STS Consultants, Ltd.

Transmittal Letter



GREEN BAY Phone (920) 468-1978 Fax (920) 468-3312

Mr. Ted Maloney

P.O. Box 1010 Pulaski, WI 54162

Carver Boat Corporation

SCHOFIELD Phone (715) 355-4304 Fax (715) 355-4513

MILWAUKEE Phone (414) 359-3030 Fax (414) 359-0822

OSHKOSH Phone (920) 235-0270 Fax (920) 235-0321

Wisconsin Department of Natural R	esources	Date:	April 22, 1999
1125 North Military Avenue		STS Job No.:	<u>23379XA</u>
P.O. Box 10448		Project:	Carver Boat Corporation
Green Bay, WI 54307-0448		Location:	Resin & Acetone Tanks (#6/7)
			<u>Pulaski, WI</u>
Attention: Ms. Kristin Nell			
We are sending:			
attached under separate cov	<i>r</i> er via:		
the following item(s):			
Prints	Copy of Letter		Samples
Shop Drawings	Change Order		Test Results
Specifications	Boring Logs		Draft Report#
Other See Below	Concrete Report #		
They are transmitted as indicated:			
For Approval			As Requested
For Your Use			For Review and Comment
Remarks:			
	ent forme for Carver Boot (Corporation Barings	D. C. 1 through D. C. F. are attached to
Temporary monitoring well abandonme this transmittal. Documentation of the a March 16, 1999. We understand that the "active" list.	abandonment of these ten	nporary monitoring w	vell was requested in your letter dated
Copy:			

William F. Noch STS Representative: William F. Noel

	,						
(1)	GENERAL INFORMATION	23379XA	(2)		ITY NAME	Carver Boat Corpora	ation Plant 4
	Well/Drillhole/Borehole	County		_	il Well Owner		
	Location B-6-1	Brown			ver Boat Co	orp.	
	N.E.	E		Present	t Well Owner		
	1/4 of <u>NE</u> 1/4 of Sec	6 ; T. 25 N; R. 19 $\overline{\square}$ w		Sam			
	(If Applicable)				or Route		
	Gov't Lot	Grid Number			Markham 1		
	Grid Location			•	tate, Zip Code		
	ft. \[\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ft. 🗆 E. 🗆 W.		Pula	<u>ıski, Wisco</u>	nsin 54162	
	Civil Town Name			Facility	Well No. and	d/or Name (If Applicat	ole) Unique Well No.
	Pulaski			B-6-			
	Street Address of Well				For Abandon	ment	
	790 Markham Drive				Closure		
	City, Village			Date of	Abandonmen	t	
	Pulaski			04/0)1/99		
WEI	LL/DRILLHOLE/BOREHOLE INFO	DRMATION					
(3)	Original Well/Drillhole/Borehole C	onstruction Completed On	(4)	Depth t	o Water (Feet	<u>7.2 </u>	_
	(Date) <u>07/17/98</u>			Pump &	& Piping Rem		☐ No ☐ Not Applicable
	Temporary	_		Liner(s) Removed?		No Not Applicable
	Monitoring Well	Construction Report Available?		Screen	Removed?	Yes 2	No Not Applicable
	Water Well	Yes No		Casing	Left in Place?	☐ Yes ☐	∟ No
	☐ Drillhole			If No, 1	Explain		
	☐ Borehole						
				Was Ca	sing Cut Off		Yes 🔲 No
	Construction Type:			Did Sea	aling Material	Rise to Surface?	Yes 🔲 No
	☑ Drilled ☐ Driven	(Sandpoint) Dug		Did Ma	iterial Settle A	fter 24 Hours?	☐ Yes 🖾 No
	Other (Specify)			If Yes,	Was Hole Re	topped?	☐ Yes ☐ No
			(5)	Require	ed Method of	Placing Sealing Materi	al
	Formation Type:		(5)		nductor Pipe -		uctor Pipe - Pumped
	Unconsolidated Formation	☐ Bedrock		_	mp Bailer		(Explain) Gravity
	Total Depth (ft.) 9.6	Casing Diameter (in.) 2.00	(0)		Materials		
		Casing Depth (ft.)	(6)		at Cement Gro		or monitoring wells and
	(110m groundsurface)	casing Depth (it.)				oncrete) Grout	onitoring well boreholes only
	Lower Drillhole Diameter (in.)				ncrete		Bentonite Pellets
	Zower Zimmole Zimmeter (m.)			_	y-Sand Slurry	· —	Granular Bentonite
	Was Well Annular Space Grouted?	☐ Yes ☐ No ☐ Unknown		_			Bentonite-Cement Grout
	If Yes, To What Depth?	Feet			ntonite-Sand S opped Bentonit	•	Bentonite-Cement Grout
			<u> </u>	ZJ CIII	pped Bentonn		
(7)	Material Used To I	Fill Well/Drillhole	Fr	om (Ft.)	To (Ft.)	No. Yards, Sacks Sealant (Circle	Mix Ratio
			<u> </u>		10 (10)	or Volume One)	or Mud Weight
Re	ntonite		9	urface	9.6	1 bag	
			5	urracc	7.0	1 bag	
			ऻ				
					1		
			 				
			<u></u>		<u> </u>		
(8)	Comments						
(0)	Name of Person or Firm Doing Seal	ing Work	1	20000	000000000000000000000000000000000000000		***************************************
(9)	•	mg work		(10)	FO) Received/Insp	COUNTY	USE ONLY Vistrict/County
-	STS Consultants Ltd. Signature of Person Doing Work	Date Signed	-	ivai o i		L.C.	Assitution Country
		4-12-99		5	wor/Inspector		
	Street or Route	Telephone Number		IX CV (E	могития Бесері		Complying Work
	· //	1 -		0211X	w-na Necessa		:: Noncomplying Work
	1035 Kepler Drive City, State, Zip Code	920-468-1978		Fano	n, nµ i vovosidi	4	
	• •						
	Green Bay, WI 54311	djp23379	1				

(1)	GENERAL INFORMATION	23379XA	(2)		ITY NAME	Carver Boat Corpora	ation Plant 4
	Well/Drillhole/Borehole	County		Origina	l Well Owner	(If Known)	
	Location B-6-2	Brown		Cary	er Boat Co	orn.	
			1		Well Owner	<u></u>	
	14 -6 NE 14 -65-	6 : T. 25 N: R. 19 \square W		Sam			
	(If Applicable)	6 ; T. 25 N; R. 19 $\overline{\square}$ W	+		r Route		Wilson
	(II Applicable)						
	Gov't Lot	Grid Number			Markham 🛚		
	Grid Location			City, Si	ate, Zip Code		
	ft. \(\simeg \) N. \(\simeg \) \$.,	ft. □ E. □ W.		Pula	ski, Wisco	nsin 54162	
	Civil Town Name					d/or Name (If Applicat	ole) [Unique Well No.
				B-6-		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1
	Pulaski Street Address of Well		-		For Abandon		
						ment	
	790 Markham Drive				Closure		
	City, Village			Date of	Abandonmen	t	
	Pulaski			04/0	1/99		
WE	LL/DRILLHOLE/BOREHOLE INFO	ORMATION	-	0 17 0	1,77		
-			(4)	D. d.	- W-+ /F	7.2	
(3)	Original Well/Drillhole/Borehole C	Construction Completed On	(4)	_	o Water (Feet	,	7
	(Date) <u>07/17/98</u>			-	Piping Remo		**
	Tomporaru			Liner(s	Removed?	∐ Yes L	☐ No Not Applicable
	Monitoring Well	Construction Report Available?	1	Screen	Removed?	☐ Yes □	No Not Applicable
	☐ Water Well	⊠ Yes □ No			Left in Place?		□ No
		2 163 2 100		_			- 110
	☐ Drillhole		i	II No, I	explain		
	☐ Borehole						
				Was Ca	sing Cut Off	Below Surface?	☑ Yes ☐ No
	Construction Type:			Did Sea	ling Material	Rise to Surface?	⊠ Yes □ No
		(Sandpoint) Dug			•	fter 24 Hours?	Yes No
		(Sandpoint) Lig				_	
	U Other (Specify)			If Yes,	Was Hole Re	copped?	」Yes □ No
			(5)	Require	d Method of	Placing Sealing Materi	al
	Formation Type:		()		ductor Pipe -		uctor Pipe - Pumped
	☐ Unconsolidated Formation	☐ Bedrock		_	-		
				∟ Du	np Bailer	Other	(Explain) Gravity
	Total Depth (ft.) 9.9	Casing Diameter (in.) 2.00	(6)	Sealing	Materials	Fo	r monitoring wells and
	(From groundsurface)	Casing Depth (ft.)	` ′	☐ Nes	t Cement Gro	out mo	onitoring well boreholes only
	` ,			_		oncrete) Grout	mileting went detended emy
	Laura Dailhala Diamatas (in)			_			D
	Lower Drillhole Diameter (in.)	,			icrete	· <u> </u>	Bentonite Pellets
			ĺ	∐ Cla	y-Sand Slurry		Granular Bentonite
	Was Well Annular Space Grouted?	☐ Yes ☐ No ☐ Unknown		☐ Ben	tonite-Sand S	lurry ; 🗌	Bentonite-Cement Grout
	If Yes, To What Depth?	Feet		🛛 Chi	pped Bentonit	e '	
(7)			<u> </u>				
(7)	Material Used To 1	Fill Well/Drillhole	From	n (Ft.)	To (Ft.)	No. Yards, Sacks Sealant (Circle	Mix Ratio
	Waterial Osca 10 I	in won/Brinnole	110	11 (1 1.)	10 (11.)	or Volume One)	or Mud Weight
			_	_			
Be	ntonite		Su	rface	9.9	1 bag	
			t				
			ļ				
			1				
(8)	Comments						
		ling Work		MASS	30000000 000	S TANK AND COUNTY	USE CASI V
	Name of Person or Firm Doing Sea	ling Work		(ió):		ONR OR COUNTY	<u></u>
(9)	Name of Person or Firm Doing Seal	- `			FO) Received/Insp		USE: QNLY
(9)	Name of Person or Firm Doing Seal STS Consultants Ltd. Signature of Person Doing Work	Date Signed		Date:	keceived/linsp	ected C	<u></u>
(9)	Name of Person or Firm Doing Seal STS Consultants Ltd. Signature of Person Doing Work	- `		Date:		ected C	histrict/County
(9)	Name of Person or Firm Doing Seal	Date Signed 4-17-99		Date:	keceived/linsp	ected C	fistrict/County
(9)	Name of Person or Firm Doing Seal STS Consultants Ltd. Signature of Person Doing Work Street or Route	Date Signed 4-17-99 Telephone Number		Date l	keceived/Insp wor/Inspector	ected. C	listrict/County
(9)	Name of Person or Firm Doing Seal STS Consultants Ltd. Signature of Person Doing Work Street or Route 1035 Kepler Drive	Date Signed 4-17-99		Date l	keceived/linsp	ected. C	fistrict/County
(9)	Name of Person or Firm Doing Seal STS Consultants Ltd. Signature of Person Doing Work Street or Route	Date Signed 4-17-99 Telephone Number		Date l	keceived/Insp wor/Inspector	ected. C	fistrict/County

(1)	GENERAL INFORMATION	23379XA	(2)		ITY NAME	Carver Boat Corpor	ation Plant 4
	Well/Drillhole/Borehole	County		Origina	il Well Owner	(If Known)	
	Location B-6-3	Brown		Car	ver Boat Co	orp.	
		⊠ E			Well Owner	•	
	1/4 of <u>NE</u> 1/4 of Sec			Sam	ie.		
	(If Applicable)	, 1 N, K \	+		or Route		
		G 1137 . i				Datas	
	Grid Location Gov't Lot	Grid Number	+		Markham I tate, Zip Code		
				-	=		
	ft. □ N. □ S.,	ft. 🗌 E. 🔲 W.	1	Pula	iski, Wisco	nsin 54162	
	Civil Town Name			•		d/or Name (If Applica	ble) Unique Well No.
	Pulaski			B-6-			į
	Street Address of Well			Reason	For Abandon	ment	
	790 Markham Drive			Site	Closure		
	City, Village			Date of	Abandonmen	it	
	Pulaski			04/0	1/99		
WE	LL/DRILLHOLE/BOREHOLE INF	ORMATION	_	<u> </u>			
			(4)	Denth t	to Water (Feet	7.0	
(3)	Original Well/Drillhole/Borehole C (Date) 07/17/98	construction Completed On	(4)	_		,	☐ No ☐ Not Applicable
	(Date) <u>0//17/98</u>				& Piping Rem		
	Temporary	I am a management of the contract of the contr		•) Removed?	∐ Yes ↓	No Not Applicable
	☐ Temporary Monitoring Well	Construction Report Available?			Removed?		No Not Applicable
	Water Well	Yes No		Casing	Left in Place?	Yes ∪	∟ No
	☐ Drillhole			If No,	Explain		
	Borehole	•					
				Was Ca	sing Cut Off	Below Surface?	⊠ Yes □ No
	Construction Type:				-		⊠ Yes □ No
		n (Sandpoint) Dug			-	fter 24 Hours?	Yes No
	Other (Specify)	(Sandpoint) Dug					Yes No
	Other (Specify)			11 1 68,	Was Hole Re	toppeur	
	- · · ·		(5)	Require	ed Method of	Placing Seali <u>ng</u> Mater	ial
	Formation Type:			Con	nductor Pipe -	Gravity Cond	luctor Pipe - Pumped
	Unconsolidated Formation	☐ Bedrock		☐ Du	mp Bailer	Othe	r (Explain) Gravity
	Total Depth (ft.) 10.6	Casing Diameter (in.) 2.00	(6)		Materials	E/	or monitoring wells and
	Total Depth (iti)	Casing Depth (ft.)	(6)	_ `	at Cement Gro		•
	(1 Tom groundsurface)	casing Depth (it.)		_			onitoring well boreholes only
	Laura Daille la Diamata (in)			_	-	oncrete) Grout	5 5
	Lower Drillhole Diameter (in.)			_	ncrete	! 님	Bentonite Pellets
					y-Sand Slurry		Granular Bentonite
	Was Well Annular Space Grouted?			_	ntonite-Sand S	•	Bentonite-Cement Grout
	If Yes, To What Depth?	Feet		⊠ Chi	ipped Bentonit	e '	
(7)						No. Yards, Sacks Sealant (Circle	
(-)	Material Used To	Fill Well/Drillhole	Fro	m (Ft.)	To (Ft.)	Sacks Sealant (Circle	Mix Ratio
						or Volume One)	or Mud Weight
Re	ntonite		Su	rface	10.6	1 bag	
					10.0	1 0 0	
			<u></u>				
	G						
(8)	Comments						
(9)	Name of Person or Firm Doing Sea	ling Work		(io):	FOI	ONR OR COUNTY	USE:ONLY
	· · · · · · · · · · · · · · · · · · ·	-			Received/Irisp		District/County
	STS Consultants Ltd. Signature of Person Doing Work	Date Signed	1				
		1		D	wor/Inspector		
	(Jame / Culaw)	4-12-99	1	ixevite	моглия Бесног		
	Street or Route	Telephone Number					Monepuplying Wark
	1035 Kepler Drive	920-468-1978		Fallo	м-ий-Иесеева	γ	
	City, State, Zip Code						
	Green Bay, WI 54311	din23379					

(1)	GENERAL INFORMATION	23379XA	(2)	FACIL	ITY NAME	Carver Boat Corpora	ation Plant 4
	Well/Drillhole/Borehole	County		Origina	al Well Owner	(If Known)	
	Location B-6-4	Brown		Car	ver Boat Co	orn	
	201	⊠ E	+		t Well Owner	orp.	
	14 -c NE 14 -co.	6; T. 25 N; R. 19 W		Sam	••		
	(If Applicable)	<u>∪</u> ; 1. <u>_25</u> N; R. <u>_15</u> ⊔ w	+		or Route		
	(II Applicable)						
	Gov't Lot	Grid Number			Markham		
	Grid Location			City, S	tate, Zip Code	е	
	ft. \(\simega \) N. \(\simega \) S.,	ft. 🗌 E. 🔲 W.		Pula	iski, Wisco	nsin 54162	
	Civil Town Name			Facility	y Well No. an	d/or Name (If Applical	ble) Unique Well No.
	Pulaski			B-6	-4		
	Street Address of Well				For Abandon	ıment	
	790 Markham Drive			Cita	Closure		
	City, Village		+		f Abandonmer	nt	
	-						
WE	Pulaski LL/DRILLHOLE/BOREHOLE INF	ODA (A TION		04/0)1/99		
WE			1.				
(3)	Original Well/Drillhole/Borehole C	Construction Completed On	(4)	Depth 1	to Water (Feet	6.8	
	(Date) <u>07/17/98</u>			Pump &	& Piping Rem	oved? \square Yes \square	No Mot Applicable Not Applicable No Mot Applicable
	Tomporary			Liner(s) Removed?	☐ Yes [☐ No ☐ Not Applicable
	Monitoring Well	Construction Report Available?		Screen	Removed?	☐ Yes □	No Not Applicable
	☐ Water Well	⊠ Yes □ No	1	Casing	Left in Place?	Yes [□ No
	Drillhole			_	Explain		
	Borehole		1	11110,			
	Boreliole			W C		D.1 0 C 0	Yes No
	G				-		
	Construction Type:				-		= =
	_	ı (Sandpoint) 🔲 Dug				After 24 Hours?	∐ Yes ⊠ No
	Other (Specify)			If Yes,	Was Hole Re	topped?	」 Yes □ No
			(5)	Require	ed Method of	Placing Sealing Materi	n1
	Formation Type:		(3)	$\overline{}$	nductor Pipe -		uctor Pipe - Pumped
	Unconsolidated Formation	☐ Bedrock		_	-		
	0.7	0.00	<u></u>		mp Bailer		(Explain) Gravity
	• ` ′	Casing Diameter (in.) 2.00	(6)	Sealing	Materials	Fo	r monitoring wells and
	(From groundsurface)	Casing Depth (ft.)		∐ Ne	at Cement Gro	out mo	onitoring well boreholes only
				☐ San	nd-Cement (Co	oncrete) Grout	
	Lower Drillhole Diameter (in.)			Con	ncrete	; 🗆	Bentonite Pellets
				Cla	y-Sand Slurry	, i 🗆	Granular Bentonite
	Was Well Annular Space Grouted?	☐ Yes ☐ No ☐ Unknown			ntonite-Sand S		Bentonite-Cement Grout
	If Yes, To What Depth?	Feet	1	_	ipped Bentoni	•	Bentonne-Cement Grout
			<u> </u>	Z CIII	ipped Bentonn		1
(7)	Material Used To	Fill Well/Drillhole	Fee	m (Ft.)	To (Ft.)	No. Yards, Sacks Sealant (Circle	Mix Ratio
	Waterial Osed 10	rin wen/Drinnole	110	III (I ⁻ t.)	10 (14.)	or Volume One)	or Mud Weight
	•		_		0.5	4.	-
Be	ntonite		Su	rface	9.7	1 bag	
			1				
			-		-		
(8)	Comments						
			·		***************************************	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
(9)	Name of Person or Firm Doing Sea	ling Work		(10)	F0)	R DNR OR COUNTY	USEONLY
	STS Consultants Ltd.				Received/Insp		Xstrict/County
	Signature of Person Doing Work	Date Signed					
	Com 1. Calau	4-12-99		Revie	wor/Inspector		Complying Work
	Street or Route	Telephone Number					Noncomplying Wark
	, , , , , , , , , , , , , , , , , , ,	920-468-1978		Palia	w-un Necessa	~	
	1035 Kepler Drive City, State, Zip Code	720-400-17/0					
	•						
	Green Ray WI 54311	di-23370	1				

711	CENEDAL INCODMATION	2227074	1/2)	EACH	ITY NAME	Carver Boat Corpor	ation Dlant 4
(1)	GENERAL INFORMATION	23379XA County	(2)		al Well Owner		ation Plant 4
	Well/Drillhole/Borehole	•		-			
	Location B-6-5	Brown			ver Boat Co	o <u>rp</u> .	
		⊠E		Present	Well Owner		
	1/4 of <u>NE</u> 1/4 of Sec	$\frac{5}{1}$: T. $\frac{25}{1}$ N: R. $\frac{19}{1}$ W		Sam	ie		
	(If Applicable)	,			or Route		
	•	G 11V		700	Markham 1	Deires	
	Grid Location Gov't Lot	Grid Number			tate, Zip Code		
				•	-		
	ft. N. S.,	ft. 🗌 E. 🗌 W.		Pula	ski, Wisco	nsin 54162	Minimo
	Civil Town Name			Facility	Well No. and	d/or Name (If Applicat	ole) Unique Well No.
	Pulaski			B-6-	.5		
	Street Address of Well			Reason	For Abandon	ment	
	790 Markham Drive			Site	Closure		
	City, Village				Abandonmen	it	_
	Pulaski			04/0	1/99		
WEI	LL/DRILLHOLE/BOREHOLE INFO	DMATION		04/0	11177		
			(1)	D 41.4	W . /F .	7.1	
(3)	Original Well/Drillhole/Borehole Co	onstruction Completed On	(4)		o Water (Feet	,	7 Ø
	(Date) <u>07/17/98</u>				& Piping Remo		☐ No ☐ Not Applicable
	Temporary			Liner(s) Removed?		No Not Applicable
	Monitoring Well	Construction Report Available?		Screen	Removed?	☐ Yes □	☑ No ☐ Not Applicable
	☐ Water Well	⊠ Yes □ No		Casing	Left in Place?	Yes [□ No
	☐ Drillhole			_	Explain		
	Borehole	l		,		- California - Cal	
	Borchole			W C	-i C+ Off	D-1 S69	Yes No
	a i i m				-		-
	Construction Type:				•	-	_
		(Sandpoint)	ļ			fter 24 Hours?	Yes 🛛 No
	U Other (Specify)			If Yes,	Was Hole Re	topped?	⊔ Yes ⊔ No
			(5)	Require	ed Method of	Placing Sealing Materi	al
	Formation Type:		(3)		nductor Pipe -		uctor Pipe - Pumped
	Unconsolidated Formation	☐ Bedrock		_	-		
	10.0	2.00			mp Bailer	Other	(Explain) Gravity
		Casing Diameter (in.) 2.00	(6)	Sealing	Materials	Fo	r monitoring wells and
	(From groundsurface)	Casing Depth (ft.)	l	☐ Nea	at Cement Gro	out mo	onitoring well boreholes only
				☐ Sar	d-Cement (Co	oncrete) Grout	
	Lower Drillhole Diameter (in.)			☐ Coi	ncrete	·	Bentonite Pellets
	. ,			_	y-Sand Slurry		Granular Bentonite
	Was Well Annular Space Grouted?	☐ Yes ☐ No ☐ Unknown		_	tonite-Sand S	-	Bentonite-Cement Grout
	If Yes, To What Depth?	Feet		_		•	Bentonite-Cement Grout
	11 Tes, 10 What Depth		<u> </u>	⊠ Chi	pped Bentonit		**************************************
(7)	Man dal III al Tar	PH 37.11/D PH -1.	_	(F:)	T- (F+)	No. Yards, Sacks Sealant (Circle	NC Date
	Material Used To F	ili well/Drilinole	Fro	m (Ft.)	To (Ft.)	Sacks Sealant (Circle or Volume One)	Mix Ratio or Mud Weight
			İ				or was weight
Be	ntonite		Su	rface	10.0	1 bag	
			<u> </u> 			<u>. </u>	
			l				
(8)	Comments						
(9)	Name of Person or Firm Doing Seali	ing Work		(i0)	FOI	ONR OR COUNTY	USE ONLY
	STS Consultants Ltd.			Date:	Received/linsp	ected [Xistrict/County
-	Signature of Person Doing Work	Date Signed					
		4-17-99		Revie	wor/Inspector		
-	Street or Route/	Telephone Number			. vi itabeceli		Complying Work:
	, , , ,	· -		65.0		<u></u>	Nonemplying Wark
-	1035 Kepler Drive	920-468-1978		rano	м-ий "Месеевя	*	
	City, State, Zip Code			:::::::			
_	Green Bay, WI 54311	djp23379					



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor George E. Meyer, Secretary William R. Selbig, Regional Director Remediation and Redevelopment 1125 North Military Avenue P.O. Box 10448 Green Bay, Wisconsin 54307-0448 Telephone 920-492-5916 FAX 920-492-5859 TDD 920-492-5812

March 16, 1999

Carver Boat Corporation Attn: Ted Maloney P.O. Box 1010 Pulaski, WI 54162

SUBJECT:

Closure Pending MW Abandonment

Carver Boats - Resin & Acetone, 790 Markham Pulaski, WI

WDNR ERP Case #: 02-05-178568

Dear Mr. Maloney:

On December 23, 1997, the Wisconsin Department of Natural Resources provided notice to you that the degree and extent of resin and acetone contamination at the above-named site was required to be investigated and remediated

On March 9, 1999, the Northeast Region Closeout Committee completed a review of the above referenced resin and acetone contamination case. The committee reviews environmental remediation cases for compliance with state laws, standards and guidelines to maintain consistency in the closeout of cases.

Based on the investigative and remedial documentation provided to the Department, it appears that the resin and acetone contamination at the above mentioned site has been remediated to the extent practicable. The Department considers the above referenced case "closed," having determined that no further action is necessary at the site at this time. As a condition of this closure, the Department is requiring you to properly abandon all groundwater monitoring wells and provide the Department with the proper documentation of such abandonment. This case will be listed as "active" on the Department's tracking system until the above mentioned condition is met.

This case may be reopened pursuant to s. NR 726.09, Wis. Adm. Code, if additional information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety or welfare to the environment.

If you have any questions regarding the content of this letter, please contact me in Green Bay at (920) 492-5943.

Sincerely,

Kristin Nell Hydrogeologist

Remediation & Redevelopment Program

cc: Bill Noel, STS Consultants Ltd.

1035 Kepler Drive, Green Bay, WI 54311



73.1.9C

WISCONSIN DEPARTMENT OF NATURAL RESOURCES CASE SUMMARY AND CLOSE OUT FORM

Type of Case: LUST Spill ER Act 453 Other DNR Reviewer:
WDNR Site Name: Carver Boat Corporation Resin and Acetone (Former Carver UST #6 / #7)
Complete Site Address:
WDNR BRRTS Case #: 0 2 - 0 5 - 1 7 8 5 6 8 PECFA Claim #:
Responsible Party Name: Carver Boat Corporation
Complete Responsible Party Address: 790 Markham Drive, Pulaski, Wisconsin 54162
Site Legal Description: 1/4, 1/4, _NE 1/4, Sec _6, T _25 N, R _19 (E/W) Town: Pulaski
County: <u>Brown</u> Latitude: <u>44 ° 40 '</u> Longitude: <u>88 ° 13 ' 30 "</u>
Type Of Closure Requested: Soil
Contaminant Type(s): VOCs Reserve Action Quantity Released: Unknown
Date of Incident/Discovery: October 3, 1997 Date Closure Submitted to DNR: October 3, 1997
Enforcement Actions Closed Out? Yes NoX_NA Permits Closed Out? Yes NoX_NA
Form 4 Pending? Yes X No NA
I certify that, to the best of my knowledge, the information presented on and attached to this form are true and accurate. This recommendation for case closure is based upon all available data as of
Form completed by: William F. Noch 1/21/99
(Signature) (Date)
Printed Name: William F. Noel Firm Name: STS Consultants, Ltd.
Relationship to Site Owner:Consultant
Address: 1035 Kepler Drive, Green Bay, Wisconsin 54311
Telephone Number: 920-468-1978 FAX Number: 920-468-3312
Environmental Consultant (if different then above):
Address:
Telephone Number: FAX Number:

WDNR BRRTS Case #:02-05-178568WDNR Site Name:(Carver UST #6 / #7)
1. CASE HISTORY AND JUSTIFICATION FOR CLOSURE ATTACHED? X Yes No
2. SOIL PRE-REMEDIATION OR INVESTIGATION ANALYTICAL RESULTS Extent Defined? X Yes No Soil Type(s): Silty sand, silty clay Depth to Bedrock: Not encountered.
Potential Receptors for Direct Contact (i.e. vapor migration, contaminated soil left in place): No identified exceedances of direct contact RCLs.
Attached: Tables of Pre-remedial Analytical Results? X Yes No Maps of Pre-remedial Sample Locations? X Yes No
3. SOIL POST REMEDIATION ANALYTICAL RESULTS
Remedial Action Completed? Yes X_No 720.19 Analysis? X_Yes No (If yes, attach supporting documentation)
Were Soils Excavated? Yes X_No Quantity: Disposal Method:
Final Confirmation Sampling Methods:
Soil Disposal Form Attached? YesNo _XNA Final Disposal Location:
Estimated volume of insitu soils exceeding NR 720 RCLs: None Attached: Tables of Post-Remedial Analytical Results? _Yes/No _X_NA Maps of Post-Remedial Sample Locations? _Yes/No _X_NA
Brief Description of Remedial Action Taken: NR 720.19 Analysis
4. GROUNDWATER ANALYTICAL RESULTS
Potential Receptors for Groundwater Migration Pathway: No identified exceedances of NR 140 ESs.
Extent of Contamination Defined? X Yes No NA Remedial Action Completed? Yes No X NA
of Sample Rounds: Depth(s) to Groundwater/Flow Direction(s):4' BGS/flow likely to north.
Field Analyses? X Yes No Lab Analyses? X Yes No # of Sampling Points: 5
NR 141 Monitoring Wells Sampled: 0 # Temporary Groundwater Sampling Points Sampled: 5
Recovery Sumps Sampled: # Municipal Wells Sampled: # Private Wells Sampled: 0
Has DNR Been Notified of Substances in Groundwater w/o Standard?YesNoXNA
Any Potable Wells Within 1,200 Feet of Site? Yes _X_ No If Yes, How Many?
Have They Been Sampled? YesNo Have Well Owners/Occupants Been Notified of Results? Yes No
Have They Been Sampled? Yes No Have Well Owners/Occupants Been Notified of Results? Yes No Preventive Action Limit Exceeded? We Yes No (If Yes, identify location(s): B-6-1, B-6-2, B-6-3
Enforcement Standard Exceeded? Yes _X No _ (If Yes, identify location(s):
Brief Description of Remedial Action Taken: Compared data to NR 140 Standards.

FOR DEPA	RTMENT USE ONLY	
FIRST REVIEW DATE: 3-9-99 1/1	Approved [] Denied	
R-C-Stoff Paloling	r Cy	
(Signature) (Signature)	(Signature)	(Signature)
SECOND REVIEW DATE: [] A	Approved [] Denied	
(Signature) (Signature)	(Signature)	(Signature)
(Signature)	(Oignature)	(Digitatio)
COMMITTEE RECOMMENDATION:		
Closure Approved Per:		
No Restrictions		
Groundwater Use Restriction Zoning Verification		
Deed Restriction		
Deed Affidavit		
Site Specific Close Out Letter New		
Well Abandonment Documentatio Soil Disposal Documentation	n	
Public Notice Needed		
NR 140 Exemption For:	WAARIN WARREN WA	410 1410
Specific Comments:	. detects are	below PALS
and Soil resid	nals are bel	ow Calculated
SSRCC'S for	G. W. Path a	and ingestion
inhalation pat	rL.	
Closure Denied, Needs More:		
Investigation		
Groundwater Monitoring		
Soil Remediation Groundwater Remediation		
Documentation Of Soil Landsprea	ding Or Biopile Destiny	
Specific Comments:		

CASE HISTORY AND JUSTIFICATION FOR CLOSURE CARVER BOAT CORPORATION RESIN AND ACETONE USTs (FORMER CARVER USTs #6 / #7) PULASKI, WISCONSIN BRRTS #02-05-178568

Two adjacent underground storage tanks (Carver USTs #6 / #7) were removed by Phenco, Inc. of Neenah, Wisconsin on October 3, 1997. STS Consultants, Ltd., (STS) performed site assessments during removal of the USTs. UST #6 was a 6,000-gallon tank which formerly contained resin, of which, styrene was a primary constituent. UST #7 was a 2,000-gallon tank which formerly contained acetone. The removal of these USTs and the site assessments are documented in a report by STS dated February 26, 1998.

No groundwater samples were collected while the USTs were being removed, nor was there evidence of groundwater impacts. STS field observations of soil conditions provided some indication of volatile organic compounds (VOCs). Laboratory soil test results indicated low-level concentrations of styrene, acetone, tetrachloroethane, and methyl tert-butyl ether (MTBE) in one or more of the soil samples (refer to Table 1).

The laboratory soil data were found to be below site-specific residual containment levels (SSRCLs) for the groundwater pathway and direct contact at non-industrial sites. Groundwater pathway SSRCLs are considered to be conservative because the average TOC concentration for Carver former UST #3 location was used instead of the substantially higher TOC measured in soil from the former USTs #6 / #7 location (USTs #3 and #6 / #7 are located in the northern portion of Carver's property).

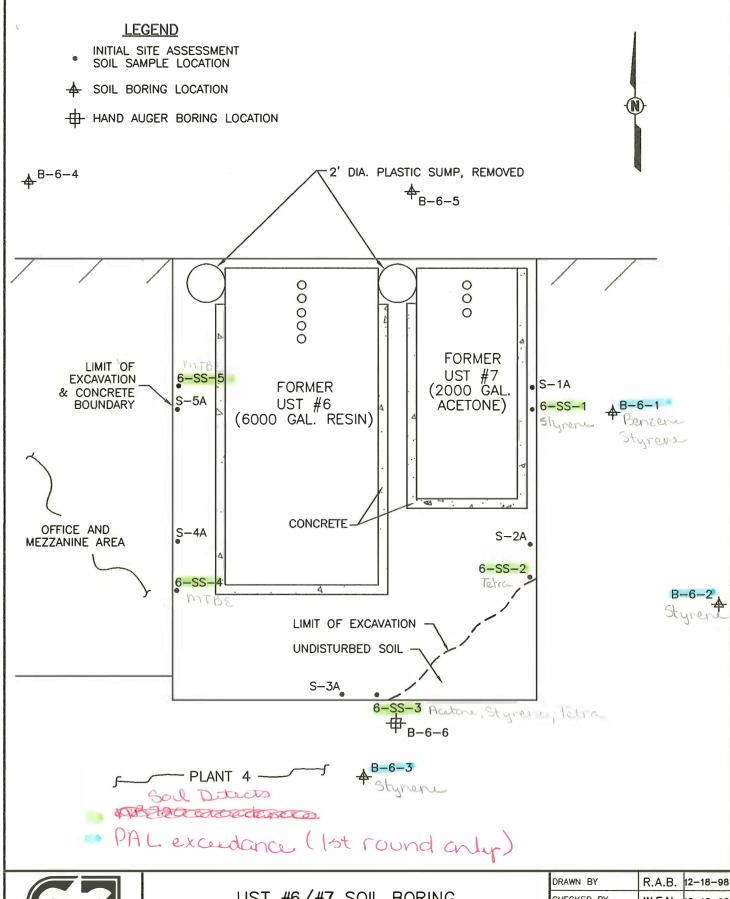
Additionally, groundwater did not exceed NR 140 enforcement standards in any of the temporary wells (refer to Table 2). Based on the collected data and observations, STS recommends that this site be closed by the WDNR with PAL exemptions for styrene and benzene per s. NR 140.28, Wisconsin Administrative Code.



FACILITY LOCATIONS
CARVER BOAT CORPORATION
PULASKI, WISCONSIN

DRAWN BY	P.D.P.	2-23-98		
CHECKED BY	W.F.N.	2-23-98		
APPROVED BY				
CADFILE G479F04	1"=500'			
STS PROJECT NO. 23379XF	FIGURE NO.			

W:\DWG97\23379\XF\G479F04 02/24/1998 09:54







UST #6/#7 SOIL BORING
LOCATION DIAGRAM
CARVER BOAT CORPORATION
PULASKI, WISCONSIN

DRAWN BY	R.A.B.	12-18-98			
CHECKED BY	W.F.N.	12-18-98			
APPROVED BY					
CADFILE	1"=5'				
STS PROJECT NO.	FIGURE NO.				
23379XA	3				

TABLE 1 SOIL FIELD OBSERVATIONS AND LABORATORY RESULTS CARVER BOAT CORPORATION USTs #6 AND #7 PULASKI, WISCONSIN

Sample Location	Depth (feet)	FID (units)	Soil Description	Odor	Acetone (μg/kg)	Styrene (µg/kg)	MTBE (μg/kg)	Tetrachloroethene (μg/kg)	Total Organic Carbon (mg/kg)
Location	(leet)	(unis)	Description		(hg/kg)	(µg/kg)	(µg/ k g)	(µg/kg)	(mg/kg)
Tank Closure Site As	ssessment Sa	mples (10/9	17)						
6-SS-1	3	52	Dark Brown Fine to Medium Silty Sand	Slight	<100	36	<25	<25	-
6-SS-2	3	10	Dark Brown Fine to Medium Silty Sand	Possible	<100	<25	<25	26	-
6-SS-3	3	6	Dark Brown Fine to Medium Silty Sand	No	120	31	<25	51	-
6-SS-4	3	4	Dark Brown Fine to Medium Silty Sand	No	<100	<25	28	<25	-
6-SS-5	3	4	Dark Brown Fine to Medium Silty Sand	No	<100	<25	36	<25	-
S-1A	4	65	Brown Red Silty Clay	Slight	-	-	-	-	-
S-2A	4	25	Brown Red Silty Clay	Possible	- "	-	-	-	-
S-3A	4	50	Brown Red Silty Clay	Slight	- 1	-	-	-	-
S-4A	4	7	Brown Red Silty Clay	No	-	-	-	-	- 1
S-5A	4	7	Brown Red Silty Clay	No	-	-	-	-	-
Site Assessment Sam	 inle (11/98)								
B-6-6	1.0-1.5	-	Dark Brown Fine to Medium Silty Sand	No	-	-	-	<27	34,700
Non-Industrial SSR	C Ls				1 000	41,000	160	130	
GW ING					1,800	41,000	390,000		
INH					7,800,000 4,600,000	16,000,000	14,000,000	12,000 11,000	
INI					4,000,000	14,000,000	14,000,000	11,000	

Notes:

VOCs not listed were not detected in any sample

- = Not Analyzed

MTBE = Methyl tert Butyl Ether

FID = Flame Ionization Detector

SSRCL = Site-Specific Residual Contaminant Level

GW = Groundwater Pathway

ING = Soil Ingestion Pathway

INH = Soil Inhalation Pathway

GROUNDWATER DATA CARVER BOAT CORPORATION UST #6 / #7 PULASKI, WISCONSIN

Field Parameters

Well ID	Date	Depth to Water (Ft from TPVC)	Dissolved Oxygen (mg/L)	Ferrous Iron (mg/L)	pH (units)	Specific Conductance (µmhos/cm)	Temperature (°F)	Color	Odor Noted
B-6-1	8/13/98	7.16	2	0,2	6.26	1034	72.0	Clear	None Noted
	2/4/99	8.20	NR	NR	NR	NR	NR	Clear	None Noted
B-6-2	8/13/98	7.05	3	0.2	6.77	1253	72.9	Clear	None Noted
	2/4/99	8.06	NR	NR	NR	NR	NR	Clear	None Noted
B-6-3	8/13/98	7.02	2	0.4	6.39	1101	73.5	Clear	None Noted
	2/4/99	7.98	NR	NR	NR	NR	NR	Clear	None Noted
B-6-4	8/13/98	6.79	2	0.2	6.09	776	71.8	Clear	None Noted
	2/4/99	7.80	NR	NR	NR	NR	NR	Clear	None Noted
B-6-5	8/13/98	, 6,95	3	1.0	6.13	1250	70.8	Clear	None Noted
	2/4/99	8.01	NR	NR	NR	NR	NR .	Clear	None Noted

Analytical Results

			1	/OCs ⁽¹⁾ (μg/L)			i i	
Well ID	Date	Acetone	Benzene	Styrene	Toluene	Xylenes	Nitrate/Nitrite (mg/L)	Sulfate (mg/L)
B-6-1	8/13/98	11	0.53(2)	46 ©	0.6 ⁽²⁾	<1.23 ⁽³⁾	<0.014	18
	2/4/99	<5.0	<0.5	1,24	<1.0	<2.0	NA	NA
B-6-2	8/13/98	1,1	<0.25	±20∂	<0.38	<1.04	<0.014	19
	2/4/99	<5.0	<0.5	1.64	<1.0	<2.0	NA	NA
B-6-3	8/13/98	15	<0.25	981	0.39 ⁽²⁾	<1.44 ⁽³⁾	<0.014	10
	2/4/99	<5.0	<0.5	<1.0	<1.0	<2.0	NA	NA
B-6-4	8/13/98	0.92(2)	<0.25	<0.74	<0.38	<1.04	<0.014	10
	2/4/99	<5.0	<0.5	<1.0	<1.0	<2.0	NA	NA
B-6-5	8/13/98	<0.28	<0.25	0.91 ⁽²⁾	<0.38	<1.04	0.47	84
	2/4/99	<5.0	<0.5	<1.0	<1.0	<2.0	NA	NA
NR.I	40 ES	1000	5.0	100	343	620		
NR 1	40 PAL	200	0.5	10	68.6	124		

⁽¹⁾VOCs not listed were not detected

NA: Not analyzed

NR: Not recorded

NE: Not established

Tetrachloroethene no un water

⁽²⁾ Analyte detected, but below limit of quantitation

⁽³⁾o-xylene detected, but below limit of quantitation; m&p-xylene not detected

Site-Specific Residual Contaminant Level (SSRCL) Calculation Input Parameters

Carver Boat Corporation USTs #6 and #7

Pulaski, Wisconsin

STS Project No. 23379XA

Parameter	SFo		SFi		Rf	D	RfC	:	Koc		H'		Da		Dw	
	(mg/kg-day) ⁻¹	Source	(mg/kg-day) ⁻¹	Source	(mg/kg-day)	Source	(mg/m ³)	Source	(L/kg)	Source	(unitless)	Source	(cm ² /s)	Source	(cm ² /s)	Source
PVOCs				7 1												
Acetone				1	1.0E-01	1	3.5E-01	6	0.575	5	1.59E-03	5	1.24E-01	5	1.14E-05	5
Methyl tert-butyl ether					5.0E-03	4	3.0E+00	1	12.0	9	2.28E-02	7	1.24E-01	7	1.05E-05	7
Styrene					2.0E-01	1	1.0E+00	1	776	5	1.13E-01	5	7.10E-02	5	8.00E-06	5
Tetrachloroethene	5.2E-02	3	2.0E-03	3	1.0E-02	1	3.85E-01	6	155	5	7.54E-01	5	7.20E-02	5	8.20E-06	5

NOTES:

- 1) Abbreviations for RCL chemical fate parameters and health criteria are defined on the calculation sheets.
- 2) For Xylene, chemical fate parameters are those published for "p-xylene".

SOURCES:

- EPA (U.S. Environmental Protection Agency). 1998. Integrated Risk Information System (IRIS). Office of Solid Waste and Emergency Response, Washington, D.C.
 On-line database available through TOXNET, National Library of Medicine, Bethesda, Maryland.
- EPA (U.S. Environmental Protection Agency). 1997a. Health Effects Assessment Summary Tables (HEAST). FY-1997 Annual Update. (and Update to Annual) Office of Emerg. and Remedial Response, Washington, D.C.
- 3) EPA (U.S. Environmental Protection Agency). 1997b. Provisional Toxicity Values Under Development (personal communication). National Center for Environmental Assessment (NCEA). Superfund Technical Support Center (phone: 513-569-7300). Cincinnati, Ohio.
- 4) EPA (U.S. Environmental Protection Agency). 1997c. Region III (EPA-III) Risk-Based Concentration (RBC) Table for April 1997. [includes documentation of human health criteria that are provisional and/or withdrawn from IRIS or HEAST.] Roy L. Smith, PhD. Office of RCRA. Technical and Program Support Branch. 841 Chestnut Street, Philadelphia, PA 19107.
- 5) EPA (U.S. Environmental Protection Agency). 1996. Soil Screening Guidance: Technical Background Document. Office of Solid Waste and Emergency Response, Washington, D.C.
- 6) EPA (U.S. Environmental Protection Agency). 1998. Region 9 Preliminary Remediation Goals (PRGs). Stanford J. Smucker, Ph. D. Regional Toxicologist. 75 Hawthorne Street, San Francisco, CA
- 7) EPA (U.S. Environmental Protection Agency). 1998. CHEMDAT8 air model chemicals properties database (file: DATATWO.WK1) obtained from EPA's web site.
- 8) HSDB (Hazardous Substance Data Bank). 1998. On-Line toxicological database available through the National Library of Medicine.
- 9) ASTM. 1995. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites (E 1739-95^{c1}). West Conshohocken, Pennsylvania.

Cumulative Risk Calculation Carver Boat Corporation Pulaski, Wisconsin STS Project No. 23379XA

Compound	Highest			Carcin	nogens				Non-Car	cinogens	
	Soil	Ir	gestion (SF	o)	In	halation (S	Fi)	Ingestio	n (RfD)	Inhalatio	on (RfC)
	Conc.				,	,					
		RCL (10 ⁻⁶)	RCL (10 ⁻⁵)	Soil Conc.	RCL (10 ⁻⁶)	RCL (10 ⁻⁵) Soil Conc.	RCL	Soil Conc.	RCL	Soil Conc.
	(mg/kg)	(mg/kg)	(mg/kg)	RCL (10 ⁻⁵)	(mg/kg)	(mg/kg)	RCL (10 ⁻⁵)	(mg/kg)	RCL	(mg/kg)	RCL
VOCs											
Acetone	0.12							7 800	1.54E-05	4600	2.61E-05
Methyl tert butyl ether	0.036							390	9.23E-05	14000	2.57E-06
Styrene	0.031							16000	1.94E-06	14000	2.21E-06
Tetrachloroethene	0.051	12	120	0.00043	11	110	0.00046	780	6.54E-05	1000	5.10E-05
Cumulative Risk or Cu	mulative Ha	zard*		0.0004			0.0005		0.0002		0.0001

Calculated by: Roger Miller 12/21/98

Checked by: Jon Cratny 1-12-33

Notes:

1)*Summation of chemical-specific ratios (i.e., soil conc./RCL).

- 2) For carcinogens, the highest soil concentration was divided by the adjusted RCL (adjusted to a target risk of 1×10^{-5}).

 The sum of these ratios is below 1 for the ingestion and inhalation pathways. Accordingly, the cumulative risk does not exceed 1×10^{-5} .
- 3) For non-carcinogens, the highest soil concentration was divided by the RCL. The sum of these ratios is below 1 for the ingestion and inhalation pathways. Accordingly, the cumulative hazard does not exceed a hazard quotient of 1.
- 4) Risks for carcinogens and noncarcinogens are conservatively presumed to be additive within each exposure pathway.
- $\textbf{5)} \, \textbf{All RCLs for Volatile Organic Compounds (VOCs)} \, \textbf{were derived from site-specific calculations}.$

Acetone Soil Ingestion Pathway (RfD)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Algorithm for Ingestion of Noncarcinogenic Contaminants	s in Non-Industria	al (Residential) Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
BWc - Average Body Weight for Child (kg)	15	WDNR Default Value
AT - Averaging Time (years)	6	WDNR Default Value
RfDo - Oral Reference Dose (mg/kg-day)	1.0E-01	1
EF - Exposure Frequency (day/year)	350	WDNR Default Value
EDc - Exposure Duration During Ages 1-6 (year)	6	WDNR Default Value
IRc - Ingestion Rate of Soil Age 1-6 (mg/day)	200	WDNR Default Value
Algorithm for Ingestion of Noncarcinogenic Contaminant		
	s in Industrial Soi Value	l Source
Parameter THQ - Target Hazard Quotient (unitless)		
Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)		Source
Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years)	Value 1 70 25	Source WDNR Default Value
Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day)	Value I 70	Source WDNR Default Value WDNR Default Value
Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day) EF - Exposure Frequency (day/year)	Value 1 70 25	Source WDNR Default Value WDNR Default Value
Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day) EF - Exposure Frequency (day/year) ED - Exposure Duration (year)	Value 1 70 25 1.0E-01	Source WDNR Default Value WDNR Default Value WDNR Default Value I
Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)	Value 1 70 25 1.0E-01 250	Source WDNR Default Value WDNR Default Value WDNR Default Value I WDNR Default Value

Calculated by: Roger Miller 12/21/98

Checked by: Sor. Partney 1-12-97

Note:

Acetone Soil Inhalation Pathway (RfC)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

	3 110m 110m-1	ndustrial (Residential) Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	30	WDNR Default Value
RfC - Reference Concentration (mg/m³)	3.5E-01	6
EF - Exposure Frequency (day/year)	350	WDNR Default Value
ED - Exposure Duration (year)	30	WDNR Default Value
VF - Volatilization Factor (m ³ /kg)	1.26E+04	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
1/RfC x EF x EI	-, ,	(Cp x 10 ⁻⁹ kg/μg)]
Algorithm for Inhalation of Noncarcinogenic Contaminant	s in Industria	al Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	25	WDNR Default Value
RfC - Reference Concentration (mg/m³)	3.5E-01	6
EF - Exposure Frequency (day/year)	250	WDNR Default Value
ED - Exposure Duration (year)	25	WDNR Default Value
IRc - Inhalation Rate Correction for Adult Laborer (unitless)	1.2	WDNR Default Value
VF - Volatilization Factor (m ³ /kg)	1.26E+04	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
Volatilization Factor (m³/kg) = Q/C x (3.1	4 x D _A xT) ^{1/2} :	$\times 10^4 \text{m}^2/\text{cm}^2 = 1.26\text{E}+04$
	$2 \times \rho_b \times D_A$	
$D_{A} (cm^{2}/sec) = [(\theta_{a}^{10})$	$^{3}D_{a}H' + \theta_{w}^{10/3}$	$D_{\rm w}/n^2$] = 9.91E-05
	K. + A + A	<u>ш</u>
	$\theta_b K_d + \theta_w + \theta_t$	Н
Parameter	$\nabla_b K_d + \theta_w + \theta_w$	H' Source
· ·		H
Parameter	Value	H Source
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³)	Value 68.81	H Source
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec)	Value 68.81 9.91E-05	Source WDNR Default Value Calculation
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec)	Value 68.81 9.91E-05 9.50E+08	Source WDNR Default Value Calculation WDNR Default Value
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³)	Value 68.81 9.91E-05 9.50E+08 1.5	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ ₄ - Air Filled Porosity (cm³/cm³)	Value 68.81 9.91E-05 9.50E+08 1.5 0.28	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec)	Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value S
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless)	Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01 1.59E-03	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value S 5
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³)	Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value S
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³)	Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01 1.59E-03	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value S 5
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec)	Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01 1.59E-03 0.15 1.14E-05	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value S S WDNR Default Value
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) q ₄ - Air Filled Porosity (cm³/cm³) D ₄ - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) q _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³)	Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01 1.59E-03 0.15 1.14E-05 0.43	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) q _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) q _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³) K _d - Soil:Water Distribution Coefficient (L/kg)	Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01 1.59E-03 0.15 1.14E-05 0.43 0.00345	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) q ₄ - Air Filled Porosity (cm³/cm³) D ₄ - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) q _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³)	Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01 1.59E-03 0.15 1.14E-05 0.43	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5

Calculated by: Roger Miller 12/21/98

Checked by: Smlathy 1-13-99

Note:

Methyl tert-butyl ether Soil Ingestion Pathway (RfD)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
BWc - Average Body Weight for Child (kg)	15	WDNR Default Value
AT - Averaging Time (years)	6	WDNR Default Value
RfDo - Oral Reference Dose (mg/kg-day)	5.0E-03	4
EF - Exposure Frequency (day/year)	350	WDNR Default Value
EDc - Exposure Duration During Ages 1-6 (year)	6	WDNR Default Value
IRc - Ingestion Rate of Soil Age 1-6 (mg/day)	200	WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg	g x EF x ED x IRc	390
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamin	g x EF x ED x IRc	1
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamin Parameter	g x EF x ED x IRc ants in Industrial Soi Value	I Source
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless)	g x EF x ED x IRc ants in Industrial Soi Value 1	Source WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)	g x EF x ED x IRc ants in Industrial Soi Value 1 70	Source WDNR Default Value WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years)	g x EF x ED x IRc ants in Industrial Soi Value 1	Source WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day)	g x EF x ED x IRc ants in Industrial Soi Value 1 70 25	Source WDNR Default Value WDNR Default Value WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)	ants in Industrial Soi Value 1 70 25 5.0E-03	Source WDNR Default Value WDNR Default Value WDNR Default Value 4

Calculated by: Roger Miller 12/21/98

Checked by: 2000. 1. 12-44

Note:

Methyl tert-butyl ether Soil Inhalation Pathway (RfC)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Algorithm for Inhalation of Noncarcinogenic Contaminan	ts from Non-I	ndustrial (Residential) Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	30	WDNR Default Value
RfC - Reference Concentration (mg/m³)	3.0E+00	1
EF - Exposure Frequency (day/year)	350	WDNR Default Value
ED - Exposure Duration (year)	30	WDNR Default Value
VF - Volatilization Factor (m³/kg)	4.35E+03	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
` ` ` ` ` `) x AT x 365 d D x [(1/VF) +	ay/year = 14000 $(Cp \times 10^9 \text{ kg/µg})]$
Algorithm for Inhalation of Noncarcinogenic Contaminan	ts in Industria	ıl Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	25	WDNR Default Value
RfC - Reference Concentration (mg/m³)	3.0E+00	1
EF - Exposure Frequency (day/year)	250	WDNR Default Value
ED - Exposure Duration (year)	25	WDNR Default Value
IRc - Inhalation Rate Correction for Adult Laborer (unitless)	1.2	WDNR Default Value
VF - Volatilization Factor (m³/kg)	4.35E+03	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
Volatilization Factor (m 3 /kg) = $Q/C \times (3.1)$		$\times 10^4 \text{m}^2/\text{cm}^2 = 4.35\text{E}+03$
	2 x ρ _b x D _A	
	$^{0/3}D_aH' + \theta_w^{10/3}$	
	$\rho_h K_d + \theta_w + \theta_n$	
		H'
Parameter	Value	Source
Q/C - Inverse Mean Concentration at	Value 68.81	
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³)	1	Source
Q/C - Inverse Mean Concentration at	1	Source
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec)	68.81	Source WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec)	68.81 8.31E-04	Source WDNR Default Value Calculation
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³)	68.81 8.31E-04 9.50E+08 1.5	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source $(g/m^2\text{-sec})/(kg/m^3)$ D_A - Apparent Diffusivity (cm^2/sec) T - Exposure Intervals (sec) ρ_b - Soil Dry Bulk Density (g/cm^3) θ_a - Air Filled Porosity (cm^3/cm^3)	68.81 8.31E-04 9.50E+08 1.5 0.28	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source $(g/m^2\text{-sec})/(kg/m^3)$ D_A - Apparent Diffusivity (cm^2/sec) T - Exposure Intervals (sec) p_b - Soil Dry Bulk Density (g/cm^3) θ_a - Air Filled Porosity (cm^3/cm^3) D_a - Air Diffusion Coefficient (cm^2/sec)	68.81 8.31E-04 9.50E+08 1.5 0.28 1.24E01	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 7
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless)	68.81 8.31E-04 9.50E+08 1.5 0.28 1.24E-01 2.28E-02	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 7
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³)	8.31E-04 9.50E+08 1.5 0.28 1.24E-01 2.28E-02 0.15	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 7 7 WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ ₄ - Air Filled Porosity (cm³/cm³) D ₄ - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec)	68.81 8.31E-04 9.50E+08 1.5 0.28 1.24E-01 2.28E-02	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 7
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ ₄ - Air Filled Porosity (cm³/cm³) D ₄ - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec)	8.31E-04 9.50E+08 1.5 0.28 1.24E-01 2.28E-02 0.15	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 7 7 WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless)	68.81 8.31E-04 9.50E+08 1.5 0.28 1.24E-01 2.28E-02 0.15 1.05E-05	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 7 WDNR Default Value 7
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ ₄ - Air Filled Porosity (cm³/cm³) D ₄ - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³)	68.81 8.31E-04 9.50E+08 1.5 0.28 1.24E-01 2.28E-02 0.15 1.05E-05 0.43	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 7 WDNR Default Value 7 WDNR Default Value 7

Calculated by: Roger Miller 12/21/98

Checked by: 2 1-13-88

Note:

Styrene Soil Ingestion Pathway (RfD)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
BWc - Average Body Weight for Child (kg)	15	WDNR Default Value
AT - Averaging Time (years)	6	WDNR Default Value
RfDo - Oral Reference Dose (mg/kg-day)	2.0E-01	1
EF - Exposure Frequency (day/year)	350	WDNR Default Value
EDc - Exposure Duration During Ages 1-6 (year)	6	WDNR Default Value
IRc - Ingestion Rate of Soil Age 1-6 (mg/day)	200	WDNR Default Value
Residual Contaminant Level (mg/kg) <u>THQ x BWc x A'</u> 1/RfDo x 10 ⁻⁶ kg/mg	g x EF x ED x IRc	= 16000
Residual Contaminant Level (mg/kg) = THQ x BWc x A' 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamina	g x EF x ED x IRc	il
Residual Contaminant Level (mg/kg) = THQ x BWc x A' 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminates	g x EF x ED x IRc ants in Industrial So Value	il Source
Residual Contaminant Level (mg/kg) = THQ x BWc x A' 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminates Parameter THQ - Target Hazard Quotient (unitless)	g x EF x ED x IRc ants in Industrial So Value	Source WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminates Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)	ants in Industrial So Value 1 70	Source WDNR Default Value WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A' 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminate Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years)	x EF x ED x IRc ants in Industrial So Value 1 70 25	Source WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A' 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminates Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day)	x EF x ED x IRc ants in Industrial So Value 1 70 25 2.0E-01	Source WDNR Default Value WDNR Default Value WDNR Default Value I
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminate Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day) EF - Exposure Frequency (day/year)	ants in Industrial So Value 1 70 25 2.0E-01 250	Source WDNR Default Value WDNR Default Value WDNR Default Value I WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A' 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminates Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day)	x EF x ED x IRc ants in Industrial So Value 1 70 25 2.0E-01	Source WDNR Default Value WDNR Default Value WDNR Default Value I

Calculated by: Roger Miller 12/21/98

Checked by: 200 (utory 1-12-79

Note:

Styrene

Soil Inhalation Pathway (RfC)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Algorithm for Inhalation of Noncarcinogenic Contaminants	from Non-I	ndustrial (Residential) Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	30	WDNR Default Value
RfC - Reference Concentration (mg/m ³)	1.0E+00	1
EF - Exposure Frequency (day/year)	350	WDNR Default Value
ED - Exposure Duration (year)	30	WDNR Default Value
VF - Volatilization Factor (m ³ /kg)	1.34E+04	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ	x AT x 365 d	
Algorithm for Inhalation of Noncarcinogenic Contaminants	in Industria	ıl Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	25	WDNR Default Value
RfC - Reference Concentration (mg/m³)	1.0E+00	1
EF - Exposure Frequency (day/year)	250	WDNR Default Value
ED - Exposure Duration (year)	25	WDNR Default Value
IRc - Inhalation Rate Correction for Adult Laborer (unitless)	1.2	WD NR Default Value
VF - Volatilization Factor (m³/kg)	1.34E+04	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
Cp - Concentration of Farticles less than 10 µm (µg/m)	1.4	WDINK Delault Value
		$+ (Cp \times 10^{-9} \text{ kg/µg})]$ $\times 10^{-4} \text{m}^2/\text{cm}^2 = \boxed{1.34\text{E} + 04}$
	$2 \times \rho_b \times D_A$	
$D_{A} (cm^{2}/sec) = [(\theta_{a}^{10/3}$	$D_aH' + \theta_w^{10/3}$	$D_{\rm w}/n^2$ = 8.70E-05
ρ	$K_1 + \theta_{xy} + \theta_{xz}$	
	pred i ow i o	H
Parameter	Value	HT Source
Q/C - Inverse Mean Concentration at	Value	Source
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³)	Value 68.81	Source WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec)	Value 68.81 8.70E-05	Source WDNR Default Value Calculation
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec)	Value 68.81 8.70E-05 9.50E+08	Source WDNR Default Value Calculation WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source $(g/m^2-sec)/(kg/m^3)$ D _A - Apparent Diffusivity (cm^2/sec) T - Exposure Intervals (sec) ρ_b - Soil Dry Bulk Density (g/cm^3)	Value 68.81 8.70E-05 9.50E+08 1.5	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source $(g/m^2-sec)/(kg/m^3)$ D _A - Apparent Diffusivity (cm^2/sec) T - Exposure Intervals (sec) ρ_b - Soil Dry Bulk Density (g/cm^3) θ_4 - Air Filled Porosity (cm^3/cm^3)	Value 68.81 8.70E-05 9.50E+08	Source WDNR Default Value Calculation WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source $(g/m^2-sec)/(kg/m^3)$ D _A - Apparent Diffusivity (cm^2/sec) T - Exposure Intervals (sec) ρ_b - Soil Dry Bulk Density (g/cm^3) θ_4 - Air Filled Porosity (cm^3/cm^3)	Value 68.81 8.70E-05 9.50E+08 1.5 0.28	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec)	Value 68.81 8.70E-05 9.50E+08 1.5 0.28	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless)	Value 68.81 8.70E-05 9.50E+08 1.5 0.28 7.10E-02	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value S
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) D _b - Soil Dry Bulk Density (g/cm³) 0 _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) 0 _w - Volumetric Soil Moisture Content (cm³/cm³)	Value 68.81 8.70E-05 9.50E+08 1.5 0.28 7.10E-02 1.13E-01 0.15	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 5 WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm²/sec) D _w - Water Diffusion Coefficient (cm²/sec)	Value 68.81 8.70E-05 9.50E+08 1.5 0.28 7.10E-02 1.13E-01 0.15 8.00E-06	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³)	Value 68.81 8.70E-05 9.50E+08 1.5 0.28 7.10E-02 1.13E-01 0.15 8.00E-06 0.43	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³) K _d - Soil: Water Distribution Coefficient (L/kg)	Value 68.81 8.70E-05 9.50E+08 1.5 0.28 7.10E-02 1.13E-01 0.15 8.00E-06 0.43 4.66	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) ρ _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³)	Value 68.81 8.70E-05 9.50E+08 1.5 0.28 7.10E-02 1.13E-01 0.15 8.00E-06 0.43	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value

Calculated by: Roger Miller 12/21/98

Checked by: Ambitry 1-13-98

Note:

Tetrachloroethene Soil Ingestion Pathway (SFo)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Algorithm for Ingestion of Carcinogenic Contaminants in Non		
Parameter	Value	Source
TR - Target Cancer Risk Level (unitless)	1E-06	WDNR Default Value
AT - Averaging Time (years)	70	WDNR Default Value
SFo - Slope Factor Oral (mg/kg-day) ⁻¹	5.2E-02	3
EF - Exposure Frequency (day/year)	350	WDNR Default Value
IFs - Age Adjusted Soil Ingestion Factor (mg-year/kg-day)	114	WDNR Default Value
IRc - Ingestion Rate of Soil Age 1-6 (mg/day)	200	WDNR Default Value
EDc - Exposure Duration During Ages 1-6 (year)	6	WDNR Default Value
BWc - Average Body Weight From Ages 1-6 (kg)	15	WDNR Default Value
IRa - Ingestion Rate of Soil Age 7-31 (mg/day)	100	WDNR Default Value
EDa - Exposure Duration During Ages 7-31 (year)	24	WDNR Default Value
BWa - Average Body Weight From Ages 7-31 (kg)	70	WDNR Default Value
SFo x 10^{-6} kg/mg x $IFs = IRc \times EDc$ BWc		= <u>12</u> = 114
SFo x 10^{-6} kg/mg x IFs = $\frac{IRc \times EDc}{BWc}$	EF x IFs + <u>IRa x EDa</u> BWa	
SFo x 10 ⁻⁶ kg/mg x IFs = IRc x EDc BWc Algorithm for Ingestion of Carcinogenic Contaminants in Indu	EF x IFs + <u>IRa x EDa</u> BWa	= 114 Source
SFo x 10 ⁻⁶ kg/mg x IFs = IRc x EDc BWc Algorithm for Ingestion of Carcinogenic Contaminants in Indu Parameter TR - Target Cancer Risk Level (unitless)	+ IRa x EDa BWa strial Soil Value 1E-06	= 114 Source WDNR Default Value
SFo x 10 ⁻⁶ kg/mg x IFs = IRc x EDc BWc Algorithm for Ingestion of Carcinogenic Contaminants in Indu Parameter TR - Target Cancer Risk Level (unitless) BWa - Average Body Weight For Adult (kg)	+ IRa x EDa BWa strial Soil Value 1E-06 70	Source WDNR Default Value WDNR Default Value
SFo x 10 ⁻⁶ kg/mg x IFs = IRc x EDc BWc Algorithm for Ingestion of Carcinogenic Contaminants in Indu Parameter TR - Target Cancer Risk Level (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years)	+ IRa x EDa BWa strial Soil Value 1 E-06 70 70	Source WDNR Default Value WDNR Default Value WDNR Default Value
SFo x 10 ⁻⁶ kg/mg x IFs = IRc x EDc BWc Algorithm for Ingestion of Carcinogenic Contaminants in Indu Parameter TR - Target Cancer Risk Level (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) SFo - Slope Factor Oral (mg/kg-day) ⁻¹	+ IRa x EDa BWa strial Soil Value 1E-06 70	Source WDNR Default Value WDNR Default Value WDNR Default Value 3
SFo x 10 ⁻⁶ kg/mg x IFs = IRc x EDc BWc Algorithm for Ingestion of Carcinogenic Contaminants in Indu Parameter TR - Target Cancer Risk Level (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) SFo - Slope Factor Oral (mg/kg-day) ⁻¹ EF - Exposure Frequency (day/year)	### FEF x IFS #### ###############################	Source WDNR Default Value WDNR Default Value WDNR Default Value 3 WDNR Default Value
SFo x 10 ⁻⁶ kg/mg x IFs = IRc x EDc BWc Algorithm for Ingestion of Carcinogenic Contaminants in Indu Parameter TR - Target Cancer Risk Level (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) SFo - Slope Factor Oral (mg/kg-day) ⁻¹ EF - Exposure Frequency (day/year) ED - Exposure Duration (year)	### FEF x IFS ### ### ### ### #### ###############	Source WDNR Default Value WDNR Default Value WDNR Default Value 3 WDNR Default Value WDNR Default Value WDNR Default Value
SFo x 10^{-6} kg/mg x IFs = IRc x EDc	### FEF x IFS #### ###############################	Source WDNR Default Value WDNR Default Value WDNR Default Value 3 WDNR Default Value

Calculated by: Roger Miller 12/21/98

Checked by: For Pathy 1-12-39

Note:

Tetrachloroethene Soil Inhalation Pathway (SFi)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Algorithm for Inhalation of Carcinogenic Contaminants fro	m Mon-Indu	strial (Acsidential) Son
Parameter	Value	Source
TR - Target Cancer Risk Level (unitless)	1E-06	WDNR Default Value
BWa - Average Body Weight For Adult (kg)	70	WDNR Default Value
AT - Averaging Time (years)	70	WDNR Default Value
SFi - Slope Factor Inhalation (mg/kg-day) ⁻¹	2.0E-03	3
EF - Exposure Frequency (day/year)	350	WDNR Default Value
ED - Exposure Duration (year)	30	WDNR Default Value
IR - Inhalation Rate (m³/day)	20	WDNR Default Value
VF - Volatilization Factor (m ³ /kg)	2.56E+03	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m ³)	1.4	WDNR Default Value
cp - Concentration of Farticles less than 10 mm (µgmr)	1,4	WDINK Default Value
	Va x AT x 36	
SFi x EF x ED x	R x [(1/VF) -	+ Cp x 10 ⁻⁹ kg/μg)]
Algorithm for Inhalation of Carcinogenic Contaminants in	Industrial So	il
Parameter	Value	Source
TR - Target Cancer Risk Level (unitless)	1E-06	WDNR Default Value
BWa - Average Body Weight For Adult (kg)	70	WDNR Default Value
AT - Averaging Time (years)	70	WDNR Default Value
SFi - Slope Factor Inhalation (mg/kg-day) ⁻¹	2.0E-03	3
EF - Exposure Frequency (day/year)	250	WDNR Default Value
ED - Exposure Duration (year)	25	WDNR Default Value
IRw - Inhalation Rate for Adult Laborer (m³/day)	24	WDNR Default Value
VF - Volatilization Factor (kg/m³)	2.56E+03	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
	VaxAT x 36:	
SFi x EF x ED x II	Rwx [(1/VF)	$\frac{5 \text{ day/year}}{+ \text{ Cp x } 10^{.9} \text{ kg/µg}} = \frac{15}{15}$ $+ \text{ Cp x } 10^{.9} \text{ kg/µg}$ $\times 10^{.4} \text{m}^{2}/\text{cm}^{2} = \frac{2.56\text{E} + 03}{15}$
SFi x EF x ED x II	Rwx [(1/VF)	+ Cp x 10 ⁻⁹ kg/μg)]
SFi x EF x ED x II Volatilization Factor (m^3/kg) = $Q/C \times (3.14)$	Rwx [(1/VF)	+ Cp x 10^{-9} kg/µg)] x 10^{-4} m ² /cm ² = 2.56E+03
SFi x EF x ED x II Volatilization Factor (m ³ /kg) = Q/C x (3.14) Q/C x (3.14) Q/C x (3.14) Q/C x (3.14)	Rwx [(1/VF) 4 x D _A xT) ^{1/2} : 2 x ρ _b x D _A	$+ \text{Cp x } 10^{-9} \text{ kg/μg})]$ $x 10^{-4}\text{m}^{2}/\text{cm}^{2} = 2.56\text{E} + 03$ $D_{w}/\text{n}^{2}] = 2.40\text{E} - 03$
SFi x EF x ED x II Volatilization Factor (m ³ /kg) = Q/C x (3.14) D_A (cm ² /sec) = $\underline{[(\theta_a^{10/2})]}$	Rwx [(1/VF) $4 \times D_A \times T)^{1/2}$ $2 \times \rho_b \times D_A$ $3 D_a H' + \theta_w^{10/3}$	$+ \text{Cp x } 10^{-9} \text{ kg/μg})]$ $x 10^{-4}\text{m}^{2}/\text{cm}^{2} = 2.56\text{E} + 03$ $D_{w}/\text{n}^{2}] = 2.40\text{E} - 03$
SFi x EF x ED x II Volatilization Factor (m ³ /kg) = Q/C x (3.14) $D_A \text{ (cm}^2/\text{sec)} = \underline{[(\theta_a^{10/2})]}$ Parameter	$Rwx [(1/VF)$ $4 \times D_A \times T)^{1/2}$ $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ $D_a H' + \theta_w^{10/3}$ $D_b K_d + \theta_w + \theta_d$	+ Cp x 10 ⁻⁹ kg/µg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H'
SFi x EF x ED x II Volatilization Factor (m ³ /kg) = Q/C x (3.14) D_A (cm ² /sec) = $\underline{[(\theta_a^{10/2})]}$ Parameter Q/C - Inverse Mean Concentration at	$Rwx [(1/VF)$ $4 \times D_A \times T)^{1/2}$ $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ $3 D_a H' + \theta_w^{10/3}$ $4 \rho_b K_d + \theta_w + \theta_d$ Value	$+ \text{Cp x } 10^{-9} \text{kg/μg})$ $\times 10^{-4} \text{m}^2/\text{cm}^2 = \boxed{2.56\text{E} + 03}$ $D_w/n^2] = \boxed{2.40\text{E} - 03}$ H' Source
$SFi \times EF \times ED \times D$ $Volatilization Factor (m3/kg) = Q/C \times (3.14)$ $D_A (cm2/sec) = [(\theta_a^{10/4})]$ $Parameter$ $Q/C - Inverse Mean Concentration at Center of Source (g/m2-sec)/(kg/m3)$	$Rwx [(1/VF) + x D_AxT)^{1/2} = 2 x \rho_b x D_A$ $2 x \rho_b x D_A$ $D_aH' + \theta_w^{10/3}$ $b_bK_d + \theta_w + \theta_d$ Value 68.81	$+ \text{Cp x } 10^{-9} \text{kg/μg})$ $\times 10^{-4} \text{m}^2/\text{cm}^2 = \boxed{2.56\text{E} + 03}$ $D_w/n^2] = \boxed{2.40\text{E} - 03}$ H' Source
$SFi \times EF \times ED \times D$ $Volatilization Factor (m3/kg) = Q/C \times (3.14)$ $D_A (cm2/sec) = [(\theta_a^{10/2})]$ $Parameter$ $Q/C - Inverse Mean Concentration at Center of Source (g/m2-sec)/(kg/m3)$ $D_A - Apparent Diffusivity (cm2/sec)$	Rwx [(1/VF) $\frac{4 \times D_A \times T}{2 \times \rho_b \times D_A}$ $\frac{3 D_a H' + \theta_w^{10/3}}{2 \times \rho_b K_d + \theta_w + \theta_d}$ Value 68.81 2.40E-03	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value Calculation
Volatilization Factor (m ³ /kg) = $Q/C \times (3.14)$ $D_A \text{ (cm}^2/\text{sec)}$ = $(\theta_a^{10/4})$ Parameter $Q/C - \text{Inverse Mean Concentration at}$ $C - \text{Center of Source } (g/m^2 - \text{sec})/(kg/m^3)$ $D_A - \text{Apparent Diffusivity } (\text{cm}^2/\text{sec})$ $T - \text{Exposure Intervals (sec)}$	Rwx [(1/VF) $4 \times D_A \times T$) ^{1/2} : $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ Value 68.81 2.40E-03 9.50E+08	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value Calculation WDNR Default Value
Volatilization Factor (m³/kg) = $Q/C \times (3.14)$ $D_A \text{ (cm²/sec)}$ = $Q/C \times (3.14)$ Parameter $Q/C - \text{Inverse Mean Concentration at}$ $C - \text{Center of Source (g/m²-sec)/(kg/m³)}$ $D_A - \text{Apparent Diffusivity (cm²/sec)}$ $T - \text{Exposure Intervals (sec)}$ $\rho_b - \text{Soil Dry Bulk Density (g/cm³)}$	Rwx [(1/VF) $4 \times D_A \times T$) ^{1/2} : $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ Value 68.81 2.40E-03 9.50E+08 1.5	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value
Volatilization Factor (m³/kg) = $Q/C \times (3.14)$ $D_A \text{ (cm²/sec)}$ = $Q/C \times (3.14)$ Parameter $Q/C - \text{Inverse Mean Concentration at}$ $C - \text{Center of Source } (g/m²-\text{sec})/(kg/m³)$ $D_A - \text{Apparent Diffusivity } (\text{cm²/sec})$ $T - \text{Exposure Intervals (sec)}$ $p_b - \text{Soil Dry Bulk Density } (g/\text{cm}³)$ $\theta_a - \text{Air Filled Porosity } (\text{cm}³/\text{cm}³)$	Rwx [(1/VF) $4 \times D_A \times T$) ^{1/2} : $2 \times \rho_b \times D_A$ $3 D_a H^1 + \theta_w^{10/3}$ $\rho_b K_d + \theta_w + \theta_d$ Value 68.81 2.40E-03 9.50E+08 1.5 0.28	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value
Volatilization Factor (m³/kg) = $Q/C \times (3.14)$ $D_A \text{ (cm²/sec)}$ = $(\theta_a^{10/4})$ Parameter $Q/C - \text{Inverse Mean Concentration at}$ $C - \text{Center of Source } (g/m²-\text{sec})/(kg/m³)$ $D_A - \text{Apparent Diffusivity } (\text{cm²/sec})$ $T - \text{Exposure Intervals (sec)}$ $D_b - \text{Soil Dry Bulk Density } (g/\text{cm}³)$ $\theta_a - \text{Air Filled Porosity } (\text{cm}³/\text{cm}³)$ $D_a - \text{Air Diffusion Coefficient } (\text{cm²/sec})$	Rwx [(1/VF) $4 \times D_A \times T$) ^{1/2} : $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ Value 68.81 2.40E-03 9.50E+08 1.5	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value
Volatilization Factor (m³/kg) = $Q/C \times (3.14)$ $D_A \text{ (cm²/sec)}$ = $Q/C \times (3.14)$ Parameter $Q/C - \text{Inverse Mean Concentration at}$ $C = C = C = C = C = C = C = C = C = C =$	Rwx [(1/VF) $4 \times D_A \times T$) ^{1/2} : $2 \times \rho_b \times D_A$ $3 D_a H^1 + \theta_w^{10/3}$ $\rho_b K_d + \theta_w + \theta_d$ Value 68.81 2.40E-03 9.50E+08 1.5 0.28	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value
Volatilization Factor (m³/kg) = $Q/C \times (3.14)$ $D_A \text{ (cm²/sec)}$ = $Q/C \times (3.14)$ Parameter $Q/C - \text{Inverse Mean Concentration at}$ $C = C = C = C = C = C = C = C = C = C =$	Rwx [(1/VF) $4 \times D_A \times T$) ^{1/2} : $2 \times \rho_b \times D_A$ $\frac{3}{2} D_a H^1 + \theta_w$ ^{10/3} $\frac{3}{2} D_b K_d + \theta_w + \theta_d$ Value 68.81 2.40E-03 9.50E+08 1.5 0.28 7.20E-02	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value WDNR Default Value WDNR Default Value WDNR Default Value Source WDNR Default Value
Volatilization Factor (m³/kg) = $Q/C \times (3.14)$ $D_A \text{ (cm²/sec)}$ = $Q/C \times (3.14)$ Parameter $Q/C - \text{Inverse Mean Concentration at}$ $C - \text{Center of Source } (g/m²-\text{sec})/(kg/m³)$ $D_A - \text{Apparent Diffusivity } (\text{cm²/sec})$ $T - \text{Exposure Intervals (sec)}$ $D_b - \text{Soil Dry Bulk Density } (g/\text{cm}³)$ $D_a - \text{Air Filled Porosity } (\text{cm²/sec})$ $D_a - \text{Air Diffusion Coefficient } (\text{cm²/sec})$ $D_1 - \text{Henry's Law Constant } (\text{unitless})$ $D_w - \text{Volumetric Soil Moisture Content } (\text{cm}³/\text{cm}³)$	Rwx [(1/VF) $4 \times D_A \times T$) ^{1/2} : $2 \times \rho_b \times D_A$ $\frac{1}{2} D_e H^r + \theta_w$ $\frac{10/3}{2} D_b K_d + \theta_w + \theta_d$ Value 68.81 2.40E-03 9.50E+08 1.5 0.28 7.20E-02 7.54E-01 0.15	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 5
Volatilization Factor (m³/kg) = $Q/C \times (3.14)$ D_A (cm²/sec) = $[(\theta_a^{10/2})]$ Parameter Q/C - Inverse Mean Concentration at Center of Source $(g/m^2\text{-sec})/(kg/m^3)$ D_A - Apparent Diffusivity (cm^2/sec) T - Exposure Intervals (sec) D_b - Soil Dry Bulk Density (g/cm^3) θ_a - Air Filled Porosity (cm^3/cm^3) θ_a - Air Diffusion Coefficient (cm^2/sec) H' - Henry's Law Constant (unitless) θ_w - Volumetric Soil Moisture Content (cm^3/cm^3) D_w - Water Diffusion Coefficient (cm^2/sec)	Rwx [(1/VF) $4 \times D_A \times T$) ^{1/2} : $2 \times \rho_b \times D_A$ $\frac{1}{2} \frac{1}{2} \frac{1}{4} $	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value Source WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5
Volatilization Factor (m³/kg) = $Q/C \times (3.14)$ D_A (cm²/sec) = $[(\theta_a^{10/2})]$ Parameter Q/C - Inverse Mean Concentration at Center of Source $(g/m^2\text{-sec})/(kg/m^3)$ D_A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p_b - Soil Dry Bulk Density (g/cm^3) θ_a - Air Filled Porosity (cm^3/cm^3) θ_a - Air Diffusion Coefficient (cm^2/sec) H' - Henry's Law Constant (unitless) θ_w - Volumetric Soil Moisture Content (cm^3/cm^3) D_w - Water Diffusion Coefficient (cm^2/sec) D_w - Water Diffusion Coefficient (cm^2/sec) D_w - Water Diffusion Coefficient (cm^2/sec) D_w - Total Soil Porosity (cm^3/cm^3)	Rwx [(1/VF) $4 \times D_A \times T$) ^{1/2} : $2 \times \rho_b \times D_A$ $\frac{\partial}{\partial \rho_b} H^* + \theta_w^{10/3}$ $\frac{\partial}{\partial \rho_b} K_d + \theta_w + \theta_d^{10/3}$ Value 68.81 2.40E-03 9.50E+08 1.5 0.28 7.20E-02 7.54E-01 0.15 8.20E-06 0.43	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5
Volatilization Factor (m³/kg) = $Q/C \times (3.14)$ D_A (cm²/sec) = $[(\theta_a^{10/2})]$ Parameter Q/C - Inverse Mean Concentration at Center of Source $(g/m^2\text{-sec})/(kg/m^3)$ D_A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p_b - Soil Dry Bulk Density (g/cm^3) θ_a - Air Filled Porosity (cm^3/cm^3) θ_a - Air Diffusion Coefficient (cm^2/sec) H' - Henry's Law Constant (unitless) θ_w - Volumetric Soil Moisture Content (cm^3/cm^3) D_w - Water Diffusion Coefficient (cm^2/sec)	$Rwx [(1/VF)$ $4 \times D_A \times T)^{1/2}$ $2 \times \rho_b \times D_A$ $\frac{\partial}{\partial x} H + \theta_w^{10/3}$ $\frac{\partial}{\partial x} L + \theta_w^{10/3}$ $\frac{\nabla a}{\partial x} H + \theta_w^{10/3}$ $\frac{\nabla a}{\partial x} L + \theta_w^{10/3}$ $\frac{\nabla a}{\partial x} L + \theta_w^{10/3}$ $\frac{\nabla a}{\partial x} L + \theta_w^{10/3}$ $\frac{\partial}{\partial x} L + $	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 6 X ON NO
SFi x EF x ED x II Volatilization Factor (m ³ /kg) = Q/C x (3.14) D_A (cm ² /sec) = $\underline{[(\theta_a^{10/2})]}$ Parameter Q/C - Inverse Mean Concentration at	Rwx [(1/VF) $4 \times D_A \times T$) ^{1/2} : $2 \times \rho_b \times D_A$ $\frac{\partial}{\partial \rho_b} H^* + \theta_w^{10/3}$ $\frac{\partial}{\partial \rho_b} K_d + \theta_w + \theta_d^{10/3}$ Value 68.81 2.40E-03 9.50E+08 1.5 0.28 7.20E-02 7.54E-01 0.15 8.20E-06 0.43	+ Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 D _w)/n ²] = 2.40E-03 H' Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value

Calculated by: Roger Miller 12/21/98

Checked by Jun Crany

Tetrachloroethene Soil Ingestion Pathway (RfD)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
BWc - Average Body Weight for Child (kg)	15	WDNR Default Value
AT - Averaging Time (years)	6	WDNR Default Value
RfDo - Oral Reference Dose (mg/kg-day)	1.0E-02	1
EF - Exposure Frequency (day/year)	350	WDNR Default Value
EDc - Exposure Duration During Ages 1-6 (year)	6	WDNR Default Value
TD T 1' D 1 CO '1 A 1 C (/1)	200	WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg	T x 365 day/year g x EF x ED x IRc	= 780
Algorithm for Ingestion of Noncarcinogenic Contamina	T x 365 day/year g x EF x ED x IRc ants in Industrial So	= 780
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamina	T x 365 day/year g x EF x ED x IRc	= 780
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamination Parameter THQ - Target Hazard Quotient (unitless)	T x 365 day/year g x EF x ED x IRc ants in Industrial So Value	= 780 il Source WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminate Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)	T x 365 day/year g x EF x ED x IRc ants in Industrial So	= 780
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminate Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years)	T x 365 day/year g x EF x ED x IRc ants in Industrial So Value 1 70	Table 1 Table 2 Table
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminate Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)	T x 365 day/year g x EF x ED x IRc ants in Industrial So Value 1 70 25	Table 1 Table 2 Table
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminate Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day)	T x 365 day/year g x EF x ED x IRc ants in Industrial So Value 1 70 25 1.0E-02	Source WDNR Default Value WDNR Default Value WDNR Default Value I

Calculated by: Roger Miller 12/21/98

Checked by: Join Codny 1-12-09

Note:

Tetrachloroethene Soil Inhalation Pathway (RfC)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Algorithm for Inhalation of Noncarcinogenic Contamina	nts from Non-II	idustriai (Residentiai) Soli
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	30	WDNR Default Value
RfC - Reference Concentration (mg/m³)	3.9E-01	6
EF - Exposure Frequency (day/year)	350	WDNR Default Value
ED - Exposure Duration (year)	30	WDNR Default Value
VF - Volatilization Factor (m ³ /kg)	2.56E+03	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
Residual Contaminant Level (mg/kg) = Ti	IQ x AT x 365 d	ay/year = 1000
		(Cp x 10 ⁻⁹ kg/µg)]
Algorithm for Inhalation of Noncarcinogenic Contamina	nts in Industria	l Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	25	WDNR Default Value
RfC - Reference Concentration (mg/m³)	3.9E-01	6
EF - Exposure Frequency (day/year)	250	WDNR Default Value
ED - Exposure Duration (year)	25	WDNR Default Value
IRc - Inhalation Rate Correction for Adult Laborer (unitless)	1.2	WDNR Default Value
VF - Volatilization Factor (m ³ /kg)	2.56E+03	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m ³)	1.4	WDNR Default Value
	IQ x AT x 365 d	ay/year = 1200) + (Cp x 10 ⁻⁹ kg/µg)]
1/RfC x EF x EL) x IRc x [(1/VF) + (Cp x 10 ⁻⁹ kg/μg)]
1/RfC x EF x EL) x IRc x [(1/VF) + (Cp x 10^{-9} kg/µg)] x 10^{-4} m ² /cm ² = 2.56E+03
$1/RfC \times EF \times EI$ Volatilization Factor (m ³ /kg) = Q/C x (2)	$0 \times [Rc \times [(1/VF)]^{1/2}]$ $3.14 \times D_A \times T)^{1/2}$ $2 \times \rho_b \times D_A$ $a^{10/3}D_aHT + \theta_w^{10/3}$	$(Cp \times 10^{-9} \text{ kg/}\mu\text{g})]$ $\times 10^{-4} \text{m}^{2}/\text{cm}^{2} = 2.56\text{E}+03$ $(3D_{w})/\text{n}^{2}] = 2.40\text{E}-03$
$1/RfC \times EF \times EI$ Volatilization Factor (m ³ /kg) = Q/C x (2)	3.14 x D _A xT) ^{1/2} 2 x ρ _b x D _A	$(Cp \times 10^{-9} \text{ kg/}\mu\text{g})]$ $\times 10^{-4} \text{m}^{2}/\text{cm}^{2} = 2.56\text{E}+03$ $(3D_{w})/\text{n}^{2}] = 2.40\text{E}-03$
$1/RfC \times EF \times EI$ Volatilization Factor (m ³ /kg) = Q/C x (2)	$0 \times [Rc \times [(1/VF)]^{1/2}]$ $3.14 \times D_A \times T)^{1/2}$ $2 \times \rho_b \times D_A$ $a^{10/3}D_aHT + \theta_w^{10/3}$	$(Cp \times 10^{-9} \text{ kg/}\mu\text{g})]$ $\times 10^{-4} \text{m}^{2}/\text{cm}^{2} = 2.56\text{E}+03$ $(3D_{w})/\text{n}^{2}] = 2.40\text{E}-03$
$1/RfC \times EF \times EI$ Volatilization Factor (m ³ /kg) = Q/C \times (1) $D_A \text{ (cm}^2/\text{sec)} = \underline{[(0)]}$ Parameter	$0 \times \text{IRc} \times [(1/\text{VF})^{1/2}]$ $2 \times \rho_b \times D_A$ $2 \times \rho_b \times D_A$ $a^{10/3}D_aH^c + \theta_w^{10/3}$ $\rho_bK_d + \theta_w + \theta$	$(Cp \times 10^{-9} \text{ kg/µg})]$ $(x \times 10^{-4} \text{m}^{2}/\text{cm}^{2}) = 2.56\text{E} + 0.3$ $(3D_{w})/\text{m}^{2}) = 2.40\text{E} - 0.3$ $(3D_{w})/\text{m}^{2}) = 2.40\text{E} - 0.3$
$1/RfC \times EF \times EI$ Volatilization Factor (m ³ /kg) = Q/C \times (1) $D_A \text{ (cm}^2/\text{sec)} = \underline{[(0)]}$ Parameter	$\begin{array}{c} D \times \mathrm{IRc} \times \left[(1/\mathrm{VF} \\ 3.14 \times \mathrm{D_A} \times \mathrm{T} \right]^{1/2} \\ 2 \times \mathrm{\rho_b} \times \mathrm{D_A} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{D_A} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{D_A} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{D_A} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\ \\ 2 \times \mathrm{P_b} \times \mathrm{P_b} \times \mathrm{P_b} \\$	$(Cp \times 10^{-9} \text{ kg/µg})]$ $(x \times 10^{-4} \text{m}^{2}/\text{cm}^{2}) = 2.56\text{E} + 0.3$ $(3D_{w})/\text{m}^{2}) = 2.40\text{E} - 0.3$ $(3D_{w})/\text{m}^{2})$ $(3D_{w})/\text{m}^{2}$ $(3D_{$
Volatilization Factor (m³/kg) = Q/C x (3) DA (cm²/sec) = [(0) Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³)	$\begin{array}{c} D \times Rc \times [(1/VF)] \\ 3.14 \times D_A \times T)^{1/2} \\ 2 \times \rho_b \times D_A \\ 2 \times \rho_b \times D_A \\ a^{10/3} D_a H^r + \theta_w^{10/3} \\ \rho_b K_d + \theta_w + \theta \\ \hline Value \\ 68.81 \end{array}$	$(Cp \times 10^{-9} \text{ kg/µg})]$ $(x \times 10^{-4} \text{m}^{2}/\text{cm}^{2}) = 2.56\text{E} + 03$ $(3D_{w})/\text{n}^{2}] = 2.40\text{E} - 03$ $(3D_{w})/\text{n}^{2}]$ $(3D_{w})/\text{n}^{2}$ $(3D_{w}$
$1/RfC \times EF \times EI$ Volatilization Factor (m³/kg) = Q/C \times (2) $D_A (cm²/sec) = [(\theta)]$ Parameter $Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³)$ $D_A - Apparent Diffusivity (cm²/sec)$	$\begin{array}{c} 0 \times \text{Re} \times [(1/\text{VF})^{1/2}] \\ 2 \times \rho_b \times D_A \\ 2 \times \rho_b \times D_A \\ \text{a}^{10/3} D_a H + \theta_w^{-10/4} \\ \rho_b K_d + \theta_w + \theta \\ \hline & Value \\ \hline & 68.81 \\ 2.40 \text{E-} 03 \end{array}$	$(2.56E+03) + (Cp \times 10^{-9} \text{ kg/µg})$ $(2.56E+03)$ $(2.56E+03)$ $(3^{1}D_{w})/n^{2}] = (2.40E-03)$ $(3^{1}A^{1}B^{2})$ Source $(3^{1}A^{2})$ $(3^{1}A^{2}$
Volatilization Factor (m³/kg) = Q/C x (3) D _A (cm²/sec) = [(0) Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec)	$\begin{array}{c} D \times Rc \times [(1/VF)] \\ \hline 3.14 \times D_A \times T)^{1/2} \\ 2 \times \rho_b \times D_A \\ \hline 2 \times \rho_b \times D_A \\ \hline \rho_b K_d + \theta_w + \theta \\ \hline Value \\ \hline 68.81 \\ \hline 2.40E-03 \\ 9.50E+08 \\ \hline \end{array}$) + (Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 3 ³ D _w)/n ²] = 2.40E-03 aH' Source WDNR Default Value Calculation WDNR Default Value
Volatilization Factor (m ³ /kg) = $Q/C \times (3)$ $D_A \text{ (cm}^2/\text{sec})$ = $[(\theta)]$ Parameter $Q/C - \text{Inverse Mean Concentration at}$ $C - \text{Center of Source } (g/m^2 - \text{sec})/(kg/m^3)$ $D_A - \text{Apparent Diffusivity } (cm^2/\text{sec})$ $T - \text{Exposure Intervals (sec)}$ $\rho_b - \text{Soil Dry Bulk Density } (g/\text{cm}^3)$	$\begin{array}{c} \text{3.14 x D}_{\text{A}} \text{xT})^{1/2} \\ \text{2 x } \rho_{\text{b}} \text{x D}_{\text{A}} \\ \text{2 x } \rho_{\text{b}} \text{x D}_{\text{A}} \\ \text{2 x } \rho_{\text{b}} \text{x D}_{\text{A}} \\ \rho_{\text{b}} K_{\text{d}} + \theta_{\text{w}} + \theta \\ \hline & Value \\ & 68.81 \\ \text{2.40E-03} \\ \text{9.50E+08} \\ \text{1.5} \end{array}$	y + (Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 3 ³ D _w)/n ²] = 2.40E-03 aH Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value
Volatilization Factor (m³/kg) = Q/C x (3) $D_{A} (cm^{2}/sec) = [(\theta)]$ Parameter $Q/C - Inverse Mean Concentration at Center of Source (g/m^{2}-sec)/(kg/m^{3})$ $D_{A} - Apparent Diffusivity (cm^{2}/sec)$ $T - Exposure Intervals (sec)$ $p_{b} - Soil Dry Bulk Density (g/cm^{3})$ $\theta_{a} - Air Filled Porosity (cm^{3}/cm^{3})$	$\begin{array}{c} \text{D x IRc x } [(1/\text{VF})] \\ \text{3.14 x D}_{\text{A}} \text{ xT})^{1/2} \\ \text{2 x } \rho_{\text{b}} \text{ x D}_{\text{A}} \\ \text{2 x } \rho_{\text{b}} \text{ x D}_{\text{A}} \\ \\ \text{a}^{10/3} \text{D}_{\text{a}} \text{H}^{\text{T}} + \theta_{\text{w}}^{10/3} \\ \\ \rho_{\text{b}} \text{K}_{\text{d}} + \theta_{\text{w}} + \theta \\ \\ \hline & 68.81 \\ \\ \text{2.40E-03} \\ \text{9.50E+08} \\ \\ \text{1.5} \\ \text{0.28} \end{array}$	y + (Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 3 ³ D _w)/n ²] = 2.40E-03 AHT Source WD NR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value WDNR Default Value
Volatilization Factor (m³/kg) = Q/C x (3) D _A (cm²/sec) = [(θ) Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec)	$\begin{array}{c} D \times Rc \times [(1/VF)^{1/2}] \\ 2 \times \rho_b \times D_A \\ \hline 2 \times \rho_b \times D_A \\ \hline 2 \times \rho_b \times D_A \\ \hline \rho_b K_d + \theta_w + \theta_w \\ \hline Value \\ \hline 68.81 \\ 2.40E-03 \\ 9.50E+08 \\ 1.5 \\ 0.28 \\ 7.20E-02 \end{array}$) + (Cp x 10 ⁻⁹ kg/µg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 3D _w)/n ²] = 2.40E-03 AH Source WDNR Default Value WDNR Default Value WDNR Default Value WDNR Default Value Source WDNR Default Value
Volatilization Factor (m³/kg) = Q/C x (5) $D_{A} (cm^{2}/sec) = [(\theta_{1}/2)]$ Parameter $Q/C - Inverse Mean Concentration at Center of Source (g/m^{2}-sec)/(kg/m^{3})$ $D_{A} - Apparent Diffusivity (cm^{2}/sec)$ $T - Exposure Intervals (sec)$ $p_{b} - Soil Dry Bulk Density (g/cm^{3})$ $\theta_{a} - Air Filled Porosity (cm^{3}/cm^{3})$ $D_{a} - Air Diffusion Coefficient (cm^{2}/sec)$ $H' - Henry's Law Constant (unitless)$	$\begin{array}{c} D \times Rc \times [(1/VF)^{1/2}] \\ 2 \times \rho_b \times D_A \\ \hline 2 \times \rho_b \times D_A \\ \hline 2 \times \rho_b \times D_A \\ \hline \rho_b K_d + \theta_w + \theta \\ \hline \hline Value \\ 68.81 \\ 2.40E-03 \\ 9.50E+08 \\ 1.5 \\ 0.28 \\ 7.20E-02 \\ 7.54E-01 \end{array}$	y + (Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 3 ² D _w)/n ²] = 2.40E-03 AHT Source WD NR Default Value Calculation WD NR Default Value WD NR Default Value WD NR Default Value Source WD NR Default Value
Volatilization Factor (m³/kg) = Q/C x (3) D _A (cm²/sec) = [(θ) Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³)	$\begin{array}{c} D \times Rc \times [(1/VF)^{1/2}] \\ 2 \times \rho_b \times D_A \\ \hline 2 \times \rho_b \times D_A \\ \hline 2 \times \rho_b \times D_A \\ \hline \rho_b K_d + \theta_w + \theta_w \\ \hline Value \\ \hline 68.81 \\ 2.40E-03 \\ 9.50E+08 \\ 1.5 \\ 0.28 \\ 7.20E-02 \end{array}$) + (Cp x 10 ⁻⁹ kg/µg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 3D _w)/n ²] = 2.40E-03 AH Source WDNR Default Value WDNR Default Value WDNR Default Value WDNR Default Value Source WDNR Default Value
Volatilization Factor (m³/kg) = Q/C x (3) $D_{A} (cm^{2}/sec) = [(\theta_{1}/c)]$ Parameter $Q/C - Inverse Mean Concentration at Center of Source (g/m^{2}-sec)/(kg/m^{3})$ $D_{A} - Apparent Diffusivity (cm^{2}/sec)$ $T - Exposure Intervals (sec)$ $p_{b} - Soil Dry Bulk Density (g/cm^{3})$ $\theta_{a} - Air Filled Porosity (cm^{3}/cm^{3})$ $D_{a} - Air Diffusion Coefficient (cm^{2}/sec)$ $H' - Henry's Law Constant (unitless)$ $\theta_{w} - Volumetric Soil Moisture Content (cm^{3}/cm^{3})$	$\begin{array}{c} D \times Rc \times [(1/VF)^{1/2}] \\ 2 \times \rho_b \times D_A \\ \hline 2 \times \rho_b \times D_A \\ \hline 2 \times \rho_b \times D_A \\ \hline \rho_b K_d + \theta_w + \theta \\ \hline \hline Value \\ 68.81 \\ 2.40E-03 \\ 9.50E+08 \\ 1.5 \\ 0.28 \\ 7.20E-02 \\ 7.54E-01 \end{array}$	y + (Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 3 ² D _w)/n ²] = 2.40E-03 AHT Source WD NR Default Value Calculation WD NR Default Value WD NR Default Value WD NR Default Value Source WD NR Default Value
Volatilization Factor (m³/kg) = Q/C x (3) D _A (cm²/sec) = [(θ) Parameter Q/C - Inverse Mean Concentration at	$\begin{array}{c} D \times \text{IRc} \times \left[(1/\text{VF} \\ 3.14 \times D_A \times T)^{1/2} \\ 2 \times \rho_b \times D_A \\ \hline 2 \times \rho_b \times D_A \\ -\rho_b K_d + \theta_w + \theta_w \\ \hline \\ Value \\ \hline \\ 68.81 \\ 2.40E-03 \\ 9.50E+08 \\ 1.5 \\ 0.28 \\ 7.20E-02 \\ 7.54E-01 \\ 0.15 \\ \end{array}$) + (Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 3D _w)/n ²] = 2.40E-03 H Source WDNR Default Value WDNR Default Value WDNR Default Value WDNR Default Value Source WDNR Default Value WDNR Default Value
Volatilization Factor (m³/kg) = Q/C x (3) D _A (cm²/sec) = [(θ) Parameter Q/C - Inverse Mean Concentration at	$\begin{array}{c} D \times Rc \times [(1/VF)^{1/2}] \\ 2 \times \rho_b \times D_A \\ 2 \times \rho_b \times D_A \\ & 2 \times \rho_b \times D_A \\ $) + (Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 3D _w)/n ²] = 2.40E-03 H Source WDNR Default Value WDNR Default Value WDNR Default Value Source WDNR Default Value WDNR Default Value WDNR Default Value Source
Volatilization Factor (m³/kg) = Q/C x (3) D _A (cm²/sec) = [(θ) Parameter Q/C - Inverse Mean Concentration at	$\begin{array}{c} D \times Rc \times [(1/VF)^{1/2}] \\ 2 \times \rho_b \times D_A \\ \rho_b K_d + \theta_w + \theta_w \\ \hline & Value \\ \hline & 68.81 \\ 2.40E-03 \\ 9.50E+08 \\ 1.5 \\ 0.28 \\ 7.20E-02 \\ 7.54E-01 \\ 0.15 \\ 8.20E-06 \\ 0.43 \\ \end{array}$) + (Cp x 10 ⁻⁹ kg/μg)] x 10 ⁻⁴ m ² /cm ² = 2.56E+03 3D _w)/n ²] = 2.40E-03 H Source WDNR Default Value WDNR Default Value WDNR Default Value S WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value

Calculated by: Roger Miller 12/21/98

Checked by: Jan Cretney

Pulaski, Wisconsin

Acetone--Groundwater Pathway Site-Specific Residual Contaminant Level Calculation

Parameter	Value	Units	Description	Source
K _{oc}	0.575	L/kg	Organic Carbon Partition Coefficient	EPA Soil Screening Guidance ¹
f_{oc}	0.0036	g/g	Fraction Organic Carbon Content	Average TOCSite UST #3
K _d	0.0021	L/kg	Soil:Water Distribution Coefficient	K _{oc} x f _{oc}
θ	0.2	cm ³ -H ₂ 0/cm ³ -soil	Volumetric Water Content, Vadose Zone Soils	WDNR Default Value
n	0.43	cm ³ -void/cm ³ -soil	Porosity	WDNR Default Value
d	152.4	cm	Groundwater Mixing Zone Thickness	WDNR Default Value
R	25.4	cm	Annualized Groundwater Recharge Rate	WDNR Default Value
ρ_{b}	1.5	g-soil/cm ³ -soil	Soil Bulk Density	WDNR Default Value
ES	1000	μg/L	Enforcement Standard	NR 140

Calculate Site-Specific Residual Contaminant Level (RCL)

DAF =
$$d/R\theta x (K_d x \rho_b + n)$$

DAF

13.0

Dilution Attenuation Factor

$$RCL_{ES} = ES \times 10^{-3}_{mg/\mu g} \times (K_d + \theta/\rho_b) \times DAF$$

RCL_{ES}

1.8 mg/kg

Acetone Site-Specific Residual Contaminant Level using ES

Calculated by: Roger Miller 12/21/98

Checked by: UFN 12/23/18

- 1) Site-Specific Residual Contaminant Level (RCL) equation and default values from WDNR Publication RR-519-97, "Soil Cleanup Levels for Polycyclic Aromatic Hydrocarbons (PAHs)--Interim Guidance" (April 1997).
- 2) NR 140 Enforcement Standard from s. NR140.10, Wisconsin Administrative Code (October 1996).
- 3) ¹USEPA, 1996, Soil Screening Guidance: Technical Background Document: Publication EPA/540/R-95/128, Washington, D. C.

Pulaski, Wisconsin

Methyl tert-butyl ether--Groundwater Pathway

Site-Specific Residual Contaminant Level Calculation

Parameter	Value	Units	Description	Source
Koc	12	L/kg	Organic Carbon Partition Coefficient	ASTM RBCA ¹
f_{oc}	0.0036	g/g	Fraction Organic Carbon Content	Average TOCSite UST #3
K _d	0.0432	L/kg	Soil:Water Distribution Coefficient	K _{oc} x f _{oc}
θ	0.2	cm ³ -H ₂ 0/cm ³ -soil	Volumetric Water Content, Vadose Zone Soils	WDNR Default Value
n	0.43	cm ³ -void/cm ³ -soil	Porosity	WDNR Default Value
d	152.4	cm	Groundwater Mixing Zone Thickness	WDNR Default Value
R	25.4	cm	Annualized Groundwater Recharge Rate	WDNR Default Value
ρ_b	1.5	g-soil/cm ³ -soil	Soil Bulk Density	WDNR Default Value
ES	60	μg/L	Enforcement Standard	NR 140

Calculate Site-Specific Residual Contaminant Level (RCL)

DAF =
$$d/R\theta \times (K_d \times \rho_b + n)$$

DAF

14.8

Dilution Attenuation Factor

$$RCL_{ES} = ES \times 10^{-3}_{mg/\mu g} \times (K_d + \theta/\rho_b) \times DAF$$

RCL_{ES}

0.16 mg/kg

MTBE Site-Specific Residual Contaminant Level using ES

Calculated by: Roger Miller 12/21/98

Checked by: UFN 12/23/98

- 1) Site-Specific Residual Contaminant Level (RCL) equation and default values from WDNR Publication RR-519-97, "Soil Cleanup Levels for Polycyclic Aromatic Hydrocarbons (PAHs)--Interim Guidance" (April 1997).
- 2) NR 140 Enforcement Standard from s. NR140.10, Wisconsin Administrative Code (October 1996).
- 3) ASTM, 1995, Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites. $(E1739-95^{\epsilon 1}).$

Pulaski, Wisconsin

Tetrachloroethene--Groundwater Pathway

Site-Specific Residual Contaminant Level Calculation

Parameter	Value	Units	Description	Source
Koc	155	L/kg	Organic Carbon Partition Coefficient	EPA Soil Screening Guidance ¹
foc	0.0036	g/g	Fraction Organic Carbon Content	Average TOCSite UST #3
K _d	0.5580	L/kg	Soil:Water Distribution Coefficient	K _{oc} x f _{oc}
θ	0.2	cm ³ -H ₂ 0/cm ³ -soil	Volumetric Water Content, Vadose Zone Soils	WDNR Default Value
n	0.43	cm ³ -void/cm ³ -soil	Porosity	WDNR Default Value
d	152.4	cm	Groundwater Mixing Zone Thickness	WDNR Default Value
R	25.4	cm	Annualized Groundwater Recharge Rate	WDNR Default Value
ρ _b	1.5	g-soil/cm ³ -soil	Soil Bulk Density	WDNR Default Value
ES	5	μg/L	Enforcement Standard	NR 140

Calculate Site-Specific Residual Contaminant Level (RCL)

DAF =
$$d/R\theta \times (K_d \times \rho_b + n)$$

DAF

38.0

Dilution Attenuation Factor

$$RCL_{ES} = ES \times 10^{-3}_{mg/\mu g} \times (K_d + \theta/\rho_b) \times DAF$$

 RCL_{ES} 0.13 mg/kg

Tetrachloroethene Site-Specific Residual Contaminant Level using ES

Calculated by: Roger Miller 12/21/98

Checked by: (NFN) 12/23/98

- 1) Site-Specific Residual Contaminant Level (RCL) equation and default values from WDNR Publication RR-519-97, "Soil Cleanup Levels for Polycyclic Aromatic Hydrocarbons (PAHs)--Interim Guidance" (April 1997).
- 2) NR 140 Enforcement Standard from s. NR140.10, Wisconsin Administrative Code (October 1996).
- 3) ¹USEPA, 1996, Soil Screening Guidance: Technical Background Document: Publication EPA/540/R-95/128, Washington, D. C.

Pulaski, Wisconsin

Styrene--Groundwater Pathway Site-Specific Residual Contaminant Level Calculation

Parameter	Value	Units	Description	Source
Koc	776	L/kg	Organic Carbon Partition Coefficient	EPA Soil Screening Guidance ¹
f_{oc}	0.0036	g/g	Fraction Organic Carbon Content	Average TOCSite UST #3
K _d	2.7936	L/kg	Soil:Water Distribution Coefficient	K _{oc} x f _{oc}
θ	0.2	cm ³ -H ₂ 0/cm ³ -soil	Volumetric Water Content, Vadose Zone Soils	WDNR Default Value
n	0.43	cm ³ -void/cm ³ -soil	Porosity	WDNR Default Value
d	152.4	cm	Groundwater Mixing Zone Thickness	WDNR Default Value
R	25.4	cm	Annualized Groundwater Recharge Rate	WDNR Default Value
ρ_b	1.5	g-soil/cm ³ -soil	Soil Bulk Density	WDNR Default Value
ES	100	μg/L	Enforcement Standard	NR 140

Calculate Site-Specific Residual Contaminant Level (RCL)

DAF =
$$d/R\theta x (K_d x \rho_b + n)$$

DAF

138.6

Dilution Attenuation Factor

$$RCL_{ES} = ES \times 10^{\text{-3}}_{\text{mg/µg}} \times (K_d + \theta/\rho_b) \times DAF$$

RCL_{ES} 41 mg/kg

Styrene Site-Specific Residual Contaminant Level using ES

Calculated by: Roger Miller 12/21/98

Checked by: WFN 12/23/98

- 1) Site-Specific Residual Contaminant Level (RCL) equation and default values from WDNR Publication RR-519-97, "Soil Cleanup Levels for Polycyclic Aromatic Hydrocarbons (PAHs)--Interim Guidance" (April 1997).
- 2) NR 140 Enforcement Standard from s. NR140.10, Wisconsin Administrative Code (October 1996).
- 3) ¹USEPA, 1996, Soil Screening Guidance: Technical Background Document: Publication EPA/540/R-95/128, Washington, D. C.



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor George E. Meyer, Secretary William R. Selbig, Regional Director Remediation and Redevelopment 1125 North Military Avenue P.O. Box 10448 Green Bay, Wisconsin 54307-0448 Telephone 920-492-5916 FAX 920-492-5859 TDD 920-492-5812

February 25, 1999

Carver Boat Corporation Attn: Ted Maloney P.O. Box 1010 Pulaski, WI 54162

SUBJECT:

Acknowledgment of Receipt/Request for Closure Review

Carver Boats - Resin & Acetone, 790 Markham, Pulaski

WDNR BRRTS ID #: 02-05-178568

Dear Mr. Maloney:

The Department received your request for closeout review on February 25, 1999. Due to staffing levels and the backlog of non-emergency cases, requests for closure are logged and reviewed in the order they are received. However, we hope to be able to review your request within 90 days. After Department review of the case, a letter will notify you either that closure is approved or that additional work is required.

If you have any questions, please contact me at (920) 492-5943.

Sincerely,

Kristin Nell Hydrogeologist

Remediation & Redevelopment Program

cc: Bill Noel, STS Consultants Ltd.

1035 Kepler Drive, Green Bay, WI 54311





February 24, 1999

Ms. Kristin Nell Wisconsin Department of Natural Resources 1125 North Military Avenue P.O. Box 10448 Green Bay, Wisconsin 54307-0448

Subject: Additional Data to Supplement Request for Closure, VOC Impacts in the Vicinity of Former Underground Storage Tanks #6 and #7, Carver Boat Corporation, 790 Markham Drive, Pulaski, Wisconsin – BRRTS Case #02-05-178568 – STS Project No. 23379XA

Dear Ms. Nell:

On behalf of Carver Boat Corporation, STS Consultants, Ltd., (STS) is pleased to submit additional data to supplement a request for closure submitted for the above-referenced site on January 21, 1999.

As you requested during our telephone discussion on January 29, 1999, samples were collected from the five temporary wells in the vicinity of former Carver underground storage tanks #6 and #7 on February 4, 1999. The samples were analyzed for petroleum volatile organic compounds, acetone, styrene, and tetrachloroethene (volatile organic compounds which had previously been detected in this vicinity), in accordance with our telephone discussion on February 2, 1999.

A data table is attached to this letter, as is the analytical test report.

No exceedances of Wisconsin Administrative Code Chapter NR 140 preventive action limits or enforcement standards were reported in any of the samples collected February 4, 1999. These data support those collected previously, which showed no NR 140 enforcement standard exceedances. On the basis of these data, we request that you forward the site closure request to the closure committee. A \$750 check was included with the original submittal.

Wisconsin Department of Natural Resources 23379XA February 24, 1999 Page 2

Please contact us at 920-468-1978 with any questions regarding this project.

Sincerely,

STS CONSULTANTS, LTD.

William F. Noel, P.E. Senior Project Engineer

Mark A. Bergeon, P.G. Principal Geologist

WFN/ddd.wd

Enclosures:

Groundwater Data Table Analytical Test Report

Copy: Mr. Ted Maloney
Carver Boat Corporation
790 Markham Drive
P.O. Box 1010
Pulaski, Wisconsin 54162

Mr. Jeffery Melby, P.E. Genmar Holdings, Inc. 100 South 5th Street, Suite 2400 Minneapolis, Minnesota 55402 "I, Mark A. Bergeon, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

Mark A. Bergeon, P.G.

2/24/99

Principal Geologist

"I, William F. Noel, P.E., hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

William F. Noel, P.E., #28909

PE. stamp

Senior Project Engineer

GROUNDWATER DATA CARVER BOAT CORPORATION UST #6 / #7 PULASKI, WISCONSIN

Field Parameters

Well ID	Date	Depth to Water (Ft from TPVC)	Dissolved Oxygen (mg/L)	Ferrous Iron (mg/L)	pH (units)	Specific Conductance (µmhos/cm)	Temperature (°F)	Color	Odor Noted
B-6-1	8/13/98	7.16	2	0.2	6.26	1034	72.0	Clear	None Noted
	2/4/99	8.20	NR	NR	NR	NR	NR	Clear	None Noted
B-6-2	8/13/98	7.05	3	0.2	6.77	1253	72.9	Clear	None Noted
	2/4/99	8.06	NR	NR	NR	NR	NR	Clear	None Noted
B-6-3	8/13/98	7.02	2	0.4	6.39	1101	73.5	Clear	None Noted
	2/4/99	7.98	NR	NR	NR	NR	NR	Clear	None Noted
B-6-4	8/13/98	6.79	2	0.2	6.09	776	71.8	Clear	None Noted
	2/4/99	7.80	NR	NR	NR	NR	NR	Clear	None Noted
B-6-5	8/13/98	6.95	3	1.0	6.13	1250	70.8	Clear	None Noted
	2/4/99	8.01	NR	NR	NR	NR	NR	Clear	None Noted

Analytical Results

				VOCs ⁽¹⁾ (μg/L)				
Well ID	Date	Acetone	Benzene	Styrene	Toluene	Xylenes	Nitrate/Nitrite (mg/L)	Sulfate (mg/L)
B-6-1	8/13/98	11	0.53 ⁽²⁾	60	0.6 ⁽²⁾	<1.23 ⁽³⁾	<0.014	18
	2/4/99	<5.0	<0.5	1.24	<1.0	<2.0	NA	NA
B-6-2	8/13/98	1.1	<0.25	20	<0.38	<1.04	<0.014	19
	2/4/99	<5.0	<0.5	1.64	<1.0	<2.0	NA	NA
B-6-3	8/13/98	15	<0.25	98	0.39(2)	<1.44 ⁽³⁾	<0.014	10
	2/4/99	<5.0	<0.5	<1.0	<1.0	<2.0	NA	NA
B-6-4	8/13/98	0.92(2)	<0.25	<0.74	<0.38	<1.04	<0.014	10
	2/4/99	<5.0	<0.5	<1.0	<1.0	<2.0	NA	NA
B-6-5	8/13/98	<0.28	<0.25	0.91(2)	<0.38	<1.04	0.47	84
	2/4/99	<5.0	<0.5	<1.0	<1.0	<2.0	NA	NA
NR I	40 ES	1000	5.0	100	343	620		
NR 14	0 PAL	200	0.5	10	68.6	124		

⁽¹⁾VOCs not listed were not detected

NA: Not analyzed

NR: Not recorded

NE: Not established

Tetrachloroethene ND in water

⁽²⁾ Analyte detected, but below limit of quantitation

⁽³⁾o-xylene detected, but below limit of quantitation; m&p-xylene not detected

U.S.FILTEI

February 19, 1999

STS Consultants 1035 Kepler Drive Green Bay, WI 54311

Attn: Bill Noel

Re: 23379XA

Please find enclosed the analytical results for the sample(s) received February 6, 1999.

The chain of custody document is enclosed.

If you have any questions about the results, please call. Thank you for using US Filter/Enviroscan for your analytical needs.

Sincerely,

US Filter/Enviroscan

James R. Salkowski

James R. Saltinist

General Manager



Attn: Bill Noel

CUST NUMBER: 23379XA SAMPLED BY: Client DATE REC'D: 02/06/99 REPORT DATE: 02/19/99

PREPARED BY: JRS REVIEWED BY: Un

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		Reporting	B-3-1		Date	
	<u>Units</u>	Limit	02/04/99	<u>Qualifiers</u>	Analyzed	<u>B</u> y
EPA 8021A						
Acetone	μg/l	5.0	8.97		02/11/99	LMP
Benzene	μg/l	0.5	ND		02/11/99	LMP
Chloroethane	$\mu g/l$	1.0	ND		02/11/99	LMP
Chloromethane	μg/l	2.0	ND		02/11/99	LMP
1,1-Dichloroethane	μg/l	1.0	ND		02/11/99	LMP
Ethylbenzene	μg/l	1.0	ND		02/11/99	LMP
Isopropylbenzene	$\mu g/1$	1.0	ND		02/11/99	LMP
Methyl tert Butyl Ether	$\mu g/1$	1.0	ND		02/11/99	LMP
Styrene	μg/l	1.0	9.87		02/11/99	LMP
Toluene	μg/l	1.0	ND		02/11/99	LMP
1,2,4-Trimethylbenzene	μg/l	1.0	ND		02/11/99	LMP
1,3,5-Trimethylbenzene	μg/l	1.0	ND		02/11/99	LMP
m- & p-Xylene	μg/l	1.0	ND		02/11/99	LMP
o-Xylene & Styrene	μg/l	1.0	ND		02/11/99	LMP
Analytical No.:			62540			

	Units	Reporting Limit	B-6-1 02/04/99	Date <u>Qualifier</u> s <u>Analyzed</u>	<u>B</u> y
EPA 8021A					
Acetone	$\mu g/l$	5.0	ND	02/11/99	LMP
Benzene	μg/l	0.5	ND	02/11/99	LMP
Ethylbenzene	μg/l	1.0	ND	02/11/99	LMP
Methyl tert Butyl Ether	$\mu g/1$	1.0	ND	02/11/99	LMP
Styrene	$\mu g/1$	1.0	1.24	02/11/99	LMP
Tetrachloroethylene	$\mu g/1$	1.0	ND	02/11/99	LMP
Toluene	$\mu g/l$	1.0	ND	02/11/99	LMP
1,2,4-Trimethylbenzene	$\mu g/1$	1.0	ND	02/11/99	LMP
1,3,5-Trimethylbenzene	$\mu g/l$	1.0	ND	02/11/99	LMP
m- & p-Xylene	μg/l	1.0	ND	02/11/99	LMP
o-Xylene & Styrene	μg/l	1.0	ND	02/11/99	LMP
Analytical No.:			62541		

ND = Analyzed but not detected.



Attn: Bill Noel

CUST NUMBER: 23379XA SAMPLED BY: Client DATE REC'D: 02/06/99 REPORT DATE: 02/19/99

PREPARED BY: JRS REVIEWED BY:

		Reporting	B-6-2		Date	
	<u>Units</u>	<u>Limit</u>	02/04/99	<u> Qualifier</u> s	Analyzed	<u>В</u> у
EPA 8021A						
Acetone	μg/l	5.0	ND		02/10/99	LMP
Benzene	μg/l	0.5	ND		02/10/99	LMP
Ethylbenzene	μg/l	1.0	ND		02/10/99	LMP
Methyl tert Butyl Ether	$\mu g/1$	1.0	ND		02/10/99	LMP
Styrene	$\mu g/1$	1.0	1.64	SPL	02/10/99	LMP
Tetrachloroethylene	μg/l	1.0	ND		02/10/99	LMP
Toluene	μg/l	1.0	ND		02/10/99	LMP
1,2,4-Trimethylbenzene	$\mu g/1$	1.0	ND		02/10/99	LMP
1,3,5-Trimethylbenzene	μg/l	1.0	ND	SPL	02/10/99	LMP
m- & p-Xylene	$\mu g/1$	1.0	ND		02/10/99	LMP
o-Xylene & Styrene	$\mu g/l$	1.0	ND		02/10/99	LMP
Analytical No.:			62542			

	<u>Units</u>	Reporting Limit	B-6-3 02/04/99	<u>Qualifier</u> s	Date Analyzed	Ву
EPA 8021A						
Acetone	μ g/l	5.0	ND		02/10/99	LMP
Benzene	μg/l	0.5	ND		02/10/99	LMP
Ethylbenzene	μg/l	1.0	ND		02/10/99	LMP
Methyl tert Butyl Ether	μg/l	1.0	ND		02/10/99	LMP
Styrene	μg/l	1.0	ND		02/10/99	LMP
Tetrachloroethylene	μg/l	1.0	ND		02/10/99	LMP
Toluene	μg/l	1.0	ND		02/10/99	LMP
1,2,4-Trimethylbenzene	μg/l	1.0	ND		02/10/99	LMP
1,3,5-Trimethylbenzene	μg/l	1.0	ND		02/10/99	LMP
m- & p-Xylene	μg/l	1.0	ND		02/10/99	LMP
o-Xylene & Styrene	μg/l	1.0	ND		02/10/99	LMP

Analytical No.: 62543

ND = Analyzed but not detected.



CUST NUMBER: 23379XA
SAMPLED BY: Client
DATE REC'D: 02/06/99
REPORT DATE: 02/19/99
PREPARED BY: JRS
REVIEWED BY: JRS

Attn: Bill Noel

		Reporting	B-6-4		Date	
	<u>Units</u>	Limit	02/04/99	<u>Qualifier</u> s _	Analyzed	Ву
EPA 8021A						
Acetone	$\mu g/l$	5.0	ND		02/11/99	LMP
Benzene	$\mu g/l$	0.5	ND		02/11/99	LMP
Ethylbenzene	μg/l	1.0	ND		02/11/99	LMP
Methyl tert Butyl Ether	$\mu g/1$	1.0	ND		02/11/99	LMP
Styrene	μg/l	1.0	ND		02/11/99	LMP
Tetrachloroethylene	μg/l	1.0	ND		02/11/99	LMP
Toluene	μg/l	1.0	ND		02/11/99	LMP
1,2,4-Trimethylbenzene	$\mu g/1$	1.0	ND		02/11/99	LMP
1,3,5-Trimethylbenzene	μg/l	1.0	ND		02/11/99	LMP
m- & p-Xylene	μg/l	1.0	ND		02/11/99	LMP
o-Xylene & Styrene	$\mu g/1$	1.0	ND		02/11/99	LMP
Analytical No.:			62544			

	Units	Reporting Limit	B-6-5 02/04/99	Qualifiers	Date Analyzed	By
EPA 8021A						
Acetone	μg/l	5.0	ND		02/11/99	LMP
Benzene	$\mu g/1$	0.5	ND		02/11/99	LMP
Ethylbenzene	μg/l	1.0	ND		02/11/99	LMP
Methyl tert Butyl Ether	μg/l	1.0	ND		02/11/99	LMP
Styrene	μg/l	1.0	ND		02/11/99	LMP
Tetrachloroethylene	μg/l	1.0	ND		02/11/99	LMP
Toluene	μg/l	1.0	ND		02/11/99	LMP
1,2,4-Trimethylbenzene	μg/l	1.0	ND		02/11/99	LMP
1,3,5-Trimethylbenzene	$\mu g/1$	1.0	ND		02/11/99	LMP
m- & p-Xylene	μ g/l	1.0	ND		02/11/99	LMP
o-Xylene & Styrene	μg/l	1.0	ND		02/11/99	LMP
Analytical No :			62545			

Analytical No.:

62545

ND = Analyzed but not detected.



Attn: Bill Noel

Qualifier Descriptions

SPL

CUST NUMBER: 23379XA SAMPLED BY: Client DATE REC'D: 02/06/99 REPORT DATE: 02/19/99

PREPARED BY: JRS REVIEWED BY: \land{\text{lc}}

JGV

Matrix spike recovery within analytical batch was low. Sample matrix appears similar to your sample; result may be biased low.

CHAIN OF CUSTODY RECORD

Instructions to Laboratory: Forward completed original to STS with analytical results. Retain green copy.

Nº 24529



Contact Person	68-1	<a< th=""><th> C</th><th>office PO N</th><th>lo</th><th></th><th></th><th></th><th>—— H</th><th></th><th>Specia</th><th></th><th>dling Request Rush /erbal</th><th></th><th>Laboratory</th><th>51</th><th>D NUMBER</th><th>) TBEY</th><th></th><th></th></a<>	C	office PO N	lo				—— H 		Specia		dling Request Rush /erbal		Laboratory	51	D NUMBER) TBEY		
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Received by:						Date			Т	ime			Relinquished by	<u>r:</u>			Date		Time	
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Distribution: Original ar	nd Green	n - Labo	rato	rv Y	ellow	-As needed 5	Pink - T	ranen	orter	Gold	denrod	L -STS	Project File							

9/94cp10k

TELEPHONE LOG

SITE NAME: Carver Bocts - Resura Actor DATE: 02-02-99
TRACKING NUMBER: 02-05-178568 TIME: 8: 30
CONTACT NAME: Bule Now PHONE:
COMPANY AGENCY: 515
INITIATED BY:
Calling to se y gu sampling parameters
could be reduced to only those parameters
detected in soil + gis. Work agreed.
SIGNATURE: Australia

TELEPHONE LOG

SITE NAME: Carver Boots - Ream + Actor	DATE: 01 - 29 - 99
TRACKING NUMBER: 02-05-178568	TIME: ~ 9:45
CONTACT NAME: Bu You	PHONE: 920 - 468 - 1978
COMPANY AGENCY: 575	
INITIATED BY:KN	
Received closure request and mul	e legune, one
additional land of sampling	
temporary wells to confum	pierrais results.
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previous land lesiberet. the	Case for
Closure. y an increase is ox	
montoung may be required.	
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January 21, 1999

Ms. Kristin Nell Wisconsin Department of Natural Resources 1125 North Military Avenue P.O. Box 10448 Green Bay, Wisconsin 54307-0448

Subject: Request for Closure, VOC Impacts in the Vicinity of Former Underground Storage Tanks #6 and #7, Carver Boat Corporation, 790 Markham Drive, Pulaski, Wisconsin - BRRTS Case #02-05-178568 – STS Project No. 23379XA

Dear Ms. Nell:

STS Consultants, Ltd., (STS) is pleased to submit this report which describes the methods used and the results of a subsurface investigation at the above-referenced site and requests site closure.

An unbound Wisconsin Department of Natural Resources (WDNR) Case Summary and Close Out Form (with attachments) accompanies your copy of this report, as does a \$750 check as required by Wisconsin Administrative Code Chapter NR 749. A copy of the closure documents is also included in Appendix A of this report.

Sincerely,

STS CONSULTANTS, LTD.

William F. Noel, P.E.

Senior Project Engineer

Paula Leier-Engelhardt, P.G. Senior Project Geologist

Mark A. Bergeon, P.G.

Principal Geologist

WFN/ljs.wd

"I, Roger A. Miller, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

Roger A. Miller

Project Hydrogeologist

1/21/99

"I, William F. Noel, P.E., hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

William F. Noel, P.E., #28909

Senior Project Engineer

PE. stamp

Wisconsin Department of Natural Resources 23379XA January 21, 1999 Page 2

Enclosures:

WDNR Case Summary and Close Out Form Check for \$750

Copy: Mr. Ted Maloney
Carver Boat Corporation
790 Markham Drive
P.O. Box 1010
Pulaski, Wisconsin 54162

Mr. Jeffery Melby, P.E. Genmar Holdings, Inc. 100 South 5th Street, Suite 2400 Minneapolis, Minnesota 55402

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<u>LIST OF APPENDICES</u>

Appendix A Closure Documents

Appendix B Soil Boring Logs

Appendix C Soil and Groundwater Analytical Reports

1.0 INTRODUCTION

1.1 Site Name and Location

The site is owned by Carver Boat Corporation (Carver), Pulaski, Wisconsin. Underground storage tanks (USTs) #6 and #7 were located within the north end of Carver's Plant 4, west of the former railroad bed which bisects Carver's property. The site is in the NE 1/4 of Section 6, T25N, R19E, Brown County, Wisconsin. The location of the Carver property is depicted on Figure 1, while Figure 2 shows the location of former USTs #6 / #7, and Figure 3 shows the area immediately around USTs #6 / #7. These figures are in Appendix A.

1.2 Background

Two adjacent USTs (Carver USTs #6 / #7) were removed by Phenco, Inc., of Neenah, Wisconsin on October 3, 1997. STS Consultants, Ltd., (STS) performed site assessments during removal of the USTs. UST #6 was a 6,000-gallon tank which formerly contained resin, of which, styrene was a primary constituent. UST #7 was a 2,000-gallon tank which formerly contained acetone. The removal of these USTs and the site assessments are documented in a report by STS dated February 26, 1998.

No groundwater samples were collected while the USTs were being removed, nor was there evidence of groundwater impacts. STS field observations of soil conditions provided some indication of the presence of volatile organic compounds (VOCs). Laboratory soil test results indicated low-level concentrations of styrene, acetone, tetrachloroethene (PCE), and methyl tert-butyl ether (MTBE) in one or more of the soil samples. These data are provided on Table 1 in Appendix A. Based on this information, Carver reported a release to the Wisconsin Department of Natural Resources (WDNR). The WDNR assigned BRRTS Case #02-05-178568 to this project.

STS then prepared a Work Plan dated February 26, 1998, on Carver's behalf to investigate conditions in the vicinity of the former USTs. Subsequent sections of this report present the methods and results of a subsurface investigation conducted in substantial accordance with this Work Plan.



2.0 METHODS OF INVESTIGATION

2.1 Soil Borings

STS advanced five soil borings (B-6-1 through B-6-5) with solid-stem augers on July 17, 1998, to a depth of 10 feet below ground surface (bgs). Soil Boring Log Information forms for these borings are included in Appendix B.

2.2 Hand Auger Boring

A hand auger boring (B-6-6) was advanced to a depth of 1.5 feet bgs on November 12, 1998. A soil sample was collected from between 1.0 and 1.5 feet bgs. This sample was submitted to U.S. Filter/Enviroscan Corporation (U.S. Filter) of Rothschild, Wisconsin, and tested for PCE and total organic carbon (TOC).

2.3 Temporary Monitoring Wells

2.3.1 Temporary Monitoring Well Installation

Temporary monitoring wells were installed in Soil Borings B-6-1 through B-6-5. Two-inch diameter Schedule 40 polyvinyl chloride (PVC) screens were installed and protected with 4-inch diameter flush-mount protector pipes. The temporary wells will be abandoned upon determining that there is no further reason to collect groundwater samples from these locations.

The temporary monitoring wells were purged on August 13, 1998, by bailing dry two times. Groundwater samples were then collected on that date and submitted to U.S. Oil Analytical Laboratory (U.S. Oil), Kimberly, Wisconsin, for testing of VOCs (including styrene and acetone), nitrate/nitrite, and sulfate in accordance with the Work Plan. Groundwater samples were also collected on that date and tested in the field. Parameters tested or noted were dissolved oxygen (DO), ferrous iron, pH, specific conductance, temperature, color, and odor.



3.0 RESULTS

3.1 Soil Test Results

3.1.1 Soil Analytical Results

As indicated previously, soil tests results from the UST closure assessment are summarized on Table 1 in Appendix A. Soil test results were below applicable residual contaminant levels (RCLs) for direct contact and the groundwater pathway, as explained herein.

In accordance with the Work Plan, soil samples were not collected from Soil Borings B-6-1 through B-6-5 due to the information gathered during the tank closure assessments. These borings were used to investigate groundwater quality.

To further evaluate the PCE detections, STS advanced Hand Auger Boring B-6-6. A soil sample was collected between 1.0 and 1.5 feet bgs, a depth thought to be consistently above the groundwater table. The PCE detections were reported in samples 6-SS-2 and 6-SS-3 from 3 feet bgs, typically above the apparent water table (observed at 4 feet bgs) during the UST removals, but potentially a depth which was saturated at certain times throughout prior years. No PCE was reported in the sample from Hand Auger Boring B-6-6. The test report is in Appendix C.

TOC was reported at 34,700 milligrams per kilogram (mg/kg) in the sample from Hand Auger Boring B-6-6. This concentration is 9.7 times greater than the representative site average value used in the RCL calculations (refer to Section 3.1.2.3). Use of this greater TOC value in the RCL calculations would result in groundwater pathway RCLs which are dramatically greater than those calculated with the representative site average TOC value.

3.1.2 Site-Specific Residual Contaminant Levels

While industrial use of this site is the most likely scenario to occur in the future, site-specific residual contaminant levels (SSRCLs) calculated for detected VOCs were found to be protective for non-industrial sites (i.e., unrestricted land use scenarios). Based on site conditions, we reviewed the following exposure pathways: 1) direct contact (soil ingestion or inhalation); and 2) leaching to groundwater.



SSRCLs were calculated for direct contact and the groundwater pathway using the algorithms presented in the WDNR's "Soil Cleanup for Polycyclic Armomatic Hydrocarbons (PAHs) - Interim Guidance" (WDNR Publication RR-519-97, dated April 1997 [corrected]). As summarized on the attached calculation sheets, default values from the WDNR guidance were used in the calculations, if available. Chemical fate parameters and health criteria for VOCs were obtained from EPA sources (e.g., Integrated Risk Information System [IRIS]). References for chemical fate input parameters and health criteria are listed with the SSRCL calculations.

3.1.2.1 Direct Contact SSRCLs

For direct contact SSRCLs were calculated for acetone, methyl tert-butyl ether (MTBE), styrene, and PCE for both the soil ingestion and inhalation pathways. As allowed in s.NR 720.19(5)1, Wisconsin Administrative Code, the excess cancer risk was adjusted to 1 × 10⁻⁶ and the hazard quotient was adjusted to 1 for the non-industrial SSRCL calculations. Even though subsurface soils are frozen for approximately four months out of the year, the default exposure frequency of 350 days per year was used in the calculations and found to be protective for direct contact exposure. While SSRCL pathways for industrial sites are also included for comparison, we selected the SSRCLs for non-industrial sites as the SSRCLs for this property. The direct contact SSRCLs are considered to be conservative because non-industrial SSRCLs have been compared to the highest organic compound concentrations detected in the soil.

As summarized on Table 1, the direct contact SSRCLs are several orders of magnitude greater than the highest residual VOC concentrations. Therefore, individual VOC concentrations do not exceed an excess cancer risk of 1×10^{-6} for carcinogens or a hazard quotient of 1 for non-carcinogens in accordance with s.NR 720.19(5)1, Wisconsin Administrative Code. SSRCLs were rounded to two significant figures. SSRCLs for PCE were calculated for carcinogenic and non-carcinogenic endpoints based on health criteria obtained from EPA sources.

3.1.2.2 Cumulative Risk

Cumulative risks were estimated for carcinogens and non-carcinogens for both ingestion and inhalation pathways. As shown in the attached calculations and in accordance with s.NR 720.19(5)2, Wisconsin Administrative Code, the cumulative excess cancer risk does not exceed 1×10^{-5} for carcinogens, nor does the hazard quotient exceed 1 for non-carcinogens.



Risks for carcinogens and non-carcinogens are conservatively presumed to be additive for each category.

3.1.2.3 Groundwater Pathway SSRCLs

SSRCLs for the groundwater pathway were calculated for acetone, MTBE, styrene, and PCE. The SSRCL equation combines a soil:water partitioning expression with a dilution attenuation factor for the groundwater mixing zone. The average soil TOC concentration for UST # 3 (3,587 mg/kg) was used in the groundwater pathway SSRCL calculation for PCE. This average TOC concentration is considered to be representative for soils at the Carver property north of Cedar Street (including both UST #3 and USTs #6 / #7 locations). Although a substantially higher TOC concentration was detected at the location of USTs #6 / #7 (34,700 mg/kg), this concentration was not used in the groundwater pathway SSRCL calculations. As summarized on the attached calculation sheets, default values from the WDNR guidance were used in the calculations where site-specific values were unavailable. Results were rounded to two significant figures. As summarized on Table 1, all soil VOC concentrations were below SSRCLs based on protection against a Wisconsin Administrative Code NR 140 enforcement standard (ES) exceedance.

Groundwater monitoring results are consistent with soil analytical data and SSRCLs for the groundwater pathway. Residual adsorbed VOCs are not partitioning into groundwater above NR 140 ESs.

3.2 Groundwater Results

3.2.1 Groundwater Analytical Data

Groundwater analytical data from the temporary wells are presented on Table 2 (Appendix A). The reported concentrations of styrene exceeded the Wisconsin Administrative Code NR 140 preventive action limit (PAL) in Borings B-6-1, B-6-2, and B-6-3. The benzene concentration in B-6-1 slightly exceeded the NR 140 PAL, though the benzene detection was below the laboratory limit of quantitation. No other PAL exceedances were reported. No exceedances of NR 140 ESs were reported. The analytical test report is in Appendix C.



3.2.2 Groundwater Field Data

Groundwater field data are also presented on Table 2. A minimum DO concentration of 2 milligrams per liter indicates that sufficient oxygen is present for aerobic degradation of the low level VOCs to proceed.



4.0 CONCLUSIONS AND RECOMMENDATIONS

Soil test results indicate residual acetone, styrene, MTBE, and PCE concentrations below SSRCLs for the groundwater pathway and direct contact at non-industrial sites. Groundwater pathway SSRCLs are considered to be conservative because the average TOC concentration for Carver former UST #3 location was used instead of the substantially higher TOC measured in soil from the former USTs #6 / #7 location (USTs #3 and #6 / #7 are located in the northern portion of Carver's property).

Additionally, groundwater did not exceed NR 140 enforcement standards in any of the temporary wells. Based on the collected data and observations, STS recommends that this site be closed by the WDNR with PAL exemptions for styrene and benzene per s. NR 140.28, Wisconsin Administrative Code. An unbound WDNR Case Summary and Close Out Form is being submitted to the WDNR and a copy of this form is included in Appendix A of this report.

5.0 GENERAL QUALIFICATIONS

The conclusions and opinions presented are based on the samples collected, conditions at the time of sampling, and the chemical analyses performed by U.S. Oil and U.S. Filter. Environmental conditions are subject to change and variations may exist in both horizontal and vertical directions between sample locations.

This report represents STS's opinions and judgments and no other warranty, either expressed or implied, is made. The opinions presented are based on our understanding of current environmental standards in the state of Wisconsin. No representation is made or intended relative to any future standards or interpretation of existing standards.



APPENDIX A

Closure Documents

- Wisconsin Department of Natural Resources Case Summary and Close Out Form
- Case History and Justification for Closure

Tables

- Table 1 Soil Field Observations and Laboratory Results
- Table 2 Groundwater Data

Figures

- Figure 1 Site Location Diagram
- Figure 2 Facility Locations
- Figure 3 UST #6 / #7 Soil Boring Location Diagram

RCL Calculation Sheets

- Site-Specific Residual Contaminant Level (SSRCL) Calculation Input Parameters
- Cumulative Risk Calculations
- SSRCL Calculations for Direct Contact and the Groundwater Pathway

WISCONSIN DEPARTMENT OF NATURAL RESOURCES CASE SUMMARY AND CLOSE OUT FORM

FOR DEPARTMENT USE ONLY Type of Case: LUST Spill ER Act 453 Other DNR Reviewer:
WDNR Site Name: Carver Boat Corporation Resin and Acetone (Former Carver UST #6 / #7)
Complete Site Address: 790 Markham Drive. Pulaski. Wisconsin 54162
WDNR BRRTS Case #: 0 2 - 0 5 - 1 7 8 5 6 8 PECFA Claim #:
Responsible Party Name: Carver Boat Corporation
Complete Responsible Party Address: 790 Markham Drive, Pulaski, Wisconsin 54162
Site Legal Description: 1/4, 1/4, _NE 1/4, Sec 6, T 25 N, R 19 (E/W) Town: Pulaski
County: <u>Brown</u> Latitude: <u>44</u> ° <u>40</u> ' " Longitude: <u>88</u> ° <u>13</u> ' <u>30</u> "
Type Of Closure Requested: Soil
Contaminant Type(s): VOCs Quantity Released: Unknown
Date of Incident/Discovery: October 3, 1997 Date Closure Submitted to DNR:
Enforcement Actions Closed Out? Yes No X NA Permits Closed Out? Yes No X NA Form 4 Pending? Yes X No NA
I certify that, to the best of my knowledge, the information presented on and attached to this form are true and accurate. This recommendation for case closure is based upon all available data as of \(\frac{1/21/99}{21/99}\) (date). I have read the Case Summary and Close Out Form Instructions and all required information has been included.
Form completed by: William F. Nocl 1/21/99
(Signature) (Date)
Printed Name: William F. Noel Firm Name: STS Consultants, Ltd.
Relationship to Site Owner: Consultant
Address: 1035 Kepler Drive, Green Bay, Wisconsin 54311
Telephone Number: 920-468-1978 FAX Number: 920-468-3312
Environmental Consultant (if different then above):
Address:
Telephone Number: FAX Number:

WDNR BRRTS Case #: 02-05-178568 WDNR Site Name: (Carver UST #6 / #7)
1. CASE HISTORY AND JUSTIFICATION FOR CLOSURE ATTACHED? X Yes No
2. SOIL PRE-REMEDIATION OR INVESTIGATION ANALYTICAL RESULTS
Extent Defined? X Yes No Soil Type(s): Silty sand, silty clay Depth to Bedrock: Not encountered.
Potential Receptors for Direct Contact (i.e. vapor migration, contaminated soil left in place): No identified exceedances of direct contact RCLs.
Attached: Tables of Pre-remedial Analytical Results? X Yes No Maps of Pre-remedial Sample Locations? X Yes No
3. SOIL POST REMEDIATION ANALYTICAL RESULTS
Remedial Action Completed? Yes _X_ No 720.19 Analysis? _X_ Yes No (If yes, attach supporting documentation)
Were Soils Excavated? Yes X_No Quantity: Disposal Method:
Final Confirmation Sampling Methods:
Soil Disposal Form Attached? YesNo _XNA Final Disposal Location:
Estimated volume of insitu soils exceeding NR 720 RCLs: None Attached: Tables of Post-Remedial Analytical Results? Yes/No X NA Maps of Post-Remedial Sample Locations? Yes/No X NA
Brief Description of Remedial Action Taken: NR 720.19 Analysis
4. GROUNDWATER ANALYTICAL RESULTS
Potential Receptors for Groundwater Migration Pathway: No identified exceedances of NR 140 ESs.
Extent of Contamination Defined? X Yes No NA Remedial Action Completed? Yes No X NA
of Sample Rounds: Depth(s) to Groundwater/Flow Direction(s):4' BGS/flow likely to north.
Field Analyses? X Yes No Lab Analyses? X Yes No # of Sampling Points: 5
NR 141 Monitoring Wells Sampled: 0 # Temporary Groundwater Sampling Points Sampled: 5
Recovery Sumps Sampled: # Municipal Wells Sampled: # Private Wells Sampled: 0
Has DNR Been Notified of Substances in Groundwater w/o Standard?YesNoXNA
Any Potable Wells Within 1,200 Feet of Site? Yes _X_ No If Yes, How Many?
Have They Been Sampled? YesNo Have Well Owners/Occupants Been Notified of Results?YesNo
Preventive Action Limit Exceeded? X Yes No (If Yes, identify location(s): B-6-1, B-6-2, B-6-3
Enforcement Standard Exceeded? Yes No (If Yes, identify location(s):
Brief Description of Remedial Action Taken: Compared data to NR 140 Standards.

23379XA (F479A002.DOC)

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FIRST REVIEW DATE:		[] Approved	[] Denied	
(Signature)	Signature)	(Sig	nature)	(Signature)
SECOND REVIEW DATE:_	1	[] Approved	[] Denied	
(Signature)	(Signature)	(Sig	nature)	(Signature)
COMMITTEE RECOMMEN	NDATION:		-	
Zoning Deed Deed Site S Well A Soil D Public NR 14	estrictions dwater Use Restriction g Verification Restriction Affidavit pecific Close Out Lette Abandonment Documentisposal Documentation Notice Needed O Exemption For:	er Necessary ntation		
Invest Groun Soil R Groun Docur	d, Needs More: igation dwater Monitoring temediation dwater Remediation mentation Of Soil Land ic Comments:			

CASE HISTORY AND JUSTIFICATION FOR CLOSURE CARVER BOAT CORPORATION RESIN AND ACETONE USTs (FORMER CARVER USTs #6 / #7) PULASKI, WISCONSIN BRRTS #02-05-178568

Two adjacent underground storage tanks (Carver USTs #6 / #7) were removed by Phenco, Inc. of Neenah, Wisconsin on October 3, 1997. STS Consultants, Ltd., (STS) performed site assessments during removal of the USTs. UST #6 was a 6,000-gallon tank which formerly contained resin, of which, styrene was a primary constituent. UST #7 was a 2,000-gallon tank which formerly contained acetone. The removal of these USTs and the site assessments are documented in a report by STS dated February 26, 1998.

No groundwater samples were collected while the USTs were being removed, nor was there evidence of groundwater impacts. STS field observations of soil conditions provided some indication of volatile organic compounds (VOCs). Laboratory soil test results indicated low-level concentrations of styrene, acetone, tetrachloroethane, and methyl tert-butyl ether (MTBE) in one or more of the soil samples (refer to Table 1).

The laboratory soil data were found to be below site-specific residual containment levels (SSRCLs) for the groundwater pathway and direct contact at non-industrial sites. Groundwater pathway SSRCLs are considered to be conservative because the average TOC concentration for Carver former UST #3 location was used instead of the substantially higher TOC measured in soil from the former USTs #6 / #7 location (USTs #3 and #6 / #7 are located in the northern portion of Carver's property).

Additionally, groundwater did not exceed NR 140 enforcement standards in any of the temporary wells (refer to Table 2). Based on the collected data and observations, STS recommends that this site be closed by the WDNR with PAL exemptions for styrene and benzene per s. NR 140.28, Wisconsin Administrative Code.

TABLE 1 SOIL FIELD OBSERVATIONS AND LABORATORY RESULTS CARVER BOAT CORPORATION USTs #6 AND #7 PULASKI, WISCONSIN

Sample Location	Depth	FID (units)	Soil	Odor	Acetone	Styrene	MTBE	Tetrachloroethene	Total Organic Carbon
Location	(feet)	(units)	Description		(μg/kg)	(μg/kg)	(μg/kg)	(μg/kg)	(mg/kg)
Tank Closure Site A	ssessment Sa	amples (10/9) (7)						
6-SS-1	3	52	Dark Brown Fine to Medium Silty Sand	Slight	<100	36	<25	<25	-
6-SS-2	3	10	Dark Brown Fine to Medium Silty Sand	Possible	<100	<25	<25 │	26	
6-SS-3	3	6	Dark Brown Fine to Medium Silty Sand	No	120	31	<25	51	-
6-SS-4	3	4	Dark Brown Fine to Medium Silty Sand	No	<100	<25	28	<25	-
6-SS-5	3	4	Dark Brown Fine to Medium Silty Sand	No	<100	<25	36	<25	-
S-1A	4	65	Brown Red Silty Clay	Slight	-		-	-	-
S-2A	4	25	Brown Red Silty Clay	Possible	-	-	-	-	-
S-3A	4	50	Brown Red Silty Clay	Slight	-	-	-	-	-
S-4A	4	7	Brown Red Silty Clay	No	-	-] -	-	-
S-5A	4	7	Brown Red Silty Clay	No		-	-	-	-
Site Assessment San	 -								
B-6-6	1.0-1.5	-	Dark Brown Fine to Medium Silty Sand	No	-	-	-	<27	34,700
							1		
Non-Industrial SSR	C L s								
GW					1,800	41,000	160	130	
ING					7,800,000	16,000,000	390,000	12,000	
INH					4,600,000	14,000,000	14,000,000	11,000	

Notes:

VOCs not listed were not detected in any sample

- = Not Analyzed

MTBE = Methyl tert Butyl Ether

FID = Flame Ionization Detector

SSRCL = Site-Specific Residual Contaminant Level

GW = Groundwater Pathway

ING = Soil Ingestion Pathway

INH = Soil Inhalation Pathway

TABLE 2 GROUNDWATER DATA CARVER BOAT CORPORATION UST #6/#7 PULASKI, WISCONSIN

(Samples collected August 13, 1998)

Field Parameters

Well ID	Depth to Water (Ft from TPVC)	Dissolved Oxygen (mg/L)	Ferrous Iron (mg/L)	pH (units)	Specific Conductance (µmhos/cm)	Temperature (°F)	Color	Odor Noted
B-6-1	7.16	2	0.2	6.26	1034	72.0	Clear	None Noted
B-6-2	7.05	3	0.2	6.77	1253	72.9	Clear	None Noted
B-6-3	7.02	2	0.4	6.39	1101	73.5	Clear	None Noted
B-6-4	6.79	2	0.2	6.09	776	71.8	Clear	None Noted
B-6-5	6.95	3	1.0	6.13	1250	70.8	Clear	None Noted

Analytical Results

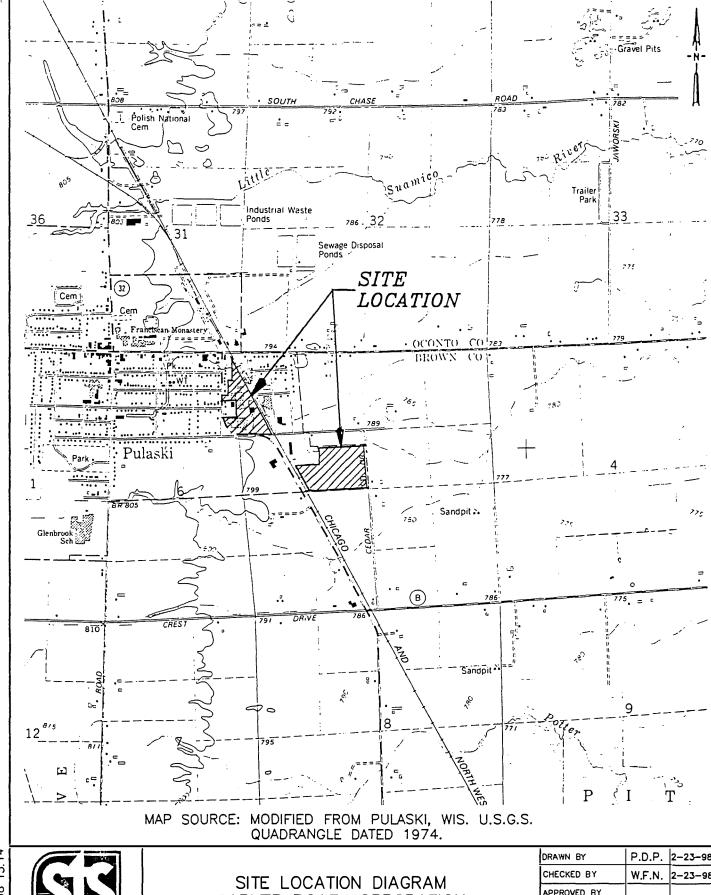
		7	VOCs ⁽¹⁾ (μg/L)				
Well	Acetone	Benzene	Styrene	Toluene	Xylenes	Nitrate/Nitrite	Sulfate
ID						(mg/L)	(mg/L)
B-6-1	11	0,53 ⁽²⁾	60	0.6(2)	<1.23(1)	<0.014	. 18
B-6-2	1.1	<0.25	20	<0.38	<1.04	<0.014	. 19
B-6-3	15	<0.25	98	0.39(2)	<1.44 ⁽³⁾	< 0.014	10
B-6-4	0.92(2)	<0,25	<0.74	<0.38	<1.04	<0.014	10
B-6-5	<0.28	<0.25	0.91(2)	<0.38	<1.04	0.47	84
NR 140 ES	1000	5.0	100	343	620		
NR 140 PAL	200	0.5	10	68.6	124		

⁽¹⁾VOCs not listed were not detected

NE: Not established

⁽²⁾ Analyte detected, but below limit of quanititation

⁽³⁾o-xylene detected, but below limit of quantitation; m&p-xylene not detected

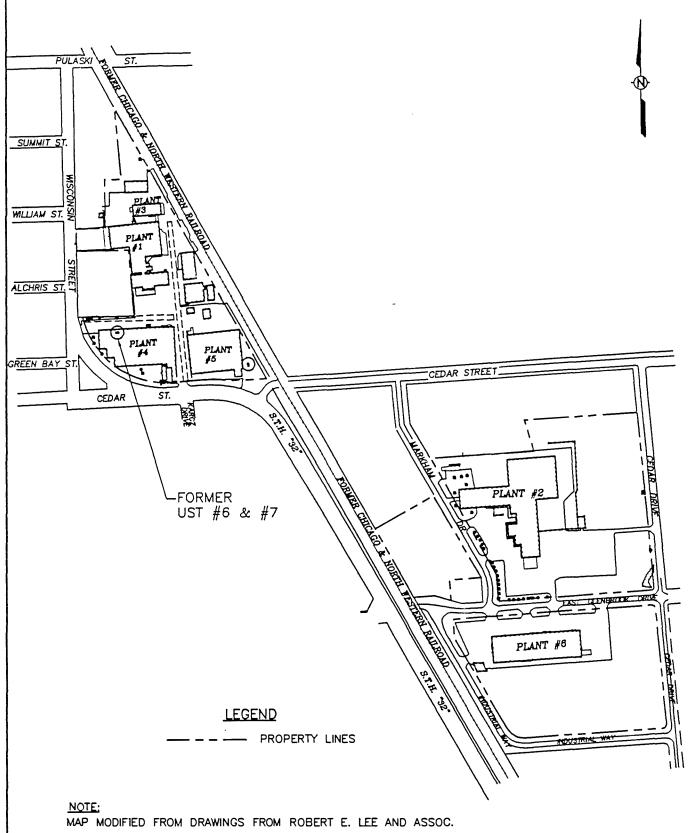


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STS Consultants Ltd.
Consulting Engineers

SITE LOCATION DIAGRAM CARVER BOAT CORPORATION PULASKI, WISCONSIN

UKAWN BT	P.U.P.	2-23-98
CHECKED BY	W.F.N.	2-23-98
APPROVED BY		
CADFILE G479F001	SCALE 1"=2	2000'
STS PROJECT NO.	FIGURE N	0.
23379XF		1

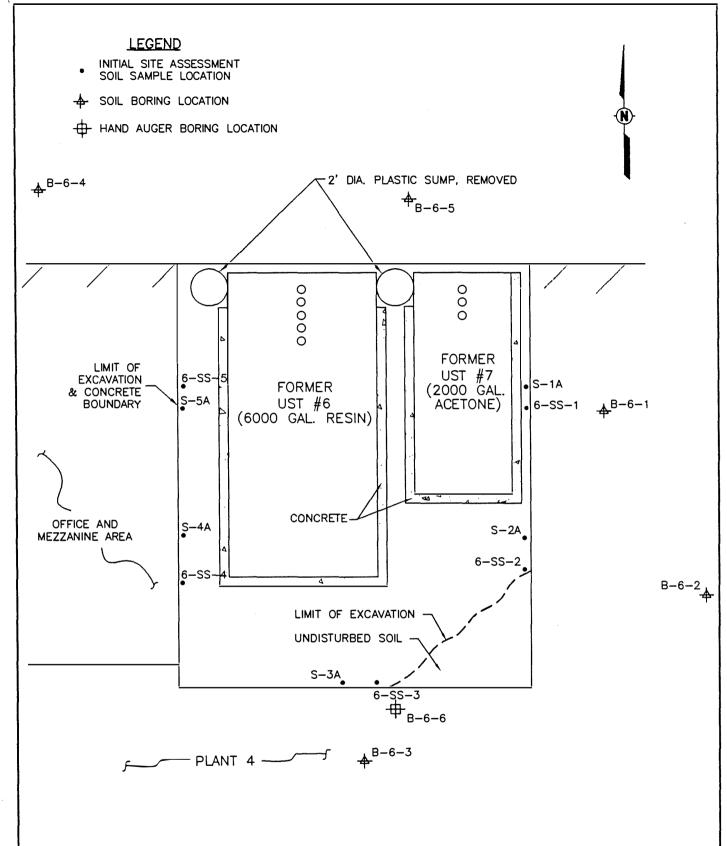


STS Consultants Ltd.
Consulting Engineers

FACILITY LOCATIONS
CARVER BOAT CORPORATION
PULASKI, WISCONSIN

DRAWN BY	P.D.P.	2-23-98
CHECKED BY	W.F.N.	2-23-98
APPROVED BY		
CADFILE G479F04		500'
STS PROJECT NO. 23379XF	FIGURE N	o. 2

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UST #6/#7 SOIL BORING LOCATION DIAGRAM CARVER BOAT CORPORATION PULASKI, WISCONSIN

DRAWN BY	R.A.B. 12-18-98
CHECKED BY	W.F.N. 12-18-98
APPROVED BY	-
CADFILE	1"=5'
STS PROJECT NO.	FIGURE NO.
23379XA	3

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Site-Specific Residual Contaminant Level (SSRCL) Calculation Input Parameters

Carver Boat Corporation USTs #6 and #7

Pulaski, Wisconsin

STS Project No. 23379XA

Parameter	SFo		SFi		Rf	D	RſC		Koo	:	H'		Da		Dw	
	(mg/kg-day) ⁻¹	Source	(mg/kg-day) ⁻¹	Source	(mg/kg-day)	Source	(mg/m³)	Source	(L/kg)	Source	(unitless)	Source	(cm ² /s)	Source	(cm ² /s)	Source
PVOCs																
Acetone					1.0E-01	1	3.5E-01	6	0.575	5	1.59E-03	5	1.24E-01	5	1.14E-05	5
Methyl tert-butyl ether					5.0E-03	4	3.0E+00	1	12.0	9	2.28E-02	7	1.24E-01	7	1.05E-05	7
Styrene					2.0E-01	1	1.0E+00	1	776	5	1.13E-01	5	7.10E-02	5	8.00E-06	5
Tetrachloroethene	5.2E-02	3	2.0E-03	3	1.0E-02	1	3.85E-01	6	155	5	7.54E-01	5	7.20E-02	5	8 20E-06	5

NOTES:

- 1) Abbreviations for RCL chemical fate parameters and health criteria are defined on the calculation sheets.
- 2) For Xylene, chemical fate parameters are those published for "p-xylene".

SOURCES:

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 On-line database available through TOXNET, National Library of Medicine, Bethesda, Maryland.
- 2) EPA (U.S. Environmental Protection Agency). 1997a. Health Effects Assessment Summary Tables (HEAST). FY-1997 Annual Update. (and Update to Annual) Office of Emerg, and Remedial Response, Washington, D.C.
- 3) EPA (U.S. Environmental Protection Agency). 1997b. Provisional Toxicity Values Under Development (personal communication). National Center for Environmental Assessment (NCEA). Superfund Technical Support Center (phone: 513-569-7300). Cincinnati, Ohio.
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 841 Chestnut Street, Philadelphia, PA 19107.
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- 6) EPA (U.S. Environmental Protection Agency). 1998. Region 9 Preliminary Remediation Goals (PRGs). Stanford J. Smucker, Ph. D. Regional Toxicologist. 75 Hawthorne Street, San Francisco, CA
- 7) EPA (U.S. Environmental Protection Agency). 1998. CHEMDAT8 air model chemicals properties database (tile: DATATWO.WK1) obtained from EPA's web site.
- 8) HSDB (Hazardous Substance Data Bank). 1998. On-Line toxicological database available through the National Library of Medicine.
- 9) ASTM. 1995. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites (E 1739-95^{c1}). West Conshohocken, Pennsylvania.

Cumulative Risk Calculation Carver Boat Corporation Pulaski, Wisconsin STS Project No. 23379XA

Compound	Highest			Carcir	ogens				Non-Car	cinogens	
	Soil	In	gestion (SF	0)	Ir	halation (SI	Fi)	Ingestio	n (RfD)	Inhalatio	n (RfC)
	Conc.				,						
		RCL (10°)	-				Soil Conc.	RCL	Soil Conc.	RCL	Soil Conc.
	(mg/kg)	(mg/kg)	(mg/kg)	RCL (10 ⁻⁵)	(mg/kg)	(mg/kg)	RCL (10 ⁻³)	(møkg)	RCL	(møkg)	RCL
VOCs											
Acetone	0.12							7800	1.54E-05	4600	2.61E-05
Methyl tert butyl ether	0.036							390	9.23E-05	14000	2.57E-06
Styrene	0.031							16000	1.94E-06	14000	2.21E-06
Tetrachloroethene	0.051	12	120	0.00043	11	110	0.00046	780	6.54E-05	1000	5.10E-05
Cumulative Risk or Cu	mulative Ha	zard*		0.0004			0.0005		0.0002		0.0001

Calculated by: Roger Miller 12/21/98

Notes:

- 1)*Summation of chemical-specific ratios (i.e., soil conc./RCL).
- 2) For carcinogens, the highest soil concentration was divided by the adjusted RCL (adjusted to a target risk of 1 x 10⁻⁵).

 The sum of these ratios is below 1 for the ingestion and inhalation pathways. Accordingly, the cumulative risk does not exceed 1 x 10⁻⁵.
- 3) For non-carcinogens, the highest soil concentration was divided by the RCL. The sum of these ratios is below 1 for the ingestion and inhalation pathways. Accordingly, the cumulative hazard does not exceed a hazard quotient of 1.
- 4) Risks for carcinogens and noncarcinogens are conservatively presumed to be additive within each exposure pathway.
- 5) All RCLs for Volatile Organic Compounds (VOCs) were derived from site-specific calculations.

Acetone Soil Ingestion Pathway (RfD)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
BWc - Average Body Weight for Child (kg)	15	WDNR Default Value
AT - Averaging Time (years)	6	WDNR Default Value
RfDo - Oral Reference Dose (mg/kg-day)	1.0E-01	1
EF - Exposure Frequency (day/year)	350	WDNR Default Value
EDc - Exposure Duration During Ages 1-6 (year)	6	WDNR Default Value
IRc - Ingestion Rate of Soil Age 1-6 (mg/day)	200	WDNR Default Value
1/RfDo x 10 ⁻⁶ kg/mg	T x 365 day/year g x EF x ED x IRc	=
1/RfDo x 10 ⁻⁶ kg/m _i	g x EF x ED x IRc	
1/RfDo x 10 ⁻⁶ kg/m _i Algorithm for Ingestion of Noncarcinogenic Contamin	g x EF x ED x IRc	
1/RfDo x 10 ⁻⁶ kg/m _i Algorithm for Ingestion of Noncarcinogenic Contamin	g x EF x ED x IRc	il
1/RfDo x 10 ⁻⁶ kg/m _i Algorithm for Ingestion of Noncarcinogenic Contamin Parameter	g x EF x ED x IRc	il Source
1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless)	g x EF x ED x IRc ants in Industrial So Value 1	Source WDNR Default Value
1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)	g x EF x ED x IRc ants in Industrial So Value 1 70	Source WDNR Default Value WDNR Default Value
Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years)	g x EF x ED x IRc ants in Industrial So Value 1 70 25	Source WDNR Default Value WDNR Default Value
Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day)	x EF x ED x IRc ants in Industrial So Value 1 70 25 1.0E-01	Source WDNR Default Value WDNR Default Value WDNR Default Value 1

1/RfDo x 10⁻⁶ kg/mg x EF x ED x IRa

100000

Calculated by: Roger Miller 12/21/98

Checked by: 13, ithey 1-12-14

Note:

See list of references for numbered source citations.

Residual Contaminant Level (mg/kg) = THQ x BWa x AT x 365 dav/year

Acetone

Soil Inhalation Pathway (RfC)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Algorithm for Inhalation of Noncarcinogenic Contaminants from Non-Industrial (Residential) Soil				
Parameter	Value	Source		
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value		
AT - Averaging Time (years)	30	WDNR Default Value		
RfC - Reference Concentration (mg/m³)	3.5E-01	6		
EF - Exposure Frequency (day/year)	350	WDNR Default Value		
ED - Exposure Duration (year)	30	WDNR Default Value		
VF - Volatilization Factor (m³/kg)	1.26E+04	Calculation		
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value		
Residual Contaminant Level (mg/kg) = THQ	x AT x 365 d	ay/year = 4600		
1/RfC x EF x ED x [(1/VF) + (Cp x 10° kg/μg)] Algorithm for Inhalation of Noncarcinogenic Contaminants in Industrial Soil				
Parameter	Value	Source		
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value		
AT - Averaging Time (years)	25.	WDNR Default Value		
RfC - Reference Concentration (mg/m³)	3.5E-01	16		
EF - Exposure Frequency (day/year)	250	WDNR Default Value		
ED - Exposure Duration (year)	25	WDNR Default Value		
IRc - Inhalation Rate Correction for Adult Laborer (unitless)	1.2	WDNR Default Value		
VF - Volatilization Factor (m³/kg)	· ·	Calculation		
Cp - Concentration of Particles less than 10 μm (μg/m ³)	1.202.104	WDNR Default Value		
INCALI ALLA	114 (1) 1 (1)) + (Cp x 10 ⁻⁹ kg/µg)]		
Volatilization Factor (m^3/kg) = $Q/C \times (3.14)$	4 x D _A xT) ^{1/2}	$\times 10^{-4} \text{m}^2/\text{cm}^2 = 1.26\text{E}+04$		
Volatilization Factor (m ³ /kg) = $Q/C \times (3.1)$	4 x D _A xT) ^{1/2} 2 x ρ _b x D _A	$\times 10^{-4} \text{m}^2/\text{cm}^2 = \boxed{1.26\text{E}+04}$		
$D_{\mathbf{A}}(cm^2/sec) = [(\theta_a^{10}$	2 x ρ _b x D _A 3D _a H + θ _w ^{10/3}	D _w /yn ²] = 9.91E-05		
$D_{\mathbf{A}}(cm^2/sec) = [(\theta_a^{10})^{10}]$	2 x ρ _b x D _A	D _w /yn ²] = 9.91E-05		
$D_{A} (cm^{2}/sec) = [(\theta_{a}^{10})^{10}]$ Parameter	2 x ρ _b x D _A 3D _a H + θ _w ^{10/3}	D _w /yn ²] = 9.91E-05		
$D_{\mathbf{A}}(cm^2/sec) = [(\theta_a^{10})^{10}]$	$2 \times \rho_b \times D_A$ ${}^3D_aH' + \theta_w^{102}$ ${}^3K_a + \theta_w + \theta_s^{102}$	D _w /yn ²] = 9.91E-05		
$D_{A} (cm^{2}/sec) = [(\theta_{a}^{10})^{10}]$ Parameter	$2 \times \rho_b \times D_A$ ${}^{3}D_aH' + \theta_w^{10/3}$ ${}^{3}C_bK_d + \theta_w + \theta_w^{10/3}$ $Value$	D _w /yn ²] = 9.91E-05 _a H' Source		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³)	$2 \times \rho_b \times D_A$ $^3D_bH + \theta_w^{10/3}$ $^3D_bK_d + \theta_w + \theta_d^{10/3}$ $Value$ 68.81	D _w /yn ²] = 9.91E-05 _a H Source WDNR Default Value		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec)	$2 \times \rho_b \times D_A$ ${}^{3}D_bH + \theta_w^{107}$ ${}^{3}D_bK_d + \theta_w + \theta_b$	D _w)/n ²] = 9.91E-05 H Source WDNR Default Value Calculation		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec)	2 x ρ _b x D _A 3 D _b H + θ _w loo 2 k _d + θ _w + θ _b Value 68.81 9.91E-05 9.50E+08	D _w)/n ²] = 9.91E-05 H Source WDNR Default Value Calculation WDNR Default Value		
$D_{A} (cm^{2}/sec) = [(\theta_{*}^{10})^{10}]$ Parameter $Q/C - Inverse Mean Concentration at$ Center of Source $(g/m^{2}-sec)/(kg/m^{3})$ $D_{A} - Apparent Diffusivity (cm^{2}/sec) T - Exposure Intervals (sec) \rho_{b} - Soil Dry Bulk Density (g/cm^{3})$	$2 \times \rho_b \times D_A$ $^{3}D_aH + \theta_w^{107}$ $^{3}D_cH + \theta_w^{107}$ 3	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value		
$D_{A} (cm^{2}/sec) = [(\theta_{*}^{10})^{10}]$ Parameter $Q/C - Inverse Mean Concentration at$ Center of Source $(g/m^{2}-sec)/(kg/m^{3})$ $D_{A} - Apparent Diffusivity (cm^{2}/sec) T - Exposure Intervals (sec) p_{b} - Soil Dry Bulk Density (g/cm^{3}) \theta_{a} - Air Filled Porosity (cm^{3}/cm^{3})$	$ \begin{array}{c} 2 \times \rho_b \times D_A \\ ^3 D_a H + \theta_w & ^{107} \\ ^3 N_b K_d + \theta_w + \theta_d \\ \hline $	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value WDNR Default Value		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) 0 ₄ - Air Filled Porosity (cm²/cm³) D _A - Air Diffusion Coefficient (cm²/sec)	$2 \times \rho_b \times D_A$ $^{3}D_aH + \theta_w^{107}$ $^{3}D_cH + \theta_w^{107}$ 3	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) 0 ₄ - Air Filled Porosity (cm²/cm³) D _A - Air Diffusion Coefficient (cm²/sec)	$ \begin{array}{c} 2 \times \rho_b \times D_A \\ ^3 D_a H + \theta_w & ^{107} \\ ^3 N_b K_d + \theta_w + \theta_d \\ \hline $	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value WDNR Default Value		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) 0 ₄ - Air Filled Porosity (cm²/cm³) D _A - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless)	$ \begin{array}{c} 2 \times \rho_b \times D_A \\ ^3 D_b H + \theta_w & ^{107} \\ ^3 N_c H + \theta_w + \theta_c \\ \hline $	Dwyn²] = 9.91E-05 LH Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value Source		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) 0 _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) 0 _w - Volumetric Soil Moisture Content (cm³/cm³)	2 x ρ _b x D _A ³ D _e H + θ _w ¹⁰² ⁵ N _c K _d + θ _w + θ _b Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01 1.59E-03	Dwyn²] = 9.91E-05 LH Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value Source		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p ₅ - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm²/sm³) D _a - Air Diffusion Coefficient (cm²/sec) H - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec)	$\begin{array}{c} 2 \times \rho_b \times D_A \\ ^3D_bH + \theta_w ^{102} \\ ^3D_bH + \theta_w + \theta_b \\ \hline & Value \\ & 68.81 \\ & 9.91E-05 \\ 9.50E+08 \\ & 1.5 \\ & 0.28 \\ & 1.24E-01 \\ & 1.59E-03 \\ & 0.15 \\ & 1.14E-05 \end{array}$	Dwyn²] = 9.91E-05 H Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value S WDNR Default Value 5 WDNR Default Value 5		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p ₅ - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³)	2 x ρ _b x D _A ³ D _e H + θ _w 60° ³ C _e H + θ _w + θ _e Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01 1.59E-03 0.15 1.14E-05 0.43	Dwyn²] = 9.91E-05 H Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value S WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p ₅ - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³) K _d - Soil:Water Distribution Coefficient (L/kg)	2 x ρ _b x D _A ³ D _a H + θ _w ¹⁰² ₅ K _d + θ _w + θ ₀ Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01 1.59E-03 0.15 1.14E-05 0.43 0.00345	Dwyn²] = 9.91E-05 H Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value S WDNR Default Value 5 WDNR Default Value 5		
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p ₅ - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³)	2 x ρ _b x D _A ³ D _e H + θ _w 60° ³ C _e H + θ _w + θ _e Value 68.81 9.91E-05 9.50E+08 1.5 0.28 1.24E-01 1.59E-03 0.15 1.14E-05 0.43	Dwyn²] = 9.91E-05 H Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value S WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value		

Calculated by: Roger Miller 12/21/98

Checked by: Lombathy 1-13-89

Note:

Methyl tert-butyl ether Soil Ingestion Pathway (RfD)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
BWc - Average Body Weight for Child (kg)	15	WDNR Default Value
AT - Averaging Time (years)	6	WDNR Default Value
RfDo - Oral Reference Dose (mg/kg-day)	5.0E-03	4
EF - Exposure Frequency (day/year)	350	WDNR Default Value
EDc - Exposure Duration During Ages 1-6 (year)	- 6	WDNR Default Value
IRc - Ingestion Rate of Soil Age 1-6 (mg/day)	200	WDNR Default Value
Residual Contaminant Level (mg/kg) <u>THQ x BWc x A</u> 1/RfDo x 10 ⁻⁶ kg/mg	g x EF x ED x IRc	= 390
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamina	g x EF x ED x IRc	
Residual Contaminant Level (mg/kg) = THQ x BWc x A	g x EF x ED x IRc	il
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminates Parameter THQ - Target Hazard Quotient (unitless)	g x EF x ED x IRc	Source
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contamination Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)	g x EF x ED x IRc ants in Industrial So Value	Source WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminates	ants in Industrial So Value 1 70	Source WDNR Default Value WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminate Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years)	ants in Industrial So Value 1 70 25	Source WDNR Default Value WDNR Default Value WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/mg Algorithm for Ingestion of Noncarcinogenic Contaminate Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day)	x EF x ED x IRc ants in Industrial So Value 1 70 25 5.0E-03	Source WDNR Default Value WDNR Default Value WDNR Default Value 4

Calculated by: Roger Miller 12/21/98

Checked by: -700. /- 12-44

Note:

Methyl tert-butyl ether Soil Inhalation Pathway (RfC)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Algorithm for Inhalation of Noncarcinogenic Contaminants from Non-Industrial (Residential) Soil			
Parameter	Value	Source	
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value	
AT - Averaging Time (years)	30	WDNR Default Value	
RfC - Reference Concentration (mg/m³)	3.0E+00	1	
EF - Exposure Frequency (day/year)	350	WDNR Default Value	
ED - Exposure Duration (year)	30	WDNR Default Value	
VF - Volatilization Factor (m ³ /kg)	4.35E+03	Calculation	
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value	
Residual Contaminant Level (mg/kg) = $\frac{\text{THQ \times AT \times 365 day/year}}{1/\text{RfC \times EF \times ED \times [(I/VF) + (Cp \times 10^9 \text{ kg/µg})]}}$			
Algorithm for Inhalation of Noncarcinogenic Contaminar	nts in Industria	al Soil	
Parameter	Value	Source	
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value	
AT - Averaging Time (years)	25 .	WDNR Default Value	
RfC - Reference Concentration (mg/m³)	3,0E+00	1	
EF - Exposure Frequency (day/year)	250	WDNR Default Value	
ED - Exposure Duration (year)	25	WDNR Default Value	
IRc - Inhalation Rate Correction for Adult Laborer (unitless)	1.2	WDNR Default Value	
VF - Volatilization Factor (m³/kg)	4.35E+03	Calculation	
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value	
) + (Cp x 10 ⁻⁹ kg/μg)]	
Volatilization Factor (m ³ /kg) = Q/C x (3.	$\frac{14 \times D_A \times T)^{1/2}}{2 \times \rho_b \times D_A}$	$\times 10^4 \text{m}^2/\text{cm}^2 = 4.35\text{E} + 03$	
$D_A \text{ (cm}^2/\text{sec)} = [(\theta_a)]$	$\frac{1003}{\rho_b K_d + \theta_w + \theta_s}$		
Parameter	Value	Source	
Q/C - Inverse Mean Concentration at	68.81	WD NR Default Value	
Center of Source (g/m²-sec)/(kg/m³)		la	
D _A - Apparent Diffusivity (cm ² /sec)		Calculation	
T - Exposure Intervals (sec)	9.50E+08		
ρ _b - Soil Dry Bulk Density (g/cm³)	1.5	WDNR Default Value	
θ _a - Air Filled Porosity (cm³/cm³)	0.28	WDNR Default Value	
D _e - Air Diffusion Coefficient (cm ² /sec)	1.24E-01	7	
H - Henry's Law Constant (unitless)	2.28E-02	7	
θ _w - Volumetric Soil Moisture Content (cm³/cm³)	0.15	WDNR Default Value	
Dw - Water Diffusion Coefficient (cm²/sec)	1.05E-05	7	
n - Total Soil Porosity (cm³/cm³)	0.43	WDNR Default Value	
K _d - Soil: Water Distribution Coefficient (L/kg)	0.07	Koc x foc	
K_{∞} - Organic Carbon: Water Partitioning Coefficient (L/kg)	12	9	
f_{∞} - Soil Fraction Organic Carbon (g/g)	0.006	WDNR Default Value	
	3.555		

Calculated by: Roger Miller 12/21/98

Checked by: 2 1-13-59

Note:

Styrene Soil Ingestion Pathway (RfD)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
BWc - Average Body Weight for Child (kg)	15	WDNR Default Value
AT - Averaging Time (years)	6	WDNR Default Value
RfDo - Oral Reference Dose (mg/kg-day)	2.0E-01	1
EF - Exposure Frequency (day/year)	350	WDNR Default Value
EDc - Exposure Duration During Ages 1-6 (year)	- 6	WDNR Default Value
	200	WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/m Algorithm for Ingestion of Noncarcinogenic Contamin	AT x 365 day/year ag x EF x ED x IRc	= [16000
Residual Contaminant Level (mg/kg) <u>= THQ x BWc x A</u> 1/RfDo x 10 ⁻⁶ kg/m	AT x 365 day/year ag x EF x ED x IRc	= [16000
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/m Algorithm for Ingestion of Noncarcinogenic Contamin	AT x 365 day/year ag x EF x ED x IRc	= [16000]
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/m Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless)	aT x 365 day/year ag x EF x ED x IRc nants in Industrial So Value	= 16000
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/m Algorithm for Ingestion of Noncarcinogenic Contamin	aT x 365 day/year ag x EF x ED x IRc nants in Industrial So Value	il Source WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/m Algorithm for Ingestion of Noncarcinogenic Contamin Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)	at x 365 day/year ag x EF x ED x IRc nants in Industrial So Value 1 70	il Source WDNR Default Value WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/m Algorithm for Ingestion of Noncarcinogenic Contaminate Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years)	aT x 365 day/year ag x EF x ED x IRc nants in Industrial So Value 1 70 25	il Source WDNR Default Value WDNR Default Value
Residual Contaminant Level (mg/kg) = THQ x BWc x A 1/RfDo x 10 ⁻⁶ kg/m Algorithm for Ingestion of Noncarcinogenic Contaminate Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day)	aT x 365 dav/year ag x EF x ED x IRc nants in Industrial So Value 1 70 25 2.0E-01	il Source WDNR Default Value WDNR Default Value WDNR Default Value I

Calculated by: Roger Miller 12/21/98

Checked by: "on ... Mary '- '2-19

Note:

Styrene

Soil Inhalation Pathway (RfC)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

		ndustrial (Residential) Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	30	WDNR Default Value
RfC - Reference Concentration (mg/m³)	1.0E+00	1
EF - Exposure Frequency (day/year)	350	WDNR Default Value
ED - Exposure Duration (year)	30	WDNR Default Value
VF - Volatilization Factor (m³/kg)	1.34E+04	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
	x AT x 365 d	ay/ycar = 14000 $(Cp \times 10^{-9} kg/\mu g)$
Algorithm for Inhalation of Noncarcinogenic Contaminant	-	
Parameter THO To a Harabase Association	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	25.	WDNR Default Value
RfC - Reference Concentration (mg/m³)	1.0E+00	1
EF - Exposure Frequency (day/year)	250	WDNR Default Value
ED - Exposure Duration (year)	25	WDNR Default Value
IRc - Inhalation Rate Correction for Adult Laborer (unitless)	1.2	WDNR Default Value
VF - Volatilization Factor (m³/kg)	1.34E+04	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
Volatilization Factor (m ³ /kg) = $Q/C \times (3.14)$		$\times 10^{-4} \text{m}^2/\text{cm}^2 = 1.34\text{E} + 04$
	2 x ρ _b x D _A	
	2 x ρ _b x D _A	
$D_{A} (cm^{2}/sec) = [(\theta_{a}^{10})]$	2 x ρ _b x D _A	
$D_{A} (cm^{2}/sec) = [(\theta_{a}^{10})]$	$2 \times \rho_b \times D_A$ ${}^3D_aH' + \theta_w^{100}$ ${}^3K_4 + \theta_w + \theta_s^{100}$	$(D_{\rm w})/n^2$ = 8.70E-05
Parameter Q/C - Inverse Mean Concentration at	$2 \times \rho_b \times D_A$ $^3D_aH' + \theta_w^{100}$ $^3D_kK_d + \theta_w + \theta_w^{100}$ $Value$	$[D_w]/n^2] = 8.70E-05$ Source
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³)	$2 \times \rho_b \times D_A$ ${}^{3}D_aH + \theta_w^{-100}$ ${}^{3}D_aK + \theta_w + \theta_w$ ${}^{4}Value$ 68.81	Source WDNR Default Value
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec)	$2 \times \rho_b \times D_A$ ${}^{3}D_aH^{T} + \theta_w^{107}$ ${}^{3}b_cK_d + \theta_w + \theta_d$	Source WDNR Default Value Calculation S.70E-05
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec)	2 x ρ _b x D _A 3 D _a H + θ _w 3 D _a H + θ _w 5 N _d + θ _w + θ _d Value 68.81 8.70E-05 9.50E+08	Source WDNR Default Value Calculation WDNR Default Value
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) P _b - Soil Dry Bulk Density (g/cm³)	2 x ρ _b x D _A 3 D _a H + θ _w 3 D _a H + θ _w 5 N _d + θ _w + θ _d Value 68.81 8.70E-05 9.50E+08 1.5	Source WDNR Default Value
$D_{A} (cm^{2}/sec) = \underbrace{[(\theta_{\bullet}^{10})^{10}]^{2}}_{6}$ Parameter $Q/C - Inverse Mean Concentration at Center of Source (g/m^{2}-sec)/(kg/m^{3})$ $D_{A} - Apparent Diffusivity (cm^{2}/sec)$ $T - Exposure Intervals (sec)$ $\rho_{b} - Soil Dry Bulk Density (g/cm^{3})$ $\theta_{a}^{*} - Air Filled Porosity (cm^{3}/cm^{3})$	2 x ρ _b x D _A 3 D _a H + θ _w 3 D _a H + θ _w 5 N _d + θ _w + θ _d Value 68.81 8.70E-05 9.50E+08	Source WDNR Default Value Calculation WDNR Default Value
$D_{A} (cm^{2}/sec) = \underbrace{[(\theta_{\bullet}^{10})^{10}]^{2}}_{6}$ Parameter $Q/C - Inverse Mean Concentration at Center of Source (g/m^{2}-sec)/(kg/m^{3})$ $D_{A} - Apparent Diffusivity (cm^{2}/sec)$ $T - Exposure Intervals (sec)$ $\rho_{b} - Soil Dry Bulk Density (g/cm^{3})$ $\theta_{a}^{*} - Air Filled Porosity (cm^{3}/cm^{3})$	2 x ρ _b x D _A 3 D _a H + θ _w 3 D _a H + θ _w 5 N _d + θ _w + θ _d Value 68.81 8.70E-05 9.50E+08 1.5	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value
$D_{\mathbf{A}} (\text{cm}^2/\text{sec}) = \underbrace{[(\theta_{\bullet}^{10})^2]^2}_{\mathbf{A}} $ $Parameter$ $Q/C - Inverse Mean Concentration at Center of Source (g/m^2 - \sec)^2(kg/m^3) D_{\mathbf{A}} - \text{Apparent Diffusivity } (\text{cm}^2/\text{sec}) T - \text{Exposure Intervals } (\text{sec}) \rho_b - \text{Soil Dry Bulk Density } (g/\text{cm}^3) \theta_{\bullet} - \text{Air Filled Porosity } (\text{cm}^3/\text{cm}^3) D_{\bullet} - \text{Air Diffusion Coefficient } (\text{cm}^2/\text{sec})$	$ \begin{array}{c} 2 \times \rho_b \times D_A \\ ^3 D_e H + \theta_w & ^{107} \\ ^3 D_e H + \theta_w & ^{107} \\ & > K_d + \theta_w + \theta_d \\ \hline & Value \\ & 68.81 \\ & 8.70E-05 \\ & 9.50E+08 \\ & 1.5 \\ & 0.28 \end{array} $	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value WDNR Default Value
$D_{A} (cm^{2}/sec) = [(\theta_{*}^{10}/cm^{2}/sec)]$ Parameter $Q/C - Inverse Mean Concentration at$ Center of Source $(g/m^{2}-sec)/(kg/m^{3})$ $D_{A} - Apparent Diffusivity (cm^{2}/sec) T - Exposure Intervals (sec) \rho_{b} - Soil Dry Bulk Density (g/cm^{3}) \theta_{a} - Air Filled Porosity (cm^{3}/cm^{3}) D_{a} - Air Diffusion Coefficient (cm^{2}/sec) H - Henry's Law Constant (unitless)$	$\begin{array}{c} 2 \times \rho_b \times D_A \\ & & \\ & D_b H + \theta_w & \\ & b K_d + \theta_w + \theta_d \\ & &$	Source WDNR Default Value Calculation WDNR Default Value WDNR Default Value WDNR Default Value WDNR Default Value Source
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) 0 ₄ - Air Filled Porosity (cm³/cm³) D ₄ - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) 0 _w - Volumetric Soil Moisture Content (cm³/cm³)	$\begin{array}{c} 2 \times \rho_b \times D_A \\ ^3D_aH + \theta_w ^{107} \\ ^3D_bK_d + \theta_w + \theta_b \\ \hline & Value \\ & 68.81 \\ & 8.70E-05 \\ 9.50E+08 \\ & 1.5 \\ & 0.28 \\ & 7.10E-02 \\ & 1.13E-01 \\ & 0.15 \\ \end{array}$	Source WDNR Default Value S S WDNR Default Value
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm²/sec) D _w - Water Diff usion Coefficient (cm²/sec)	$\begin{array}{c} 2 \times \rho_b \times D_A \\ ^3D_bH + \theta_w ^{107} \\ ^3D_bH + \theta_w ^{107} \\ & > K_4 + \theta_w + \theta_b \\ \hline & Value \\ & 68.81 \\ & 8.70E-05 \\ & 9.50E+08 \\ & 1.5 \\ & 0.28 \\ & 7.10E-02 \\ & 1.13E-01 \\ & 0.15 \\ & 8.00E-06 \\ \end{array}$	Source WDNR Default Value S S WDNR Default Value S
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm²/sec) D _w - Water Diff usion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³)	$\begin{array}{c} 2 \times \rho_b \times D_A \\ ^3D_aH + \theta_w ^{107} \\ ^3b_cK_d + \theta_w + \theta_d \\ \hline & Value \\ & 68.81 \\ 8.70E-05 \\ 9.50E+08 \\ 1.5 \\ 0.28 \\ 7.10E-02 \\ 1.13E-01 \\ 0.15 \\ 8.00E-06 \\ 0.43 \\ \end{array}$	Source WDNR Default Value S W
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) D _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H - Henry's Law Constant (unitless) θ _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diff usion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³) K _d - Soil:Water Distribution Coefficient (L/kg)	2 x ρ _b x D _A 3 D _b H + θ _w 107 5 K _d + θ _w + θ _b Value 68.81 8.70E-05 9.50E+08 1.5 0.28 7.10E-02 1.13E-01 0.15 8.00E-06 0.43 4.66	Source WDNR Default Value S WDNR Default Value Koc x foc
Parameter Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless)	$\begin{array}{c} 2 \times \rho_b \times D_A \\ ^3D_aH + \theta_w ^{107} \\ ^3b_cK_d + \theta_w + \theta_d \\ \hline & Value \\ & 68.81 \\ 8.70E-05 \\ 9.50E+08 \\ 1.5 \\ 0.28 \\ 7.10E-02 \\ 1.13E-01 \\ 0.15 \\ 8.00E-06 \\ 0.43 \\ \end{array}$	Source WDNR Default Value S W

Calculated by: Roger Miller 12/21/98

Checked by: Italy 1-13-88

Note:

Tetrachloroethene Soil Ingestion Pathway (SFo)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

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SFo x 10^{-6} kg/mg x EF x IFs $IFs = \frac{IRc \times EDc}{BWc} + \frac{IRa \times EDa}{BWa} = 114$ Algorithm for Ingestion of Carcinogenic Contaminants in Industrial Soil Parameter Value Source TR - Target Cancer Risk Level (unitless) BWa - Average Body Weight For Adult (kg) 1 E-06 WDNR Default Value WDN												

Calculated by: Roger Miller 12/21/98

Checked by: " 12-7-

Note:

Tetrachloroethene

Soil Inhalation Pathway (SFi)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

-	m ivoli-iliuu:	strial (Residential) Soil
Parameter	Value	Source
IR - Target Cancer Risk Level (unitless)	1E-06	WDNR Default Value
BWa - Average Body Weight For Adult (kg)	70	WDNR Default Value
AT - Averaging Time (years)	70	WDNR Default Value
SFi - Slope Factor Inhalation (mg/kg-day) ⁻¹	2.0E-03	3
EF - Exposure Frequency (day/year)	350	WDNR Default Value
ED - Exposure Duration (year)	30	WDNR Default Value
IR - Inhalation Rate (m³/day)	20	WDNR Default Value
VF - Volatilization Factor (m³/kg)	2.56E+03	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
N.F.		
	/a x AT x 36	
SFi x EF x ED x	R x [(1/VF) -	+ Cp x 10 ^{.9} kg/μg)]
Algorithm for Inhalation of Carcinogenic Contaminants in	Industrial Sc	il
Parameter	Value	Source
TR - Target Cancer Risk Level (unitless)	1E-06	WDNR Default Value
BWa - Average Body Weight For Adult (kg)	70	WDNR Default Value
AT - Averaging Time (years)	70	WDNR Default Value
SFi - Slope Factor Inhalation (mg/kg-day) ⁻¹	2.0E-03	3
EF- Exposure Frequency (day/year)	250	WDNR Default Value
ED - Exposure Duration (year)	25	WDNR Default Value
IRw - Inhalation Rate for Adult Laborer (m ³ /day)	24	WDNR Default Value
VF - Volatilization Factor (kg/m³)	2.56E+03	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
SFi x EF x ED x I		+ Cp x 10 ⁻⁹ kg/μg)]
Volatilization Factor (m 3 /kg) = $\frac{Q/C \times (3.1 - 1)}{2}$	$\frac{1 \times D_A \times T)^{1/2}}{2 \times D_b \times D_A}$	$\times 10^{-4} \text{m}^2/\text{cm}^2 = \boxed{2.56\text{E}+03}$
$D_{\mathbf{A}} \text{ (cm}^2/\text{sec)} = [(\theta_a^{10}$	$^{3}D_{\mathbf{a}}H' + \theta_{\mathbf{w}}^{100}$	<u></u>
D _A (ciii /scc) =	$b_{\mathbf{k}}\mathbf{I} + \theta_{\mathbf{w}} + \theta_{\mathbf{w}}$	<u>Б., ун ј</u> н
•	- G-4 <u>-</u> - OW - O	
Parameter	Value	Source
O/C Inverse Many Consentration of		
Q/C - Inverse Mean Concentration at	68.81	WDNR Default Value
Q/C - Inverse Mean Concentration at Center of Source (g/m²-sec)/(kg/m³)	68.81	WDNR Default Value
	68.81 2.40E-03	
Center of Source (g/m ² -sec)/(kg/m ³) D _A - Apparent Diffusivity (cm ² /sec)		Calculation
Center of Source (g/m ² -sec)/(kg/m ³) D _A - Apparent Diffusivity (cm ² /sec) T - Exposure Intervals (sec)	2.40E-03 9.50E+08	Calculation WDNR Default Value
Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³)	2.40E-03 9.50E+08 1.5	Calculation WDNR Default Value WDNR Default Value
Center of Source $(g/m^2-\sec)/(kg/m^3)$ D_A - Apparent Diffusivity (cm^2/\sec) T - Exposure Intervals (sec) p_b - Soil Dry Bulk Density (g/cm^3) θ_a - Air Filled Porosity (cm^3/cm^3)	2.40E-03 9.50E+08 1.5 0.28	Calculation WDNR Default Value WDNR Default Value WDNR Default Value
Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) θ _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec)	2.40E-03 9.50E+08 1.5 0.28 7.20E-02	Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5
Center of Source $(g/m^2-sec)/(kg/m^3)$ D_A - Apparent Diffusivity (cm^2/sec) T - Exposure Intervals (sec) p_b - Soil Dry Bulk Density (g/cm^3) θ_a - Air Filled Porosity (cm^3/cm^3) D_a - Air Diffusion Coefficient (cm^2/sec) H - Henry's Law Constant (unitless)	2.40E-03 9.50E+08 1.5 0.28 7.20E-02 7.54E-01	Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 5
Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) q _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H - Henry's Law Constant (unitless) q _w - Volumetric Soil Moisture Content (cm³/cm³)	2.40E-03 9.50E+08 1.5 0.28 7.20E-02	Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5
Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) q _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H - Henry's Law Constant (unitless) q _w - Volumetric Soil Moisture Content (cm³/cm³)	2.40E-03 9.50E+08 1.5 0.28 7.20E-02 7.54E-01	Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 5
Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) q _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) q _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec)	2.40E-03 9.50E+08 1.5 0.28 7.20E-02 7.54E-01 0.15	Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 5
Center of Source $(g/m^2-sec)/(kg/m^3)$ D_A - Apparent Diffusivity (cm^2/sec) T - Exposure Intervals (sec) ρ_b - Soil Dry Bulk Density (g/cm^3) θ_a - Air Filled Porosity (cm^3/cm^3) D_a - Air Diffusion Coefficient (cm^2/sec) H - Henry's Law Constant (unitless) θ_w - Volumetric Soil Moisture Content (cm^3/cm^3) D_w - Water Diffusion Coefficient (cm^2/sec) D_w - Water Diffusion Coefficient (cm^3/sec) D_w - Total Soil Porosity (cm^3/cm^3)	2.40E-03 9.50E+08 1.5 0.28 7.20E-02 7.54E-01 0.15 8.20E-06 0.43	Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5
Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) 0 _a - Air Filled Porosity (cm³/cm³) D _a - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) 0 _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³) K _d - Soil:Water Distribution Coefficient (L/kg)	2.40E-03 9.50E+08 1.5 0.28 7.20E-02 7.54E-01 0.15 8.20E-06 0.43 0.93	Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5
Center of Source (g/m²-sec)/(kg/m³) D _A - Apparent Diffusivity (cm²/sec) T - Exposure Intervals (sec) p _b - Soil Dry Bulk Density (g/cm³) 0 ₄ - Air Filled Porosity (cm³/cm³) D ₄ - Air Diffusion Coefficient (cm²/sec) H' - Henry's Law Constant (unitless) 0 _w - Volumetric Soil Moisture Content (cm³/cm³) D _w - Water Diffusion Coefficient (cm²/sec) n - Total Soil Porosity (cm³/cm³)	2.40E-03 9.50E+08 1.5 0.28 7.20E-02 7.54E-01 0.15 8.20E-06 0.43	Calculation WDNR Default Value WDNR Default Value WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value 5 WDNR Default Value Koc x foc

Calculated by: Roger Miller 12/21/98

Checked by Jun Citry

Tetrachloroethene Soil Ingestion Pathway (RfD)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Algorithm for Ingestion of Noncarcinogenic Contaminants in Non-Industrial (Residential) Soil										
Parameter	Value	Source								
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value								
BWc - Average Body Weight for Child (kg)	15	WDNR Default Value								
AT - Averaging Time (years)	6	WDNR Default Value								
RfDo - Oral Reference Dose (mg/kg-day)	1.0E-02	1								
EF - Exposure Frequency (day/year)	350	WDNR Default Value								
EDc - Exposure Duration During Ages 1-6 (year)	- 6	WDNR Default Value								
IRc - Ingestion Rate of Soil Age 1-6 (mg/day)	200	WDNR Default Value								
Algorithm for Ingestion of Noncarcinogenic Contamina	x EF x ED x IRc	1								
Algorithm for Ingestion of Noncarcinogenic Contamina	ints in Industrial Soi									
Algorithm for Ingestion of Noncarcinogenic Contamina	nts in Industrial Soi Value	Source								
Algorithm for Ingestion of Noncarcinogenic Contamina Parameter THQ - Target Hazard Quotient (unitless)	nts in Industrial Soi Value	Source WDNR Default Value								
Algorithm for Ingestion of Noncarcinogenic Contamina Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg)	unts in Industrial Soi Value 1 70	Source WDNR Default Value WDNR Default Value								
Algorithm for Ingestion of Noncarcinogenic Contamina Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years)	Value 1 70 25	Source WDNR Default Value								
Algorithm for Ingestion of Noncarcinogenic Contamina Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day)	Value 1 70 25 1.0E-02	Source WDNR Default Value WDNR Default Value WDNR Default Value 1								
Algorithm for Ingestion of Noncarcinogenic Contamina Parameter THQ - Target Hazard Quotient (unitless) BWa - Average Body Weight For Adult (kg) AT - Averaging Time (years) RfDo - Oral Reference Dose (mg/kg-day) EF - Exposure Frequency (day/year)	Value 1 70 25 1.0E-02 250	Source WDNR Default Value WDNR Default Value WDNR Default Value I WDNR Default Value								
	Value 1 70 25 1.0E-02	Source WDNR Default Value WDNR Default Value WDNR Default Value 1								

Calculated by: Roger Miller 12/21/98

Checked by: i'en inchang = 12-09

Note:

Tetrachloroethene Soil Inhalation Pathway (RfC)

Carver Boat Corporation USTs #6 and 7 Pulaski, Wisconsin

Algorithm for Inhalation of Noncarcinogenic Contaminants	from Non-In	dustrial (Residential) Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT- Averaging Time (years)	30	WDNR Default Value
RfC - Reference Concentration (mg/m³)	3.9E-01	6
EF - Exposure Frequency (day/year)	350	WDNR Default Value
ED - Exposure Duration (year)	30	WDNR Default Value
VF - Volatilization Factor (m³/kg)	2.56E+03	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
	x AT x 365 d	
1/RfC x EF x E	D x [(1/VF) +	(Cp x 10 ⁻⁹ kg/μg)]
Algorithm for Inhalation of Noncarcinogenic Contaminant	s in Industria	l Soil
Parameter	Value	Source
THQ - Target Hazard Quotient (unitless)	1	WDNR Default Value
AT - Averaging Time (years)	25 ·	WDNR Default Value
RfC - Reference Concentration (mg/m³)	3.9E-01	6
EF - Exposure Frequency (day/year)	250	WDNR Default Value
ED - Exposure Duration (year)	25	WDNR Default Value
IRc - Inhalation Rate Correction for Adult Laborer (unitless)	1.2	WDNR Default Value
VF - Volatilization Factor (m³/kg)	2.56E+03	Calculation
Cp - Concentration of Particles less than 10 μm (μg/m³)	1.4	WDNR Default Value
) + (Cp x 10 ⁻⁹ kg/µg)]
Volatilization Factor (m 3 /kg) = $\frac{Q/C \times (3.1)}{2}$	$\frac{4 \times D_A \times T)^{12}}{2 \times \rho_b \times D_A}$	$\times 10^4 \text{m}^2/\text{cm}^2 = 2.56\text{E}+03$
$D_{A} (cm^{2}/sec) = [(\theta_{a}^{1/2})]$	$\frac{D_{a}H' + \theta_{w}^{10/2}}{\rho_{b}K_{d} + \theta_{w} + \theta_{w}}$	$\frac{^{3}D_{w}/n^{2}}{n} = 2.40E-03$
	β β K4 + θ w + θ	₌ H
Parameter	Value	Source
Q/C - Inverse Mean Concentration at	68.81	WDNR Default Value
Center of Source (g/m ² -sec)/(kg/m ³)		
D _A - Apparent Diffusivity (cm ² /sec)	2.40E-03	Calculation
T - Exposure Intervals (sec)	9.50E+08	WDNR Default Value
ρ _b - Soil Dry Bulk Density (g/cm ³)	1.5	WDNR Default Value
θ_a - Air Filled Porosity (cm ³ /cm ³)		
	0.28	WDNR Default Value
D _a - Air Diffusion Coefficient (cm ² /sec)	7.20E-02	5
H' - Henry's Law Constant (unitless)	7.54E-01	5
$\theta_{\rm w}$ - Volumetric Soil Moisture Content (cm ³ /cm ³)	0.15	WDNR Default Value
Dw - Water Diffusion Coefficient (cm²/sec)	8.20E-06	5
- 	ı	WDNR Default Value
	0.43	WDINK Delauit Value
n - Total Soil Porosity (cm³/cm³)	0.43 0.93	Koc x foc
n - Total Soil Porosity (cm³/cm³) K _d - Soil:Water Distribution Coefficient (L/kg)	0.93	I .
n - Total Soil Porosity (cm³/cm³)	1	Koc x foc

Calculated by: Roger Miller 12/21/98

Checked by: Joss Categ

Note:

Pulaski, Wisconsin

Acetone--Groundwater Pathway

Site-Specific Residual Contaminant Level Calculation

Parameter	Value	Units	Description	Source
K _{oc}	0.575	L/kg	Organic Carbon Partition Coefficient	EPA Soil Screening Guidance ¹
f_{oc}	0.0036	g/g	Fraction Organic Carbon Content	Average TOCSite UST #3
K _d	0.0021	L/kg	Soil:Water Distribution Coefficient	K _{oc} x f _{oc}
θ	0.2	cm ³ -H ₂ 0/cm ³ -soil	Volumetric Water Content, Vadose Zone Soils	WDNR Default Value
n	0.43	cm ³ -void/cm ³ -soil	Porosity	WDNR Default Value
d	152.4	cm	Groundwater Mixing Zone Thickness	WDNR Default Value
R	25.4	cm	Annualized Groundwater Recharge Rate	WDNR Default Value
Рь	1.5	g-soil/cm³-soil	Soil Bulk Density	WDNR Default Value
ES	1000	μg/L	Enforcement Standard	NR 140

Calculate Site-Specific Residual Contaminant Level (RCL)

$$DAF = d/R\theta x (K_d x \rho_b + n)$$

DAF

13.0

Dilution Attenuation Factor

$$RCL_{ES} = ES \times 10^{-3}_{mg/\mu g} \times (K_d + \theta/\rho_b) \times DAF$$

RCL_{ES} 1.8 mg/kg

Acetone Site-Specific Residual Contaminant Level using ES

Calculated by: Roger Miller 12/21/98

Checked by: LUTN 122: 13

- I) Site-Specific Residual Contaminant Level (RCL) equation and default values from WDNR Publication RR-519-97, "Soil Cleanup Levels for Polycyclic Aromatic Hydrocarbons (PAHs)--Interim Guidance" (April 1997).
- 2) NR 140 Enforcement Standard from s. NR140.10, Wisconsin Administrative Code (October 1996).
- 3) ¹USEPA, 1996, Soil Screening Guidance: Technical Background Document: Publication EPA/540/R-95/128, Washington, D. C.

Pulaski, Wisconsin

Methyl tert-butyl ether--Groundwater Pathway

Site-Specific Residual Contaminant Level Calculation

Parameter	Value	Units	Description	Source
Koc	12	L/kg	Organic Carbon Partition Coefficient	ASTM RBCA ¹
f_{oc}	0.0036	g/g	Fraction Organic Carbon Content	Average TOCSite UST #3
K _d	0.0432	L/kg	Soil:Water Distribution Coefficient	K _{oc} x f _∞
θ	0.2	cm ³ -H ₂ 0/cm ³ -soil	Volumetric Water Content, Vadose Zone Soils	WDNR Default Value
n	0.43	cm ³ -void/cm ³ -soil	Porosity	WDNR Default Value
d	152.4	cm	Groundwater Mixing Zone Thickness	WDNR Default Value
R	25.4	cm	Annualized Groundwater Recharge Rate	WDNR Default Value
Рь	1.5	g-soil/cm ³ -soil	Soil Bulk Density	WDNR Default Value
ES	60	μg/L	Enforcement Standard	NR 140

Calculate Site-Specific Residual Contaminant Level (RCL)

DAF =
$$d/R\theta x (K_d x \rho_b + n)$$

DAF

14.8

Dilution Attenuation Factor

$$RCL_{ES} = ES \times 10^{-3}_{mg/\mu g} \times (K_d + \theta/\rho_b) \times DAF$$

RCL_{FS} 0.16 m

0.16 mg/kg

MTBE Site-Specific Residual Contaminant Level using ES

Calculated by: Roger Miller 12/21/98

Checked by: (4) 12/73/93

- 1) Site-Specific Residual Contaminant Level (RCL) equation and default values from WDNR Publication RR-519-97, "Soil Cleanup Levels for Polycyclic Aromatic Hydrocarbons (PAHs)--Interim Guidance" (April 1997).
- 2) NR 140 Enforcement Standard from s. NR140.10, Wisconsin Administrative Code (October 1996).
- 3) ¹ASTM, 1995, Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites. (Ε1739-95^{ε1}).

Pulaski, Wisconsin

Tetrachloroethene--Groundwater Pathway

Site-Specific Residual Contaminant Level Calculation

Parameter	Value	Units	Description	Source
K _{oc}	155	L/kg	Organic Carbon Partition Coefficient	EPA Soil Screening Guidance ¹
f_{oc}	0.0036	g/g	Fraction Organic Carbon Conterd	Average TOCSite UST #3
K _d	0.5580	L/kg	Soil:Water Distribution Coefficient	K _{oc} x f _{oc}
θ	0.2	cm ³ -H ₂ 0/cm ³ -soil	Volumetric Water Content, Vadose Zone Soils	WDNR Default Value
n	0.43	cm ³ -void/cm ³ -soil	Porosity	WDNR Default Value
d	152.4	cm	Groundwater Mixing Zone Thickness	WDNR Default Value
R	25.4	cm	Annualized Groundwater Recharge Rate	WDNR Default Value
ρ_b	1.5	g-soil/cm³-soil	Soil Bulk Density	WDNR Default Value
ES	5	μg/L	Enforcement Standard	NR 140

Calculate Site-Specific Residual Contaminant Level (RCL)

DAF =
$$d/R\theta \times (K_d \times \rho_b + n)$$

DAF

38.0

Dilution Attenuation Factor

$$RCL_{ES} = ES \times 10^{-3}_{mg/\mu g} \times (K_d + \theta/\rho_b) \times DAF$$

 RCL_{ES}

0.13 mg/kg

Tetrachloroethene Site-Specific Residual Contaminant Level using ES

Calculated by: Roger Miller 12/21/98

Checked by: [17] 12/23/93

- 1) Site-Specific Residual Contaminant Level (RCL) equation and default values from WDNR Publication RR-519-97, "Soil Cleanup Levels for Polycyclic Aromatic Hydrocarbons (PAHs)--Interim Guidance" (April 1997).
- 2) NR 140 Enforcement Standard from s. NR140.10, Wisconsin Administrative Code (October 1996).
- 3) ¹USEPA, 1996, Soil Screening Guidance: Technical Background Document: Publication EPA/540/R-95/128, Washington, D. C.

Pulaski, Wisconsin

Styrene--Groundwater Pathway Site-Specific Residual Contaminant Level Calculation

Parameter	Value	Units	Description	Source
Koc	776	L/kg	Organic Carbon Partition Coefficient	EPA Soil Screening Guidance
f_{oc}	0.0036	g/g	Fraction Organic Carbon Content	Average TOCSite UST #3
K _d	2.7936	L/kg	Soil:Water Distribution Coefficient	K _{oc} x f _{oc}
θ	0.2	cm ³ -H ₂ 0/cm ³ -soil	Volumetric Water Content, Vadose Zone Soils	WDNR Default Value
n	0.43	cm ³ -void/cm ³ -soil	Porosity	WDNR Default Value
d	152.4	cm	Groundwater Mixing Zone Thickness	WDNR Default Value
R	25.4	cm	Annualized Groundwater Recharge Rate	WDNR Default Value
ρ_{b}	1.5	g-soil/cm ³ -soil	Soil Bulk Density	WDNR Default Value
ES	100	μg/L	Enforcement Standard	NR 140

Calculate Site-Specific Residual Contaminant Level (RCL)

$$DAF = d/R\theta x (K_d x \rho_b + n)$$

DAF

138.6

Dilution Attenuation Factor

$$RCL_{ES} = ES \times 10^{-3}_{mg/\mu g} \times (K_d + \theta/\rho_b) \times DAF$$

RCL_{ES}

Styrene Site-Specific Residual Contaminant Level using ES

Calculated by: Roger Miller 12/21/98

Checked by: Wil 12/23/93

- 1) Site-Specific Residual Contaminant Level (RCL) equation and default values from WDNR Publication RR-519-97, "Soil Cleanup Levels for Polycyclic Aromatic Hydrocarbons (PAHs)--Interim Guidance" (April 1997).
- 2) NR 140 Enforcement Standard from s. NR140.10, Wisconsin Administrative Code (October 1996).
- 3) ¹USEPA, 1996, Soil Screening Guidance: Technical Background Document: Publication EPA/540/R-95/128, Washington, D. C.

APPENDIX B

Soil Borings Logs

State of Wisconsin Department of Natural Resources Department of Natural Resources Emergency Response Wastewater Superfund									Unde	r Resou	l Tanks				Soil Bo Form 44	_			v. 5-92	
Facility	-				•	7110110			License/Permit/Monitorin					ing Number Boring Number						
				ration Plan									l .	B-6-1						
STS	Consu	• •		me and name B. Vande I		-	t No.		Date Drilling Started 07/17/98				Date	Date Drilling Completed 07/17/98				Drilling Method Solid-Stem Auger		
23379XA DNR Facility Well No. WI Unique Well No. Common Well Name									Fin	Final Static Water Level				Surface Elevation				Borehole Diameter		
Boring	Locati	on							<u> </u>			t MSL	Loca		Feet M		plicable	4.0 In	nches	
State F	Plane	on of NI	F 1	/4 of Section		N, E 6 T 25 N, R19				Lat Long	011				_	N		_	□ E	
County		01 141	1	74 of Section	U	1 23		DNR Co			Civil T	Town/Ci	ty/ or			3		reet L	<u> w</u>	
Brov								05			Pula									
Sam															Soil	Prope	rties		-	
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet		Soil/Roo nd Geol Each		rigin F			USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments	
			+-	Fill: Con	ncrete					-				0 03						
1	24		-46810	Fill: Lig Brownish silty sand (Soil was excluding 7.0 feet) End of B Boring ac by solid-s Installed temporar	red silty seams - classified split spo oring dvanced f stem auge 2-inch dia	sandy of moist to from 0.0 from 0.0 from to refameter to	clay - co o wet a auger c n 5.0 fo O feet to usal	occasion t 6.5 fee uttings, eet to	eet										SS	
I hereby Signatur				ormation on the		true and	correct		est of Firm				tonto	7 4.4					, ,	
	Signature William F. Norl								- 41111		1035 K	Consul epler D 0-468-1	rive, C	Green B	ay, Wis 0-468-3	consin 312				

	of Wise		ral Res	ources [o: la Waste rgency Resp	onse	□ U₁	ndei		i Tanks		Soil Boring Log Information Form 4400-122 Rev. 5-92								
					□ Wast □ Supe					Resou	rces					Pag	e 1	of	1	
	-	ct Nam		ation Plant 4		Tund					ermit/M	lonitorii	Boring Number B-6-2							
Boring	g Drille	d By (F	irm naı	me and name of	crew cl				Date Drilling Started					Drillin	g Com		Drilling Method			
	Const	iltants	Ltd	B. Vande Hey	- STS	Project No).		07/17/98					07/17/98				Solid-Stem Auger		
DNR Facility Well No. WI Unique Well No. Common Well Name										al Stati	c Water Fee	t MSL	Surf	Surface Elevation Feet MSL				Borehole Diameter 4.0 Inches		
	Locat	ion	,			N E			1	Lat	011	,	Loca	l Grid	Locatio		plicabl	e)		
State		of NE	č 17.	4 of Section		N, E T 25 N, 1	p10	F	, ,	ong	011	1		Fe	et 🗌			Feet	⊔ E □ W	
County	у	01 142	<u> </u>	4 of Section	<u> </u>	1 20 11,1		R Cou			Civil T Pula	own/C	ity/ or					-	<u> </u>	
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Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet							s n	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments	
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			-2	Fill: Light	brown	fine silty sa	and													
!			-4						_											
Т			- -																	
1	18		<u></u> −6	Brownish re			e small	grave	el										SS	
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			- -10	7.0 leet)																
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				Boring adva			et to 10).5 fee	et											
				by solid-ster Installed 2-in			edule 4	0 PV	c l											
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I hazat	1. game? (to thee .	ha infi	mation on this	formt!	teno and	mact *- 1	the I		1- ·	onde 4								1	
I hereby certify that the information on this form is true and correct to the best of my king signature																				
J	Signature Williamt. Now										1035 K	epler D	rive, G	reen Ba						
djp	djp23379											0-468-1								

State of Wisconsin Department of Natural Resources Solida Waste Emergency Respo								se [Unde	Waste ergroun		3			Soil Bo Form 44	_	Log Ir		ation v. 5-92	
				_	」Waste]Super				」Wate]Othe	r Resoi r	ırces					Pag	e 1	of	1	
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DNR Facility Well No. WI Unique Well No. Common Well Name									Fi	nal Stat		r Level et MSL	Surf	ace Ele	vation Feet M		orehole	Diame 4.0 I		
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				End of Borin Boring advan by solid-sten Installed 2-in temporary m	nced fr n auger nch dia	r meter	Schedu	ıle 40	PVC											
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Signature William F. Novel								Firn	n		Consul		reen B	ay, Wis	consin					

State of Wisconsin Department of Natural Resources					Route To: Solida Waste Haz. Waste Haz. Waste Underground Tanks Wastewater Waste Resources							s			Soil Bo		Log Ir		ation v. 5-92	
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Signature Firm STS											Consul	tants	Ltd.							
William F. Nort										1035 K	Cepler D:	rive, G	reen Ba							

State of Wisconsin Department of Natural Resources					oute To: Solida Was Emergency Wastewater	Response	□ w	nder ater		i Tanks	ı			Soil Bo Form 44	00-122		Re	v. 5-92
Facility	y/Proje	ct Nam	ıe	L	Superfund		<u> </u>		nse/P	ermit/M	lonitorii	ng Nun	ıber	Boring		er 1	of	1
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Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet		Duen Majo	ı omt			S	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
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APPENDIX C

Soil and Groundwater Analytical Reports

ENVIROSCAN SERVICES 301 WEST MILITARY ROAD ROTHSCHILD, WI 54474

TELEPHONE 715-359-7226 FACSIMILE 715-355-3221

December 1, 1998

STS Consultants 1035 Kepler Drive Green Bay, WI 54311

Attn: Pat Mccarey

Re: 23379XA

Please find enclosed the analytical results for the sample(s) received November 17, 1998.

The chain of custody document is enclosed.

If you have any questions about the results, please call. Thank you for using US Filter/Enviroscan for your analytical needs.

Sincerely,

US Filter/Enviroscan

James R. Salkowski

General Manager



STS Consultants 1035 Kepler Drive Green Bay, WI 54311

CUST NUMBER: 23379XA SAMPLED BY: Client
DATE REC'D: 11/17/98
REPORT DATE: 12/01/98
PREPARED BY: JRS

PREPARED DI.

Attn: Pat McCarey

	Units	Reporting Limit	B-6-6 1-1.5 	Qualifiers	Date <u>Analyzed</u>	_ <u>B</u> y
MOSA21-2 Total Solids	%	-	92.50		11/25/98	SKM



STS Consultants 1035 Kepler Drive Green Bay, WI 54311

Attn: Pat Mccarey

Client Sample

CUST NUMBER: 23379XA
SAMPLED BY: Client
DATE REC'D: 11/17/98
REPORT DATE: 12/01/98
PREPARED BY: JRS
REVIEWED BY:

B-6-6 1-1.5	, Enviroscan Analytical	# 55607, Results are	in Units of mg/kg
			Ouglity

Quality
Cambaai

		LUST	LUST		RI	ESULT	•	Control	Analysis
Method EPA 8021	MDL	LOD	LOQ		Wet		Dry	Qualifiers	Date
Tetrachloroethylene	0.002	0.025	0.060	<	0.025	<	0.027		11/22/98



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue Morton Grove, Illinois 60053-3203 847-967-6666 FAX: 847-967-6735

LABORATORY REPORT

190026

Page 1 of 1

US Filter/Enviroscan 301 W. Military Road Rothschild, WI 54474

Report Date: 12/1/98

Sample Received On Ice: 11/20/98

Date Sampled: 11/20/98

Project No.: 11055607

Sample Description: Soil Grab - 11055607

Sample No.: 056399

Date

Analyte Result Completed By Method

TOTAL TOTAL TOTAL PROPERTY OF THE PROPERTY OF

Total Organic Carbon 34700 11/25/98 RG 9060(6)

Wisconsin Certified Laboratory #999888890.

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety

LABORATORY DIRECTOR



Sample Receipt Report

Cher	Tieen Buy Date Received: 11/98
	ytical No.: 11055607 Through
Chec	ck all deviations from EPA or WDNR sample protocol.
[]	Sample(s) received at°C which is above the EPA and WDNR limit of 4°C.
[]	VOC vial(s) received with headspace. Explain:
[]	Sample(s) received in bottles not furnished by U.S.FILTER/ENVIROSCAN. Preservation method, if used, is unknown.
[]	Sample(s) not properly preserved per EPA/WDNR protocol for the following:
[]	Sample(s) received beyond EPA holding time for:
[]	Sample date/time not supplied by client. Actual holding time unknown.
[]	GRO/PVOC/VOC/DRO (circle appropriate) sample(s) are <19.5 gms and this report is the flag for that information. Sample(s) under-weight:
ťĺ	GRO/PVOC/VOC (circle appropriate) sample(s) were between 26.4-35.4 gms so methanol was added in a 1:1 ratio. Samples(s) included: No 55 607 +2 ml
[]	GRO/PVOC/VOC/DRO (circle appropriate) sample(s) were >35.4 gms and are required to be rejected. Sample(s) included:
[]	Other:
Clie	nt contact concerning the above deviations:
Clier devia	contact name) notified of the above deviation(s) of the above ation(s) on//at:AM/PM by(signature)
and 4	(signature)
anu t	the client ordered: [] Proceed with analyses as ordered. [] Proceed with analyses after taking the following corrective action:
	[] Do NOT proceed with the analyses.

CHAIN OF CUSTODY RECORD

Instructions to Laboratory: Forward completed original to STS with analytical results. Retain green copy.

Nº 24600



Contact Person Phone No Project No Project Name _	प्राप्त			C	Offic		xA						[Rush Verbal Other		Laboratory Contact Person Phone No Results Due	£1	V	in	USCA		
Sample I.D.		ate	Time	Grab	Composite	No. of Containers	Sample Type (Water, soil, air, sludge, etc.)	Y	Z	Ambient Gd		d Data	Special Cond.		Analysis f	s Re	equest PETRACHLUS	27 A		nclu	ıde Major (on Sample Contaminants)	
B-6-6	1.0 %	5		×		4	SULL	λ			1	05	550	17	TOC 4	4	TETRACHLO.	411	K/K	Æ	NE		
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Received for la	b by: 🇘] G.	ايلا	ul	/- <u>i-u</u>		Date //- /7	7-9	5		Т	ime C	9:40	7	Relinquished by:	:		Date)			Time	
Laboratory Co	mment	ts O	nly:	S	eals	s Inta	ct Upon Red	eip	t?			Yes	□ No		□N/A on	, ;	ce						
Final Disposition:							<u></u>								Comments (Wea	eath	her Conditions, Precau	tions, F	lazaro	ds)	:		
														\dashv						-	5 t- 5 Cg	22	
														4							le	667	
																						210753	
Distribution: Origina	al and Gr	een -	Labo	rato	ry \	Yellov	v-As needed	Pink	-Tra	nspo	orter	Gold	denrod -	STS	S Project File								

STS Consultants Ltd.
Consulting Engineers

9/94cp10k



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Project #:

23379XA

Project:

Carver Boat Corp

Sample ID:

B-6-1

Lab Code:

5022497D

Sample Type: Water

Report Date:

01-Sep-98

Sample Date:

13-Aug-98

Test	Result	LOD	LOQ	Unit	рН	Dilution Factor	Date Analyzed:	Analyzed By:	QC Code
NITROGEN (NITRATE/NITRITE) EPA 300.0	< 0.014	0.014	0.05	MG/L	0.8	10	17-Aug-98	TJW	1
SULFATE EPA 300.0	18	0.024	0.079	MG/L	7.0	1	21-Aug-98	TJW	1

LOD = Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ.

LOQ = Limit of Quantitation

QC SUMMARY

CODE:

1

All laboratory QC requirements were met for this sample.



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

Method 8260 Volatile Organic Compounds

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date:

01-Sep-98

Analyzed By:

CJR

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/L	UG/L	Factor
Acetone	11	0.28	0.93	1
Benzene	0.53 "J"	0.25	0.85	1
Bromobenzene	< 0.23	0.23	0.77	1
Bromodichloromethane	< 0.25	0.25	0.84	1
n-Butylbenzene	< 0.43	0.43	1.4	1
sec-Butylbenzene	< 0.37	0.37	1.2	1
tert-Butylbenzene	< 0.4	0.4	1.3	1
Carbon Tetrachloride	< 0.48	0.48	1.6	1
Chlorobenzene	< 0.26	0.26	0.87	1
Chloroethane	< 0.15	0.15	0.51	1
Chloroform	< 0.26	0.26	0.87	1
Chloromethane	< 0.29	0.29	1	1
2-Chlorotoluene	< 0.31	0.31	1	1
4-Chlorotoluene	< 0.27	0.27	0.91	1
1,2-Dibromo-3-Chloropropane	< 0.51	0.51	1.7	1
Dibromochloromethane	< 0.31	0.31	1	1
1,2-Dichlorobenzene	< 0.28	0.28	0.93	1
1,3-Dichlorobenzene	< 0.34	0.34	1.1	1
1,4-Dichlorobenzene	< 0.26	0.26	0.87	1
Dichlorodifluoromethane	< 0.54	0.54	1.8	1
1,1-Dichloroethane	< 0.32	0.32	1.1	1
1,2-Dichloroethane	< 0.14	0.14	0.48	1
1,1-Dichloroethene	< 0.61	0.61	2	1
cis-1,2-Dichloroethene	< 0.34	0.34	1.1	1
trans-1,2-Dichloroethene	< 0.46	0.46	1.5	1
1,2-Dichloropropane	< 0.26	0.26	0.86	1
1,3-Dichlorooropane	< 0.23	0.23	0.76	1

Dibromofluoromethane Sur	102 % Rec.
1,2-Dichloroethane-d4 Sur	88 % Rec.
Toluene-d8 Sur	88 % Rec.
4-Bromofluorobenzene Sur	82 % Rec.

Project #: Project:

23379XA

Carver Boat Corp

Sample ID: Lab Code:

B-6-1 5022497D

Sample Type: Sample Date:

Water

Date Analyzed:

13-Aug-98 24-Aug-98

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/L	UG/L	Factor
2,2-Dichloropropane	< 0.53	0.53	1.8	1
Di-Isopropyl ether	< 0.21	0.21	0.69	1
Ethylbenzene	< 0.32	0.32	1.1	1
EDB (1,2-Dibromoethane)	< 0.24	0.24	0.82	1
Hexachlorobutadiene	< 0.33	0.33	1.1	1
Isopropylbenzene	< 0.33	0.33	1.1	1
p-Isopropyltoluene	< 0.34	0.34	1.1	1
Methylene chloride	< 1	1	3.3	1
MTBE	< 0.21	0.21	0.69	1
Naphthalene	< 0.73	0.73	2.4	1
n-Propylbenzene	< 0.36	0.36	1.2	1
Styrene	60	0.75	2.5	1
1,1,2,2-Tetrachloroethane	< 0.29	0.29	1	1
Tetrachloroethene	< 0.56	0.56	1.9	1
Toluene	0.6 "J"	0.38	1.3	1
1,2,3-Trichlorobenzene	< 0.16	0.16	0.54	1
1,2,4-Trichlorobenzene	< 0.17	0.17	0.57	1
1,1,1-Trichloroethane	< 0.35	0.35	1.2	1
1,1,2-Trichloroethane	< 0.2	0.2	0.66	1
Trichloroethene	< 0.39	0.39	1.3	1
Trichlorofluoromethane	< 0.52	0.52	1.7	1
1,2,4-Trimethylbenzene	< 0.34	0.34	1.1	1
1,3,5-Trimethylbenzene	< 0.36	0.36	1.2	1
Vinyl Chloride	< 0.32	0.32	1.1	1
m&p-Xylene	< 0.67	0.67	2.2	1
o-Xylene	0.56 "J"	0.37	1.2	1

LOD = Limit of Detection

GCMS #12

LOQ = Limit of Quantitation QC Batch #

120237

Sample pH 1.8

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #: Sample ID: 23379XA B-6-1 Report Date: Lab Code: 01-Sep-98 5022497D

ANALYTE	INITIAL	KNOWN	INT STD	METHOD	LCS	MATRIX	MATRIX
하다 그 아무를 가게 되었다.	CALIBRATION	STANDARD	AREA %	BLANK	SPIKE	SPIKE	SPIKE RPD
Acetone	Р	Р	P	P	P	P	P
Benzene	P	P	P	Р	P	P	P
Bromobenzene	P	Р	P	Р	P	P	P
Bromodichloromethane	P	P	P	P	P	Р	P
n-Butylbenzene	P	Р	P	P	P	Р	l P
sec-Butylbenzene	P	Р	P	P	P	Р	P
tert-Butylbenzene	P	P	P	P	P	Р	P
Carbon Tetrachloride	P	Р	P	P	P	Р	P
Chlorobenzene	P	Р	P	P	P	Р	P
Chloroethane	P	Р	P	P	P	Р	l P
Chloroform	ĺ P I	Р	Р	Р	l P ¦	Р	P
Chloromethane	P	Р	P	P	P	Р	P
2-Chlorotoluene	P	P	P	P	P	Р	P
4-Chlorotoluene	P	P	P	P	F	F	P
1,2-Dibromo-3-Chloropropane	P	Р	P	P	P	P	P
Dibromochloromethane	P	P	P	P	P	P	P
1.2-Dichlorobenzene	P	P	P	P	P	P	P
1,3-Dichlorobenzene	P	P	P	P	P	P	P
1.4-Dichlorobenzene	P	P	P	P	P \	P	P
Dichlorodifluoromethane	P	P	P	P	P	P	P
1,1-Dichloroethane	P	P	P	P	P	P	P
1.2-Dichloroethane	P	P	P	P	P	P	P
1,1-Dichloroethene	P	P	P	P	P	P	P
cis-1.2-Dichloroethene	P	P	P	P P	P	P	P
rans-1.2-Dichloroethene	P	P	P	P	P	P	P
1,2-Dichloropropane	P	P	P	P	P	P	P
1,3-Dichloropropane	P	P	P	P	P	P	P
2,2-Dichloropropene	P	P	P	P	P	P.	P
Di-isopropyl Ether	P	F	P	P	F	F	P
Ethylbenzene	P	P	P	P	P	P	P
EDB (1,2-Dibromoethane)	P	P	P	P	P	P	P
Hexachlorobutadiene	P	P	P	P	P	P	P
sopropylbenzene	P	P	P	Р	P	P	P.
o-Isopropyltoluene	P	P	P	P	P	P	P
Methylene Chloride	i i	P	P	P	<u>'</u> P	P	P
MTBE	P	p	P	P	P	P	P
Naphthalene	P	P	P	P	P	P	P
n-Propylbenzene	P	P	P	P	P	P	P
Styrene	P	P	P	P	P	P	P
,1,2,2-Tetrachloroethane	P	P	P	P	P	P	P
Tetrachloroethene	P	P	P	P	P	P	P
Toluene	P	P	, P	, P	P	P	P
.2.3-Trichlorobenzene	P	P	, P	P	p	P	P
.2.4-Trichlorobenzene	P	P	P	P	'p	P	P
1,1-Trichloroethane	P	P	P	P	P	Р	P
.1.2-Trichloroethane	P	P	P	P	P	P	P
richloroethene	P	P	P	P	Р	P	P
richlorofluoromethane	P	P	P	P	P	P	P
,2,4-Trimethylbenzene	P	P	P	P	P	F i	P
,3,5-Trimethylbenzene	P	P	P	P	P	P	P
/inyl Chloride	P	P	P	P	P	P	P
-	P	P	P	P	-		•
n&p-Xylene		·i	· ·		P	P	P
-Xylene	Р	Р!	P	P	Р!	P	Р

SPCC 1,1-Dichloroethane P
SPCC 1,1,2,2-Tetrachloroethane P
SPCC Bromoform P
SPCC Chlorobenzene P
SPCC Chloromethane P

QC Batch # 120237
F = Failed QC limits.
P = Passed QC limits.
NA = Not Applicable

Authorized Signature

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1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Project #:

23379XA

Project:

Carver Boat Corp

Sample ID:

B-6-2

Lab Code:

5022497E

Sample Type: Water

Report Date:

01-Sep-98

Sample Date:

13-Aug-98

Test	Result	LOD	LOQ	Unit	рН	Dilution Factor	Date Analyzed:	Analyzed By:	QC Code
NITROGEN (NITRATE/NITRITE) EPA 300.0	< 0.014	0.014	0.05	MG/L	0.8	10	17-Aug-98	TJW	1
SULFATE EPA 300.0	19	0.024	0.079	MG/L	7.2	1	21-Aug-98	TJW	1

LOD = Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ.

LOQ = Limit of Quantitation

QC SUMMARY

CODE:

1

All laboratory QC requirements were met for this sample.



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

Method 8260 Volatile Organic Compounds

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date: Analyzed By: 01-Sep-98

CJR

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/L	UG/L	Factor
Acetone	1.1	0.28	0.93	1
Benzene	< 0.25	0.25	0.85	1
Bromobenzene	< 0.23	0.23	0.77	1
Bromodichloromethane	< 0.25	0.25	0.84	1
n-Butylbenzene	< 0.43	0.43	1.4	1
sec-Butylbenzene	< 0.37	0.37	1.2	1
tert-Butylbenzene	< 0.4	0.4	1.3	1
Carbon Tetrachloride	< 0.48	0.48	1.6	1
Chlorobenzene	< 0.26	0.26	0.87	1
Chloroethane	< 0.15	0.15	0.51	1
Chloroform	< 0.26	0.26	0.87	1
Chloromethane	< 0.29	0.29	1	1
2-Chlorotoluene	< 0.31	0.31	1	1
4-Chlorotoluene	< 0.27	0.27	0.91	1
1,2-Dibromo-3-Chloropropane	< 0.51	0.51	1.7	1
Dibromochloromethane	< 0.31	0.31	1	1
1,2-Dichlorobenzene	< 0.28	0.28	0.93	1
1,3-Dichlorobenzene	< 0.34	0.34	1.1	1
1,4-Dichlorobenzene	< 0.26	0.26	0.87	1
Dichlorodifluoromethane	< 0.54	0.54	1.8	1
1,1-Dichloroethane	< 0.32	0.32	1.1	1
1,2-Dichloroethane	< 0.14	0.14	0.48	1
1,1-Dichloroethene	< 0.61	0.61	2	1
cis-1,2-Dichloroethene	< 0.34	0.34	1.1	1
trans-1,2-Dichloroethene	< 0.46	0.46	1.5	1
1,2-Dichloropropane	< 0.26	0.26	0.86	1
1,3-Dichloropropane	< 0.23	0.23	0.76	1

Dibromofluoromethane Sur	103	% Rec.
1,2-Dichloroethane-d4 Sur	88	% Rec.
Toluene-d8 Sur	87	% Rec.
4-Bromofluorobenzene Sur	81	% Rec.

Project #: 23379XA Project: Carver Boat Corp Sample ID: B-6-2 Lab Code: 5022497E Sample Type: Water

Sample Date: 13-Aug-98 24-Aug-98 Date Analyzed:

ANALYTE	RESULT	LOD	LOQ	Dilution
	.4(13)	UG/L	UG/L	Factor
2,2-Dichloropropane	< 0.53	0.53	1.8	1
Di-Isopropyl ether	< 0.21	0.21	0.69	1
Ethylbenzene	< 0.32	0.32	1.1	1
EDB (1,2-Dibromoethane)	< 0.24	0.24	0.82	1
Hexachlorobutadiene	< 0.33	0.33	1.1	1
Isopropylbenzene	< 0.33	0.33	1.1	1
p-Isopropyltoluene	< 0.34	0.34	1.1	1
Methylene chloride	< 1	1	3.3	1
MTBE	< 0.21	0.21	0.69	1
Naphthalene	< 0.73	0.73	2.4	1
n-Propylbenzene	< 0.36	0.36	1.2	1
Styrene	20	0.74	2.5	1
1,1,2,2-Tetrachloroethane	< 0.29	0.29	1	1
Tetrachloroethene	< 0.56	0.56	1.9	1
Toluene	< 0.38	0.38	1.3	1
1,2,3-Trichlorobenzene	< 0.16	0.16	0.54	1
1,2,4-Trichlorobenzene	< 0.17	0.17	0.57	1
1,1,1-Trichloroethane	< 0.35	0.35	1.2	1
1,1,2-Trichloroethane	< 0.2	0.2	0.66	1
Trichloroethene	< 0.39	0.39	1.3	1
Trichlorofluoromethane	< 0.52	0.52	1.7	1
1,2,4-Trimethylbenzene	< 0.34	0.34	1.1	1
1,3,5-Trimethylbenzene	< 0.36	0.36	1.2	1
Vinyl Chloride	< 0.32	0.32	1.1	1
m&p-Xylene	< 0.67	0.67	2.2	1
o-Xylene	< 0.37	0.37	1.2	1

LOD = Limit of Detection

LOQ = Limit of Quantitation

QC Batch #

120237

Sample pH

1.8

GCMS #12

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #: Sample ID: 23379XA B-6-2 Report Date: Lab Code: 01-Sep-98 5022497E

ANALYTE INITIAL KNOWN INT STD METHOD LCS MATRIX MATRIX CALIBRATION STANDARD BLANK SPIKE SPIKE SPIKE RPD AREA % Acetone P P P Benzene P P P Р Bromobenzene PPPPPP Bromodichloromethane n-Butylbenzene P P P P P P P P P sec-Butylbenzene tert-Butylbenzene Carbon Tetrachloride P P P P P P P Chlorobenzene P P P P Chloroethane Chloroform P P P P P P P P P P P P Ρ Chloromethane P P 2-Chlorotoluene 4-Chlorotoluene FPPPPP 1,2-Dibromo-3-Chloropropane P P P Dibromochloromethane P P 1.2-Dichlorobenzene 1,3-Dichlorobenzene P P P P P P P 1,4-Dichlorobenzene
Dichlorodifluoromethane P P P P P P P P 1,1-Dichloroethane 1.2-Dichloroethane P P P P P P 1.1-Dichloroethene PP cis-1,2-Dichloroethene trans-1,2-Dichloroethene P P P P P P 1 2-Dichloropropane 1,3-Dichloropropane PPFPPPPP 2,2-Dichloropropane P F P P F P P P P Di-isopropyl Ether Ethylbenzene EDB (1,2-Dibromoethane) P P P P P P P P Hexachlorobutadiene Isopropylbenzene P P P P P P P P P P P P P Methylene Chloride MTBE Р Naphthalene P P P P P P n-Propylbenzene Styrene 1,1,2,2-Tetrachloroethane PPPPPPP Tetrachloroethene Р Toluene 1,2,3-Trichlorobenzene 1,2,4-Trichlorobenzene 1.1.1-Trichloroethane 1,1,2-Trichloroethane PPPPP Trichloroethene Trichlorofluoromethane 1,2,4-Trimethylbenzene P P P 1,3,5-Trimethylbenzene Vinyl Chloride Р Р Р

SPCC 1,1-Dichloroethane P
SPCC 1,1,2,2-Tetrachloroethane P
SPCC Bromoform P
SPCC Chlorobenzene P
SPCC Chloromethane P

QC Batch # 120237
F = Failed QC limits.
P = Passed QC limits.
NA = Not Applicable

Р

Р

Authorized Signature

m&p-Xylene

o-Xylene

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01-Sep-98

Analytical Laboratory

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

BILL NOEL

Report Date:

S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Project #:

23379XA

Project:

Carver Boat Corp

Sample ID:

B-6-3

Lab Code:

5022497F

Sample Type: Water

Sample Date:

13-Aug-98

Test	Result	LOD	LOQ	Unit	pН	Dilution Factor	Date Analyzed:	Analyzed By:	QC Code
NITROGEN (NITRATE/NITRITE) EPA 300.0	< 0.014	0.014	0.05	MG/L	0.8	10	17-Aug-98	TJW	1
SULFATE EPA 300.0	10	0.024	0.079	MG/L	7.4	1	21-Aug-98	TJW	1

LOD = Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ.

LOQ = Limit of Quantitation

QC SUMMARY

CODE:

1

All laboratory QC requirements were met for this sample.



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

Method 8260 Volatile Organic Compounds

Sample Date:

o-Xylene

Date Analyzed:

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date:

Analyzed By:

01-Sep-98	
CJR	

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/L	UG/L	Factor
Acetone	15	0.28	0.93	1
Benzene	< 0.25	0.25	0.85	1
Bromobenzene	< 0.23	0.23	0.77	1
Bromodichloromethane	< 0.25	0.25	0.84	1
n-Butylbenzene	< 0.43	0.43	1.4	1
sec-Butylbenzene	< 0.37	0.37	1.2	1
tert-Butylbenzene	< 0.4	0.4	1.3	1
Carbon Tetrachloride	< 0.48	0.48	1.6	1
Chlorobenzene	< 0.26	0.26	0.87	1
Chloroethane	< 0.15	0.15	0.51	1
Chloroform	< 0.26	0.26	0.87	1
Chloromethane	< 0.29	0.29	1	1
2-Chlorotoluene	< 0.31	0.31	1	1
4-Chlorotoluene	< 0.27	0.27	0.91	1
1,2-Dibromo-3-Chloropropane	< 0.51	0.51	1.7	1
Dibromochloromethane	< 0.31	0.31	1	1
1,2-Dichlorobenzene	< 0.28	0.28	0.93	1
1,3-Dichlorobenzene	< 0.34	0.34	1.1	1
1,4-Dichlorobenzene	< 0.26	0.26	0.87	1
Dichlorodifluoromethane	< 0.54	0.54	1.8	1
1,1-Dichloroethane	< 0.32	0.32	1.1	1
1,2-Dichloroethane	< 0.14	0.14	0.48	1
1,1-Dichloroethene	< 0.61	0.61	2	1
cis-1,2-Dichloroethene	< 0.34	0.34	1.1	1
trans-1,2-Dichloroethene	< 0.46	0.46	1.5	1
1,2-Dichloropropane	< 0.26	0.26	0.86	1
1,3-Dichloropropane	< 0.23	0.23	0.76	1

Dibromofluoromethane Sur	103	% Rec.
1,2-Dichloroethane-d4 Sur	89	% Rec.
Toluene-d8 Sur	88	% Rec.
4-Bromofluorobenzene Sur	81	% Rec.

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Project #: 23379XA Project: Carver Boat Corp Sample ID: B-6-3 Lab Code: 5022497F Sample Type: Water

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/L	UG/L	Factor
2,2-Dichloropropane	< 0.53	0.53	1.8	1
Di-Isopropyl ether	< 0.21	0.21	0.69	1
Ethylbenzene	< 0.32	0.32	1.1	1
EDB (1,2-Dibromoethane)	< 0.24	0.24	0.82	1
Hexachlorobutadiene	< 0.33	0.33	1.1	1
Isopropylbenzene	< 0.33	0.33	1.1	1
p-Isopropyltoluene	< 0.34	0.34	1.1	1
Methylene chloride	< 1	1	3.3	1
MTBE	< 0.21	0.21	0.69	1
Naphthalene	< 0.73	0.73	2.4	1
n-Propylbenzene	< 0.36	0.36	1.2	1
Styrene	98	0.74	2.5	1
1,1,2,2-Tetrachloroethane	< 0.29	0.29	1	1
Tetrachloroethene	< 0.56	0.56	1.9	1
Toluene	0.39 "J"	0.38	1.3	1
1,2,3-Trichlorobenzene	< 0.16	0.16	0.54	1
1,2,4-Trichlorobenzene	< 0.17	0.17	0.57	1
1,1,1-Trichloroethane	< 0.35	0.35	1.2	1
1,1,2-Trichloroethane	< 0.2	0.2	0.66	1
Trichloroethene	< 0.39	0.39	1.3	1
Trichlorofluoromethane	< 0.52	0.52	1.7	1
1,2,4-Trimethylbenzene	< 0.34	0.34	1.1	1
1,3,5-Trimethylbenzene	< 0.36	0.36	1.2	1
Vinyl Chloride	< 0.32	0.32	1.1	1
m&p-Xylene	< 0.67	0.67	2.2	1

13-Aug-98

24-Aug-98

LOD = Limit of Detection GCMS #12 LOQ = Limit of Quantitation 120237 QC Batch # Sample pH 1.8

0.77 "J"

0.37

1.2

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #: Sample ID: 23379XA B-6-3

Report Date:

01-Sep-98

Lab Code:

5022497F

ANALYTE	· INITIAL	KNOWN	INT STD	METHOD	LCS	MATRIX	MATRIX
	CALIBRATION	STANDARD	AREA %	BLANK	SPIKE	SPIKE	SPIKE RPD
Acetone	P	Р Р	Р	Р	Р	Р	Р
Benzene	P	P	P	Р	P :	Р	P
Bromobenzene	Р	Р	Р	Р	P	Р	l P
Bromodichloromethane	P	P	P	Р	P	P	Р
n-Butylbenzene	Р	P	Р	Р	P	Р	P
sec-Butylbenzene	Р	P	Р	Р	P	Р	P
tert-Butylbenzene	Р	P	P	Р	P	Р	P
Carbon Tetrachloride	P	P	P	P	P	Р	P
Chlorobenzene	P	Р	P	P	P	P	P
Chloroethane	P	P	P	Р	P	Р	P
Chloroform	P	P	Р	P	P	Р	P
Chloromethane	P	P	Р	Р	P	Р	P
2-Chlorotoluene	P	Р	Р	Р	P +	Р	P
4-Chlorotoluene	P	Р	Р	Р	F	F	P
1,2-Dibromo-3-Chloropropane	P	Р	Р	P	Р	Р	P
Dibromochloromethane	P	P	P	Р	Р	P	P
1,2-Dichlorobenzene	P	Р	Р	Р	P	Р	P
1,3-Dichlorobenzene	P	Р	P	Р	P	Р	P
1,4-Dichlorobenzene	Р	Р	Р	Р	P	Р	P
Dichlorodifluoromethane	Р	P	Р	Р	P	Р	P
1,1-Dichloroethane	P	Р	P	Р	P	Р	P
1.2-Dichloroethane	Р	Р	P	Р	Р !	Р	P
1,1-Dichloroethene	P	Р	Р	Р	Р:	Р	P
cis-1.2-Dichloroethene	P	Р	Р	Р	P	Р	P
trans-1,2-Dichloroethene	P	Р	Р	Р	Р	Р	P
1,2-Dichloropropane	P	Р	Р	Р	Ρ,	Р	P
1,3-Dichloropropane	Р	Р	Р	Р	P	Р	P
2,2-Dichloropropane	P	Р	P	Р	Р	Р	P
Di-isopropyl Ether	P	F	P	Р	∫ F [†]	F	P
Ethylbenzene	Р	Р	Р	Р	P	P	P
EDB (1,2-Dibromoethane)	P	P	P	P	P	Ρ.	P
Hexachlorobutadiene	P	P	P	P	P	P	P
sopropylbenzene	P	P	Р	P	P	P	P
p-Isopropyltoluene	P	P	P	P	P	P	P
Methylene Chloride	P	P	P	P	P	P	P
MTBE	P	P	P	P	Р	P	P
Naphthalene	P	Р	Р	P	Р	P	Р
n-Propylbenzene	P	P	Р	P	P	P	P
Styrene	P	Р	Р	Р	P	P	Р
1,1,2,2-Tetrachloroethane	P	P	P	P	P	P	P
Tetrachloroethene	P	Р	P	P	P	P	P
Toluene	P	Р	P	P	Р	P	P
1.2.3-Trichlorobenzene	P	P	P	P	Р	P	P
1,2,4-Trichlorobenzene	P	P.	P	P	P	P	P
1.1.1-Trichloroethane	P	P	P	P	P	P	P
1,1,2-Trichloroethane	P	P	P	P	Р,	P	P
Frichloroethene	P	P	P	P	P	P	P
Trichlorofluoromethane	P	P	P	P	P	P	P
1,2,4-Trimethylbenzene	P	P	P	P	P	P	P
1,3,5-Trimethylbenzene	P	P	P	P	P	P	P
√inyl Chloride	P	P	P	P	P	P	F
n&p-Xylene	P	P	P	P	P	P	P
-Xylene	P	Р	Р	P	Р	P	P

SPCC 1,1-Dichloroethane SPCC 1,1,2,2-Tetrachloroethane Р SPCC Bromoform Р SPCC Chlorobenzene Р SPCC Chloromethane

QC Batch # 120237 F = Failed QC limits. P = Passed QC limits. NA = Not Applicable



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Project #:

23379XA

Project:

Carver Boat Corp

Sample ID:

B-6-4

Lab Code:

5022497G

Sample Type: Water

Report Date:

01-Sep-98

Sample Date:

13-Aug-98

Test		Result	LOD	LOQ	Unit	рН	Dilution Factor	Date Analyzed:	Analyzed By:	QC Code
NITROGEN (NITRA EPA 300.0	•	< 0.014	0.014	0.05	MG/L	0.8	10	17-Aug-98	TJW	1
SULFATE EPA 300.0		10	0.024	0.079	MG/L	7.4	1	21-Aug-98	TJW	1

LOD = Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ.

LOQ = Limit of Quantitation

QC SUMMARY

CODE:

1

All laboratory QC requirements were met for this sample.

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

Method 8260 Volatile Organic Compounds

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date:

01-Sep-98

Analyzed By:

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ANALYTE	RESULT	LOD	LOQ	Dilutio
		UG/L	UG/L	Factor
Acetone	0.92 "J"	0.28	0.93	1
Benzene	< 0.25	0.25	0.85	1
Bromobenzene	< 0.23	0.23	0.77	1
Bromodichloromethane	< 0.25	0.25	0.84	1
n-Butylbenzene	< 0.43	0.43	1.4	1
sec-Butylbenzene	< 0.37	0.37	1.2	1
tert-Butylbenzene	< 0.4	0.4	1.3	1
Carbon Tetrachloride	< 0.48	0.48	1.6	1
Chlorobenzene	< 0.26	0.26	0.87	1
Chloroethane	< 0.15	0.15	0.51	1
Chloroform	< 0.26	0.26	0.87	1
Chloromethane	< 0.29	0.29	1	1
2-Chlorotoluene	< 0.31	0.31	1	1
4-Chlorotoluene	< 0.27	0.27	0.91	1
1,2-Dibromo-3-Chloropropane	< 0.51	0.51	1.7	1
Dibromochloromethane	< 0.31	0.31	1	1
1,2-Dichlorobenzene	< 0.28	0.28	0.93	1
1,3-Dichlorobenzene	< 0.34	0.34	1.1	1
1,4-Dichlorobenzene	< 0.26	0.26	0.87	1
Dichlorodifluoromethane	< 0.54	0.54	1.8	1
1,1-Dichloroethane	< 0.32	0.32	1.1	1
1,2-Dichloroethane	< 0.14	0.14	0.48	1
1,1-Dichloroethene	< 0.61	0.61	2	1
cis-1,2-Dichloroethene	< 0.34	0.34	1.1	1
trans-1,2-Dichloroethene	< 0.46	0.46	1.5	1
1,2-Dichloropropane	< 0.26	0.26	0.86	1
1,3-Dichloropropane	< 0.23	0.23	0.76	1

Dibromofluoromethane Sur	104	% Rec.
1,2-Dichloroethane-d4 Sur	88	% Rec.
Toluene-d8 Sur	88	% Rec.
4-Bromofluorobenzene Sur	82	% Rec.

100

Project #: 23379XA Project:

Carver Boat Corp

Sample ID: Lab Code:

B-6-4 5022497G

Sample Type: Sample Date:

Water

Date Analyzed:

13-Aug-98 24-Aug-98

ANALYTE	RESULT	LOD	LOQ	Dilution
	1	UG/L	UG/L	Factor
2,2-Dichloropropane	< 0.53	0.53	1.8	1
Di-Isopropyl ether	< 0.21	0.21	0.69	1
Ethylbenzene	< 0.32	0.32	1.1	1
EDB (1,2-Dibromoethane)	< 0.24	0.24	0.82	1
Hexachlorobutadiene	< 0.33	0.33	1.1	1
Isopropylbenzene	< 0.33	0.33	1.1	1
p-Isopropyltoluene	< 0.34	0.34	1.1	1
Methylene chloride	< 1	1	3.3	1
MTBE	< 0.21	0.21	0.69	1
Naphthalene	< 0.73	0.73	2.4	1
n-Propylbenzene	< 0.36	0.36	1.2	1
Styrene	< 0.74	0.74	2.5	1
1,1,2,2-Tetrachloroethane	< 0.29	0.29	1	1
Tetrachloroethene	< 0.56	0.56	1.9	1
Toluene	< 0.38	0.38	1.3	1
1,2,3-Trichlorobenzene	< 0.16	0.16	0.54	1
1,2,4-Trichlorobenzene	< 0.17	0.17	0.57	1
1,1,1-Trichloroethane	< 0.35	0.35	1.2	1
1,1,2-Trichloroethane	< 0.2	0.2	0.66	1
Trichloroethene	< 0.39	0.39	1.3	1
Trichlorofluoromethane	< 0.52	0.52	1.7	1
1,2,4-Trimethylbenzene	< 0.34	0.34	1.1	1
1,3,5-Trimethylbenzene	< 0.36	0.36	1.2	1
Vinyl Chloride	< 0.32	0.32	1.1	1
m&p-Xylene	< 0.67	0.67	2.2	1
o-Xylene	< 0.37	0.37	1.2	1

LOD = Limit of Detection

LOQ = Limit of Quantitation

QC Batch #

120237

Sample pH

1.8

GCMS #12

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295 WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #: Sample ID: 23379XA B-6-4 Report Date:

01-Sep-98

Lab Code: 5022497G

ANALYTE	INITIAL	KNOWN	INT STD	METHOD	LCS	MATRIX	MATRIX
다 하는 경기를 하는 다음을 바꿨다. 19 10g	CALIBRATION	STANDARD	AREA %	BLANK	SPIKE	SPIKE	SPIKE RPD
Acetone	Р	Р	Р	Р	Р	P	Р
Benzene	P	Р	P	Р	P	Р	Р
Bromobenzene	P	Р	P	Р	Р	Р	Р
Bromodichloromethane	P	Р	P	Р	P	Р	Р
n-Butylbenzene	P	P	Р	Р	Р	Р	Р
sec-Butylbenzene	P	P	P	Р	P	Р	Р
tert-Butylbenzene	P	Р	P	Р	Р	Р	Р
Carbon Tetrachloride	Р	P	Р	Р	P	Р	Р
Chlorobenzene	Р	Р	P	Р	P	P	Р
Chloroethane	P	Р	Р	Р	P	Р	Р
Chloroform	P	Р	Р	P	Р	P	Р
Chloromethane	P	P	P	Р	P	Р	Р
2-Chlorotoluene	Р	Р	Р	P	Р	Р	Р
4-Chlorotoluene	Р	Р	P	Р	F	F	Р
1,2-Dibromo-3-Chloropropane	P	Р	P	P	P	Р	Р
Dibromochloromethane	Р	Р	P	Р	Р	Р	Р
1,2-Dichlorobenzene	P	P	Р	P	Р	Р	P
1,3-Dichlorobenzene	Р	Р	Р	Р	P	Р	Р
1,4-Dichlorobenzene	Р	P	Р	P	Р	Р	P
Dichlorodifluoromethane	P	P	Р	P	Р	P	P
1,1-Dichloroethane	P	P	Р	P	P	Р	P
1,2-Dichloroethane	P	P	P	P	Р	P	P
1,1-Dichloroethene	P	P	P	P	Р	P	P
cis-1,2-Dichloroethene	P P	Р	P	P	P '	P P	P
trans-1,2-Dichloroethene	P	P P	P	P P	P	P	P P
1,2-Dichloropropane 1,3-Dichloropropane	P	P	P	P	P	P	P
2,2-Dichloropropane	P	P	P	P	P	P	P
Di-isopropyl Ether	P	F	P	P	F	F	P
Ethylbenzene	P	P	P	P	P	P	P
EDB (1,2-Dibromoethane)	P	P	P	P	P	P	P
Hexachlorobutadiene	P	P ,	P	P	P	P	P
Isopropylbenzene	P	P	i e	P	P	P	P
p-lsopropyltoluene	P	P	P	P I	P	P	P
Methylene Chloride	P	P	P	P	P	P	P
MTBE	P	P	P	P	P	P	P
Naphthalene	P	P	P	P	Р	P	P
n-Propylbenzene	P	P	P	P	Р	P	P
Styrene	P	P	P	P	P	P	P
1.1.2.2-Tetrachloroethane	Р	Р	P	Р	Р	Р	P
Tetrachloroethene	Р	Р	Р	P	Р	Р	P
Toluene	Р	Р	Р	Р	Р	Р	P
1,2,3-Trichlorobenzene	Р	Р	Р	Р	Р	Р	Р
1,2,4-Trichlorobenzene	P	Р	Р	Р	P	Р	Р
1,1,1-Trichloroethane	Р	P	Р	Р	Р ;	Р	P
1,1,2-Trichloroethane	Р	P	Р	Р	P	P	P
Trichloroethene	P	P	Р	P	P	Р	P
Trichlorofluoromethane	P	Р	Р	P	P	P	P
1,2,4-Trimethylbenzene	Р	Р	Р	Р	Р ;	Р	P
1,3,5-Trimethylbenzene	Р	Р	Р	Р	P	P	Р
Vinyl Chloride	Р	P	Р	Р	P	Р	Р
m&p-Xylene	Р	Р	Р	Р	Р	Р	P
o-Xylene	Р	P	P	P	Ρ ΄	Р	P

SPCC 1,1-Dichloroethane P
SPCC 1,1,2,2-Tetrachloroethane P
SPCC Bromoform P
SPCC Chlorobenzene P
SPCC Chloromethane P

QC Batch # 120237
F = Failed QC limits.
P = Passed QC limits.
NA = Not Applicable

Authorized Signature

nature

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

BILL NOEL

Report Date:

S T S CONSULTANTS LTD 1035 KEPLER DRIVE

GREEN BAY WI 54311

01-Sep-98

Project #:

23379XA

Project:

Carver Boat Corp

Sample ID:

B-6-5

Lab Code:

5022497H

Sample Type: Water

Sample Date:

13-Aug-98

Test	Result	LOD	LOQ	Unit	pН	Dilution Factor	Date Analyzed:	Analyzed By:	QC Code
NITROGEN (NITRATE/NITRITE) EPA 300.0	0.47	0.014	0.05	MG/L	0.8	10	17-Aug-98	TJW	1
SULFATE EPA 300.0	84	0.24	0.79	MG/L	7.5	10	21-Aug-98	TJW	1

LOD = Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ.

LOQ = Limit of Quantitation

QC SUMMARY

CODE:

1

All laboratory QC requirements were met for this sample.



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

Method 8260 Volatile Organic Compounds

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date:

01-Sep-98

Analyzed By:

CJR

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/L	UG/L	Factor
Acetone	< 0.28	0.28	0.93	1
Benzene	< 0.25	0.25	0.85	1
Bromobenzene	< 0.23	0.23	0.77	1
Bromodichloromethane	< 0.25	0.25	0.84	1
n-Butylbenzene	< 0.43	0.43	1.4	1
sec-Butylbenzene	< 0.37	0.37	1.2	1
tert-Butylbenzene	< 0.4	0.4	1.3	1
Carbon Tetrachloride	< 0.48	0.48	1.6	1
Chlorobenzene	< 0.26	0.26	0.87	1
Chloroethane	< 0.15	0.15	0.51	1
Chloroform	< 0.26	0.26	0.87	1
Chloromethane	< 0.29	0.29	1	1
2-Chlorotoluene	< 0.31	0.31	1	1
4-Chlorotoluene	< 0.27	0.27	0.91	1
1,2-Dibromo-3-Chloropropane	< 0.51	0.51	1.7	1
Dibromochloromethane	< 0.31	0.31	1	1
1,2-Dichlorobenzene	< 0.28	0.28	0.93	1
1,3-Dichlorobenzene	< 0.34	0.34	1.1	1
1,4-Dichlorobenzene	< 0.26	0.26	0.87	1
Dichlorodifluoromethane	< 0.54	0.54	1.8	1
1,1-Dichloroethane	< 0.32	0.32	1.1	1
1,2-Dichloroethane	< 0.14	0.14	0.48	1
1,1-Dichloroethene	< 0.61	0.61	2	1
cis-1,2-Dichloroethene	< 0.34	0.34	1.1	1
trans-1,2-Dichloroethene	< 0.46	0.46	1.5	1
1,2-Dichloropropane	< 0.26	0.26	0.86	1
1,3-Dichloropropane	< 0.23	0.23	0.76	1

Dibromofluoromethane Sur	103 % Rec.
1,2-Dichloroethane-d4 Sur	88 % Rec.
Toluene-d8 Sur	88 % Rec.
4-Bromofluorobenzene Sur	81 % Rec.

Project #: Project:

23379XA

Carver Boat Corp

Sample ID: Lab Code:

B-6-5 5022497H

Sample Type:

Water

Sample Date:

13-Aug-98

Date Analyzed:

24-Aug-98

ANALYTE	RESULT	LOD	LOQ	Dilution
	100	UG/L	UG/L	Factor
2,2-Dichloropropane	< 0.53	0.53	1.8	1
Di-Isopropyl ether	< 0.21	0.21	0.69	1
Ethylbenzene	< 0.32	0.32	1.1	1
EDB (1,2-Dibromoethane)	< 0.24	0.24	0.82	1
Hexachlorobutadiene	< 0.33	0.33	1.1	1
Isopropylbenzene	< 0.33	0.33	1.1	1
p-Isopropyltoluene	< 0.34	0.34	1.1	1
Methylene chloride	< 1	1	3.3	1
MTBE	< 0.21	0.21	0.69	1
Naphthalene	< 0.73	0.73	2.4	1
n-Propylbenzene	< 0.36	0.36	1.2	1
Styrene	0.91 "J"	0.74	2.5	1
1,1,2,2-Tetrachloroethane	< 0.29	0.29	1	1
Tetrachloroethene	< 0.56	0.56	1.9	1
Toluene	< 0.38	0.38	1.3	1
1,2,3-Trichlorobenzene	< 0.16	0.16	0.54	1
1,2,4-Trichlorobenzene	< 0.17	0.17	0.57	1
1,1,1-Trichloroethane	< 0.35	0.35	1.2	1
1,1,2-Trichloroethane	< 0.2	0.2	0.66	1
Trichloroethene	< 0.39	0.39	1.3	1
Trichlorofluoromethane	< 0.52	0.52	1.7	1
1,2,4-Trimethylbenzene	< 0.34	0.34	1.1	1
1,3,5-Trimethylbenzene	< 0.36	0.36	1.2	1
Vinyl Chloride	< 0.32	0.32	1.1	1
m&p-Xylene	< 0.67	0.67	2.2	1
o-Xylene	< 0.37	0.37	1.2	1

LOD = Limit of Detection

LOQ = Limit of Quantitation

QC Batch #

120237

Sample pH

1.8

GCMS #12

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #: Sample ID: 23379XA B-6-5 Report Date: Lab Code: 01-Sep-98 5022497H

ANALYTE	INITIAL	KNOWN	INT STD	METHOD	LCS	MATRIX	MATRIX
	CALIBRATION	STANDARD	AREA %	BLANK	SPIKE	SPIKE	SPIKE RPD
Acetone	Р	Р	Р	Р	Р	Р	Р
Benzene	Р	Р	Р	Р	P	Р	P
Bromobenzene	Р	P	P	P	Р	Р	Р
Bromodichloromethane	P	P	р :	Р	Р	Р	P
n-Butylbenzene	P	P	P	P	Р	P	P
sec-Butylbenzene	Р	P	P	Р	Р	P	P
tert-Butylbenzene	P	P	P	P	P	Р	P
Carbon Tetrachloride	P	P	Р	P	P	P	P
Chlorobenzene	P	P	Р	P	Р	P	P
Chloroethane	P	P	P !	P	P	P	P
Chloroform	P	P	Р :	P	P	P	P
Chloromethane	P	P	P	P	Р	P	P
2-Chlorotoluene	P	P	P	P	P	P	P
4-Chlorotoluene	P	P	P	P	F	F	P
1,2-Dibromo-3-Chloropropane	P	P	. P	P	P	P	P
Dibromochloromethane	i P	þ	P	P	P	P	P
1.2-Dichlorobenzene	P	þ	P	P	P	P	P
1.3-Dichlorobenzene	P	P	P	P	P	P	P
1,4-Dichlorobenzene	P	F		P	P	P	P
Dichlorodifluoromethane	P	F		P	P	P	P
1.1-Dichloroethane	P	F	P	P	P	P	P
1,2-Dichloroethane	P	F	P	P	P	P	P
1,1-Dichloroethene	P	P	P	P	P	P	P
cis-1,2-Dichloroethene	P	P	P	P	P	P	P
trans-1,2-Dichloroethene	P	P	P	P	P	P	P
1,2-Dichloropernene	P	P	P	P	P	P	P
	P	P	P	P	P	P	P
1,3-Dichloropropane 2,2-Dichloropropane	P	P	P	P	P	P	P
	P	F	P	P	F	F	P
Di-isopropyl Ether	P	P	P	P	P	P	P
Ethylbenzene	P	P	P	P	P	P	P
EDB (1,2-Dibromoethane)	P	P	P	P	P	P	P
Hexachlorobutadiene	P	P	P :	P	P	P	P
Isopropylbenzene		P			P	•	
p-Isopropyltoluene	P P	P	P P	P	P	P P	P
Methylene Chloride		•		P		•	P
MTBE	P	P	Р	P	Р	P	P
Naphthalene	P	P	Р	P	Р	P	P
n-Propylbenzene	P	P	P	P	Р	P	P
Styrene	P	P	Р	P	P	P	P
1,1,2,2-Tetrachloroethane	P	P	Р	P	Р	P	P
Tetrachloroethene	P	P	Р	P	Р	P	P
Toluene	P	P	Р	P	Р	P	P
1,2,3-Trichlorobenzene	P	P	P	Р	P	P	Р
1,2,4-Trichlorobenzene	P	P	Р	P	Р	P	P
1,1,1-Trichloroethane	P	P	Р	P	Р	P	P
1,1,2-Trichloroethane	Р	P	P	Р	P	Р	P
Trichloroethene	Р	Р	P	Р	P	P	Р
Trichlorofluoromethane	Р	Р	Р	P	Р	P	Р
1,2,4-Trimethylbenzene	Р	P	Р	Р	Р	P	Р
1,3,5-Trimethylbenzene	P	Р	Р	Р	P	Р	P
Vinyl Chloride	Р	Р	P	Р	Р	Р	Р
π&p-Xylene	Р	Р	Р	Р	Р	P	Р
-Xylene	Р	Р	Р	Р	P	Р	Р

SPCC 1,1-Dichloroethane P
SPCC 1,1,2,2-Tetrachloroethane P
SPCC Bromoform P
SPCC Chlorobenzene P
SPCC Chloromethane P

QC Batch # 120237
F = Failed QC limits.
P = Passed QC limits.
NA = Not Applicable

Authorized Signature

ture



CHAIN OF CUSTODY RECORD 5022497 Nº 21115

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	Project No. 233																Phone No		
	Project Name <u>CAR</u>	UER	<u>B0</u>	ΑT	C	DRP),					پرا ا	********		Other		Results Due		···
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Distribution: Original and Green - Laboratory Yellow - As needed Pink - Transporter Goldenrod - STS Project File Instructions to Laboratory: Forward completed original to STS with analytical results. Retain green copy.

9/94cp10k



October 29, 1998

Ms. Carrie Rackey
Bureau of Remediation and Redevelopment
Wisconsin Department of Natural Resources
1125 North Military Avenue
P.O. Box 10448
Green Bay, Wisconsin 54307-0448

NOV 0 3 1998 LMD SOLID WASTE

.. w

Subject: Case Update, Carver Boat Corporation, Pulaski, Wisconsin -- BRRTS #02-05-178568 -- STS Project No. 23379XA

Dear Ms. Rackey:

STS Consultants, Ltd. (STS), on behalf of Carver Boat Corporation (Carver), has prepared this letter in response to your letter dated October 26, 1998, which inquired as to the status of the above-referenced project.

STS installed temporary wells on July 17, 1998, in substantial accordance with the Work Plan for this project. The temporary wells were then sampled on August 13, 1998. Carver has authorized STS to collect one additional piece of soil test data, at which time we anticipate that a report will be submitted to the Wisconsin Department of Natural Resources. Dependent on the additional findings and our evaluation of all project data, the submittal may include a request for site closure. We anticipate that a submittal will be made in late 1998.

Please contact us with any questions or comments regarding this project.

Sincerely,

STS CONSULTANTS, LTD.

William F. Noel, P.E. Senior Project Engineer

WFN/smd.wd

Copy: Mr. Ted Maloney

Carver Boat Corporation 790 Markham Drive P.O. Box 1010

Pulaski, Wisconsin 54162



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor George E. Meyer, Secretary William R. Selbig, Regional Director Northeast Region Headquarters 1125 N. Military Avenue P.O. Box 10448 Green Bay, Wisconsin 54307-0448 Telephone 920-492-5916 FAX 920-492-5859

File.

October 26, 1998

Mr. Ted Maloney Carver Boat Corporation 790 Markham Drive P.O. Box 1010 Pulaski, WI 54162

SUBJECT:

Case Update, Carver Boat Corporation (Resin & Acetone); 790 Markham

Drive; Pulaski

BRRTS CASE #02-05-178568

Dear Mr. Maloney:

I am writing to request an update on the status of the above referenced environmental repair case. On March 2, 1998, the Department received a site investigation workplan prepared by STS Consultants. To date, the Department has not received a site investigation report.

Please provide the Department with a letter detailing the status of the above referenced case.

If you have any questions regarding this matter, please contact Roxanne Chronert at (920) 492-5592.

Sincerely,

Carrie Rackey

Program Assistant

Bureau of Remediation and Redevelopment

cc: William Noel; STS Consultants; 1035 Kepler Drive; Green Bay, WI 54311





TELEPHONE LOG

SITE NAME: Corver Boats DNR NO.: PECFA CALIM NO.: TO/FROM: Bill Well COMPANY/AGENCY: STS	DATE: Z-Z 7-98 TIME: /3:46 (800) (414) (715) NUMBER: (920) 4010 - 3145 (608)
2) Review of W.P.	use long turn



February 26, 1998

Ms. Roxanne Nelezen Chronert Wisconsin Department of Natural Resources 1125 North Military Avenue P.O. Box 10448 Green Bay, Wisconsin 54307-0448 MAR 0 2 1998 LMD SOLID WASTE

Re: Work Plan to Investigate Soil and Groundwater Impacts, Vicinity of Former Underground Storage Tank #6 and #7, Carver Boat Corporation, 790 Markham Drive, Pulaski, Wisconsin - BRRTS Case #02-05-178568 - STS Project No. 23379XA

Dear Ms. Nelezen Chronert:

STS Consultants, Ltd., was retained by Carver Boat Corporation to prepare the attached Work Plan to investigate soil and groundwater impacts at this location. This Work Plan was prepared in accordance with Wisconsin Administrative Code NR 716.09.

Sincerely,

STS CONSULTANTS, LTD.

William F. Noel, P.E.

Senior Project Engineer

Paula Leier-Engelhardt, P.G.

Senior Project Geologist

WFN/slc.wd

Copy to: Mr. Ted Maloney

Carver Boat Corporation 790 Markham Drive P.O. Box 1010

Pulaski, Wisconsin 54162

(C479A003)

"I, Calvin D. Taylor, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

Calvin D. Taylor

Project Hydrogeologist

2/26/98

STS Consultants Ltd. Consulting Engineers

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	1.2 Responsible Party and Consultant	. 1
	1.3 Background	
	1.4 Geologic and Hydrogeologic Setting	
2.0	SCOPE OF WORK	. 4
	2.1 Borings	. 4
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	2.3 Monitoring Wells Groundwater Sample Collection	. 4
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	2.5 Quality Assurance and Quality Control	. 5
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3.0	SCHEDULE	. 6

FIGURES

Figure 1 Site Location Diagram

Figure 2 Facility Locations

Figure 3 UST #6 and #7 Proposed Hydraulic Probe Location Diagram

TABLE

Table 1 Soil Field Observations and Laboratory Results

WORK PLAN TO INVESTIGATE SOIL AND GROUNDWATER IMPACTS VICINITY OF FORMER UST #6 AND #7

CARVER BOAT CORPORATION

PULASKI, WISCONSIN

STS PROJECT NO. 23379XA – FEBRUARY 1998

1.0 INTRODUCTION

1.1 Site Name and Location

The site is owned by Carver Boat Corporation (Carver), Pulaski, Wisconsin. Underground Storage Tanks (USTs) #6 and #7 are located at the north end of Carver's Plant 4, west of the former railroad tracks which bisect Carver's property. The site is in the NE ¼ of Section 6, T25N, R19E, Brown County, Wisconsin. The location of the Carver property is depicted on Figure 1.

1.2 Responsible Party and Consultant

The site owner is:

Carver Boat Corporation 790 Markham Drive P.O. Box 1010 Pulaski, Wisconsin 54162 Attention: Mr. Ted Maloney

Telephone: 920-822-9000, Ext. 266

The consultant preparing the Work Plan is:

STS Consultants, Ltd.
1035 Kepler Drive
Green Bay, Wisconsin 54311
Attention: Mr. William F. Noel P.

Attention: Mr. William F. Noel, P.E. Telephone: 920-468-1978, Ext. 145

Wisconsin Department of Natural Resources STS Project No. 23379XA

February 26, 1998

1.3 Background

Two adjacent USTs (Carver USTs #6 and #7) were removed by Phenco, Inc., of Neenah,

Wisconsin, on October 3, 1997. STS Consultants, Ltd., (STS) performed site assessments during

removal of the USTs. UST #6 was a 6,000-gallon tank which formerly contained resin, of

which, styrene was a primary constituent. The removal of this UST and the site assessment are

documented in a report by STS dated February 26, 1998. Figure 2 shows Carver's entire facility,

while Figure 3 shows the area immediately surrounding USTs #6 and #7.

STS' field observations of soil conditions during the site assessment provided some indication of

volatile organic compounds (VOCs). Laboratory soil test results indicated low-level

concentrations of styrene, acetone, tetrachloroethene, and methyl tert-butyl ether (MTBE) in one

or more of the soil samples. Table 1 summarizes field and laboratory data. Based on this

information, Carver reported a release to the Wisconsin Department of Natural Resources

(WDNR). No groundwater samples were collected while the USTs were being removed, nor was

there evidence of groundwater impacts.

Carver retained STS to prepare this Work Plan for further work at this site. This Work Plan has

been prepared in accordance with Wisconsin Administrative Code NR 716.09. Relevant items

addressed in NR 716.07 were evaluated to ensure that the scope and detail of the proposed field

investigation were appropriate to the complexity of the site.

1.4 Geologic and Hydrogeologic Setting

The site is located in a relatively level area at approximately 800 feet above mean sea level. Soil

conditions noted during the USTs removals included brown silty sand, changing to brown red

silty clay at approximately 3 to 4 feet below ground surface (bgs). Soil conditions do vary across

the facility, ranging from silty sand to silt to sandy clay, to silty clay.

- 2 -

Wisconsin Department of Natural Resources STS Project No. 23379XA February 26, 1998

Groundwater appeared to be approximately 4 feet bgs during the UST removals. Prior work in the site vicinity was reviewed, and indicated that the horizontal groundwater gradient is relatively flat. The Little Suamico River is located approximately one mile to the north and may affect groundwater flow. The village of Pulaski Municipal Well No. 2 is located approximately 2,300 feet southeast of former USTs #6 and #7. STS understands that this well was constructed in 1975 to a depth of 700 feet and has a capacity of 1,000 gallons per minute.

2.0 SCOPE OF WORK

2.1 Borings

STS will advance five borings with a hydraulic probe to a depth of 10 feet. The borings will be

advanced to determine the degree and extent of groundwater VOC impacts. Locations of the

previously collected soil samples and proposed hydraulic probes are shown on Figure 3.

2.2 Hydraulic Probe -- Groundwater Sample Collection

A ¾-inch diameter, Schedule 40, screened length of PVC will be installed into each 10-foot-deep

hydraulic probe boring. The PVC screen will be purged, then sampled, with a disposable bailer.

The PVC screen will be left in place after the sampling until test results are received, to allow for

collection of additional samples if appropriate. Upon removal of the screen, the boring will be

filled with bentonite and hydrated, with concrete or asphalt at the surface.

2.3 Monitoring Wells -- Groundwater Sample Collection

If groundwater analytical results warrant it, additional hydraulic probes and/or groundwater

monitoring wells will be installed, with monitoring wells installed in accordance with NR 141

requirements. Locations will be determined following the hydraulic probe work. Well screens

will be installed to intersect the apparent water table at the time of well installation.

Groundwater samples will be collected no sooner than seven days after well development.

2.4 Groundwater Sample Analysis

Groundwater samples from the hydraulic probes and, if necessary, the monitoring wells, will be

collected and submitted to U.S. Oil for analytical testing for VOCs, including styrene and

- 4 -

Wisconsin Department of Natural Resources STS Project No. 23379XA

February 26, 1998

acetone, in accordance with EPA Method 8260. Indicators of natural attenuation will also be

tested, including laboratory testing for nitrate (EPA Method 353.2) and sulfate (Method SW846-

9038), and field testing for dissolved oxygen and ferrous iron (Chemetrics ampoules).

Groundwater samples will be collected with disposable sampling devices to minimize or avoid

potential for cross-contamination. Groundwater samples for VOC testing will be placed in 40-

milliliter, hydrochloric acid-preserved vials with zero headspace. Samples will be shipped on ice

under Chain of Custody control.

2.5 Quality Assurance and Quality Control

Quality assurance and quality control procedures implemented for this project will be consistent

with items specified in NR 716.13 and those outlined in PUBL-SW-130 93, "Leaking

Underground Storage Tank and Petroleum, Analytical and Quality Assurance Guidance,

Wisconsin Department of Natural Resources," July 1993.

2.6 Report

The report will be prepared in accordance with Chapter NR 716.15 and will include the field and

analytical data and our interpretations of the data.

- 5 -

(R479A002)

Wisconsin Department of Natural Resources STS Project No. 23379XA February 26, 1998

3.0 SCHEDULE

The following is our anticipated schedule for the project:

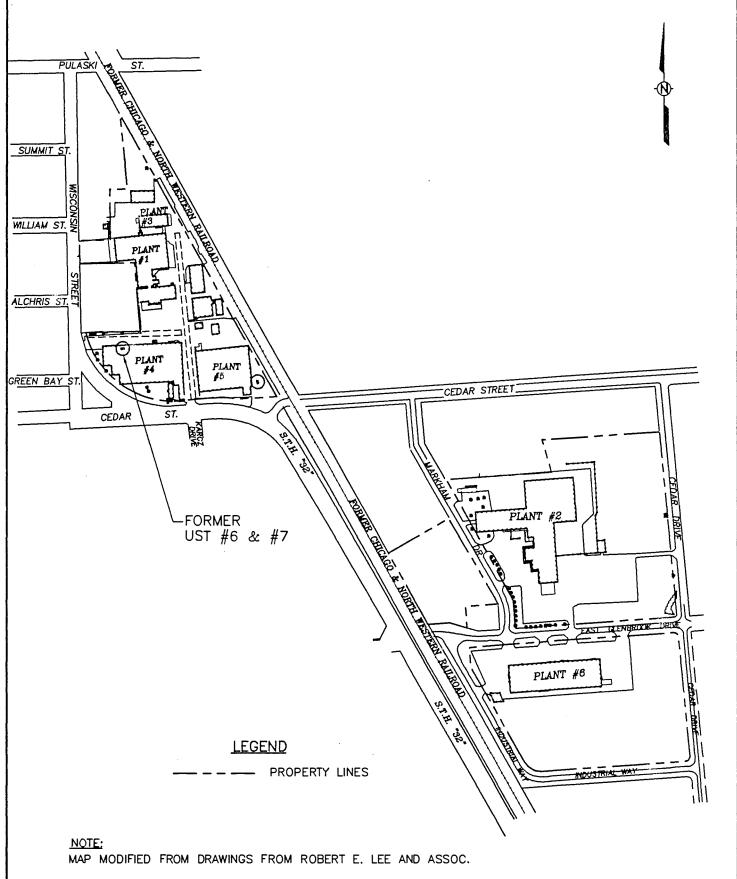
- Complete the drilling program by March 20, 1998.
- Receive analytical results by April 10, 1998.
- Submit report to the WDNR by April 30, 1998.

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STS Consultants Ltd.
Consulting Engineers

SITE LOCATION DIAGRAM CARVER BOAT CORPORATION PULASKI, WISCONSIN

DRAWN BY	P.D.P.	2-23-98
CHECKED BY	W.F.N.	2-23-98
APPROVED BY		
CADFILE	SCALE	
G479F001		2000'
STS PROJECT NO.	FIGURE N	0.
23379XF		1





FACILITY LOCATIONS
CARVER BOAT CORPORATION
PULASKI, WISCONSIN

DRAWN BY	P.D.P.	2-23-98
CHECKED BY	W.F.N.	2-23-98
APPROVED BY		
CADFILE G479F04	SCALE 1"=	500'
	FIGURE N	0.
23379XF		2



UST #6 & #7 PROPOSED HYDRAULIC PROBE
LOCATION DIAGRAM
CARVER BOAT CORPORATION
PULASKI, WISCONSIN

DRAWN BY	R.A.B.	2-23-97		
CHECKED BY	W.F.N.	2-23-98		
APPROVED BY				
CADFILE	SCALE 1"=	=5'		
STS PROJECT NO.	FIGURE NO.			
23379XA	3	3		

TABLE 1 SOIL FIELD OBSERVATIONS AND LABORATORY RESULTS CARVER BOAT CORPORATION USTs #6 AND #7 PULASKI, WISCONSIN

Sample Location	Depth (feet)	FID (units)	Soil Description	Odor	Acetone (μg/kg)	Styrene (µg/kg)	MTBE (µg/kg)	Tetrachloroethene (μg/kg)	Benzene (µg/kg)	Toluene (μg/kg)	Ethylbenzene (µg/kg)	Xylenes (µg/kg)
6-SS-1	3	52	Dark Brown Fine to Medium Silty Sand	Slight	<100	36	<25	<25	<25	<25	<25	<50
6-SS-2	3	10	Dark Brown Fine to Medium Silty Sand		<100	<25	<25	26	<25	<25	Q 5	<50
6-SS-3	3	6	Dark Brown Fine to Medium Silty Sand	No	120	31	<25	51	<25	25	<25	<50
6-SS-4	3	4	Dark Brown Fine to Medium Silty Sand	No	<100	<25	28	<25	<25	<25	<25	<50
6-SS-5	3	4	Dark Brown Fine to Medium Silty Sand	No	<100	<25	36	<25	<25	<25	<25	<50
S-1A	4	65	Brown Red Silty Clay	Slight		-	-	-	-	-	-	-
S-2A	4	25	Brown Red Silty Clay	Possible	-	-	-	•	-	-	-	-
S-3A	4	50	Brown Red Silty Clay	Slight	-	-	-	-	-	-	-	-
S-4A	4	7	Brown Red Silty Clay	No	-	-	-	•	-	-	-	-
S-5A	4	7	Brown Red Silty Clay	No	-	-	-	-	-	-	-	-

Notes:

- = Not Analyzed

MTBE = Methyl tert Butyl Ether

FID = Flame Ionization Detector

VOCs not listed were not detected in any sample



February 26, 1998

MAR 0 2 1998

LMD SOLID WASTE

Mr. Ted Maloney Carver Boat Corporation 790 Markham Drive P.O. Box 1010 Pulaski, Wisconsin 54162

Re: Underground Storage Tank Closure Report for Carver Boat Corporation, UST #6 and UST #7 at Plant 4, 790 Markham Drive, Pulaski, Wisconsin -- BRRTS Case No. 02-05-178568 - STS Project No. 23379XF

Dear Mr. Maloney:

STS Consultants, Ltd., (STS) is pleased to submit this report documenting the removal of two underground storage tanks (USTs), one 6,000-gallon resin UST (UST #6) and one 2,000-gallon acetone UST (UST #7), located at Carver Boat Corporation, 790 Markham Drive, Pulaski, Wisconsin.

This report summarizes activities conducted at Carver Boat Corporation, and outlines procedures followed for documenting soil conditions around the USTs. Based on conditions observed in the field and the low level concentrations of volatile organic compounds detected in soil samples, we recommend further subsurface investigation. In accordance with Wisconsin Administrative Code ILHR 10, copies of this report are being sent to the Wisconsin Department of Commerce (Madison) and the Wisconsin Department of Natural Resources (Green Bay).

STS appreciates the opportunity to provide environmental services and looks forward to working with you in the future. Please contact us at 920-468-1978 with any questions or comments concerning this report.

Sincerely,

STS CONSULTANTS, LTD.

James L. Calaway

Senior Environmental Technician

William F. Noel, P.E. Senior Project Engineer

JLC/kjw.wd

STS Consultants Ltd. Consulting Engineers

1035 Kepler Drive Green Bay, Wisconsin 54311-8320 920.468.1978/Fax 920.468.3312



Carver Boat Corporation STS Project No. 23379XF February 26, 1998 Page 2

1

Copy to: Wisconsin Department of Commerce

ERS Division

Bureau of Storage Tank Regulation

P.O. Box 7969

Madison, Wisconsin 53707-7969

Ms. Roxanne Nelezen Chronert Spill Coordinator - Hydrogeologist Wisconsin Department of Natural Resources 1125 North Military Avenue P.O. Box 10448 Green Bay, Wisconsin 54307-0448

B(C479F001)

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UNDERGROUND STORAGE TANK CLOSURE REPORT CARVER BOAT CORPORATION PULASKI, WISCONSIN STS PROJECT NO. 23379XF – FEBRUARY 1998

1.0 INTRODUCTION

One 6,000-gallon resin underground storage tank (UST #6) and one 2,000-gallon acetone UST (UST #7) located at Carver Boat Corporation (Carver), 790 Markham Drive, Pulaski, Wisconsin, (NE 1/4 of Section 6, T25N, R19E, Brown County, Wisconsin) were decommissioned by excavation and removed on October 3, 1997. Figure 1 shows the location of the Carver facility. UST #6 (Wisconsin Department of Commerce [WDCOMM] No. 051100596) and UST #7 (WDCOMM No. 051100595) were located at the north end of Plant 4. Figure 2 portrays the entire Carver facility, while Figure 3 shows the former location of UST #6 and UST #7. The contractor responsible for tank decommissioning was Phenco Inc., (Phenco) of Neenah, Wisconsin. Mr. John Wolters (Certification No. 01019) was the certified remover/cleaner.

STS Consultants, Ltd., (STS) was retained by Carver to perform sampling, analysis, and documentation required for the closure assessment and to summarize conditions in a closure documentation report. Mr. James L. Calaway, STS, (Certification No. 248261) was the certified site assessor and was present throughout the tank removal.

Inspector Robert E. Dunks (Certification No. 35003) of the Allouez Fire Department was notified prior to the planned tank closures. Inspector Dunks was present at the project site during portions of the work.

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STS Consultants Ltd.
Consulting Engineers

SITE LOCATION DIAGRAM CARVER BOAT CORPORATION PULASKI, WISCONSIN

DRAWN BY	P.D.P.	2-23-98
CHECKED BY	W.F.N.	2-23-98
APPROVED BY		
CADFILE	SCALE	
G479F001	1"=2	2000'
STS PROJECT NO.	FIGURE N	0.
23379XF		1

STS Consultants Ltd.
Consulting Engineers

FACILITY LOCATIONS
CARVER BOAT CORPORATION
PULASKI, WISCONSIN

DRAWN BY	P.D.P.	2-23-98			
CHECKED BY	W.F.N.	2-23-98			
APPROVED BY					
CADFILE G479F04	SCALE 1"=500'				
STS PROJECT NO. 23379XF	FIGURE N	o. 2			

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UST #6 & #7 LOCATION DIAGRAM CARVER BOAT CORPORATION PULASKI, WISCONSIN

DRAWN BY	R.A.B.	2-23-97
CHECKED BY	W.F.N.	2-23-98
APPROVED BY		
CADFILE	SCALE 1":	=5'
STS PROJECT NO.	FIGURE N	0.
23379XF		3

W:\DWG97\23379\XF\G437903A 02/23/1998 16:00 Decommissioning of USTs #6 and #7 by Phenco began on October 2, 1997, with removal of the

concrete slab and other concrete above the USTs.

On October 3, 1997, Carver removed approximately 500 gallons of acetone from UST #7. The

acetone was transferred to another location at the Carver facility. The resin UST had previously

been emptied and cleaned by Carver.

Also on October 3, 1997, Phenco excavated around the immediate exterior of USTs #6 and #7

prior to lifting them from the excavation. Phenco monitored the atmosphere in the USTs and

surrounding area for combustible gases. At the time of the UST removals, no holes,

deterioration, or cracks were observed in either of the two bare steel tanks. No impacts to

groundwater were observed. Low-level soil impacts were observed in soil samples which were

field screened with a flame ionization detector (FID).

Soil sample collection was performed on the day of UST removal. STS' site assessor collected

soil samples at a depth of 3 feet below ground surface (bgs), above the apparent groundwater

table which was at approximately 4 feet bgs. No soil samples could be collected from the north

side of the USTs due to the presence of a concrete footing. Soil descriptions are provided on

Table 1. Sample locations are shown on Figure 2. Portions of the soil samples were placed in

sealed containers for field screening with an FID. Other portions of the soil samples were

transferred into laboratory containers. The laboratory containers were placed in an ice-filled

cooler for transportation to the U.S. Oil Company, Inc. (U.S. Oil) Laboratory, Kimberly,

Wisconsin. The samples were submitted under Chain of Custody control for analysis of volatile

organic compounds (VOC) including acetone and styrene by Method 8260. (Styrene is a

primary constituent of the resin formerly stored in UST #6.)

- 5 -

TABLE 1 SOIL FIELD OBSERVATIONS AND LABORATORY RESULTS CARVER BOAT CORPORATION USTs #6 AND #7 PULASKI, WISCONSIN

Sample Location	Depth (feet)	FID (units)	Soil Description	Odor	Acetone (μg/kg)	Styrene (µg/kg)	MTBE (µg/kg)	Tetrachloroethene (μg/kg)	Benzene (µg/kg)	Toluene (μg/kg)	Ethylbenzene (µg/kg)	Xylenes (μg/kg)
6-SS-1	3	52	Dark Brown Fine to Medium Silty Sand	Slight	<100	36	<25	<25	<25	<25	<25	<50
6-SS-2	3	10	Dark Brown Fine to Medium Silty Sand	Possible	<100	<25	<25	26	<25	<25	<25	<50
6-SS-3	3	6	Dark Brown Fine to Medium Silty Sand	No	120	31	<25	51	<25	<25	<25	<50
6-SS-4	3	4	Dark Brown Fine to Medium Silty Sand	No	<100	<25	28	<25	<25	<25	<25	<50
6-SS-5	3	4	Dark Brown Fine to Medium Silty Sand	No	<100	<25	36	<25	<25	<25	<25	<50
S-1A	4	65	Brown Red Silty Clay	Slight		-	-	-		•	.	-
S-2A	4	25	Brown Red Silty Clay	Possible	-	-	-	-	-	-	-	-
S-3A	4	50	Brown Red Silty Clay	Slight	-	-	-	-	-	-		•
S-4A	4	7	Brown Red Silty Clay	No	-	-	-	_	-	-	l - 1	-
S-5A	4	7	Brown Red Silty Clay	No	-	-	-	-	-	-	.	-

Notes:

- = Not Analyzed MTBE = Methyl tert Butyl Ether

FID = Flame Ionization Detector

VOCs not listed were not detected in any sample

Carver Boat Corporation STS Project No. 23379XF February 26, 1998

The UST excavation was backfilled with the soil previously excavated in order to remove the USTs, and with additional imported fill. The backfill was then compacted with the backhoe

bucket and a vibratory plate compactor.

Phenco cut up the USTs for transport to Sadoff Iron and Metal (Sadoff), Green Bay, Wisconsin.

Tank Disposal Forms signed by a Sadoff representative are included in Appendix A.

Carver previously submitted Underground Petroleum Product Tank Inventory forms (ERS-7437)

and a Checklist for Underground Tank Closure (ERS-8951) to WDCOMM under separate cover.

Copies of these forms are included in Appendix B.

3.0 SOIL TEST RESULTS

FID screening results, olfactory observations, and analytical test results are summarized on Table 1. Field evidence indicated the possibility of soil impacts, with somewhat higher FID readings reported for the samples collected to the east and south of the excavation. Olfactory observations also indicated the possibility of some impacts to the east with no odors observed on the west side.

Laboratory testing indicated the presence of three VOC compounds in Sample 6-SS-3 and one compound in each of the other tamples. Styrene, tetrachloroethene and methyl tert-butyl ether (MTBE) were each detected in two samples, while acetone was detected in one sample. In only one instance did any VOC concentration exceed 100 micrograms per kilogram (µg/kg), that being acetone in Sample 6-SS-3 at 120 µg/kg. Benzene, toluene, ethylbenzene, and xylenes, collectively referred to as BTEX, were not detected in any sample. The U.S. Oil Analytical report is in Appendix C.

4.0 CONCLUSIONS AND RECOMMENDATIONS

One 6,000-gallon resin UST and one 2,000-gallon acetone UST were both decommissioned by removal. The steel tanks were observed to be in good condition with no holes or pitting reported. Low level detections of styrene, acetone, tetrachloroethene, and MTBE were reported in soil samples, and along with field indications provide evidence that a release has occurred. We therefore recommend further subsurface investigation.

Carver Boat Corporation STS Project No. 23379XF February 26, 1998

5.0 GENERAL QUALIFICATIONS

Conditions and conclusions presented in this report are based on site observations and results of field and laboratory tests performed on collected soil samples. The scope of this report is limited to the specific project and locations described herein. Our description of the project represents our understanding of the significant aspects relative to subsurface conditions. This information should not be used for purposes other than intended.

APPENDIX A

Tank Disposal Form

Phenco,

Jab 27029

ENVIRONMENTAL CONSTRUCTION

TANK DISPOSAL FORM

Pheneo Inc
1977 American Dr.
Noenah Wi. 54956
Received from Phenco, Inc. agent for:
Project No. 2029
Name: Carrer Boat Cop
Location: Markham Dr.
Pokski Wi.
Tank (s) have been properly cleaned and rendered non-reusable for recycle or disposal.
Received by: Cuy Kay Date: 10-7-97

APPENDIX B

Underground Petroleum Product Tank Inventory Forms (ERS-7437)

Checklist for Underground Tank Closure (ERS-8951)

State of Wisconsin

UNDERGROUND PETROLEUM PRODUCT TANK INVENTORY

WI Tank ID#: <u>のらけるのようん</u> Information Required By Section 101.142, Wis. Stats.

Send Completed Form To: (C)
Department of Commerce
ERS Division
Bureau of Storage Tank Regulation
P.O. Box 7969, Madison, WI 53707

Underground tanks in Wisconsin that have stored or currently store petroleum or regulated substances must be registered. Please see the reverse side for additional information on this program. An underground storage tank is defined as any tank with at least 10 percent of its total volume (including piping) located below ground level. A separate form is needed for each tank. Send each completed form to the agency designated in the top right corner. Have you previously registered this tank by submitting a form? 🔁 Yes 📋 No If yes, are you correcting/updating information only?

☐ Yes ☐ No Personal information you provide may be used for secondary purposes. [Privacy Law, s. 15.04 (1)(m)] This registration applies to a tank that is (check one): Fire Department providing fire coverage where tank is located: 1A. In Use or 8. Ownership Change (Indicate 6. Closed - Filled with Inert Materials N Village なのS//の 1B. Newly Installed new owner name in block 2) ☐ City Abandoned with Product 7. Out of Service - Provide Date: ☐ Abandoned No Product (empty) or with Water IDENTIFICATION (Please Print) 1. Tank Site Name Site Address Site Telephone Number 90 (920)822-RP ☐ City **▼** Village ☐ Town of: State LASKI BROW. Tank Owner Name Mailing Address Telephone Number ARVER City ☐ Town of: State Village County u LASKi 3. Previous Name Previous site address if different than #1 4. Tank Age (date installed, if known or years old) Tank Capacity (gallons) 6. If more than one tank is located at facility, please provide tank # 951/00596 000 B. TYPE OF USER (check one) 1. ☐ Gas/Retail Sales 2.

Bulk Storage 4. Mercantile/Commercial 3. Utility 5. Trindustrial 6. Government 7.
School 8.

Residential 9. Agricultural 10.

Other (specify): 11.

Tribal Nation 12.

Federal Property ☐ Backup Generator C. TANK CONSTRUCTION (check one) 2. Cathodically Protected & Coated Steel (Check one: A. Sacrificial Anodes or B. Impressed Current) 1.

☐ Bare Steel Coated Steel 5. Other (specify): 4.

Fiberglass 6. Lined - Date: Steel - Fiberglass Reinforced Plastic Composite Approval: 1. Nat'l Std. 3.

Other: 2. 🔯 UL Is tank double walled? ☐ Yes No. No If yes, identify type: Overfill Protection Provided? ☐ Yes Spill Containment? No Vapor monitoring
 Interstitial monitoring 3. Groundwater monitoring Tank leak detection method: 1. X Automatic tank gauging 4. Inventory control and tightness testing 7. Manual tank gauging (only for tanks of 1,000 gallons or less) 8. Statistical Inventory Reconciliation (SIR) D. PIPING CONSTRUCTION 1. Bare Steel 2. Cathodically Protected & Coated Steel (Check one: A. Sacrificial Anodes or B. Impressed Current) 3.

Coated Steel 4.

☐ Fiberglass 5. Other (Specify): 9. Unknown CARB #: Vapor Recovery/Stage II Operational - Provide Date (mo/day/yr): 4. Fiberglass ☐ Flexible 5. Other (specify): 1. ☐ Pressurized piping with A. ☐ auto shutoff; B. ☐ alarm or C. ☐ flow restrictor Piping System Type: ☐ Not needed if waste oil 2.
Suction piping with check valve at tank 3. Suction piping with check valve at pump and inspectable Piping leak detection method: used if pressurized or check valve at tank: 1. ☐ Vapor monitoring 2. Interstitial monitoring 3. Groundwater monitoring 4.

Tightness testing 5. Line leak detector 6. Not required 8. ☐ SIR Approval: 1. Nat'l Std. 2. 🗍 UL Other: Yes Is pipe double walled? ĭ⊠ No E. TANK CONTENTS 1. Diesel □ Leaded 3.

Unleaded 4. Fuel Oil 5. Gasohol 8.

Sand/Gravel/Slurry* 9. Unknown* 10. Premix 6. A Other (Specify): ☐ Aviation 11. Waste/Used Motor Oil (Indicate chemical name and number) * If 7, 8, 9, or 13 is chosen, this tank is NOT PECFA eligible. If Tank Closed, Abandoned or Out of Service, give date (mo/day/yr); Has a site assessment been completed (see reverse side for details) No. Yes \(\square\) No. -3-97 Indicate whether: Owner or Operator Name (please print): ☐ Owner or Operator alone Owner or Operator Signature:

WI Tank ID#:

UNDERGROUND PETROLEUM PRODUCT TANK INVENTORY

Information Required By Section 101.142, Wis. Stats.

Underground tanks in Wisconsin that have stored or currently store petroleum or regulated substances must be registered. Please see

Send Completed Form To:
Department of Commerce
ERS Division
Bureau of Storage Tank Re

Bureau of Storage Tank Regulation P.O. Box 7969, Madison, WI 53707

its total volume (including piping) located tagency designated in the top right corner correcting/updating information only?	below grour . Have you Yes □ No	previously regis o	arate form is tered this ta	needed for e ank by submit	each tank. Ś	end each com	pleted form t	to the
Personal information you provide may be used This registration applies to a tank that is (che	ck one).	y purposes, (Priva	cy Law, S. 15	1.04 (T)(m)j		Fire Departme	nt providing fir	
		Tank Removed	8 🗆 0	wnership Chan	ne (Indicate	coverage whe		
I		Filled with Inert Ma		ew owner name	e in block 2)	☐ City 🔀 V		
		rvice - Provide Dat			L L			
3. Abandoned No Product (empty) or wit	_					☐ Town of ∠	ULASK	1
A. IDENTIFICATION (Please Print)								
Tank Site Name	1	Site Address				Site Telephone	Number	
PARIER BUT CER	。	790 m	ARKH	1.	1	1920)8	222 90	. ^ -
CARVER BOAT CORK	own of:	State			163.6	County	00-10	60
		() =		Zip Code	4/62	•		
PuLASK!		127		5477	48	BROW	<u> </u>	
2. Tank Owner Name		Mailing Address	_		-	relebilone Mil	nber	
CARVER BOAT CO	RP	P.D. K	70x /	0/0	((920) 8	22-9=	000
City Village To	own of:	State		Zip Code 50	1162	County		
PULASK;		112		5017	2	BROL	٦, ١	
3. Previous Name		Previous site add	ress if differe	nt than #1		~//\		
		PIOT	2 1	0.10	· - 1,	1		
A T-0. A-73-4-2-3-0-4 (I)		5. Tank Capacity	(3414Pi	NG/L	/		
4. Tank Age (date installed, if known or y	years old)					•	please provide	e tank
/-/-84		2,000		05/	1005	95		
B. TYPE OF USER (check one)		'						
 ☐ Gas/Retail Sales ☐ Bulk St 	•	3. Utility		Mercantile/Cor	mmercial 5	5. 🏿 Industrial		
6. ☐ Government 7. ☐ School		8. Residentia		Agricultural	10	0. 🗌 Other (sp	ecify):	
11. Tribal Nation 12. Federal	I Property 1	13. ☐ Backup Ge	enerator					
C. TANK CONSTRUCTION (check one)								
		ed & Coated Steel		: A. 🗌 Sacrific	cial Anodes or	B. Impresse	d Current)	
 3. ☐ Coated Steel 4. ☐ Fibergla 		5. Other (spe						
6. Lined - Date:	-	7. Steel - Fib	erglass Reinf	orced Plastic C	omposite	9. 🔲 Unknowr	1	
Approval: 1 Notil Ctd 2 Ull 2								
Approval: 1. Nat'l Std. 2. UL 3.	. 🔲 Other:				Is tank doub	ole walled?	☐ Yes 🔯	No
Overfill Protection Provided? Yes		es, identify type:			Is tank doub			No No
Overfill Protection Provided? Yes	No If ye	es, identify type:	2. 🗆	Vapor monitori	Spill Contair	nment?	☐ Yes 🔯	No
Overfill Protection Provided? Yes Tank leak detection method: 1. Automa 4. Invento	No If yeatic tank gaug	ging d tightness testing	5. 🗖	Vapor monitori	Spill Contair ing : iitoring	nment? 3. 🔲 Groundw	Yes 🔀	No g
Overfill Protection Provided? Yes Tank leak detection method: 1. Automa 4. Invento 7. Manual	No If yeatic tank gaug	ging	5. 🗖	Interstitial mon	Spill Contair ing : iitoring	nment?	Yes 🔀	No g
Overfill Protection Provided? Tank leak detection method: 1.	No If yeatic tank gaug by control and I tank gauging	ging d tightness testing g (only for tanks of	5. 🗍 f 1,000 gallon	Interstitial mon is or less)	Spill Contairing :itoring 8. Statistic	nment? 3. ☐ Groundw cal Inventory R	Yes 🔀	No g
Overfill Protection Provided?	No If yeatic tank gaugory control and I tank gauging	ging d tightness testing g (only for tanks of ted & Coated Stee	5. ☐ f 1,000 gallon I (Check one	Interstitial mon is or less)	Spill Contairing :intoring 8. Statistic	nment? 3.	Yes Nater monitoring econciliation (Seed Current)	No g
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Wisconsin Department of Industry, Labor and Human Relations

Complete one form for each site closure.

CHECKLIST FOR UNDERGROUND TANK CLOSURE

RETURN COMPLETED CHECKLIST TO: Safety & Buildings Division Fire Prevention & Underground Storage Tank Section P. O. Box 7969, Madison, WI 53707

	A. IDENTIFICATION: (Ple	ease Print)	Indicate wheth	er closure is for: 🔼	Tank System	☐ Tan	k Only	□ P	iping C	nly
	1. Site Name	Bac	J+ Co.			BOAT	-	ORP		
	Site Street Address (not P.O. E		<u> </u>	Owner Street	Address	,, ,		<u> </u>		
	790 MARI		☐ Town of:	Cix	Village Town	10/c	State	Zip C	ode 55	(/6)
	Pu LASK!	· · · · · · · · · · · · · · · · · · ·			ASKI	l la Ca	IUL	چې .	120	0
	State	ip Code 54/1	BROW	County BRO		one No. (ir クレー) 8		•	0	
	3. Closure Company Name (F		0	losure Company Street A	ddress,	تست	,\	>0	-10.	
	Closure Company Telephone N	lo. (include area	code) C	losure Company City, Sta		<u> </u>	<u></u>			
	1920) 729-			MEENA		<i>)</i>				
	4. Name of Company Perform	ing Ciosure Asse にての	1	ssessment Company Stre	er Address, City, Sta DK (eileet)			4311		
	Telephone # (inclass area co	de) Cunified As	sessor Name (Print)	Assasso	Signature		As	sessor Ce		No.
	(920) 468-1478		ALAULAY		Tank Cabacity	Contor		482		mani
. د	Tank ID #	Closure	Temp. Closure			Conter		Closure		ment
- م دد	1.05/100595	X-		 	2000	00		27		
٠.	2.651100596	<u> </u>		- 	6000			<u> </u>		
	3. 4	<u> </u>	П			<u> </u>		Y Y		
	5.	П	П					ПΥ		
	5.							Y	ПΝ	
	* Indicate which product by 11-Waste oil; 13-Chemica	numeric code	: 01-Diesel; 02-Le chemical name(s	eaded; 03-Unleaded; 0) or numbers(s)	4,Fuel Oil; 05-Gas	ohol; 06-	Other; 09 ; 14-K	-Unknov erosene;	vn; 10-F 15-Avi	Premix; ation.
	Written notification was prov						-		N [□NA
	All local permits were obtain							₹	N [NA
	Check applicable box at B. TEMPORARILY OUT			atements in Section	ns B - E.		Remov Verific		pector erified	NA
	Written inspector approv	val of tempora		ed, which					_	
	is effective until (provide 1. Product Removed	e date)						_ N		Ø
) and resulting liquid (N		Ž
	c. All product remove	ed to within 1"	of bottom] N] N		802
	 Fill pipe, gaug pipe, All product lines at th 									X) VI
	Dispensers/pumps le	ft in place but	locked and power	r disconnected				N		剪
	5. Vent lines left open.6. Inventory form filed in	ndicating temp	orary closure					_ N _ N		KŽ ŽĮ
	C. CLOSURE BY REMO				,		_=			
	1. Product from piping							N	M	
	 Piping disconnected All liquid and residue 							א <u>ר</u> א ר		
	4. All pump motors and	suction hoses	bonded to tank of	or otherwise grounded.				ΠN	図	
	Fill pipes, gauge pipe NOTE: DROP TUBE			submersible pumps at IF THE TANK IS TO E			<u>1</u> 23√	Ли	M	
	THE USE OF AN ED 6. Vent lines left connections 6. Vent line		s nurged					٦N	П	\Box
	Tank openings tempo	orarily plugged	so vapors exit th	rough vent				ΠN		\$
	 Tank atmosphere red Tank removed from e 						8 4 [ЛИ	図	
							RY C	ΒN	I	
	10. Tank cleaned before	bolog kamasis	d boing ramant	from site			X Y [Ŋ	$\bar{\Sigma}$	

C. CLOSURE BY REMOVAL (continued)	Remover Verified	Inspector Verified	<u>NA</u>
11. Tank labeled in 2" high letters after removal but before being moved from site			×
 12. Tank vent hole (1/8 th " in uppermost part of tank) installed prior to moving the tank from site. 13. Inventory form filed by owner with Safety and Buildings Division indicating closure by removal. 14. Site security is provided while the excavation is open. 	∑ ∑∕∨□ N		
D. CLOSURE IN PLACE			
NOTE: CLOSURES IN PLACE ARE ONLY ALLOWED WITH THE PRIOR WRITTEN APPROVAL OF THE DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATIONS OR LOCAL AGENT			
 Product from piping drained into tank (or other container). Piping disconnected from tank and removed	ПҮ П N	П	M
3. All liquid and residue removed from tank using explosion proof pumps or hand pumps	□Υ □ Ν		Ž
 All pump motors and suction hoses bonded to tank or otherwise grounded. Fill pipes, gauge pipes, vapor recovery connections, submersible pumps and other fixtures removed. NOTE: DROP TUBE SHOULD NOT BE REMOVED IF THE TANK IS TO BE PURGED THROUGH THE USE OF AN EDUCTOR - EDUCTOR OUTPUT 12 FT ABOVE GRADE. 	ved. 🗌 Y 🗌 N	. 🗆	A RYCHEIK
6. Vent lines left connected until tanks purged		. 🔲	[X]
 Tank openings temporarily plugged so vapors exit through vent. Tank atmosphere reduced to 10% of the lower flammable range (LEL) - see Section F. 			SKINKERE
 Tank properly cleaned to remove all sludge and residue. Solid inert material (sand, cyclone boiler slag, pea gravel recommended) introduced and tank fille 			E
11. Vent line disconnected or removed.	🗌 Y 🗌 N		
12. Inventory form filed by owner with Safety and Buildings Division indicating closure in place	<u>Y</u> N	200	
E. CLOSURE ASSESSMENTS NOTE: DETERMINE IF A CLOSURE ASSESSMENT IS REQUIRED BY REFERRING TO ILHR 1	0.		
1. Individual conducting the assessment has a closure assessment plan (written) which		<u></u>	
is used as the basis for their work on the site. 2. Do points of obvious contamination exist?		X	
3. Are there strong odors in the soils?	🗌 Ү 🔀 N	Ž	
4. Was a field screening instrument used to pre-screen soil sample locations?5. Was a closure assessment omitted because of obvious contamination?	🗖 Ү 🖫 и		
Was the DNR notified of suspected or obvious contamination?			
7. Contamination suspected because of: Odor Soil Staining Free Product Sheen On Grou	ndwater Field	Instrument T	Γest
F. METHOD OF ACHIEVING 10% LEVEL DESCRIPTION			
Educator Or Diffused Air Blower Eductor driven by compressed air, bonded and drop tube left in place; vapors discharged minim	num of 12 feet abo	ove around.	
Diffused air blower bonded and drop tube removed. Air pressure not exceeding 5 psig.		y, cana	
Dry Ice Dry ice introduced at 1.5 pounds per 100 gallons of tank capacity. Dry ice crushed and distribution	uted over the grea	test possible	e tank
area. Dry ice evaporated before proceeding.	•	•	
☐ Inert Gas (CO/2 or N/2) NOTE: INERT GASSES PRODUCE AN OXYGEN DEFICIENT ATMOSI ENTERED IN THIS STATE WITHOUT SPECIAL EQUIPMENT	PHERE. THE TA	NK MAY NC) I BE
Gas introduced through a single opening at a point near the bottom of the tank at the end of the Gas introduced under low pressure not to exceed 5 psig to reduce static electricity. Gas introduced through the control of the control			
☐ Tank atmosphere monitored for flammable or combustible vapor levels.			
Calibrate combustible gas indicator. Drop tube removed prior to checking atmosphere. Tanks and upper portion of tank. Readings of 10% or less of the lower flammable range (LEL) obtained			iddle
ground.		J	
G. NOTE SPECIFIC PROBLEMS OR NONCOMPLIANCE ISSUES BELOW			
6000 gal TANE Contents			
H. REMOVER/CLEANER INFORMATION			
1. REMOVER/CLEANER INCOMMATION	n 1 G	10 2	C1-
Remover Name (print) Remover Signature Remover	Certification No.	Date Signed	1/
I. INSPECTOR INFORMATION			
Par to B. Alle S.	, 25~~	マ	
Inspector Name (print) Inspector Signature	/ 3500 Inspector Ce	rtification No	
EDID # For Location Where Inspection Performed Inspector Telephone Number	Date Signed	<u>97</u>	

APPENDIX C

Analytical Laboratory Reports (Soil Testing)



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Project #:

23379XF

Project:

Carver Boat Corp

Sample ID:

6-SS-1

Lab Code:

5018957A

Sample Type:

Soil Sample Date: 03-Oct-97

Report Date:

24-Oct-97

Test	Result	LOD	LOQ	Unit	Dilution Factor	Date Analyzed:	Analyzed By:	QC Code
TOTAL SOLIDS	90.6			%		07-Oct-97	BNR	1
VOC Mod SW846 8260 (Meth Pres.)						18-Oct-97	CJR	
Acetone Styrene	< 100 36	31 2	1	UG/KG UG/KG				2,3 1

LOD = Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ.

LOQ = Limit of Quantitation

QC SUMMARY

CODE:

All laboratory QC requirements were met for this sample. 1

The check standard failed to meet acceptable QC limits. 2

The duplicate RPD failed to meet acceptable QC limits. 3



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

VOC Method 8260 Volatile Organic Compounds (Methanol Preserved)

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date:

23-Oct-97

Analyzed By:

CJR	
0000	_

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/KG	UG/KG	Factor
Benzene	< 25	2.5	8	1
Bromobenzene	< 25	2.6	8.1	1
Bromodichloromethane	< 25	2.6	8.1	. 1
n-Butylbenzene	< 25	3	10	1
sec-Butylbenzene	< 25	1.8	5.5	1
tert-Butylbenzene	< 25	2.5	7.9	1
Carbon Tetrachloride	< 25	4.6	15	1
Chlorobenzene	< 25	1.9	6	1
Chloroethane	< 25	10	31	1
Chloroform	< 25	4.1	13	1
Chloromethane	< 25	4.9	15	1
2-Chlorotoluene	< 25	1.6	5.2	1
4-Chlorotoluene	< 25	2.3	7.3	1
1,2-Dibromo-3-Chloropropane	< 25	11	33	1
Dibromochloromethane	< 25	3.8	12	1
1,2-Dichlorobenzene	< 25	2.8	8.7	1
1,3-Dichlorobenzene	< 25	2.5	7.9	1
1,4-Dichlorobenzene	< 25	2.3	7.2	1
Dichlorodifluoromethane	< 25	9.4	30	1
1,1-Dichloroethane	< 25	2.7	8.4	1
1,2-Dichloroethane	< 25	11	35	1
1,1-Dichloroethene	< 25	6.9	22	1
cis-1,2-Dichloroethene	< 25	4	13	1
trans-1,2-Dichloroethene	< 25	9.4	30	1
1,2-Dichloropropane	< 25	2.8	8.7	1
1,3-Dichloropropane	< 25	3.8	12	1

Dibromofluoromethane Sur

1,2-Dichloroethane-d4 Sur Toluene-d8 Sur

4-Bromofluorobenzene Sur

101 % Rec.

102 % Rec.

103 % Rec.

101 % Rec.

Project #: Project:

23379XF

Sample ID:

Carver Boat Corp

Lab Code:

6-SS-1 5018957A

Sample Type: Sample Date: Soil

Date

03-Oct-97

_'	Analyz	od.
	/ IIIGI y Z	.cu.

17-Oct-97

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/KG	UG/KG	Factor
2,2-Dichloropropane	< 25	4.1	13	1
Di-Isopropyl ether	< 25	2.9	9	1
Ethylbenzene	< 25	1.7	5.4	1
EDB (1,2-Dibromoethane)	< 25	3.1	10	1
Hexachlorobutadiene	< 25	3.3	10	1
Isopropylbenzene	< 25	2.6	8.1	1
p-Isopropyltoluene	< 25	2.3	7.1	1
Methylene chloride	< 25	7	22	1
MTBE	< 25	4.5	14	1
Naphthalene	< 25	3.8	12	1
n-Propylbenzene	< 25	2.6	8.1	1
1,1,2,2-Tetrachloroethane	< 25	4.6	14	1
Tetrachloroethene	< 25	5.4	17	1
Toluene	< 25	1.6	4.9	1
1,2,3-Trichlorobenzene	< 25	4	13	1
1,2,4-Trichlorobenzene	< 25	3.3	10	1
1,1,1-Trichloroethane	< 25	3.1	10	1
1,1,2-Trichloroethane	< 25	5	16	1
Trichloroethene	< 25	7.5	24	1
Trichlorofluoromethane	< 25	6.5	21	1
1,2,4-Trimethylbenzene	< 25	1.6	5	1
1,3,5-Trimethylbenzene	< 25	2.4	7.7	1
Vinyl Chloride	< 25	10	31	1
m&p-Xylene	< 25	1.9	5.9	1
o-Xylene	< 25	2.4	7.6	1

LOD = Limit of Detection

LOQ = Limit of Quantitation

QC Batch #

Total % Solids

120088

91

GCMS #12



Analytical Laboratory 1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295 WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #: Sample ID: 23379XF 6-SS-1

F Report Date: Lab Code: 23-Oct-97 5018957A

ANALYTE	INITIAL	KNOWN	INT STD	METHOD	LCS	MATRIX	MATRIX
	CALIBRATION	STANDARD	AREA %	BLANK	SPIKE	SPIKE	SPIKE RPD
Benzene	Р	Р	Р	Р	P	P	P
Bromobenzene	P	P	Р	P	P	P	P
Bromodichloromethane	P	Р	Р	P	P	P	P.
n-Butylbenzene	P	P	Р	P	P	P	P.
sec-Bulylbenzene	l P	P	P	P	P	P	P
lert-Butylbenzene	P	P	P	P	P	P P	P
Carbon Tetrachlonde	P	Р	P	P	P	P	P
Chlorobenzene	P	Р	Р	P	P	P	P
Chloroethane	l P	F	P	P	F	F	P
Chloroform	P	P	P	Р	P	P	P
Chloromethane	P	Р	P	P	P	P	P
2-Chlorotoluene	P	Р	Р	l p	P	P	P
4-Chlorotoluene	P	Р	Р	P	P	P	P
1,2-Dibromo-3-Chloropropane	P	Р	Р	P	P	P	P.
Dibromochloromethane	P	Р	Р	P	P	P	P.
1,2-Dichlorobenzene	P	Р	Р	P	P	P	P
1.3-Dichlorobenzene	Р	Р	P	P	P	P	P
1.4-Dichlorobenzene	P	Р	Р	P	P	P	P
Dichlorodifluoromethane	P	Р	P	P	P	P	P
1.1-Dichloroethane	P	Р	Р	P	P	P	P
1.2-Dichloroethane	P	Р	Р	P	P	P	P
1,1-Dichloroethene	P	P	P	P.	P	P	P
cis-1,2-Dichloroethene	P	Р	P	P	P	'p	P P
Irans-1,2-Dichloroethene	P	Р	Р	P	P	P	P.
1,2-Dichloropropane	P	Р	Р	P	P	P	P
1,3-Dichloropropane	i p	Р	Р	P	P	P	P
2,2-Dichloropropane	P	Р	Р	Р	P	P	P
Di-isopropyl Ether	Р	Р	Р	P	P	P	P.
Ethylbenzene	Р	Р	Р	P	P	P	P
EDB (1,2-Dibromoethane)	P	Р	Р	Р	P	P	P
Hexachlorobutadiene	P	Р	Р	Р	P	l p l	P
Isopropylbenzene	P	Р	Р	Р	Р	P	P
p-Isopropyltoluene	P	Р	Р	Р	Р	Р	Р
Methylene Chloride	P	F	Р	Р	Р	Р	Р
MTBE	P	Р	Р	Р	Р	Р	Р
Naphthalene	P	F	Р	Р	Р	Р	Р
n-Propylbenzene	P	Р	Р	Р	Р	Р	Р
1,1,2,2-Telrachloroethane	Р	Р	Р	Р	P	Р	Р
Telrachloroethene	Р	Р	Р	Р	Р	Р	Р
Toluene	P	Р	Р	Р	Р	Р	Р
1,2,3-Trichlorobenzene	P	Р	Р	Р	Р	Р	Р
1,2,4-Trichlorobenzene	P	Р	Р	Р	Р	Р	Р
1,1,1-Trichloroethar:e	P	Р	Р	Р	Р	Р	Р
1,1,2-Trichloroethane	P	Р	Р	Р	Р	Р	P
Trichloroelhene	P	Р	Р	Р	Р	Р	P
Trichlorofluoromethane	P	F	Р	Р	F	F	Р
1,2,4-Trimethylbenzene	P	Р	Р	Р	Р	Р	P
1,3,5-Trimethylbenzene	P	Р	Р	Р	Р	Р	P
Vinyl Chloride	P	Р	Р	Р	P	P	P
m&p-Xylene	P	Р	Р	Р	Р	P	P
o-Xylene	Р	Ρ.	Р	Р	P	Р	Р

SPCC 1,1-Dichloroethane	Р	QC Batch # 120088
SPCC 1,1,2,2-Tetrachloroethane	Р	F = Failed QC limits.
SPCC Bromoform	Р	P = Passed QC limits.
SPCC Chlorobenzene	P	NA = Not Applicable
SPCC Chloromethane	Р	VOC analysis detected unidentified peaks.

Authorized Signature

f...h



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date:

Project #:

23379XF

Project:

Carver Boat Corp

Sample ID:

6-SS-2

Lab Code:

5018957B

Sample Type:

Soil

Sample Date:

03-Oct-97

Test	Result	LOD	LOQ	Unit	Dilution Factor	Date Analyzed:	Analyzed By:	QC Code
TOTAL SOLIDS	87.6			%		07-Oct-97	BNR	1
VOC Mod SW846 8260 (Meth Pres.) Acetone Styrene	< 100 < 25	31 2		UG/KG UG/KG		18-Oct-97	CJR	2,3

LOD = Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ.

LOQ = Limit of Quantitation

QC SUMMARY

CODE:

All laboratory QC requirements were met for this sample.

24-Oct-97

The check standard failed to meet acceptable QC limits. 2

The duplicate RPD failed to meet acceptable QC limits. 3



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

VOC Method 8260 Volatile Organic Compounds (Methanol Preserved)

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date: Analyzed By:

CJR

23-Oct-97

ANALYTE	RESULT	LOD	LOQ	Dilution
	1 4 4	UG/KG	UG/KG	Factor
Benzene	< 25	2.5	8	1
Bromobenzene	< 25	2.6	8.1	1
Bromodichloromethane	< 25	2.6	8.1	1
n-Butylbenzene	< 25	3	10	1
sec-Butylbenzene	< 25	1.8	5.5	1
tert-Butylbenzene	< 25	2.5	7.9	1
Carbon Tetrachloride	< 25	4.6	15	1
Chlorobenzene	< 25	1.9	6	1
Chloroethane	< 25	10	31	1
Chloroform	< 25	4.1	13	1
Chloromethane	< 25	4.9	15	. 1
2-Chlorotoluene	< 25	1.6	5.2	1
4-Chlorotoluene	< 25	2.3	7.3	1
1,2-Dibromo-3-Chloropropane	< 25	11	33	1
Dibromochloromethane	< 25	3.8	12	1
1,2-Dichlorobenzene	< 25	2.8	8.7	1
1,3-Dichlorobenzene	< 25	2.5	7.9	1
1,4-Dichlorobenzene	< 25	2.3	7.2	1
Dichlorodifluoromethane	< 25	9.4	30	1
1,1-Dichloroethane	< 25	2.7	8.4	1
1,2-Dichloroethane	< 25	11	35	1
1,1-Dichloroethene	< 25	6.9	22	1
cis-1,2-Dichloroethene	< 25	4	13	1
trans-1,2-Dichloroethene	< 25	9.4	30	1
1,2-Dichloropropane	< 25	2.8	8.7	1
1,3-Dichloropropane	< 25	3.8	12	1

Dibromofluoromethane Sur	102 % Rec.
1,2-Dichloroethane-d4 Sur	103 % Rec.
Toluene-d8 Sur	102 % Rec.
4-Bromofluorobenzene Sur	99 % Rec.

Project: Sample ID:

Project #:

23379XF Carver Boat Corp

Lab Code: Sample Type: 6-SS-2 5018957B

Sar

Soil

Sample Date:	03-Oct-97
Date Analyzed:	17-Oct-97

431413475	550111.7			W
ANALYTE	RESULT	LOD UG/KG	LOQ UG/KG	Dilution Factor
2,2-Dichloropropane	< 25	4.1	13	
Di-Isopropyl ether	< 25	2.9		1
1 17	_		9	1
Ethylbenzene	< 25	1.7	5.4	1
EDB (1,2-Dibromoethane)	< 25	3.1	10	1
Hexachlorobutadiene	< 25	3.3		1
Isopropylbenzene	< 25	2.6	8.1	1
p-Isopropyltoluene	< 25	2.3	7.1	1
Methylene chloride	< 25	7	22	1
MTBE	< 25	4.5	14	1
Naphthalene	< 25	3.8	12	1
n-Propylbenzene	< 25	2.6	8.1	1
1,1,2,2-Tetrachloroethane	< 25	4.6	14	1
Tetrachloroethene	26	5.4	17	1
Toluene	< 25	1.6	4.9	1
1,2,3-Trichlorobenzene	< 25	4	13	1
1,2,4-Trichlorobenzene	< 25	3.3	10	1
1,1,1-Trichloroethane	< 25	3.1	10	1
1,1,2-Trichlcroethane	< 25	5	16	1
Trichloroethene	< 25	7.5	24	1
Trichlorofluoromethane	< 25	6.5	21	1
1,2,4-Trimethylbenzene	< 25	1.6	5	1
1,3,5-Trimethylbenzene	< 25	2.4	7.7	1
Vinyl Chloride	< 25	10	31	1
m&p-Xylene	< 25	1.9	5.9	1
o-Xylene	< 25	2.4	7.6	1

LOD = Limit of Detection LOQ = Limit of Quantitation

GCMS #12

QC Batch #

120088

Total % Solids

88

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #:

23379XF

Report Date:

23-Oct-97

Sample ID:

6-SS-2

Lab Code:

5018957B

ANALYTE	INITIAL	KNOWN	INTSTD	METHOD	LCS	MATRIX	MATRIX
그는 그런 이 유래되었다면 되는 것은 이 일까?	CALIBRATION	STANDARD	AREA %	BLANK	SPIKE	SPIKE	SPIKE RPD
Benzene	Р	Р	P	Р	Р	Р	Р
Bromobenzene	P	Р	P	P	Р	P	Р
Bromodichloromethane	Р	P	P	P	Р	P	Р
n-Butylbenzene	P	P	P	P	Р	P	Р
sec-Butylbenzene	P	P	P	P	Р	P	Р
tert-Butylbenzene	Р	Р	P	P	Р	P	Р
Carbon Tetrachloride	, P	P	. Р	P	Р	P	P
Chlorobenzene	P	P	P	P	Р	P	Р
Chloroethane	P	F	P	P	F	F	Р
Chloroform	P	P	P	P	Р	P	Р
Chloromethane	P	P	P	P	Р	P	Р
2-Chlorotoluene	P	Р	P	P	Р	P	Р
4-Chlorotoluene	Р	Р	P	P	Р	P	Р
1,2-Dibromo-3-Chloropropane	P	Р	P	P	Р	P	Р
Dibromochloromethane	P	P	P	P	P	P	Р
1,2-Dichlorobenzene	P	Р	P	P	P	P	P
1,3-Dichlorobenzene	P	Р	P	P	P	P	P
1.4-Dichlorobenzene	' Р	Р	P	P	P	P	P
Dichlorodifluoromethane	P	Р	P	P	P	P	P
1,1-Dichloroethane	P	P	P	P	P	P	P
1,2-Dichloroethane	P	P	P	P	P	P	P
1.1-Dichloroethene	Р	P	P	P	P	P	P
cis-1,2-Dichloroethene	P	P	P	P	P	P	P
trans-1,2-Dichloroethene	Р	P	P	P	P	P	P
1,2-Dichloropropane	P	P	P	P	P	P	P
1,3-Dichloropropane	P	P	P.	P P	P	P	P
2,2-Dichloropropane	i P	P	P	P	P	P	P
Di-isopropyl Ether	Р	P	P	P	P.	P P	Р
Ethylbenzene	P	P	P	P	P	P	P
EDB (1,2-Dibromoethane)	P	P	P.	P	P	P	Р
Hexachlorobutadiene	P	P	P	P P	P.	P	P
Isopropylbenzene	P	P	P	P	P	P	P
p-Isopropylloluene	Р	P	P	P	P	P	P
Melhylene Chloride	P	F	P	P	P	P	P
MTBE	Р	P	P.	P	P	P	P
M I DE Naphthalene	P	F F	P	P	P	P	P
naprittalene n-Propylbenzene	P	P	P	P	P	P	P
1,1,2,2-Tetrachloroethane	P	P	P	P	P	P	P
r, r,z,z-retrachioroethane Tetrachioroethene	P	i p	P	P	P	P	P
Telrachioroethene Toluene	F	l P	P	P	P	P	P
	P	P	P	P	P	P	P
1,2,3-Trichlorobenzene	P	P	P	P	P	P	P
1,2,4-Trichlorobenzene	P		P	P	P	P	P
1,1,1-Trichloroethane	P	P	P	P	P	P	
1,1,2-Trichloroethane	P	P	P	P	P	P	P P
Trichloroethene	P	F		P	F	F	P
Trichlorofluoromethane	P	P	P P	P			
1,2,4-Trimethylbenzene					Р	P	Р
1,3,5-Trimethylbenzene	P	P	Р	P	Р	P	Р
Vinyl Chloride	Р	P	Р	P	Р	P	P
m&p-Xylene	P	P	Р	P	Р	P	P
o-Xylene	. 0	l P	Р	P	Р	P	Р

Ρ SPCC 1,1-Dichloroethane SPCC 1,1,2,2-Tetrachloroethane Ρ SPCC Bromoform SPCC Chlorobenzene SPCC Chloromethane

QC Batch # 120088 F = Failed QC limits. P = Passed QC limits.

NA = Not Applicable VOC analysis detected unidentified peaks.



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

BILL NOEL

S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Project #:

23379XF

Project:

Carver Boat Corp

Sample ID:

6-SS-3

Lab Code:

5018957C

Sample Type:

Soil

Report Date:

24-Oct-97

Sample Date:

03-Oct-97

Test	Result	LOD	LOQ	Unit	Dilution Factor	Date Analyzed:	Analyzed By:	QC Code
TOTAL SOLIDS	87.5			%		07-Oct-97	BNR	1
VOC Mod SW846 8260 (Meth Pres.)						18-Oct-97	CJR	
Acetone	120	31		UG/KG				2,3
Styrene	31	2	6.4	UG/KG				1

LOD = Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ.

LOQ = Limit of Quantitation

QC SUMMARY

CODE:

1 All laboratory QC requirements were met for this sample.

The check standard failed to meet acceptable QC limits. 2

3 The duplicate RPD failed to meet acceptable QC limits.



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

VOC

Method 8260 Volatile Organic Compounds (Methanol Preserved)

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date:

Analyzed By:

23-Oct	-97
CJR	

ANALYTE	RESULT	LOD	LOD LOQ	
		UG/KG	UG/KG	Factor
Benzene	< 25	2.5	8	1
Bromobenzene	< 25	2.6	8.1	1
Bromodichloromethane	< 25	2.6	8.1	1
n-Butylbenzene	< 25	3	10	1
sec-Butylbenzene	< 25	1.8	5.5	1
tert-Butylbenzene	< 25	2.5	7.9	1
Carbon Tetrachloride	< 25	4.6	15	1
Chlorobenzene	< 25	1.9	6	1
Chloroethane	< 25	10	31	1
Chloroform	< 25	4.1	13	1
Chloromethane	< 25	4.9	15	1
2-Chlorotoluene	< 25	1.6	5.2	1
4-Chlorotoluene	< 25	2.3	7.3	1
1,2-Dibromo-3-Chloropropane	< 25	11	33	1
Dibromochloromethane	< 25	3.8	12	1
1,2-Dichlorobenzene	< 25	2.8	8.7	1
1,3-Dichlorobenzene	< 25	2.5	7.9	1
1,4-Dichlorobenzene	< 25	2.3	7.2	1
Dichlorodifluoromethane	< 25	9.4	30	1
1,1-Dichloroethane	< 25	2.7	8.4	1
1,2-Dichloroethane	< 25	11	35	1
1,1-Dichloroethene	< 25	6.9	22	1
cis-1,2-Dichloroethene	< 25	4	13	1
trans-1,2-Dichloroethene	< 25	9.4	30	1
1,2-Dichloropropane	< 25	2.8	8.7	1
1,3-Dichloropropane	< 25	3.8	12	1

Dibromofluoromethane Sur	100	% Rec.
1,2-Dichloroethane-d4 Sur	103	% Rec.
Toluene-d8 Sur	102	% Rec.
4-Bromofluorobenzene Sur	101	% Rec.

Project #: Project:

23379XF

Sample ID:

Carver Boat Corp 6-SS-3

Lab Code: Sample Type: 5018957C Soil

Sample Date: Date Analyzed: 03-Oct-97

17-Oct-97

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/KG	UG/KG	Factor
2,2-Dichloropropane	< 25	4.1	13	1
Di-Isopropyl ether	< 25	2.9	9	1
Ethylbenzene	< 25	1.7	5.4	1
EDB (1,2-Dibromoethane)	< 25	3.1	10	1
Hexachlorobutadiene	< 25	3.3	10	1
Isopropylbenzene	< 25	2.6	8.1	1
p-Isopropyltoluene	< 25	2.3	7.1	1
Methylene chloride	< 25	7	22	1
MTBE	< 25	4.5	14	1
Naphthalene	< 25	3.8	12	1
n-Propylbenzene	< 25	2.6	8.1	1
1,1,2,2-Tetrachloroethane	< 25	4.6	14	1
Tetrachloroethene	51	5.4	17	1
Toluene	< 25	1.6	4.9	1
1,2,3-Trichlorobenzene	< 25	4	13	1
1,2,4-Trichlorobenzene	< 25	3.3	10	1
1,1,1-Trichloroethane	< 25	3.1	10	1
1,1,2-Trichloroethane	< 25	5	16	1
Trichloroethene	< 25	7.5	24	1
Trichlorofluoromethane	< 25	6.5	21	1
1,2,4-Trimethylbenzene	< 25	1.6	5	1
1,3,5-Trimethylbenzene	< 25	2.4	7.7	1
Vinyl Chloride	< 25	10	31	1
m&p-Xylene	< 25	1.9	5.9	1
o-Xylene	< 25	2.4	7.6	1

LOD = Limit of Detection

LOQ = Limit of Quantitation

QC Batch # 120088

Total % Solids

88

GCMS #12

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #: Sample ID: 23379XF 6-SS-3 Report Date: Lab Code: 23-Oct-97 5018957C

ANALYTE	INITIAL	KNOWN	INTSTD	METHOD	LCS	MATRIX	MATRIX
	CALIBRATION	STANDARD	AREA %	BLANK	SPIKE	SPIKE	SPIKE RPD
Benzene	1 P	P	P	P	Р	Р	Р
Bromobenzene	; P	P	Р	P	P	P	Р
Bromodichloromethane	: Р	. Р	Р	P	P	P	Р
n-Butylbenzene	Р	Р	Р	Р	P	P	Р
sec-Butylbenzene	: Р	Р	P	į P	P	P	Р
tert-Butylbenzene	Р	Р	Р	P	P	P	Р
Carbon Tetrachloride	P	P	P	P	P	P	P
Chlorobenzene	P	P	P	P	P	P	Р
Chloroethane	P	j F	P	P	F	F	P
Chloroform	P	Р	P	P	P	P	Р
Chloromethane	P	Р	P	P	Р	P	Р
2-Chlorotoluene	P	Р	P	P	P	P	Р
4-Chlorotoluene	P	Р	P	P	Р	P	Р
1,2-Dibromo-3-Chloropropane	P	Р	P	P	Р	P	Р
Dibromochloromethane	P	Р	P	P	P	P	Р
1,2-Dichlorobenzene	P	P	P	P	P	P	P
1.3-Dichlorobenzene	P	P	P	P	P	P	P
1.4-Dichlorobenzene	P	P	P	P	P	P	P
Dichlorodifluoromethane	P	P	P	P P	P	P	P
1.1-Dichloroethane	Р	P	P	P	P	P	P.
1,2-Dichloroethane	P	P	P	P	P	P	P.
1,1-Dichloroethene	P	P .	P	P P	P	P	P.
cis-1.2-Dichloroethene	P	P	P P	P	P	P	P
trans-1,2-Dichloroethene	P	P	P P	P	P	P	P
1,2-Dichloropropane	P	P	P	, P	P	P	P
1,3-Dichloropropane	P	P	P	P	P	P	P
2,2-Dichloropropane	P	P	P	P	P	P	P
Di-isopropyl Ether	P	P	P	P	P	P	P
Ethylbenzene	P	P	P	P	P	P	P
EDB (1,2-Dibromoethane)	P	P	P	P	P	l P	P
Hexachlorobutadiene	P	P	P	P	P	P	P
Isopropylbenzene	P	P	P	P	P	P	P
	P	P	P	P	P	P	P
p-Isopropyltoluene	P	F	P	P	P	P	P
Methylene Chloride MTBE	P	P	P	P	P	P	P
	P	F	P	P	P	P	P
Naphthalene	P	P	P	P	P		P
n-Propylbenzene	P	P	P	P	P	P P	
1,1,2,2-Telrachloroethane	P	P	P	P	P		P
Tetrachloroethene	P	P	P	P	P	P	P
Toluene					•	P	P
1,2,3-Trichlorobenzene	P	P	P	P	Р	P	P
1,2,4-Trichlorobenzene	P	Р	Р	P	Р	P	P
1,1,1-Trichloroethane	P	P	P	P	Р	P	Р
1,1,2-Trichloroethane	P	Р	P	P	Р	P	P
Trichloroethene	P	P	Р	P	Р	P	Р
Trichlorofluoromethane	P	F	Р	Р	F	F	Р
1,2,4-Trimelhylbenzene	P	Р	Р	Р	Р	P	Р
1,3,5-Trimethylbenzene	P	Р	Р	Р	Р	P	Р
Vinyl Chloride	P	P	Р	Р	Р	P	Р
m&p-Xylene	P	Р	Р	Р	Р	P	Р
o-Xylene	i p.	Р	P	P	Р	Р	Р

SPCC 1, 1-Dichloroethane	Р	QC Batch # 120088
SPCC 1,1,2,2-Tetrachloroethane	Р	F = Failed QC limits.
SPCC Bromoform	Р	P = Passed QC limits.
SPCC Chlorobenzene	Р	NA = Not Applicable
SPCC Chloromethane	Р	VOC analysis detected unidentified peaks.





WI DNR Certified Lab #445027660

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Project #:

23379XF

Project:

Carver Boat Corp

Sample ID:

6-SS-4

Lab Code:

5018957D

Sample Type:

Soil

Report Date:

24-Oct-97

Sample Date:

03-Oct-97

Test	Result	LOD	LOQ	Unit	Dilution Factor	Date Analyzed:	Analyzed By:	QC Code
TOTAL SOLIDS	86.6			%		07-Oct-97	BNR	1
VOC Mod SW846 8260 (Meth Pres.)						18-Oct-97	CJR	
Acetone	< 100	31	98	UG/KG				2,3
Styrene	< 25	2	6.4	UG/KG				1

LOD = Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ.

LOQ = Limit of Quantitation

QC SUMMARY

CODE:

All laboratory QC requirements were met for this sample.

The check standard failed to meet acceptable QC limits.

The duplicate RPD failed to meet acceptable QC limits. 3



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

voc Method 8260 Volatile Organic Compounds (Methanol Preserved)

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date:

23-Oct-97

Analyzed By:

CJR

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/KG	UG/KG	Factor
Benzene	< 25	2.5	8	1
Bromobenzene	< 25	2.6	8.1	1
Bromodichloromethane	< 25	2.6	8.1	1
n-Butylbenzene	< 25	3	10	1
sec-Butylbenzene	< 25	1.8	5.5	1
tert-Butylbenzene	< 25	2.5	7.9	1
Carbon Tetrachloride	< 25	4.6	15	1
Chlorobenzene	< 25	1.9	6	1
Chloroethane	< 25	10	31	1
Chloroform	< 25	4.1	13	1
Chloromethane	< 25	4.9	15	1
2-Chlorotoluene	< 25	1.6	5.2	1
4-Chlorotoluene	< 25	2.3	7.3	1
1,2-Dibromo-3-Chloropropane	< 25	11	33	1
Dibromochloromethane	< 25	3.8	12	1
1,2-Dichlorobenzene	< 25	2.8	8.7	1
1,3-Dichlorobenzene	< 25	2.5	7.9	1
1,4-Dichlorobenzene	< 25	2.3	7.2	1
Dichlorodifluoromethane	< 25	9.4	30	1
1,1-Dichloroethane	< 25	2.7	8.4	1
1,2-Dichloroethane	< 25	11	35	1
1,1-Dichloroethene	< 25	6.9	22	1
cis-1,2-Dichloroethene	< 25	4	13	1
trans-1,2-Dichloroethene	< 25	9.4	30	1
1,2-Dichloropropane	< 25	2.8	8.7	1
1,3-Dichloropropane	< 25	3.8	12	1

Dibromofluoromethane Sur	101 % Rec.
1,2-Dichloroethane-d4 Sur	103 % Rec.
Toluene-d8 Sur	101 % Rec.
4-Bromofluorobenzene Sur	101 % Rec.

Project #: 23379XF Project: Carver Boat Corp Sample ID: 6-SS-4 Lab Code: 5018957D

Sample Type: Sample Date: Date Analyzed:

03-Oct-97 17-Oct-97

Soil

ANALYTE	RESULT	LOD	LOQ	Dilution
The contractive following		UG/KG	UG/KG	Factor
2,2-Dichloropropane	< 25	4.1	13	1
Di-Isopropyl ether	< 25	2.9	9	1
Ethylbenzene	< 25	1.7	5.4	1
EDB (1,2-Dibromoethane)	< 25	3.1	10	1
Hexachlorobutadiene	< 25	3.3	10	1
Isopropylbenzene	< 25	2.6	8.1	1
p-Isopropyltoluene	< 25	2.3	7.1	1
Methylene chloride	< 25	7	22	1
MTBE	28	4.5	14	1
Naphthalene	< 25	3.8	12	1
n-Propylbenzene	< 25	2.6	8.1	1
1,1,2,2-Tetrachloroethane	< 25	4.6	14	1
Tetrachloroethene	< 25	5.4	17	1
Toluene	< 25	1.6	4.9	1
1,2,3-Trichlorobenzene	< 25	4	13	1
1,2,4-Trichlorobenzene	< 25	3.3	10	1
1,1,1-Trichloroethane	< 25	3.1	10	1
1,1,2-Trichloroethane	< 25	5	16	1
Trichloroethene	< 25	7.5	24	1
Trichlorofluoromethane	< 25	6.5	21	1
1,2,4-Trimethylbenzene	< 25	1.6	5	1
1,3,5-Trimethylbenzene	< 25	2.4	7.7	1
Vinyl Chloride	< 25	10	31	1
m&p-Xylene	< 25	1.9	5.9	1
o-Xylene	< 25	2.4	7.6	1

120088

87

LOD = Limit of Detection

LOQ = Limit of Quantitation

QC Batch #

Total % Solids

GCMS #12

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #: Sample ID: 23379XF 6-SS-4 Report Date: Lab Code: 23-Oct-97 5018957D

ANALYTE INITIAL KNOWN INTSTD METHOD LCS MATRIX MATRIX STANDARD AREA% CALIBRATION SPIKE SPIKE RPD BLANK SPIKE Benzene Bromobenzene Bromodichloromethane n-Butylbenzene sec-Butylbenzene P P P P tert-Butylbenzene Carbon Tetrachloride Chlorobenzene Chloroethane P P P Chloroform Chloromethane 2-Chlorotoluene P P P 4-Chlorotoluene 1,2-Dibromo-3-Chloropropane Dibromochloromethane 1.2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Dichlorodifluoromethane 1,1-Dichloroethane 1,2-Dichloroethane 1.1-Dichloroethene cis-1,2-Dichloroethene trans-1,2-Dichloroethene 1,2-Dichloropropane 1,3-Dichloropropane 2,2-Dichloropropane Di-isopropyl Ether EDB (1,2-Dibromoethane) Hexachlorobuladiene Isopropylbenzene p-Isopropyltoluene Methylene Chlonde Naphthalene n-Propylbenzene 1, 1,2,2-Telrachloroelhane Tetrachloroethene Toluene Р 1,2,3-Trichlorobenzene 1.2.4-Trichlorobenzene 1,1,1-Trichloroethane

SPCC 1,1-Dichloroethane	Р	QC Batch # 120088
SPCC 1,1,2,2-Tetrachloroethane	Р	F = Failed QC limits.
SPCC Bromoform	Р	P = Passed QC limits.
SPCC Chloroberizene	Р	NA = Not Applicable
SPCC Chloromethane	Р	VOC analysis detected unidentified peaks.

fi se

P

Authorized Signature

1,1,2-Trichloroethane Trichloroethene Trichlorofluoromethane 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene

Vinyl Chloride m&p-Xylene o-Xylene



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295 WI DNR Certified Lab #445027660

BILL NOEL S T S CONSULTANTS LTD

1035 KEPLER DRIVE GREEN BAY WI 54311 Project #:

23379XF

Project :

Carver Boat Corp

Sample ID:

6-SS-5

Lab Code:

5018957E Soil

Sample Type: Sample Date:

03-Oct-97

Report Date:

24-Oct-97

Test	Result	LOD	LOQ	Unit	Dilution Factor	Date Analyzed:	Analyzed By:	QC Code
TOTAL SOLIDS	89.5			%		07-Oct-97	BNR	1
VOC Mod SW846 8260 (Meth Pres.)						18-Oct-97	CJR	
Acetone	< 100	31	98	UG/KG				2,3
Styrene	< 25	2	6.4	UG/KG				1

LOD = Limit of Detection

"J" Flag: Analyte detected between LOD and LOQ.

LOQ = Limit of Quantitation

QC SUMMARY

CODE:

1 All laboratory QC requirements were met for this sample.

2 The check standard failed to meet acceptable QC limits.

3 The duplicate RPD failed to meet acceptable QC limits.

Authorized Signature

Airton



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

LOD

UG/KG

4.1

2.9

1.7

3.1

3.3

2.6

2.3

36

7

4.5

3.8

2.6

4.6

5.4

1.6

3.3

3.1

7.5

6.5

1.6

2.4

10

1.9

5

LOQ

UG/KG

13

9 1

5.4

10 1

10 1

8.1

7.1

22 1

14 1

12 1

8.1 1

14 1

17 1

4.9 1

13 1

10 1

10 1

16 1

24 1

21 1

> 5 1

7.7 1

31 1

5.9 1

7.6

GCMS #12

Dilution

Factor

1

1

1

VOC

Method 8260 Volatile Organic Compounds (Methanol Preserved)

BILL NOEL S T S CONSULTANTS LTD 1035 KEPLER DRIVE GREEN BAY WI 54311

Report Date:

23-Oct-97

Analyzed By:

20	_
CJR	

Sample Date: Date Analyzed:							
ution	ANALYTE						
actor							
1	2,2-Dichloropropane						
1	Di-Isopropyl ether						
1	Ethylbenzene						
1	EDB (1,2-Dibromoethane)						
1	Hexachlorobutadiene						
1	Isopropylbenzene						

23379XF

Project #: Project: Carver Boat Corp

Sample ID: Lab Code:

6-SS-5 5018957E

Sample Type:

Soil

·< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

< 25

p-Isopropyltoluene

Methylene chloride

n-Propylbenzene

Tetrachloroethene

1.1.2.2-Tetrachloroethane

1,2,3-Trichlorobenzene

1,2,4-Trichlorobenzene

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Trichlorofluoromethane

1,2,4-Trimethylbenzene

1,3,5-Trimethylbenzene

Trichloroethene

Vinyl Chloride

m&p-Xylene

o-Xylene

MTBE

Toluene

Naphthalene

03-Oct-97 17-Oct-97

ANALYTE	RESULT

ANALYTE	RESULT	LOD	LOQ	Dilution
		UG/KG	UG/KG	Factor
Benzene	< 25	2.5	8	1
Bromobenzene	< 25	2.6	, 8.1	1
Bromodichloromethane	< 25	2.6	8.1	1
n-Butylbenzene	< 25	3	10	1
sec-Butylbenzene	< 25	1.8	5.5	1
tert-Butylbenzene	< 25	2.5	7.9	1
Carbon Tetrachloride	< 25	4.6	15	1
Chlorobenzene	< 25	1.9	6	1
Chloroethane	< 25	10	31	1
Chloroform	< 25	4.1	13	1
Chloromethane	< 25	4.9	15	1
2-Chlorotoluene	< 25	1.6	5.2	1
4-Chlorotoluene	< 25	2.3	7.3	1
1,2-Dibromo-3-Chloropropane	< 25	11	33	1
Dibromochloromethane	< 25	3.8	12	1
1,2-Dichlorobenzene	< 25	2.8	8.7	1
1,3-Dichlorobenzene	< 25	2.5	7.9	1
1,4-Dichlorobenzene	< 25	2.3	7.2	1
Dichlorodifluoromethane	< 25	9.4	30	1
1,1-Dichloroethane	< 25	2.7	8.4	1
1,2-Dichloroethane	< 25	11	35	1
1,1-Dichloroethene	< 25	6.9	22	1
cis-1,2-Dichloroethene	< 25	4	13	1
trans-1,2-Dichloroethene	< 25	9.4	30	1
1,2-Dichloropropane	< 25	2.8	8.7	1
1,3-Dichloropropane	< 25	3.8	12	1

LOQ = Limit of Quantitation

120088

QC Batch # Total % Solids

90

Authorized Signature

Dibromofluoromethane Sur

1,2-Dichloroethane-d4 Sur

4-Bromofluorobenzene Sur

Toluene-d8 Sur

102 % Rec.

106 % Rec.

100 % Rec.

100 % Rec.

1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #: Sample ID: 23379XF 6-SS-5 Report Date: Lab Code: 23-Oct-97 5018957E

ANALYTE	INITIAL	KNOWN	INTSTD	METHOD	LCS	MATRIX	MATRIX
<u> 140 magazinak makali bilangan Tijura</u>	CALIBRATION	STANDARD	AREA %	BLANK	SPIKE	SPIKE	SPIKE RPD
Benzene	Р	, P	P	Р	P	- کړ	Р
Bromobenzene	Р	Р	Р	P	P	Р	P
Bromodichloromethane	Р	Р	Р	Р	Р	P	P
n-Butylbenzene	Р	Р	Р	, P	, P	Р	P
sec-Butylbenzene	P	Р	Р	Р	P	Р	Р
tert-Butylbenzene	P	' Р	Р	Р	P	Р	Р
Carbon Tetrachlonde	P	P	Р	<u>'</u> Р	Р	Р	Р
Chlorobenzene	Р	Р	Р	P	Р	P	Р
Chloroethane	P	F	P	P	F	F	Р
Chloroform	P	Р	P	Р	Р	P	Р
Chloromethane	P	Р	P	Р	Р	P	P
2-Chlorotoluene	P	Р	P	l P	Р	P	Р
4-Chiorotoluene	P	Р	P	Р	Р	P	P
1,2-Dibromo-3-Chloropropane	P	Р	P	P	Р	P	P
Dibromochloromethane	P	Р	P	Р	Р	P	P
1,2-Dichlorobenzene	Р	Р	P	P	Р	P	Р
1,3-Dichlorobenzene	Р	P	P	Р	Р	P	Р
1,4-Dichlorobenzene	Р	Р	Р	Р	Р	Р	Р
Dichlorodifluoromethane	Р	P	P	Р	Р	P	Р
1.1-Dichloroethane	P	l P	P	Р	Р	P	Р
1.2-Dichloroethane	P	P	P	Р	Р	P	P
1.1-Dichloroethene	P	P	Р	Р	Р	P	P
cis-1 2-Dichloroethene	P	P	Р	P	P	l P	P
trans 2-Dichloroethene	P	P	P	P	P	P	P
1,2-Lichloropropane	P	P	P	P	P	P	P
1,3-Dichloropropane	P	P .	P	P	P	P	P
2,2-Dichloropropane	P	P	P	P	P	Р	P
Di-isopropyl Ether	P	P	P	P	P	P	P
Ethylbenzene	P	P.	P	P	' P	P	P
EDB (1,2-Dibromoethane)	'p	P	P	P	P	P	P
Hexachlorobutadiene	P	P	P	P	P	P	P
Isopropylbenzene	þ þ	P.	P	P	P	P	P
p-Isopropyltoluene	P	P	P	P	P	P	P
Methylene Chloride	P 'P	F	P	P	P	P	P
MTBE	P	P	P	P	F	P	P
	P	F	P	P	P	P	P
Naphthalene	P	P	P	P		P	
n-Propylbenzene 1,1,2,2-Tetrachloroethane	P	P	P	P	P	P	P P
	P	P	P	P	P	P	
Tetrachloroethene		P	P	P			P
Toluene	P	P			Р	P	P
1,2,3-Trichlorobenzene	P	P	P	P P	P	P	P
1,2,4-Trichlorobenzene	Р			•		P	Р
1,1,1-Trichloroethane	P	P	Р	P	Р	Р	Р
1,1,2-Trichloroethane	P	P	Р	P	P	P	Р
Inchloroethene	P	P	Р	P	P	Р	Р
Trichlorofluoromethane	Р	F	פ	Р	F	F	Р
1,2,4-Trimethylbenzene	P	Р	Р	Р	Р	Р	Р
1,3,5-Trimethylbenzene	P	Р	Р	Р	Р	Р	Р
Vinyl Chlonde	P	Р	Р	Р	Р	Р	Р
m&p-Xylene	Р	Р	Р	Р	Р	Р	Р
o-Xylene	P	Р	Р	Р	Р	Р	Р

SPCC 1,1-Dichloroethane P
SPCC 1,1,2,2-Tetrachloroethane P
SPCC Bromoform P
SPCC Chlorobenzene P
SPCC Chloromethane P
VOC

QC Batch # 120088
F = Failed QC limits.
P = Passed QC limits.

NA = Not Applicable VOC analysis detected unidentified peaks.



1090 Kennedy Ave. Kimberly, WI 54136 920-735-8295

WI DNR Certified Lab #445027660

QC Summary

Method 8260 Volatile Organic Compounds

Project #:

23379XF

Report Date:

23-Oct-97

Sample ID:

6-SS-5

Lab Code: 5018957E

ANALYTE	INITIAL	KNOWN	INT STD	METHOD	LCS	MATRIX	MATRIX
	CALIBRATION	STANDARD	AREA %	BLANK	SPIKE	SPIKE	SPIKE RPD
Benzene	Р	Р		Р	P	Р	Р
Bromobenzene	P	¦ P	P	P	P	P	P
Bromodichloromethane	P	P	P	P	P	P	Р
n-Butylbenzene	P	i P	P	P	P	l P	P
sec-Butylbenzene	P	P	P	P	P	P	P
tert-Butylbenzene	P	Р	P	P	P	P	P
Carbon Tetrachloride	P	Р	P	P	P	P	P
Chlorobenzene	P	P	P	P	P	P	P
Chloroethane	P	F	P	P	F	F	P
Chloroform	P	P	P	P	P	P	P P
Chloromethane	P	P	P	P	P	P	P
2-Chlorotoluene	, P	P	, P	P.	P	P P	P
4-Chlorotoluene	P	P	P	P	P	P	P
	P	P	P	P	P	P	P
1,2-Dibromo-3-Chloropropane Dibromochloromethane	P	P	P	P	P	P	P
1.2-Dichlorobenzene	P	P	P	P	P	P	
	P	P	P	P	P	P	P P
1,3-Dichlorobenzene	P	P	P	P	P	P	P
1,4-Dichlorobenzene							
Dichlorodifluoromethane	P	P	Р	P	Р	P	P
1,1-Dichloroethane	P	P	P	P	Р	P	Р
1,2-Dichloroethane	Р	P	Р	Р	Р	Р	Р
1,1-Dichloroethene	Р	P	Р	Р	Р	Р	Р
cis-1,2-Dichloroethene	Р	P	Р	Р	Р	P	Р
trans-1,2-Dichloroethene	Р	P	Р	Р	P	P	Р
1,2-Dichloropropane	Р	P	Р	Р	Р	P	Р
1,3-Dichloropropane	P	, b	P	Р	P	P	Р
2,2-Dichloropropane	Р	P	P	Р	P	P	Р
Di-isopropyl Ether	P	P	P	Р	P	P	Р
Ethylbenzene	P	P	P	Р	P	P	P
EDB (1,2-Dibromoethane)	P	P	P	Р	P	P	Р
Hexachlorobutadiene	P	P	P	Р	Р	P	Р
Isopropylbenzene	P	P	P	Р	Р	Р	Р
p-Isopropyltoluene	P	P	P	Р	Р	P	Р
Methylene Chloride	P	F	P	Р	Р	P	Р
MTBÉ	P	P	P	Р	Р	P	Р
Naphthalene	P	F	P	Р	P	P	P
n-Propylbenzene	P	P	Р	Р	Р	P	P
1,1,2,2-Tetrachloroethane	P	P	P	P	P	P	P
Tetrachloroethene	P	P	P	P	P.	P	P
Toluene	P	P	P	P.	P.	P	P
1,2,3-Trichlorobenzene	P	P	P	P	P	P	P
1,2,4-Trichlorobenzene	P	P	F	P	P	P	P
1.1.1-Trichloroethane	P	P	P	P	P	F	P
1,1,2-Trichloroethane	P	P	P	P	P	P	P
Trichloroethene	P	P	P	P	P	P	P
	P	F	P	P	F	F	
Trichlorofluoromethane	P	P	P				P
1,2,4-Trimelhylbenzene	نے			Р	Р	P	P
1,3,5-Trimelhylbenzene		P	Р	Р	Р	P	P
Vinyl Chloride	P	P	Р	P	Р	P	Р
m&p-Xylene	P	Р	Р	P	Р	P	Р
o-Xylene	Р	Р	Р	Р	Р	P	Р

SPCC 1,1-Dichloroethane	Р	QC Batch# 120088
SPCC 1,1,2,2-Tetrachloroethane	Р	F = Failed QC limits.
SPCC Bromoform	Р	P = Passed QC limits.
SPCC Chlorobenzene	P	NA = Not Applicable
SPCC Chloromethane	Р	VOC analysis detected unidentified peaks.

CHAIN OF CUSTODY RECORD 5018957 № 28914



	1/	\ L 1)							Specia	l Handling Request	1.1	ORD NUMBER	THROUGH
Contact Person BILL NOEL Phone No. 920-969-1979 Office 6.B. Project No. 23379XF PO No. Project Name CARVER RONT CORP PLNING 4, UST (617)					7		□ Rush □ Verbal □ Other	Contact Person						
Sample I.D. Date		Grab	Composite	No. of Containers	SampleType (Water, soil, air, sludge, etc.)	A Preservation	Ambient 10		d Data	Special Cond.	Analysis F	Request		on Sample Contaminants)
6-55-1 10/3		81	-	21	SOIL	X					VOCS (INCLUS	ING STYRENE /	ACETONE)	5018957 A
6-55-2					!									<u> </u>
G-55-3														C
6-55-4		11												P
6-55-5		*		*	_ ¥	A -	-	 						VE
Collected by:	laur	1 1			Date (<i>()</i> -3	97		LI Ti:	me.≺	 5:00f	> Delivery by:		Date	Time
Received by:	rele		· ·		Date 10/6		 >			7:45		LesTrelium	Date/6/6/99	Time /530
Received by:					Date			Ti	me		Relinquished by:		Date / / /	Time
Received by:		\rightarrow			Date	. ,		Ti	me		Relinquished by:		Date	Time
Received for lab by:			2		Date / 0/6	141		Ti	me/	- 30	Relinquished by:		Date	Time
Laboratory Comments	Only:	Se	als	Inta	ct Upon Rec	eipt?		ÆΥ	es/	□ No	D N/A	ONICE		1
Final Disposition:											Comments (Wea	ther Conditions, Precau	itions, Hazards):	
Distribution: Original and Gree									-		272.0 : 457			

Instructions to Laboratory: Forward completed original to STS with analytical results. Retain green copy.

9/94cp10k



January 23, 1998

RECEIVED

JAN 2 5 1998

MD SOLID WASTE

Ms. Roxanne Nelezen Chronert Wisconsin Department of Natural Resources 1125 North Military Avenue P.O. Box 10448 Green Bay, Wisconsin 54307-0448

Re: Site Investigation/Remediation at Carver Boat Corporation, 790 Markham Drive, Pulaski, Wisconsin – BRRTS Case Nos. 02-05-178563 and 02-05-178568 – STS Project No. 23379XA

Dear Ms. Nelezen-Chronert:

Carver Boat Corporation (Carver) of Pulaski, Wisconsin, has retained STS Consultants, Ltd., (STS) to prepare work plans for investigating impacts at two locations at this site. This letter is in response to your letters dated December 23, 1997, in which you requested that Carver provide written verification that an environmental consultant had been hired for this work.

Two work plans will be submitted. One work plan will address impacts identified on September 26, 1997, during removal of a resin underground storage tank (UST) known as Carver UST No. 3. The Wisconsin Department of Natural Resources (WDNR) assigned the number 02-05-178563 to this release. The second work plan will address impacts identified on October 3, 1997, during removal of two adjacent USTs (a resin UST known as Carver UST No. 6 and an acetone UST known as Carver UST No. 7). The WDNR assigned the number 02-05-178568 to this release.

Please contact us at 920-468-1978 if you have any questions regarding these projects.

Sincerely,

STS CONSULTANTS, LTD.

William F. Noel William F. Noel, P.E.

Senior Project Engineer

Paula Leier-Engelhardt, P.G.

Senior Environmental Geologist

Paula Leier- Enpelherat/ Win

WFN/kjw.wd

STS Consultants Ltd. Consulting Engineers



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor George E. Meyer, Secretary William R. Selbig, Regional Director Northeast Regional Headquarters Solid Waste Office PO Box 10448, 1125 N. Military Ave. Green Bay, Wisconsin 54307-0448 TELEPHONE 414-492-5916 FAX 414-492-5859 TDD 414-492-5812

December 23, 1997

Carver Boat Corporation Ted Maloney PO Box 1010 Pulaski WI 54162

SUBJECT:

Reported Contamination at Carver Boat Corporation-Resin & Acetone; 790

Markham Drive; Pulaski, Wisconsin BRRTS CASE #02-05-178568

Dear Mr. Maloney:

The Wisconsin Department of Natural Resources has been notified of resin/acetone contamination at the above referenced location.

Based on the information received by the Department of Natural Resources, we believe you are responsible for restoring the environment at this site under Section 292.11, Wisconsin Stats., known as the hazardous substances spills law. Your responsibilities include investigating the extent of the contamination and then selecting and implementing the most appropriate remedial action. Enclosed is information to help you understand what you need to do to ensure your compliance with the spills law.

The purpose of this letter is threefold: 1) to describe your legal responsibilities, 2) to explain what you need to do to investigate and clean up the contamination, and 3) to provide you with information about cleanups, environmental consultants, possible financial assistance, and working cooperatively with the Department of Natural Resources.

Legal Responsibilities:

Your legal responsibilities are defined both in statute and in administrative codes. The hazardous substances spill law, Section 292.11 (3) Wisconsin Statutes, states:

* RESPONSIBILITY. A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of the state.

Wisconsin Administrative Codes chapters NR 700 through NR 728 establish requirements for emergency and interim actions, public information, site investigations, design and operation of remedial action systems, and case closure. Chapter NR 708 includes provisions for immediate actions in response to limited contamination. Wisconsin Administrative Code chapter NR 140 establishes groundwater standards for contaminants that reach groundwater.



Steps to Take:

The longer contamination is left in the environment the farther it can spread and the more it may cost to clean up. Quick action may lessen damage to your property and to neighboring properties and reduce your costs in investigating and cleaning up the contamination. To ensure that your cleanup complies with Wisconsin's laws and administrative codes, you should hire a professional environmental consultant who understands what needs to be done. These are the first four steps to take:

- 1. By January 26, 1998, please submit written verification (such as a letter from your consultant) that you have hired an environmental consultant. You will need to work quickly to meet this timeline.
- 2. By February 26, 1998, your consultant must submit a workplan and a schedule for conducting the investigation. The consultant must follow the Department's administrative codes and our technical guidance documents. Please include with your workplan a copy of any previous information that has been completed (such as an underground tank removal report or a preliminary soil excavation report).
- 3. Please keep us informed of what is being done at your site. You or your consultant must provide us with a <u>brief</u> report at least every 90 days, starting after your workplan is submitted. These quarterly reports should summarize the work completed since the last report. Quarterly reports need only include one or two pages of text, plus any relevant maps and tables. However, please note that should conditions at your site warrant, you may receive a letter requiring more or less frequent contacts with the Department.
- 4. When the site investigation is complete, your consultant must submit a full report on the extent and degree of soil and groundwater contamination and a proposal for cleaning up the contamination.

Due to the number of contaminated sites and our staffing levels, we will be unable to respond to each report. To maintain your compliance with the spills law and chs. NR 700 through NR 728, do not delay the investigation and cleanup of your site by waiting for DNR responses. We have provided detailed technical guidance to environmental consultants. Your consultant is expected to be familiar with our technical procedures and administrative codes and should be able to answer your questions on meeting Wisconsin's cleanup requirements.

Your correspondence and reports regarding this site should be sent to the Department at the following address:

Wisconsin Department of Natural Resources Roxanne Nelezen Chronert PO Box 10448 Green Bay WI 54307-0448

If the contamination does not include groundwater contamination, the responsibility for governmental oversight of this site will be transferred to the Department of Commerce in accordance with Wisconsin Act 27.

Unless otherwise requested, please send only one duplexed copy of all plans and reports. Correspondence should be identified with the assigned DNR identification number BRRTS CASE #02-05-178568.

Information for Site Owners:

Enclosed is a list of environmental consultants and some important tips on selecting a consultant. Also enclosed are materials on controlling costs, understanding the cleanup process, and choosing a site cleanup method. This information has been prepared to help you understand your responsibilities and what your environmental consultant needs to do. Please read this information carefully.

If you have any questions about this letter or your responsibilities, please call Roxanne Nelezen Chronert at (920)492-5592.

Thank you for your cooperation.

Sincerely,

in t

Roxanne Nelezen Chronert

Spills Coordinator - Hydrogeologist

Enclosure

cc: File

Tanks 6+7

22-05-178568

Wisconsin Department of Natural Resources

Notification of Petroleum Contamination from Underground / Aboveground Storage Tank Systems

releas	e complete this form and FAX it to the appropriate WDNR contact person (see list on back page) immediately upon discovery of a see from (CIRCLE ONE): (UST) AST system.
TO:	WONR, AMDI ROXANNE ChronerT
	FAX 8: 920-492-5859
PLEA	ASE TYPE OF PRINT LEGIBLY:
1.	Name, company, mailing address and phone number of person reporting the discharge; Ted Maloney
	Carver Boat Corp P.O. Box 1010, Pulaski, WI, 54162. 920-822-9000 x266
Ž.,	Site Information
a da .	Name of site at which discharge occurred (local name of site/business - not responsible party name, unless a residence): Carver Boat Corp
	Location (actual street address, not PO box; if no street address, describe as precisely as possible, i.e., 1/4 mile NW of CTHs 60 & 123 on E side of CTH 60): 790 Markham Dr.
	Manicipality (city, village, township in which the site is located — not mailing address): $\rho_{vl} \approx 5 k$.
	Brown
	Legal Description:1/4, Section, Tn, Range E / W
3.	Responsible Party (RP) and/or RP Representative Information
	RP/Business Name: Carver Boat Corp
	Contact Person (if different):
	Mailing Address (with zip code): Sa, me as Above
	Telephone Number:
1.	Identity, physical state and quantity of the hazardous substance discharged (check all that apply):
	Unleaded gasoline Leaded gasoline Diosel Waste oil Other Research Acetange

5.	impacts to the environmen	t (cater "K" for known/confirmed o	r °P" for potential for all that apply):
	Fire/explosion	n threat	K Soil contamination
		private wells (# of wells)	Surface water impacts
	Contaminated	•	Floating product
	Circumwaiar	contamination	Other
б.	Contamination was discove	red as a result of:	
	X Tank closure a	siessment Site ressament	(other)
	On what date:		
ish a	tional Comments:	t .	
	irves-Toak.#	WI DIR Tank#	CONTENTS
,	Tank 6 (6000 gol)	051100596	Polyester Resim/Stypene MIXTURE
•	Tank 7 (2000 gal)	051100597	Acetone
File	camalar ware T	rkan ground the De	rimeTer of the two tank system. #4 Methyl TerTiary Butyl Ether 28 ppb
-4 eV[[rsults were as Cal	louic :	#4 Methyl TerTiary Butyl Ether 28 ppb #5 Methyl Tertiary Butyl Ether 36 ppb
40,51		36 cab Sample	#14 Methyl letilary baryl order 31
Samp	e#1. Styrene	to ppo	* - Markyl Tertiary Butyl ZIMBE 36 pp0
الم	#2 Tetrachloreet	here 26ppb Somphe	#3 ****
Jamy		31 1	
amole	#3 Acetone Styrene	Hoase 1	note the soil was sampled at 3-fe
	Styrene	The land out	-oundwater was encountered.
	Tetrachloroe	thene Sipplo	
757 A 752		,	
EAA	numers m regan leseme	tank sites in DNR's five regions.	are as tonows:
North	reast Region (920-492-5859		
	Underground Tanks: Ath		
		ention - Roxanne Chronert and do Lac <i>(except Chron Wounus</i>	n - see South Central Region), Green Lake, Kewannee,
			tagamic, Shawano, Waupaca, Waushara, Winnebago
	Counties	•	
Nort	iern Region (7)5-365-8932	,	T . T I S S S S S
	Sawyer, Taylor, Vilas, Wa		ce, Iron, Langlade, Lincoln, Oneida, Polk, Price, Rusk,
South	4 4 " -	338); Attention - Marilyo Jahok	:a:
			aupun only), Grant, Green, Iowa, Jefferson, Lafayene,
C	Richland, Rock, Sank Cou		
muli); Attention - Mike Farley: .kee, Racine, Sheboygan, Walwort	th, Washington, Waukesha Counties
West		076); Attention - John Grump:	
			nt, Juneau, LaCrosse, Marathon, Mozoce, Pepin, Pierce,
	Fortage, St. Croix, Tremp	saleau, Vernon, Wood Counties	

1.D. # 02-05-178568

Site Name: Carrel Borel Resint Restone Address: 790 Marcham Re Legal Municipality: Plaski T V C	Case No.: PMN: FID: Proj. Mgr:
	3 = Hazardous Waste Rules NR 600 Series 4 = Solid Waste Rules NR 500 Series 5 = CERCLA ments) 6 = Abandoned Container s. 144.77, Wis. Stat. 7 = Other (Describe in Comments)
PROGRAMS INVOLVED: (L - LEAD S - SUPPOR Aban Containers	
RESPONSIBLE PARTY: Business Name: Carver Boat Carps Owner/Mgr.: Ted Phaloney Address: PD Box (010) Phone: 9101 Y27-9000 Contact Person:	Business Name: Owner/Mgr.: Address Phone: Contact Person:
No Threat Fire/Explosion threat (1) Contaminated Private Well (2) Contaminated Public Well (3) Groundwater Contamination (4) Soil Contamination (5) Direct Contact (10) Contaminated Surface Water (7) Contaminated Air- (8) Other (6)	NIMPACTS (X) POTENTIAL IMPACTS (X)
CONSULTANT INFORMATION: Company: 575 Contact Person: Address: 1035 Keplen GreenBay WT SY311 Phone: 970 / 468-1978 (List additional on separate sheet & attach.)	Company: Contact Person: Address: Phone:/

NER	ERP	Tracking	Undates

Y	our	Ν	an	ne	

Date	
Date	

ACTION CODES

01 = Notification	50 = Site Closed w/GW Use Restriction
02 = RP Letter Sent	51 = Deed Affidavit at Closeout
11 = Activity Closed	52 = Deed Restriction at Closeout
37 = SI Report Rec'd	53 = Deed Affidavit for Enforcement

53 = Deed Affidavit for Enforcement 54 = Activity transferred to DATCP

41 = RA Report Rec'd 48 = NR140 Exemp Closure 55 = Closed w/NR720.19 soil standards

74 = Long Term Monitoring Start75 = Long Term Monitoring End 58 = Enforcement Start 59 = Enforcement End

76 = Activity Transferred to DCOM 61 = NR718 Landspreading Request 62 = NR718 Landspreading Approval 70 = Emergency Response Start 77 = Free Product Removal Start

71 = Emergency Response End

79 = Closure Review Requested

78 = Free Product Removal End

85 = NR720.19 Performance Based Closure

87 = Closeout under NR726.07

89 = DCOM transferred activity back to DNR

Unique ID #	Code	Action Date 12, 27, 97	Comment
	11	12, 73, 97	No Restrictions
		/	
		/	2