DOPHE 136 HAZARDOUS MATERIALS

SW_1.6._2549



BOX#

108

Phantom Landfill/PH3

10/1/2010

FRM

Solid Waste - Correspondence - Enforcement - Response to Letter, Request Status Update for Compliance Order on Consent #08-08-15-01, September 17, 2010

SW/1.6./2549

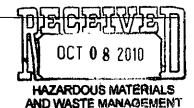


SW/1.6./1594

KRW CONSULTING, INC.

October 1, 2010

Colorado Department of Public Health and Environment Hazardous Materials and Waste Management Division 4300 Cherry Creek Drive South Denver, Colorado



Attention:

Mr. Jerry Henderson

Subject:

Response to letter "Request Status Update for Compliance Order on Consent #08-08-15-

01", September 17, 2010

KRW Project No.:

9110-03

Dear Jerry:

We are in receipt of your letter dated September 17, 2010 which requests a status update on issues related to the Compliance Order #08-08-15-01. On behalf of Twin Landfill Corp. KRW has prepared the following response. Please find the CDPHE comments, presented in bold italics and our response to each comment presented below.

1. Submittal of proposed assessment plan for the detailed hydrogeologic investigation necessary to modify the groundwater monitoring plan, with location and design of additional groundwater monitoring wells appropriate to the solidification basin, subject to Division review and approval (paragraph 32 of the Order).

TWIN has performed a detailed analysis of the hydrogeologic conditions in the vicinity of the solidification basin and will implement changes in the Groundwater monitoring plan as appropriate. The hydrologic conditions beneath the solidification basin, as indicated by the nearest boreholes at the site, TH-9 and TH-20, indicate that there is no unconfined groundwater beneath the basin. The first aquifer to be encountered beneath the facility is the Greenhorn Limestone. Water was encountered in well TH-9 at a depth of approximately 91 feet and effectively screened in the uppermost water bearing zone between 90 and 105 feet below ground surface (BGS). Subsequent water level measurements in this well indicate a water level of less than 65 feet BGS. Water was encountered in well TH-20 at a depth of approximately 100 feet and effectively screened in the uppermost water bearing zone between 101 and 137 feet BGS. Subsequent water level measurements in this well indicate a water level of less than 50 feet BGS. Since this is clearly a confined aquifer, the aquifer is not a potential target for contamination from the facility. The site plan/geologic map (Figure 1) and well logs for TH-9 and TH-20 are included as attachments to this letter.

Twin therefore proposes to install two additional monitor wells at the facility down-slope of the solidification basin, at locations as shown on the attached geologic map. It should be noted that one of these wells is located adjacent to the solidification basin sump. The wells, which will function as wet-dry wells, will be at least 2-inches in diameter to allow for sampling if water is encountered in the wells. The wells will be installed to depths below the base of the solidification basin sump and into un-weathered bedrock. The wells will be screened for nearly their entire length, from bottom to near surface, to intercept any fluid flow in weathered bedrock. A detail of the construction of the proposed wells is shown as attached Figure 2. Given the location and construction of these wells, they will serve as leak detection wells to detect any potential release from the solidification basin to allow for corrective action prior to any potential environmental impact. Please note that previous attempts were made to install

angled monitor wells beneath the low point of the solidification basin. However, these borings collapsed, because site soils are not conducive to angle drilling.

Both of the proposed wells will be checked for moisture on a weekly basis. The monitoring of these wells on a weekly schedule, as well as sampling for Appendix 1A and 1B parameters if water is encountered, will be included as a revision to the existing groundwater monitoring plan (Section 5.5 of the facility Design and Operations Plan). Twin will commence installation of these wells within 30 days of receiving approval from CDPHE.

2. Installation of two new ground water monitoring wells, once approved (paragraph 33 of the Order).

TWIN agrees to install the wells as described in Item #1 above and reiterates the inappropriateness of completing another monitoring well in the confined aguifer beneath the solidification basin.

3. Further revisions to the engineering design and operation plan necessitated by the Order (paragraphs 26 and 31 of the Order). These should be separated from the certificate of designation amendments so that they can be implemented independent of that process.

Twin currently conducts a weekly inspection of the solidification basin sump riser pipe. If the liquid level ever exceeds a depth of six inches, the sump is pumped to remove all liquid. Twin is currently in the process of preparing a Solidification Basin Design and Operations Plan (D & O plan) amendment and this D & O plan amendment will specify these monitoring and pumping activities.

Twin utilizes an operation log, attached. The D & O plan amendment will append this operation log.

If you have any questions regarding this letter, please feel free to call me.

Sincerely,

KRW Consulting, Inc.

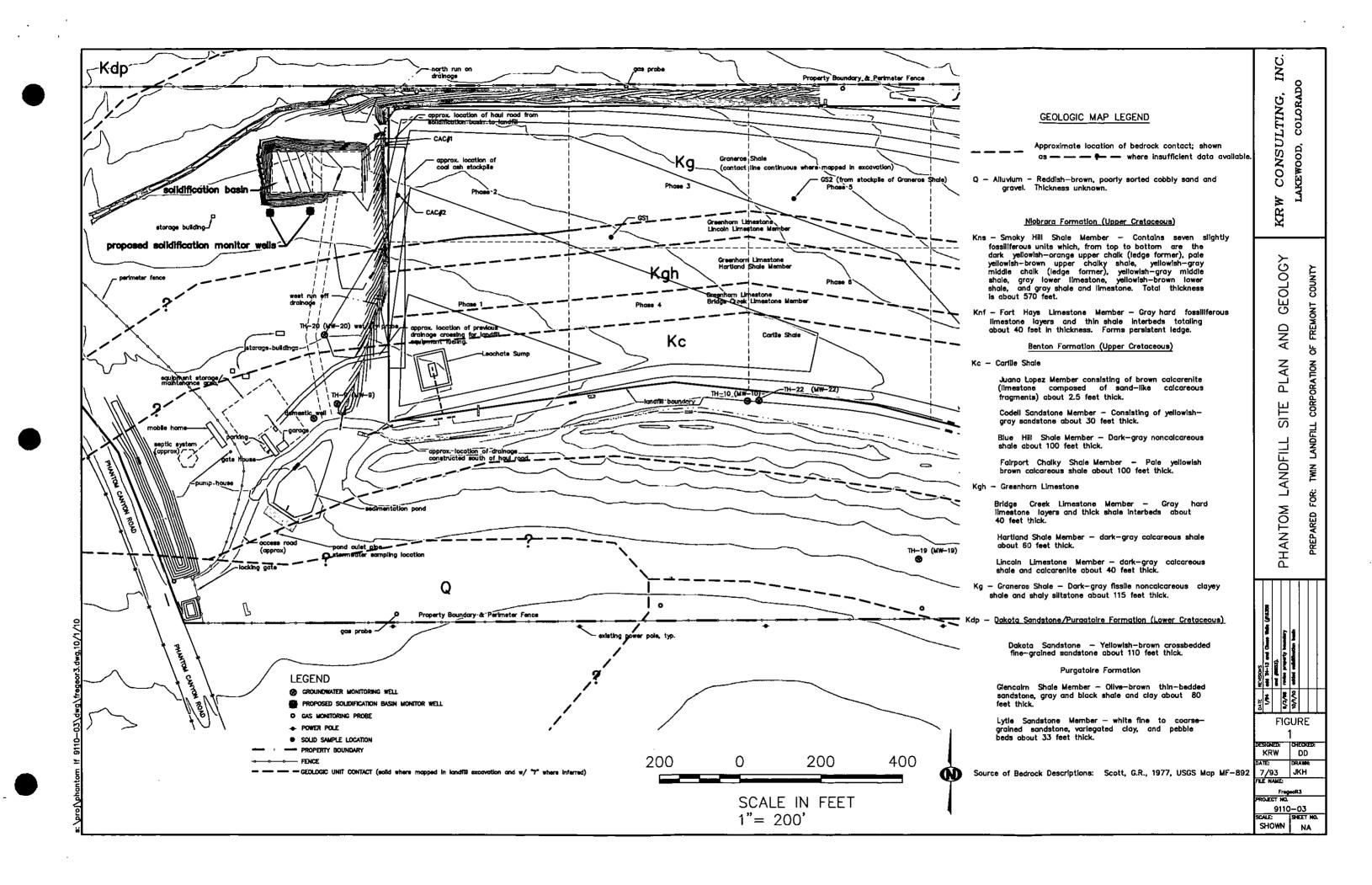
David Douglass, P.E. V.P. Engineering

Attachments: Figure 1, Site Plan and Geology map

Well Logs; TH-9 & TH-20

Figure 2, Solidification Basin Leak Detection (Monitoring) Well detail

Solidification Basin Operation Log



	. '	Dro	ioot	. NI	ame:	5 1	Do	ring No. TUO
						Phantom Landfill		ring No.: TH-9
		Pro	ojec	t N	0.:	9110-03	<u> </u>	gged By: K. White
					_	*		te: 2/11/93
		j		8		S S S E Lithology	Concrete Construction	16" diameter steel well protector 4" diameter PVC slip cap
ŀ	•					Topsoll, poorly developed		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
E						Clay, slity, brown slightly damp		concrete collar around 8° locking steel
F	- 5					Sand, silty, oxidized, light red to red-brown, dr	y to slignily damp	well protector 4° diameter sch. 40 flush threaded PVC pipe with PVC slip cap.
E	-10				₩		· · · ·	
	-1 5					Clay Shale,(Carille Fairport Chalky Shale Membroalcareous, gypsum noted in fractures and par oxidized, yellow-brown to gray, damp to medium	tings, fractures and partings are	Type I-II neat cement grout
F			_	-	₩	å		
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ļ	25	/			\otimes	Chala hassarias lass days with durin	3 -	
ļ				\vdash		Shale becoming less damp with depth		
-	30	\setminus	35	0				
F	35	_{			終			
	40				$\overset{\circ}{\otimes}$	Clay Shale,(Carlile), silty, very weathered and frac noted in fractures and partings, fractures and par yellow-brown, medium damp		
	45				***	Clay Shale (Carlile), very weathered and fractured in fractures and partings, fractures and partings medium damp	d, calcareous, gypsum noted are oxidized, yellow-brown,	
	50	\langle	30	0		Clay Shale, (Carlile Fairport Chalky Shale Membe less gypsum than above, yellow-brown to gray, m	r), becoming less weathered, edium damp	
-; - -	5 5	X	8 5	4		Clay Shale, (Carille), very silty, hard, brittle, with o pyrite noted in fractures and partings, vertical to discontinuous across the core, dark gray, dry to	subvertical fractures are often	
F	_/	<u> </u>			//			· · · · · · · · · · · · · · · · · · ·
			-		nod:	——————————————————————————————————————	Location Coordinates	9492.60N, 3034.75E
						Core Size: 7.88/NC		
			ype	: _		Failing 1500 Ground 5624.89		
	Te	st l	Bori	ng	Elev	vation: Top of locking steel casing 5628.07		
	s	hee	t:			1 of 2		KRW CONSULTING, INC.

- 1	•				
	Project	Name:	Phantom Landfill	Boring	No.: TH-9 cont.
ł	Project	No.:	9110-03	Logged	d By: K. White
				Date:	2/11/93
)	Serve ineve	HOD GARAGE	ع ق Lithology	Well Construction Det	ai
F		1/2	Clay Shale,(Carille), very silty, hard, brittle, with occassional gy	psum and iron	Notes Notes
<u>-</u> 6	8.5	4	pyrite noted in fractures and partings, vertical to subvertical fi discontinuous across the core, dark gray, dry static water level 6/23/93	ractures are often	48 dl
-7					 4° diameter sch. 40 flush threaded P pipe with PVC slip cap.
<u> </u>					Type I-II neat cement grout
-7 -	5				
F8	0		Bentonite, 2-4 *, cream to white, damp Clay Shale,(Cartile) as before	-·-· <u>-</u> .	
8	5		City Grane, (Carrie) as beinte		
					bentonite pellets
F9'			Limestone/Shale Interbedded (Greenhorn Bridge Creek Membe		1
- - -	5		brittle, very fractured and oxidized, wet groundwater is confined, well yield estimated to be in excess		8-12 silica sand
<u>+</u> 00			hydraulic conductivity estimated at 7 e-2 cm/sec based on s performed 6/23/93	lug tests	sch 40 slotted flush threaded PVC
- - +05				8.33 P 8.33 €	lpe (0.020 slot)
-			Total depth drilled = 105'		PVC flush threaded end cap 6" long)
10					
- - 115					
- -					
	Orilling Me	ethod:	Air Rotary 1	Location Coordinates: 94	192.60N, 3034.75F
ŀ	Hole Diam		re Size:		
			Failing 1500 Ground 5624.89		
T	est Borin	g Eleva	Ground 5624.89 tion: Top of locking steel casing 5628.07		
	Sheet:		2 of 2	L i	RW CONSULTING, INC.
				N	Joneolinia, Mc.

Project Name: Phantom Landfill

Project Address: Fremont County, CO

Boring No.: TH-20

Logged By: B. Tilton

Sheet: 1 of 5

Date: November 19-21, 1998

Graphic Log Sample Location Steel Well Cover 6" ID by 5' 0-4 ft., stiff, dark yellowish brown sandy clay 2" Locking J-plug and gravel, calcareous damp to dry (CL) cement grout (0.0' to 96.0') 5 -12 ft., very stiff, very pole orange to light gray colluvium consisting of siltstone, limestone & sandstone pieces, damp, calcareous 4" ID Sched. 40 Certa-Lok PVC casing little clay (GP) (+2.16' to 106.0') 10 10 -14 ft., medium hard, very pale orange fine-grained argillaceous limestone, some heavy iron oxide staining, little v.f. sand, damp (bedrock) 15 4—20 ft., medium hard, orange to pale yellow brown siltstone with interbedded argilloceous limestone, damp, calcareous 20 20-30 ft., hard, pale yellow-brown claystone with occasional limestone layers (< 3"), damp, calcareous 9 22' thin, very fine grained limestone (< 6") 9 24' thin, fine grained limestone (< 6") with with some iron staining • 27' thin, very fine grained limestone (< 6") 9 30' drilling rate slows 30 30-44 ft., medium hard to hard, moderate yellowish brown to medium dark gray claystone with interbedded limestone @ 36' thin, fine grained argillaceous limestone (< 6") © 37' thin, fine grained argillaceous limestone (<6") from 38-39' very fine 35 35 grained crystalline limestone 40 40 44-47 ft., hard, arange brown arenaceous fine grained 45 limestone with interbedded grayish brown siltstone, calcareous, damp 47-51 ft., hard, pale yellowish brown claystone with thin interbeds of siltstone, damp calcareous 50 50 51-60 ft., hard, medium dark gray, very fine grained limestone with interbedded silty gray claystone, damp, calcareous

Drilling Method:	air rotary	
Hole Diameter:	3.625" (0-20'), 7.875" (20-260')	
Rio Tyne:	Porta Drill 524	
Test Boring Flevati	on: Grd=5631.81', TOPVC=5633.97',	TOC=5634.5
Sample Method:	sieve	

Project Name: Phantom Landfill

Project Address: Fremont County, CO

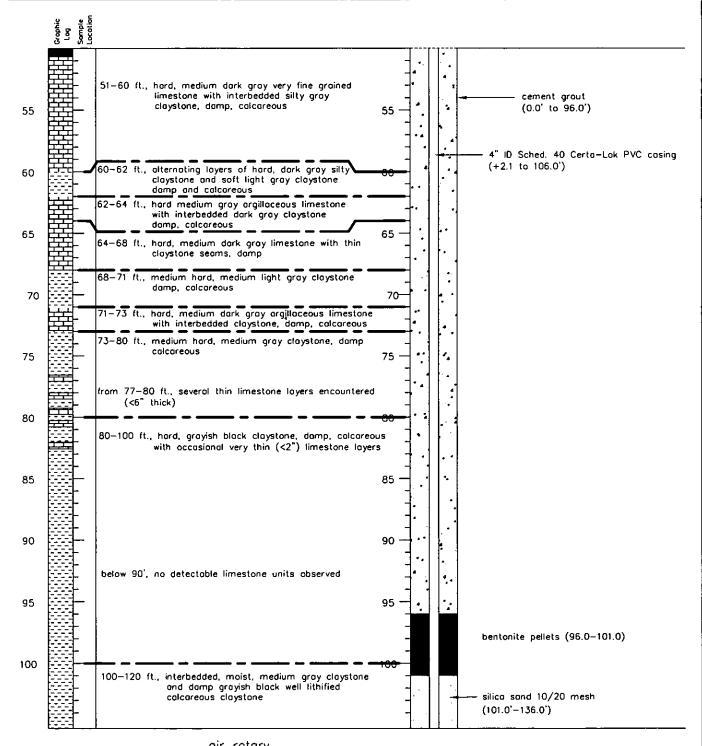
Date: November 19–21, 1998

Boring No.: TH-20

Logged By: B. Tilton

Sheet:

2 of 5



 Drilling Method:
 air rotary

 Hole Diameter:
 7.875"

 Rig Type:
 Porta Drill 524

 Test Boring Elevation:
 Grd=5631.81', TOPVC=5633.97', TOC=5634.51'

 Sieve
 Sieve

Sample Method: ____

Boring No.: Fremont County, CO B. Tilton Project Address: Logged By: 3 of 5 Date: November 19-21, 1998 Sheet: 100-120 ft., interbedded moist medium gray claystone and damp grayish black well lithified calcareous claystone 4"ID Sched 90 PVC Johnson machine slotted 110 110 well screen (106.0-136.0') 115 115 110-120 ft., very poor to no circulation of drill cuttings 120 120-180 ft., hard, grayish black, fissile claystone calcareous, infrequent very thin layers of moist 120 ft., wet drill cuttings consisting of claystone observed at surface, stopped drilling for 10 minutes to determine if free water white to light gray bentonite seams, damp present, only mist of water observed briefly 125 125 At 120 ft, must begin injecting trace amounts of water and foam to achieve circulation. 130 130 135 threaded PVC end cap 135 TD=137.0 ft at 2nd barehole for TH-20Original borehole at TH-20 drilled to 260 ft. on 11/20/98. The borehole was grouted from approximately 180-220 ft. with neat cement so that the well could be set shallower. 140 140 On 11/21/98 the borehole was caved to 89 ft. with water to 65 ft. Tried to clean borehole out to cement plug but borehole unstable due to slaking shales and seams of bentanite. The barehole was then abandoned to the surface with cement grout and a new borehole was drilled 12 ft. south to allow installation of a monitoring well to 136 ft. 145 145 Lithologic log from 137-260' refers to original borehole 150 150 155 155 air rotary Drilling Method: ____ KRW CONSULTING, INC. 7.875" Hole Diameter: _ 7717-J West 6th Avenue Porta Drill 524 Lakewood, CO. 80215_ Rig Type: _ Test Boring Elevation: Grd=5631.81', TOPVC=5633.97', TOC=5634.51' (303)239 - 9011Project No. 9110-03 sieve Sample Method: ____

TH-20

Phantom Landfill

Project Name:

Project Name: Phantom Landfill

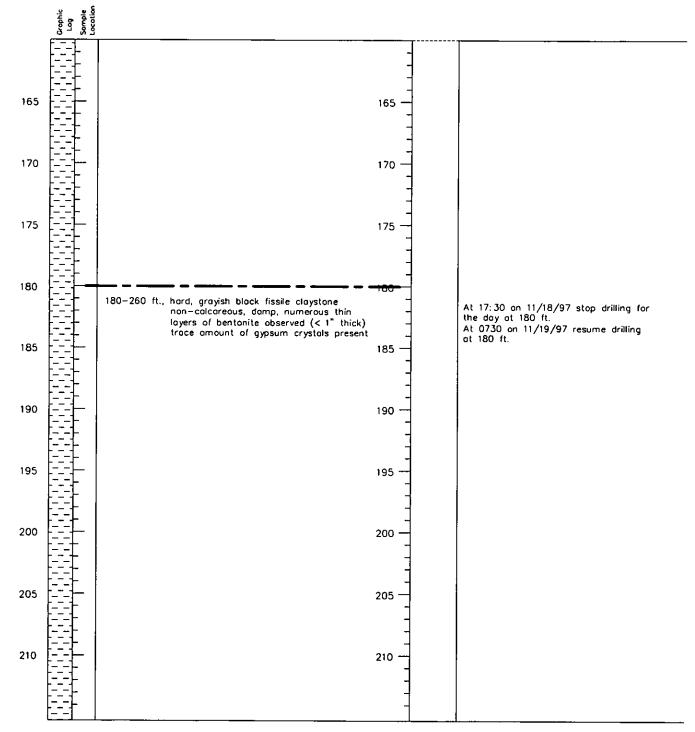
Project Address: Fremont County, CO

Date: November 19-21, 1998

Boring No.: TH-20

Logged By: B. Tilton

Sheet: 4 of 5



Drilling Method: air rotary

Hole Diameter: 7.875"

Rig Type: Porta Drill 524

Test Boring Elevation: <u>Grd=5631.81', TOPVC=5633</u>.97', TOC=5634.51'

Sample Method: sieve

Phantom Landfill TH-20 Project Name: Boring No.: Fremont County, CO B. Tilton Project Address: Logged By: November 19-21, 1998 5 of 5 Date: Sheet: 215 215 220 220 225 225 230 230 At 12 noon on 11/20/91 stop drilling at 260 ft. Borehole developed with air to clean out injected water and foam.

At 14:15 begin to install a cement grout plug to seal borehole from approximately 235 235 180-260 ft. Water level at 19 ft. prior to the installation of the cement grout. 240 240 245 245 at 250 ft., calcareous material and very fine disseminated pyrite observed in claystone partings 250 250 255 255 260 TOTAL DEPTH = 260 FT.

Drilling Method: air rotary

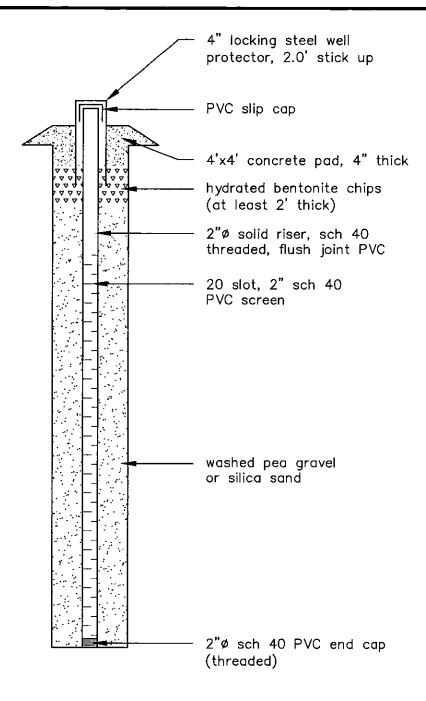
Hole Diameter: 7.875"

Porta Drill 524

Rig Type: Porta Drill 324

Test Boring Elevation: <u>Grd=5631.81', TOPVC=5633.9</u>7', TOC=5634.51'

Sample Method: ______sieve



LEAK DETECTION WELL DETAIL PHANTOM LANDFILL

PREPARED FOR: TWIN LANDFILL CORP

DATE	REVISIONS	DESIGNED:	CHECKED:	FIGURE
		GK	GK	FIGURE
		DATE:	DRAWN	1 2
		9/30/10	DRF	~
		FILE NAME:		SHEET NO.
		well log	design	2 of 2
		PROJECT NO.		SCALE:
		9110	-03	NTS

KRW CONSULTING, INC. 8000 W. 14TH AVENUE, SUITE 200 LAKEWOOD, COLORADO (303) 239-9011

Note: Total Depth will vary based on site conditions.

6"ø borehole

Twin Enviro Services (Twin Landfill Corporation) Phantom Landfill

Solidification Basin Operation Log--WEEKLY Month/Year

Month/Year	Year									
Day	Time	Time Liquid	Riser Pipe		rab	Weekly	Random Haz	Weekly	Operator Name	
ō	Liquid in	back to	Liquid Level	Removed	Sample?	Sample? Monitoring Well	Waste Exclusion	Tank	(Legibly Please)	
Month	Freeboard	proper level	Tenth of Foot	From Sump	YorN	Inspection	Sample?	Inspection	Inspection & Comments	
	!									
	,		:							