole Di /ell Di /ater L creen round	ate: lole D iamet amet Level Leng I Surf	epth er (in) er (initia (Initia (Initia (Initia (Initia (Initia)	(ft): ): al, Ft): ): Elev.:	6/25 6/25 75 8 4 62 54-7 1656	/07 /07 4 5.83 fe	eet NAV	D88	Logged By: Davis Checked By:G. Carter Permit No.:
Depth (feet)	Grap Lo	ohic g			Soil / De:	Geolo	ogic			Samp No	ole	Penetration / Recovery	3lows / 6"	PID Headspace	linda		Well Completion Details
0			SILT with GRA 60-8 SILT 60-8 Sanc GRA SILT 60-8 Sanc GRA SILT 60-8 Sanc GRA SILT 10-1 Plas SILT with GRA SO-7	Y SAN Grave VEL (0 0% Fir 0% Fir ds, No VEL (0 and Sa Y SAN 0% Fir d, Non VEL (0 Silt an um to 2% Fir tic Y SAN Grave ned Sa ticity. VEL (0 5% Fir	ND (SI II, Dry GW): The Gra ND (SI Inte to 1 ND (SI Inte to 1 ND (SI Inte to 1 MSM): The Gra ND (SI Inte to 1 MSM): The to 1 MSM (SI MSM): The to 1 MSM): The to 1 MSM (SI MSM): The to 1 MSM): The to 1 MSM (SI MSM): The to 1 MSM (SI MSM): The to 1 MSM): The to 1 MSM (SI MSM): The to 1 MSM (SI MSM (SI MSM (SI MSM): The to 1 MSM (SI MSM (SI MSM): The to 1 MSM (SI MSM):	M): Re , Non With S ained W): Wi Coars .ow Pl Reddi W): Wi Coars w Pla With S Reddi avel, 6 se Gra avel, 1 Non t With S Mediu	eddish Plast Silt an Grave ith Gra e Gra asticity Silt an lish B 30-75% ained Dry, N eddish Fine to o Low Silt an m Gra	Brown ic d Sand, ined ty own with avel, ined rown d Sand, on Brown b Mediur d Sand, avel	n								Locking Stove-Pipe Monument w/ Concrete Vault and Ballards. 3' Stick-up Bentonite chip seal
30			SILT 60-8 Sanc <2", GRA Silt a <2",	Y SAN 0% Fir d, 8-15 Dry, N VEL (1 and Sa 40-50	ND (SI ne to 1 5% Fir Ion to GW): and, 8 % Fin	M): Wi Mediu te to ( Low Low Reddi -12% e Gra	ith Gra m Gra Coars Plasti Sh Br Coars vel	avel, ained e Grave city own with se Grave	n el								Bentonite chip seal
-			SILT	Y SAN	VD (SI	M): Re	ddish	Brown									

K	L	E	IN	F	E	L	D	E	R	6380 Las \ (702)	Polari /egas, 736-2	s Av Nev 936	enue ada 89 Fax (7	9118 02)	361-9	094	DRILLING LOG Well No. DBMW-9
Proje Site Proje Clier Drilli Drilli Sam	ect Nar Locatio ect No: nt: ng Cor Rig Ty ng Met pling M	me: on: mpar pe: thod: Metho	BRC / Hende 83173 BRC 9/: Boart B.L. G Roto-3 pd: Contin	Aquifer erson, Longy SP24-3 Sonic nuous	r Test NV ear 800RS Core	ting S	S E H M S G	tart D ind Da iotal H lole D lole D lole D lole D iotal H creen irounc	ate: lole D iamete iamete Level Leng d Surfa	epth ( er (in) er (in) (Initia th (ft) ace E	ft): : : !, Ft): : !ev.:	6/25 6/25 75 8 4 62 54-7 1656	/07 /07 4 3.83 fee	et N	IAVD	88	Logged By: Davis Checked By:G. Carter Permit No.:
Depth (feet)	Grapi Log	hic J		Soil / De:	Geolo Geolo	ogic			Samp No.	ole	Penetration / Recovery	3lows / 6"	PID Headspace ppm)				Well Completion Details
40-			Fine to Co Low Plast	e coars oarse S ticity	se Gra Sand,	aver, d Dry, I	Non to						штС				4" Diameter Schedule 40 PVC Casing
-			MUDDY C (TMC): Sil Yellowish 60-80% F Slightly M	REEK Ity Clay Green ine Sau loist, L	FORM yey Sa , Trac nd, 20 ow Pla	MATIO and, L e Gra )-40% asticit	N Light Ivel, Fines, Y										
			Reddish E Gypsum,	Brown, Trace	2-5% Crysta	Fine als <1	Grained										
50			Light Yell	owish (	Green												
			Reddish E Gypsum i	Brown, in Thin	8-15% Beds	6" <6	Graine	d									
			Light Yell Gypsum,	owish ( Thin B	Green eds	, 5-12	?%										4" Diameter Schedule 40 PVC Casing, 0.020" Slot Well Screen
60—  			Reddish I Plasticity	3rown/l	Brown	, Mois	st, Low										#10/20 Colorado Silica Sand #10/20 Colorado Silica Sand
			Light Yell	owish	Green	, Wet											
70			Brown/Re Sand, 1-5 Low Plast	ddish I 5% Fine ticity	Brown e Graii	, 60-8 ned G	30% Fin Sypsum,	e	MW-9,	65-66.							4" Diameter, 0.020" Slot

K	L	E	I	N	F	E	L	D	E	R	6380 Las V (702)	Polar /egas 736-3	is Av , Nev 2936	enue ada 89 Fax (70	118 02) 36	1-9094	DF 4 We		NG L	og MW-	9
Proje Site Proje Clier Drilli Drilli Sam	ect Na Local ect No nt: ing Co Rig T ing Mo pling	ame: tion: o: ompai ōype: ethod Meth	ny: : od:	BRC A Hende 83173 BRC Boart I B.L. G Roto-S Contin	Longy P24-3 Sonic uous	r Tes NV /ear 300RS Core	ting S	S E T T T T T T T T T T T T T T T T T T	tart D nd Da otal H ole D /ell Di /ater I creen rounc	ate: ate: lole D liamet iamet Level Leng d Surf	Depth ( ter (in) er (in). (Initia gth (ft). face El	(ft): : : I, Ft): : lev.:	6/25 6/25 75 8 4 62 54-7 1656	/07 /07 4 5.83 fee	et NA	VD88	Log Che Per	ged By ocked E mit No.	∕: Dav 3y:G. ( .:	vis Carter	
Depth (feet)	Gra Lo	phic og			Soil De	/ Geolo	ogic on			Samı No	ple	Penetration / Recovery	Blows / 6"	PID Headspace (ppm)			We	ell Com Detai	pletion ls		
-			Mo	ottled Br	own a	and Ye	llowis	h Greer	)BI	MW-9,	75-76.						Stop	sampli	ng at 7	5 feet b	gs.
																				Page	of 3

K	L	E	I	Ν	F	E	L	D	E	R	6380 Las \ (702)	Polar /egas, 736-2	is Av Nev 2936	enue ada 89 Fax (70	118 )2) 361-90	94	DRILLING LOG Well No. DBMW-16
Proj Site Proj Clien Drill Drill Drill Sam	ect Na Locat ect No nt: ing Co Rig T ing Me ppling	ame: ion: o: ompai ype: athod. Metho	ny: od:	BRC A Hende 83173 BRC Boart B.L 0 Roto-S Contin	Aquife erson, Longy GP24 Sonic Juous	r Test NV rear -300F Core	ting RS	St Er To Ho W So Gi	art Da otal H ole Di 'ell Di 'ater L creen round	ate: ole De iameté ameté _evel _evel _eng l Surfé	epth er (in) er (in) (Initia th (ft) ace E	(ft): ): : : : : : : : : : : : : : : : : :	7/19. 7/22. 110 8 4 94 85-1 1691	/07 /07 10 I.31 fee	t NAVD8	8	Logged By: Davis Checked By:G. Carter Permit No.:
Depth (feet)	Grap Lo	ohic g			Soil / De	/ Geolo scriptic	ogic on			Samp No.	ole	Penetration / Recovery	Blows / 6"	PID Headspace (ppm)			Well Completion Details
0 0 10 20 30		g	WI (7.50 Gr 2)IN SA Fir Gr Me GrWG (Sul 2) SA Fir Traces NoWG (Gr 2) SA Fir Traces N	ELL GR 5YR 5/4 % Fine avel Su " (Volca TERBEL ND (SV le and C avel Be edium to avel Be edium to avel, Tr ELL GR W): Bro bangula " Grave nd, Dry TERBEL ND (SV le and N ace Gra nsist of brounde n Plasti ELL GR W): Bro avel <21 Icanics nd, Dry	ADED ADED 4) with to Med bangu inic), [ DDED V): Bro Coarse ds <6" rained coarse ds <6" rained Coarse ace Si ADED wn (7. ar/Subi ADED V): Bro DDED V): Bro ODED V): Bro ADED Wn (7. ar/Subi ADED V): Bro Coarse ace Si ADED Wn (7. ar/Subi ADED V): Bro Coarse ace Si ADED V): Bro Coarse ADED V): Bro Coarse ADED V): Bro ADED V): Bro ADED	SANE Grav dium S lar to Dry, N WELL wm (7 Grair ' Thick Sand se San ilt, Dry SANE 5YR 5 SYR 5 SYR 5 SYR 5 SANE SYR 5 Ingula Fine t Plasti SANE SANE SANE SANE SANE SANE SANE SANE	on (SW) el, Tra Sand, Subro on Pla GRAI .5YR ned Sa (, 80% , 17ac Syr on Pla GRAI .5YR (, Non )Y GR (, 157 (, Non )Y GR (, 157 (, Non )Y GR (, 157 (, Non )Y GR (, 157 (, 157 (, 157 (, 157 (, 157 () 1	2: Brown ace Silt, 15% ounded astic DED 5/4), and with 6 Fine to 5% or Plastic AVEL 0% lcanic dium DED 5/4), and, 5/4), and, 5/4), and, 5/4), and, 5/4), and dium DED 5/4), and, 5/4), and dium	·	No.		Per	BIO				Details Locking Stove-Pipe Monument w/ Concrete Vault and Ballards. 3' Stick-up Bentonite chip seal
-			75 5% Vo	% Fine 6 Grave Icanics	to Meo I <1" S , Dry,	dium S Subrou Non to	Sand, Inded o Low	20% Silt Plastici	t, ty								Bentonite chip seal

K	LE	INFELDI	DRILLING LOG Well No. DBMW-16				
Proj Site Proj Clie Drill Drill Drill San	ect Name: Location: ect No: nt: ing Compar Rig Type: ing Method: npling Method	BRC Aquifer TestingStarHenderson, NVEnd83173TotaBRCHoleay:Boart LongyearWelB.L GP24-300RSWatRoto-SonicScreetbod:Continuous CoreGrout	Logged By: Davis Checked By:G. Carter Permit No.:				
Depth (feet)	Graphic Log	Soil / Geologic Description	Sample No.	o Penetration / Recovery	Blows / 6"	PID Headspace (ppm)	Well Completion Details
40		<ul> <li>WELL GRADED SAND (SW): Brown (7.5YR 4/3), Trace Gravel, 95% Fine to Coarse Sand; 40% Coarse Sand, 5% Gravel &lt;1/2", Rounded Volcanics, Dry (Zone of Moisture 2" Thick at 46.8"), Non Plastic</li> <li>SILTY SAND (SM): Brown (7.5YR 5/4), Trace Gravel, 75% Fine to Medium Sand, 20% Silt, 5% Gravel, Dry, Low Plasticity</li> <li>With Gravel, 70% Fine to Medium Sand, 15% Silt, 15% Gravel &lt;2", Subangular/Subrounded (Volcanic), Dry, Low Plasticity</li> <li>Reddish Brown (5YR 5/4), Trace Clay, 75% Fine to Medium Grained Sand, 20% Silt, 5% Clay, Moderate</li> </ul>					Bentonite chip seal 4" Diameter Schedule 40 PVC Casing 4" Diameter Schedule 40 PVC Casing

K	L	E	I	N	FELDE R 6380 Polaris Avenue Las Vegas, Nevada 89118 (702) 736-2936 Fax (702) 361-9094											DRILLING LOG Well No. DBMW-16		
Proje Site Proje Clier Drilli Drilli Sam	Project Name:BRC Aquifer TestingStart Date:7/19/07Site Location:Henderson, NVEnd Date:7/22/07Project No:83173Total Hole Depth (ft):110Sitent:BRCHole Diameter (in):8Prilling Company:Boart LongyearWell Diameter (in):4Prilling Method:Roto-SonicScreen Length (ft):94Sampling Method:Continuous CoreGround Surface Elev.:1691.31 feet NAVD88												8	Logged By: Davis Checked By:G. Carter Permit No.:				
Depth (feet)	Grap Lo	ohic g			Soil / De	/ Geolo scriptio	ogic on			Sam No	ple	Penetration / Recovery	Blows / 6"	PID Headspace (ppm)				Well Completion Details
80			Plasticity. Fine Grained Gypsum Present from 70 to 84'.															4" Diameter Schedule 40 PVC Casing, 0.020" Slot Well Screen
90			Liç Sa 15	Light Brown (7.5YR 6/4), Increase in Sands, 80% Fine to Medium Sands, 15% Silt and 5% Clay, Moist														#10/20 Colorado Silica Sand
			CL wit We Mu	AY (CL) th Silt, 8 et, Medi uddy Cre	): Pale 35% C um to eek Fo	e Yello lay an High ormatio	ow (5) od 159 Plasti on	7 8/3) % Silt, icity.										
100-			CL (5) Tra Pla	AYEY S YR 4/4), ace Fine asticity.	SILT (1 60% Sanc Mudd	ML): R Silt ar I, Wet ly Cree	Reddis nd 40 , Mec ek Fo	h Brown % Clay, lium fium	n									4" Diameter, 0.020" Slot
_			CL wit We Mu	AY (CL th Silt, 8 et, Medi uddy Cre	): Pale 35% C um to eek Fo	e Yello lay an High ormatio	ow (5) nd 159 Plasti on	/ 8/3) % Silt, icity.		C	BMW-	1						
			CL (5) Tra	AYEY S YR 4/4), ace Fine	SILT (I , 60% e Sanc	ML): R Silt ar I, Wet	Reddis nd 40 , Mec	sh Brow % Clay, lium	n									

		F 6380 Polar	is Avenue		
KLEI	NFELD	Las Vegas (702) 736-	, Nevada 89118 2936 Fax (702) 361-9094	Well No. DBMW-16	
Project Name: Site Location: Project No: Client: Drilling Company: Drill Rig Type: Drilling Method: Sampling Method:	BRC Aquifer TestingSiHenderson, NVEi83173ToBRCHiBoart LongyearWB.L GP24-300RSWRoto-SonicSiContinuous CoreG	tart Date: nd Date: otal Hole Depth (ft): ole Diameter (in): /ell Diameter (in): /ater Level (Initial, Ft): creen Length (ft): round Surface Elev.:	7/19/07 7/22/07 110 8 4 94 85-110 1691.31 feet NAVD88	Logged By: Davis Checked By:G. Carter Permit No.:	
Depth (feet) Fog	Soil / Geologic Description	Penetration / Recovery	Blows / 6" PID Headspace (ppm)	Well Completion Details	
110- 	lasticity. Muddy Creek Formation	DBMW-16, 110-		Stop sampling at 50 feet bgs.	

K	LE	INFELD	DRILLING LOG Well No. DBMW-19							
Proj Site Proj Clie Drill Drill Drill San	ect Name: Location: ect No: nt: ing Compan Rig Type: ing Method: npling Method	Logged By: Davis Checked By:G. Carter Permit No.:								
Depth (feet)	Graphic Log	Soil / Geologic Description	Sample No.	minimized by the second						
0		SILT (ML): Light Brown (7.5YR 6/4), Trace fine sand, 95% silt, 5% fine sand, Dry, Non to low plasticity						Locking Stove-Pipe Monument w/ Concrete Vault and Ballards. 3' Stick-up		
          		SILTY SAND (SM): Reddish Brown (2.5YR 4/4), 70% Fine sand, 20% Silt, 5% Fine gravel <1" subrounded/volcanic, Dry, Non to Low plasticity						Bentonite chip seal		
		Fine grained gypsum, Disseminted						4" Diameter Schedule 40 PVC Casing, 0.020" Slot Well Screen		
20		Trace clay, Moist, Low to medium plasticity	DBMW-19, 20-2					#10/20 Colorado Silica Sand		
		CLAYEY SAND (SC): Brown (7.5YR 4/4), 70% Fine to medium sand, 20% clay, 5% gravel <1" subrounded/volcanic, Wet, Low plasticity		Super-						
-		CLAY WITH SILT (CL): Pale Olive (5Y 6/3), 90% Clay, 10% Silt, Wet,						#10/20 Colorado Silica Sand 4" Diameter, 0.020" Slot		

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Proje Site Proje Clien Drillin Drillin Drillin	ect Name: Location: ect No: ht: ng Compa Rig Type: ng Method	ny: I:	BRC A Hende 83173 BRC Boart B.L	Aquife erson, Longy GP24 Sonic	r Testir NV /ear -300R\$	ng	Start End I Total Hole Well Wate Scree	Date: Date: Hole De Diamete Diamete r Level ( an Lena	e: e Depth (ft): meter (in): meter (in): vel (Initial, Ft):			/07 /07 0			Logged By: Davis Checked By:G. Ca Permit No.:	Davis G. Carter
Sam	pling Meth	nod:	Contin	nuous	Core		Ground Surface Elev.: 1580.41 feet NAVD88									
(feet)	Graphic Log			Soil De	/ Geolog scription	ic		Samp No.	le	Penetration / Recovery	Blows / 6"	PID Headspace (ppm)			Well Comple Details	etion
to 40		Fo	rmation	)				DBMW-1	9, 40-			-			Stop sampling	at 40 feet bgs
Hat _		5 <u>.</u>														

K	L	E		Ν	F	E	L	D	E	R	6380 Las \ (702)	Polar /egas, 736-2	is Av Nev 2936	enue ada 89 Fax (7	)118 02) 361-9	094	DRILLING LOG Well No. DBMW-22
Proj Site Proj Clie Drill Drill Drill San	ect Na Locat ect No nt: ing Co Rig T ing Ma npling	ime: ion: o: ompar ype: othod: Metho	P:BRC Aquifer TestingStart Date:8/13/07:Henderson, NVEnd Date:8/13/0783173Total Hole Depth (ft):55BRCHole Diameter (in):8Dany:Boart LongyearWell Diameter (in):4P:B.L GP24-300RSWater Level (Initial, Ft):39Dd:Roto-SonicScreen Length (ft):35-55thod:Continuous CoreGround Surface Elev.:UNK										Logged By: Davis Checked By:G. Carter Permit No.:				
Depth (feet)	Grap Lo	ohic g	hic Soil / Geologic g Description							Samp No.	ole	Penetration / Recovery	Blows / 6"	PID Headspace (ppm)			Well Completion Details
0			Wind Gir Sun Si	DMPACT ELL GR RAVEL ( % Fine avel <2' brounde stic DORLY ( own (7.5 ained sa ELL GR RAVEL ( % Fine avel <2' brounde astic	ADED SW): to med SW): Suba ed/vold GRAD SYR 5/ and, D ADED SYR 5/ and, D ADED SW): to med SW): to med SW SW): to med SW): to med SW SW): to med SW): to med SW): t	LL Brown dium s angula canic, ED SA (4), 10 ry, No SAND Brown dium s angula canic, ): Pal 20% S h plas ween	0 WITH (7.5) and, 1 Dry, 1 Dry, 1 ND (§ 00% F n plas 0 WITH (7.5) and, 1 r to Dry, 1 Silt, D ticity. 17 an	H (R 5/3), 20% Non SP): ine stic H (R 5/3), 20% Non e (5Y ry/moist d 22 ft.									Locking Stove-Pipe Monument w/ Concrete Vault and Ballards. 3' Stick-up Bentonite chip seal
30			Sile OI to SI SI SI SI SI SI SI SI SI SI SI SI SI	ty Lens Iddish B high pla LT WITH ht Redd It, 20% eakly ce	es pre rown ( 6/3), [ asticity H SANI dish Bi Fine s Fine s	D ANE rown ( and, 1 ed whe	Mottle 5/4) an bist, M 55YR 6 10% C 20% C	ed Light nd Pale foderate Y (ML): S/3), 709 slay, ssum	%								Bentonite chip seal 4" Diameter Schedule 40 PVC Casing 4" Diameter Schedule 40 PVC Casing, 0.020" Slot Well Screen

K	L		E			L	DE	<b>R</b> 6380 Las V (702)	Polari ⁄egas, 736-2	s Av Nev 936	enue ada 891 Fax (70	18 2) 361-9094	DRILLING LOG Well No. DBMW-22		
Proje Site Proje Clier Drilli Drilli Sam	ect Loc ect ng ng ng l plin	Na ati No Co Ty Me	me: ion: : mpa /pe: tho Meti	any d: hoo	BRC Aquifer T Henderson, N 83173 BRC Boart Longyea B.L GP24-30 Roto-Sonic Continuous Co	resting V Dr DORS Dre	Start End Tota Hole Well Wate Scre Grou	Date:8/13/07Logged By: DavisDate:8/13/07Checked By:G. CarterHole Depth (ft):55Permit No.:Diameter (in):8Diameter (in):4r Level (Initial, Ft):39on Length (ft):35-55and Surface Elev.:UNK							
Depth (feet)	Graphic Soil / Geologic Log Description								Penetration / Recovery	Blows / 6"	PID Headspace (ppm)		Well Completion Details		
40 50					Reddish Brown (5Y 20% Fine sand, 10 plasticity CLAY WITH SILT ( (5Y 8/4), 85% Clay Moderate to high p SILT WITH SAND / Reddish Brown (5Y 20% Fine sand, 10 cemented when gy exceeds 5%, Wet, plasticity	(R 5/4), 70 (R 5/4), 70 (N clay, W psum equi Moderate	Yellow , Wet, Low Yellow , Wet, (ML): % Silt, Veakly al or	BMW-22, 40-41.					#10/20 Colorado Silica Sand Stop sampling at 55 feet bgs.		



MWH

Borning. BRC-3B-00-E

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Project No. 3850360

Log of Boring: BRC-SB-08-B

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 Project No.
 3850360
 Log of Boring:
 BRC-SB-08-B

 Image: MWH
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Project No. 385036

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Project No. 3850360

Log of Boring: BRC-SB-26-B

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## **APPENDIX C**

November 26, 2007

Mr. Mark Paris Basic Remediation Company (BRC) 875 West Warm Springs Henderson, NV 89011

 Re.: Nevada Division of Environmental Protection Response to: Slug Test Results dated November 1, 2007 (received November 7, 2007) NDEP Facility ID# H-000688

Dear Mr. Paris:

The NDEP has received and reviewed BRC's correspondence identified above and provides comments below:

DBMW-16 is tabulated as the Quaternary alluvium (Qal). The boring log indicates that saturated interval is within Muddy Creek formation (MCf). , and the resulting K value is within the expected range for the MCf. This should be corrected in the table.

Monitoring well DBMW-16 is screened from 85 to 110 feet below ground surface (bgs). The screened interval includes 10 feet of alluvial silty sands from 85 to 95 feet bgs. The screened interval from 95 to 110 feet bgs includes interlayered clays and silty clays of the Muddy Creek formation. The screened interval crosses the Alluvial/Muddy Creek Formation contact. Groundwater first occurs at 94 feet bgs in the alluvial silty sands in this monitoring well. The hydraulic conductivities for the two slug tests completed in DBMW-16 were 0.87 and 0.38 feet/day which is within the range of expected values for silty sands. The MCF silts and clays should have a value within the 10<sup>-3</sup> to 10<sup>-6</sup> feet/day range. An explanation of the screened material for this well was expanded in the text.

The fourth slug test report is listed as "AA-23R Slug Test" for well "DBMW-2". Please explain which one of these tags is incorrect. The results of this test are tabulated for AA-23R. The aquifer thickness for that test does not match that for the other AA-23R tests, but it does match the aquifer thickness for DBMW-2. After determining which well this is, the analysis should be conducted using the correct aquifer thickness. The resulting K value will be slightly different than listed and this can become significant during modeling.

The fourth slug test for monitoring well AA-23R (Slug-out-2) did have the incorrect aquifer of 18 feet instead of 25 feet as listed in the previous AA-23R slug tests. The aquifer thickness has been corrected and the analysis recalculated with resulting in only a minor change from 1.10 to 1.25 feet/day. Corrections have been made to the appendix with the analysis printouts and to Table 1 in the report.

The lowest K value is reported for DBMW-2, which is described as "Alluvium and MCf" in lithology column; Alluvium and MCf should have distinctly different Ks. The lithology log should be re-checked for Qal-MCf contact identification; and slug test parameters should be adjusted if necessary. Most importantly, the Qal-MCf contact should be verified for modeling purposes.

Monitoring well DBMW-2 is screened from 20 to 50 feet bgs. The lithologies found in the upper part of the screen include silty sand from 20 to 31 feet bgs and clayey sand/sandy clay from 31 to 44.5 feet bgs. Both of these units have been interpreted as alluvial sediment. The clayey sand/sandy clay from 31 to 44.5 feet bgs has a reddish-brown color commonly associated with Muddy Creek Formation units. The clayey sand/sandy clay unit may represent reworked sediments derived from the Muddy Creek Formation commonly interbedded within the alluvium in the Henderson area. The lithology from 44.5 to 50 feet bgs is a silty, clayey sandstone of the Muddy Creek Formation. The tested hydraulic conductivities in DBMW-2 are 0.043 and 0.060 feet/day which suggests a response commonly associated with clayey sands. An expanded discussion of the results of DBMW-2 was added to the text of the report.

The tabulated K value for DBMW-8 roughly equals the K value for DBMW-16, however these two wells lithologies are described respectively as MCf and Qal. The last paragraph in the report addresses this observation. NDEP suggests that BRC reference back to the well logs, double check for contact depth pick, and make sure that the modelers are setting up their layers correctly. The modeler will be setting the layer top or bottom elevations (probably) based on the lithology log picks, so the log picks should be revisited based on these hydraulic results to verify quality of pick. If DBMW-16 is actually screened in MCf rather than Qal, layer thickness error for both units could be propagated over a large area.

The screened interval in monitoring well DBMW-16 includes 10 feet of alluvial silty sands from 85 to 95 feet bgs and interlayered clays and silty clays of the Muddy Creek formation from 95 to 110 feet bgs. The screened interval in DBMW-8 includes silty-clayey sands from 41 to 47 feet bgs, silty sand with clay from 47 to 62 feet bgs, and silt with clay from 62 to 68 feet bgs. The entire screen in monitoring well DBMW-8 is within the Muddy Creek Formation. The slug tests in the two monitoring wells resulted in hydraulic conductivities of 0.87 and 0.38 feet/day for DBMW-16 and 0.50 to 0.59 feet/day in DBMW-8. The similarities in the hydraulic conductivities for the two wells are likely due to the presence of silty sand present in the screened sections of each well. The lithology present within the screened section of the well influences the hydraulic conductivities produced in a slug test and not the formation designation since similar lithologies can be present in both the alluvium and the MCF.

Again, the end user of this data (modeler) is advised to review the well logs in conjunction with the testing results, since many of the wells appear to be screened across both Qal and MCf. DBMW-2 looks

suspiciously low for the Qal, however the log does indicate silt and clay in the Qal at that location. The modelers need to justify usage of low K values in the Qal via the conceptual site model (CSM). For example, explain if the Qal has a significant fine grained member. BRC will need to explain if the model will reflect this via multiple layers, or stochastic techniques. The modelers will need to consider the well logs in addition to the slug test (and aquifer test) results. These tests can be viewed as a "validation" of the borehole log. The borehole and well log should always be reviewed against subsequent data by the end user (modeler). It is expected that these issues will be discussed during model development.

The hydrogeologists working on the aquifer testing and the groundwater modeling team will coordinate efforts to ensure the hydrostratigraphy tested in the field is represented in the conceptual model and the computerized groundwater model.

Please provide a revised report to the NDEP. Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2850x247 or brakvica@ndep.nv.gov.

Sincerely,

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