APPLICATION OF TORT LAW IN THE ENVIRONMENT DUE TO THE FLOOD EVENT BY MANMADE ACTIVITIES

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ENVIRONMENTAL SCIENCE PROGRAMME

FACULTY OF SCIENCE AND NATURAL RESOURCES

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THIS DISSERTATION IS SUBMITED IN PARTIAL FULFILLMENT OF THE REQUIREMENT IN OBTAINING THE DEGREE OF BACHELOR OF SCIENCE WITH HONOURS

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DECLARATION

I hereby certify that the work described herein is entirely my own, except for quotations and summaries of each source have been duly acknowledged.

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ABSTRAK

APLIKASI UNDANG-UNDANG TORT DI DALAM PERSEKITARAN DISEBABKAN OLEH KEJADIAN BANJIR OLEH AKTIVITI MANUSIA

Undang-undang Tort memainkan peranan yang penting dalam menangani masalah persekitaran. Aplikasi undang-undang Tort dalam masalah banjir yang disebabkan oleh tindakan manusia adalah secara tidak langsung melindungi persekitaran dan hak individu yang mengalami kecederaan,kerosakan harta benda dan kerugian dari segi kewangan semasa kejadian banjir itu. Ulasan dan analisa kes -kes Tort yang berkaitan dengan kejadian banjir adalah tujuan utama kajian ini. Kaedah kajian yang digunakan adalah kaedah IRAC di mana merangkumi isu, undang-undang, analisa dan kesimpulan. Pemilihan kaedah ini adalah kerana untuk menjelaskan dengan lebih terperinci tentang setiap komponen tersebut di dalam kes. Berdasarkan daripada keputusan yang diperoleh, jumlah kes Tort adalah sebanyak 2193. 46 daripadanya adalah kes yang berkaitan persekitaran, 32 daripadanya adalah kes Tort yang berkaitan dengan kejadian banjir di Malaysia. 17 daripadanya adalah kes banjir yang dilaporkan dari tahun 2000-2012 dan enam jenis kes telah dipilih dalam tempoh tahun tersebut untuk dianalisa. Elemen yang penting dalam memenangi kes ialah tanggungjawab berhati-hati, pelanggaran tanggungjawab hati-hati, sebarang perkara yang menyebabkan bahaya kepada pihak lain, pihak terbabit menanggung kerugian/kecederaan dan bukti yang diperoleh mencukupi. Elemen yang meyebabkan kes kalah apabila pendakwa gagal mengemukakan bukti yang mencukupi, pendakwa gagal membuktikan jumlah sebenar kerugian dan apabila pendakwa tidak mempunyai maklumat yang mencukupi tentang permohonan pampasan di mahkhamah. Dari kajian ini, konsep bertanggungjawab terhadap aspek persekitaran akan memberikan perlindungan terhadap hak individual dengan pampasan yang setimpal. Denda akan dikenakan jika didapati bersalah sekiranya aktiviti yang dijalankan merosakkan alam sekitar, secara tidak langsung melindungi alam sekitar.

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ABSTRACT

Law of Tort is one of the important roles in dealing with the environment issues. The application of Tort law in the flood issues caused by the manmade activities is indirectly protecting the environment and the rights of individual that suffered in injury, damages to property or financial loss during the flood incidents. Reviewing and analysis the Tort cases that related with flood cases is the main purpose of this study. The methodology that used to achieve the objectives is the IRAC method which contains the issues, rule, analysis and conclusion. This method is chose in order to explain about each component in detail. According to the results, the total of Tort cases is 2193. 46 from it are the environment related cases and 32 is the Tort cases related with flood events in Malaysia. 17 cases is the flood case reported from year 2000-2012 and six from that has chosen to analysis. The important element to winning the cases are owed duty by the Defendant to take reasonable care, Defendant breached that duty, any action that may cause harm to the other parties, he may suffered in loss/damage and sufficient proof are collected. The element that makes the case loss is when Plaintiff failed to produce sufficient evidence, Plaintiff did not prove actual amount of loss and when Plaintiff does not have enough information on what needed in claiming compensation. From this study, the concept of responsibility towards the the perception of environment will be able to protect the individual rights with commensurate compensation. Penalty will be given if found guilty in handling activities which may cause environment damage, thus indirectly protecting the environment.

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LIST OF ABBREVIATION

DID	Department of Irrigation and Drainage
FEMA	Flood Emergencies Management Agencies
MMD	Malaysia Meteorological Department
NSC	National Security Council
UN	United Nation
WHO	World Health Organization
m	Meter

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CHAPTER 1

INTRODUCTION

1.1 Flood and Tort Law

Human in this decade are more exposed to the natural disaster such flood by the rainfall which originally is natural but if being observed more deeper, the incident are often caused by human and development (Smith, 2001 & Murck *et al.*, 1997). Malaysia has come a long way since achieving independence from British in 1957 where in order to achieved development and rapid urbanization, indirectly, it has contributed to environmental impact such as flood. As we move towards the year 2020, the country is expected to face serious environmental challenges relating to flood. One of the consequences is per capita availability of water will greatly decrease due to growing population, development and lack in the sustainable environment activities. Hence, frequency of flood occurs becoming consistent with the development especially in big cities such as Kuala Lumpur, Penang and Kuching (Wing, 2005).

Flood is defined as a body of water, rising, and overflowing on the dry land. In simplest way, it also can be defined as the accumulation of too much water in short period of time in an area where the land is normally dry. There are 189 river systems in the country which is 89 in Peninsular Malaysia, 78 in Sabah and 22 in Sarawak flowing directly to the sea of which 85 are prone to frequent flooding (Atikah Shafie, 2009).

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Floods are divided into a few types which among of them are known as flash floods, coastal floods, urban flood and river flood. It is reported that the average annual rainfall is 2,400 mm for Peninsular Malaysia, 3,800 mm for Sarawak and 2,600 mm for Sabah (Department of Drainage and Irrigation, 2009). The natural occurrence of flood is common happened in Malaysia because of the natural distribution of geographic characteristics where it is situated in Southeast Asia. It consists of Peninsular Malaysia from the Asia continents and Sabah and Sarawak in Borneo Island (Atikah Shafie, 2009). Malaysia lies in a geologically stable region which is free from earthquakes, volcanic activities, and strong winds such as tropical cyclones which periodically affect some of its regional countries.

However, that does not mean Malaysia is totally "free" from natural disasters and catastrope, because it is often hit by floods, droughts, landslides, haze, tsunamis, and manmade disasters (Chan, 2012). In addition, manmade activities is one of the major impact contribute in causing flood. Among the manmade activity that influences the natural flood is land clearing for urbanization, deforestation, hill slope development to construct the houses in a highland area and many more. Hence, the side effect of the project such as the drainage or runoff is not working properly while under the construction often times led to flood tendencies (Dano Umar Lawal *et al.*, 2012).

According to Department of Drainage and Irrigation, (2009) flood becomes an important issue when it threatens lives, properties such as houses, vehicles, household, and severely disrupts social and economic activities. At times a flood event is classified as disaster when it occurs unexpectedly and affecting a high number of the population and properties. Furthermore, flooding also results in extensive destruction or impairment of goods, services, health and crops (Kozlowski, 1984). In Malaysia, equally reported that around twenty nine thousand kilometers of the entire area and over 4.82 million individuals (22%) suffers from flooding every year along with damage approximated to cost RM915 million (Department of Drainage and Irrigation, 2009).

Even though various precautions have been made in order to minimize the impact of flooding, there are still damages to property of flood victim(Rustam Khairi and Raja Noriza, 2012). From the research and pleminary studies, Malaysia is a

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developing country which have the insurance or policies for the victim to claim or ask for any compensation. However, people have to buy and pay for it monthly to the insurance company who conduct the risk management. The percentage of the compensation are depends on how much the insurance prices that pay monthly as it usually only a basic cover. In Malaysia, often the politician or the Government will donate if there is a flooding cases happen. However, the amount of the contribution to help the victim is up to the discretion of the politician or the Government. Here it is where the the Tort Law can help the victim to get their compensation as a lot of people out there are not aware with the existence of this Law which may help them. Hence, they can claim for the compensation if they have proof to fight for their rights from the parties which cause the flood become more severely by their manmade activities.

Originally, floodwater was considered as something scary and everyone had the right to defense their property against flooding (Barlow and Salmon, 2006). The need to restrict the irresponsible action, application of effective management to control and application of legal system due to the flooding is needed. Thus can help the victim to fight for their right and get the compensation. The law that recommended applying to use is law of tort. Tort law is under the group of Private Law in Common law which then it was divided to four more sub-categories which are Nuisance law, Negligence law, Trespass law and Strict Liability.

The law of tort is simply defined in the Nolo's Plain- English Law Dictionary as;
"An injury to one person for which the person who caused the injury is legally responsible. A tort can be intentional -- for example, an angry punch in the nose -- but is far more likely to result from carelessness (called "negligence"), such as riding your bicycle on the sidewalk and colliding with a pedestrian. While the injury that forms the basis of a tort is usually physical, this is not a requirement -- libel, slander, and the "intentional infliction of mental distress" are on a good-sized list of torts not based on a physical injury. A tort is a wrong action, as opposed to a criminal action" (Hill, 2009).

From the statement above, it can be summarize that a tort is an area of law about an act against another person or damages to a property, reputation and rights.

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It is not criminal actions but more to action that impact on others. The action more likely caused by careless or "negligence". It is a Law term used for any action caused by the careless or inappropriate action which cause harmful to others.

1.2 Scope of study

The study are focusing in Malaysia where all these area will be consider in detail in the result and analysis. Troughout these study it will involve the review of cases that related to flood and how the the victim can claim compensation. The focus point in a reviewing the selected cases is to find what is the fact of cases, who are involved as a Defendant and Plaintiff, causes contributed the flood event and how the Tort Law are used in claiming compensation by considering the element that needed in order to win the cases.

1.3 Problem Statement

The rapid urbanization in malaysia development is the major contributing factors towards the flood in Malaysia. Among the manmade activities that can give impact to flood are deforestation, construction, soil deposition and other related causes. In addition, the Goverment, Local Authority as well as the related Department should play major roles in managing and preventing the flood with proper policies and effective mitigations. However, lack of control and management of those manmade activities by the Authorities and related Department will result in worse flooding cases. This is where the Tort Law indirectly are helping in protecting the environment from the irresponsible people and activities.

1.4 Significance of study

The significance of the study is to analysed how the tort law is being applied and use for claiming the compensations due to occurance of natural disaster such as flood and how it indirectly cause a severe impact due to the manmade activity. It is important for the public to be introduced to the Tort Law as it is the Law the reduce the burden of the victims. Moreover, it is important to know the used of the Tort Law, so that the public are concern on the availibilty of the Tort Law and the rights of

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public in such circumstances. In achieving the goal of the study, cases that related with flood by manmade activity have been selected as resource from the High Court of Malaysia for the review and analysis. This indirectly shows that there is existence of the Tort cases in Malaysia.

1.5 Objectives

This study is conducted to accomplish these objectives which are :

1) To Identify the Tort cases related to flood events by screening the cases from the Tort cases in Malaysia.
2) To Identify the element in winning and losing the Tort cases compensation related to flood events by manmade activities in Court.
3) To analysis Tort cases related with flood events by manmade activies that are reported in Current Law Journal.

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CHAPTER 2

LITERATURE REVIEW

2.1 Flood

Natural disasters are happened every year with the impact and frequency seems to have greatly increased in recent decades, mostly because of environmental degradation, such as deforestation, intensified land use, and the increasing population (Pradhan, 2009). Research has found that natural disaster have a significant negative impact on growth and poverty too (Laframboise & Loko, 2012).

Tsunami is one of the extreme examples that may result in massive loss of life, land and possessions. Hence, flood is one of the classifications of the natural disaster. Flood events differ in their severity and duration (Abdul Mutalib, 2011). Past few decade, Malaysia has transformed into industrialization with the population grew and urbanization expanded rapidly in plains. Indirectly,it brings along the huge impact and today floods developed into a national issue that have to be concerned (Department of Drainage and Irrigation, 2009).

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However, the rainfall pattern in Malaysia is the important factor in contributing the rainfall. The pattern is influenced by two monsoon regimes which is Northeast and Southwest Monsoon. The short period time between this two monsoon are known as Inter Monsoon (Atikah Shafie, 2009). Table 2.1 show the description of the rainfall pattern in Malaysia.

Table 2.1 Rainfall pattern in Malaysia

Monsoon	**Period**	**Characteristics**
Northeast	November - March	Heavy rainfall. Winds from 10-20 knots up to 30 knots during cold surges period affecting east coast area.
Inter-monsoon	April-May October - November	Heavy rainfall causing flash flood with frequent period of thunderstorm in afternoon and evening.
Southwest	May-September	Dried weather with winds below 15 knots affecting the west coast area.

Source: Malaysia Meteorological Department,(2013)

2.2 Types of Flood

In Malaysia, there are few types of flood that occur. Among these is regional, river, monsoonal, urban, flash, and coastal floods. Location, characteristic, the cause, the timing of the occurrence and its duration have to be considered as it different based on each type of flood.

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2.2.1 Regional floods

A regional flood when occur, its cover a wide area such as large river basins in Kelantan River, Terengganu River and Pahang River. In Malaysia, river flood usually occur during the monsoon seasons which is between October and March every year especially in the East Cost of Peninsular Malaysia. According to Pradhan (2009), geographical characteristics, unplanned urbanization, and proximity to the South China Sea, Kota Bharu has become extremely vulnerable to monsoon floods every year. The flooding that happen in November 2005, triggered by monsoon rains, has been described as one of the worst natural flood in the history of Kota Bharu.

2.2.2 River Floods

River flooding is a natural process. It is part of the hydrological cycle of rainfall, surface with groundwater flow and storage. When natural or manmade drainage system is unable to cope with the volume of water generated by rainfall, the consequences of it will cause floods. It is the combination of the other channels flow as it slows downstream and the volume increases. The flow can be into a ditches, stream and tributaries. At the points where the flow is beyond the capacity that can be contained in the river channel, water overflows the river banks and consequently flows into the dry land. The Muda River in Malaysia where it is located at Kedah will experiences this type of flood every year (Julien *et al.,* 2010).

2.2.3 Urban Floods

Urban defined as development area. Urban floods are those in build-up areas such as in cities, township, commercial and residential areas. Urban flood can cause more damaging compare to other types of flood because it can cause public damage such as basement flooded, uncovered drain, roads becoming swift flowing channel and others. Its affect more people and properties per unit area compared to those in agriculture and rural areas (Mohd Fauzi, 2013).

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2.2.4 Coastal floods

Coastal floods are those that occur on the coastal plains caused by extreme tidal flow. (Mohammad Beksin, 2011). Tsunami of Disember 2004 is one of the example of severe coastal flood that effected the coasts of Langkawi Island, parts of Penang Island and the Kedah Coast at Kuala Muda (Department of Drainage and Irrigation, 2009).

2.2.5 Flash Floods

Defining a flash flood is difficult because flash floods are complex phenomena and because they are viewed differently by different people. However, to put it simplest in words, a flash flood is a body of water which rises to overflow land which is not normally submerged and sub-sides after only a few hours. Flash floods are most frequently associated with violent, convectional storms which tend to be of short duration, often measured in minutes rather than hours (Jamaluddin, 1985).

2.3 Causes of Flood

2.3.1 Naturally

Rainfall is the key source of hydrological cycle. Rainfall input is the primary factor affecting the degree of the run-off responses during the flood occurrences (Dano *et al.*, 2012). The high intensity of precipitation is in the North East Monsoon season which fall on October until March. Another natural causes of flood is the influence of land use. Land use is a man-made activities greatly associated with farmings as well as water avaibility (Dano *et al.*, 2012). Soil type, rainfal, topography and accessibility is the factor that might rely on the types of land use. Land use also affecting hydrology and deforestation, drainage system, rapid agriculture activities results in flood.

Soils also is the natural causes of flood because soils are generally related with sedimentary origin, certainly not cemented, free to compact and also not

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tremendously compacted (Dano *et al.*, 2012). Dry soil has a specific rate at which it can be absorb rainfall, called as infiltration capacity. If the rainfall exceed the infiltration capacity,runoff will occur. Soil texture is a soil property used to describe the relative proportion of soil permeability. It used to describe the relative proportion between of different grain sizes of mineral particles in soils. For instance, clay minerals is usually consists of tinier particles,very poor durability, low density , as well as impermeable which increases the degree of runoff responses during intense occurrences of flooding (Dano *et al.*, 2012).

When river flow into the sea, it could also prevent by sandbar formation across river mouths. This phenomenon common occur in the East Coast areas. Besides that, river also have a characteristic geomorphology together with geologic structure as the source of flooding. However, topography of an area that determines the susceptibility of that area to floods in all cases (Department of Drainage and Irrigation, 2009).

2.3.2 Manmade activities

The main human activities induced floods in the country are causes by the land use without consideration for drainage needs. Urbanization that growth up rapidly is resulted in more building development, therefore the surface runoff increases during rains (Bradshaw *et al.,* 2008). However, the drainage infrastructure development is still left far behind urbanization progress. This extended insufficiently downstream. The Kuala Lumpur flood at 2004 is the example of event which is having serious implication of costs, economically and socially to resolve it (Rustam Khairi and Raja Noriza, 2013).

Deforestation plays several roles in the flooding because trees prevent sediment runoff and forest hold more water than farm or grasslands. This is because some rainwater stays on the leaves and it may evaporate directly to the air. In addition, tree roots absorb water from the soil, making the soil drier and able to store more rainwater. It also helps to hold the soil in the place by reducing the movement of sediment that can minify river channels downstream (Bradshaw *et al.,* 2008).

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REFERENCES

Abdul Mutalib, M.B. 2011. *The effect flooding of house prices* : *Two cases studies in Malaysia.* Ph.D thesis, Universiti of Malaysia (Unpublished).

Abdul Rashid Abdullah v. Shimizu Corporation & Ors. 2011. High Court Malaya, Alor Setar reporter. http://www.cljlaw.com/Members/DisplayCase.aspx?CaseId=2906071041&SearchId=7ngziyang.

Atikah Shafie. 2009*. Extreme Flood Event : A Case Study on Floods of 2006 and 2007 in Johor, Malaysia.* Degree Master of Science-Plan B. Colarado State University (Unpublished).

Agarwal, A. K. 2011. Medical Negligence. *Law and Interpretation.* Indian Institute Of Management, India.

Bandar Baru Masai Sdn Bhd v. Scientex Quatari Sdn Bhd. 2010. High Court Johor Reporter.http://www.cljlaw.com/Members/DisplayCase.aspx?CaseId=2893484545&SearchId=1ngziyang.

Barlow,M. & Salmon,B. 2006. Legal responsibility for flooding "Emerging environmental issues and future challenges". *Proceeding Conference on Fourth CIWEM annual ,* 12-14 September 2006.

Bouvier, J. 2004. A Law dictionary, adapted to the Constitution and Laws of the United States. http://legal-dictionary.thefreedictionary.com/trespass.

Bradshaw, C.J.A., Sodi N.S., Peh, K.S.H., & B. W. Brook. 2009. Global Chang Biology*.* Forest–flood relation still tenuous – comment on *'Global evidence that deforestation amplifies flood risk and severity in the developing world'* **15** : 110–115.

Carter, W. N., 1991. *Disaster management: A disaster manager's handbook.* 2nd ed. Cataloging-In-Publication Data,Philipines.

Cane, P. 2002. *Tort Law and Economic Interests.* 2nd ed. Oxford University Press.

Caffagi, F., & Watt, H.M. 2007. Making european Private Law: Governance design. Chaltenham,Elgar.

UMS
UNIVERSITI MALAYSIA SABAH

Chan, N. W. 2012. 'Impacts of disasters and disasters risk management in Malaysia: The case of floods', in Sawada, Y. and S. Oum (eds.), *Economic and Welfare Impacts of Disasters in East Asia and Policy Responses. ERIA Research Project Report 2011,* Jakarta: ERIA. 497-545.

Dano Umar, L., Abdul Nasir, M., & Ahmad Mustafa H. 2012. Natural flood influencing factors: A case study of Perlis, Malaysia. *In: International Conference on Civil,Offshore and Environmental Engineering (ICCOEE 2012),* June 2012, Kuala Lumpur.

Department Drainage and Irrigation (DID). 2007. *Flood and Drought Management in Malaysia.* Kuala Lumpur.

Department of Irrigation and Drainage (DID). 2009.*Flood Management.* Kuala Lumpur. Volume **1**.

Department Drainage and Irrigation, (DID). 2012. The official portal for Department of Irrigation and Drainage Malaysia. http://www.water.gov.my/our-services-mainmenu-252/flood-mitigation main menu- 23/programme-aamp-activities-mainmenu-199?lang=en.

Division. 2011. Disaster management. *3rd AIPA Caucus Report,* Kuala Lumpur, National Security Council.

Flood Emergencies Mitigation Agencies (FEMA). 2011. Plan, Prepare & Mitigation. http://www.ready.gov/floods.

Friedlander, S. L., 2012. *sssmalaysia.org. Law websites.* http ://law/sssmalaysia.org.

Godchalk. 2003. Urban creating recilience cities: Natural hazards review. *Hazard mitigation.* **4**(3) : 131-160.

Goddardk. 2000. *What can you be liable for and why* : *Liablility.* 7th ed. Aspen, New York.

Herzog, J., Horst, R.J. 2007. Municipal Liability. The Tort of Nuisance, Complicity: Ethics and Law for a collective age. Cambridge University Press, United Kingdom.

Hickey, J.T & Salasand, J.D. 1995. Environmental effects of extreme floods. In: *United States- Italy research Workshop on Hydrometeorology, Impacts and Management of Extreme Floods*.

Hill, G. & Attorney. 2009. *Nolo's Plain-English Law Dictionary.* 1st ed. Nolo Press Occidental, United States.

UMS
UNIVERSITI MALAYSIA SABAH

Hock Wee Sdn Bhd v Fajar Saga Sdn Bhd. 2010. High Court Johor Bahru reporter. http://www.cljlaw.com/Members/DisplayCase.aspx?CaseId=2890076675&SearchId= 0ngziyang.

Hughes & Bob. 2003. *Tresspass. In: Bob and Hughes, Textbook on Tort*. 8nd ed. Oxford University Press, United Kingdom.

Jamaluddin, M.J. 1985. *Flash flood problems and human responses to the flash flood hazard in Kuala Lumpur area, Peninsular Malaysia.* Akademika. **26**: 45-62.

Julien P.Y, Abd Ghani, N.A., Zakaria, R. Abdullah & Chang, C.K. 2010. Case study: Flood Mitigation of the Muda River, Malaysia. *Journal of Hydraulic Engineering.* **136** (4):251-261.

Kozlowski, T.T. 1984. Flooding and Plant Growth. United Kingdom, Academic Press Inc ,London.

Korkh, I.V. 2008. *Law 130 Property Law Douglas Harris*. 2nd ed. Oxford University Press, New York.

Lamont, C., 2008. Flooding: Private Law Claims, Landmark Chambers, United Kingdom.

Loko,B. & Laframboise, N. 2012. Natural Disasters *: Mitigating Impact, Managing Risks,* Washington: International Monetary Fund.

Malaysia Meteorological Department (MMD). 2013. *General climate of Malaysia*. http://www.met.gov.my/index.php?option=com_content&task=view&id=75&Itemid=1089.

Martin, T., Bruce, R., & Peter, W. 2010. Cornell University Law school. http://www.law.cornell.edu/wex/strict_liability.

Mohammad, A. Mohit & Gajikoh, M. S. 2013. Cultural sustainability in the built and natural environment : Mitigation of climate change effect through non structural flood disaster management in Pekan town,Malaysia. *AcE-Bs 2013 Hanoi ASEAN Conference on Environment Behaviour Studies,* 19-22 March 2013, Hanoi Architectural University, Hanoi, Vietnam.

Mohd Fauzi, M. 2013. Key Challenges In Urban Flood Management. *Proceeding of Conference on Knowledges, Experiences and Policy in Malaysian Perspective*, 2 march,ms.68.

UMS
UNIVERSITI MALAYSIA SABAH

Muhammad Rizal, R. Jamaluddin Mad, J & Kadir Ariffin. 2004.Occupational safety, health and environmental management and the Law of negligence in Malaysia. *Environmental Management*. **5**: 125-136.

Murck, B.W, & Skinner,B.J & Porter,S.C. 1997. Dangerous Earth: An introduction to geologic hazards. John Wiley & Sons, Inc.

Nina Larsen Saarnak. 2003. Flood recession agriculture in the Senegal river valley. *Danish Journal of Geography.* **103** (1): 99-113.

Noor Mohammad. 2011. Environmental Law and policy practices in Malaysia. *An Empirical Study,* **5**(9): 1428-1260.

Perdana Parkcity Sdn Bhd v. Lee Hon Kit. 2012. High Court Malaya reporter. http://www.cljlaw.com/Members/DisplayCase.aspx?CaseId=2943419011&SearchId= 8ngziyang.

Pradhan, B., 2009. Flood susceptible mapping and risk area delineation using logistic regression, GIS and remote sensing. *Spatial Hydrology*. **9**(2): 1-18.

Puteri Nemie J.K & Khadijah, M.N. 2013. Medical negligence disputes in Malaysia. Resolving through hazards of litigation or through community responsibilities. *International Journal of Social Human Science and Engineering.* **7**(5):1- 9.

Rubin, K. 2009. Ask An Earth Scientist. http://www.soest.hawaii.edu/GG/ASK/floods.html.

Rustam Khairi Zahari & Raja Noriza Raja Ariffin. 2012. flood-Communities Of Kuala Lumpur.*Risk communications*. **17**: 880-888.

Sabrina Sobri v. Perkanas Sdn Bhd. 2011. High Court Malaya, Alor Setar reporter. http://www.cljlaw.com/Members/DisplayCase.aspx?CaseId=2903449601&SearchId=9ngziyang.

Survival, L. S. 2011. Law School Survival http://www.lawschoolsurvival.org/index.php/the-irac-method.

Smith, K. 2001. *Environmental Hazards: Assessing risk and reducing disaster*. 3rd ed. Routledge Press, United Kingdom.

Steven Phoa Cheng Loon & Ors v. Highland Properties Sdn Bhd. 2002. Court Of Appeal, Kuala Lumpur reporter. http://www.cljlaw.com/Members/DisplayCase.aspx?CaseId=2647591425&SearchId=0ngziyang.

UMS
UNIVERSITI MALAYSIA SABAH

Tarlock, A. D. 2011. Environmental Laws and their enforcement. *History Of Environmental Law.* **1**: 1-7.

United Nations, (UN). 2000. United Nations Web Sites. http://unu.edu/publications/articles/preventing-and-controlling-infectious-diseases-after-natural-disasters.html#info.

Wan Azhar, W.A. 2012. Institut Kefahaman Islam Malaysia.(IKIM) Malaysia Common Law : http://www.ikim.gov.my/index.php/ms/the-star/7587-malaysian-common-law.

Wing, C. C. 2005. Board Of Engineers Malaysia. (BEM) Managing Flood Problems In Malaysia. http://www.bem.org.my/publication/juneaug04/F(Flood)(38-43).

World Health Organization, (WHO). 2002. Floods: Climate change and adaptation atrategies for human health, WHO regional office for Europe, United Kingdom.

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