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## Marine oil spills: cost implications for Belize

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### Dedication

Belize is blessed with unparalleled marine resources and it is our view that every Belizean has a duty to protect and preserve it. The Institute for Maritime Studies therefore dedicates this paper to all those who have and continue to struggle to keep marine environmental protection issues at the fore of the national discourse.

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## Abstract

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Fiscal preparedness is an important component of any sound marine oil spill response mechanism. The nature of marine oil spills means that there can be no universal figure attached to spills whether that is on the basis of a per ton or per gallon cost.

The current threat profile to Belize's maritime environment suggests that the risk of ship-source pollution is very real and that it will be very costly if a spill was to occur. Consequently, three spill scenarios are discussed in this paper to provide insights as to their likely costs, with a view to guide Belize's fiscal preparedness. In Scenario One a tanker runs aground and spills 1,387 tons of crude resulting in likely costs of US\$277,129,932.52; in Scenario Two as a result of a collision 230 tons of bunker C is spilled resulting in likely costs of US\$129,518,976.25; and in Scenario Three an estimated 5 tons of crude is spilt in Belize's exclusive economic zone (EEZ), the source is unknown and the resulting cost of dealing with the spill is likely to be US\$1,008,040.18.

In Scenario One the cost is recoverable under CLC 92 and the FUND 92; in Scenario Two the cost would have to be recovered by other means as Belize is not yet a party to the Bunker Convention and CLC 92/the FUND 92 would not apply; in Scenario Three the cost may be recoverable under the FUND 92.

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### **Keywords:**

Marine environmental damage  
Marine environmental pollution  
Marine oil spill  
Oil spill costs

## **Abbreviations**

BNE	Belize Natural Energy Ltd
BOSCEM	Basic Oil Spill Cost Estimation Model
CLC 92	the International Convention on Civil Liability for Oil Pollution Damage, 1992
EEZ	Exclusive Economic Zone
EMF	Environmental Management Fund
FUND 92	the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992
GT	Gross Tons
NEPPOS	National Emergency Preparedness Plan for Oil Spills
NM	Nautical Mile
PACT	Protected Areas Conservation Trust

## **Purpose of the Study**

This paper provides a fiscal perspective on three marine oil spills that are likely to occur within Belize's territorial waters and EEZ. It is not meant to be a definitive proclamation about what the actual cost of any of the hypothetical spills will be. The intent is to inspire national discourse on the financial implications of a marine oil spill in the Belizean context in general, but in particular to highlight the need for fiscal preparedness as a part of an overall national spill response mechanism for Belize.

This paper follows on from an earlier paper by the Institute for Maritime Studies<sup>1</sup> which identified ship-source forms of pollution as the primary threat to Belize's pristine marine environment and it is hoped that it will add to Belize's body of work as it relates to marine pollution prevention and preparedness.

## **Scope of the Study**

This paper examines the cost implications for three hypothetical but plausible marine oil spills within Belizean waters without speaking to the probability of the said spills. It does not examine the private costs to ship owners such as salvage costs, damage to the ship or the costs of the oil/bunkers lost; instead it focuses only on the associated costs of the response, the resultant cost of the injury to the environment and the socio-economic impacts of the hypothetical spills.

Additionally, an empirical review is taken of the various international regimes that exist to compensate states for pollution damage resulting from marine oil spills; and a synopsis is provided to show Belize's vulnerability in each of the three scenarios in terms of fiscal exposure.

## **Methodology**

To arrive at the projected total costs of the spill scenarios contained herein, the Basic Oil Spill Cost Estimation Model (BOSCEM) was used. The quantity and type of oil spilled, the location of the spill, the socio-economic activity taking place within the

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<sup>1</sup> "Building an effective oil spill response mechanism for Belize: Obligations, threats and challenges"

spill zone, the environmental sensitivity of the spill zone and the likely consequences of the spill were taken into consideration in order to guide the application of the BOSCEM (Etkin, Dagmar Schmidt, 2004). The derived total cost of the spill was then adjusted from 2002 to 2011 figures and thereafter a 25% and 15% modifier was applied to the response cost and the environmental cost respectively (see Appendix One).

The response cost was adjusted taking into consideration the fact that there is no competent in-country spill responder; thus the cost is likely to be greater than those experienced in the USA, since this expertise would have to be imported on a crisis basis. In addition the modifier was added, given the fact that the “how clean is clean” challenge will be fierce because of the high level of environmental consciousness of the Belizean people.

Finally, the environmental cost was adjusted to take stock of the sensitive nature of Belize’s marine environment considering that Belize is home to the largest barrier reef and three of the four atolls in the western hemisphere—marine resources that are unparalleled in this part of the world. The absence of local spill response organizations also means that marine oil spills are likely to go unattended for at least 24 hours thus, increasing the extent of environmental damages.

### **Introduction**

Belize has never had to deal with a marine oil spill of any significant size and consequentially it has no relevant baseline data available to guide fiscal preparedness for marine oil spills as part of its overall national contingency plan. To address this shortfall the US Environmental Protection Agency’s BOSCEM was used given the fact that the US has one of the highest global environmental standards and it is hoped that Belize’s attitude with respect to its environmental protection efforts, will mirror the US approach.

It is important to recognize that, “oil spill cleanup response costs depend on a variety of factors, most notably, location, oil type, spill size, and cleanup strategy, making it difficult to develop a universal per-unit cost factor” (Etkin, Dagmar Schmidt, 2000). It is critical none-the-less to develop indicative spill response costs

for likely spill scenarios in order to guide effective spill response strategies and fiscal preparedness.

Belize's marine environment remains vulnerable to ship-source pollution with oil being carried as cargo and bunkers posing the greatest threats. Given the global nature of shipping, it's imperative that Belize puts in place the necessary spill response mechanism to deal with a shipping incident which may lead to pollution. Though fiscal preparedness is one of the four pillars that the Institute for Maritime Studies argues is necessary to build a sound spill response mechanism for Belize (Jones, Lloyd Major, 2010), there are many variables inherent in each of the spill scenarios and unless there is an actual marine oil spill, predicting the likely cost with any greater degree of accuracy is near impossible.

### **Current Fiscal Preparedness**

The Institute for Maritime Studies, in 2010, found that:

*“Though various international instruments to which Belize is a signatory does provide for financial compensation they do nothing to address the immediate financial needs of responding to a spill.*

*Belize currently has nothing in place to meet the immediate costs of oil spills. The NEPPOS does require the polluter to address tier one spills but there is no legislative framework spelling out what financial safety net must be in place by those transporting or storing petroleum products. Tier two and tier three spills are to be addressed with Government's and if necessary external support, but again, the question needs to be asked, where is the Government going to get the money to pay for the initial response?*

*Invariable, ships coming to Belize are likely to have the requisite certificate of financial responsibility pursuant to the CLC 92, the Fund 92/03 and the Bunker Convention, but it will take some time for the “paper work” to be completed before funds become available; legal maneuverings aside.*

*As can be expected any vessel causing a spill will reserve all its rights and the subsequent legal maneuvering can tie up civil claims for months if not years. But while the legal battles take place somebody has to attend the spill.”(Jones, Lloyd Major, 2010)*

To date, this obvious deficiency in Belize's preparedness for oil spills has not been addressed effectively. The Environmental Management Fund (EMF) has been activated, but its rate of growth is extremely slow and as of today, it would not be able to sustain the cost for even seven (7) days of effective spill response.

The EMF by law is to be constituted by 0.1% of gross revenues from petroleum production; 20% of fees collected by the Protected Areas Conservation Trust (PACT) and 20% of the environmental tax amongst other sources. Currently, dues paid into the EMF amounts to less than half a million dollars per annum and at that rate it would take the EMF 2 years to be able to meet the response cost for spill Scenario Three. Incredibly, it would take 533 years to build the EMF in order to be able to meet the response cost of spill Scenario One. This reality should provide the motivation for the Government of Belize to ensure that in the event of a marine oil spill, it has done all that is necessary to ensure that it can quickly access the requisite funds under the various international compensation regimes.

## **Cost Implications of Marine Oil Spills**

### **Scenario One**

#### **Tanker Grounding**

On Saturday, November 26, 2011 at about 08:00 hours a 6,688 GT tanker carrying 9,508<sup>2</sup> tons of Belize Natural Energy (BNE) crude runs aground near Seals Caye (16 10.39N; 088 20.26W: 22NM from the Port of Big Creek or 26.96 NM from Punta Gorda). She ruptures tanks number 2 and 3 on the port side and reports that she is leaking oil at 10 & 22 tons per hour respectively. The initial spill was reported at 80 tons. The tanker is hard aground and at risk of breaking apart with 9,428 tons of oil remaining onboard. In addition to the cargo, she has onboard 96.2 tons of bunkers (IFO 180) and 32.8 tons of marine diesel oil. She is manned by a crew of eleven.

#### **The Consequences**

Spill responders take 30 hours to deploy the first set of booms, consequentially 1,387 tons of crude is spilt causing 125 kilometers of shoreline, including areas in the Port

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<sup>2</sup> Actual cargo carried onboard MT Lucy PG in November 2009 from the Port of Big Creek. This is equivalent to 2.785 million gallons. Source Port of Big Creek.

Honduras Marine Reserve, to be oiled and the slick threatens the town of Punta Gorda. Given the location of the grounding and the availability of salvage companies in Belize, the tanks were unable to be repaired and she lost all the cargo in the ruptured tanks.

### **Likely Cost of Spills (CLC 92)**

The application of the BOSCEM to the above scenario suggests that the total cost of such a spill would be in the region of US\$277,129,932.52. The largest associated cost would be the cost of the response at 48.09% of the total costs. Since Belize is a party to the CLC 92 the ship owner under the strict liability clause would be required to meet a mere 3.18% of the total costs. However, claimants should be able to recover the remaining costs by way of the FUND 92 to which Belize is a party.

<b>Total Cost of spill:</b>	<b>\$277,129,932.52</b>
Response:	\$133,281,023.16
Environmental:	\$64,783,895.63
Socio-Economic:	\$79,065,013.74
Cost recoverable under CLC 92:	\$8,839,798.99
Cost recoverable under the FUND 92:	\$268,290,134.53

Provided Belize has met its obligations under the FUND 92, the total cost of this spill should be completely recoverable; the challenge for Belize becomes what happens between the time of the spill and the time the FUND 92 or the ship's P&I club makes available the cash to finance the containment and clean up costs?

### **Scenario Two**

#### **Two-Ship Collision**

On January 2, 2012 at about 05:00 hours a cruise ship reports that she has collided with a container ship near the entrance to the English Caye Channel. The Captain reports that one of her starboard fuel tanks has been ruptured, the tank contains 600 tons of Bunker C and the escape is estimated at 10 tons with continued loss of 4 tons per hour. Total passengers onboard the cruise ship is reported as 3,156 serviced by a crew of 1,115.

Though no reports were received from the containership, it was later found to have a crew of 11 and carrying a total of 133 tons of Bunker C (IFO180) and 26.2 tons of marine diesel oil onboard. She suffered severe damage to her bow and has lost power.

### **The Consequences**

Spill responders take 24 hours to deploy the first set of booms. Salvage operations were able to seal the ruptured tank after 55 hours as a consequence an additional 220 tons of oil enters the sea resulting in 33 kilometers of shoreline at western Turneffe Islands as well as English Caye, Water Caye, Goffs Caye and Drown Cayes being oiled.

### **Likely Cost of Spill (Bunker Convention)**

This scenario differs from the previous scenario in that it involves two ships but more importantly the liabilities would be as provided for under the Bunker Convention. This convention allows owners to limit their liability for pollution damage in accordance with the Convention on Limitation of Liability for Maritime Claims, 1976 (as amended).

Since the incident involves two ships the limitation of liability was calculated based on the largest ship (the cruise ship) and even so, the amount recoverable under the Bunker Convention would only be US\$20,208,979.13 or 42.68% of the response cost and less than 15.6% of the total cost of the spill.

Claimants would, however, not be able to recover any of their costs under the FUND 92 since the spill was not from a tanker. As Belize is not a party to the Bunker Convention, claimants would have to go by other means in order to recover the total cost of a spill of this nature.

<b>Total Cost of spill:</b>	<b>\$129,518,976.25</b>
Response:	\$47,354,126.20
Environmental:	\$16,212,028.06
Socio-Economic:	\$65,952,822.00

Cost recoverable under CLC 92:	US\$0
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Cost recoverable under the FUND 92:	US\$0
Cost recoverable under the Bunkers Convention:	US\$0

### **Scenario Three**

#### **Offshore Spill from an Unknown Source**

On April 14, 2012 at about 17:00 hours, a Belize Defence Force pilot on EEZ patrol reports to the Department of the Environment what appears to be a huge oil slick about 15 miles east and south of Lighthouse Reef Atoll. He estimates the slick to be about one mile long and about 500 yards across. Initial estimates about the spill size suggest a spill of about 5 tons of crude.

#### **The Consequences**

Spill responders are deployed to monitor the spill. The use of dispersants is not authorized. The spill dissipates within 30 days and does not enter Belize's territorial waters.

#### **Likely Cost of Spill (CLC 92)**

Since the source of pollution is unknown and therefore claims cannot, at least in the initial stages, be made against the owners under CLC 92, claims would have to be made against the FUND 92. In the interim, response costs would have to be met by the Government of Belize until such time that it can recover same from the FUND 92.

<b>Total Cost of spill:</b>	<b>\$1,008,040.18</b>
Response:	\$470,045.63
Environmental:	\$329,862.72
Socio-Economic:	\$208,131.83
Cost recoverable under Fund 92:	\$1,008,040.18

### **Conclusion (Implications for National Preparedness)**

In each of the hypothetical spill scenarios the total cost would have been significantly influenced by the absence of spill combating equipment, trained personnel and a synchronized spill management strategy. This has to be regarded as the single greatest challenge facing Belize in terms of its preparedness for marine oil

spills. However, of equal importance is the legal framework to effectively address the myriad legal issues that will no doubt arise in the event of a spill.

The ability of the Government of Belize to source the necessary funds to meet the associated costs of a marine oil spill would be critical to its ability to properly manage any of the spill scenarios discussed herein. The international regime to have in place mandatory insurance is one that Belize must subscribe to but it must recognize the obvious deficiencies of the said system. Understanding that ships that are not covered by the aforesaid international regime can and do pose significant risk as well, Belize must ensure the provision of a spill response mechanism designed to deal with the full threat profile both current and prospective. As part of that process, Belize should move with due haste to become a party to the Bunker Convention and must ensure that it fulfill its obligations under the FUND 92, if it expects to draw upon the fiscal benefits of these instruments in the event of a spill.

## References

1. Etkin, Dagmar Schmidt, *Worldwide Analysis of Marine Oil Spill Cleanup Cost Factors*, Environmental Research Consulting, June 2000.
2. Etkin, Dagmar Schmidt, *Modeling Oil Spill Response and Damage Costs*, Environmental Research Consulting, June 2004.
3. Major Lloyd Jones, *Building an Effective Oil Spill Response Mechanism for Belize: Obligations, Threats and Challenges*, the Institute for Maritime Studies, 2010.

**APPENDIX ONE**

**Application of the BOSCEM**

Spill Events	Cost/gallon	Modifier	Spill Size (gallons)	Total Cost (2002 figures)	CPI Adjusted	Importation Adjustment	Modifier Used
<b>Scenario 1</b>							
Response Cost	118	1.6	447,858.92	\$84,555,764.10	\$106,624,818.53	\$133,281,023.16	Wetland
Environmental Cost	35	2.85	447,858.92	\$44,673,927.27	\$56,333,822.29	\$64,783,895.63	Wildlife/wetland
Socio-Economic Cost	70	2	447,858.92	\$62,700,248.80	\$79,065,013.74	\$79,065,013.74	Extreme
						<b>\$277,129,932.52</b>	
<b>Scenario 2</b>							
Response Cost	359	1.6	52,302.00	\$30,042,268.80	\$37,883,300.96	\$47,354,126.20	Wetland
Environmental Cost	75	2.85	52,302.00	\$11,179,552.50	\$14,097,415.70	\$16,212,028.06	Wildlife/wetland
Socio-Economic Cost	500	2	52,302.00	\$52,302,000.00	\$65,952,822.00	\$65,952,822.00	Extreme
						<b>\$129,518,976.25</b>	
<b>Scenario 3</b>							
Response Cost	215	1	1,387.00	\$298,205.00	\$376,036.51	\$470,045.63	Offshore
Environmental Cost	80	2.05	1,387.00	\$227,468.00	\$286,837.15	\$329,862.72	Other/non-specified
Socio-Economic Cost	70	1.7	1,387.00	\$165,053.00	\$208,131.83	\$208,131.83	Very high
						<b>\$1,008,040.18</b>	

Costs assumes manual cleanup and no use of dispersants

All figures in USD