



April 8, 2009

**Ref. No. TG91003**

City of Port Colborne  
66 Charlotte Street  
Port Colborne, Ontario  
L3K 3C8

Attention: Mr. Ron Hanson, Director of Engineering & Operations  
City of Port Colborne

**Re: Quarterly Monitoring Report – January – March 2009  
40-44 Killaly Street West, Port Colborne, Ontario**

Dear Mr. Hanson:

AMEC Earth & Environmental, a division of AMEC Americas Limited (“AMEC”), is pleased to provide the City of Port Colborne (“City”) with this quarterly report summarizing the work that was conducted at the Site between January 15<sup>th</sup> and March 26<sup>th</sup>, 2009. This report is being issued as a follow-up to Ministry of the Environment (“MOE”) comments on AMEC’s December 2008 report entitled: *“Interim Update Ground Water Monitoring and Liquid Phase Petroleum Recovery 40-44 Killaly Street West, Port Colborne, Ontario”* and AMEC’s response letter entitled: *“Follow-Up to MOE comments dated January 9<sup>th</sup>, 2009; Regarding: Interim Update – Groundwater Monitoring and Liquid Phase Recovery, 40-44 Killaly Street West, Port Colborne, Ontario”* dated January 13<sup>th</sup>, 2009” (both provided under separate cover).

It is our understanding that this quarterly report will be submitted to the MOE by the City.

The location of the Site is indicated in Figure 1 and a Site plan showing the locations of existing monitoring wells and sumps both on and off-Site are shown in Figure 2.

**SITE ACTIVITIES JANUARY – MARCH 2009**

Between January and March 2009, AMEC monitored the water levels and / or presence of liquid petroleum (and thicknesses, if possible) on a weekly basis at the ground water / bedrock well (“MW1”) and the “Sump” in the basement at 409 Catherine Street (adjacent to the south of the Site). The weekly monitoring forms were also sent to the City for addition to the official log book / binder following each monitoring occasion.

AMEC has also conducted scheduled monthly ground water monitoring of water levels and liquid petroleum thicknesses (if necessary) in the 9 monitoring wells (BH1 [MW100A], MW100, MW200, MW300, MW400, MW500, MW600A, MW600B and BH800) and one sump (“new sump”) located on-Site, as well as one monitoring well (MW700) and the “Sump” located at 409 Catherine Street. Monitoring activities consisted of measuring the depth to ground water and petroleum thicknesses in each of the monitoring wells, if present, using an electronic interface probe. The monthly records were also sent to the City for addition to the official monitoring binder.

## FINDINGS

Since ceasing the pump-outs at MW1 (December 18<sup>th</sup>, 2008), the following has been observed at the Site and 409 Catherine Street:

- The results of the monitoring indicate that during the period between January and March 2009, static ground water levels observed in MW1 ranged from 1.47 to 3.92 metres below top of monitor pipe (“mbtp”).
- Between January and March 2009, only minimal residual amounts of product have been observed on the skimmer sock in MW1. (The ‘skimmer’ (also called ‘SoakEase’) is used for periodic product removal). MW1 is currently equipped with a 2 inch SoakEase which absorbs ~1 litre (“L”) for each (replaceable) sock. The level of the skimmer is set to straddle the water / product level each week to account for water level fluctuations. The absorbent sock sits within a stainless steel perforated bailer which is attached to the J-plug. The skimmer sock is changed on a weekly basis, as necessary.
- Between January and March 2009, the Sump located at 409 Catherine Street has been observed to have a film present on the water surface. The depth to the film / water has ranged from 0.13 to 0.20 m below floor surface. At each monitoring event, the product film was absorbed with a hydrophobic (oil absorbent, water repellent) sock.
- No measurable thicknesses of liquid petroleum were observed in any other monitoring well locations (i.e., BH1 [MW100A], MW100, MW200, MW300, MW400, MW500, MW600A, MW600B, MW700, and MW800) at the Site during this monitoring period.

The monitoring data, including the relative ground water elevations and petroleum thicknesses are presented in Table 1.

## CONCLUSIONS

During this monitoring period, no measurable thicknesses of free phase petroleum were recorded in any of the monitoring wells at the Site. Furthermore, only relatively minor quantities of free phase

petroleum were detected on the skimmer sock in monitoring well MW1 during each weekly monitoring event. A petroleum film was observed in the Sump in the basement of the residence at 409 Catherine Street during each monitoring event. The film in the Sump was removed with an oleophilic sock during each monitoring event. Given the relatively minor quantities of free phase petroleum, active petroleum product removal methods were not required during this monitoring period.

## **RECOMMENDATIONS**

Based on the findings to date, petroleum recovery should be continued at this location using the skimmer device/oleophilic socks. It is recommended that MW1 and the house sump continue to be monitored on a weekly basis to verify that the thickness of free phase petroleum product does not increase as the water table elevation fluctuates seasonally. It is also recommended that the remaining monitoring wells at the Site continue to be monitored on a monthly basis. If the thickness of free phase petroleum at MW1 increases to greater than 5 centimetres, weekly vacuum truck pump outs should be resumed until the thicknesses are reduced to less than 5 centimetres. The next quarterly monitoring report will be prepared and issued at the completion of the last June weekly monitoring event.

Additional measures to recover possible free phase underlying the former service station building should be implemented as appropriate pending the results of further subsurface assessment in this area of the Site.

## **LIMITATIONS**

This report was prepared for the exclusive use of the City of Port Colborne and is intended to provide summary of the work that has been conducted at the property located at 40-44 Killaly Street and 409 Catherine Street, Port Colborne, Ontario between January 15<sup>th</sup>, and March 26<sup>th</sup>, 2009. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third party. Should additional parties require reliance on this report, written authorization from AMEC will be required. With respect to third parties, AMEC has no liability or responsibility for losses of any kind whatsoever, including direct or consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The investigation undertaken by AMEC with respect to this report and any conclusions or recommendations made in this report reflect AMEC's judgment based on the Site conditions observed at the time of the Site inspections between January 15<sup>th</sup> and March 26<sup>th</sup>, 2009 set out in this report and on information available at the time of preparation of this report. This report has been prepared for specific application to this Site and it is based, in part, upon visual observation of the Site, subsurface investigation at discrete locations and depths, and specific analysis of specific

chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future Site conditions, portions of the Site, which were unavailable for direct investigation, subsurface locations, which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. AMEC has used its professional judgment in analysing this information and formulating these conclusions.

AMEC makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

This Report is also subject to the further Standard Limitations which are attached.

## **CLOSURE**

We trust that the information presented in this report meets your current requirements. Should you have any questions, or concerns, please do not hesitate to contact the undersigned.

Respectfully Submitted,  
**AMEC Earth & Environmental,  
A Division of AMEC Americas Ltd.**

Erin Sgambato, B.Sc.,  
Environmental Scientist

Patrick Shriner, P.Geo.  
Associate, Environmental Geoscientist

Tim Westgate, M.Sc., P.Geo.  
Senior Hydrogeologist

### **Attachments:**

- Figure 1 – Site Location Map
- Figure 2 – Site Plan
- Standard Limitations

Table 1 – Ground Water Monitoring Data

**Distribution:** City of Port Colborne – 2 copies; AMEC – 2 copies

**FIGURES**



REFERENCE: BASE MAP PROVIDED  
BY [HTTP://WWW.MAPQUEST.CA](http://www.mapquest.ca)



CLIENT:

CITY OF PORT COLBORNE

PROJECT:

40-44 KILLALY STREET WEST  
PORT COLBORNE, ON.

TITLE:

SITE PLAN

REVD BY:

KS

CHECKED BY:

PS

DATE:

APRIL 2009

PROJECT NO:

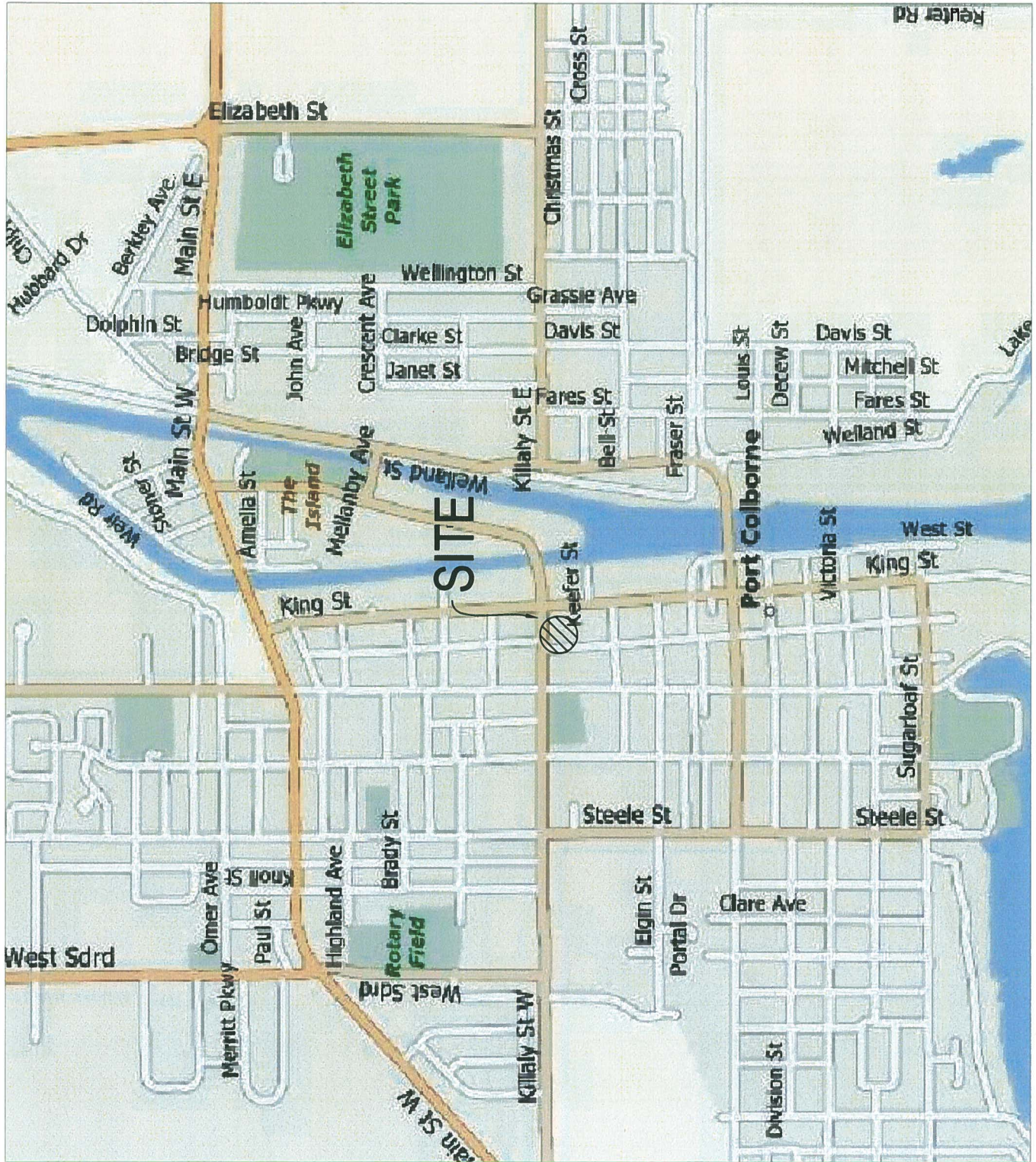
TG91003

SCALE:

N.T.S.

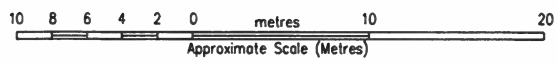
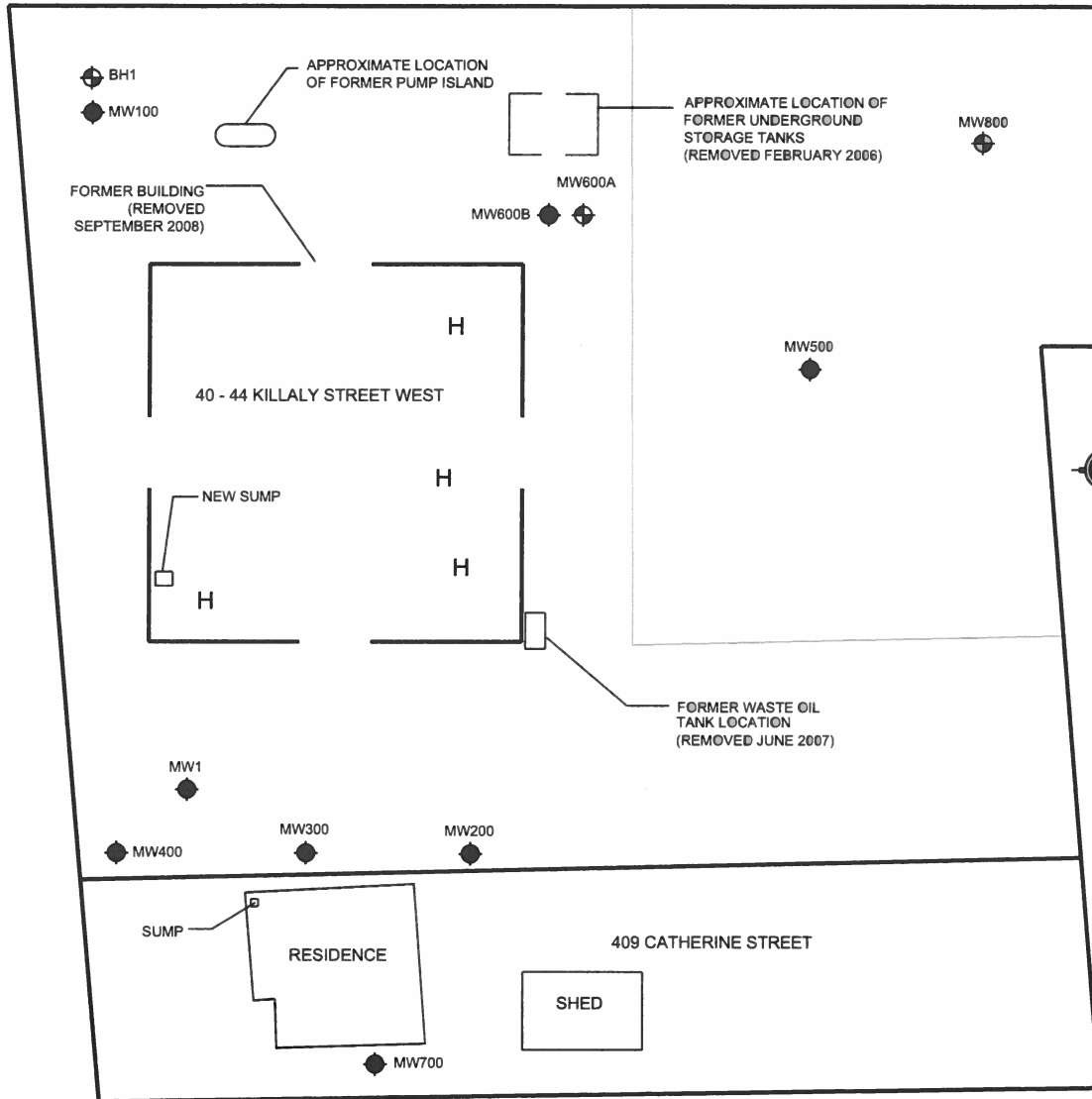
FIGURE NO:

1



# KILLALY STREET WEST

CATHERINE STREET



	TITLE: SITE PLAN 40-44 Killaly Street West Port Colborne, Ontario	DRAWN BY: CS	CHECKED BY: TW
	CLIENT: CITY OF PORT COLBORNE	DATE: APRIL 2009	PROJECT NO: TG91003
LEGEND H HOIST OVERBURDEN MONITOR BEDROCK MONITOR	SCALE: AS SHOWN		
		FIGURE NO: 2	

**TABLES**



TABLE 1 - Ground Water Monitoring Data

Monitor Identification	Top of Monitor Pipe Elevation (masl)	Date Monitored	Depth to Liquid Petroleum (mbtp)	Depth to Water (mbtp)	Liquid Petroleum Thickness (m)	Water Table Elevation (masl)
BH1 (MW100A)	177.922	15-Jan-09	no access	no access	no access	no access
		12-Feb-09	-	1.75	-	176.17
		05-Mar-09	-	2.37	-	175.55
MW100	177.922	15-Jan-09	no access	no access	no access	no access
		12-Feb-09	-	2.013	-	175.91
		05-Mar-09	-	3.88	-	174.04
MW200	178.022	15-Jan-09	-	0.67	-	177.35
		12-Feb-09	-	0.30	-	177.72
		05-Mar-09	-	0.81	-	177.21
MW300	178.092	15-Jan-09	-	1.99	-	176.10
		12-Feb-09	-	1.68	-	176.41
		05-Mar-09	-	1.85	-	176.24
MW400	178.007	15-Jan-09	-	1.70	-	176.31
		12-Feb-09	-	1.09	-	176.92
		05-Mar-09	-	1.74	-	176.27
MW500	177.897	15-Jan-09	-	0.96	-	176.94
		12-Feb-09	-	0.39	-	177.51
		05-Mar-09	-	1.00	-	176.90
MW600A	178.122	15-Jan-09	-	1.61	-	176.51
		12-Feb-09	-	0.93	-	177.20
		05-Mar-09	-	1.46	-	176.66
MW600B	178.147	15-Jan-09	-	4.02	-	174.13
		12-Feb-09	no access	no access	no access	no access
		05-Mar-09	-	3.87	-	174.28
MW700	177.902	15-Jan-09	-	1.14	-	176.76
		12-Feb-09	-	0.66	-	177.24
		05-Mar-09	-	1.20	-	176.70
MW800	177.912	15-Jan-09	-	0.99	-	176.92
		12-Feb-09	-	0.33	-	177.58
		05-Mar-09	-	1.03	-	176.88
MW1	178.077	15-Jan-09	-	3.82	-	174.26
		22-Jan-09	-	3.92	-	174.16
		29-Jan-09	-	3.91	-	174.17
		05-Feb-09	-	3.85	-	174.23
		12-Feb-09	-	1.47	-	176.61
		19-Feb-09	-	2.04	-	176.04
		26-Feb-09	-	2.21	-	175.87
		05-Mar-09	-	2.89	-	175.19
		11-Mar-09	-	1.54	-	176.54
		19-Mar-09	-	1.92	-	176.16
		26-Mar-09	-	2.20	-	175.88
Sump (409 Catherine)	176.652	15-Jan-09	-	0.14	film	176.51
		22-Jan-09	-	0.16	film	176.49
		29-Jan-09	-	0.18	film	176.47
		05-Feb-09	-	0.20	film	176.45
		12-Feb-09	-	0.15	film	176.50
		19-Feb-09	-	0.15	film	176.50
		26-Feb-09	-	0.17	film	176.48
		05-Mar-09	-	0.15	film	176.50
		11-Mar-09	-	0.14	film	176.51
		19-Mar-09	-	0.16	film	176.49
		26-Mar-09	-	0.13	film	176.52
new sump	nm	15-Jan-09	-	2.50	-	n/a
		12-Feb-09	-	1.93	-	n/a
		05-Mar-09	-	-	-	-

## Notes:

"mbtp" means metres below top of monitor pipe. "masl" means metres above sea level.

"nm" means not measured. "-" means no value.

Water table elevations shown for MW1 have not been corrected for presence of free phase petroleum.

"n/a" means not applicable.



## Limitations

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:
  - (a) The Scope of Services as part of our City's authorization dated July 28, 2008; and
  - (b) The Limitations stated herein.
2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our agreement, or the conclusions presented.
3. The conclusions presented in this report were based, in part, on visual observations of the site and attendant structures. Our conclusions cannot and are not extended to include those portions of the site or structures, which were not reasonably available, in AMEC's opinion, for direct observation.
4. The environmental conditions at the site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the site with any applicable local, provincial or federal by-laws, orders-in-council, legislative enactments and regulations was not performed.
5. The site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.
6. Where testing was performed it was carried out in accordance with the terms of our agreement providing for testing. Other substances, or different quantities of substances testing for, may be present on site and may be revealed by different or other testing not provided for in our agreement.
7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, AMEC must be notified in order that it may determine if modifications to the conclusions in the report are necessary.
8. The utilization of AMEC's services during the implementation of any remedial measures will allow AMEC to observe compliance with the conclusions and recommendations contained in the report. AMEC's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.
9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or in part, or any reliance thereon or decisions made based on any information or conclusions in the report, is the sole responsibility of such third party. AMEC accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.
10. Provided that the report is still reliable, and less than 12 months old, AMEC will issue a third-party reliance letter to parties client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on AMEC's report, by such reliance agree to be bound by our agreement and AMEC's standard reliance letter. AMEC's standard reliance letter indicates that in no event shall AMEC be liable for any damages, howsoever arising, relating to third-party reliance on AMEC's report. No reliance by any party is permitted without such agreement.