

**PETITION TO THE INTER AMERICAN COMMISSION ON HUMAN RIGHTS
SEEKING RELIEF FROM VIOLATIONS RESULTING FROM GLOBAL
WARMING CAUSED BY ACTS AND OMISSIONS OF THE UNITED STATES**

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ON BEHALF OF ALL INUIT OF THE ARCTIC REGIONS OF THE UNITED STATES AND CANADA,
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I. SUMMARY OF THE PETITION

In this petition, Sheila Watt-Cloutier, an Inuk woman and Chair of the Inuit Circumpolar Conference, requests the assistance of the Inter-American Commission on Human Rights in obtaining relief from human rights violations resulting from the impacts of global warming and climate change caused by acts and omissions of the United States. Ms. Watt-Cloutier submits this petition on behalf of herself, 62 other named individuals, and all Inuit of the arctic regions of the United States of America and Canada who have been affected by the impacts of climate change described in this petition.

Global warming refers to an average increase in the Earth's temperature, causing changes in climate that lead to a wide range of adverse impacts on plants, wildlife, and humans. There is broad scientific consensus that global warming is caused by the increase in concentrations of greenhouse gases in the atmosphere as a result of human activity. The United States is, by any measure, the world's largest emitter of greenhouse gases, and thus bears the greatest responsibility among nations for causing global warming.

The Inuit, meaning "the people" in their native Inuktitut, are a linguistic and cultural group descended from the Thule people whose traditional range spans four countries – Chukotka in the Federation of Russia, northern and western Alaska in the United States, northern Canada, and Greenland. While there are local characteristics and differences within the broad ethnic category of "Inuit," all Inuit share a common culture characterized by dependence on subsistence harvesting in both the terrestrial and marine environments, sharing of food, travel on snow and ice, a common base of traditional knowledge, and adaptation to similar Arctic conditions. Particularly since the Second World War, the Inuit have adapted their culture to include many western innovations, and have adopted a mixed subsistence- and cash-based economy. Although many Inuit are engaged in wage employment, the Inuit continue to depend heavily on the subsistence harvest for food. Traditional "country food" is far more nutritious than imported "store-bought" food. Subsistence harvesting also provides spiritual and cultural affirmation, and is crucial for passing skills, knowledge and values from one generation to the next, thus ensuring cultural continuity and vibrancy.

Like many indigenous peoples, the Inuit are the product of the physical environment in which they live. The Inuit have fine-tuned tools, techniques and knowledge over thousands of years to adapt to the arctic environment. They have developed an intimate relationship with their surroundings, using their understanding of the arctic environment to develop a complex culture that has enabled them to thrive on scarce resources. The culture, economy and identity of the Inuit as an indigenous people depend upon the ice and snow.

Nowhere on Earth has global warming had a more severe impact than the Arctic. Building on the 2001 findings of the Intergovernmental Panel on Climate Change, the 2004

Arctic Climate Impact Assessment – a comprehensive international evaluation of arctic climate change and its impacts undertaken by hundreds of scientists over four years – concluded that:

The Arctic is extremely vulnerable to observed and projected climate change and its impacts. The Arctic is now experiencing some of the most rapid and severe climate change on Earth. Over the next 100 years, climate change is expected to accelerate, contributing to major physical, ecological, social, and economic changes, many of which have already begun.

Because annual average arctic temperatures are increasing more than twice as fast as temperatures in the rest of the world, climate change has already caused severe impacts in the Arctic, including deterioration in ice conditions, a decrease in the quantity and quality of snow, changes in the weather and weather patterns, and a transfigured landscape as permafrost melts at an alarming rate, causing slumping, landslides, and severe erosion in some coastal areas. Inuit observations and scientific studies consistently document these changes. For the last 15 to 20 years, Inuit, particularly hunters and elders who have intimate knowledge of their environment, have reported climate-related changes within a context of generations of accumulated traditional knowledge.

One of the most significant impacts of warming in the Arctic has been on sea ice. Commonly observed changes include thinner ice, less ice, later freezes and earlier, more sudden thaws. Sea ice is a critical resource for the Inuit, who use it to travel to hunting and harvesting locations, and for communication between communities. Because of the loss in the thickness, extent and duration of the sea ice, these traditional practices have become more dangerous, more difficult or, at times, impossible. In many regions, traditional knowledge regarding the safety of the sea ice has become unreliable. As a result, more hunters and other travelers are falling through the sea ice into the frigid water below. The shorter season for safe sea ice travel has also made some hunting and harvest activities impossible, and curtailed others. For the Inuit, the deterioration in sea ice conditions has made travel, harvest, and everyday life more difficult and dangerous.

The quality, quantity and timing of snowfall have also changed. Snow generally falls later in the year, and the average snow cover over the region has decreased ten percent over the last three decades. The spring thaw comes earlier and is more sudden than in the past. As with decreased ice, the shorter snow season has made travel more difficult. In addition, the deep, dense snow required for igloo building has become scarce in some areas, forcing many travelers to rely on tents, which are less safe, much colder and more cumbersome than igloos. The lack of igloo-quality snow can be life threatening for travelers stranded by unforeseen storms or other emergencies. These changes have also contributed to the loss of traditional igloo building knowledge, an important component of Inuit culture.

Permafrost, which holds together unstable underground gravel and inhibits water drainage, is melting at an alarming rate, causing slumping, landslides, severe erosion and loss of ground moisture, wetlands and lakes. The loss of sea ice, which dampens the impact of storms

on coastal areas, has resulted in increasingly violent storms hitting the coastline, exacerbating erosion and flooding. Erosion in turn exposes coastal permafrost to warmer air and water, resulting in faster permafrost melts. These transformations have had a devastating impact on some coastal communities, particularly in Alaska and the Canadian Beaufort Sea region. Erosion, storms, flooding and slumping harm homes, infrastructure, and communities, and have damaged Inuit property, forcing relocation in some cases and requiring many communities to develop relocation contingency plans. In addition, these impacts have contributed to decreased water levels in rivers and lakes, affecting natural sources of drinking water, and habitat for fish, plants, and game on which Inuit depend.

Other factors have also affected water levels. Changes in precipitation and temperature have led to sudden spring thaws that release unusually large amounts of water, flooding rivers and eroding their streambeds. Yet, after spring floods, rivers and lakes are left with unusually low levels of water further diminished by increased evaporation during the longer summer. These changes affect the availability and quality of natural drinking water sources. The fish stocks upon which Inuit rely are profoundly affected by changing water levels. Fish sometimes can not reach their spawning grounds, their eggs are exposed or washed ashore, or northward moving species compete with the native stocks for ecological niches.

The weather has become increasingly unpredictable. In the past, Inuit elders could accurately predict the weather for coming days based on cloud formations and wind patterns, allowing the Inuit to schedule safe travel. The changing climate has made clouds and wind increasingly erratic and less useful for predicting weather. Accurate forecasting is crucial to planning safe travel and hunting. The inability to forecast has resulted in hunters being stranded by sudden storms, trip cancellations, and increased anxiety about formerly commonplace activities.

Observers have also noted changes in the location, characteristics, number, and health of plant and animal species caused by changes in climate conditions. Some species are less healthy. In the words of the Arctic Climate Impact Assessment, “[m]arine species dependent on sea ice, including polar bears, ice-living seals, walrus, and some marine birds, are very likely to decline, with some facing extinction.”

Other species are becoming less accessible to the Inuit because the animals are moving to new locations, exacerbating the travel problems resulting from climate change. Still others cannot complete their annual migrations because the ice they travel on no longer exists, or because they cannot cross rivers swollen by sudden floods. More frequent autumn freeze-thaw cycles have created layers of solid ice under the snow that makes winter foraging more difficult for some game animals, including caribou, decreasing their numbers and health. These impacts on animals have impaired the Inuit’s ability to subsist.

Increased temperatures and sun intensity have heightened the risk of previously rare health problems such as sunburn, skin cancer, cataracts, immune system disorders and heat-related health problems. Warmer weather has increased the mortality and decreased the health of

some harvested species, impacting important sources of protein for the Inuit. Traditional methods of food and hide storage and preservation are less safe because of increased daytime temperatures and melting permafrost.

The current impacts in the Arctic of climate change are severe, but projected impacts are expected to be much worse. Using moderate – not worst case – greenhouse gas emission scenarios, the Arctic Climate Impact Assessment finds that:

- “Increasing global concentrations of carbon dioxide and other greenhouse gases due to human activities, primarily fossil fuel burning, are projected to contribute to additional arctic warming of about 4-7°C, about twice the global average rise, over the next 100 years.”
- “Increasing precipitation, shorter and warmer winters, and substantial decreases in snow and ice cover are among the projected changes that are very likely to persist for centuries.”
- “Unexpected and even larger shifts and fluctuations in climate are also possible.”
- “Reductions in sea ice will drastically shrink marine habitat for polar bears, ice-inhabiting seals, and some seabirds, pushing some species toward extinction.”
- “Caribou/reindeer and other animals on land are likely to be increasingly stressed as climate warming alters their access to food sources, breeding grounds, and historic migration routes.”
- “Species ranges are projected to shift northward on both land and sea, bringing new species into the Arctic while severely limiting some species currently present.”
- “As new species move in, animal diseases that can be transmitted to humans, such as West Nile Virus, are likely to pose increasing health risks.”
- “Severe coastal erosion will be a growing problem as rising sea level and a reduction in sea ice allow higher waves and storm surges to reach shore.”
- “Along some Arctic coastlines, thawing permafrost weakens coastal lands, adding to their vulnerability.”
- “The risk of flooding in coastal wetlands is projected to increase, with impacts on society and natural ecosystems.”
- “In some cases, communities and industrial facilities in coastal zones are already threatened or being forced to relocate, while others face increasing risks and costs.”
- “Many Indigenous Peoples depend on hunting polar bear, walrus, seals, and caribou, herding reindeer, fishing, and gathering, not only for food and to support the local economy, but also as the basis for cultural and social identity.”
- “Changes in species’ ranges and availability, access to these species, a perceived reduction in weather predictability, and travel safety in changing ice and weather conditions present serious challenges to human health and food security, and possibly even the survival of many cultures.”

Noting the particular impact these changes will have on the Inuit, the ACIA states: “For Inuit, warming is likely to disrupt or even destroy their hunting and food sharing culture as

reduced sea ice causes the animals on which they depend on to decline become less accessible, and possibly become extinct.”

Several principles of international law guide the application of the human rights issues in this case. Most directly, the United States is obligated by its membership in the Organization of American States and its acceptance of the American Declaration of the Rights and Duties of Man to protect the rights of the Inuit described above. Other international human rights instruments give meaning to the United States’ obligations under the Declaration. For example, as a party to the International Convention on Civil and Political Rights (“ICCPR”), the United States is bound by the principles therein. As a signatory to the International Convention on Economic, Social, and Cultural Rights (“ICESCR”), the United States must act consistently with the principles of that agreement.

The United States also has international environmental law obligations that are relevant to this petition. For instance, the United States also has an obligation to ensure that activities within its territory do not cause transboundary harm or violate other treaties to which it is a party. As a party to the UN Framework Convention on Climate Change, the United States has committed to developing and implementing policies aimed at returning its greenhouse gas emissions to 1990 levels. All of these international obligations are relevant to the application of the rights in the American Declaration because, in the words of the Inter-American Commission, the Declaration “should be interpreted and applied in context of developments in the field of international human rights law ... and with due regard to other relevant rules of international law applicable to [OAS] member states.”

The impacts of climate change, caused by acts and omissions by the United States, violate the Inuit’s fundamental human rights protected by the American Declaration of the Rights and Duties of Man and other international instruments. These include their rights to the benefits of culture, to property, to the preservation of health, life, physical integrity, security, and a means of subsistence, and to residence, movement, and inviolability of the home.

Because Inuit culture is inseparable from the condition of their physical surroundings, the widespread environmental upheaval resulting from climate change violates the Inuit’s right to practice and enjoy the benefits of their culture. The subsistence culture central to Inuit cultural identity has been damaged by climate change, and may cease to exist if action is not taken by the United States in concert with the community of nations

The Inuit’s fundamental right to use and enjoy their traditional lands is violated as a result of the impacts of climate change because large tracks of Inuit traditional lands are fundamentally changing, and still other areas are becoming inaccessible. Summer sea ice, a critical extension of traditional Inuit land, is literally ceasing to exist. Winter sea ice is thinner and unsafe in some areas. Slumping, erosion, landslides, drainage, and more violent sea storms have destroyed coastal land, wetlands, and lakes, and have detrimentally changed the characteristics of the landscape upon which the Inuit depend. The inability to travel to lands

traditionally used for subsistence and the reduced harvest have diminished the value of the Inuit's right of access to these lands.

The Inuit's fundamental right to enjoy their personal property is violated because climate change has reduced the value of the Inuit's personal effects, decreasing the quality of food and hides, and damaging snowmobiles, dog sleds and other tools. Their right to cultural intellectual property is also violated, because much of the Inuit's traditional knowledge, a formerly priceless asset, has become frequently unreliable or inaccurate as a result of climate change.

The Inuit's fundamental rights to health and life are violated as climate change exacerbates pressure on the Inuit to change their diet, which for millennia has consisted of wild meat and a few wild plants. Climate change is accelerating a transition by Inuit to a more western store-bought diet with all of its inherent health problems. Life-threatening accidents are increasing because of rapid changes to ice, snow, and land. Traditional food preservation methods are becoming difficult to practice safely. Natural sources of drinking water are disappearing and diminishing in quality. Increased risks of previously rare heat and sun related illnesses also implicate the right to health and life.

The Inuit's fundamental rights to residence and movement, and inviolability of the home are likewise violated as a result of the impacts of climate change because the physical integrity of Inuit homes is threatened. Most Inuit settlements are located in coastal areas, where storm surges, permafrost melt, and erosion are destroying certain coastal Inuit homes and communities. In inland areas, slumping and landslides threaten Inuit homes and infrastructure.

The Inuit's fundamental right to their own means of subsistence has also been violated as a result of the impacts of climate change. The travel problems, lack of wildlife, and diminished quality of harvested game resulting from climate change have deprived the Inuit of the ability to rely on the harvest for year-round sustenance. Traditional Inuit knowledge, passed from Inuit elders in their role as keepers of the Inuit culture, is also becoming outdated because of the rapidly changing environment.

The United States of America, currently the largest contributor to greenhouse emissions in the world, has nevertheless repeatedly declined to take steps to regulate and reduce its emissions of the gases responsible for climate change. As a result of well-documented increases in atmospheric concentrations of greenhouse gases, it is beyond dispute that most of the observed change in global temperatures over the last 50 years is attributable to human actions. This conclusion is supported by a remarkable consensus in the scientific community, including every major US scientific body with expertise on the subject. Even the Government of the United States has accepted this conclusion.

However, and notwithstanding its ratification of the UN Framework Convention on Climate Change, United States has explicitly rejected international overtures and compromises, including the Kyoto Protocol to the U.N. Framework Convention on Climate Change, aimed at securing agreement to curtail destructive greenhouse gas emissions. With full knowledge that

this course of action is radically transforming the arctic environment upon which the Inuit depend for their cultural survival, the United States has persisted in permitting the unregulated emission of greenhouse gases from within its jurisdiction into the atmosphere.

Protecting human rights is the most fundamental responsibility of civilized nations. Because climate change is threatening the lives, health, culture and livelihoods of the Inuit, it is the responsibility of the United States, as the largest source of greenhouse gases, to take immediate and effective action to protect the rights of the Inuit.

Because this petition raises violations of the American Declaration of the Rights and Duties of Man by the United States of America, the Inter-American Commission on Human Rights has jurisdiction to receive and consider it. The petition is timely because the acts and omissions of the United States that form the basis for the petition are ongoing, and the human rights violations they are causing is increasing. Because there are no domestic remedies suitable to address the violations, the requirement that domestic remedies be exhausted does not apply in this case.

The violations detailed in the petition can be remedied. As such, the Petitioner respectfully requests that the Commission:

1. Make an onsite visit to investigate and confirm the harms suffered by the named individuals whose rights have been violated and other affected Inuit;
2. Hold a hearing to investigate the claims raised in this Petition;
3. Prepare a report setting forth all the facts and applicable law, declaring that the United States of America is internationally responsible for violations of rights affirmed in the American Declaration of the Rights and Duties of Man and in other instruments of international law, and recommending that the United States:
 - a. Adopt mandatory measures to limit its emissions of greenhouse gases and cooperate in efforts of the community of nations – as expressed, for example, in activities relating to the United Nations Framework Convention on Climate Change – to limit such emissions at the global level;
 - b. Take into account the impacts of U.S. greenhouse gas emissions on the Arctic and affected Inuit in evaluating and before approving all major government actions;
 - c. Establish and implement, in coordination with Petitioner and the affected Inuit, a plan to protect Inuit culture and resources, including, *inter alia*, the land, water, snow, ice, and plant and animal species used or occupied by the named individuals whose rights have been violated and other affected Inuit;

and mitigate any harm to these resources caused by US greenhouse gas emissions;

- d. Establish and implement, in coordination with Petitioner and the affected Inuit communities, a plan to provide assistance necessary for Inuit to adapt to the impacts of climate change that cannot be avoided;
- e. Provide any other relief that the Commission considers appropriate and just.

II. JURISDICTION OF THE COMMISSION

The Inter-American Commission on Human Rights has competence to receive and act on this petition in accordance with articles 1.2.b, 18, 20.b, and 24 of the Commission's Statute.

III. PETITIONER AND INDIVIDUALS WHOSE RIGHTS HAVE BEEN VIOLATED

A. PETITIONER

This petition is submitted by Sheila Watt-Cloutier, with the support of the Inuit Circumpolar Conference.

Sheila Watt-Cloutier, P.O. Box 2099, Iqaluit, Nunavut, X0A 0H0, Canada, Telephone: (867) 979-4661. Ms. Watt-Cloutier is Chair of the Inuit Circumpolar Conference (ICC), the Inuit organization that represents the interests internationally of Inuit resident in Canada, Greenland, Alaska, and Chukotka in the Far East of the Federation of Russia. Currently living in Iqaluit, Nunavut, she was born in Kuujjuaq, Nunavik (northern Quebec) in 1953, and was raised traditionally in her early years before attending school in southern Canada. She is a mother of two and a grandmother of one. Ms. Watt-Cloutier is an avid berry picker and eats a diet of country food whenever possible. She is particularly concerned that her grandson will not be able to live the Inuit hunting and food-sharing culture that has sustained Inuit physically and spiritually for generations.

The Inuit Circumpolar Conference

The Inuit Circumpolar Conference (ICC) was founded in 1977. It is an international non-government organization representing approximately 150,000 Inuit of Alaska, Canada, Greenland, and Chukotka (Russia). The ICC has an organization in each country that is incorporated in accordance to the laws of the respective country, as well as an international office, which is the Office of the Chair. The Office of the Chair of ICC is led by Sheila Watt-Cloutier, the elected Chair of ICC.

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B. INDIVIDUALS WHOSE RIGHTS HAVE BEEN VIOLATED

The individuals whose rights have been violated in this case are the Inuit of the Arctic regions of the United States and Canada whose property, physical well-being and cultural life are being adversely affected by the acts and omissions described in this petition. These include the following individuals, all of whom have experienced one or more of the human rights violations described in this petition. Annex I provides a brief description of each of the named individuals whose rights have been violated.

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IV. FACTS: GLOBAL WARMING IS HARMING INUIT LIFE AND CULTURE

A. THE LIFE AND CULTURE OF THE INUIT* DEPEND ON THE ARCTIC ENVIRONMENT

The Arctic is magnificent. It is not wilderness, for almost every square kilometer is used, known, and named. Inuit hunters travel hundreds of kilometers for seals, walrus, polar bear, whales, and caribou. Our rich and vibrant traditional knowledge is passed forward from generation to generation.^{1†}

1. HISTORY OF THE INUIT

The Inuit oral tradition tells of their ancestors, their history, the peoples that came before them, and of the origin of their culture. Western archeological evidence also illuminates Inuit history and culture.

When we speak about the origins and history of our culture, we do so from a perspective that is different from that often used by non-Inuit who have studied our past.... Our past is preserved and explained through the telling of stories and the passing of information from one generation to the next through what is called the oral tradition. Inuit recognize the importance of maintaining the oral tradition as a part of our culture and way of learning. At the same time we realize that there are other ways to understand the past through activities such as archeology and the study of historical documents. Both ways of knowing must now be used by Inuit and it is our elders and our schools that will provide the necessary tools.²

Inuit oral tradition and western archeological evidence agree that the Inuit culture has developed over millennia, incorporating aspects of both the Thule culture and Sivullirmiut culture.³ The Inuit are part of a larger group of linguistically related people that include the

* The term "Inuit," meaning "the people" in their native Inuktituk, refers to a linguistic and cultural family of indigenous people whose common roots come from the Thule (so-named after the place where the culture was discovered in Greenland) and Dorset peoples of the Arctic 1000 to 1600 years ago when technical innovations allowed successful whale hunting. The singular, sometimes found in this petition to refer to a single person, is "Inuk." Other names for the same people or subdivisions thereof include Inupiat, Inupiaq, Yuit, Yuik, and Yu'pik. Although linguistically related, the Aleut of Alaska are generally considered a separate people. The term "Eskimo" is sometimes used in this petition in quotations, but to some Inuit, the term is considered pejorative. "Eskimo," however, is the name most associated with these various northern peoples in the Western consciousness. It is therefore found in some passages quoted in this petition.

† For the Commission's convenience, this petition uses the following format. Explanatory notes and comments are provided in footnotes at the bottom of the page. Citations to source documents and other legal and factual support are provided in endnotes.

Aleut, Yupik, and Inupiat. Inuit oral tradition speaks of the Sivullirmiut as their first “real” ancestors. Western Archeologists refer to this group as the Predorset, Independence and Dorset peoples.⁴ The Sivullirmiut migrated eastward from the north coast of Alaska through Canada to Greenland approximately 5000 years ago.⁵ These people were successful sea mammal hunters, but did not hunt whales.

INUIT and CIRCUMPOLAR PEOPLES



The classic Thule culture in Greenland first developed the tools, weapons, skills, and boats necessary to hunt the large whales in the northern seas approximately 1000 to 1600 years ago.⁶ This innovation probably contributed to the rapid migration of the Thule people and the absorption of the Sivullirmiut people. About 1000 years ago, the Thule people migrated throughout the Arctic from Alaska, through

Canada and Greenland, to northern Russia in only a few generations, absorbing the Dorset culture and becoming the present Inuit culture.⁷ Inuit now live in four arctic countries and in eight different time zones.⁸ Across the Russian Federation, Alaska, Canada and Greenland, Inuit share the same language and cultural practices.

The ability to adapt their way of life to changing conditions served the Inuit well in the harsh arctic climate.⁹ This adaptability continued to serve the Inuit when Europeans arrived, with their newer, different technologies. The early contact with the Europeans, between the late sixteenth and early nineteenth centuries, was very limited and had little impact on the Inuit. By 1848, however, American whalers had discovered the bowhead whale in the Chukchi Sea, and the commercial exploitation of the Inuit’s main subsistence food source began in earnest.¹⁰ In the late nineteenth century, missionaries in Alaska began coercing Inuit to form permanent villages.¹¹ A similar sequence of events took place later across the Canadian Arctic as Canadian Inuit remained primarily nomadic until the 1950s and 60s.¹² In the Eastern Canadian Arctic, the struggle to convert Inuit often caused deep divisions in groups and families that depended on cohesion and co-operation to survive. Ultimately, contact with the first visitors to the Arctic and the move from traditional camps on the land to settlements caused a decisive loss of independence.¹³

Since intensive European contact began, Inuit have tried to adapt to social and economic change and to reconcile their traditional world view with the values of western society and the economic development policies of national governments in the four countries in which they

reside. Inuit have been very active politically and continue to promote self-determination, self-government, and Inuit ownership, control, and management of areas they use and occupy. This political movement has resulted in detailed agreements with national governments which continue to be commented upon worldwide. These agreements include:

- * The James Bay and Northern Quebec Agreement (1975);
- * Home Rule in Greenland (1979);
- * The Inuvialuit Final Agreement (1984);
- * The Nunavut Agreement (1993); and
- * The Labrador Agreement (1993).

The specific provisions of these agreements differ, but all enable the Inuit to design and implement policies and programs to promote sustainable development and, in a very broad sense, to combine the best of the old with the best of the new. Effective implementation of these agreements is key to promoting Inuit culture, protecting Inuit homelands, and raising the material standard of living of Inuit, many of whom continue to live in conditions akin to the developing world. Climate change undercuts many of the rights and benefits that Inuit have secured in these agreements, and hinders implementation.



2. INUIT CULTURE TODAY

*The process of the hunt and eating of our country food personifies what it means to be Inuit. It is on the land that our values and age-old knowledge are passed down from generation to generation. Generations—young and old—meet on the land. The wisdom of the land and process of the hunt teaches young Inuit to be patient, courageous, tenacious, bold under pressure, reflective to withstand stress, to focus and carry out a plan to achieve a goal.... Hunting and eating the animals we hunt are spiritual and cultural activities.*¹⁴

a. Hunting and Gathering

Inuit in different areas harvest whale, seal, caribou, arctic hare, berries, and fish. The harvest provides needed food for the Inuit, in addition to providing the opportunity to engage in and pass on cultural practices. The Inuit have adopted numerous innovations of modern technology to assist in the harvest, including skidoos, rifles and motorboats, which minimize risks and help to ensure a successful hunt. The vast knowledge gleaned from oral tradition and personal observation tells Inuit hunters how and where their harvest can be found, to what uses the harvest can be put, and how to sustainably manage the animal and plant populations.

Inuit describe the behavior of animals in where the animals feed, breed, calve or rest, and in terms of their routes of movement from one location to another at different times of the year. Each type of animal has a characteristic pattern of movement and these often change from season to the next. Our knowledge takes into account the relative abundance of various types of animals and changes in this abundance, but it does not necessarily deal with absolute numbers. Inuit knowledge is not quantitative in nature, but this does not mean that it is not precise. In fact, the need to be precise is one of the primary identifying elements of our knowledge base.¹⁵

While harvest methods and technology have changed, the need for this knowledge and skill remains constant. The knowledge and skill passes from one generation to the next, with each generation adding its own observations to the store of knowledge and skill. This method of teaching and learning has made the Inuit very successful harvesters.



The harvest provides necessary “country food” to the Inuit, in addition to providing opportunities to engage in traditional practices and teach the next generation. As described in the following section, the harvest is a vital part of the economic well being of the Inuit.

b. Inuit Economy

The modern Inuit economy is an interdependent mix of old and new. Cash flow has enabled Inuit to adapt their culture to changing conditions by purchasing modern equipment that helps them to hunt more efficiently and safely.¹⁶ The harvest in turn complements and supplements the newer cash-based aspects of the economy and provides Inuit with necessary nutrition, which they would otherwise need to purchase.¹⁷

[I]t is impossible to discuss our future as part of the larger Canadian fabric without giving serious consideration to the role we will play in the next phase of economic and political development throughout the Canadian North. We cannot, however, assume that this new role will be developed at the expense of more traditional activities which characterize our mixed subsistence based economies that are so vital for the long term economic and social health of our communities.¹⁸

The government of Nunavut, Canada, estimates that to replace the annual subsistence harvest in that territory with a population of approximately thirty thousand people would cost over thirty-five million Canadian dollars.¹⁹ On the other hand, there is no way to convert that vast wealth into actual cash that can be used to purchase other goods and services, so the economic value of the subsistence harvest may be undervalued or discounted altogether.²⁰ The value of Inuit traditional knowledge and intellectual property has also not yet been quantified or protected.²¹ These aspects of the Inuit economy, though nearly invisible to the Western eye, are vital and integral pillars of the Inuit's standard of living, economy, and way of life.



The conundrum of how to develop the cash economy and improve the standard of living in communities without compromising the traditional Inuit subsistence economy or culture is a consistent theme in discussions among Inuit leaders. Sustainable development requires carefully thought out strategies for future development. The traditional subsistence harvest is sustainable over the long term, and makes up a large part of this developing strategy.

c. Social and Cultural Conditions and Practices

There is no denying that Inuit culture and society are under significant economic, spiritual and psychological strain. Inuit people are navigating immense economic and social changes. The rapid change from a way of life that is purely subsistence to a mixed one has brought with it upheaval and insecurity in the lives of the Inuit. The culture has yet to fill all of the holes that this transformation has created, but Inuit organizations, the government of Nunavut, and the governments of the States in which Inuit live are all working to remedy these problems. The traditional culture of living on the land and harvesting continues to play a central role in the well-being of Inuit.

i. Living on the Land

“Despite the considerable changes that have occurred in our society over the past 50 years, the relationship between Inuit and the land continues to be a fundamental element of Inuit culture and identity.”²²

*Generations – young and old – meet on the land. The wisdom of the land and process of the hunt teaches young Inuit to be patient, courageous, tenacious, bold under pressure, reflective to withstand stress, to focus and carry out a plan to achieve a goal.*²³

The “land” that Inuit refer to when speaking of living on the land includes not only the ground underfoot, but the ice, oceans, lakes, tidal zones, islands, and the total environment.²⁴ Depending on where they lived and the time of year, Inuit traditionally lived in tents, whalebone or driftwood houses, or igloos.²⁵ Igloo building has always been confined to the winter months, generally in the Canadian Arctic. Currently, Inuit live in permanent communities in permanent modern style housing. However, many Inuit harvesters spend several months each year traveling, harvesting, and “living on the land.”

Inuit remain intimately connected to the land and to the weather. In Greenland, the Inuit use the word “*sila*” for “weather.”

Sila is also used to mean “the elements” or “the air.” But *sila* is also the word for “intelligence/consciousness,” or “mind” and is understood to be the fundamental principle underlying the natural world. *Sila* is manifest in each and every person. It is an all-pervading, life-giving force – the natural order, a universal consciousness, and a breath soul. *Sila* connects a person with the rhythms of the universe,



integrating the self with the natural world. As *sila* links the individual and the environment, a person who lacks *sila* is said to be separated from an essential relationship with the environment that is necessary for human well-being.”²⁶

ii. Sharing the Hunt

An integral part of the Inuit culture is the sharing of the hunt.²⁷ In addition to traditional and cultural reasons, there are several practical reasons why Inuit share the harvest among community members. First, the harvest of large mammals requires a cooperative effort that a single family alone could not successfully complete. In addition, the harvest of a large animal, especially a whale, results in plenty of food as well as plenty of work to preserve. The need for sharing is also underscored by the risk of an unsuccessful hunt. No single hunter or group of hunters can be assured of success, so interdependence is necessary to sustain the families of the hunters whose endeavors do not result in success.²⁸

More than providing an efficient and practical food distribution system, food sharing provides less tangible benefits. The bonds that are formed by the sharing of food and labor among many in the community are central to Inuit culture.²⁹

Across the Arctic, the sharing and distribution of meat and fish is central to daily social life and expresses and sustains social relationships.... Harvesting and its associated processing and sharing activities reaffirm fundamental values and attitudes towards animals and the environment and provide a moral foundation for continuity between generations.... Complex and precise local rules determine the sharing and distribution of the catch, and seal meat is commonly shared out to people beyond the household, whether those people are related to the hunter or not. For arctic hunting peoples, sharing can only be understood with reference to the sense of social relatedness that people feel they have with each other and with animals and the environment.³⁰



d. Inuit Traditional Knowledge Regarding Climate

This is a story about knowledge. For the Iñupiat, knowledge means survival on the ice. Scientists started coming to Barrow, Alaska, in the 1940s, sent by the Navy to study the ice and cold weather. They brought Native guides along for safety, but they didn't often rely on Iñupiat knowledge for their studies. They didn't know how.

For each side, the knowledge held by the other contains a strong element of magic. Arnold Brower Sr. can see the value of a Global Positioning System receiver, for example, but he has yet to master the instrument, much less explain how it works. He knows how to navigate by the stars. Scientists coming to Barrow could see that Natives could keep them safe, but they didn't know how they did it any better than a layman understands the internal workings of a GPS unit.³¹

Inuit elders, after years of careful observation and practice as well as oral tradition passed from the previous generation's observations and practice, have developed a living, adaptable body of knowledge about their physical surroundings. Called Inuit Qaujimagatuqangit, or IQ by the Inuit, the term "traditional knowledge" ("TK") or "traditional ecological knowledge"

(“TEK”) describes a worldview that has proven itself reliable time and again.³² Inuit who live off the land, travel over precarious ice, and have, until recently, survived solely on what they can find or make from a sparse environment can attest to the accuracy of IQ. Western scientists now understand that traditional knowledge can describe reality as well as or better than results of the scientific method.

Perhaps the most famous and documented demonstration of IQ’s reliability is the bowhead whale count of 1977.³³ United States government scientists used commonly accepted scientific methods to estimate the bowhead whale population, counting individual migrating



whales from one vantage, and using statistical analysis to estimate the number that would be missed from that vantage point. The scientific conclusion was that only 600 to 2000 whales were left in the world, and drastic measures would be needed to save the species; including cutting off the Iñupiat subsistence whale hunt.

The Iñupiat hunters insisted that whale populations were much higher, based on their traditional knowledge of whale behavior. The government scientists refused to believe them,

so the Iñupiat set about proving their theory, in terms that the government could understand and accept. The North Slope Borough* hired a scientist to improve the count using the Iñupiat knowledge. Eventually, the improved count showed that traditional knowledge was correct, and more than 6000 bowhead existed, a level that did not require cutting off the subsistence hunt. The piece missing from the scientific method was the knowledge of bowhead behavior that the Inuit had developed over centuries of observing the bowhead.

“TEK is dynamic, incorporating new technologies and adjusting to changing conditions. As a Belcher Islands resident observed, spending time on the land is to collect TEK continuously. An Inuk on the land is ‘like a scientist studying his whole life - every day - never writing a report because the information keeps on changing.’”³⁴ Inuit know their land. Now, they know it is changing.

B. GLOBAL WARMING AND CLIMATE CHANGE CAUSED BY HUMAN EMISSIONS OF GREENHOUSE GASES ARE DAMAGING THE ARCTIC ENVIRONMENT

Of all the challenges faced by the Inuit in recent decades, global warming is the most daunting. As described below, no region on Earth has been hit harder by global warming than the Arctic. In a frozen land, where even small changes in the climate can be significant, the rapid changes being wrought by global warming are nothing short of catastrophic. Global

* Municipalities in Alaska are organized in “Boroughs” rather than counties as in the rest of the United States.

warming is forcing the Inuit to shoulder the burden of the rest of the world's development, with no corresponding benefit.

Some effects of global warming are obvious to anyone. Rapidly retreating glaciers leave behind barren rock attesting to their recent coverage of ice. Melting permafrost causes land to slump dramatically, leaving a wave-like cornice and precipice, when the unstable underground gravel is released from the ice. Other effects are less obvious to the untrained eye. Inuit, however, know that the ice is less slippery, the snow is not only more scarce but different, that the ice comes later and leaves earlier, and that the changes are affecting the behavior, numbers, location and quality of harvested animals. Inuit Qaujimajatuqangit tells the Inuit that the weather is not just warmer in the Arctic, but the entire familiar landscape is metamorphosing into an unknown land.

1. GLOBAL TEMPERATURES ARE RISING AND THE CLIMATE IS CHANGING

Exhaustive recent studies of the Earth's climate and temperature trends all lead to the same conclusion: the Earth is warming and the climate is changing. Observations of key planetary systems – sea ice, permafrost, sea levels, glaciers, and the range and habitat of plants and animals – support this conclusion. Although there remains some scientific uncertainty with respect to the nature and timing of sub-regional impacts, there is no scientific uncertainty with respect to the buildup of greenhouse gases in the atmosphere as a result of human activities. Nor is there any credible scientific doubt regarding the fundamental premises of this petition: that increased concentrations of greenhouse gases in the atmosphere have caused a rapid and persistent warming of the Arctic, and this warming has had a highly adverse effect on the lives and culture of the Inuit.



Summer Landscape, Baffin Island, Nunavut, Canada

a. Global Temperature Trends

In 1988, the United Nations responded to mounting international concern about the threat of global warming by creating the Intergovernmental Panel on Climate Change (IPCC).^{*} The

^{*} Created in 1988 by the World Meteorological Organization and the United Nations Environmental Programme, the IPCC's purpose is to evaluate the state of climate science as a basis for informed policy action, primarily on the basis of peer-reviewed and published scientific literature. See www.ipcc.ch/about/about.htm. The IPCC is the largest, most reputable peer-reviewed body of climate-change scientists in history, composed of the top scientists from around the globe, and employs a decision-by-consensus approach.

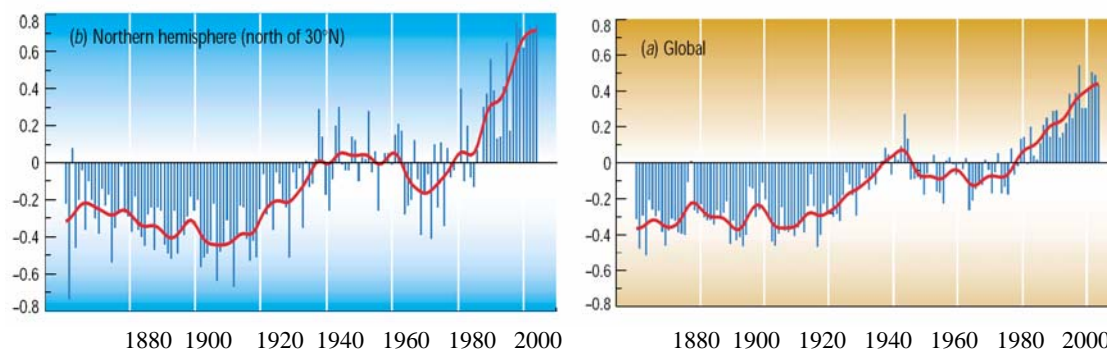
U.N. gave this international group of scientists the task of assessing climate change, its potential impacts, and options for adaptation and mitigation.³⁵ The IPCC's "assessment reports" are based on peer-reviewed and published scientific literature.* With increasing certainty, the reports express a scientific consensus that the Earth is warming, increasing the risk of potentially devastating consequences.

The IPCC's most recent assessment, entitled the Third Assessment Report (TAR), found that the average global surface temperature has increased by approximately 0.6°C since the late 1800s.³⁶ This warming is likely to have been the most significant in the Northern Hemisphere for any century in the past 1,000 years (data for the Southern Hemisphere and the period preceding the last millennium is too limited to make such an assessment).³⁷ Therefore, it is "very likely" (i.e., more than 90% certain) that the 1990s was the warmest decade in the instrumental record, with 1998 as the warmest year.³⁸

In 2001, the U.S. National Academy of Sciences prepared a report at the request of President George W. Bush which affirmed the TAR's findings. The report states that "global mean surface air temperature warmed between 0.4 and 0.8°C (0.7 and 1.5°F) during the 20th century."³⁹ Many U.S. Governmental agencies support this view, including the Environmental Protection Agency, the Department of Energy, the Department of Commerce, and the Office of Science and Technology.⁴⁰ Indeed, a report issued by the U.S. Interagency Climate Change Science Program (CCSP) found that recent warming has been even more rapid. Specifically, the CCSP found that during the past 20 years the global annual average surface temperature has increased by about 0.2°C per decade, a rate equivalent to 2°C per century.⁴¹

According to the World Meteorological Organization (WMO), global temperatures have increased since the publication of the TAR. The WMO reports that the ten-year period from 1995 to 2004 was the warmest on record.⁴² The five warmest years, in decreasing order, are: 1998, 2002, 2003, 2004 and 2001.⁴³

* The United States Senate has recognized the IPCC as the preeminent international body established to provide objective scientific and technical assessments on climate change. S. Exec. Rep. No. 102-55, 102nd Cong., 2d Sess. (1992) (IPCC's work is "viewed throughout most of the international scientific and global diplomatic community as the definitive statement on the state-of-the-knowledge about global climate change.")



(a) Combined annual global land and sea-surface temperature anomalies from 1861–2004; (b) Combined annual land and sea-surface temperature anomalies in the northern hemisphere from 1861–2004

Source: WMO Statement on the Status of the Global Climate in 2004.

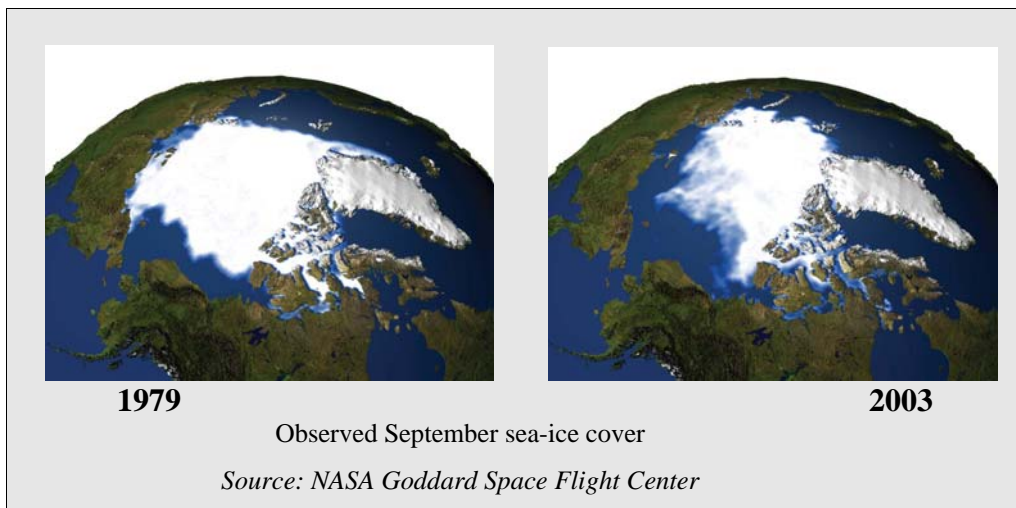
b. Key Indicators Confirm that the Earth Is Warming

Recently observed changes to natural systems provide additional evidence that global temperatures are rising. Key indicators of global warming include: melting sea ice, thawing permafrost, rising sea levels, retreating glaciers and ice sheets, and the alteration of species' behavior and habitat (including shifts of plant and animal ranges).

i. Melting Sea Ice

One of the most dramatic indicators of global warming is the reduction of arctic sea ice due to melting. The ACIA estimates an 8% decrease in the annual average amount of sea ice in the last 30 years, and notes that the melting trend is further accelerating.⁴⁴ The highest reduction of sea ice occurs during warm seasons. In fact, the past several decades show an Arctic-wide decrease of 10-15% of the total amount of sea ice during the summer months.⁴⁵ Specifically, in the region closest to the Atlantic Ocean, summer sea ice cover has dropped by as much as 20%, uncovering an area more than twice the size of California.⁴⁶

Sea ice in the Arctic has also grown substantially thinner because of the warming temperatures. For example, the ACIA reports a reduction in the average thickness of sea ice ranging from 10-15% over the past few decades.⁴⁷ Similarly, in the central Arctic Ocean, sea ice thickness has decreased by up to 40%.⁴⁸



As discussed Section II-C(2), the loss of sea ice due to this warming has been devastating to Inuit. According to a 2003 study of Alaska Native villages by the U.S. Government:

Rising temperatures have affected the thickness, extent, and duration of sea ice that forms along the western and northern coasts [of Alaska]. Loss of sea ice leaves coasts more vulnerable to waves, storm surges, and erosion. When combined with the thawing of permafrost along the coast, loss of sea ice seriously threatens coastal Alaska Native villages. Furthermore, loss of sea ice alters the habitat and accessibility of many of the marine mammals that Alaska Natives depend upon for subsistence. As the ice melts or moves away early, walrus, seals, and polar bears move with it, taking themselves too far away to be hunted.⁴⁹

ii. Thawing Permafrost

Permafrost, defined as permanently frozen ground or soil, underlies 20-25% of the Northern Hemisphere's land area. Ice that forms during cold seasons accounts for 20-30% of the permafrost's volume. Higher temperatures due to warming can cause that ice to melt, making the land unstable and leading to collapse of land surfaces. Furthermore, the thawing of arctic permafrost has deformed roads, railway lines, and airport runways, in addition to fracturing oil and gas pipelines. These fractures resulted in severe spills that have made large tracts of land unusable.⁵⁰

The U.S. Government report on Alaska Native villages, mentioned above, states:

Permafrost (permanently frozen subsoil) is found over approximately 80 percent of Alaska.... However, rising temperatures in recent years have led to widespread thawing of the permafrost, causing serious damage. As permafrost melts, land slumps and erodes, buildings and runways sink, and bulk fuel tank areas are threatened.⁵¹



Sea erosion and permafrost melting in Shishmaref, Alaska

Source: U.S. General Accounting Office

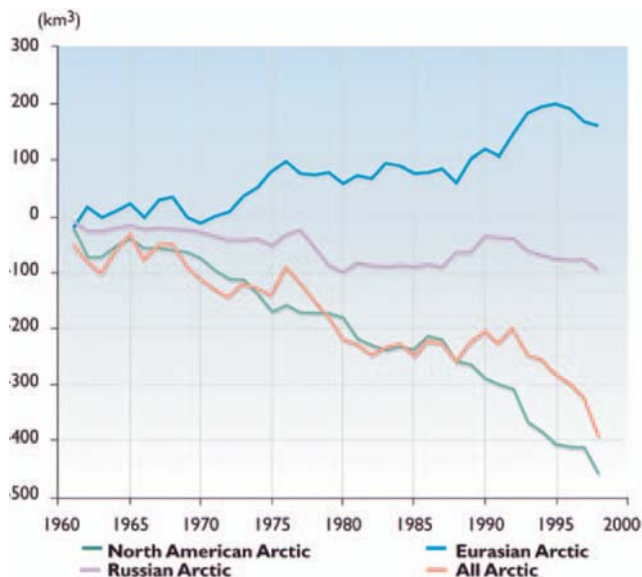
iii. Sea-level Rise

During the twentieth century, sea levels have risen at ten times the rate of the past 3,000 years.⁵² Evidence based on both direct observation and climate models shows that thermal expansion (an increase in water volume caused by warming) is estimated to contribute about 1.0 mm/yr to rising sea-levels.⁵³ Moreover, melting glaciers and ice caps contribute to the rising sea levels, adding both mass and volume to the oceans. These observations and models of glaciers and ice caps indicate that they contribute, on average, 0.2 to 0.4 mm/yr to sea levels.⁵⁴

iv. Melting Ice Sheets and Glaciers

Throughout the world, ice sheets and glaciers are also receding due to warming. A survey of Alaskan glaciers recorded typical decreases in ice-thickness of ten meters over the past 40 years.⁵⁵ In addition, a U.S. Government study based on satellite imaging determined that the margins of Greenland's ice sheet were decreasing in height at a rate of one meter per year.⁵⁶ A more recent study, employing on-the-ground monitors, found rates of decline as high as ten meters per year.^{57*}

* Glacier melting is not limited to the Arctic. In fact, Mount Kilimanjaro's glaciers have receded by over 80% during the past century. Paul V. Desanker, *Impact of Climate Change on Life in Africa*, World Wildlife Fund, available at www.wwf.org.uk/filelibrary/pdf/africa_climate.pdf (last visited May 20, 2004). Similarly, Peru's Yanamarey Glacier has declined by 25% in the



Changes in Arctic glacier volume

Source: *Arctic Climate Impact Assessment*

v. Alterations in Species and Habitat

The habitat and behavior of thousands of plants and animals have been altered by rising temperatures. Based on 43 studies completed before 2001, the TAR finds that 61% of observed habitat or species exhibited change.⁵⁸ For example, inland land and stream environments exhibited earlier ice-off and later freeze dates.⁵⁹ In addition, plant and animal species exhibited earlier breeding times, shifts in habitat ranges, and changes in density, development, morphology (physical shape), and genetics.⁶⁰ Alarming, up to 25% of the world's mammals (roughly 1,125 species) and 12% of birds (roughly 1,150 species) were found to be at significant risk of global extinction.⁶¹

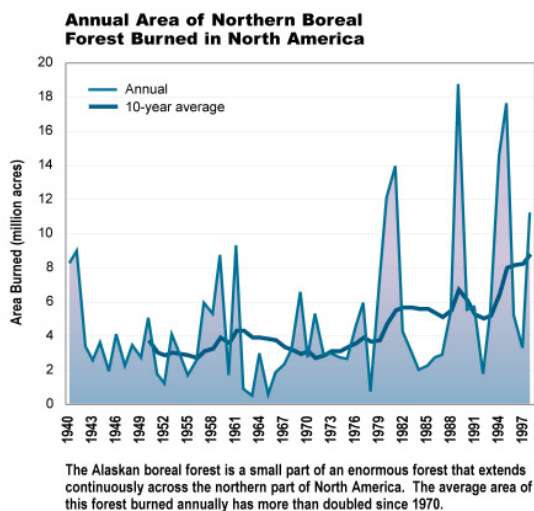
Several other recent studies support these observations. A 2003 study of over 1,473 plant and animal species found that over 80% had altered traits or behaviors in ways that corresponded with expectations based on temperature change.⁶² Another study found that 99 species of birds, butterflies, and plants have moved an average of 6.1 km per decade toward the poles.⁶³

last 50 years, and Bolivia's Glacier Chacaltaya lost two-thirds of its volume during the 1990s. World Wildlife Fund, *Going, Going, Gone: Climate Change and Global Glacier Decline 3* (2003), available at http://www.panda.org/downloads/climate_change/glacierspaper.pdf (last visited on August 4, 2004). Between 10-20% of glacier ice in the Alps has disappeared in the past two decades. *Id.*, at 4. In Asia, the glaciers of the Himalayas have been receding for the past 30 years, however, the loss has accelerated over the past decade. *Id.*

Furthermore, the same study reported that 172 species of plants, birds, butterflies, and amphibians have shifted their spring season events earlier by 2.3 days per decade.⁶⁴

The warming allows some insects to reproduce more quickly. Accelerated reproduction of spruce bark beetles caused over 2.3 million acres of tree mortality on Alaska's Kenai Peninsula, the largest loss recorded in North America.⁶⁵ Additionally, outbreaks of other defoliating insects in the boreal forest, such as spruce budworm, coneworm, and larch sawfly, have also increased sharply in the past decade.⁶⁶

Rising temperatures and insect infestations make forests more susceptible to forest fire. Since 1970, the acreage in Alaska subjected to fire has increased steadily from 2.5 million to more than 7 million acres per year.⁶⁷ In fact, a fire in 1996 burned 37,000 acres of forest and peat, causing \$80 million in direct losses and destroying 450 structures, including 200 homes.



Source: US Global Change Research Program

In the marine environment, mass bleaching of coral reefs is well-documented. These mass die-offs appear to occur whenever sea temperatures exceed summer averages by more than 1.0° C for a period of more than a few weeks.⁶⁸ It is estimated that 16% of the world's reef-building corals died in 1998, and the frequency and intensity of bleaching is expected to increase as ocean temperatures rise.⁶⁹

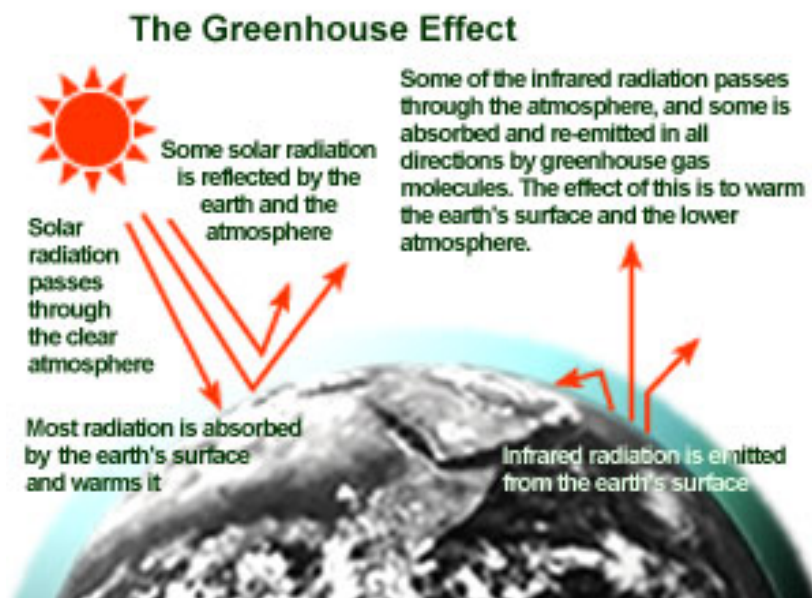
2. GLOBAL WARMING IS CAUSED BY HUMAN ACTIVITY

A scientific consensus has emerged that global warming is caused by the increase in concentrations of greenhouse gases in the atmosphere as a result of human activity. This is borne out by the reports of the Intergovernmental Panel on Climate Change (IPCC), numerous

scientific studies, statements by U.S. scientific organizations, and the U.S. Government's own research.

a. The Greenhouse Effect

Greenhouse gases are natural and manmade constituents of the atmosphere with the ability to trap and retain heat, thereby warming the planet. Greenhouse gases are relatively translucent to short wavelength radiation (e.g., visible light) that reaches the Earth from the sun, but are more opaque to longer-wave radiation, trapping some of the heat that the Earth would otherwise radiate back to space. This heat trapping characteristic is vital, because it keeps the earth warm enough to sustain life.



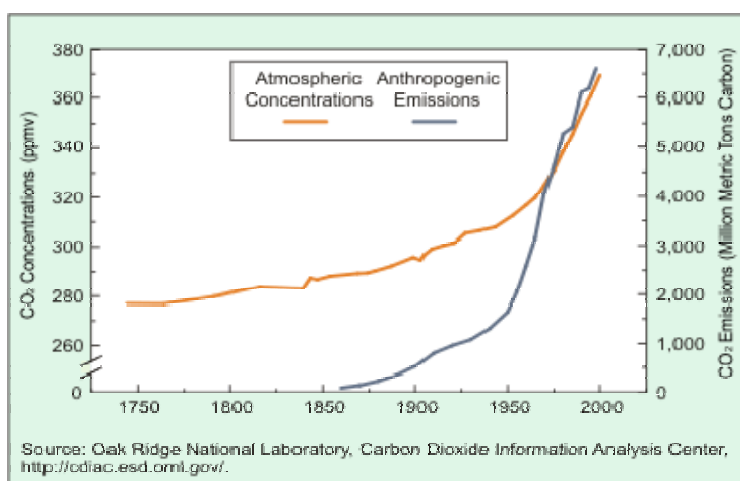
Source: U.S. Environmental Protection Agency

Under "normal" conditions, naturally-occurring greenhouse gases, such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), keep the Earth's heat budget in balance. With occasional periodic or episodic fluctuations, the amount of energy retained at the Earth's surface and in its lower stratosphere equals the energy reflected back to space. Thus, the temperature of the Earth's land area and oceans remain generally constant.

Since the industrial revolution at the end of the 18th Century, greenhouse gas emissions have risen inexorably, primarily due to ever-increasing combustion of fossil fuels for energy and industrial processes. In addition, industry has introduced new, exceedingly powerful greenhouse gases to the atmosphere – including chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), hydrochlorofluorocarbons (HCFCs), perfluorocarbons (PFCs), and sulfur hexafluoride – that have exacerbated the problem of global warming. Some of these, notably CFCs and HFCs are

also ozone-depleting substance regulated by the Montreal Protocol on Substances that Deplete the Ozone Layer.⁷⁰

At the beginning of the industrial revolution, the atmospheric concentration of CO₂, the principal greenhouse gas, was about 280 parts per million (ppm).⁷¹ Currently it is about 375 ppm, an increase of 34%,⁷² with most of the increase having occurred after 1950.* Methane, the second most abundant greenhouse gas, has increased 150% and nitrous oxide has increased 16% since the pre-industrial era.⁷³



Trends in Atmospheric Concentrations and Anthropogenic Emissions of Carbon Dioxide

Source: US Energy Information Administration

b. IPCC Third Assessment Report

The Intergovernmental Panel on Climate Change determined that human activities are altering the makeup of the atmosphere in ways that are very likely causing the Earth to warm and the global climate to change.⁷⁴ The Third Assessment Report (TAR) surveys the range of climate observations and models, and notes that “[t]here is a wide range of evidence of qualitative consistencies between observed climate changes and model responses to anthropogenic forcing.”⁷⁵ It found that “[s]tatistical assessments confirm that natural variability (the combination of internal and naturally forced) is unlikely to explain the warming in the latter half of the 20th century” and, therefore, warming is likely the result of human influences.⁷⁶

* U.S. emissions of CO₂ have increased more than 2 ½ times since 1950.

[http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSU5BWK2R/\\$File/wh_trends.pdf](http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSU5BWK2R/$File/wh_trends.pdf).

The TAR notes that in the five years between publication of its second and third assessment reports, *every* study published has found that “a significant anthropogenic contribution is required to account for surface and tropospheric trends over at least the last 30 years.”⁷⁷ Similarly, “all recent studies reject natural forcing and internal variability alone as a possible explanation of recent climate change.”⁷⁸ Considering all the studies available at the time of publication, the TAR concludes: “[a]nthropogenic greenhouse gases are likely to have made a significant and substantial contribution to the warming observed over the second half of the 20th century, *possibly larger than the total observed warming.*”⁷⁹ (Emphasis added.)

c. Scientific Studies

The findings of the TAR are supported by numerous scientific studies. For example, a recent survey of peer-reviewed papers demonstrates that there is general agreement within the scientific community that greenhouse gas emissions are causing the Earth to warm. The survey analyzed 928 climate change abstracts published in refereed scientific journals between 1993 and 2003. In fact, 75% of these papers explicitly endorsed the view that global warming is caused by human activity, evaluated impacts, or proposed mitigation strategies. Although the remaining 25% took no position on the cause of global warming; not a single paper disagreed with the consensus position.⁸⁰

d. Statements by U.S. Scientific Organizations

Major scientific organizations in the United States whose members’ expertise bears directly on the matter have issued statements supporting the consensus view.⁸¹ The National Geographic Society, which is the largest nonprofit scientific and educational institution in the world, has produced numerous articles, papers, and television documentaries attesting to the dangers of global warming and to the fact that human activities are contributing to the problem.⁸² Moreover, the American Association for the Advancement of Science concluded that the evidence for human modification of climate is undeniable.⁸³ The American Meteorological Society states “there is a broad consensus that greenhouse forcing is responsible for about half the warming in global mean temperature in the past century.”⁸⁴ The American Geophysical Union, with a membership of over 41,000 scientists from 130 countries, said “[t]he global climate is changing and human activities are contributing to that change.”⁸⁵

e. Research and Reports by the U.S. Government

Although the U.S. Government in many of its public statements has chosen to portray the science of climate change as inconclusive,^{*} reports prepared by and for the Bush administration

* The Clinton Administration did not share this view. D. James Baker, administrator of the U.S. National Oceanic and Atmospheric Administration and Undersecretary for Oceans and Atmosphere at the Department of Commerce under the Clinton administration, remarked about human contributions to global warming that “there’s no better scientific consensus than this on

have endorsed the scientific consensus that the primary cause of global warming is human emissions of greenhouse gases.

i. Report by the U.S. Global Change Research Program (2001)

The first major assessment by a U.S. Government agency of global warming and its consequences to be released during the Bush administration was entitled *Climate Change Impacts on the United States*. The assessment was prepared by the U.S. Global Change Research Program, and its findings are consistent with the IPCC TAR. It notes that “[l]ong-term observations confirm that our climate is now changing at a rapid rate. Over the 20th century, the average annual US temperature has risen by almost 1°F (0.6°C) and precipitation has increased nationally by 5-10%, mostly due to increases in heavy downpours.... The science indicates that the warming in the 21st century will be significantly greater than in the 20th century.”⁸⁶

The assessment’s findings with respect to the Alaska are sobering:

Recent warming has been accompanied by several decades of thawing in discontinuous permafrost, which is present in most of central and southern Alaska, causing increased ground subsidence, erosion, landslides, and disruption and damage to forests, buildings, and infrastructure. Sea ice off the Alaskan coast is retreating (by 14% since 1978) and thinning (by 40% since the 1960s), with widespread effects on marine ecosystems, coastal climate, human settlements, and subsistence activities.⁸⁷

Present climate change already poses drastic threats to subsistence livelihoods, practiced mainly by Native communities, as many populations of marine mammals, fish, and seabirds have been reduced or displaced due to retreat and thinning of sea ice and other changes. Projected climate changes are likely to intensify these impacts. In the longer term, projected ecosystem shifts are likely to displace or change the resources available for subsistence, requiring communities to change their practices or move.⁸⁸

ii. Report by the U.S. National Academy of Sciences

In preparation for international discussions on global warming, the Bush administration asked a committee of the National Academy of Sciences’ National Research Council to sum up science’s current understanding of global climate change in general, in addition to assessing the particular conclusions of the IPCC’s TAR.* The resulting report, *Climate Change Science: An*

any issue I know—except maybe Newton's second law of dynamics.” Washington Post, 11/12/97.

* The National Research Council is the principal operating arm of the National Academy of Sciences and National Academy of Engineering. It is a private, nonprofit institution that provides scientific and technical advice under a congressional charter. The committee was made up of 11

Analysis of Some Key Questions, confirms the IPCC's findings ("[g]reenhouse gases are accumulating in Earth's atmosphere as a result of human activities, causing surface air temperatures and subsurface ocean temperatures to rise.").⁸⁹ and agrees that the IPCC report accurately reflects the consensus view of scientists ("[t]he IPCC's conclusion that most of the observed warming of the last 50 years is likely to have been due to the increase in greenhouse gas concentrations accurately reflects the current thinking of the scientific community on this issue.").⁹⁰

iii. U.S. State Department Report to the UNFCCC

The U.N. Framework Convention on Climate Change (UNFCCC) requires industrialized countries to periodically submit national reports describing actions they have taken to reduce greenhouse gas emissions along with the anticipated effect of those actions. In 2002, the U.S. Government submitted its third report, *U.S. Climate Action Report 2002*.⁹¹ The report acknowledges that global warming is due primarily to human activities, concluding that "[g]reenhouse gases are accumulating in Earth's atmosphere as a result of human activities, causing global mean surface air temperature and subsurface ocean temperature to rise."⁹² It further reports that "warming over the 48 contiguous states amounted to about 0.6°C (about 1°F), causing changes ranging from the thawing of permafrost to aggravated coastal erosion resulting from melting of sea ice."⁹³ With regard to the Arctic, the report found that in Alaska "[s]harp winter and springtime temperature increases are very likely to cause continued melting of sea ice and thawing of permafrost, further disrupting ecosystems, infrastructure, and communities."⁹⁴

iv. Report by the U.S. Interagency Climate Change Science Program

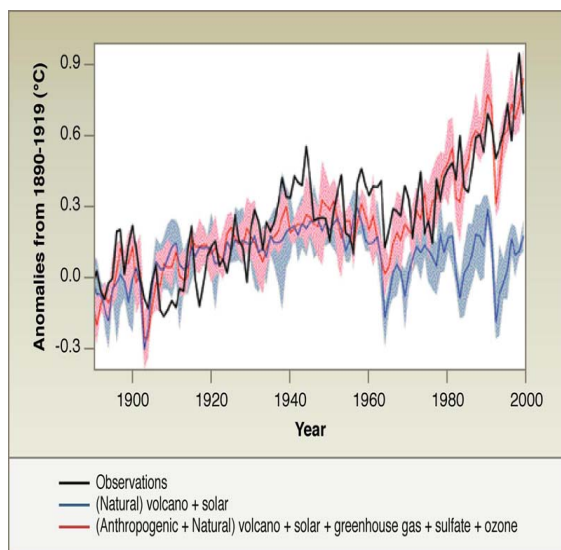
On June 11, 2001, President Bush announced that his administration would establish the U.S. Climate Change Research Initiative (CCRI) to study areas of uncertainty about global climate change science.⁹⁵ The CCRI was subsequently integrated into the Interagency Climate Change Science Program (CCSP),* which released its first report in August 2004.† The report confirmed and strengthened the findings of the IPCC and other previous scientific studies. Specifically, it reported that new federal research indicates that emissions of carbon dioxide and other heat-trapping gases are the only likely explanation for global warming over the last three decades:

of the nation's top climate scientists, including seven members of the National Academy of Sciences, one of whom was a Nobel-Prize winner.

* The Climate Change Science Program integrates federal research on climate and global change, as sponsored by thirteen federal agencies and overseen by the Office of Science and Technology Policy, the Council on Environmental Quality, the National Economic Council and the Office of Management and Budget. <http://www.climatechange.gov/about/default.htm>

† The report is among those submitted regularly to Congress as a summary of recent and planned federal research on shifting global conditions of all sorts. The report is accompanied by a letter signed by Mr. Bush's secretaries of energy and commerce and his science adviser. See <http://www.usgcrp.gov/usgcrp/Library/ocp2004-5/default.htm>

Multiple ensemble simulations of the 20th century climate have been conducted using climate models that include new and improved estimates of natural and anthropogenic forcing. The simulations show that observed globally averaged surface air temperatures can be replicated only when both anthropogenic forcings, for example, greenhouse gases, as well as natural forcings such as solar variability and volcanic eruptions are included in the model.⁹⁶



Climate model simulations of the Earth's temperature variations compared with observed changes (1890-1999). The black line shows observed temperature; the blue line shows mean temperature based on simulations using natural forcings only; and the red line shows mean temperature based on simulations using both natural and anthropogenic forcings.

Source: U.S. Climate Change Science Program

Despite the robust findings of the CCSP, the IPCC TAR, and the other major reports issued on climate change, a small minority still maintains that today's rising temperatures are the result of the climate's natural variations and/or there is insufficient scientific evidence to attribute climate change to anthropogenic causes. This minority view, which is frequently funded by industry interests that oppose restrictions on carbon dioxide emissions,⁹⁷ has been successful in deflecting attention away from the overwhelming scientific consensus that human contributions are responsible for the current global warming trend. Based on the reports discussed above, however, it is clear that the debate is over. There is no longer a serious substantive disagreement in the scientific community about the reality of anthropogenic climate change and the science supporting that phenomenon.

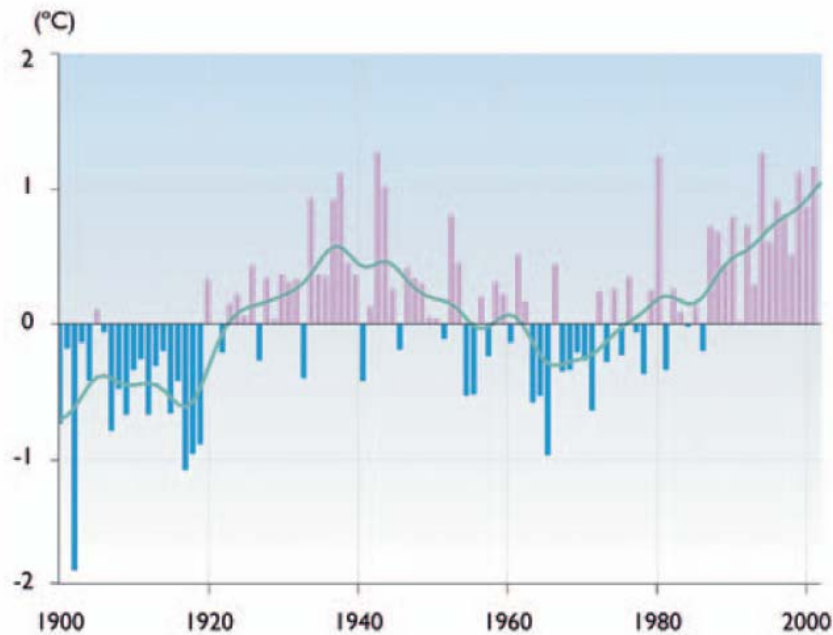
3. GLOBAL WARMING IS MOST SEVERE IN THE ARCTIC

Climate models have long predicted that global warming would be most pronounced in the Arctic.⁹⁸ In fact, annual arctic temperatures have increased at almost twice the rate as that of the rest of the world over the past few decades.⁹⁹ The Arctic Climate Impact Assessment (ACIA) confirms and explains this rapid temperature increase.* A number of related factors are

* While the full report was just recently released, the results of the assessment, contained in the *ACIA Overview*, were presented at the ACIA International Scientific Symposium held in Reykjavik, Iceland in November 2004.

at work: First, melting of arctic snow and ice reveals darker land and ocean surfaces that absorb more of the sun's energy, increasing arctic warming.¹⁰⁰ This effect is not offset by increased evaporation, as it is in the tropics.¹⁰¹ Second, the depth of the atmospheric layer in the Arctic that has to warm in order to cause warming of near-surface air is much shallower than in the tropics, resulting in a larger arctic temperature increase.¹⁰² Third, the reduction in sea ice caused by global warming allows the solar heat absorbed by the oceans in the summer to be more easily transferred to the atmosphere in the winter, making the air temperature warmer than it would be otherwise.¹⁰³ Finally, alterations in ocean and atmospheric circulation patterns caused by global warming allow more heat to be transported to the Arctic, further increasing arctic warming.¹⁰⁴

The pattern of warming in the Arctic closely mirrors global trends, with a warming period in the 1940s, followed by some cooling through the mid-1960s, and a steep increase in warming thereafter.¹⁰⁵ Since the 1960s, the Arctic has warmed at the rate of 0.4°C per decade, which is more than twice the global rate.¹⁰⁶ The U.S. Government's own studies agree with these findings.¹⁰⁷



Annual average change in near surface land temperature relative to the average for 1961-1990 for the region from 60 to 90°N.

Source: *Arctic Climate Impact Assessment*

C. GLOBAL WARMING HARMS INUIT LIFE AND CULTURE

1. GLOBAL WARMING IS DESTROYING THE ARCTIC ENVIRONMENT

a. Global Warming has already altered the Arctic

As previously described, Inuit culture has developed over thousands of years in relationship with, and in response to, the physical environment of the Arctic.¹⁰⁸ The Inuit have developed an intimate relationship with their surroundings, using their understanding of the arctic environment to develop a culture, including tools, techniques and knowledge, that has enabled them to subsist and thrive on the scarce resources available.¹⁰⁹ All aspects of the Inuit's lives depend upon their culture, and the continued viability of the culture depends in turn on the Inuit's reliance on the ice, snow, land and weather conditions in the Arctic.¹¹⁰ To understand the impacts of climate change on the Inuit, therefore, it is necessary to understand how climate change has altered the arctic environment. This section describes those changes; subsequent sections address how these changes have affected the Inuit.

Global warming has already visibly transformed the Arctic. Inuit observations and scientific studies are consistent in documenting substantial and lasting alterations in the physical environment of the Arctic due to global climate change.¹¹¹

Key Findings of the Arctic Climate Impact Assessment

The Arctic Climate Impact Assessment, a “comprehensively researched, fully referenced and independently reviewed evaluation of arctic climate change and its impacts[,] ... involved an international effort by hundreds of scientists over four years, and also includes the special knowledge of indigenous people.” It presents a “moderate scenario,”* using several models to project likely changes and impacts to the arctic environment as a result of climate change. The ACIA's key findings are as follows:

1. Arctic Climate is now warming rapidly and much larger changes are projected.
2. Arctic warming and its consequences have worldwide implications.
3. Arctic vegetation zones are very likely to shift, causing wide-ranging impacts.
4. Animal species' diversity, ranges, and distribution will change.
5. Many coastal communities and facilities face increasing exposure to storms.
6. Reduced sea ice is very likely to increase marine transport and access to resources.... Sovereignty, security and safety issues, as well as social, cultural, and environmental concerns are likely to arise as marine access increases.
7. Thawing ground will disrupt transportation, buildings, and other infrastructure.
8. Indigenous communities are facing major economic and cultural impacts.
9. Elevated ultraviolet radiation levels will affect people, plants, and animals.
10. Multiple influences interact to cause impacts to people and ecosystems.

* The report is careful to note that it is *not* a worst-case scenario. “Judgments of likelihood... are indicated using a five-tier lexicon consistent with everyday usage (very unlikely, unlikely, possible, likely, and very likely). Confidence in results is highest at both ends of this scale. A conclusion that an impact ‘will’ result is reserved for situation where experience and multiple methods of analysis all make clear that the consequence would follow inevitably from the projected change in climate.”

(Source: ACIA Overview, *supra* note 16, at Preface, “How to read this report,” pp. 10-11.)

Although the effects of climate change on weather patterns, temperatures, and the environment vary somewhat throughout the Arctic, all regions are experiencing disturbing changes, and many of the effects are constant throughout the region.¹¹² Because the Arctic is especially vulnerable to the effects of global climate change, the “[a]nnual average arctic temperature has increased at almost twice the rate as that of the rest of the world over the past few decades.”¹¹³ The rising temperature has set in motion an ever-escalating series of changes in the arctic climate and environment.¹¹⁴ Some of the more observable changes include deteriorating ice conditions, decreasing quantity and quality of snow, unpredictable and unfamiliar weather, and a transfigured landscape.¹¹⁵

Commonly observed ice changes include thinner ice, later freezes, and earlier, more sudden thaws.¹¹⁶ In the past, sea ice and lake ice froze hard enough for safe travel earlier in the year.¹¹⁷ Now the freeze comes later,¹¹⁸ and once the ice freezes it is generally thinner than in the past.¹¹⁹ “[A]rctic-wide average thickness [has decreased] ten to fifteen percent ... with particular areas showing reductions of up to 40% between the 1960s and late 1990s.”¹²⁰ Thinner ice melts earlier and more suddenly in the spring, further shortening winter travel and hunting seasons.¹²¹

In some areas, the floe edge* is closer to the land than in the past, and the edge is less stable.¹²² “Over the past 30 years, the annual average sea-ice extent has decreased by about 8%, or nearly one million square kilometers, an area larger than all of Norway, Sweden and Denmark combined, and the melting trend is accelerating.”¹²³



The quality, quantity and timing of snowfall have changed dramatically due to global warming. For example, snow falls later in the year, and the overall quantity has diminished in most areas.¹²⁴ Average snow cover over the region has decreased ten percent over the last three decades, and climate-modeling projections predict a further loss of another ten to twenty percent in coming decades.¹²⁵ The snow that does fall is of a different quality.¹²⁶ The

* “The floe edge is a constantly moving and dynamic line that marks the end of fixed fast ice (ice that is anchored to the shore) and the start of the Arctic Ocean.... In the fall as the ocean freezes, the floe edge moves farther and farther out from land and may eventually completely disappear once the body of water is frozen completely solid. In the spring, as the ice starts to break up, the floe edge recedes and gradually comes closer to land until it eventually disappears completely.” GRAHAM DICKSON, *ENCYCLOPEDIA OF THE ARCTIC* vol. 1, p. 82 (Mark Nutall, ed. Routledge 2004).

spring thaw comes earlier and is much more sudden than in the past.¹²⁷ Changing winds and decreased snowfall embed more particles in the snow;¹²⁸ the particles hasten the spring melt, contributing to the suddenness of the thaw.¹²⁹

Global warming is also altering land conditions. Permafrost, which holds together unstable underground gravel, is melting at an alarming rate,¹³⁰ causing slumping and landslides.¹³¹ Severe erosion is also increasing dramatically.¹³² The loss of sea ice that used to prevent the creation of large waves has resulted in increasingly violent sea storms, resulting in coastal erosion.¹³³ The erosion exposes more coastal permafrost to the warmer air, resulting in faster permafrost melt.¹³⁴ The accelerating loss of ice can only be expected to aggravate this problem in the future.

The weather of the Arctic has become increasingly unpredictable.¹³⁵ Inuit elders, who have long experience in reading the weather, report various changes in weather patterns in different areas of the Arctic.¹³⁶ In the past, elders could accurately predict the weather for the coming days based on cloud formations and cloud movement, allowing the Inuit to plan for inclement weather and schedule safe travel.¹³⁷ Now, however, the clouds do not accurately predict upcoming weather.¹³⁸ In some areas, elders used to be able to predict changes in wind direction by the period of calm that preceded them.¹³⁹ This period of calm no longer necessarily comes before a shift in wind direction.¹⁴⁰ In other areas, good weather can no longer be predicted by particular changes in wind patterns.¹⁴¹ Shifts in the prevailing wind direction and intensity have added to the unpredictability of the weather.¹⁴² Sudden changes in wind direction and speed have rendered traditional weather forecasting methods useless.¹⁴³

The combination of these changes further alters the arctic environment. Lack of snowfall, early thaws, increased erosion, melting permafrost, melting ice caps and changing wind conditions have combined to decrease water levels in lakes and rivers.¹⁴⁴ In addition, the sudden spring thaw fills rivers with more water at one time than in the past, which erodes the banks and straightens the river paths.¹⁴⁵ Because the water flows more intensely during a shorter period of time, the water level is unusually low once the spring flood is over.¹⁴⁶ Water levels are further reduced by the longer warm season and increased temperatures, which evaporate more water than in the past.¹⁴⁷

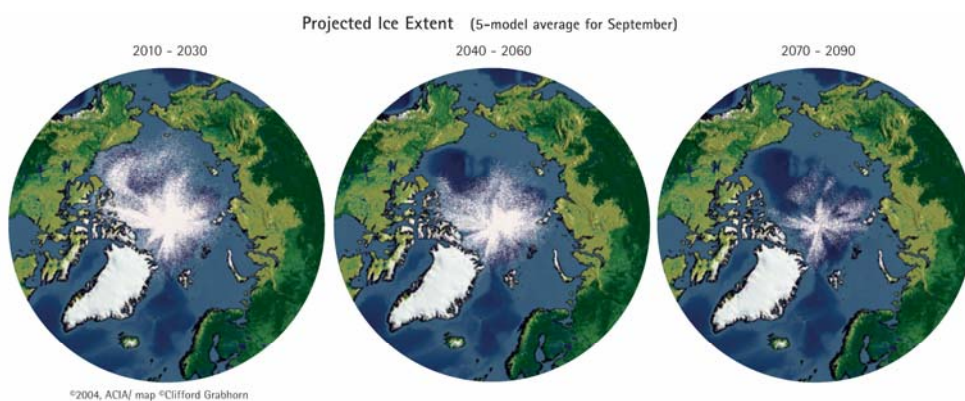
Observers have also noted changes in the location, characteristics and health of plant and animal species caused by changes in climate conditions.¹⁴⁸ The harder snow pack, lower water levels, unusual vegetation, changing seasons and deteriorating ice conditions have altered the quantity, quality, behavior and location of the Inuit's sources of harvested game.¹⁴⁹ New or seldom-seen species are also moving north.¹⁵⁰ Certain plants, such as berries, are now smaller and drier, whereas others, including grasses and some trees, are growing larger.¹⁵¹ Consequently, some animals have lost body fat, and others have gained fat.¹⁵²

The combination of increased temperatures, more wind in winter and spring, and a shortage of snowfall have caused permanent ice caps, multi-year snow, and glaciers to diminish

or disappear.¹⁵³ The loss of the highly reflective snow and ice further aggravates the problem of higher global temperatures by exposing the darker, more heat-absorbing land below.¹⁵⁴

b. Global Warming will continue to damage the arctic environment in the future

Using conservative projections based on current conditions and likely continued emissions, scientists have determined that climate change in the Arctic will continue, with devastating consequences.* Arctic temperatures will probably rise at least another 2.5 degrees Celsius by the middle of this century. By the end of this century, arctic temperatures will have risen five to seven degrees Celsius.



September sea-ice extent, already declining markedly, is projected to decline even more rapidly in the future. The three images above show the average of the projections from five climate models for three future time periods. As the century progresses, sea ice moves further and further from the coasts of arctic land masses, retreating to the central Arctic Ocean. Some models project the nearly complete loss of summer sea ice in this century.

Projected Polar Ice Extent, 2000-2030, 2040-2060, 2070-2090. Source: ACIA Overview

* The ACIA has calculated future climate change in the arctic using two emissions scenarios prepared by the Intergovernmental Panel on Climate Change (IPCC), designated A2 and B2. Based on these scenarios, the ACIA models project an increase of 2.5°C for the region north of 60° N by the mid-21st century. By the end of the 21st century, the models project arctic temperatures to be 5 to 7°C above current temperatures. Descriptions of the two scenarios are found in the IPCC Working Group I report *Climate Change 2001: The Scientific Basis*, technical summary. The A2 scenario is based on the following assumptions:

- Relatively slow demographic transition and relatively slow convergence in regional fertility patterns.
- Relatively slow convergence in inter-regional GDP per capita differences.
- Relatively slow end-use and supply-side energy efficiency improvements (compared to other storylines).
- Delayed development of renewable energy.
- No barriers to the use of nuclear energy. The B2 scenario assumes a more fragmented pattern of future development, precluding any future strong convergence tendencies.

In addition to temperature increases, precipitation is likely to increase, perhaps by as much as thirty five percent over current levels by the end of this century. Snow and sea-ice cover over the most of the Arctic will decrease dramatically as well. Some models show that the polar ice cap will be virtually nonexistent by 2100.¹⁵⁵ In particular, fall and winter in the Arctic will become warmer and wetter.¹⁵⁶ Moreover, the changes that have already occurred will continue to accelerate, along with their impacts on the environment, landscape, and people of the region.

As the preceding discussion demonstrates, global warming is profoundly changing the environment in which the Inuit live, and will continue to do so in the absence of clear limits on greenhouse gas emissions. The following sections will describe in greater detail how these changes affect the Inuit.

2. CHANGES IN ICE AND SNOW CONDITIONS HAVE HARMED THE INUIT'S SUBSISTENCE HARVEST, TRAVEL, SAFETY, HEALTH AND EDUCATION, AND HAVE PERMANENTLY DAMAGED INUIT CULTURE

For the Inuit, “[i]ce is a supporter of life. It brings the sea animals from the north ... and in the fall it also becomes an extension of [Inuit] land.”¹⁵⁷ Snow is a critical resource for travel, shelter, and habitat. Changes in snow and ice have impaired the safety of the Inuit. Even more critical to their continued survival as a people, these changes have damaged their subsistence harvest, the animals they harvest to survive, and their cultural practices.

The conservation of arctic wildlife and ecosystems depends in part on maintaining the strength of the relationship between indigenous peoples, animals, and the environment, and in part on securing the rights of indigenous peoples to continue customary harvesting activities.... [T]hese activities and relationships appear to be threatened by severe climate change. The potential impacts of climate change on harvesting wildlife resources are of fundamental concern for the social and economic well-being, the health, and the cultural survival of indigenous peoples throughout the Arctic, who live within institutional, legal, economic, and political situations that are often quite different from non-indigenous residents. Furthermore, indigenous peoples rely on different forms of social organization for their livelihoods and well-being.¹⁵⁸

a. Deteriorating ice and snow conditions have diminished the Inuit's ability to travel in safety, damaging their health, safety, subsistence harvest, and culture.

The deteriorating ice conditions have made travel, harvest, and everyday life more dangerous for the Inuit because the location of unsafe ice is harder to predict.¹⁵⁹ In the past, the dangerous areas were those covered with snow or known recurring thin areas, but bare, formerly safe areas are now thin and dangerous.¹⁶⁰ An Inuk woman from Baker Lake, an inland Inuit settlement in Nunavut, Canada, described the impact of the more dangerous lake ice: “You know it is scary because we can no longer depend on ... traditional knowledge, where it was safe

to travel on these areas, now we don't know.... Even to us it is hard to understand."¹⁶¹ When the ice begins to break up in spring, it is more sudden than in the past, changing from safe to unsafe much more rapidly, sometimes in a matter of hours.¹⁶² New, unexpected, and unpredictable areas of open water now persist through the cold season.¹⁶³ As an Inuk in Pangnirtung, Nunavut, explained,

*Even areas with little current are not freezing over and they have non-recurring polynias [areas of open water] all over the place now. This used to only occur at the areas where there were really strong currents.... [T]hese were known areas of strong currents. These days, even in place where we have no known polynias, there are occurrences now happening all over the area. Near Pangnirtung, we are starting to get polynias where there never used to be one.*¹⁶⁴

As a consequence of these changes, more travelers are falling through the ice into the frigid water below.¹⁶⁵ Ronald Brower of Barrow, Alaska, explained the new dangers of thinner ice:

*One of my sons ... was going to visit the next crew.... And he fell right through the ice half-way out to that camp. I've seen my fellow whalers trying to go whaling break through the ice, because it's melting from the bottom, and our snow machines have fallen through the ice.*¹⁶⁶

In general, the people have less confidence in the safety of ice travel, and are fearful and anxious when traveling.¹⁶⁷

Thick ice is also essential for a successful bowhead whale hunt. Roy Nageak of Barrow, Alaska, explained how the thinning ice has already affected the subsistence and livelihood of whale harvesters:

*You need thick ice for the weight of the whale to bring it up. You need at least six feet of solid ice to bring up a whale. When it's like three, four feet, especially if somebody got a bigger whale, it's going to keep breaking up. And that reflects on the sizes of the whale that we catch, too. More so, we're trying to catch smaller whales, which are much easier to pull up on the ice. That means that we're getting a smaller share of the whales and with a quota of 22, the smaller the whale, the less [meat] the people get.*¹⁶⁸

Not only are Inuit getting less whale meat because of thinner ice, they are sometimes injured and killed during whaling activities as a result of the thinner ice. Ronald Brower of Barrow described several injuries resulting from whales breaking through the ice:

So when we're drilling through, we're doing at least two layers, now we're ... running our rope through just to try and maintain the tensile strength of the ice so that it doesn't break when we pull on the whale. That's creating a very dangerous condition for us.... We have lost several people in trying to pull the

*whale out of the water. I believe we now have lost two or three people, members of our community, because the ice broke, or the rope broke, and, when it swung back, it went faster than a bullet. One lady's arm was severed. One, her brain was scattered over the ice because she got hit. She never had a chance. And the third one, her jaw and skull was scattered into hundreds of pieces. But she survived. There's others that have not been so fortunate.*¹⁶⁹

The whale hunt is not the only subsistence harvest that is affected by changing ice conditions. Seal and walrus hunters are experiencing greater difficulty because of retreating pack ice. Eugene Brower of Barrow described how disappearing ice affected a recent season:

*June, July, August, we used to be able to see the polar pack of ice, out in front of Barrow. That's no longer happening. Our people are going bearded seal hunting, walrus hunting, in the spring, are having to go farther and farther out to find the game. This summer, we were hearing of crews going 20 to 30 miles past Point Barrow north to try and find game. The people were trying to get their subsistence hunting done while the ice was close to us, but there are a lot of people who are still short their normal supply of sea mammals for the year. I'm one of those very unfortunate ones who didn't land any bearded seals this spring. My boys went out trying, and some of my crew members went out trying but they didn't land any.*¹⁷⁰

Roy Nageak agreed with this assessment:

*When I was younger, there was more ice.... The seals, you had time, you had the whole summer to hunt, you had June and July; when the shore ice broke up was usually around the second week of July to the middle week of July, the break of the shore-fast ice.... As we were hunting this summer, I heard a lot of men say, "I'm going to go out hunting after the ice goes out and comes back," because after all the ice goes out, for some distance, then comes back to shore it brings back a lot of animals.... But this year, when all the ice went away from the shore-fast ice, it never came back.... We were fortunate that we hunted real earlier and went gung-ho instead of waiting around for the ice to move out, and once it moved out, there were a lot of people that never got the bearded seals or walrus.... The ones that didn't go early ... they're short a lot of ugruk meat and blubber, the seal-oil blubber. You could hear it through the radio; people that want seal oil, and they don't have it.*¹⁷¹

Travel has also become more dangerous and inconvenient because of the deteriorating snow conditions, harming the subsistence harvest. Lucas Ittulak of Nain, Newfoundland and Labrador, described how changing snow conditions hampered his travel:

[T]he trails we used to use or the routes we used to use to go out on the land to go hunting, some of them we can't even use anymore because there is not enough

*snow or the snow is not the same. We have to find new routes now even to travel out onto the land to go to our hunting grounds so the snow is not the same as it used to be.*¹⁷²

An Inuk hunter from Baker Lake described how the changing snow conditions also affect travel equipment:

*The first effect I have is on my qamutik [sled] runners. They wear out fast when there is not much snow coverage. Also if you don't have a cabin[, t]here is very little snow to make a shelter. Maybe because there is less snow the snow appears to be harder. According to my traditional knowledge there is pukaq snow and it is always at the bottom layer. The top layer is another snow coverage - aqilluqaq - which is a more recent snow coverage. Now there is a smaller bottom layer. Maybe because there is not enough snowfall the top layer is overriding the pukaq.*¹⁷³



The deep, dense snow required for igloo building has become extremely scarce, forcing Inuit to rely on tents and cabins.¹⁷⁴

The snow is not the same anymore. The bottom of the snow is a lot softer than it used to be. It's no good for igloos anymore. [Twenty years ago] we used to be able to stop anywhere we needed a place to sleep just to build an igloo and sleep in that

*igloo. And nowadays you can't just find good snow anywhere. In [those] days we used to find them anywhere. The condition of the snow is not very good, the bottom of it is very soft. So that's what I've notice in the snow as well - not only on the bottom but on the top as well.*¹⁷⁵

Tents are much colder because they lack the insulation properties of igloos, as an Inuk man from Pangnirtung explained:¹⁷⁶

*We used to stay in igloos most of the winters those days, these days we mostly stay in tents.... [D]uring winter the tents get cold due to not enough insulation. These days the snow seems to be much harder.*¹⁷⁷

The lack of good igloo snow also creates a greater danger in emergency situations because these snow shelters are important as emergency shelters.¹⁷⁸ Furthermore, the dearth of

igloo snow has resulted in a loss of traditional igloo-building knowledge, creating a generation who would not know how to build an igloo in an emergency situation even if the better snow were available.¹⁷⁹ Heather Angnatok explained the impact of this loss:

*We've had incidents where young people have perished in the winter-time. Because they didn't, perhaps, know how to make a shelter, even a temporary one, or a small one, or whatever. We've had young people freeze to death. And so, what we would like to do is to be able to teach the youth on how to build an igloo.*¹⁸⁰

Travel difficulties due to the deterioration of ice and snow conditions have resulted in fewer, shorter and more dangerous hunting trips, impairing the Inuit's subsistence harvest.¹⁸¹ The later freeze and earlier, more sudden thaw force travelers to wait until much later into the winter season before traveling, and to stop spring travel earlier, dramatically shortening the season for safe ice travel.¹⁸² In addition, some bays that formerly froze in winter no longer freeze all the way across, requiring the use of longer, more time-consuming land routes.¹⁸³ Where the ice is frozen thick enough to traverse, it is rougher, less slippery, more crumbled and packed, and softer, making sled and snowmobile travel more difficult.¹⁸⁴ The gradual melt that happened in the past supported travel to hunting grounds and ice hunting later into the spring.¹⁸⁵ Now, the soft spring ice is too dangerous to travel on, but too solid to allow for travel by boat.¹⁸⁶ The early thaw cuts off ice access to islands, where in the past some Inuit would harvest eggs, geese, and seal.¹⁸⁷ By the time they can get to the islands by boat, the eggs are often too old to harvest.¹⁸⁸

The snow travel season has also become much shorter, more arduous and more dangerous because of the later snowfall and earlier, sudden melt.¹⁸⁹ Kenneth Toovak of Barrow described how the sudden melt affects him:

*Back in the early days in my lifetime, the snow melted kind of gradually; slow melting. Had to drive up to river banks, spend two, three weeks, go geese hunt, enjoy the weather.... Today, it seems like the temperature gets warm and the sun is in a clear sky, and all of a sudden, the snow melted really fast. And then it's disappearing kind of fast.... [A]ll of a sudden, the snow starts to melt, and you have to come back.... We might be losing what we planned, due to the sudden snowmelt. Before, we had the gradual thaw, that froze in the night, and melted a little in the day, a gradual thaw.*¹⁹⁰

Eugene Brower added these comments about the impact of the later winter:

Going out to your fish camps this time of year is getting harder and harder because there's no snow, you have to take a boat. But also, if you take a boat, you're more inclined to be weather bound because of the wind conditions. As a matter of fact, I've just seen my nephew this afternoon, who was lucky to meet someone in a four-wheeler up there hunting, and had to leave his boat, and the

*animals he'd caught by the river ... because of the massive waves that were out in the inlet – the boat couldn't take them.... [Boat travel] is getting difficult.... Not everybody has a skiff or a boat to go camping with. But they do own snow machines that they travel with in the fall time and in the winter months to go to their fish camps and camping sites to do their subsistence hunting. Now they have to wait until later in the season. By the time they get out there, sometimes the game's already gone because they go with the cycle.*¹⁹¹

The sudden thaw can also strand sled and snowmobile travelers who rely on the snow for travel when the unexpected thaw suddenly eliminates their travel surface.¹⁹² David Haogak of Sachs Harbour described the sudden thaw's effect on his spring subsistence harvest activities:

*When we go out hunting, we usually expect we've got a couple of days to get our load of snow geese, and still be able to cross without having the water levels go high. Every year it's high, it's just that now we can't judge or we can't estimate ... we can't predict when to leave because of that rain. It'll be a constant. You figure that it's going to stop, we still could travel, but the water level comes up as it rains, the rivers break. We can't cut across, even with our snow machines alone, we can't make it home in the spring-time. That's just in the last 2 or 3 years. No one goes very far now, whereas long ago, even a few years ago, we used to go 40 or 50 miles. Now we don't even go 20. It's just not worth the risk.*¹⁹³

Heather Angnatok of Nain, Newfoundland and Labrador, also described an incident in which the sudden and unpredictable spring thaw caused a dangerous accident:

*We were driving our skidoo in the Spring - early Spring - normal, I mean we knew that some areas were areas were dangerous. We know what spots to look out for, like black spots versus ice pans, or whatever.... We stopped the skidoos and we waited for my brother and his wife to come up and join us. And as we were waiting, we no sooner stopped the skidoo and were just about to start our skidoos again when the ice just collapsed underneath the skidoo and the skidoo went through the ice. And so my son fell in the water. My husband jumped off and just missed going in the water. But he fell in the water. And it just crumbled all the way. So we hadn't realized that it was a black area, because there was, well, a bit of snow on top which made it look white I guess. But, we hadn't realized that it was soft underneath. Anyway, we got him out and he was alright. He just got pretty shook up because he couldn't climb out. Every time he tried to climb out it would break off. And it would just crumble under his hands. So we managed to get him out. But, we noticed that that area, which never is like that – [the ice] usually lasts quite awhile and just breaks up into pans and melts that way.*¹⁹⁴

The sudden melt has also increased the number and unpredictability of avalanches in some areas, further endangering travelers.¹⁹⁵ In the past, the gradual spring melt would freeze at

night, leaving a hard crust on top of the snow, which was easy to travel on.¹⁹⁶ That crust no longer appears.¹⁹⁷ “When the snow layer has not frozen during the evening, then it is difficult to travel. When the snow does not freeze ‘qiqsuqqaq,’ then it is really soft and hard to travel on. It seems to be really soft now once it really starts to melt.”¹⁹⁸

The decrease in overall snowfall has exposed more rocks, damaging sled and snowmobile runners.¹⁹⁹ Dogsled travel also has become more difficult because the dogs’ paws sometimes bleed when there is not enough snow.²⁰⁰ Even when the animals are nearby, subsistence users may not be able to reach them, as an Inuk hunter from Deering, Alaska, has explained:



*Last year there were more caribou than I’ve ever seen or heard of in my life here, but the guys couldn’t go out hunting due to lack of snow. I guess it probably could be done, if you wanted to really hurt your snow machine. But you’d have to weigh whether the cost of parts for your snow machine would be worth the effort of getting the caribou while they’re this close to us.*²⁰¹

All of these travel problems have led to a decrease in the number and length of hunting trips, and have made travel and harvest more cumbersome and more dangerous.²⁰²

b. Changes in ice and snow have affected animals on which the Inuit rely, damaging their subsistence harvest, safety, and health.

Game animals are also affected by the ice changes, further impairing the Inuit’s subsistence harvest. Ice dependent species such as seals, walrus, polar bears and sea birds are already suffering population decreases as a result of the disappearing ice.²⁰³ “Polar bears are unlikely to survive as a species” without the ice, and “[i]ce dependent seals ... are particularly vulnerable to the observed and projected reductions in arctic sea ice.”²⁰⁴ Ringed seal, ribbon seal, and bearded seal forage near the ice edge, give birth and nurse on the ice, and rest on the ice while hunting.²⁰⁵ “Ringed seals are likely to be the most highly affected species of seal because all aspects of their lives are tied to the sea ice.”²⁰⁶ Floe edge instability, early breakup and thinner ice have caused seal pups to lose their mothers, affecting the numbers of breeding females and the health of the existing pups.²⁰⁷ Increasing storm surges caused by the loss of the ice’s wave-dampening effect have virtually wiped out entire years’ seal pups.²⁰⁸ The earlier

breakup has also caused seals to change their location, making another traditional source of food and clothing less accessible to the Inuit.²⁰⁹ “The ringed seal is the single most important food source for [some] Inuit.... No other species is present ... in the quantities needed to sustain the dietary requirements of the [coastal] Inuit.”²¹⁰ “As the ice melts or moves away early, walrus, seals, and polar bears move with it, taking them too far away to be hunted.”²¹¹ Isa Piungituk of Clyde River, Nunavut, described the effect on the seal harvest:



“This year we hardly had any seals and it’s because the seal pups grow up on the flat sea ice where the polar bears can’t get to them and when you don’t have [flat sea ice] you don’t have seal pups.”²¹²

Ice changes also affect land animals that travel on the ice. For example, in Dolphin and Union Strait, between Victoria Island and mainland Northwest Territories, the annual caribou migration across the ice is in jeopardy because of the late freeze.²¹³ The caribou, accustomed to crossing solid ice at the same time every year, have encountered thinner ice later in the year.²¹⁴ The result has been a loss in numbers of caribou, a major source of harvested food and clothing, due to animals crashing through the ice.²¹⁵ In response to the later freeze, some caribou have been forced to alter their migration routes, making them less accessible to the Inuit for harvest.²¹⁶ The Porcupine caribou herd has also experienced problems because of the earlier thaw.²¹⁷ When the herd reaches the Porcupine River to cross into its calving grounds, the river is no longer frozen, forcing the herd to swim the melt-swollen river.²¹⁸

Changes in ice conditions have also contributed to more dangerous encounters between polar bears and humans because the ice floe edge is closer to the land than in the past, reducing the amount of habitat available for the polar bears. The bears are forced into a smaller area, closer to Inuit settlements and camping areas.²¹⁹ Isa Piungituk of Clyde River, Nunavut explained the difference in polar bear behavior:



*[On the] overlapping of the ice packs is where polar bears normally have their hunting grounds. Because the sea ice isn’t formed the way it used to be that the polar bears are coming closer. This is why we now have polar bears in the community even before the dark season would start to come. It used to be that when it would start to get dark at night the polar bears would start to come this way, but now they’re always around.*²²⁰

Harvested species have also been harmed by changes in snow conditions, impairing the Inuit's ability to subsist. In many regions, a hard layer of ice has appeared under the snow in recent years, cutting off access to winter food for herbivores.²²¹ Whereas in the past, autumn snow fell on frozen ground and remained until the spring thaw, now the snow sometimes falls on warmer ground, and a warmer period often follows the first snows.²²² Snow, followed by rain and freezing rain, followed by more snow has resulted in an impenetrable layer of ice over the winter vegetation.²²³



This ice layer makes winter foraging much more difficult for game animals, especially caribou, contributing to a decrease in numbers, change in habits and location, and deterioration in the health of major sources of traditional subsistence protein.²²⁴ *“That is the biggest worry, these caribou, and others that feed off the land. When there should be snow on the land, instead ice forms and the food is then not accessible.”*²²⁵

A study of the effects of climate change explains the connection between the impenetrable ice layer and caribou and reindeer numbers:

During the long arctic winter, reindeer depend on access to range that is rich in lichens. The lichens provide carbohydrates almost exclusively as a source of energy to maintain body temperature in winter. Reindeer can effectively paw through snow to reach the lichens. If warmer than normal temperatures produce freezing rain, the resulting ice cover makes the lichens unavailable and this often causes reindeer to starve to death.²²⁶

One sub-species of caribou found in the Canadian Arctic islands and western Greenland, the Peary caribou, “has declined 72% over the last three generations mostly because of catastrophic die-off likely related to severe icing episodes.”²²⁷ The Porcupine caribou herd, the eighth largest herd in North America, has declined at a rate of 3.5% per year since 1989.²²⁸ The scarcity and changes in location force harvesters to travel farther, and under more dangerous travel conditions, to find healthy animals.²²⁹ The ice layer can also kill the plants and lichens themselves, or make them less healthy.²³⁰ Changes in snow conditions have thus impaired the subsistence harvest.

Projections indicate that ice and snow conditions will continue to deteriorate. The loss of heat-reflective snow and ice will contribute to further warming, which will in turn lead to the loss of more snow and ice.²³¹ These continuing changes will likely affect the distribution of fish stocks, and will force marine mammals that rely on sea ice to find new habitats.²³² Habitat for harvested land animals will continue to change.²³³ Whale migration routes will probably change

as well.²³⁴ All of these effects on animals and habitat will continue to diminish the Inuit's ability to subsist on the harvest.

c. Deteriorating ice and snow conditions have undermined the Inuit's traditional way of life.

As climate change has reduced the capacity to travel, access to game, and safety, the Inuit have been forced to modify their traditional travel and harvest methods, damaging the Inuit culture.²³⁵ The changes in traditional subsistence harvest activities have interfered with one of the most important opportunities to educate the younger generation in fundamental cultural values and traditions, and have diminished the role of elders in the younger generation's lives.²³⁶ Roy Nageak of Barrow explained the impact on passing traditional hunting knowledge to the younger generation:

*[W]ith the hunting out in the ocean, we just had a short season, and between hunting out there, and waiting for the caribou to come in, there's a span of time when ... there's a lot of dead time. With young people ... you know where that's going to take them. It's not productive. And then experience that is needed, they're getting shorter, or less experience in what they need to learn, especially at a time when they need to learn it. The learning curve for them is getting shorter. The less time they spend out hunting, the less that they learn. Because you need to learn about the weather, the currents, the sea and the ice, and when they don't have those types of experiences and it's shorter, the knowledge that they need to learn concerning the sea current and the ice, it's a shorter learning curve. If they're not out there hunting, and the ice is not there, then they're not learning what they need to learn, and that's through experience.... The experience is not there.*²³⁷



The summer seal hunt traditionally involved boating to the edge of the ice, and harvesting seals basking on the ice.²³⁸ For the last few years the ice has been too far away in summer to boat to the edge.²³⁹ Hunters are now forced to harvest from boats and from shore.²⁴⁰

The ice goes out, and the game goes out with it. No more game. Seals, walrus, they go out with the ice ... we've been bringing in less game nowadays, and we have to hunt further out. The game was very close before, and the game is getting further out ... sometimes as far as 90 miles out. That's the farthest I've heard.

*Mostly 70, 50 miles out. If you're lucky, you go 17 miles to get game, but that's the closest you're going to go, if you're lucky.*²⁴¹

Because of the deterioration of the snow, the art of building igloos cannot easily be passed on to the next generation, resulting in a loss of traditional knowledge about a truly unique feature of the Inuit culture.²⁴²

*It would be nice to be able to pass on how to build an igloo, especially before our elders are all passed away. And that is coming right around the corner, because a lot of our elders are passing on. We do have some elders who are capable yet of getting around and they have the interest and the knowledge of building igloos. So we try to use their resources to show the youth how to build igloos, but we've never - in my five years of working with the Labrador Inuit Youth Division we have been unsuccessful so far.... [T]he snow is just a different texture.*²⁴³

The early melt has also forced a change in the timing of the traditional Toonik Tyme spring festivities in one community, which now begins two weeks earlier than the traditional time.²⁴⁴ The loss of ice and snow, significant and formerly abundant natural resources, has produced a lasting and destructive transformation in many aspects of the Inuit's lives. Projected changes can only be expected to damage the Inuit culture further in the future.

3. THAWING PERMAFROST HAS CAUSED LANDSLIDES AND SLUMPING, AND COMPLICATED FOOD STORAGE, HARMING THE HEALTH, SAFETY, CULTURE AND PROPERTY OF THE INUIT

The health, safety, property and culture of the Inuit are threatened by the transformation of the landscape. Permafrost, which holds together unstable underground gravel, is melting at an alarming rate,²⁴⁵ causing unpredictable mudslides and slumping that endanger travelers and residents.²⁴⁶ "Hot weather in the summer is melting the permafrost and causing large-scale slumping on the coastline and along the shores of inland lakes" where many Inuit have built their communities and homes.²⁴⁷ "In northern barrier island communities, the permafrost literally helps hold the island together.... As permafrost melts ... slumping and erosion of land ensue."²⁴⁸

In Sachs Harbor, a community on the western tip of Banks Island in the Canadian Arctic, "building foundations are shifting from the melting."²⁴⁹ The village is already in danger of sliding into the sea because of slumping, erosion, and mudslides caused by permafrost melt and increased storm surges.²⁵⁰ David Haogak of Sachs Harbour, Northwest Territories, said, "Even in my office, there are these big cracks in the walls. And that was March and April. That's before the spring thaw. Usually the spring thaw moves the housing pads. This year they all moved early. And it's caused a lot of damage. I mean, it costs money to fix a crack. It's like every year we're fixing my office. There's cracks everywhere."²⁵¹ Slumping and landslides have also threatened important cultural and historic sites, including Inuit cemeteries.²⁵²



Cracking due to permafrost melting

Because permafrost impedes drainage of surface water, the loss of permafrost also affects surface water levels.²⁵³ For example, current wetlands are drying up, and new wetlands are forming due to permafrost subsidence.²⁵⁴ Water levels in lakes are also affected by the loss of permafrost, with some smaller lakes disappearing entirely.²⁵⁵ “Where there were small lakes in areas they are totally dried up, they are part of the tundra. These lakes don’t exist anymore.”²⁵⁶ Permafrost melt will cause changes in surface drainage and wetness that is likely to result in vegetative changes as well as changes to the terrestrial ecosystem, affecting not only Inuit and animal foraging, but also the release of greenhouse gasses into the atmosphere, further accelerating global warming.²⁵⁷

In addition, “[c]ontainment structures [such as] tailing ponds and sewage lagoons often rely on the impermeable nature of frozen ground; thawing permafrost will reduce the integrity of these structures. Over the long term, infrastructure replacement will be necessary to eliminate many of the concerns related to the disappearance of the permafrost.”²⁵⁸ The implications of permafrost melt for the Inuit’s health, as well as economic concerns, are clear.

Traditional methods of food preservation have also become dangerous or infeasible with the loss of permafrost.²⁵⁹ Inuit have traditionally used the convenient permafrost for meat storage. Permafrost melt has made this method more arduous and more dangerous, requiring deeper holes or abandonment of the method, and increasing the risk of food-borne illnesses. “A warmer climate has ... thawed traditional ice cellars in several northern villages in Alaska, making them useless for the storage of meat.”²⁶⁰ Eugene Brower has experienced the loss of his traditional underground cellars:

*I can talk about the permafrost because I’ve got two ice cellars that I see where the changes are. They’re no longer cold like they used to be. It’s melting. The heat is going into the ground. I’ve got one ice cellar that’s about 12 feet into the permafrost ... even with the layer of 5” of snow on the bottom of the ice cellar, my game is melting on top, it’s thawing out, it’s not frozen solid. So, natural ice cellars are warming up ... the food you stored there is going to be no longer good to eat. They’re going to get rancid, and they’re going to spoil.... And that’s already happening. When ABC came up last month ... I took them down to see my ice cellar, and I was surprised by how warm my whale meat, my muktuk, the skin and the blubber were thawed, already.... I had to go out and buy some chest freezers to try and protect them from rotting.... I’ve got another ice cellar that’s about twenty-five feet into the ground, and you’re starting to feel that in there, too.*²⁶¹

Permafrost melt has also made travel over traditional routes more problematic and even impossible in some cases because of erosion and deteriorating ice paths.²⁶²

*I do a lot of hunting inland, for caribou, and last year was especially bad because we had a real wet summer, and it was hot, real hot and wetter than usual and hotter than usual. At the tail end of the summer - we've got longer summers too now - then it was raining and there's places in the tundra that I know were solid before. I hunt with my four-wheeler, and I usually go where there's solid, where it's not real marshy.... I could tell that places I never used to get stuck on four-wheelers, I get stuck. There were so many places that started getting stuck on, because the permafrost had thawed out and it got real mucky, and marshy ... as we were coming home, we must have gotten stuck like six different times, where we never used to get stuck before.*²⁶³

Several factors are projected to contribute to the continued degradation of the permafrost. In addition to increased air temperatures, increases in sea level and longer open-water seasons are likely to expose coastal environments to more storms, leading to rapid erosion and exposing more permafrost to warmer air.²⁶⁴

The impact on the Inuit's health, safety, property, subsistence and culture will continue to increase as the melting accelerates. The transformation of the landscape due to climate change has profoundly affected the Inuit, and it is highly likely that projected changes will continue to affect the Inuit into the next century.²⁶⁵

4. COASTAL EROSION, STORM SURGES AND FLOODING ARE THREATENING INUIT HOMES, CAMPS, COMMUNITIES, AND CULTURAL SITES, JEOPARDIZING THEIR PROPERTY, AND CULTURE

Loss of permafrost and sea ice both contribute to increasingly devastating coastal erosion. Because most Inuit live, hunt, and travel near the coast, coastal erosion and storm surges are having a cataclysmic impact on the Inuit. "Flooding and erosion affects 184 out of 213, or 86 percent, of Alaska Native villages to some extent.... [V]arious studies indicate that coastal villages are becoming more susceptible to flooding and erosion due in part to rising temperatures."²⁶⁶

The loss of sea ice threatens Inuit homes and communities because of the increased storm surges resulting from the loss of the ice's wave-suppressing effects.²⁶⁷ "Solid ice cover, and even floating ice dampens wave activity, reducing its intensity. By contrast, in areas of open water, nothing limits the full development of wind-driven waves. The presence of 'land-fast' sea-ice ... also limits the effects of coastal erosion by directly protecting the coastline from waves."²⁶⁸ The erosion exposes more coastal permafrost to the warmer air, resulting in faster permafrost melt, leading to more slumping and erosion.²⁶⁹ Storm surges and erosion threaten

Inuit homes, camps, communities, and cultural sites.²⁷⁰ People whose houses are located near embankments and coasts fear for the security of their homes.²⁷¹

Roy Nageak of Barrow, Alaska, has noted the increase in the ferocity of storms and the accompanying increase in the damage they cause:

When the current and the wind goes together, the intensity of the ocean is stronger, and here in Barrow, we're way at the point, and, with a good Northwest wind, and the current is coming from the northwest, and the water rises together and a good wind, with the two together, then it floods, the water level gets higher, and there's nothing stopping it - the ice is 150 to 200 miles away - the intensity of the ocean is stronger and that's what's causing a lot of erosion here, because there's no ice to diminish the strength of the sea ... our beaches, the houses that used to be high and dry and now are so much closer to the ocean, we see a lot of erosion.... A lot of this wouldn't have happened if the ice was still stable. Our ice is not there like it used to be.²⁷²



Eugene Brower, also of Barrow, agreed:

We have erosion danger out on our beach. Some years ago, the North Slope Borough, the local government, did some dredging off the beach ... to try and build up our gravel. But one storm came in and took all that gravel out and deposited it up toward the point.... We used to have a beach front of about 200 feet out in front of us, it's no longer there in Barrow ... the lack of ice has changed that because, in the fall time, we used to have multi-year ice that would flow in, and broke up the waves coming in, the wave action. Now we don't have that anymore, so we have big rollers coming in and pounding the shoreline.²⁷³

In the island community of Shishmaref, Alaska, the erosion, slumping and storm surges are so bad that the only option left to residents is to move the community off the island.²⁷⁴ Several residents described the devastating effects of the storms and erosion:

Some of the houses moved because of erosion. And our old school building we had burned up, and the second one we had, the ocean practically reached the steps.... We used to walk a long ways to the lagoon. Even the lagoon is eroding away. So, from both sides, we're eroding away. They've tried all kinds of sea walls.... Cement didn't even last.²⁷⁵

John Sinnok, also of Shishmaref, added these observations:

[The ice] normally saved our beach from eroding so much more - the ice that buffers the waves. Nowadays ... we don't have ice to protect our beaches anymore. Waves and storms are becoming more frequent, sometimes fifteen feet at a time. So, if there's two or three storms, it could be fifteen feet three times. That's how much land we would lose where our drying racks are, on the west side of the island, west of here. My wife and I usually put our drying racks every fall after it freezes over but we're still able to dig into the ground, and we know that the ground is freezing. But now, after we do that, if there's a storm it starts to thaw out the frozen ground and then we have to move the racks again. Things that didn't happen before. That ice is usually our life-saver during the fall.²⁷⁶

Stanley Tocktoo described how the storms and erosion have gotten worse, affecting his attempts at traditional food preservation:

Erosion wiped out all our drying racks on the last Fall. And this fall, all the racks were wiped out because of the storms. And these are not the mean storms. Our mean storms are the west winds, high winds, and that's where we do a lot of erosion, you see a lot of debris falling into the ocean.... [W]hen I was a youngster, we had a big beach out there on the ocean. We had tents out there, boats out there. And then every fall, we'd very rarely have a big storm, but we'd have a high tide storm, but not as severe as nowadays. But nowadays, when you look at it, we have high tides for no reason; could, could be nice and calm like this.... No matter what we put out there, Mother Nature is pretty tough, you know. All the sand-bag barriers we put out there either puncture or sink. It seems like this rock sea wall seems to hold on pretty well because I think when they built it ... there's a big tow under there, under the fine sand.... Like I said, we get maybe two or three storms a year now. We lose about twenty feet a storm. Even from high tide we lose ground from permafrost melting. That's what we're trying to do on the whole North side of our island, protect the permafrost from high-tide. Once the high tide comes around, the permafrost melts, and the next time we get low-tide the ground will collapse.²⁷⁷

One recent coastal storm in Alaska, likely made worse by the disappearing sea ice, demonstrated the human impact of the loss of sea ice:

When severe storms happen in populated areas there is significant impact on residents and infrastructure. During the October 2004 storm in Nome [Alaska], forty-five people had to be evacuated and thirteen homes were damaged. Other homes ... were vacated because of leaking propane tanks from nearby businesses. Many city buildings suffered structural damage.... Power lines were downed, roofs blown off, and rocks and driftwood scattered over the main street and against buildings. The seawall that protects the harbor was also damaged.²⁷⁸

Many other Alaskan coastal villages are similarly at risk from erosion, storm, and flood damage resulting from the loss of sea ice:²⁷⁹ “Increases in the frequency and ferocity of storm surges have triggered increased coastal erosion and threatened several villages in the Bering Sea; this has led to plans for relocation of some villages at great expense.”²⁸⁰ The erosion has also washed away former camping areas that the Inuit have traditionally used and occupied.²⁸¹

As storm surges and coastal flood events increase in frequency and intensity, bird and fishery habitats in the affected areas are also likely to be adversely affected.²⁸² These changes will further jeopardize Inuit hunting and foraging practices. Coastal communities will continue to experience increasingly more extreme storm events, threatening their homes, communities, way of life, and safety, as more ice disappears. Slumping and erosion will further imperil coastal communities.

5. CHANGING SPECIES DISTRIBUTION HAS HARMED THE NUTRITION, HEALTH AND SUBSISTENCE HARVEST OF THE INUIT

Various species of land plants and animals are changing range and abundance due to the effects of global warming. For example, the white pine has pushed northward due to warming temperatures, causing allergy problems in Inuit populations unaccustomed to the pollen.²⁸³ Likewise, an increase in the crow population has become a nuisance because the crows get into communities’ garbage and spread it.²⁸⁴

Reductions in the quantity and quality of berries and wild greens in some areas have made harvest more difficult and less fruitful.²⁸⁵ In some areas, berries, an important component of the Inuit diet, are smaller, drier and scarcer because of a decrease in spring and summer precipitation.²⁸⁶ “The [gathering] seasons are getting shorter for picking berries. And some of the berries I noticed we picked around here, they dry up before we can pick them. I think that’s due to a warmer climate here than before.”²⁸⁷ Sudden heavy rains in autumn then sometimes cause the berries to spoil before they can be harvested.²⁸⁸ Harvesting of greens has also been affected by climate changes:

*My mom, before she died, used to go picking greens with us girls. We used to fill up maybe four barrels to keep for the winter, and she taught us how to pack them and keep them for the winter. I can now only fill up one barrel each summer because it is getting shorter and shorter to me. In late June, we waited for greens to be ready to be picked but I noticed that we are starting kind of early this year because they grow up and then from too much sun and heat, they wither very fast. So we pick greens as soon as the weather is good for us to go up to the country. Then, late July it started raining a lot. The weather changes faster to me ... seems like to me like the sun is getting warming. The weather changes faster. So we have to pick greens real fast.*²⁸⁹

Important protein sources are also changing location and are of lower quality in some areas because of the changes in habitat and flora. A study of climate change in Alaska sponsored

by the U.S. Global Change Research Program makes clear the likely impacts of global warming on the health of subsistence communities:

Climate change is likely to have significant impacts on key ... terrestrial species availabl[e] for subsistence purposes. *At a minimum ... caribou, moose, and various species of waterfowl are likely to undergo shifts in range and abundance.... Changes in diet [and] nutritional health ... can also be expected.*²⁹⁰

Pitseolak Alainga of Iqaluit described these changes in species distribution:

*The food for the caribou is less abundant. Exact same things with rabbits. Rabbits are starting to come into the community more because they are finding more food that they have never had before. Different grasses, different plants. These sort of things are changing. New plants are growing up here in the north that the rabbits have never seen.... Different plants are unique for our elders, but they are beginning to say that there is so much climate change that plants from down south are coming up here and plants from different communities are coming here. Different plants, almost like bushes, are growing. These are the changes that the elders are seeing.*²⁹¹

Inuit have already noticed a deterioration in their health because of a lack of country food: *“The store-bought food has had an effect on our bodies. The doctors are telling us today that we have too much fat in our blood. Our blood system has changed and as a result of that it has had an ill-effect on the body.”*²⁹² Stanley Tocktoo of Shishmaref added:

*It would be nice for us to have all the native food that we can hunt and prepare because these are healthy foods that I’m talking about, the native foods. They have no cholesterol or anything.... We see a lot of diabetes and blood-clots. People have started having a lot of heart attacks, maybe because their veins being clogged or something. It might be from the foods, from the oils that they by in the store. The fat from pork-chops or chicken or whatever.*²⁹³



These environmental changes have also impaired the Inuit’s subsistence harvest. Changes in location and size of vegetation and habitat have altered the quantity, quality, habits and range of game, impairing the Inuit’s ability to engage in traditional subsistence harvest activities.²⁹⁴ Community members in some areas have noticed less fat on bears, caribou, hare and ptarmigan as a result.²⁹⁵ Tony Mannernaluk of Rankin Inlet, Nunavut, remembers, *“Back then, at this time*

of the year, in the end of August, bull caribou were fatted, but now, often times, bull caribou are very lean. There is no fat when they should be fatted."²⁹⁶ Ben Kovic of Iqualuit, Nunavut, shared this observation:

*The vegetation is different. Caribous are not getting fatter quicker than they used to be. Right now, when you go out here and get a caribou, they're not fat anymore. It's almost the end of August, but when you go back thirty years by this time they should be well fed and well fat.*²⁹⁷

Consequently, Inuit must travel farther to different areas to harvest the plants and game.²⁹⁸

These problems associated with changes in land conditions jeopardize several aspects of Inuit culture. The Inuit have been forced to alter traditional hunting patterns because of the changes in availability and quality of game, compounded with increased travel difficulties.²⁹⁹ Travel over traditional routes has become more problematic and even impossible in some cases because of erosion and deteriorating ice paths.³⁰⁰ Slumping and erosion have threatened important cultural and historic sites, including Inuit cemeteries.³⁰¹ In addition, as noted earlier, traditional food storage methods have changed.³⁰² The transformation of the arctic landscape due to climate change has profoundly affected Inuit culture.

The projected changes in species distribution will exacerbate these problems. Terrestrial ecosystems will continue to change as permafrost melt alters drainage and ground moisture and temperatures rise.³⁰³ The decreased runoff into the sea will likely decrease salinity in coastal areas, further altering ecosystems.³⁰⁴ Projected increases in sea level will affect the ecosystems of extensive coastal lowlands and immense deltas, moving wetlands farther inland and increasing coastal flooding.³⁰⁵ "If storm surges and coastal flood events increase in frequency and/or intensity, bird and fishery habitats in the affected areas are likely to be adversely affected."³⁰⁶ These changes will further jeopardize Inuit hunting and foraging practices.

6. INCREASINGLY UNPREDICTABLE WEATHER IN THE ARCTIC HAS DIMINISHED THE INUIT'S ABILITY TO FORECAST THE WEATHER ACCURATELY, CREATING PROBLEMS FOR HARVESTERS AND TRAVELERS, AND HARMING INUIT CULTURE

a. Travel and subsistence harvest have become more dangerous and difficult because of the unpredictable weather³⁰⁷

For the Inuit, forecasting the weather is essential to planning safe and convenient travel.³⁰⁸ Unfortunately, global warming has caused sudden fluctuations in the weather, and rendered traditional forecasting methods inaccurate. Jerome Tattuinee of Rankin Inlet described these changes:

With the traditional knowledge of the Inuit we [were] able to tell ... whether it's going to be warm or cold.... In the old days, we were able to tell just by looking at the clouds and by studying and observing the weather itself. [Now it's] hard to

predict how it's going to be.... I can't tell you how it's going to be, say for tomorrow or this evening because it's so hard to predict the weather now.... Looking at the clouds itself, sometimes they're ... really stressed or they're really loose and we were able to tell how it's going to be for the rest of the day but now it's almost quite impossible to tell how it's going to be ... the clouds that I'm talking about, right now they're grey and stressed. [In the past that meant] that it's going to be really windy. And with the clouds, if they're really really high, I [could] tell you that looking at the clouds itself, cause they're so high, I [could] tell you that it's going to be really nice for the next few days. Calm wind, no wind at all. And today it's not like in the old days anymore. So hard to predict the weather now.³⁰⁹

An Inuk hunter from Baker Lake agreed:

The cloud formations that we used to predict if it would be windy the next day – Those long cloud formations that we used are no longer visible. They are not there. Also other cloud formations that we also used are not there as often as they used to be.... [D]uring the winter – years ago – you would have clear skies and then from the south you would see lone clouds forming, even during the clear skies. Somewhere in the near future you were going to have a snowstorm. We knew this then. But this is not the case now. You don't see those clouds.... When you are predicting the weather – good or bad – you always look[ed] to kivativut [southwest]. The clouds ... are formations that are going to result in either storms or good weather. These clouds traveled towards kanangnavut. This knowledge ... has been passed down for generations. This is something I learned from my parents. It is used by other elders.... This is how many people predict the weather. It is not just my style it is a traditional style.³¹⁰

Because the Inuit can no longer predict weather accurately, travelers are burdened by having to bring extra equipment to deal with various weather conditions, or risk being unprepared should the weather become volatile.³¹¹ Planned trips are sometimes canceled when unforeseen storms develop, and travelers are more frequently stranded by unforeseen storms.³¹²



Prevailing winds have also changed, as Eugene Brower of Barrow describes:

The wind patterns have changed to where we have constantly East to Northeast winds with higher velocity than in the past. One big indicator here in Barrow is the realignment of the Barrow airport. The state of

*Alaska is doing a re-alignment on the current runway – we have to realign to the prevailing winds that are now coming in. Our winds used to be from the East to Southeast winds, but they’ve shifted more toward the Northeast.*³¹³

Changes in the prevailing winds have also affected the location and movement of floating pack ice, which in turn has impaired the subsistence harvest.

*Our winds are changing; we are constantly getting more Northeast winds and blowing the ice out farther and farther away from us. And, when you find it does happen that we get the Southwest winds, it takes forever for the ice to come in, or it doesn’t come in at all. It’s receding north so far.*³¹⁴

The return of the pack ice formerly brought easily accessible game to hunters near Barrow, but, as Roy Nageak of Barrow, Alaska, explains, the change in the prevailing wind has rendered this common harvesting strategy unsuccessful: “As we were hunting this summer, I heard a lot of men say, ‘I’m going to go out hunting after the ice goes out and comes back,’ because after all the ice goes out, for some distance, then comes back to shore it brings back a lot of animals.... But this year, when all the ice went away from the shore-fast ice, it never came back.”³¹⁵

In addition, changes in the prevailing winds in some regions have altered the orientation of snowdrifts.³¹⁶ In the past, the orientation of snowdrifts remained consistent from year to year, allowing the Inuit to rely on them for navigation.³¹⁷ The unfamiliar orientation has removed a critical navigation tool and caused disorientation among travelers.³¹⁸ A Baker Lake Inuk described his confusion when he first noticed the snowdrift change: “I navigated by the pattern of the snowdrifts. I was traveling during a storm and I started to get lost, because the pattern of the snowdrifts changed.... All the snowdrifts have moved. I started going the wrong direction during the storms. I felt kind of silly but I started asking has the earth moved?”³¹⁹

These impacts have also made travel less frequent, of shorter duration, more dangerous, and more worrisome than in the past.³²⁰ People are taking fewer, shorter, hunting trips because of the increased risks and inconveniences associated with travel.³²¹

b. The increasingly unpredictable weather has also harmed Inuit culture

Travel and harvesting, two critical components of Inuit culture, have been damaged as a result of the elders’ inability to forecast accurately.³²² The inability to forecast the weather has also diminished the important role of elders in planning hunting, travel, and day-to-day preparation for bad weather.³²³ An Inuk from Baker Lake described how the changed circumstances have affected reliance on traditional knowledge:

Things have changed so much it is hard to rely on what you knew traditionally anymore. What happened years ago is different than what it is today. I feel that each individual must do their own observing and use their own experience to understand the change. You may ask an expert what his knowledge is but his

*knowledge is not going to apply to what is happening today. For example an elder might say by November 1 you are able to cross this area, it is now safe to cross this lake, but according to the way things are today, it may not be the case.*³²⁴



Travelers and hunters increasingly rely on FM radio instead of traditional knowledge for weather forecasts and communication about dangerous conditions.³²⁵ In addition, the science of traditional weather forecast can no longer be passed on to younger generations.³²⁶ In these ways, the increasingly unpredictable weather has damaged Inuit culture.

7. INCREASED TEMPERATURES HAVE LED TO AN INCREASE IN HEAT-RELATED HEALTH PROBLEMS, AND HAVE IMPEDED THE HARVEST AND PROCESSING OF ESSENTIAL FOOD AND HIDES

As noted above, the “[a]nnual average Arctic temperature has increased at almost twice the rate as that of the rest of the world over the past few decades.”^{327*} In communities along the Newfoundland and Labrador North Coast in Canada, more people are experiencing sun- and heat-related headaches and rashes because of higher temperatures during daylight hours.³²⁸ Sappa Fleming of Kuujjuarapik, Quebec, explained that the sun has affected her skin:

*It triggers a rash that I get when it’s too hot nowadays. Like, if I had the rash there in the day, in the evening, even though the sun has gone, it hurts a lot. It affects my whole body when I have a rash. So, sometimes it is very severe pain on my chest, because [of] what I have endured during the day. It affects me in the evening still, even though the sun has gone. Sometime I do not even go out there in the day because of the heat.*³²⁹

These formerly rare health problems are a direct result of increased temperatures.³³⁰

In addition, traditional methods of food storage and preservation are less safe because of increased daytime temperatures.³³¹ Sarah Ittulak of Nain, Newfoundland and Labrador, described how this impacts her:

* Some areas have cooled slightly, and some have warmed, but the overall average has increased markedly. ACIA Overview, *supra* note 16, at 10.

*In the Spring time, when I'm making dried fish, ... I lay it on the rock so I can hang it later. What I've been noticing is that before hanging the fish to be dried, the meat of the fish is really really cooked from the sun because the sun is so hot. It's not too bad when there's a little bit of clouds out, but now when there's no clouds it can really cook the fish. And even after trying to put the fish in a bucket for later or to salt for later, the texture of the fish is really really soft. So, the sun is really affecting the way you also prepare your fish.*³³²



The subsistence harvest of food and clothing has been affected by the heat as well. For instance, in the Kivalliq, the central region of Nunavut, Canada, observers have noted an increase in the number of unhealthy and dead game animals during periods of hotter weather, which affects an important source of subsistence protein for the Inuit.³³³

In the past, the time for caching (storing) meat coincided with the time that the caribou hides were of the best quality.³³⁴ Now, because of warmer temperatures, caching must come later in the season.³³⁵ The result is a shorter caching season and poorer quality caribou hide for use as clothing.³³⁶ An Inuk hunter from Baker Lake, Nunavut, described the disturbing change in the caching season:

*Traditionally when we do the caribou caching - this is where we would put away the meat to pick up later in the winter - we would start our caribou caching in August – the middle of August. It was safe to start your caribou caching, but now it is just too warm. Either the meat is just going to rot, or the maggots are there.... [T]he month of August is very important traditionally. It has always been an important part of summer. This is when they collect skins for clothing, and at the same time they do their caribou caching. Now people do most of their caribou caching in September. Even by the second week of September they are doing their caribou caching. Inuit were very selective of when to cache the meat, because of the taste and the whole thing.... They chose the weather for caribou caching and now we see people going out still camping in the 2nd week of September doing their caribou caching.*³³⁷

Processing animal hides has also become more problematic because of higher temperatures and changes in precipitation.³³⁸

The skins that we do prepare are sometimes too dry now because of the climate change. In the old days, it never used to be like so. We even have to dry them

*now in the shade away from the sun because when you dry them out in the sun, they become too dry or very easy to tear, especially the seal skins.*³³⁹

Increased temperatures and sun intensity have had a direct impact on the Inuit's harvest, property, and health, and caused a multitude of detrimental changes to their physical environment.³⁴⁰ Temperatures are expected to continue to increase in the coming years, further exacerbating heat related problems, as well as contributing to loss of ice, snow, and glaciers.

8. THE COMBINED IMPACTS OF CHANGES IN ICE, LAND, SNOW, AND WEATHER CONDITIONS ARE FURTHER JEOPARDIZING THE HEALTH, SAFETY, TRAVEL, PROPERTY, HARVEST, AND CULTURE OF THE INUIT

- a. The health and safety impacts stemming from the combination of changing conditions include decreased drinking water quality and quantity, changes in the Inuit's diet, illness resulting from increased pest populations, and damage to overall mental health.**

Natural drinking water sources have become scarcer and less drinkable, harming Inuit health. Drinking water quality and quantity have decreased significantly because of the combined effects of the decrease in snowfall, permafrost melt, the sudden early melt, erosion, rising temperatures, and changing winds.³⁴¹ The water level in rivers and lakes has dropped dramatically, and some ponds and lakes have dried up completely,³⁴² reducing the availability of drinking water and decreasing its quality.³⁴³ According to John Sinnok of Shishmaref, Alaska,

*Lakes that have never dried, especially by our drying racks, that lake I don't remember ever drying up, but it's been drying up every year the last few years. The lakes around our camp, which we used to use for waste water, there's hardly any water, and the water is so brown now, we don't use it for drinking and hardly even for waste water.*³⁴⁴

Increased algal blooms and breeding insects in the water have also diminished the usefulness of many lakes for drinking water.³⁴⁵ In addition, erosion leaves more particles and minerals in the water, decreasing its desirability for drinking.³⁴⁶ Residents of Clyde River, Nunavut, have experienced this:

*It used to be that [the rivers from the glaciers] were very clear.... They looked so clear you wanted to drink from them and now they are foggy even in the late summer. They're not as clear as they used to be.*³⁴⁷

Residents of Kuujjuarapik, Quebec, have noticed the same thing:

I have seen the changes in the quality of the water. It used to be that you can go into a stream and make tea with it. There seems to be more dirt in the water than there used to be.... In the past I used to drink the water from my camp but now

*when I make tea with it it turns real black so it must be something in the water that makes it almost undrinkable.*³⁴⁸

The quality of melted snow, a traditional source of drinking water in winter, particularly for travelers, has also deteriorated.³⁴⁹ The decreased snowfall is more susceptible to the changing winds, and thus contains more dust particles, which decreases its desirability for melting and drinking.³⁵⁰

Some freshwater sources near the sea are becoming more saline, either because shifting winds and tides push saltwater into freshwater sources, or because decreased levels of freshwater lead to increased salinity.³⁵¹ For example, Baker Lake in Nunavut has increased in salinity further from the ocean. “[I]t used to be the *Bowell Islands area where you could taste salt. But now when there are big waves on Baker Lake, one can even taste salt here at the settlement of Baker Lake. I noticed just recently how salty it is on the windy days. I have been in this area before and it was not as bad. It has worsened.*”³⁵²

Increased obstacles to harvesting country food, and the reduced quality of that food, also threaten the health of the Inuit.³⁵³ The shift from a traditional diet to store-bought food is being exacerbated because of the travel and harvest problems associated with thinning ice, weather changes, decreased game availability, and changed snow conditions.³⁵⁴ Subsistence harvest of fish, game, and edible plants has fallen off in recent years because of the danger, inconvenience and anxiety associated with travel, as well as the decrease in quantity and quality of game.³⁵⁵

As a consequence, the Inuit are increasingly unable to rely on traditional foods for year-round sustenance, and must supplement their traditional diet with commercially processed food purchased from stores, which contributes to health problems.³⁵⁶ Alec Tuckatuck of Kuujjuarapik, Quebec, described his experience with the decreased harvest:

*We are forced to buy store-bought food a lot more than before, a lot more. For instance, even when I hunt I do get some wild meat but it doesn't last that long with a large family like mine, so we're very much forced to buy store-bought food.*³⁵⁷

Another Kuujjuarapik resident put it this way:

*It has affected everybody. Even if it affects me when I am out hunting, it will affect my community. It has affected my family. In a way like eating less country food because of less time out hunting. More relying on store-bought foods. So, it has affected in a lot of ways.*³⁵⁸

Diabetes, associated with some processed store-bought foods, has increased among the Inuit in recent years.³⁵⁹ Willie Jooktoo of Kuujjuarapik explained that climate change “*has changed my eating habits considerably. My doctor is saying that I have high blood pressure and diabetes because of relying on more store-bought foods rather than having healthy country*

food.”³⁶⁰ “A shift to a more Western diet is [also] known to increase the risks of cancer, obesity, ... and cardiovascular diseases among northern populations.”³⁶¹ Older people are particularly affected because their bodies are less accustomed to the processed store-bought food.³⁶²

The quality of the available country food is also deteriorating. For example, game animals are undernourished because of changes in habitat caused by climate change.³⁶³ While caribou in some areas are reportedly fatter because of the longer summer growing season, in other areas they are noticeably undernourished, due to the combination of less healthy plants during the hotter summers and a hard layer of ice under the snow that prevents winter access to food.³⁶⁴ Several other health problems have increased among caribou, including swollen joints and testicles, discoloration of meat, and white spots on the meat due to lack of nutrition and increased parasites,³⁶⁵ problems generally affecting increasing numbers of game animals.³⁶⁶ People are finding more diseased livers in game animals.³⁶⁷ Fish meat has become soft, unpalatable, and difficult to process.³⁶⁸ The meat from unhealthy animals is discarded, wasting scarce resources and decreasing the supply of subsistence protein.³⁶⁹

Polar bear, seals, whales and other game are also undernourished.³⁷⁰ “Polar bears in [the James and Hudson Bays in Canada] suffered 15% declines in both average weight and number of cubs born between 1981 and 1998.”³⁷¹ Seals sink faster when they are thinner, meaning they are more difficult to harvest, and people have observed seals spending less time in the water because of the lack of insulating fat.³⁷²



Inuit health has also been harmed by changes in the pest population. “Climate stress and shifting animal populations ... create conditions for the spread of infectious diseases in animals that can be transmitted to humans, such as West Nile virus.”³⁷³ An increase in the mouse and fox population has increased the incidence of rabies.³⁷⁴ In addition, the mosquito population is changing.³⁷⁵ Although in some areas the drying up of ponds and small lakes has decreased mosquito-breeding habitat, in

other areas the increased temperatures and longer warm season have caused an increase in the mosquito and biting fly population.³⁷⁶ As a result, infections from the bites have increased, and people are concerned about diseases that the insects may carry.³⁷⁷

The combination of these worrisome changes has also affected the Inuit’s mental health. “Reduced opportunities for subsistence hunting, fishing, herding, and gathering are likely to cause psychological stresses due to the loss of important cultural activities.”³⁷⁸ The additional travel danger, unfamiliarity of weather conditions, changes in land conditions and appearance, and changes in familiar flora and fauna have exacerbated anxiety, stress, and uncertainty.³⁷⁹ Barrow resident Roy Nageak explains:

*The anxiety level, the danger, especially when it gets dark; people get anxious. They know the polar bear, and, when it gets hungry, it will stalk people. It's the anxiety level; it's not [only] a matter of whether more people are hurt.*³⁸⁰

Eugene Brower, also of Barrow, describes it this way:

*There's a lot of anxieties and angers that are being felt by some of the hunters that no longer can go and hunt. We see the change, but we can't stop it, we can't explain why it's changing it ... our way of life is changing up here, our ocean is changing.... I think it's widely felt, because you can feel it further from the folks that live in the villages outside of Barrow, where they do a lot of subsistence hunting.*³⁸¹

The anxiety associated with these changes makes people even less likely to travel and harvest, aggravating the problems of changes in diet and loss of the traditional way of life. The dislocation and disruption caused by the destruction and relocation of homes and communities also affects mental health.³⁸²

The changes in the Inuit's physical surroundings thus jeopardize both their health and their safety.

b. Travel, subsistence and culture have been damaged as a result of the combination of changes.

Traditional travel routes have been eliminated due to lower water levels and melting ice caps.³⁸³ The loss of ice caps, glaciers, and permanent snow have destroyed some travel routes that were formerly passable by sled year-round, and caused problems with other routes.³⁸⁴ Roy Nageak of Barrow, Alaska, described the deterioration in two travel routes:

*I do a lot of hunting inland, for caribou, and last year was especially bad because we had a real wet summer, and it was hot, real hot and wetter than usual and hotter than usual. At the tail end of the summer – we've got longer summers too now – then it was raining and there's places in the tundra that I know were solid before. I hunt with my four-wheeler, and I usually go where there's solid, where it's not real marshy.... I could tell that places I never used to get stuck on four-wheelers, I get stuck. There were so many places that started getting stuck on, because the permafrost had thawed out and it got real mucky, and marshy ... as we were coming home, we must have gotten stuck like six different times, where we never used to get stuck before.*³⁸⁵

The decreased water level in rivers has also made summer boat travel more dangerous.³⁸⁶ As Eugene Brower, of Barrow, Alaska, explained:

Going out to your fish camps this time of year is getting harder and harder because there's no snow, you have to take a boat. But also, if you take a boat, you're more inclined to be weather bound because of the wind conditions. As a matter of fact, I've just seen my nephew this afternoon, who was lucky to meet someone in a four-wheeler up there hunting, and had to leave his boat, and the animals he'd caught by the river to report to work because of the massive waves that were out in the inlet - the boat couldn't take them ... [boat travel] is getting difficult.... Not everybody has a skiff or a boat to go camping with. But they do own snow machines that they travel with in the fall time and in the winter months to go to their fish camps and camping sites to do their subsistence hunting. Now they have to wait until later in the season. By the time they get out there, sometimes the game's already gone because they go with the cycle.³⁸⁷

Some previously navigable rivers are now impossible to use for transportation.³⁸⁸ Tony Mannernaluk of Rankin Inlet said, *"When I first came here to Rankin in 1965, they could go up by boat up the ... river. But now it's impossible to go up that river by boat at all."³⁸⁹*

Disappearing sea ice, combined with changes in prevailing winds and currents have wreaked havoc with travel and harvest. Roy Nageak described the work of several weeks floating away because of the combination of changes:

This year, some of the trails that they made for two weeks, just when the ice started opening up for whaling, a lot of the trails that they made took off. The shore-ice that we thought was stable and piled up solid, [with] the first good easterly wind, maybe with the help of a quick current, the ice just went out.... A lot of the trails that they made, three-quarters, or half of them were gone. So that was a lot of work that just floated away. A lot of people thought that the ice was stable; it was shore-fast ice.... It's not following what we have learned in the past. It's more unstable. It's not solid ice.³⁹⁰



These travel difficulties necessarily impair the subsistence harvest.³⁹¹

Changes in animal habitat, combined with increased travel difficulty, have diminished the Inuit's ability to engage in traditional harvest activities. The harvest now requires traveling farther, which is more expensive and, because of travel difficulties caused

by deteriorating snow and ice conditions, more dangerous, arduous and worrisome.³⁹² As Barrow resident Ronald Brower explained:

*The climatic changes, especially the changes to our ocean, are affecting our ability to feed our families.... We're not catching as many spring whales as we used to. Now we're becoming more dependent on fall whaling.... We never used to do that much fall whaling, but we did occasionally. Now we're more dependent on fall whaling than we are on spring whaling. And that takes a lot of gas. We're hunting in open seas. Whereas the ice used to be twenty-five miles off-shore, right now it's over two-hundred miles, maybe two-hundred fifty miles off-shore. Now we're endangered with storms, and requiring more use of gas to hunt the bowhead whale. So we've changed dramatically. In supporting our subsistence, we need more cash to accomplish that same objective, of bringing food to the table. We're having to go further away.*³⁹³

Changes in summer vegetation combined with the new hard layer of ice under the snow have made game more scarce and less accessible, and have diminished the quality of meat and hides.³⁹⁴ Pitseolak Alainga of Iqaluit noticed that,

*In the last fifteen years, the caribou migration has changed. There used to be a big migration that would happen around three or four different communities, and the migration of the caribou has come a lot quicker than it used to.... The migration route has changed. There have been different groups of caribou migrating with other groups of caribou in different areas and once they get together they migrate in one big herd and that's part of a change that has affected the hunters from not just this community but other communities that have been talking to the families here.... The caribou calves are not as healthy as they used to be. There's not enough food for the caribou to have. There's been a big change in what the caribou eat or when they go on a migration. And it's hard for hunters to read where the caribou will be and that stuff that we used to know.*³⁹⁵

New or previously uncommon species are moving north and causing problems as well. Black bears and grizzly bears are seen further north, and appear to be growing in number.³⁹⁶ Grizzly bears have begun hunting seals on the ice, as well as raiding caribou caches.³⁹⁷

Lower water levels have damaged the fish harvest because fewer migrating fish reach their spawning beds in the shallower rivers, and the eggs sometimes get exposed or washed ashore.³⁹⁸ In order to preserve traditional fish spawning rivers, the Inuit have been forced to dredge and divert rivers to allow for sufficient water flow for the traveling fish.³⁹⁹ Jerome Tattuinee of Rankin Inlet explained that the lower water levels also affect the quality of fish caught: *"Because the water itself is becoming low, it has also impacted on the fish itself. The fish aren't as good as they used to be anymore because of the global warming. A lot [of fish] seem to be a lot smaller."*⁴⁰⁰

Different species of fish are also moving northward, possibly jeopardizing native fish stocks. Eugene Brower described a surprising change in types of fish caught in the Barrow area:

*From the ocean side, there are people here in Barrow that are catching more King Salmon in their nets. They're catching Red Salmon. Catching Red Salmon up here is a rarity, but this fall the people that were setting nets out in the lagoon said that they were surprised to see the amount of King Salmon and Red Salmon that they caught in their nets; that's a new species of fish that are coming up here. Normally we don't have those.*⁴⁰¹



* * *

The impacts described above demonstrate that Inuit culture has been jeopardized by the combined effects of changes in the ice, land, weather, and snow. Harvest and travel, important aspects of the Inuit culture, are less likely to take place because of the danger, fear, and problems caused by the combined impacts of climate change. Such activities, once familiar and habitual to the Inuit, now are associated with uncertainty, fear and stress. Some formerly familiar surroundings, once a source of sustenance and safety, have become alien and hostile. People are sometimes unable to educate the younger generation because the changing conditions have displaced traditional knowledge.⁴⁰²

The transformation of their physical environment due to the individual and cumulative effects of climate change have undercut the Inuit's ability to enjoy the benefits of their traditional way of life and property, and have imperiled Inuit health, safety, subsistence harvest, travel. These changes are projected to accelerate, seriously threatening the Inuit's continued survival as a distinct and unique society.

D. THE UNITED STATES IS THE WORLD'S LARGEST CONTRIBUTOR TO GLOBAL WARMING AND ITS DAMAGING EFFECTS ON THE INUIT

1. HISTORICAL EMISSIONS OF CO₂ *

Among nations, the United States has long been the world's greatest consumer of energy, and hence of fossil fuels. Since the main byproduct of fossil fuel combustion is carbon dioxide (CO₂), throughout the industrial era the United States has had the highest CO₂ emissions of any nation. In 1890, the United States emitted 31% of the world's energy-related carbon dioxide (CO₂).[†] By 1950, U.S. emissions peaked, relative to other countries, at 43% of the world's CO₂ emissions.⁴⁰³

It follows that the United States also leads the world in cumulative emissions (total historic emissions) of CO₂. Precise historic comparisons for more than a few decades are difficult for several reasons: historical data may vary in quality and may not be available at all for some periods; national borders may shift; and regional groupings, such as the European Union, may change. Nevertheless, some comparisons are possible and illuminating.

From 1950 to 2000, the United States emitted 57,874 million metric tons (MMTC) of CO₂, making it the largest cumulative emitter over that period of time.⁴⁰⁴ Indeed, this is more than two-and-a-half times the emissions of the next largest emitter, the Russian Federation, during the same period.⁴⁰⁵ U.S. cumulative emissions for the period were some 30% higher than all the "economies-in-transition" states together.⁴⁰⁶ They were also 46% greater than those of the European Union-15 (EU-15).[‡] Further, the U.S.'s cumulative emissions were approximately three times greater than China's, twelve times greater than India's, and twenty-nine times greater than those of Brazil.⁴⁰⁷

Looking across the entire period of significant growth in energy-related CO₂ emissions from 1850 to 2000, the numbers are even more dramatic, with one exception. The exception is the EU-15 with its member states' emissions having been closer to U.S. emissions during the nineteenth century than they are today. Even for this period, however, cumulative U.S. emissions exceeded EU-15 emissions by a large margin of 29%.⁴⁰⁸

2. CONTRIBUTION TO TEMPERATURE INCREASE

The dominant role of the United States in carbon emissions correlates well with the country's estimated contribution to the global temperature increase. U.S. greenhouse gas emissions between 1850 and 2000 are responsible for 0.18°C (30%) of the observed temperature

* For the period before 1990, reliable data is not available for non-CO₂ greenhouse gases.

† Unless otherwise noted, the terms carbon, carbon dioxide and CO₂ are used interchangeably.

‡ The ten newest members of the European Union are excluded to avoid overlap with economies-in-transition countries.

increase of 0.6°C during that period.⁴⁰⁹ This exceeds the European Union's contribution of 0.14°C (23%), and by far surpasses the 0.05°C (9%), 0.04°C (7%), and 0.01°C (2%) warming caused by Russia, China and India respectively. Although the actual correlation between cumulative emissions and temperature increase is subject to some uncertainty, there is no doubt that the United States has contributed far more to global warming than any other country.⁴¹⁰

3. CURRENT EMISSIONS

The United States continues to be the world's largest emitter of energy-related CO₂, accounting for nearly one quarter of the world's current emissions.⁴¹¹ It far exceeds the next two largest emitters, China and the European Union, which each account for approximately 14% of global greenhouse gas emissions.⁴¹² In 2000, the United States produced 1,574 MMTC, 24% of the world total of 6,518 MMTC.⁴¹³ The 2004 U.S. emissions are estimated by the U.S. Energy Information Administration (EIA) at 1,608 MMTC. This rising trend is expected to continue in the future, with the EIA projecting U.S. CO₂ emissions to rise 40% above the 2000 level, to 2,198 MMTC by 2025.⁴¹⁴

4. PER CAPITA EMISSIONS

U.S. emissions of energy-related CO₂ are vastly out of proportion to its population size. With only 4.7% of the world's population, the United States produced 24% of global emissions in 2000.⁴¹⁵ On a per-person basis, U.S. emissions in 2000 were more than five times the global average.⁴¹⁶ They were nearly two-and-a-half times the per capita emissions in Europe,⁴¹⁷ and nine times those in Asia and South America.⁴¹⁸ Only five countries exceeded the United States in per capita emissions in 2000—Qatar, the United Arab Emirates, Kuwait, and Bahrain—all of which have much smaller populations and huge reserves of highly carbon-intensive commodities.⁴¹⁹ Yet among the countries with significant emissions, the United States had the highest level of per capita emissions.⁴²⁰

V. VIOLATIONS: THE EFFECTS OF GLOBAL WARMING CONSTITUTE VIOLATIONS OF INUIT HUMAN RIGHTS, FOR WHICH THE UNITED STATES IS RESPONSIBLE

A. THE HUMAN RIGHTS OF INDIGENOUS PEOPLE SHOULD BE INTERPRETED IN THE CONTEXT OF INDIGENOUS CULTURE AND HISTORY, WHICH REQUIRES PROTECTION OF THEIR LAND AND ENVIRONMENT

1. “[E]NSURING THE FULL AND EFFECTIVE ENJOYMENT OF HUMAN RIGHTS BY INDIGENOUS PEOPLES REQUIRES CONSIDERATION OF THEIR PARTICULAR HISTORICAL, CULTURAL, SOCIAL AND ECONOMIC SITUATION AND EXPERIENCE”⁴²¹

In applying the rights contained in the American Declaration to indigenous peoples, both the Inter-American Court of Human Rights and the Inter-American Commission on Human Rights have repeatedly emphasized the need to take into account the unique context of indigenous culture and history.*

The Court recognized this context in the *Awás Tingni* case, in which the Court interpreted the American Convention’s protection of “property” to mean protection of property rights as understood by the indigenous community involved.⁴²² In its judgment on reparations in the *Aloeboetoe et al.* case, the Court disregarded the State’s domestic family law for purposes of determining which persons were the next-of-kin of the victims, and awarded reparations based on the matrilineal and polygamist customs of the Saramaka people to which the victims belonged.⁴²³ In addition, although rejecting the Saramaka’s contention that, according to their customs, the entire community was injured as the “family” of the deceased, the Court implicitly accepted that the entire community had suffered damages when it ordered reparations that would benefit the community as a whole.⁴²⁴

“[T]he Commission has since its establishment in 1959 recognized and promoted respect for the rights of indigenous peoples of this Hemisphere.”⁴²⁵ Since 1972, it has been the Commission’s position that “because of moral and humanitarian principles ... protection for indigenous populations constitutes a sacred commitment of the states.”⁴²⁶ This recognition, shared by the international community as a whole, is a norm of general or customary international law. “In acknowledging and giving effect to particular protections in the context of human rights of indigenous populations, the Commission has proceeded in tandem with developments in international human rights law more broadly.”⁴²⁷

* “Both the Inter-American Court and the Inter-American Commission on Human Rights have held that, although originally adopted as a declaration and not as a legally binding treaty, the American Declaration is today a source of international obligations for the OAS member States.” Inter-Am. Court H.R., Advisory Opinion OC-10/89, Interpretation of the American Declaration of the Rights and Duties of Man Within the Framework of Article 64 of the American Convention on Human Rights, July 14, 1989, Ser. A. No. 10, at ¶¶ 35, 45 (1989).

In the *Mary and Carrie Dann* (“Dann”) case, the Commission considered rights set forth in the Proposed American Declaration on the Rights of Indigenous Peoples (“Proposed Declaration”) in interpreting and applying the provisions of the American Declaration.⁴²⁸ The Commission noted that, although the Proposed Declaration has not been adopted, “the basic principles reflected in many of the provisions of the Declaration ... reflect general international legal principles developing out of and *applicable inside ... the inter-American system ...* in the context of indigenous peoples.”⁴²⁹ The Commission further acknowledged that much of the Proposed Declaration reflects established international norms:⁴³⁰ “[A] review of pertinent treaties, legislation and jurisprudence reveals the development over more than 80 years of particular human rights norms and principles applicable to the circumstances and treatment of indigenous peoples.”⁴³¹ The Commission concluded that “by interpreting the American Declaration so as to safeguard the integrity, livelihood and culture of indigenous peoples through the effective protection of their individual and collective human rights, the Commission is respecting the very purposes underlying the Declaration which, as expressed in its Preamble, include recognition that ‘... it is the duty of man to preserve, practice and foster culture by every means within his power.’”⁴³²

The Commission reaffirmed this view in its recent decision in the *Maya Indigenous Communities of the Toledo District* (“Belize Maya”) case, in which it gave “due regard to the particular principles of international human rights law governing the individual and collective interests of indigenous peoples.”⁴³³ Quoting from its 1997 Report on the Human Rights Situation in Ecuador, the Commission noted that distinct “protections for indigenous peoples may be required for them to exercise their rights fully and equally with the rest of the population.”^{434*} In finding that the human rights of the Maya people had been violated, the Commission “afford[ed] due consideration to the particular norms and principles of international human rights law governing the individual and collective interests of indigenous peoples, including consideration of any special measures that may be appropriate and necessary in giving proper effect to these rights and interests.”⁴³⁵

In the *Yanomami* case, the Commission determined that “international law in its present state ... recognizes the right of ethnic groups to special protection ... for all those characteristics necessary for the preservation of their cultural identity.”⁴³⁶ In concluding that the rights of the Yanomami people had been violated, the Commission considered that “the Organization of American States has established, as an action of priority for the member states, the preservation and strengthening of the cultural heritage of these ethnic groups and the struggle against the

* In the Ecuador Report, the Commission stated:

Within international law generally, and inter-American law specifically, special protections for indigenous peoples may be required for them to exercise their rights fully and equally with the rest of the population. Additionally, special protections for indigenous peoples may be required to ensure their physical and cultural survival – a right protected in a range of international instruments and conventions.

OEA/Ser.L/V/II.96, Ch. 10.

discrimination that invalidates their members' potential as human beings through the destruction of their cultural identity and individuality as indigenous peoples."⁴³⁷

As the Commission has affirmed, international law recognizes that the human rights of indigenous peoples must be protected in the context of indigenous culture and history. For example, the U.N. Human Rights Committee has stated that the rights under Article 27 of the International Covenant on Civil and Political Rights ("ICCPR") "depend on the ability of the minority group to maintain its culture, language or religion. Accordingly, positive measures by States may also be necessary to protect the identity of a minority and the rights of its members to enjoy and develop their culture and language and to [practice] their religion, in community with other members of the group."⁴³⁸ In addition, the International Labour Organisation's Convention 169 concerning Indigenous and Tribal Peoples in Independent Countries (ILO Convention 169) states that "[t]he rights of the peoples concerned to the natural resources pertaining to their lands shall be specially safeguarded."⁴³⁹

As described in Section II-A above, the Inuit are an indigenous people who have occupied the arctic and sub-arctic regions of the United States, Russia, Greenland, and Canada for many millennia. As such, "they are entitled to special protection ... for all those characteristics necessary for the preservation of their cultural identity" and for the protection of their human rights.

2. BECAUSE OF THEIR CLOSE TIES TO THE LAND AND THE ENVIRONMENT, PROTECTION OF THE INUIT'S HUMAN RIGHTS NECESSARILY REQUIRES PROTECTION OF THE ARCTIC ENVIRONMENT

The lives and culture of the Inuit demonstrate that indigenous peoples' human rights are inseparable from their environment. As a Special Rapporteur of the UN Commission on Human Rights has noted, violations of indigenous peoples' human rights "almost always arise as a consequence of land rights violations and environmental degradation and indeed are inseparable from these factors."⁴⁴⁰ Therefore, preservation of the arctic environment is one of the distinct protections required for the Inuit to fully enjoy their human rights on an equal basis with all peoples. States thus have an international obligation not to degrade the environment to an extent that threatens indigenous peoples' culture, health, life, property, or ecological security.

Within the Inter-American system, and in the international community generally, indigenous peoples' right to a healthy environment has been repeatedly recognized and enforced. For instance, the Inter-American Court noted in the *Awas Tingni* case that the failure to prevent environmental damage to indigenous lands "causes catastrophic damage" to indigenous peoples because "the possibility of maintaining social unity, of cultural preservation and reproduction, and of surviving physically and culturally, depends on the collective, communitarian existence and maintenance of the land."⁴⁴¹ Similarly, in its *Belize Maya* decision, this Commission found that "the State's failure to respect [the Maya people's human rights had] been exacerbated by environmental damage" to Mayan lands.⁴⁴² The "logging concessions granted by the State ... caused environmental damage,

and ... this damage impacted negatively upon some lands wholly or partly within the limits of the territory in which the Maya people have a communal property right.”⁴⁴³

In its 1997 report on Ecuador, the Commission found that “indigenous peoples maintain special ties with their traditional lands, and a close dependence upon the natural resources provided therein – respect for which is essential to their physical and cultural survival.”⁴⁴⁴ As the report further acknowledges, “damage to these lands ‘invariably leads to serious loss of life and health and damage to the cultural integrity of indigenous peoples.’”⁴⁴⁵ In discussing the connection between

the physical environment and the rights to health and life, the report concluded that environmental degradation can “give rise to an obligation on the part of a state to take reasonable measures to prevent” the risks to health and life associated with environmental degradation.⁴⁴⁶

The Commission further noted that human rights law “is premised on the principle that rights inhere in the individual simply by virtue of being human,” and that environmental degradation, “which may cause

serious physical illness, impairment and suffering on the part of the local populace, [is] inconsistent with the right to be respected as a human being.”⁴⁴⁷



International law protects the special ties that many indigenous people have to their environment. For example, ILO Convention 169 states that “[g]overnments shall take measures ... to protect and preserve the environment of the territories [indigenous people] inhabit.”⁴⁴⁸ The Convention further requires that indigenous peoples’ rights “to the natural resources pertaining to their lands shall be specially safeguarded. These rights include the right of these peoples to participate in the use, management and conservation of these resources.”⁴⁴⁹ In addition, Article XIII of the Proposed American Declaration of the Rights of Indigenous Peoples explicitly guarantees indigenous peoples the right to environmental protection: “Indigenous peoples shall have the right to conserve, restore and protect their environment, and the productive capacity of their lands, territories and resources.”⁴⁵⁰ Similarly, Article 28 of the U.N. Draft Declaration on the Rights of Indigenous People guarantees “the right to the conservation, restoration and protection of the total environment and the productive capacity of their lands, territories and resources.”⁴⁵¹ The Draft Declaration also includes the “total environment” in the concept of the property to which indigenous peoples have a right.⁴⁵²

The right to a healthy environment is also a right of customary international law outside the context of indigenous peoples. In the words of Judge Weeramantry of the International Court of Justice,

The protection of the environment is likewise a vital part of contemporary human rights doctrine, for it is a *sine qua non* for numerous human rights such as the right to health and the right to life itself. It is scarcely necessary to elaborate on this as damage to the environment can impair and undermine all the human rights spoken of in the Universal Declaration and other human rights instruments.⁴⁵³

Echoing numerous international instruments,⁴⁵⁴ the Inter-American Commission has recognized that “[t]he realization of the right to life, and to physical security and integrity is necessarily related to and in some ways dependent upon one’s physical environment.”⁴⁵⁵

Like other indigenous peoples, the Inuit rely on the natural environment for their cultural and physical survival. The Inuit and their culture have developed over thousands of years in relationship with, and in response to, the physical environment of the Arctic.⁴⁵⁶ The Inuit have developed an intimate relationship with their surroundings, using their understanding of the arctic environment to develop tools, techniques and knowledge that have enabled them to subsist on the scarce resources available in the tundra.⁴⁵⁷ All aspects of Inuit life depend on the ice, snow, land and weather conditions in the Arctic.⁴⁵⁸ For example, the subsistence harvest is essential to the continued existence of the Inuit as a people.⁴⁵⁹ As one observer noted, “If you tell the Eskimo he can’t hunt the whale, you might as well tell him he can’t be Eskimo.”⁴⁶⁰ The judicious use of plants and game, for everything from food to clothing to lighting, has allowed the Inuit to thrive in the arctic climate, while developing a complex social structure based upon the harvest.⁴⁶¹ Destruction of the delicate arctic ecosystem is therefore “inconsistent with [the Inuit’s] right to be respected as ... human being[s],”⁴⁶² and violates many rights guaranteed in the American Declaration.

B. THE EFFECTS OF GLOBAL WARMING VIOLATE INUIT HUMAN RIGHTS

1. THE EFFECTS OF GLOBAL WARMING VIOLATE THE INUIT’S RIGHT TO ENJOY THE BENEFITS OF THEIR CULTURE

a. The American Declaration guarantees the Inuit’s right to the benefits of culture.

The American Declaration guarantees the Inuit’s right to the benefits of culture.⁴⁶³ The Charter of the Organization of American States places cultural development and respect for culture in a position of supreme importance.⁴⁶⁴ The American Convention also recognizes the importance of cultural freedom to human dignity in its protection of freedom of association⁴⁶⁵ and progressive development.⁴⁶⁶ Cultural rights are also protected in other major human rights instruments including the Universal Declaration of Human Rights⁴⁶⁷ the ICCPR,⁴⁶⁸ and the International Covenant on Economic, Social and Cultural Rights (ICESCR).⁴⁶⁹

The Court and the Commission have long recognized that environmental degradation caused by a State's action or inaction can violate the human right to the benefits of culture, especially in the context of indigenous cultures.⁴⁷⁰ In the *Awas Tingni* case, the Inter-American Court, in discussing the right to property, acknowledged the link between cultural integrity and indigenous communities' lands: "[T]he close ties of indigenous people with the land must be recognized and understood as the fundamental basis of their cultures, their spiritual life, their integrity, and their economic survival."⁴⁷¹

In the *Belize Maya* case, the Commission acknowledged that interference with indigenous lands necessarily implicates the right to culture.⁴⁷² The Commission acknowledged that international human rights law recognized that "the use and enjoyment of the land and its resources are integral components of the physical and cultural survival of the indigenous communities." In its *Yanomami* decision, the Commission noted that the State had an obligation under the OAS Charter to give priority to "preserving and strengthening ... the cultural heritage" of indigenous peoples, and determined that the granting of concessions to subsoil resources on indigenous land – "with all the negative consequences for their culture" – violated the Yanomami's rights.⁴⁷³ The Commission also recognized that protection of ancestral lands is an essential component of indigenous peoples' right to culture in its Report on the Situation of Human Rights of a Segment of the Nicaraguan Population of Miskito Origin.*

In its country reports, the Commission has further recognized the close connection between the environment and the right to culture. As stated in the Commission's 1997 Report on the Situation of Human Rights in Ecuador, "[c]ertain indigenous peoples maintain special ties with their traditional lands, and a close dependence upon the natural resources provided therein – respect for which is essential to their physical and cultural survival."⁴⁷⁴

The U.N. Human Rights Committee's jurisprudence further supports the importance of natural resources to the right to the benefits of culture. The Committee has recognized that degradation of natural resources may violate the ICCPR's right to enjoy culture:

[C]ulture manifests itself in many forms, including a particular way of life associated with the use of land resources, especially in the case of indigenous peoples. That right may include such traditional activities as fishing or hunting and the right to live in reserves protected by law. The enjoyment of those rights may require positive legal measures of protection and measures to ensure the

* "[S]pecial legal protection is recognized for the use of their language, the observance of their religion, and in general, all those aspects related to the preservation of their cultural identity. To this should be added the aspects linked to productive organization, which includes, among other things, the issue of the ancestral and communal lands. Non-observance of those rights and cultural values leads to a forced assimilation with results that can be disastrous." Inter-Am. C.H.R., *Report on the Situation of Human Rights of a Segment of the Nicaraguan Population of Miskito Origin* 76, OEA/Ser.L/V/II.62, doc. 10, rev. 3 (1983) at ¶ II.B.15.

effective participation of members of minority communities in decisions which affect them.... The protection of these rights is directed towards ensuring the survival and continued development of the cultural, religious and social identity of the minorities concerned, thus enriching the fabric of society as a whole.⁴⁷⁵

In *Bernard Ominayak and the Lubicon Band v. Canada* (“Lubicon”), which the Commission cited with approval in the *Belize Maya* decision,⁴⁷⁶ the petitioners alleged that the government of the province of Alberta had deprived the Band of their means of subsistence and their right to self-determination by selling oil and gas concessions on their lands.⁴⁷⁷ The U.N. Human Rights Committee characterized the claim as being based on the right to enjoy culture under Article 27 of the ICCPR. It found that oil and gas exploitation, in conjunction with historic inequities, threatened the way of life and culture of the Band and that Canada had thus violated Article 27.⁴⁷⁸

The U.N. Draft Declaration on the Rights of Indigenous People specifically assures the cultural rights of indigenous groups and links them to the natural environment. The Declaration asserts that “[i]ndigenous peoples have the collective and individual right to ... prevention of and redress for ... [a]ny action which has the aim or effect of depriving them of their integrity as distinct societies, or of their cultural or ethnic characteristics or identities; ... [and] [a]ny action which has the aim or effect of dispossessing them of their lands, territories or resources.”⁴⁷⁹ As part of the right to the benefits of culture, the draft also includes the right to “revitalize, use, develop and transmit to future generations [indigenous peoples’] histories, languages, oral traditions, philosophies, writing systems and literatures, and to designate and retain their own names for communities, places and persons.”⁴⁸⁰

The Inuit’s human right to enjoy the benefits of their unique culture is thus guaranteed under the American Declaration and affirmed by other sources of international law. In the global and Inter-American human rights systems, indigenous peoples’ right to culture is inseparable from the condition of the lands they have traditionally occupied. The United States thus has a clear duty not to degrade the arctic environment to an extent that infringes upon the Inuit’s human right to enjoy the benefits of their culture.

b. The effects of global warming violate the Inuit’s right to enjoy the benefits of their culture

Through its failure to take effective action to reduce greenhouse gas emissions, the United States is violating the Inuit’s right to the benefits of culture. The subsistence way of life central to Inuit cultural identity has been damaged by, and may cease to exist because of, climate change. Traditional Inuit knowledge, passed from the Inuit elders in their role as keepers of the Inuit culture, is becoming less useful because of the rapidly changing environment. Given the widely acknowledged and extensive connection between the natural environment and Inuit culture, the changes in arctic ice, snow, weather patterns and land caused by climate change is resulting in the destruction of Inuit culture.



The United States government itself has recognized the importance of the subsistence way of life to the continued survival of the Inuit culture. In granting preference to subsistence uses of fish and wildlife in Alaska, the United States Congress noted that “the continuation of the opportunity for subsistence uses ... is *essential* to Native physical, economic, traditional, and *cultural existence*.”⁴⁸¹

As previously explained, climate change hinders the Inuit’s ability to continue to practice the traditional subsistence harvest because it changes the characteristics of the ice, snow, land and weather of the Arctic. Travel over ice and snow, an essential component of the traditional Inuit harvest, has necessarily declined because of the relative scarcity of these infrastructure resources. Winter ice hunting has diminished because the later freeze and earlier, more sudden thaw allow less time each year for ice hunting, increase the risk of breaking ice, and affect the behavior and health of game. Increasingly, changes in the location, characteristics, and health of harvested species require hunters to travel farther for a successful harvest, aggravating the impact of travel difficulties. Current projections of continued accelerated change in the characteristics of the ice, snow, land and weather of the Arctic mean that these difficulties will only worsen in the future.⁴⁸²

The shortage of deep, dense, granular snow required for building igloos has diminished the Inuit’s ability to travel and hunt safely and conveniently. Building igloos for travel shelter, a unique and important practice that is part of Inuit culture, has been replaced by the use of uninsulated, more cumbersome tents and fixed-location cabins. The dearth of useful snow has nearly eradicated some Inuit’s practice of relying on igloos for travel and emergency shelter. Scientists predict a further “substantial decrease in snow ... cover over most of the Arctic by the end of the 21st century,” which will continue to diminish the Inuit’s ability to build and use igloos.⁴⁸³

The change in the orientation of snowdrifts has already severely hampered the traditional method of using the snowdrifts to navigate, contributing to the decline in travel and harvest activities. The repercussions of this change can be likened to the impact on ancient mariners had the stars suddenly changed their positions in the sky. In a land lacking consistent landmarks, the loss of one of the few navigation tools available to the Inuit is a profound deprivation.

The loss of this form traditional knowledge further undermines Inuit culture. Predicting the weather, a crucial part of planning safe and convenient travel and harvest, as well as an

important role for the Inuit elders, has become much more difficult because of changes in weather patterns. As a result, the elders can no longer fulfill one of their important roles, nor can they pass the science of weather forecasting to the next generation.

As a result of these changes, the Inuit's ability to continue to practice the subsistence way of life central to their culture is diminishing rapidly. The shorter, fewer, less fruitful and more dangerous hunting trips not only mean less food harvested, but less time spent engaging in important cultural practices and teaching younger generations the intricacies of those practices. The ongoing and accelerating impacts of climate change will continue to erode Inuit cultural practices in the future.

Other aspects of Inuit culture are also jeopardized by the changing climate. Land slumping, erosion and landslides threaten cultural and historic sites, as well as traditional hunting grounds. Traditional methods of food storage and hide preparation are changing because of the melting permafrost and changing weather patterns. The early spring thaw has forced a change in the traditional timing of festivities.



The elders' roles as educators have been compromised because the changing conditions have rendered inaccurate much of their traditional knowledge about weather, ice, snow, navigation and land conditions. The Inuit educational system, passing on and building upon knowledge from one generation to the next, is critical to Inuit cultural survival. The Inuit have spent millennia developing knowledge about their physical surroundings.⁴⁸⁴ The unprecedented rapid climate change has made much

of this traditional knowledge inaccurate, and therefore less valuable to the Inuit. As climate change continues, these impacts will only get worse. The loss of this traditional knowledge may permanently erase aspects of the Inuit history and culture. One Inuit resident of Pangnirtung expressed the fear that, "*in the future... [the Inuit way of life] will seem as if it were nothing but a fairytale.*"⁴⁸⁵

The cumulative effects of these injuries are permanently undermining the Inuit's ability to engage in their unique culture. Arctic climate change, caused by the United States' regulatory action and inaction, is depriving the Inuit of their cultural identity and their continued existence as a distinct people, violating their human right to enjoy the benefits of their culture.

2. THE EFFECTS OF GLOBAL WARMING VIOLATE THE INUIT'S RIGHT TO USE AND ENJOY THE LANDS THEY HAVE TRADITIONALLY USED AND OCCUPIED

a. The American Declaration guarantees the Inuit's right to use and enjoy the lands they have traditionally occupied

The American Declaration includes the human right to “own such private property as meets the essential needs of decent living and helps to maintain the dignity of the individual and of the home.”⁴⁸⁶ The Commission acknowledged the fundamental nature of this right when it stated, “[v]arious international human rights instruments, both universal and regional in nature, have recognized the right to property as featuring among the fundamental rights of man.”⁴⁸⁷ Similarly, the American Convention declares that “[e]veryone has the right to the use and enjoyment of his property.... No one shall be deprived of his property except upon payment of just compensation, for reasons of public utility or social interest, and in the cases and according to the forms established by law.”⁴⁸⁸ The Universal Declaration of Human rights includes the right to property as well.⁴⁸⁹ Other international instruments, including the European Convention on Human Rights⁴⁹⁰ and the African Charter on Human and Peoples' Rights⁴⁹¹ also secure the right to property.

The Inter-American Court and this Commission have long recognized that indigenous peoples have a fundamental international human right to use and enjoy the lands they have traditionally occupied, independent of domestic title. Moreover, as this Commission has noted, “the right to use and enjoy property may be impeded when the State itself, or third parties acting with the acquiescence or tolerance of the State, affect the existence, value, use or enjoyment of that property.”⁴⁹²

The Inter-American Court affirmed the independent existence of indigenous peoples' collective rights to their land, resources, and environment in the *Awas Tingni* case.⁴⁹³ The Court held that the government of Nicaragua had violated the Awas Tingni's rights to property and judicial protection when it granted concessions to a foreign company to log on their traditional lands without consulting them or getting their consent. In the context of indigenous land rights, “the close relationship that the communities have with the land must be recognized and understood as a foundation for their cultures, spiritual life, cultural integrity, and economic survival.”⁴⁹⁴ The court further noted that, “[b]y the fact of their very existence, indigenous communities have the right to live freely on their own territories.”⁴⁹⁵

In its recent *Belize Maya* decision, the Commission found that Belize violated the Maya people's right to use and enjoy their property by granting concessions to third parties to exploit resources that degraded the environment within lands traditionally used and occupied by the Maya people.⁴⁹⁶ Indigenous people's international human right to property, the Commission noted, is based in international law, and does not depend on domestic recognition of property interests.⁴⁹⁷ The Commission noted that indigenous property rights are broad, and are not limited “exclusively by entitlements within a state's formal legal regime, but also include that indigenous communal property that arises from and is grounded in indigenous custom and

tradition.”⁴⁹⁸ In fact, the failure of the State to recognize indigenous property rights was itself one basis for the Commission’s finding of a violation of the Maya people’s right to property.⁴⁹⁹

The Commission recognized in the *Dann* case that general international law supports indigenous peoples’ property rights in their ancestral lands.⁵⁰⁰ In that case, the indigenous petitioners challenged the purported extinguishment of their aboriginal title to lands they had traditionally used and enjoyed within the state of Nevada.* In ruling that the extinguishment of aboriginal rights to ancestral land violated their right to property, the Commission noted that the Proposed American Declaration on the Rights of Indigenous Peoples reflected general principles of international human rights law.† The Commission noted that this was particularly true of the Proposed Declaration’s Article XVIII, which states that “[i]ndigenous peoples have the right to the recognition of their property and ownership rights with respect to lands, territories and resources they have historically occupied, as well as to the use of those to which they have historically had access for their traditional activities and livelihood.”⁵⁰¹

Other human rights institutions also recognize the independent international human right of indigenous people to use and occupy their ancestral lands. For example, the International Labour Organisation’s Convention 169 concerning Indigenous and Tribal Peoples in Independent Countries declares, “[t]he rights of ownership and possession of [indigenous peoples] over the lands which they traditionally occupy shall be recognised.”⁵⁰² The United Nations’ Draft Declaration on the Rights of Indigenous Peoples specifically includes “the right to own, develop, control and use the lands and territories, *including the total environment of the lands, air, waters, coastal seas, sea-ice, flora and fauna and other resources* which they have traditionally owned or otherwise occupied or used.”⁵⁰³

Deprivation of the use and enjoyment of land through environmental degradation caused by a State’s actions or inactions therefore constitutes a violation of the human right to property. In the *Belize Maya* case, the Commission noted that “the right to use and enjoy property may be

* The Inuit whose rights have been violated in this petition face much the same situation as the Dannels, as the United States has purported to extinguish their aboriginal title against their will through enactment of the Alaska Native Claims Settlement Act. See 43 U.S.C. 1601 *et seq.*

† “The development of these principles in the inter-American system has culminated in the drafting of Article XVIII of the Draft American Declaration on the Rights of Indigenous Peoples, which provides for the protection of traditional forms of ownership and cultural survival and rights to land, territories and resources. While this provision, like the remainder of the Draft Declaration, has not yet been approved by the OAS General Assembly and therefore does not in itself have the effect of a final Declaration, the Commission considers that the basic principles reflected in many of the provisions of the Declaration, including aspects of Article XVIII, reflect general international legal principles developing out of and applicable inside and outside of the inter-American system and to this extent are properly considered in interpreting and applying the provisions of the American Declaration in the context of indigenous peoples.” *Case of Mary and Carrie Dann* (“*Dann*”), Report N° 75/02, Case 11.140 (United States), Inter-Am. C.H.R., 2002 ¶ 129 (2002), available at <http://www.cidh.oas.org/annualrep/2002eng/USA.11140.htm>.

impeded when the State itself, or third parties acting with the acquiescence or tolerance of the State, affect the existence, value, use or enjoyment of that property.”⁵⁰⁴ The environmental degradation caused by development can “affect the existence, value, use or enjoyment of”⁵⁰⁵ land, especially that of land belonging to indigenous people using it for subsistence. The Commission also noted that while states may encourage development as a means of securing economic and social rights, they nevertheless have an obligation to take positive measures to ensure that third parties do not infringe upon property rights, especially those of indigenous people.⁵⁰⁶ Environmental degradation caused by a State’s action or inaction thus compromises the human right to property that is protected by the American Declaration.

The Inuit’s human right to protection of their land is thus guaranteed by the American Declaration and general international law. The United States government has an obligation not to interfere with the Inuit’s use and enjoyment of their land through its acts and omissions regarding climate change.

b. The effects of global warming violate the Inuit’s right to use and enjoy the lands they have traditionally occupied

For millennia, the Inuit have occupied and used land in the arctic and sub-arctic areas of the United States, Canada, Russia, and Greenland. Included in the “land” that the Inuit have traditionally occupied and used are the landfast winter sea ice,^{*} pack ice,[†] and multi-year ice.[‡] The Inuit have traditionally spent much of the winter traveling, camping and hunting on the landfast ice.⁵⁰⁷ They have used the summer pack ice and multi-year ice to hunt seals, one of their primary sources of protein. Because the international human right to property is interpreted in the context of indigenous culture and history, the Inuit have a human right to use and enjoyment of land and ice that they have traditionally used and occupied in the arctic and sub-arctic regions of the United States, Canada, Russia, and Greenland. Inuit have also secured domestic property rights through the conclusion of four agreements with the Government of Canada⁵⁰⁸ and in Alaska by the legislated 1971 Alaska Native Claims Settlement Act.^{509§}

* “Fast ice is sea ice that grows from the coast into the sea, remaining attached to the coast or grounded to a shallow sea floor.” ACIA Overview, *supra* note 16, at 24.

† “Pack ice refers to a large area of floating sea ice fragments that are packed together.” *Id.*

‡ “[P]ack ice lasting more than a year becomes multi-year ice [which is] progressively fresher, harder and thicker.” GIBSON & SHULLINGER, *supra* note 7, at 8.

§ The Alaska Native Claims Settlement Act (“ANCSA”) is unlike the Canadian agreements in that ANCSA is a unilateral settlement imposed upon the Alaskan Inuit by the United States without the Inuit’s consent. *See* 43 U.S.C. 1601 *et seq.* While the Act purports to extinguish aboriginal collective title in favor of individual alienable shares in a corporation, the Commission’s *Dann* case makes clear that extinguishment of aboriginal title without informed consent of the peoples involved is ineffective from the perspective of international human rights. *Dann* at ¶ 130.

For instance the Nunavut Land Claims Agreement (NLCA) provides the Inuit of Nunavut title to some 352,240 square kilometers of land chosen for, among others, wildlife harvesting, conservation purposes, high potential for propagation, cultivation or husbandry, and for cultural importance.⁵¹⁰ These collective property rights are being devalued by the impacts of climate change and will continue to be severely devalued as the impacts of climate change continue.

Global warming violates the Inuit's human right to use and enjoy their land because "third parties acting with the acquiescence or tolerance of the State [are] affecting the existence, value, use [and] enjoyment of that property."⁵¹¹ Climate change has made the Inuit's traditional lands less accessible, more dangerous, unfamiliar, and less valuable to the Inuit. The disappearance of sea ice, pack ice, and multi-year ice is affecting the very existence of Inuit land. In the last thirty years, about eight percent of the total yearly sea ice has ceased to exist, with more dramatic losses more recently, and further acceleration of the trend expected in the future.⁵¹² Summer sea ice has decreased fifteen to twenty percent, and is projected to disappear completely by the end of this century.⁵¹³ The ice that remains is less valuable to the Inuit because the later freezes, earlier, more sudden thaws, and striking loss of thickness have made use of the ice more dangerous and less productive. Sea ice, a large and critical part of coastal Inuit's property, is literally melting away.

The loss of sea ice has another effect on the Inuit's use and enjoyment of their property. This loss of ice has contributed to alarming coastal erosion because sea storms and wave movement are so much greater without the breakwater effect of the ice.⁵¹⁴ The erosion threatens the Inuit's homes and villages, forcing them to move their homes, which is expensive, arduous, and inconvenient, or lose them. Coastal campsites, a traditional use of land while traveling and harvesting, have been washed away. The erosion in turn exposes coastal permafrost to the warmer air and water, causing it to melt as well.⁵¹⁵ As the ice continues to disappear, the impact on Inuit coastal homes and communities will increase.



The melting permafrost has altered the characteristics of Inuit land, diminishing its value to the Inuit, and affecting their ability to use and enjoy their property. Slumping has damaged homes, villages and infrastructure. Water resources and wetlands are drying because the permafrost no longer inhibits drainage, which changes the look of the land, alters landmarks, and transforms critical habitat. The use of permafrost for food storage is no longer practical in some areas, eliminating a traditional use of the land, and diminishing its value to the Inuit. The extent

of permafrost is expected to retreat northward by hundreds of miles this century, further diminishing the value of Inuit land.⁵¹⁶

The sea ice that the Inuit have used for millennia as hunting grounds is ceasing to exist, and what remains is less useful.⁵¹⁷ The land they have traditionally used and occupied is fundamentally changing as a result of climate change, making it less valuable and useful to the Inuit. The United States' acts and omissions regarding climate change have violated their right to use and enjoy their ancestral lands and their rights of property in those lands.

3. THE EFFECTS OF GLOBAL WARMING VIOLATE THE INUIT'S RIGHT TO USE AND ENJOY THEIR PERSONAL, INTANGIBLE AND INTELLECTUAL PROPERTY

a. The American Declaration guarantees the Inuit's right to use and enjoy their personal, intangible and intellectual property

The Inuit's human right to property extends to their right to use and enjoy their personal and intellectual property without undue interference. In the *Awes Tingni* case, the Court expansively defined property to include those material goods capable of being acquired, as well as all rights that can be deemed to make up the assets of a person. Protected property includes "those material things which can be possessed, as well as any right which may be part of a person's patrimony; that concept includes all movables and immovables, corporeal and incorporeal elements and any other intangible object capable of having value."⁵¹⁸ Personal property, intellectual property, and intangible rights of access fall within this definition.

The Proposed American Declaration on the Rights of Indigenous Peoples guarantees "the right to the recognition and the full ownership, control and protection of their cultural, artistic, spiritual, technological and scientific heritage, and legal protection for their intellectual property ... as well as to special measures to ensure them legal status and institutional capacity to develop, use, share, market and bequeath that heritage to future generations."⁵¹⁹ The Proposed Declaration also protects indigenous peoples' property interests in "the use of [lands] to which they have historically had access for their traditional activities and livelihood."⁵²⁰ In addition, ILO Convention 169 protects the right of indigenous peoples to access the lands they have traditionally used for subsistence.⁵²¹ The broad scope of the Inuit's human right to use and enjoy of their property thus extends to their tangible and intangible personal property.

Deprivation of the use and enjoyment of personal property through environmental degradation caused by a State's actions or inactions can constitute a violation of the human right to property. In the *Belize Maya* case, the Commission noted that "the right to use and enjoy property may be impeded when the State itself, or third parties acting with the acquiescence or tolerance of the State, affect the existence, value, use or enjoyment of that property."⁵²² Environmental degradation caused by development can "affect the existence, value, use or enjoyment of" personal property.

The Inuit's human right to protection of their personal and intellectual property is guaranteed by international law. The United States government therefore has an obligation not to interfere with the Inuit's use and enjoyment of their property through its failure to take effective action to reduce greenhouse gas emissions.

b. The effects of global warming violate the Inuit's right to use and enjoy their personal, intangible and intellectual property

The Inuit, both individually and collectively possess property rights in "movables" as well as "intangible object[s] capable of having a value."⁵²³ Their personal possessions, such as equipment, clothing, and hides, clearly fall within the protected property. The Inuit's intellectual property, in the form of their traditional knowledge, is an "intangible object capable of having a value." In addition, the Inuit possess intangible property rights of access to the harvest of resources.

Climate change diminishes the value of the Inuit's personal property. For example, disappearing ice roads and snow damage sled and skidoo runners, as well as sled dogs' paws. Hides have become less valuable for use as clothing and for sale because of changes in the animals' fur characteristics resulting from climate change, changes in optimal timing for harvest, and difficulties in processing the hides. In the small community of Pangnirtung in Nunavut, Inuit conduct a commercial fishery through the sea ice that employs up to fifty people. In recent years, however, the ice often has not formed properly or has broken up early with ensuing losses of vital equipment.⁵²⁴ Climate change is thus diminishing the use and value of the Inuit's personal property.

In addition, the Inuit possess intangible property in the form of traditional knowledge. The Inuit's traditional knowledge is a valuable intangible possession protected under the definition of protected property described in the *Awasi Tingni* decision.⁵²⁵ The Inuit educational system of passing on and building upon knowledge from one generation to the next has tremendous value to the Inuit's survival and culture. The Inuit have spent millennia developing knowledge about their physical surroundings. In addition, western scientists have recently recognized the value of traditional Inuit knowledge to their studies on species, climate change, and other critical scientific issues.⁵²⁶ The unprecedented rapid climate change has made much of this traditional knowledge inaccurate, affecting the Inuit's ability to "use, share, market and bequeath that [knowledge] to future generations."⁵²⁷ Climate change has therefore made the Inuit's traditional knowledge less valuable.

The right to access lands for subsistence purposes is also an intangible property right, the value of which is diminished by the effects of global warming. The Nunavut Land Claims Agreement provides that Inuit have free and unrestricted access to all lands and waters within Nunavut, Canada, subject to conservation requirements, to their full level of economic, social and cultural need.⁵²⁸ In Alaska, the Alaska National Interest Lands Conservation Act ensures rural residents reasonable access to all public lands, including the Alaska National Wildlife Refuge, for subsistence uses.⁵²⁹ The Inuit's property interest in access to lands to which "they

have historically had access for their traditional activities and livelihood”⁵³⁰ is now less valuable because climate change has substantially diminished the fruit of the harvest from those lands. For example, the disappearance of travel routes and healthy game due to climate change has made access for the Inuit more difficult and less valuable. “Having spent considerable time and political energy negotiating comprehensive land claim agreements which guarantee their right to harvest wildlife, Inuit leaders are warranted in questioning the value of the agreements if, as a result of climate change, key species can no longer withstand hunting or are no longer to be found.”⁵³¹

In these ways, global warming is reducing the “existence, value, use, [and] enjoyment”⁵³² of the Inuit’s property. As the warming continues to accelerate, this damage will continue to reduce the value of Inuit property. U.S. acts and omissions regarding climate change are thus violating the Inuit’s fundamental human right to use and enjoy their property.

4. THE EFFECTS OF GLOBAL WARMING VIOLATE THE INUIT’S RIGHT TO THE PRESERVATION OF HEALTH

a. The American Declaration guarantees the Inuit the right to the preservation of health

The American Declaration provides that “[e]very person has the right to the preservation of his health through sanitary and social measures relating to food, clothing, housing and medical care, to the extent permitted by public and community resources.”⁵³³ This guarantee is interpreted in the Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights (“Protocol of San Salvador”) as ensuring “the enjoyment of the highest level of physical, mental and social well-being.”⁵³⁴ Other major international human rights instruments also safeguard the right to health, including the Universal Declaration of Human Rights,⁵³⁵ the International Convention on Economic, Social, and Cultural Rights (ICESCR),⁵³⁶ and the African Charter on Human and Peoples’ Rights.⁵³⁷ The universal and fundamental nature of this right is further supported by the fact that at least seventy national constitutions recognize the state’s obligation to promote health, many of them directly proclaiming a right to health.⁵³⁸

This Commission has acknowledged the close relationship between environmental degradation and the right to health, especially in the context of indigenous peoples. In the *Yanomami* case, the Commission recognized that harm to people resulting from environmental degradation violated the right to health in Article XI of the American Declaration.⁵³⁹ In that case, the Brazilian government’s failure to prevent environmental degradation stemming from road construction and subsequent development of Yanomami indigenous lands caused an influx of pollutants and resulted in widespread disease and death. The Inter-American Commission found that “by reason of the failure of the Government of Brazil to take timely and effective measures [on] behalf of the Yanomami Indians, a situation has been produced that has resulted in the violation, injury to them, of the ... right to the preservation of health and to well-being.”⁵⁴⁰ Additionally, in the *Belize Maya* case, the Commission noted that the right to health and well-

being in the context of indigenous people's rights was so dependent on the integrity and condition of indigenous land that "broad violations" of indigenous property rights necessarily impacted the health and well-being of the Maya.⁵⁴¹

International health and environmental law also lend support and meaning to the American Declaration's right to health. The preamble of the Constitution of the World Health Organization (WHO) recognizes that "[t]he enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being."⁵⁴² The Stockholm Convention on Persistent Organic Pollutants, signed by the United States, seeks "to protect human health and the environment from persistent organic pollutants."⁵⁴³ The WHO Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes aims "to promote at all appropriate levels, nationally as well as in transboundary and international contexts, the protection of human health and well-being, both individual and collective."⁵⁴⁴ Finally, principle 14 of the Rio Declaration recognizes the importance of controlling "any activities and substances that ... are found to be harmful to human health."⁵⁴⁵

The close relationship between environmental protection and health has been also been recognized by various international human rights bodies and experts. Special Rapporteur Rodolfo Stavenhagen of the UN Commission on Human Rights recently concluded that "the effects of global warming and environmental pollution are particularly pertinent to the life chances of Aboriginal people in Canada's North, a human rights issue that requires urgent attention at the national and international levels, as indicated in the recent Arctic Climate Impact Assessment."⁵⁴⁶ Special Rapporteur Fatma Zohra Ksentini of the U.N. Sub-Commission on Prevention of Discrimination and Protection of Minorities (now the Sub-Commission on Promotion and Protection of Human Rights) identified the right to health as a fundamental right and analyzed the effects of the environment on that right.⁵⁴⁷ Drawing from various international human rights documents and national constitutions, she found that, under customary international law, "everyone has a right to the highest attainable standard of health."⁵⁴⁸ She further found that, "[i]n the environmental context, the right to health essentially implies feasible protection from natural hazards and freedom from pollution."⁵⁴⁹ The United Nations' Special Rapporteur on the right to health, Paul Hunt, also noted that the right to health gives rise to an obligation on the part of a State to ensure that environmental degradation does not endanger human health.⁵⁵⁰ The recognition of the connection between health and the environment is further underscored by the definition of pollution in international environmental law as "the introduction by man of substances or energy into the environment resulting in such deleterious effects as hazards to human health or which harm/endanger human health."⁵⁵¹

The U.N. Committee on Economic and Social Rights explained that the right to "the highest attainable standard of physical and mental health" in Article 12.1 of the International Covenant on Economic, Social and Cultural Rights

is not confined to the right to health care. On the contrary, the drafting history and the express wording of article 12.2 acknowledge that the right to health

embraces a wide range of socio-economic factors ... and extends to the underlying determinants of health, such as food and nutrition, housing, access to safe and potable water and adequate sanitation, safe and healthy working conditions, and a healthy environment.”⁵⁵²

The Committee further states that victims of a violation of the right to health should have access to remedies at the both national and international levels and should be entitled to adequate reparation.⁵⁵³

The World Health Organization (“WHO”) has also recognized on numerous occasions the right to health in connection with environmental harms. In 1976, the WHO Executive Board recommended that the World Health Assembly adopt a resolution urging governments “to make environmental health programmes an integral part of their national health and development efforts, particular attention being given to the most needy sectors of the population.”⁵⁵⁴ The resolution, adopted by the World Health Assembly on January 27, 1976, considered that “progress in improving the conditions of the human environment as they affect health is too slow” and emphasized that “the improvement of environmental conditions should be seen as part of the total health and development effort.”⁵⁵⁵ In 1989, the WHO Executive Board became concerned that environmental degradation resulting from indiscriminate use of technology posed a threat to human health. It recommended that the World Health Assembly adopt a resolution urging WHO Member States “to establish and evaluate policies and strategies for preventing adverse effects of development to the environment and on health” and calling on the international community “to increase their support for activities to promote a healthy environment and to control adverse effects of development on the environment and health.”⁵⁵⁶

The right to preservation of health recognized in the American Declaration necessarily includes a prohibition on degradation of the environment to the point that human health and well-being are threatened. The United States has an international obligation not to infringe upon the Inuit’s human right to health and well-being through degradation of their physical environment.

b. The effects of global warming violate the Inuit’s right to the preservation of health

Climate change caused by the U.S. government’s regulatory actions and inactions is harmful to the Inuit’s health and well-being. Continued accelerating climate change will continue to add to these and other health risks in the future. Disappearing sea-ice and changing environmental conditions have diminished populations, accessibility, and quality of fish and game upon which the Inuit rely for nutrition. The Inuit’s health is also adversely affected by changes in insect and pest populations and the movement of new diseases northward. The quality and quantity of natural sources of drinking water has decreased, exacerbating the already damaging effects on Inuit health. In addition to physical health issues, the Inuit’s mental health has been damaged by the transformation of the once familiar landscape, and the resultant cultural

destruction. These increases in health risks, caused by the United States' acts and omissions, violate the Inuit's right to the preservation of health.

Like the Mayan people in the *Belize Maya* case, the Inuit rely so heavily on the condition of the land for their health and well-being that the damage to their environment caused by climate change violates their human right to health and well-being. Climate change has subjected the Inuit to a higher risk of diet-related diseases. The Inuit's diet is rapidly changing because of the scarcity, inaccessibility, and decrease in quality of traditional food sources due to climate change. Loss of game habitat and food sources, and the inaccessibility of game due to travel difficulties hinder the Inuit's ability to rely on the subsistence harvest for sustenance. The less healthy and more expensive store-bought food the Inuit must use to supplement the subsistence harvest increases dietary health risks such as "cancer, obesity, diabetes, and cardiovascular diseases."⁵⁵⁷ In addition, the deteriorating health of harvested game negatively affects the nutritional value of subsistence game to the Inuit.



The rapidly disappearing sea ice, which is habitat and hunting grounds for polar bears, has forced the bears to into a smaller, less productive living space. Consequently, the bears must search for food on land, where more frequent and dangerous encounters between Inuit and bears results. In addition, the bears have begun raiding garbage dumps in Inuit settlements, further endangering the health of Inuit. Grizzly and black bears have also become a problem for the Inuit. Grizzly bears have extended their range further north because of climate change, and have been spotted hunting seal and raiding caribou caches. Black bears have also been seen more frequently further north. The extra competition for food and loss of harvested food from previously unknown species threaten the health of the Inuit.

Shifts in species distribution due to climate change also subject the Inuit to a greater risk of topical infections, allergies, and animal-borne diseases. For example, the increase in flies and mosquitoes brings an increased risk of infection from insect bites, as well as of fly- and mosquito-borne illnesses.⁵⁵⁸ These risks are echoed in the Arctic Climate Impact Assessment's projection that "animal diseases that can be transmitted to humans, such as West Nile virus, are likely to pose increasing health risks."⁵⁵⁹ Increased populations of pests such as fox and mice have also raised the risk of rabies. Residents of Sachs Harbor have begun to suffer from allergies to white pine pollen, which has moved northward, as well as from skin rashes and other skin problems due to increased sun and wind arising from climate change.⁵⁶⁰

Climate change is also profoundly affecting the Inuit's mental health. Transformation of the once familiar landscape causes psychological stress, anxiety, and uncertainty.⁵⁶¹ The loss of important cultural activities such as subsistence harvesting, passing on traditional knowledge to

younger generations, weather forecasting, and igloo building can induce psychological problems.⁵⁶² Because of the increased danger and insecurity of travel, the practice of traditional cultural activities induces more stress than in the past, adding emotional barriers to the physical barriers to the practice of those cultural activities.⁵⁶³ In addition, the damage to homes, infrastructure and communities from increased coastal erosion, land slumping, and flooding result in displacement, dislocation, and associated psychological impacts.⁵⁶⁴



The United States' acts and omissions with respect to climate change have degraded the arctic environment to the point that those acts and omissions violate the Inuit's fundamental human right to the preservation of their health.

5. THE EFFECTS OF GLOBAL WARMING VIOLATE THE INUIT'S RIGHT TO LIFE, PHYSICAL INTEGRITY AND SECURITY

a. The American Declaration protects the Inuit's right to life, physical protection and security

Under the American Declaration, "[e]very human being has the right to life, liberty and the security of his person."⁵⁶⁵ The right to life is the most fundamental of rights, and is contained in all major international human rights conventions.⁵⁶⁶ The United States has repeatedly bound itself to protect this fundamental right by ratifying the OAS Charter and the ICCPR,⁵⁶⁷ adopting the American Declaration, and signing the American Convention on Human Rights.⁵⁶⁸ The right to life is also a general principle of law that is contained in the constitutions of many nations, including that of the United States.⁵⁶⁹

This Commission has made clear that environmental degradation can violate the right to life. In the *Yanomami* case, the Commission established a link between environmental quality and the right to life.⁵⁷⁰ In that case, the Brazilian government had constructed a highway through Yanomami territory and authorized the exploitation of the territory's resources. These actions led to the influx of non-indigenous people who brought contagious diseases that spread to the Yanomami, resulting in disease and death. The Commission found that, among other things, the government's failure to protect the integrity of Yanomami lands had violated the Yanomami's

rights to life, liberty and personal security guaranteed by Article 1 of the American Declaration.⁵⁷¹

In its Report on the Situation of Human Rights in Ecuador, the Commission stated that “[t]he right to have one’s life respected is not ... limited to protection against arbitrary killing.”⁵⁷²

The realization of the right to life, and to physical security and integrity is necessarily related to and in some ways dependent upon one’s physical environment. Accordingly, where environmental contamination and degradation pose a persistent threat to human life and health, the foregoing rights are implicated.⁵⁷³

In discussing the connection between the physical environment and the right to life, the report concluded that environmental degradation can “give rise to an obligation on the part of a state to take reasonable measures to prevent” the risk to life associated with environmental degradation.⁵⁷⁴ The Commission noted that human rights law “is premised on the principle that rights inhere in the individual simply by virtue of being human,” and that environmental degradation, “which may cause serious physical illness, impairment and suffering on the part of the local populace, [is] inconsistent with the right to be respected as a human being.”⁵⁷⁵

This application of the American Declaration is also consistent with the interpretation of the right to life under the International Covenant on Civil and Political Rights. In *E.H.P. v. Canada*, a group of Canadian citizens alleged that the storage of radioactive waste near their homes threatened the right to life of present and future generations. The U.N. Human Rights Committee found that the case raised “serious issues with regard to the obligation of States parties to protect human life,” but declared the case inadmissible due to failure to exhaust domestic remedies.⁵⁷⁶ The Committee has also stated that the right to life “has been too often narrowly interpreted.... [It] cannot properly be understood in a restrictive manner, and the protection of this right requires that states adopt positive measures.”⁵⁷⁷

The United States has an obligation to protect the Inuit’s human rights to life and personal security. This obligation includes the duty not to degrade the arctic environment to such an extent that the degradation threatens the life and personal security of Inuit people.

b. The effects of global warming violate the Inuit’s right to life, physical protection and security

The United States’ acts and omissions regarding global climate change violate the Inuit’s right to life, physical security and integrity. Changes in ice and snow jeopardize individual Inuit lives, critical food sources are threatened, and unpredictable weather makes travel more dangerous at all times of the year. The impacts the Inuit are already suffering will continue to worsen as climate change accelerates.

Individual Inuit lives are at risk due to the effects of climate change. As explained above, the sea ice, an important resource for travel and hunting, freezes later in the year, thaws earlier and more suddenly, and is thinner because of climate change.⁵⁷⁸ In the spring, the thaw happens much more rapidly, causing the ice to change from safe to perilous in a matter of hours rather than weeks. The thinner ice and new, unpredictable areas of open water cause hunters and other travelers to fall through the ice and be injured or drowned.

Not only are harvested species becoming scarcer as the climate changes, the Inuit's access to these foods is diminishing due to difficulties in travel and changes in game location.⁵⁷⁹ The U.S. Congress has acknowledged that, for many Inuit, "no practical alternative means are available to replace the food supplies and other items gathered from fish and wildlife which supply rural residents dependent on subsistence uses."⁵⁸⁰ Damage to the Inuit's subsistence harvest violates their right to life.

Sudden, unpredictable storms due to climate change also threaten the Inuit's lives and physical security. The inability of elders to predict the weather accurately increases the risk that hunters and travelers will be caught unprepared, with life-threatening consequences in the harsh arctic climate. Stranded travelers can no longer rely on the abundance of snow from which to construct emergency shelters.

This lack of shelter has contributed to deaths and injuries among hunters stranded by sudden storms.⁵⁸¹ In addition, the decrease in summer ice has caused rougher seas and more dangerous storms, increasing hazards to boaters.⁵⁸² Formerly familiar and common activities are now laden with unavoidable and unpredictable threats to human life because of the unpredictable weather.



Climate change has damaged the arctic environment to such an extent that the damage threatens human life. The United States has breached its duty under the American Declaration to protect the Inuit's right to life and personal security.

6. THE EFFECTS OF GLOBAL WARMING VIOLATE THE INUIT'S RIGHT TO THEIR OWN MEANS OF SUBSISTENCE

a. The American Declaration protects the Inuit's right to their own means of subsistence

A people's right to their own means of subsistence is inherent in and a necessary component of the American Declaration's rights to property, health, life, and culture in the context of indigenous peoples. The ICESCR and ICCPR both provide that all peoples "may freely dispose of their natural wealth and resources," but that "[i]n no case may a people be deprived of its own means of subsistence."⁵⁸³ The U.N. Draft Declaration on the Rights of Indigenous People provides the same assurance to indigenous peoples.⁵⁸⁴ In the context of indigenous peoples, the rights to self-determination and one's own means of subsistence have become recognized principles of international human rights law.

Included within a people's right to their own means of subsistence is the right to control over natural resources and the physical environment.⁵⁸⁵ As described in more detail above, this Commission has noted that the basic principles reflected in many of the provisions of the Proposed American Declaration on the Rights of Indigenous Peoples, "including aspects of Article XVIII, reflect general international legal principles developing out of and applicable inside and outside of the inter-American system and to this extent are properly considered in interpreting and applying the provisions of the American Declaration in the context of indigenous peoples."⁵⁸⁶ Article XVIII of the Proposed Declaration states that indigenous peoples have the "right to an effective legal framework for the protection of their rights ... with respect to traditional uses of their lands, interests in lands, and resources, *such as subsistence*."⁵⁸⁷ The Proposed Declaration also states that "[i]ndigenous peoples have the right to ... autonomy or self-government with regard to ... land and resource management, [and] the environment."⁵⁸⁸ Deprivation of control over natural resources and the environment necessarily deprives indigenous peoples of their own means of subsistence.

Other human rights bodies have acknowledged the right of a people to control over their own means of subsistence. In its 2002 Concluding Observations to Sweden, the U.N. Human Rights Committee recommended that Sweden take steps to involve the indigenous Sami people in decision-making processes that affect their traditional lands and economic activities, particularly "by giving them greater influence in decision-making affecting their natural environment and their means of subsistence."⁵⁸⁹ Similarly, in response to Canada's failure to implement recommendations for aboriginal land and resource allocation, the Human Rights Committee emphasized Canada's obligations under Article 1 of the ICCPR and the ICESCR, stating, "peoples ... may not be deprived of their own means of subsistence."⁵⁹⁰

The Human Rights Committee has also recognized that the right to culture requires protecting a people's means of subsistence. In the *Lubicon Lake* case, the Lubicon Lake Band of indigenous peoples asserted that the State's failure to protect their culture from the impacts of

development activities violated their right to self-determination.⁵⁹¹ Although the Human Rights Committee determined that it did not have jurisdiction to consider a violation of a collective right in a procedure designed to protect individual rights,⁵⁹² the Committee stated that the State's actions violated the right to culture in the ICCPR because they "threaten[ed] the [subsistence] way of life of the Lubicon Lake Band."⁵⁹³

Other international instruments also protect the right to subsistence. For example, Article 21 of the Draft U.N. Declaration on the Rights of Indigenous Peoples includes the right to subsistence, stating that indigenous peoples have the right "to be secure in the enjoyment of their own means of subsistence and development."⁵⁹⁴ ILO Convention 169 also protects the right of a people to their own means of subsistence, stating that a right of access to lands they do not own, but "to which they have traditionally had access for their subsistence and traditional activities" must be protected.⁵⁹⁵ Convention 169 further states that the "subsistence economy and traditional activities ... such as hunting, fishing, trapping and gathering, shall be recognised as important factors in the maintenance of their cultures and in their economic self-reliance and development."⁵⁹⁶

The Inuit's right to their own means of subsistence is protected under international law and is in intrinsic part of the rights established in the American Declaration. The United States has an international obligation not to deprive the Inuit of their own means of subsistence.

b. The effects of global warming violate the Inuit's right to their own means of subsistence

Arctic climate change is making the Inuit's subsistence harvest more dangerous, more difficult and less reliable. In fact, climate change is gradually and steadily destroying the Inuit's means of subsistence.⁵⁹⁷ Changes in ice, snow, weather, seasons and land have combined to deprive the Inuit of their ability to rely exclusively on the subsistence harvest, violating their right to their own means of subsistence. Continuing changes in the arctic climate will further interfere with the Inuit's right to their own means of subsistence.



Because travel is an essential component of the Inuit subsistence harvest, the deprivation of safe and reliable means of travel deprives the Inuit of their means of subsistence. Travel over ice has become more dangerous and more difficult because of more sudden thaws, thinner ice, and new areas of open water that persist throughout the winter. The later freezes and earlier thaws have dramatically shortened the winter ice travel season. The loss of summer sea ice has also made boat travel more

dangerous because of the loss of the multi-year ice's wave-suppressing effect. Travel over snow, an important surface for travel using sleds or snowmobiles, has been diminished by the later snowfall, lack of snow cover, earlier, more sudden thaw, and loss of multi-year snow cover. The change in the orientation of snowdrifts has made navigation using the snowdrifts unreliable, depriving the Inuit of one of the few navigation tools consistently available and contributing to the decline in their ability to subsist on harvested foods. The Inuit can no longer plan safe travel because the unpredictable weather has deprived them of the ability to forecast the weather. The resulting trip cancellations, stranded travelers and the need for more cumbersome equipment further deprive the Inuit of their ability to subsist. The catastrophic effects that climate change has had on travel have deprived the Inuit of their own means of subsistence.

In addition to depriving the Inuit of their ability to travel in safety, climate change has crippled the subsistence harvest through its effect on harvested foods. Land animals' winter food sources are now trapped below a hard, impenetrable layer of ice caused by the new autumn freeze-thaw-freeze pattern, resulting in fewer, less healthy, and less accessible land animals for harvest. The harvest of ice-dependent animals has also become less fruitful because the animals' habitat, food sources, and living space are disappearing. The animals are suffering a loss in numbers and decline in overall health that is expected to accelerate in the coming years.⁵⁹⁸ The remaining animals are changing location and habits, making them less accessible, harder to find and, because of impacts on the ability to travel, sometimes impossible to hunt.



As a result of the problems with travel and food sources due to climate change, the Inuit are no longer able to rely exclusively on the subsistence harvest for their survival. Climate change has therefore deprived the Inuit of their means of subsistence. The United States' acts and omissions with regard to climate change, done without consultation or consent of the Inuit, violate the Inuit's human rights to self-determination and to their own means of subsistence.

7. THE EFFECTS OF GLOBAL WARMING VIOLATE THE INUIT'S RIGHTS TO RESIDENCE AND MOVEMENT AND INVIOABILITY OF THE HOME

a. The American Declaration guarantees the Inuit's right to residence and movement and inviolability of the home

The American Declaration guarantees every person "the right to fix his residence within the territory of the state of which he is a national, to move about freely within such territory, and not to leave it except by his own will."⁵⁹⁹ The American Declaration also guarantees every person "the right to the inviolability of his home."⁶⁰⁰ Like the right to life, the rights to residence and movement and inviolability of the home are established in all major human rights instruments, including the Universal Declaration of Human Rights,⁶⁰¹ the ICCPR,⁶⁰² the

American Convention on Human Rights,⁶⁰³ the European Convention on Human Rights⁶⁰⁴ and the African Charter on Human and Peoples' Rights.⁶⁰⁵ Many constitutions also guarantee the right to movement and residence.⁶⁰⁶

In the *Yanomami* case, this Commission found a violation of the right to residence and movement where some Yanomami people had to leave their traditional lands because of a series of adverse changes caused by government development projects.⁶⁰⁷ The Commission noted that the construction of a highway through the territory of the Yanomami Indians, "compelled them to abandon their habitat and seek refuge in other places."⁶⁰⁸ The right to residence and movement was violated where parts of the Yanomami lands became uninhabitable because of changes to the land and the environment caused by government-sponsored development projects.⁶⁰⁹

Other human rights tribunals have recognized the significant link between environmental quality and the right to the inviolability of the home. In *Lopez Ostra v. Spain*, the European Court of Human Rights held that Spain's failure to prevent a waste treatment plant from polluting nearby homes violated this right.⁶¹⁰ Similarly, in *Guerra and Others v. Italy*, the Court held that severe environmental pollution may affect individuals' well-being and adversely affect private and family life, and as a result held Italy liable for its failure to secure these rights.⁶¹¹ The European Court recently reaffirmed this concept in *Fadeyeva v. Russia*, in which the failure of the State to relocate the applicant away from a highly toxic area constituted violation of the right to respect for the home and private life.⁶¹² The European Court noted that forcing a few people to bear the environmental costs of economic benefits to the entire community did not strike a fair balance between these competing interests. The connection between the home, private life and the environment is thus well established in international law.

The United States thus has an obligation not to infringe upon the Inuit's rights to residence and movement and inviolability of the home through destruction of the land upon which the Inuit have built their homes.

b. The effects of global warming violate the Inuit's right to residence and movement, and inviolability of the home

The United States' acts and omissions that contribute to global warming violate the Inuit's right to residence and movement because climate change threatens the Inuit's ability to maintain residence in their communities. Furthermore, the Inuit's right to inviolability of the home is violated because the effects of climate change adversely affect private and family life. In particular, climate change harms the physical integrity and habitability of individual homes and entire villages. Coastal erosion caused by increasingly severe storms threatens entire coastal communities. Melting permafrost causes building foundations to shift, damaging Inuit homes and community structures. The destruction is forcing the coastal Inuit to relocate their communities and homes farther inland, at great expense and distress.

This forced relocation goes to the heart of the rights to residence and movement and inviolability of the home. As in the *Yanomami* case, the destruction of Inuit homes due to climate change “compel[s the Inuit] to abandon their habitat and seek refuge in other places,”⁶¹³ affecting their family and private lives as well as denying them the ability “to fix [their] residence ... and not to leave it except by [their] own will. U.S. acts and omissions with regard to climate change therefore violate the Inuit’s fundamental human rights to residence and movement and inviolability of the home.

C. THE AMERICAN DECLARATION SHOULD BE APPLIED IN THE CONTEXT OF RELEVANT INTERNATIONAL NORMS AND PRINCIPLES

In their interpretation of the American Declaration of the Rights and Duties of Man, both the Court and Commission have consistently recognized the relevance of broader developments in the field of international law to their analysis of rights, duties, and violations.

1. THE AMERICAN CONVENTION ON HUMAN RIGHTS BEARS ON INTERPRETATION OF THE AMERICAN DECLARATION

The Commission has acknowledged that the American Convention on Human Rights “may be considered to represent an authoritative expression” of the rights contained in the American Declaration, and is therefore properly considered in interpreting the Declaration’s provisions.⁶¹⁴ The jurisprudence of the Commission and the Court in interpreting the Convention’s provisions is thus also relevant in interpreting the Declaration. At the same time, the Convention should not restrict the Court’s reading of the American Declaration or other sources of human rights. Specifically, Article 29 of the Convention states that the Convention must not be interpreted as “restricting the enjoyment or exercise of any right or freedom recognized by virtue of the laws of any State Party or by virtue of another convention...; precluding other rights or guarantees that are inherent in the human personality or derived from representative democracy as a form of government; or excluding or limiting the effect that the American Declaration of the Rights and Duties of Man and other international acts of the same nature may have.”⁶¹⁵

2. DEVELOPMENTS IN OTHER INTERNATIONAL HUMAN RIGHTS SYSTEMS SHOULD BE TAKEN INTO ACCOUNT WHEN INTERPRETING AND APPLYING THE AMERICAN DECLARATION

The Commission similarly has recognized that “the provisions of ... the American Declaration, should be interpreted and applied in context of developments in the field of international human rights law.”⁶¹⁶ It has noted in particular the appropriateness of considering other international and regional human rights documents in the interpretation and application of the rights contained in the American Declaration.⁶¹⁷ The Commission has used this approach often in interpreting the scope and meaning of the rights contained in the American Declaration and Charter of the Organization of American States (“OAS Charter”).⁶¹⁸ Other human rights instruments that are relevant to the understanding of the rights at issue in this case include, as

demonstrated above, the American Convention, the ICCPR, the ICESCR, other regional human rights conventions, the ILO Convention 169, and the official interpretations of these instruments by human rights bodies.

3. INTERNATIONAL ENVIRONMENTAL NORMS AND PRINCIPLES ARE RELEVANT TO THE INTERPRETATION AND APPLICATION OF THE AMERICAN DECLARATION

In the *Awás Tingni* case, the Court reaffirmed that “human rights treaties are live instruments whose interpretation must adapt to the evolution of the times.”⁶¹⁹ In its advisory opinion regarding *The Right to Information on Consular Assistance in the Framework of the Guarantees of the Due Process of Law*, the Court considered the questions before it “in the context of the evolution of the fundamental rights of the human person in contemporary international law.”⁶²⁰

The American Declaration should thus be applied “with due regard to other relevant rules of international law applicable to member states against which complaints of human rights violations are properly lodged.”⁶²¹ As the Court has noted, “a treaty can *concern* the protection of human rights, regardless of what the principal purpose of the treaty might be.”⁶²² The Commission has similarly stated that “it would be inconsistent with general principles of law for the Commission to construe and exercise its Charter-based mandate without taking into account other international obligations of member states which may be relevant.”⁶²³ Finally, in interpreting the term “other treaties” in Article 64 of the American Convention, the Court affirmed its competence to interpret the provisions of the American Declaration using international developments as well as the provisions of the American Convention.⁶²⁴

In considering the United States’ acts and omissions relating to climate change, therefore, the Commission should take into account not only the specific rights provisions in the American Declaration of the Rights and Duties of Man and the American Convention on Human Rights, but also other relevant obligations the United States has assumed under international treaties and customary international law. The United States’ breach of these obligations reinforces the conclusion that the United States is violating rights protected by the American Declaration.

a. The United States is violating its obligations under the United Nations Framework Convention on Climate Change and the Kyoto Protocol

The United States ratified the U.N. Framework Convention on Climate Change (FCCC) on October 15, 1992, and the Convention entered into force on March 21, 1994.⁶²⁵ The objective of the Framework Convention is to “achieve ... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”⁶²⁶ To further this objective, Article 4.1(b) of the Convention requires Parties to formulate and implement national programs for mitigating anthropogenic greenhouse gas emissions.⁶²⁷

Article 4.2(b) is more specific: each Annex I (developed country) Party must communicate information on its policies and measures to limit emissions and enhance removals of greenhouse gases, and on the resulting projected emissions and removals through 2000, “with the aim of returning individually or jointly to [its] 1990 levels these anthropogenic emissions of [GHGs].”⁶²⁸

Although the year 2000 has passed, this obligation is not moot.* The terms of Article 4.2(b), given their “ordinary meaning ... in their context and in light of the object and purpose,”⁶²⁹ remain operative as long as the Framework Convention remains in force. In light of the Framework Convention’s objective of avoiding dangerous atmospheric concentrations of greenhouse gases, mooted the obligation would make no sense. Indeed, were Article 4.2(b) to be read as applying only during the period before 2000, the objective would have been unachievable from the start. It is clear that U.S. climate policy must aim at returning U.S. emissions to 1990 levels as quickly as possible.

Judging by its most recent report to the Framework Convention secretariat, which forecasts U.S. GHG emissions increasing markedly for the foreseeable future,⁶³⁰ as well as statements by President Bush and numerous other government officials,[†] the United States has abandoned the aim of returning its emissions to 1990 levels, in violation of its obligation to implement the Framework Convention in good faith and in light of the Convention’s objective. Although the U.S. government has acknowledged its obligation to reduce emissions, it has not taken steps to remedy the defects identified by the secretariat in its first review of U.S. climate policy, in 1999.⁶³¹

Explaining his position on global warming, President Bush stated, “Our country, the United States is the world’s largest emitter of manmade greenhouse gases. We account for almost 20 percent of the world’s man-made greenhouse emissions. We also account for about one-quarter of the world’s economic output. We recognize the responsibility to reduce our emissions.”⁶³² In spite of this recognition, the U.S. Government predicts that U.S. emissions will

* The obligation to aim to return greenhouse gas emissions to 1990 levels is found in Article 4.2(b), whereas the reference to returning “by the end of the present decade to earlier levels” is in Article 4.2(a). While the reporting requirements of Article 4.2(b) are limited to the “the period referred to in subparagraph (a),” the aim to return emissions to 1990 levels is not. Parties have disregarded the limitation on reporting requirements.

† For example, President Bush announced, “My administration is committed to cutting our nation’s greenhouse gas intensity – how much we emit per unit of economic activity – by 18 percent over the next 10 years.” “President Announces Clear Skies & Global Climate Change Initiatives,” National Oceanic and Atmospheric Administration, Silver Spring, Maryland, Feb. 14, 2002 at <http://www.whitehouse.gov/news/releases/2002/02/20020214-5.html>. According to analysis by the Pew Center on Global Climate Change, the Administration’s 18% intensity target will allow *actual* emissions to increase 12% over the same period. Emissions will continue to grow at nearly the same rate as at present. Pew Center on Global, at http://www.pewclimate.org/policy_center/analyses/response_bushpolicy.cfm.

increase 42.7% by 2020, from 1562 MMTC in 2000 to 2088 MMTC in 2020.⁶³³ As if to confirm its complete rejection of Article 4.2, the United States' latest report to the secretariat makes no mention of ever returning to 1990 emissions levels, instead identifying the U.S. goal as the 18% carbon intensity reduction proposed by President Bush in 2001.⁶³⁴ The U.S. plan to reduce greenhouse gas intensity by 18% in ten years exceeds by only 4% the 14% reduction in greenhouse gas intensity expected in the absence of the President's additional proposed policies and measures.^{635*} This goal, which is to be met in 2012, will allow *actual* emissions to *increase* by 12% over the same period, a rate of growth that is nearly the same as at present.⁶³⁶

b. The United States is violating its obligation to avoid transboundary harm and to respect the principle of sustainable development

Customary international law requires the United States to prevent its territory from being used in a manner that causes harm outside of its jurisdiction. This obligation to avoid transboundary environmental harm is one of the most fundamental and widely recognized customary international law norms. It originates from the common law principle of *sic utere tuo ut alienum non laedus* (do not use your property in a manner that will harm others).⁶³⁷

For over half a century, this principle has been recognized by international tribunals as limiting the way in which States may use their territory. In the 1938 *Trail Smelter Arbitration* between the United States and Canada, the U.S.–Canada International Joint Commission held that “under principles of international law, as well as the law of the United States, no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.”⁶³⁸ In the *Corfu Channel Case*, the International Court of Justice recognized the principle even more broadly as “every State’s obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States.”⁶³⁹ More recently, in its 1996 advisory opinion on the *Legality of the Threat or Use of Nuclear Weapons*, the International Court of Justice noted that “[t]he existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.”⁶⁴⁰

The prohibition on transboundary harm has also been included in numerous widely accepted treaties and declarations over the past several decades. For example, in adopting the 1972 Declaration of the United Nations Convention on the Human Environment (Stockholm Declaration) and the 1992 Rio Declaration on Environment and Development, the United States and 179 other nations agreed that sovereignty over natural resources is conditioned on the responsibility of States “to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national

* The report notes that the 18% improvement in intensity in actuality amounts to only a 4% improvement from expected emissions during the same period. U.S. Climate Action Report – 2002, *supra* note 91 at 5.

jurisdiction.”⁶⁴¹ The United States agreed to that formulation in several international treaties, including the 1993 North American Agreement on Environmental Cooperation⁶⁴² and the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.⁶⁴³ In a statement that the United States has recognized as expressing customary international law,⁶⁴⁴ the UN Convention on the Law of the Sea echoes these texts, stating that “States shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as to not cause damage by pollution to other States and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with this Convention.”⁶⁴⁵ The Framework Convention itself acknowledges state responsibility for the prevention of transboundary harm, adopting the same language as the Stockholm and Rio Declarations.⁶⁴⁶

International law recognizes that the obligation to avoid transboundary harm limits States’ right to economic development. For example, both the Stockholm Declaration and the Rio Declaration condition the right of States “to exploit their own resources pursuant to their own environmental and development policies” on the responsibility to avoid transboundary environmental harm.* The International Court of Justice has explained that “[t]his need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development.”⁶⁴⁷ Eminent scholars, including at least one judge of the International Court of Justice, consider sustainable development to be “a principle with normative value.”⁶⁴⁸ The Inter-American Commission took the same position when it stated that, although “the right to development implies that each state has the freedom to exploit its natural resources, ... the Commission considers that the absence of regulation, inappropriate regulation, or a lack of supervision in the application of extant norms may create serious problems with respect to the environment which translate into violations of human rights.”⁶⁴⁹

Climate change has already produced numerous transboundary environmental impacts as it alters the arctic environment. These impacts include melting ice and decreasing snow, erratic weather and alterations in land and water conditions. Through action and inaction with respect to climate change that have made a major and disproportionate contribution to these transboundary environmental impacts, the United States has violated its international responsibility for preventing activities within its jurisdiction from damaging the environment outside its borders. The United States’ failure to take effective action to minimize these impacts also violates the principle of sustainable development. These violations in turn have contributed to the human rights violations at issue in this petition.

* Principle 2 of the Rio Declaration, *supra* note 454, and principle 21 of the Stockholm Declaration, *supra* note 641, each provide that

States have ... the sovereign right to exploit their own resources pursuant to their own environmental [Rio adds: “and developmental”] policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

c. The United States is violating its obligation to act with precaution

The obligation of States to act cautiously in the face of scientific uncertainty is a well-established principle of international law. The Rio Declaration provides the most widely accepted articulation of this norm: “In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. When there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”⁶⁵⁰ The United States has stated its support for this part of the Rio Declaration.⁶⁵¹ The Malmö Ministerial Declaration, which came out of the United Nations Environment Programme’s First Global Ministerial Environment Forum in 2000, reaffirmed the dedication of the United States and numerous other nations to “the observation of the precautionary approach as contained in the Rio Principles.”⁶⁵²

The precautionary principle has been included in many of the major international environmental treaties, including agreements to address climate change, ozone, biodiversity, biosafety, and persistent organic pollutants.⁶⁵³ The United States has accepted treaties endorsing a precautionary approach, such as the Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Heavy Metals and the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.⁶⁵⁴ Moreover, recent environmental agreements demonstrate an emerging international trend of strengthening the precautionary principle to embrace an active obligation to make decisions in a precautionary manner.⁶⁵⁵

Most relevant here, the Framework Convention, to which the United States is a party, states that “[t]he Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects.”⁶⁵⁶ The Convention specifically addresses scientific uncertainty by noting that “lack of full scientific certainty should not be used as a reason for postponing [cost-effective] measures” in the face of “threats of serious or irreversible damage.”⁶⁵⁷

U.S. action and inaction in response to its acknowledged contributions to global climate change demonstrate a failure to take precautionary measures. The U.S. government has repeatedly alleged uncertainty in climate science, and continues to do so, to justify its refusal to take effective steps toward reducing carbon emissions.⁶⁵⁸ The precautionary principle articulated in the Framework Convention and other international instruments would require the United States to take precautionary measures to reduce emissions even if the uncertainty alleged by the United States actually existed. At this point, however, there is no longer scientific uncertainty over the threat that climate change poses or the contribution of greenhouse gases to it. As detailed in Part II, the Intergovernmental Panel on Climate Change and the international and U.S. scientific communities agree that human-induced emissions of greenhouse gases are the principal cause of global warming. Moreover, the United States has acknowledged that it contributes almost 20% of the world’s greenhouse gas emissions,⁶⁵⁹ and that it plans to increase its net contributions of greenhouse gases each year.⁶⁶⁰

The impacts of climate change on the Arctic and Inuit are both serious and irreversible. The alterations in the ice and land are progressing rapidly, and causing long-term changes to the environment. Similarly, the loss of the Inuit's communities and traditional way of life cannot be easily corrected at a later date.

Although there remains some scientific uncertainty with respect to the nature and timing of sub-regional impacts, there is virtually no scientific uncertainty with respect to the issues relevant to this petition – the rapid and persistent warming of the Arctic as a result of the buildup of anthropogenic greenhouse gases in the atmosphere, and the highly adverse effect of this warming on the lives and culture of the Inuit. Were there some uncertainty concerning these issues, however, the U.S. approach to climate change would violate the precautionary principle.

4. THE UNITED STATES HAS A DUTY TO REMEDY BREACHES OF ITS INTERNATIONAL OBLIGATIONS

States' responsibility to prevent breaches of international law and remedy them when they occur is a foundational principle of international law. The Permanent Court of International Justice and its successor, the International Court of Justice, have repeatedly recognized States' duty to make reparations when they breach international law obligations. In its 1928 decision *Concerning the Factory at Chorzów*, the Permanent Court of International Justice held that “[i]t is a principle of international law, and even a general conception of law, that any breach of an engagement involves an obligation to make reparation.”⁶⁶¹ The International Court of Justice found state responsibility for international law violations and required reparations in both the *Corfu Channel Case* and the *Gabcikovo-Nagymaros Project*.⁶⁶² The opinion in *Gabcikovo-Nagymaros Project* explained that “[r]eparation must, ‘as far as possible,’ wipe out all the consequences of the illegal act.”⁶⁶³

The *Restatement (Third) of the Foreign Relations Law of the United States* similarly acknowledges that States must act to prevent violations of environmental obligations and are responsible for such breaches and their consequences.⁶⁶⁴ The principle of State responsibility is also imbedded in other principles of international law, such as the prohibition on transboundary harm discussed in Section III.C.3.b. The Stockholm and Rio Declarations, for example, specifically indicate that States are responsible for preventing transboundary harm resulting from activities on their territory or under their control.⁶⁶⁵

The Inter-American Court of Human Rights has recognized that these principles equally in the case of human rights obligations. In the *Velásquez Rodríguez* case, the Court ordered compensation for human rights violations, stating that “the obligation to indemnify is not derived from internal law [of the violating nation], but from violation of the American Convention. It is the result of an international obligation.”⁶⁶⁶

Similarly, the principle that the polluter should pay the costs of pollution, as articulated in the Rio Declaration, presumes responsibility on the part of those who pollute.⁶⁶⁷ The Malmö

Ministerial Declaration recently reiterated the necessity of applying the polluter pays principle,⁶⁶⁸ as did the Plan of Implementation resulting from the 2002 World Summit on Sustainable Development.⁶⁶⁹ By failing to act to reduce greenhouse gas emissions, the United States has allowed domestic emitters to impose the environmental costs of their pollution on those outside U.S. borders, with the Inuit suffering especially from this lapse.

The United States has failed thus far to take responsibility for the breaches of international law and their consequences that stem from its acts and omissions with respect to climate change. The United States has acknowledged its duty to reduce its greenhouse gas emissions,⁶⁷⁰ but its current policies result in continued emissions increases.⁶⁷¹ The ever-growing U.S. contribution to global climate change serves to accelerate the pace of the environmental impacts in the Arctic and the resultant violations of the Inuit's human rights.

The United States is obligated under international law to take responsibility for its contributions to global climate change both by limiting emissions and by paying reparations to those that it has harmed and continues to harm. The United States therefore has a duty to provide appropriate remedy and redress to the Inuit.

D. BY ITS ACTS AND OMISSIONS, THE UNITED STATES VIOLATES THE HUMAN RIGHTS OF THE INUIT

1. THE UNITED STATES IS THE WORLD'S LARGEST CONTRIBUTOR TO GLOBAL WARMING AND ITS DAMAGING EFFECTS ON THE INUIT

As established above, the United States is, by any measure, the world's largest contributor to global warming and its damaging effect on the Inuit. As the world's largest consumer of energy, both historically and at present, it emits the most fossil fuels and is responsible for the largest amount of cumulative emissions of any nation on Earth. It follows that the United States has contributed more than any other nation to the rise in global temperature. U.S. emissions of energy-related CO₂ are also vastly out of proportion to its population size. On a per-person basis, U.S. emissions in 2000 were more than five times the global average,⁶⁷² nearly two-and-a-half times the per capita emissions in Europe,⁶⁷³ and nine times those in Asia and South America.⁶⁷⁴ Among the countries with significant emissions, the United States had the highest level of per capita emissions.⁶⁷⁵

2. U.S. CLIMATE POLICY DOES NOT REDUCE GREENHOUSE GAS EMISSIONS

a. U.S. climate policy

In February 2002, the administration of U.S. president George W. Bush formulated a Global Climate Change Initiative, for which the stated goal is to reduce U.S. greenhouse gas emissions "intensity" by 18% between 2002 and 2012. Emissions intensity describes the ratio of greenhouse gases emitted per unit of economic output.⁶⁷⁶ The major elements of this initiative are a pair of programs, Climate Leaders and the "Climate VISION" Partnership, which are aimed

to persuade and provide limited assistance industry to voluntarily reduce its greenhouse gas emissions.⁶⁷⁷

Climate Leaders is administered by the U.S. Environmental Protection Agency (EPA), which describes it as an “industry-government partnership that works with companies to develop long-term comprehensive climate change strategies.”⁶⁷⁸ Member businesses adopt voluntary reduction targets, based either on emissions intensity or absolute emissions, and agree to inventory their greenhouse gas production to track progress toward these goals. Climate Leaders also requires companies to report their emissions and summarize their goals and achievements to EPA.

The “Climate VISION” Partnership is a similar public-private partnership scheme launched by the Department of Energy (DOE) in February 2003.* Similar to the Climate Leaders initiative, its mission is to induce business and trade associations to set and achieve voluntary emissions reduction goals within their sector.⁶⁷⁹ Targeted sectors include oil and gas, railroads, auto manufacturers, and chemical manufacturing.⁶⁸⁰ Additionally, the Federal government provides funding through the USDA Environmental Quality Incentives Program (EQIP) for farmers to engage in carbon sequestration projects.⁶⁸¹ It also revamped its Voluntary Reporting of Greenhouse Gases Program in order to allow companies to report any decreases in their emissions and, if emissions decreases are mandated in the future, secure credit for reported decreases.⁶⁸²

The President’s 2006 budget request to Congress includes \$524 million in tax incentives to reduce greenhouse gases.⁶⁸³ These incentives include tax credits for the purchase of hybrid and fuel-cell vehicles, residential solar heating systems, energy produced from landfill gas, electricity produced from alternative energy sources, and combined heat and power systems.⁶⁸⁴

In 2001, the United States established the multi-agency Climate Change Science Program (CCSP) to oversee and coordinate government research on areas of uncertainty in climate science. The President’s 2006 budget request for CCSP is nearly \$2 billion.⁶⁸⁵ The Climate Change Technology Program (CCTP), also established in 2001, is a multi-agency program to accelerate research and development of technologies that can achieve greenhouse gas emission reductions.⁶⁸⁶ With a projected budget of nearly \$3 billion in 2006, CCTP focuses on advanced technologies, such as hydrogen energy, zero-emissions coal-fired power plants, and nuclear fusion.⁶⁸⁷ The program also funds research and development of renewable energy, nuclear power, and energy efficiency.⁶⁸⁸

The Federal initiative also includes \$200 million for international assistance and cooperation. International programs include the International Partnership for a Hydrogen Economy,⁶⁸⁹ the Methane-to-Markets Partnership,⁶⁹⁰ the Carbon Sequestration Leadership

* Other agencies participating in Climate VISION include the EPA, Department of Transportation (DOT), Department of Agriculture (USDA) and Department of the Interior (DOI).

Forum,⁶⁹¹ the Generation IV International Forum (for nuclear energy research),⁶⁹² and several bilateral partnerships.⁶⁹³

b. U.S. climate policy is not effective

The President's goal of reducing emissions intensity by 18% and the initiatives adopted to implement that goal have had no discernible effect on U.S. emissions, which have increased by more than 13% between 1990 and 2003.⁶⁹⁴ Except for a dip between 2000 and 2001, emissions have risen every year since 1992, with increases averaging about 1% per year.⁶⁹⁵ There is no indication that this trend will abate as long as current climate policy remains in place. The measures that the government rely on to mitigate greenhouse gas emissions consist mainly of misleading and ineffective targets, voluntary initiatives, and speculative research.

i. Misleading and ineffective targets

The U.S. goal of reducing greenhouse gas *intensity* by 18% is unlikely to lead to any significant decrease in actual emissions. Greenhouse gas intensity tends to fall naturally, as energy efficiency improves and the U.S. economy shifts away from heavy industry. The Government Accountability Office accordingly predicts that without any government action, U.S. greenhouse gas intensity will decline 14% by 2012.⁶⁹⁶ Thus, by the government's own figures, achieving the 18% target will produce only a 4% decrease in emissions.⁶⁹⁷ In absolute terms, however, U.S. carbon dioxide emissions will actually *rise* 18% between 2002 and 2012, according to projections by the U.S. Energy Information Administration (EIA) (15% if the United States suffers low economic growth).⁶⁹⁸

The two programs intended to assist industry to achieve this small improvement in emissions intensity are not on track to succeed. Climate VISION has garnered only a few reluctant pledges to make minor cuts in emissions intensity, in most cases without any quantified reduction targets.⁶⁹⁹ In fact, the target set by the electricity industry for 2000 to 2010 exceeds EIA projections of "business-as-usual" emissions during that period.⁷⁰⁰ Furthermore, because Climate VISION does not require individual companies to set goals for emissions reductions, many of the worst polluters have avoided making even voluntary commitments.⁷⁰¹ While no data are yet available to gauge the progress of Climate VISION, initial results are not encouraging.*

The Climate Leaders program suffers from a similar problem. Of the seventy or so listed partners, only about half have set targets for emissions reductions.⁷⁰² As with Climate VISION, many of those targets would decrease emissions intensity, but would allow absolute emissions to increase.⁷⁰³ Despite being promoted as a major element of the government's climate initiative, Climate Leaders had an annual budget in 2004 of only \$1 million and a full-time staff of three.⁷⁰⁴

* For each sector, the Climate VISION website states that it is too early for emissions data to be available. See, e.g., Climate VISION, Automobile Manufacturers: Results, *available at* <http://www.climatevision.gov/sectors/automobile/results.html> (last visited Jul. 8, 2005).

ii. No mandatory controls

U.S. climate policy does not include any mandatory controls on greenhouse gas emissions. The United States signaled a willingness to adopt mandatory domestic emissions reductions in 1995, when it announced its intention to negotiate legally binding international emissions targets.⁷⁰⁵ It subsequently reversed course, however, and rejected both international and domestic mandatory targets.

President Bush opposes the Kyoto Protocol because, in his view, its binding targets would wreck the U.S. economy and be unfair and ineffective, as the Protocol does not similarly obligate major developing countries such as China and India.⁷⁰⁶ He also opposes mandatory domestic controls. In a letter to several U.S. Senators, he declared his opposition to caps on CO₂ emissions from power plants, a reversal of his own earlier views.⁷⁰⁷ In 2003, the general counsel for the EPA repudiated the position of his two predecessors⁷⁰⁸ and the EPA adopted the position that it did not have the authority to regulate carbon dioxide under the Clean Air Act.⁷⁰⁹ This view was subsequently upheld by a U.S. Federal court.⁷¹⁰

iii. U.S. research cannot ensure adequate reductions

U.S. climate policy relies heavily on future scientific and technological developments to achieve reductions. Technological development by its very nature is speculative, however, and the United States cannot be certain that it will have a dependable method for achieving adequate emissions reductions anytime in the near future. This over-reliance by the U.S. on technological innovation was criticized in the 2004 *Report on the in-depth review of the third national communication of the United States of America*, issued by the secretariat of the Framework Convention. The report criticized “the lack of concrete estimates for emission reductions to be delivered by new technologies.”⁷¹¹

Moreover, current investment decisions by U.S. companies could impede or preclude wide-scale adoption of new technologies identified or promoted by U.S. programs. This seems to be the case with integrated gasification combined-cycle (IGCC). This technology, which is being actively promoted by the U.S. government, would allow CO₂ to be separated out of coal-fired power plant emissions for sequestration. Of the 114 new plants currently in the planning stages nationwide, only 15 are designed to incorporate IGCC.⁷¹² The U.S. government has done little to encourage investment in IGCC. Government funding for FutureGen, the program under which IGCC was developed, has been sporadic.⁷¹³ With no prospect of mandatory greenhouse gas emissions cuts anywhere on the horizon, power companies see little to be gained from investing their money in technology to reduce emissions.⁷¹⁴

Nevertheless, the United States persists in relying heavily on future development of ground-breaking technologies.⁷¹⁵ The United States has reduced expenditures on energy efficiency—a tried-and-true approach—in favor of less tested methods such as carbon sequestration and production of hydrogen. While such approaches hold promise, they may

become commercially viable only decades in the future.* Spending on renewable energy has also fallen somewhat in recent years compared to investments in less immediately workable technologies.⁷¹⁶ The government's proposed 2006 budget would cut funding for research and development of new energy efficiency and renewable energy technologies even further.^{717†}

c. Indirect regulation

The United States has also failed to address major sources of emissions by other means. Power plants and vehicles are two of the main sources of U.S. greenhouse gas emissions, and both are subject to extensive government regulation. Yet the United States has repeatedly declined to extend such regulation to include greenhouse gases.

i. Power plants

Power plants produce 36% of man-made CO₂ in the United States.⁷¹⁸ The government has made clear, however, that it will not mandate any cuts in those emissions.⁷¹⁹ The United States affirmed this statement by leaving greenhouse gases uncovered by the Clear Skies Act, the most recent major legislation to deal with power plant emissions. EPA even withheld a report that an alternative air pollution bill regulating CO₂ as well as other pollutants would result in cleaner air than the Clear Skies proposal at an only marginally greater cost.⁷²⁰ Therefore, the government has not controlled the greatest source of greenhouse gases in the United States and does not plan to do so in the near future.

ii. Vehicles

Automobiles (including cars, sport utility vehicles, and light duty trucks) produce 20% of U.S. greenhouse gas emissions.⁷²¹ Emissions from transportation activities have risen substantially, from 395 MMTC in 1990 to 483 MMTC in 2003.⁷²² Although the United States could reduce emissions from the transportation sector by increasing fuel economy standards, relevant standards have remained almost constant since 1985.⁷²³ In fact, fuel efficiency has actually declined during this period, due to a loophole in the law that subjects vans, SUVs, and light duty trucks to less stringent standards.⁷²⁴ Furthermore, because there are more cars on the road in the United States today and drivers annually travel more miles, even had the government

* Indeed, wide-spread use of fuel cells, which are fueled by hydrogen, will not be practical until sufficient hydrogen production and distribution facilities have been built, in addition to the fuel cell technology itself being developed. National Academy of Engineering, "The Hydrogen Economy: Opportunities, Costs, Barriers, and R&D Needs," at 2, 2004, *available at* <http://www.nap.edu/books/0309091632/html>.

† The proposed DOE budget for 2006 would alter enacted 2005 expenditures by reducing funding for energy conservation by \$21 million and renewable energy by \$27 million, while adding \$22 million for nuclear, \$17 million for efficiency and sequestration, and \$28 million for fusion, sequestration, and hydrogen. Climate Change Expenditures, *supra* note 683, at 10.

maintained the fuel efficiency performance of past years, U.S. emissions would have increased and will continue to substantially increase.*

d. State and local measures are not enough

A number of U.S. state and local governments have attempted to partially fill the regulatory void created by the federal government. As demonstrated by ever-increasing national emissions and uninterrupted global warming trends, however, regulation in these fora cannot effectively mitigate greenhouse gas emissions. There is a strong structural disincentive against state governments enacting mandatory greenhouse gas cuts because many emitters could easily move to locales that do not regulate their production of greenhouse gases.⁷²⁵ Six states have already passed laws *banning* mandatory emissions reductions, setting themselves up as safe havens for companies fleeing from more proactive states.⁷²⁶

Those state and local measures which have been implemented tend to be voluntary and therefore difficult to enforce. This is the case with the U.S. Mayors Climate Protection agreement⁷²⁷ and the tax credits for energy efficiency and renewable energy, which states commonly use.⁷²⁸ Renewable energy mandates, which require electric utilities to generate a certain amount of power from renewable sources, are one of the few compulsory schemes being employed by states. They are in place in only 19 states, however, and often provide utilities an escape hatch by allowing electricity providers to purchase renewable energy credits rather than actually using renewable power and reducing their own greenhouse gas emissions.⁷²⁹ The Regional Greenhouse Gas Initiative, a Northeastern greenhouse gas cap-and-trade agreement that is one of the major pieces of non-federal greenhouse gas regulation, has already missed an important deadline of designing a program by April 2005.⁷³⁰

Even in the aggregate, such state and local efforts can be duplicative and lack coherent direction, which makes them inherently less effective than a centralized federal effort. Without federal mandates, standards, or even guidance, there is no yardstick by which states and municipalities can measure success and determine the usefulness of various initiatives. Furthermore, programs need funding to achieve anything substantial, and there already are reports of states failing to provide adequate financing.⁷³¹ No matter how enthusiastic state and local governments may be, they are not making, and probably cannot make, emissions reductions substantial enough to make a noticeable difference to curb the negative effects of climate change.⁷³²

* The Department of Transportation's National Household Travel Survey noted a rise in non-commercial person-miles of travel from approximately 1.8 trillion in 1977 to approximately 3.9 trillion in 2001. The number of vehicles in the United States nearly doubled in the same time period. DOT, National Household Travel Survey 9, 10, 2001, *available at* <http://nhts.ornl.gov/2001/pub/STT.pdf>. Similarly, truck mileage increased from 34.6 billion miles in 1975 to 72.4 billion in 2001. Bureau of Transportation Statistics, National Transportation Statistics 2005, Table 1-32: U.S. Vehicle Miles, *available at* http://www.bts.gov/publications/national_transportation_statistics/2005/html/table_01_32.html.

3. THE U.S. GOVERNMENT HAS OBSCURED CLIMATE SCIENCE, MISLEADING BOTH THE PUBLIC AND INDUSTRY AS TO THE SCALE AND URGENCY OF THE PROBLEM OF GLOBAL WARMING

The United States has consistently denied, distorted, and suppressed scientific evidence of the causes, rate, and magnitude of global warming. Despite substantial evidence of human-induced climate change, including several assessments by the Intergovernmental Panel on Climate Change (IPCC) and recent reports by its own agencies confirming and expanding on the findings of the IPCC,⁷³³ the U.S. government continues to insist that the science does not yet justify a reduction in greenhouse gas emissions.⁷³⁴ It stresses and frequently exaggerates the uncertainties in climate science as an excuse for inaction.⁷³⁵ A second opinion requested by the White House on the findings of the IPCC,⁷³⁶ and the U.S. government's own subsequent Climate Action Report (its third annual report to the UNFCCC),⁷³⁷ affirmed the mainstream scientific consensus that human greenhouse gas emissions are causing global warming. All of these assessments amply justify immediate action to address climate change. Rather than act, however, the U.S. government has attacked the evidence and obscured the ineffectiveness of its own climate policy. The President dismissed the first version of the Climate Action Report as a "report put out by the bureaucracy."⁷³⁸ The government subsequently revised the document to add a section stressing the remaining uncertainties in the science.⁷³⁹

The U.S. has also attempted to hide information about the certainty and urgency of global warming. For example, it cut the discussion of climate change out of EPA's 2002 annual report for the first time in six years.⁷⁴⁰ A similar incident occurred in 2003 when the White House insisted on such extensive alteration to the discussion of climate change in an EPA report, even attempting to insert findings from a study partly financed by the American Petroleum Institute,⁷⁴¹ that its authors left out that section almost entirely rather than misrepresent the science involved.⁷⁴² Senator Inhofe of Oklahoma, Chairman of the Senate Committee on Environment and Public Works, has openly denounced global warming as a "hoax" on the Senate floor, contending there has been no significant warming in the last century.⁷⁴³ Such behavior led the Union of Concerned Scientists to issue a statement, initially signed by a group of 60 leading scientists that included 19 Nobel laureates,* admonishing the administration for "misrepresent[ing] scientific knowledge and misle[ading] the public about the implications of its policies" on climate change and other issues,⁷⁴⁴ and reproaching the U.S. government for relying on "disreputable and fringe science."⁷⁴⁵

This trend has not abated. In December 2004, the United States issued new guidelines giving federal officials (for the most part, political appointees of the White House) the final sign-off on a series of climate change reports.⁷⁴⁶ A number of the scientific experts involved objected to this undermining of their autonomy, and one lead author even resigned.⁷⁴⁷ Reports also surfaced in June 2005 that the then-chief of staff of the White House Council on Environmental

* The Kyoto Protocol achieved the required level of participation when it was ratified by Russia in November 2005.

Quality, who had previously held a position lobbying against limits on greenhouse gas emissions for the petroleum industry and had no scientific training, repeatedly edited government reports on climate change science to downplay the link between global warming and greenhouse gases.⁷⁴⁸ He has since been hired by the fuel company ExxonMobil.⁷⁴⁹ This distortion and denial of climate science continues in the face of such recent developments as a 2005 joint statement by the U.S. National Academies of Science and ten more of the world's foremost national scientific academies, including those of Germany, China, India, and Russia, that urges nations to take prompt action to reduce emissions in the face of strong evidence that global warming is occurring and is caused by anthropogenic greenhouse gas emissions.^{750*} Even as the case for human-caused climate change and the need to do something about it has convinced the majority of scientists, as shown in even the United States' own scientific reports,⁷⁵¹ the U.S. government has persisted in trying to discredit the established evidence.

4. THE UNITED STATES HAS FAILED TO COOPERATE WITH INTERNATIONAL EFFORTS TO REDUCE GREENHOUSE GAS EMISSIONS

As the world's largest emitter of greenhouse gases, the United States is in a unique position to lead the global effort to avert global warming. Instead of cooperating with international efforts, however, the U.S. government has employed the same tactics of renouncing climate science and delaying action that characterize its domestic approach. Beginning with its rejection of the Kyoto Protocol in 2001,⁷⁵² the United States has hindered attempts by other nations even to agree on the need for coordinated action to deal with global warming. Without the United States, entry into force of the Protocol depended on ratification by Russia, the only remaining country with sufficient emissions to meet the threshold requirement. Russia vacillated for more than a year, due in no small part to a significant drop in the potential value of its emissions allowances when the world's largest buyer, the United States, left the market.

The United States also has obstructed the formulation of additional international measures. At the 10th Conference of the Parties to the UNFCCC, in Buenos Aires, the United States delegation blocked discussion of any steps beyond the expiration in 2012 of Kyoto's first commitment period, preventing anything beyond a weak promise of limited, informal, future talks.⁷⁵³ Other than modest funding of research through the UNFCCC and IPCC, the only international commitments of the United States are limited regional and bilateral partnerships that do not address reduction in greenhouse emissions. Those agreements are confined to research initiatives that will have speculative, long-term effects at best, with no immediate results.⁷⁵⁴ They receive relatively small amounts of funding averaging around \$200 to \$300 million for the last few years.⁷⁵⁵ In addition, they are not intended to expand scientific and technological knowledge, but merely to share and centralize independently-reached findings.⁷⁵⁶

Like other bilateral and regional agreements, the latest U.S. agreement, the Asia-Pacific Partnership on Clean Development, concentrates on long-term and uncertain technological

* The signatories are the national scientific academies of Brazil, Canada, France, Italy, Japan, and the United Kingdom.

advances.⁷⁵⁷ Furthermore, the pact's emphasis on clean development means that its aim is to affect the emissions of U.S. partner countries, like China and India, rather than U.S. emissions.⁷⁵⁸ It is unlikely that this partnership will result in actual emissions reductions; like President Bush's domestic initiative, the vision statement for the partnership states a goal of reducing carbon intensities, rather than achieving cuts in absolute emissions.⁷⁵⁹

In addition to impeding policy negotiations, the U.S. government has continued to quarrel about the relevance of basic climate science. As the Arctic Climate Impact Assessment neared completion in 2004, the United States worked to prevent the Arctic Council from issuing a previously agreed-upon policy report endorsing broad measures to deal with warming, contending that the detailed study did not provide enough evidence on which to base such proposals.⁷⁶⁰

The United States followed a similar course of action during the 2005 Group of Eight (G8) summit in Scotland. It blocked the inclusion of any targets or timetables for emissions reductions in the G8 joint communiqué and plan of action on climate change,⁷⁶¹ and pressured negotiators to delete sections that outlined problems associated with climate change.⁷⁶² It insisted upon removal of the simple statement "our world is warming." It rejected sections describing adverse warming effects already occurring in the Arctic and urging "ambitious" emissions reductions.⁷⁶³

By the time the official versions of the summit documents were issued, the scientific and policy details had been cut down to a third of their original length.⁷⁶⁴ The mere acknowledgment by the United States that action must be taken to address global warming was considered a step forward by world leaders.⁷⁶⁵

Although the United States concedes the fact that climate change is occurring and is caused in large part by anthropogenic greenhouse gases, it refuses to take meaningful action to tackle global warming. The result is that temperatures in the Arctic continue to rise unabated, with dire consequences for the Inuit.

VI. EXCEPTION TO EXHAUSTION OF DOMESTIC REMEDIES

Article 31.1 of the Commission's rules of procedure specifies: "In order to decide on the admissibility of a matter, the Commission shall verify whether the remedies of the domestic legal system have been pursued and exhausted in accordance with the generally recognized principles of international law."⁷⁶⁶ These general principles of international law are further elaborated in article 31.2(a), which establishes that the exhaustion requirement "shall not apply when ... the domestic legislation of the State concerned does not afford due process of law for protection of the right or rights that have allegedly been violated."⁷⁶⁷

Because there are no remedies “suitable to address [the] infringement” of the rights Petitioner alleges to have been violated in this case,^{*} the requirement that domestic remedies be exhausted does not apply in this case. Thus, the petition is admissible under the rules of procedure of the Commission.

A. U.S. LAW DOES NOT PROVIDE ADEQUATE OR EFFECTIVE PROTECTION AGAINST THE HUMAN RIGHTS VIOLATIONS SUFFERED BY THE INUIT

The Commission has held that “[i]f a remedy is not adequate in a specific case, it obviously need not be exhausted.”⁷⁶⁸ No U.S. law provides a remedy adequate to protect the rights alleged to have been violated in this petition.

1. THE RIGHT TO LIFE

The Fourteenth Amendment to the U.S. Constitution safeguards citizens’ right to life by prohibiting the States from depriving any person of life without due process of law. The Fifth Amendment places similar limitations on the federal government. However, neither the Fourteenth nor the Fifth Amendment is effective at remedying violations of the right to life that result from environmental harms, such as the violations described in this petition. The U.S. Supreme Court interprets the due process clauses of the Fourteenth and Fifth Amendments as limitations on governmental power to act but not a guarantee of any minimum level of safety and security:

[O]ur cases have recognized that the Due Process Clauses generally confer no affirmative right to governmental aid, even where such aid may be necessary to secure life, liberty, or property interests of which the government itself may not deprive the individual.⁷⁶⁹

In the present case, a substantial portion of the human rights violations arise out of omissions of the U.S. government, in particular the government’s ongoing failure to take meaningful and effective action to limit its contribution to climate change. The due process

^{*} The Inter-American Court of Human Rights has explained that adequate remedies are those “suitable to address an infringement of a legal right.” *Velásquez Rodriquez Case*, Inter-Am. Ct. H.R., Judgment of July 29, 1988, Series C. No. 4, ¶ 64. *See also* *Juan Carlos Bayarri v. Argentina*, Case No. 11.280, Commission Report No. 2/01, January 19, 2001, OEA/ser. L/V/II.111 doc.20 rev., ¶ 27 fn.12 (“If a remedy is not adequate in a specific case, it obviously need not be exhausted”) (*citing Velásquez Rodriquez Case* at ¶ 63 (“[The exhaustion requirement] speaks of ‘generally recognized principles of international law.’ Those principles refer not only to the formal existence of such remedies, but also to their adequacy and effectiveness, as shown by the exceptions.”)); *Gilson Nogueira Carvalho v. Brazil*, Case No. 12,058, Ann. Rpt. Inter-Am. C.H.R. 145, OEA/ser. L/V/II.111 doc. 20 rev. Report No. 61/00, ¶ 60 (“[T]he merely theoretical existence of legal remedies is not sufficient for this objection to be invoked: they have to be effective.”).

clauses of the Fourteenth and Fifth Amendment thus offer no adequate or effective remedy to vindicate the Inuit's right to life.

2. THE RIGHT TO RESIDENCE AND MOVEMENT

Neither the U.S. Constitution nor U.S. law provides a right to residence or movement similar to that guaranteed by Article VIII of the American Declaration of the Rights and Duties of Man.⁷⁷⁰ The closest constitutional analogue to the right to residence is the right to property, discussed in the next section. The closest constitutional analogue to the right to movement is the right to interstate travel.

While not explicitly mentioned in the U.S. Constitution, the right to interstate travel has been derived from various constitutional provisions.⁷⁷¹ These provisions include the Privileges and Immunities Clause of Article IV;⁷⁷² the Privileges and Immunities Clause of the 14th Amendment;⁷⁷³ the Commerce Clause;⁷⁷⁴ and the Due Process Clauses of the 5th and 14th Amendment.⁷⁷⁵ The right to interstate travel derived from these provisions guarantees that U.S. citizens may pass through or to reside in any state.

The right to interstate travel under the U.S. Constitution is much narrower than the American Declaration's right of movement, which is one of the rights that is violated as a result of climate change. The right of movement recognized under international human rights laws includes the right not to leave one's residence except by one's own will, and the right to "move about freely."⁷⁷⁶ The U.S. Constitution's right to interstate travel, by contrast, does not protect the right to stay in one's home, but rather seeks to prevent governmental impediments to the right to move from one state to another.⁷⁷⁷

The residence-related claim in this petition is not that U.S. inaction on climate change impedes the Inuit's right to leave their place of residence to move elsewhere, which might implicate the Constitutional right to interstate travel. Rather, the claim is that such inaction impedes the Inuit's right *not* to leave and their right to move about freely within their traditional homelands, which are rights arising under the American Declaration with no analogue in U.S. law. The U.S. Constitution's right to travel therefore furnishes no avenues for an adequate or effective remedy to the Inuit.

3. THE RIGHT TO PROPERTY

The Fifth Amendment of the U.S. Constitution protects private property. It states, in relevant part, "No person shall ... be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation." As interpreted by U.S. courts, the amendment entitles property owners to compensation when title to their property transfers to the government as a result of either (i) physical invasion of the property by government order, either permanently or temporarily;⁷⁷⁸ or (ii) regulation for other than health or safety reasons which takes all or nearly all of the value of the property.⁷⁷⁹ Similarly, in certain instances, the amendment restricts the government's ability to attach conditions on a proposed use that are not roughly proportionate to such use.⁷⁸⁰

This constitutional provision, however, provides no effective remedy to the Inuit for damages to their property resulting from climate change. Under U.S. law, the government's failure to take an action to prevent harm to property cannot form the basis of a claim under the Fifth Amendment.⁷⁸¹ Only affirmative government action to transfer private property to a public use in the limited situations described in the preceding paragraph can trigger the Takings Clause.⁷⁸² As such, U.S. law does not provide an adequate or effective remedy for the Inuit's loss of property resulting from U.S. government action and inaction on climate change.

4. THE RIGHT TO INVIOABILITY OF THE HOME

The closest analogy in U.S. law to the right to inviolability of the home is the right to privacy, which the U.S. Supreme Court has found to exist in the "penumbras" of the amendments to the Constitution.⁷⁸³ However, the right to privacy in the United States is generally limited to such personal rights as family planning, child-rearing, and abortion.⁷⁸⁴ The environmental degradation that violates the Inuit's rights to inviolability of the home is thus beyond the scope of the U.S. Constitution's right to privacy. For these reason, the constitutional right to privacy does not provide an adequate or effective remedy for violations to Inuit's right to the inviolability of their homes.

5. THE RIGHTS TO ENJOY THE BENEFITS OF CULTURE, TO HEALTH AND TO MEANS OF SUBSISTENCE

Neither the U.S. Constitution nor U.S. statutes provide due process of law to protect the rights to the enjoyment of the benefits of culture, to health or to means of subsistence. For that reason, there are no domestic remedies to exhaust with respect to those rights.

B. U.S. LAW DOES NOT PROVIDE ADEQUATE OR EFFECTIVE REMEDIES FOR THE HARMS THAT HAVE CAUSED THE VIOLATIONS SUFFERED BY THE INUIT

1. U.S. TORT LAWS

Many of the injuries suffered by the Inuit as a result of climate change may be characterized as torts. However, U.S. tort law does not provide a remedy for these violations.

Absent a waiver, sovereign immunity shields the U.S. government and its agencies from suit.⁷⁸⁵ Pursuant to the Federal Tort Claims Act ("FTCA"), the U.S. government has waived its sovereign immunity only for certain tort claims: those committed "under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred."⁷⁸⁶ The waiver does not apply, however, to acts and omissions "based upon the exercise or performance or the failure to exercise or perform a discretionary function or duty on the part of a federal agency or an employee of the Government, whether or not the discretion involved be abused."⁷⁸⁷

With respect to the situation of the Inuit, there are no tort remedies available against the U.S. government because the U.S. government's acts and omissions that have led to climate

change result primarily from acts considered discretionary under U.S. law. For example, as described below, the U.S. Court of Appeals for the D.C. Circuit has recently held that the statute most likely to require action to address climate change – the U.S. Clean Air Act – gives the U.S. government the discretion not to regulate greenhouse gas emissions.⁷⁸⁸ On the basis of the court’s decision, therefore, U.S. courts have no power to hear Inuit claims based on the government’s failure to take action to address climate change.

Finally, for those acts or omissions of governmental agencies that may be non-discretionary (or “ministerial”) – such as the issuance of a permit to a large carbon emissions producing factory – the non-discretionary act or omission is still immune to suit under the FTCA because it is not an action in which a private citizen can engage.⁷⁸⁹ Because private citizens cannot issue government permits or engage in other typically ministerial government activities, no adequate or effective tort remedy against the U.S. government exists for the Inuit.

2. U.S. ENVIRONMENTAL LAWS

This petition demonstrates that the Inuit have suffered human rights violations as a result of the United States’ failure to take action to prevent harm caused by its greenhouse gas emissions. Although this is predominantly an environmental issue, the U.S. government itself has interpreted the leading U.S. air quality statute as providing no remedy for the violations alleged in this petition, and has suggested no other statute that could provide a remedy.

U.S. federal courts have affirmatively ruled that no right to environmental protection exists under the U.S. Constitution.⁷⁹⁰ Further, although several U.S. statutes address the protection of natural resources, environmental quality, public health, and cultural heritage, none of these laws protects the rights at issue in this petition or prevents the harms that are the basis for the violations of the Inuit’s human rights.

The most obvious potential source of a domestic remedy for harm resulting from U.S. greenhouse gas emissions is the U.S. Clean Air Act (CAA). The U.S. Environmental Protection Agency is responsible for implementing this law. However, the U.S. government has stated that “the CAA does not authorize EPA to regulate for global climate change purposes, and accordingly that CO₂ and other [greenhouse gases] cannot be considered ‘air pollutants’ subject to the CAA’s regulatory provisions for any contribution they may make to global climate change.”⁷⁹¹ The government has also determined that, even if it had the authority to regulate greenhouse gases, such authority would be discretionary and the government would not exercise such discretion.⁷⁹² Finally, the government has formally taken the position that individuals like Petitioner or the individuals whose rights have been violated in this case cannot use U.S. courts to challenge its failure to regulate greenhouse gases.⁷⁹³

In light of the U.S. government’s statements on the availability of environmental regulation and the absence of judicial remedies for the government’s failure to regulate greenhouse gas emissions, the international legal principle of *non concedit venire contra factum proprium* – no one may set himself in opposition to his own previous conduct – prohibits the United States from arguing before this Commission that the petition is inadmissible because the Clean Air Act provides a remedy for the violations at issue. As the Inter-American Court has held, “when a party in a case adopts a position that is either beneficial to it or detrimental to the

other party, the principle of estoppel prevents it from subsequently assuming the contrary position.”⁷⁹⁴

Even if the United States were not bound by its prior statements, however, Petitioner and the individuals whose rights have been violated in this case would have no domestic remedy, because, only a few months ago, the U.S. Court of Appeals for the D.C. Circuit – the only court that may hear a challenge to the government’s decision not to regulate greenhouse gases – upheld the government’s decision not to regulate greenhouse gas emissions under the Clean Air Act.⁷⁹⁵

Nor do other environmental laws provide a remedy. The National Environmental Policy Act of 1969 (“NEPA”) is the basic national charter for environmental protection. It requires the federal government to assess the environmental impact of many of its actions and establishes processes for such assessments, but it does not require the government to achieve any minimum level of environmental protection or provide any other substantive rights or protections for culture or health.⁷⁹⁶

In sum, as demonstrated above, the U.S. legal system does not provide an effective remedy for the human rights violations suffered by the Inuit as a result of U.S. actions and omissions relating to climate change. The lack of an effective remedy constitutes an exception to the exhaustion of remedies rule, according to general principles of international law and article 31.2(a) of the Commission’s rules of procedure. The petition is therefore admissible.

VII. TIMELINESS

Under article 32 of the Commission’s Rules of Procedure, a petition to the Commission should be lodged within six months of notification of the final ruling that comprises the exhaustion of domestic remedies. However, article 32.2 provides that in cases such as the present in which the requirement of exhaustion does not apply, “the petition shall be presented within a reasonable period of time, as determined by the Commission. For this purpose, the Commission shall consider the date on which the alleged violation of rights occurred, and the circumstances of each case.”

Under the circumstances of this case, this petition is being presented within a reasonable period of time. The acts and omissions and resulting harm that form the basis of the petition are ongoing. Emissions from the United States of greenhouse gases that cause global warming are increasing. The United States has failed to take serious and effective measures to minimize its emissions and has given no indication that it will do so in the foreseeable future. The harm to the Inuit caused by U.S. acts and omissions has not diminished but has worsened and will continue to worsen in the coming decades unless the United States changes its behavior. In the absence of adequate or effective domestic remedies, the Inuit Circumpolar Conferences (ICC) has attempted to use other international mechanisms to obtain US protection of the rights of Inuit harmed by climate change.

The Inuit Circumpolar Conference is an observer organization to the UN Framework Convention on Climate Change and has attended three Conferences of the Parties to the FCCC, at which it has held side-events to publicize the impacts of climate change on Inuit and to request that Parties to the Convention take serious actions to reduce greenhouse gas emissions. The ICC is also a Permanent Participant at the Arctic Council where it has pressed for action from all eight Arctic nations, particularly the United States. The ICC has also provided testimony to the U.S. Senate Committee on Commerce, Science and Transportation. Because it is becoming increasingly clear that these efforts have not been and will not be effective, Petitioner is now bringing the matter to the Commission.

VIII. ABSENCE OF PARALLEL INTERNATIONAL PROCEEDINGS

The subject of this petition is not pending in any other international proceeding for settlement, nor does it duplicate any petition pending before or already examined by the Commission or any other international governmental organization.

IX. REQUEST FOR RELIEF

For the reasons stated above, Petitioner respectfully requests that the Commission:

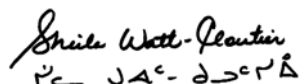
1. Make an onsite visit to investigate and confirm the harms suffered by the named individuals whose rights have been violated and other affected Inuit;
2. Hold a hearing to investigate the claims raised in this Petition;
3. Prepare a report setting forth all the facts and applicable law, declaring that the United States of America is internationally responsible for violations of rights affirmed in the American Declaration of the Rights and Duties of Man and in other instruments of international law, and recommending that the United States:
 - a. Adopt mandatory measures to limit its emissions of greenhouse gases and cooperate in efforts of the community of nations – as expressed, for example, in activities relating to the United Nations Framework Convention on Climate Change – to limit such emissions at the global level;
 - b. Take into account the impacts of U.S. greenhouse gas emissions on the Arctic and affected Inuit in evaluating and before approving all major government actions;
 - c. Establish and implement, in coordination with Petitioner and the affected Inuit, a plan to protect Inuit culture and resources, including, *inter alia*, the land, water, snow, ice, and plant and animal species used or occupied by the named individuals whose rights have been violated and other affected Inuit; and mitigate any harm to these resources caused by US greenhouse gas emissions;
 - d. Establish and implement, in coordination with Petitioner and the affected Inuit communities, a plan to provide assistance necessary for Inuit to adapt to the impacts of climate change that cannot be avoided;
 - e. Provide any other relief that the Commission considers appropriate and just.

X. VERIFICATION, SIGNATURE AND DESIGNATION OF ATTORNEYS

Sheila Watt-Cloutier, with the support of the Inuit Circumpolar Conference, presents this petition on behalf of the named individuals whose rights have been violated and other affected Inuit. (See Section IV.B.) By her signature below, Ms. Watt-Cloutier attests to the truthfulness of the facts set forth in this petition.

Ms. Watt-Cloutier wants her name used by the Commission in its communications with the government of the United States of America and with the public.

Paul Crowley is authorized to represent Ms. Watt-Cloutier in this case. All notices and communications to the petitioner in relation to this case should be sent to Mr. Crowley, counsel of record, at the address below.



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ANNEX I

Pitseolak Alainga, P.O. Box 595, Iqaluit, Nunavut, XOA OHO, Canada. Telephone: (867) 979-0285. Born 1967. Mr. Alainga works for the city of Iqaluit as a heavy equipment operator. He has a wife and three sons whom he enjoys taking out hunting. He and other hunters have had difficulties bringing food back for the community. This has affected their traditional community-based food practices. Mr. Alainga has also noticed a decrease in the quality of seal fur; changes in caribou migration; and the presence of new species of insects.

Heather Angnatok, PO Box 174, Nain, Newfoundland and Labrador, AOP ILO, Canada. Telephone: (709) 922-2942. Born 1965. Ms. Angnatok is a part of the Labrador Inuit Youth Division. She has four children and one grandchild. She reports that the ice and snow conditions have changed. Her husband and son once fell through the ice because it has become harder to judge whether the ice is safe for travel.

Evie Anilniliak, PO Box 59, Pangnirtung, Nunavut, XOA ORO, Canada. Telephone: (867) 473-8319. Born 1927. Ms. Anilniliak was born in Pangnirtung where she has lived most of her life. She is the mother of 6 adopted children. Ms. Anilniliak reports that the ice freezes much later in the winter, resulting in a shorter hunting season. She and other community members are now forced to rely more on store-bought food which has had an ill effect on their health.

Louis Autut, PO Box 15, Chesterfield Inlet, NU, X0C 0B0, Canada. Telephone: (867) 898-9094. Born 1936. Mr. Autut has lived in Chesterfield Inlet all his life, where he has hunted on the land and water since 1940. Changes in the quality of the snow have decreased his ability to build igloos. Mr. Autut also reports that the caribou are thinner and less healthy. Changes in river water levels have affected his ability to boat and fish.

Christine Baikie, PO Box 146, Nain, Newfoundland and Labrador, AOP ILO, Canada. Telephone: (709) 922-2829. Born 1931. Ms. Baikie was born in Tutak and moved to Nain in 1978. She now has 8 children, 13 grandchildren, and 9 great-grandchildren. Ms. Baikie reports that there is less sea ice in the wintertime, which leads to dangerous travel conditions. She also sees how this makes it harder to access the seal population and as a result they catch fewer seals. Since she came to Nain, the tides are higher. Moose, which never used to be around, are often in town.

Eugene Brower, PO Box 69, Barrow, AK, 99723, USA. Born 1946. Mr. Brower was born and raised in Barrow and has lived there since returning from his education in the south. He serves as Director of North Slope Borough Fire Department, President of Barrow Whaling Captains Association, and Weapons Improvement Chair for whaling across 10 communities. He has seen a number of new fish species in Barrow waters, and increased competition on the water for scarcer animal resources. Changes in the thickness and longevity of sea ice and the warming in his ice cellars is causing him concern. These changes increase Mr. Brower's risks during harvesting, as well as causing uncertainty and anxiety related to travel.

Ronald Brower, PO Box 75, Barrow, AK 99723, USA. Telephone: (907) 852-4510. Born 1948. Mr. Brower was born and spent his early years in a traditional community outside of Barrow, and moved into the village at age 6. He spent several years in the south and abroad for his education, but then returned to Barrow and now teaches Inupiat language and cultural history at Barrow Middle School. A whaling captain and heavily dependent on subsistence hunting, he has noticed new problems related to whaling from the thinner sea ice, changing land vegetation and its negative impacts on caribou, and food-stresses on the community from the scarcity of sea mammals.

Johnny Cookie, PO Box 6, Umiujaq, Quebec, JOM IYO, Canada. Telephone: (819) 331-7146. Born 1940. Mr. Cookie is from the Richmond Gulf area in Nimiriq, but he currently lives with his grandchildren. He reports that the duration of the seasons has changed during his lifetime.

Sappa Fleming, PO Box 195, Kuujjuarapik, Quebec, JOM IGO, Canada. Telephone: (819) 929-3642. Born August 10, 1956. Mr. Fleming has lived in Kuujjuarapik for his entire life. He has four sons, two daughters and one adopted child. Mr. Fleming is concerned about the effect that a shorter season of sea ice is having on the community's ability to hunt seal. He reports that there is less snow in the wintertime and that the sun feels hotter. Mr. Fleming is worried about the difficulty of passing on traditional knowledge to his sons now that there are fewer opportunities for them to hunt together.

Lizzie Gordon, Kuujjuaq, Quebec, JOM 1C0, Canada. Telephone: (819) 964-1144. Born March 9, 1933. Mrs. Gordon and her husband have 7 children and 21 grandchildren. Mrs. Gordon reports that there are now more polar bears and black bears around town and around her camp than there used to be. She has also found trees growing in places that used to be barren. She also lost several close family members who were stuck in an unexpected blizzard due to the rapidly changing weather patterns.

Sandy Gordon, Kuujjuaq, Quebec, JOM 1C0, Canada. Telephone: (819) 964-1144. Born September 30, 1937. Mr. Gordon and his wife, Lizzie, have 7 children and 21 grandchildren. Mr. Gordon reports the presence of migratory birds in his community that had not come there in the past. He also remembers an incident in which several travelers were stuck outside of town due to rapid snow melt and had to be rescued by helicopter.

David Haogak, PO Box 29, Sachs Harbour, NT X0E 0Z0, Canada. Telephone: (867) 690-3029. Born 1974. Mr. Haogak was born and raised in Sachs Harbour. He went south for high school and college but returned to Banks Island to take a position as the Iluvak National Park Site Manager. The President of the Sachs Harbour Hunters and Trappers Committee and a life-long hunter, he has witnessed a massive starvation of musk-oxen from increased winter ground ice and now experiences difficulties in traveling from increased fog. Mr. Haogak is concerned about the broad difficulties of struggling to adapt to accelerating environmental dangers.

Edith Haogak, PO Box 52, Sachs Harbour, NT, X0E 0Z0, Canada. Telephone: (867) 690-3040. Born 1930. Mrs. Haogak was born in Paulatuk. She and her parents lived a nomadic subsistence

life for years, traveling between Banks and Victoria Island and staying on the ice the whole winter, hunting seal and polar bear. She has lived in Sachs Harbour all her life, and reports that weather changes more rapidly than in the past and that the quality of caribou meat has diminished.

Julius Ikkusek, PO Box 152, Nain, Newfoundland and Labrador, AOP ILO, Canada. Telephone: (709) 922-1063. Born 1935. Mr. Ikkusek reports that the weather varies more quickly and drastically than it did in the past and that there are more polar bears around town. He also has noticed a decrease in snowfall, and that the snow conditions are so different that it is now harder to build igloos.

Lucas Ittulak, PO Box 167, Nain, Newfoundland and Labrador, AOP ILO, Canada. Telephone: (709) 922-1106. Born 1940. Mr. Ittulak has taught cultural and life skills youth camps for at least 15 years. In that time, he has noticed that the fishing season has become shorter and that the fish leave the rivers much earlier in the year. Mr. Ittulak also reports that there are more polar bears in town, attributing their presence to the fact that there is less sea ice. He has also noticed that the prevailing winds have changed from the West to the South.

Sarah Ittulak, PO Box 167, Nain, Newfoundland and Labrador, AOP ILO, Canada. Telephone: (709) 922-1106. Born 1930. Mrs. Ittulak has taught cultural and life skills youth camps for at least 15 years. She has noticed that the quality of sealskins has decreased, and that the caribou meat is not the same as it used to be. The sun also feels hotter to Mrs. Ittulak, which effects her traditional fish-drying practices.

Mina Jooktoo, PO Box 345, Kuujjuarapik, Quebec, JOM IGO, Canada. Telephone: (819) 929-3870. Born 1938. Mrs. Jooktoo was born near Sunykyluk, and now lives with her husband in Kuujjuarapik. She reports that seal fur is of a different quality than it used to be, and that the seals' molting season has changed. She has also noticed that berries do not ripen as much as they used to.

Willie Jooktoo, PO Box 345, Kuujjuarapik, Quebec, JOM IGO, Canada. Telephone: (819) 929-3870. Born 1933. Mr. Jooktoo was born near Kuujjuarapik and has lived in the area his whole life. He reports that the quality of water in the rivers and streams has decreased to the point that it is no longer drinkable. He has also seen the water level in lakes go down due to heat and evaporation. Mr. Jooktoo has begun to experience health problems due to an increased reliance on store-bought food.

Irving Kava, PO Box 102, Savoonga, AK 99769, USA. No telephone. Born 1953. Mr. Kava was born and grew up on the south side of St. Lawrence Island, hunting with his family from a young age. Mr. Kava reports that the winters have become warmer, with less land snow and less sea ice. He has also noticed increased erosion on the beach, which has made it more difficult to land boats.

John Keogak, General Delivery, Sachs Harbour, NT, X0E 0Z0, Canada. Telephone: 867-690-

4003. Born 1958. Mr. Keogak was born in Aklavik, and raised in the McKenzie Delta. He has relied heavily on subsistence hunting all his life. He reports that there are now periods when traveling to hunt is limited as there is too little snow for skidoos, and the ground is too muddy from the rapid thaw for ATVs. Mr. Keogak has also noticed that the behavior of some animals, including seals, has changed, and that fishing now produces less catch.

David Koneak, PO Box 505, Kuujuaq, Quebec, JOM 1C0, Canada. Telephone: (819) 964-1407. Born 1942. Mr. Koneak was born on a small island accessible by foot at low tide, not far from Hotek. He married at age 19 and has nine children. He and his family moved to Kuujuaq in 1957. He has been a subsistence hunter all his life, and has recently noticed that the weather has become less predictable and that the sea ice thaws much earlier in the year than it used to. Because of this, Mr. Koneak has seen several species of animals lose their habitat.

George Koneak, PO Box 278, Kuujuaq, Quebec, JOM 1C, Canada. Telephone: (819) 964-8844. Born 1931. Mr. Koneak is married with five sons and five daughters. He reports changes in the behavior and health of the animals, including displacement of the polar bear, walrus and osprey and incidents of caribou starving to death due to poor vegetation growth. These changes have made it difficult for Mr. Koneak to pass on traditional teachings to his ten children.

Ben Kovic, PO Box 60008, Iqaluit, Nunavut, XOA 1H0, Canada. Telephone: (867) 979-3066. Mr. Kovic was born in Quwaitin and moved to Baffin Island. Mr. Kovic is the president of Baffin Fisheries and has been in the field of wildlife management for over 30 years. During that time, he has noticed negative changes to caribou and seal health, as well as warmer temperatures in the winter and an increased incidence of sunburn.

Frank Kudlak, PO Box 9, Sachs Harbour, NT, X0E 0Z0, Canada. Telephone: (867) 690-4900. Born December 24, 1929. Mr. Kudlak was born on Victoria Island and lived in several other communities in the North before moving to Banks Island. He has hunted and trapped on the land his entire life. Mr. Kudlak reports that the summer weather has become much less desirable than in the past, that there are far fewer caribou, and that ice is not staying in the harbor for nearly as long as it used to.

Nora Kuzuguk, PO Box 24, Shishmaref, AK 99772. Telephone: (907) 649-3021. Mrs. Kuzuguk was born in Shishmaref, where she has lived her entire life. She works as a carving, sewing and language instructor at the Shishmaref School. She is active in food preservation and preparation, along with subsistence gathering of vegetation and fishing. She reports that many buildings along the shoreline are in precarious situations, and that beach clams, which used to be part of the subsistence diet, are no longer available.

John Lucas, PO Box 67, Sachs Harbour, NT X0E 0Z0, Canada. Telephone: (867) 690-4009. Mr. Lucas was born on Banks Island and has been hunting and trapping there all his life. He co-manages a tour service that takes clients sport-hunting for musk oxen and polar bear, and is an active subsistence hunter on land, sea and ice. He reports seeing massive erosion along the coast and along river and lake banks across Banks Island. Thinner sea ice has increased Mr. Lucas's

risk when polar bear hunting because of thinner sea ice.

Samantha Lucas, PO Box 67, Sachs Harbour, NT, X0E 0Z0, Canada. Telephone: (867) 690-4009. Born 1947. Mrs. Lucas was born in Tuktoyaktuk. Since moving to Sachs Harbour, she has been active in hunting, trapping and traveling, and co-manages a sport-hunting tour operation. In addition, she collects monthly data on game caught for the Inuvialuit Fisheries Joint Management Committee. She has found that more polar bears are being stranded on the island and coming into town, and that there has been a change in migration patterns of geese that has made them more difficult to hunt. More frequent weather delays for flights to Banks Island has decreased the quality of foods imported and available to Mrs. Lucas and others in the community.

Trevor Lucas, PO Box 67, Sachs Harbour, NT, X0E 0Z0, Canada. Telephone: (867) 690-4009. Born 1974. Mr. Lucas was born and raised in Sachs Harbour, and has been hunting and trapping all his life. He now works actively as a polar bear and musk-ox hunting guide. He has been stranded on the far side of unusually high rivers recently, and has noticed thinner, less healthy musk-oxen. Mr. Lucas has also noticed increased erosion and mud-slides along rivers and lakes.

Pauloosie Lucassie, PO Box 434, Iqaluit, Nunavut, XOA OHO, Canada. Telephone: (867) 979-3691. Born 1947. Mr. Lucassie was born outside of Iqaluit and has lived in the area his entire life. He has spent time on the land ever since he was a child and practices subsistence hunting. Mr. Lucassie also teaches hunting and igloo-building skills. He has more difficulty hunting these days, due to poor travel conditions and the need to find alternate routes. It has also become harder for him to find snow for igloo building. Mr. Lucassie also reports a decrease in the seal population, and an increase in polar bear sightings.

Jack Maniapik (Mayor), PO Box 253, Pangnirtung, NT, XOA ORO, Canada. Telephone: work: (867) 473-2604; home: (867) 473-8361. Born 1956. Mr. Maniapik was born in an outpost camp and moved to Pangnirtung in 1966 at the age of 10. He is now mayor of Pangnirtung. He has five siblings and three children. Mr. Maniapik reports that the ice freezes later in the winter now, which shortens the fishing season. Mr. Maniapik and other community members have also seen more polar bears in and around the town.

Tony Mannernaluk, PO Box 267, Rankin Inlet, NU, X0C 0G0, Canada. Telephone: (867) 645-3184. Born 1935. Mr. Mannernaluk was born and raised in a camp far outside any community. He was trained and worked as a carpenter, and has served as a Northern Ranger since 1992, a post that involves emergency outdoor rescues. He is an active subsistence hunter. Mr. Mannernaluk reports that some rivers have become impossible to navigate due to a drop in water levels. He has also noticed that more people are being stranded out on the land due to rapidly changing weather and a decrease in the winter ground snow that makes travel much more difficult.

Rosemund Martin, PO Box 6, Savoonga, AK 99769, USA. No telephone. Born October 26, 1933. Mrs. Martin was born and raised in Savoonga and has lived there all her life. She

routinely gathers greens, berries, and roots and has worked with skins and furs for sewing and handicrafts. She reports that food spoils and becomes insect-infested more quickly when it is left out to dry than it used to; that there has been a decrease in the quality and quantity of greens that she can harvest in season; and that drier soil has resulted in a decrease in the quality of edible roots.

Warren Matumeak, PO Box 405, Barrow, AK 99723, USA. Telephone: (907) 852-5218. Born 1927. Mr. Matumeak grew up in the old community of sod houses that was located on Point Barrow before the erosion began in earnest. His father and grandfather trained him to hunt on the tundra from an early age. He worked for the North Slope Borough Zoning Commission, and eventually became director of NSB Wildlife Management. He reports that increased permafrost melting has caused rippling, damaged air-strips, and damage to and shifting of his home. He also has trouble keeping his meat cellar cool enough in a way that he did not before.

Jamesie Mike, Pangnirtung, Nunavut, XOA ORO, Canada. (No telephone.) Born November 1, 1928. Mr. Mike was born on the North Cumberland Sound before the community was established in Pangnirtung. He lived in outpost camps as a child and moved to Pangnirtung in the 1950's. Mr. Mike has 12 children and approximately 50 grandchildren. He reports that the sea ice is forming thinner and melting faster than in the past, making it more difficult for the fishermen who spend part of the year living on the ice, and for the hunters who catch game on the ice. He has also witnessed land slumping due to melting permafrost.

Meeka Mike, PO Box 797, Iqaluit, Nunavut, XOA OHO, Canada. Telephone: (867) 979-1600. Born 1966. Ms. Mike was raised in the traditional camping style and still does her own hunting. She currently runs a dog team touring operation in Iqaluit. She reports rapid changes in wind direction; increased rainfall; and changes to the caribou and seal populations. Ms. Mike's business has been affected due to the shorter cold season and changes in snow quality.

Roy Nageak, PO Box 354, Barrow, AK 99723, USA. Telephone: (907) 852-7696. Born 1951. Mr. Nageak moved to Barrow during his early childhood and, except for some schooling in the south, has lived there since. A highly active subsistence hunter and whaling captain, he also serves as a member of the Native Village council. Mr. Nageak has noticed a steady decrease in the size of whales that he can harvest, due to reduced thickness of sea ice. He also reports that there are seasons in which large groups of hunters miss sea mammals entirely because the ice now travels by early and rapidly. He also feels that there is less time available for young hunters to experience the skills necessary for their work.

Annie Napayok, PO Box 103, Whale Cove, NU, X0C 0J0, Canada. Telephone: (867) 896-9025. Born March 18, 1937. Mrs. Napayok was born and raised in Coral Harbour and lived in several other communities in the North including Iqaluit and Arviat. She has worked as a cook's aid and a janitor and has always been involved in teaching younger people how to prepare and work with skins and nutritious foods. She reports that meat now sometimes spoils before hunters even have a chance to get it back into the community. She has also seen a decrease in the quality of drinking water from lakes because of lower water levels, and a decrease in the quantity of fish

in streams and rivers.

Enosilk Nashalik, Pangnirtung, Nunavut, XOA ORO, Canada. Born 1919. Mr. Nashalik was born in an old whaling station and is the oldest person in Pangnirtung. He has been an avid hunter his whole life and used to teach survival skills to young people at the community school. Mr. Nashalik reports that changes in the freezing and melting of the ice have resulted in an altered habitat for seals and a decline in their fur quality. He and others have also experienced health problems related to an increased reliance on store-bought food. Changes in the weather have made it harder for Mr. Nashalik to predict the weather using traditional knowledge.

Simon Nattaq II, PO Box 972, Iqaluit, Nunavut, XOA OHO, Canada. Telephone: (867) 979-6015. Born 1945. As a child, Mr. Nattaq spent long periods of time on the land outside the settlement. He reports a decrease in the quality of water and meats, and changes that have made it more difficult for him to predict the weather. Mr. Nattaq now feels more in danger of falling through the ice because it is often thinner than it used to be. He is also experiencing new difficulties in passing on traditional knowledge of weather prediction and igloo building.

Herbert Nayokpuk, PO Box 30, Shishmaref, AK 99772, USA. Telephone: (907) 649-3301. Born June 12, 1929. Mr. Nayokpuk was born and raised in Savoonga. He is a champion dog musher and was among the first inductees to the Iditarod Hall of Fame. Mr. Nayokpuk has noticed less rain in August and more dry lakes; unseasonably warm temperatures; and a massive loss of land from erosion each time the water is high.

George Noongwook, PO Box 81, Savoonga, AK 99769, USA. Telephone: work: (907) 984-6414; home: (907) 984-6231. Born before 1955. Mr. Noongwook was born in Savoonga. When he was a child, his uncle taught him to hunt. He now spends much of his time on the sea ice and tundra, and in the country pursuing living a subsistence life. He is also Savoonga's commissioner to the Alaskan Eskimo Whaling Commission. Mr. Noongwook reports that there is increased stress and anxiety among hunters because of greater uncertainty about hunting and traveling; that hunters must travel greater distances to reach hunting territory as the ice edge recedes; and that more hunters are falling through the thinner ice.

Peter Paneak, PO Box 56, Clyde River, Nunavut, XOA OHO, Canada. Telephone: (867) 924-6135. Born March 13, 1934. Mr. Paneak was born and raised in the Samford Fjord area on a small island. He has noticed that the weather has become less predictable, making traditional knowledge less useful, and that meat caching is no longer effective for food storage because the increase in polar bear activity around town leaves cached meat vulnerable to the polar bears. He has seen changes in species: seals are being found with no fur, less caribou are around and there are more mosquitoes.

Uqallak Panikpak, Clyde River, Nunavut, Canada. Born 1939. Ms. Panikpak was born near Clyde River and has lived in the area her whole life. She has 7 children, one adopted child and 14 grandchildren. Ms. Panikpak practices traditional meat drying and makes traditional clothing from animal skins. She also gathers berries for food in the summertime. Ms. Panikpak reports

that polar bears are becoming too thin to eat, and that the ice is melting much earlier in the spring than it used to. She has also seen and experienced sunburn, which never used to happen.

Joanasie Qappik, PO Box 372, Pangnirtung, Nunavut, XOA ORO, Canada. Telephone: (867) 473-8391. Born September 6, 1933. Mr. Qappik has four children and was married for 47 years. He reports that the late freezing and early melting of the ice has reduced the ability of the hunters and fishermen to be out on the land. He also has seen changes in wildlife, including the quality of seal fur, and has seen the negative health effects that an increased reliance on store-bought food has brought to his community.

Apak Qaqqasiq, Clyde River, Nunavut, XOA OHO, Canada. No telephone. Born 1934. Mr. Qaqqasiq was born inland near Pangnirtung and moved to Clyde River when his community relocated to the settlement. He has 10 children and many grandchildren. Changes in weather have caused Mr. Qaqqasiq to travel less. He is less able to rely on traditional weather predicting skills, because the weather has become unpredictable and the prevailing wind direction has shifted. He also cannot cache meat anymore, out of fear that it will get eaten by polar bears.

James Qillaq, PO Box 104, Clyde River, Nunavut, XOA OEO, Canada. Telephone: (867) 924-6288. Born 1951. Mr. Qillaq is the director of HTO (a hunter's association). He has spent much of his life in outpost camps and as a hunter. He reports that the glaciers surrounding Clyde River have disappeared; that some rivers that historically froze over in the winter are no longer doing so; and that there is more sediment in the rivers, making the water unsafe for drinking.

Paul Rookok, PO Box 135, Savoonga, AK 99769, USA. Telephone: (907) 984-6329. Born 1940. Mr. Rookok was raised in Savoonga and went south for several years for education and technician training. He began a subsistence way of life on his return and has been hunting and whaling ever since. Mr. Rookok has noticed that the spring whaling season has become shorter, which sometimes results in no catch. He also reports that the beach has been changed by erosion, and that less walrus are available because the ice is thinner.

Joshua Sala, PO Box 40, Umiujaq, Quebec, JOM IYO, Canada. No telephone. Born 1937. Mr. Sala grew up in Sanikiluaq. He has one child and several grandchildren. Mr. Sala has noticed that the ice forms much later in the season and melts much earlier. This has shortened the hunting season and reduced hunters' access to wildlife.

Akittiq Sanguya, PO Box 106, Clyde River, Nunavut, XOA OEO, Canada. Telephone: (867) 924-6297. Born July 1, 1935. Ms. Sanguya was born across the inlet from Clyde River and has lived in the area her whole life. She has 7 children, 21 grandchildren and one great-grandchild. Ms. Sanguya has spent time on the land all her life, both as a child and as a mother. She used to go fishing and seal and caribou hunting by dogsled. She and her husband used to rely on a diet of only country food but now she must rely on store-bought food. Ms. Sanguya reports changes in the quality of animal skins; that the sea ice is melting faster and earlier; and that the weather has become harder to predict.

John Sinnok, PO Box 62, Shishmaref, AK 99772, USA. Telephone: (907) 649-3531. Mr. Sinnok is a carving, sewing and language instructor at Shishmaref school, a life-long resident of the community and a subsistence hunter. He reports that the ice that used to buffer their beach from winter storms no longer forms, resulting in massive erosion that jeopardizes the community's traditional food preparation areas. He has also noticed that there is more "slush-ice," which is extremely weak and can be a danger to ice travel when it is covered with snow.

Jerome Tattuinee, Lot 600th Sk 272, Rankin Inlet, NU, X0C 0G0, Canada. Telephone: (867) 645-2550. Born March 15, 1932. Mr. Tattuinee grew up in Repulse Bay. For as long as he can remember he has been tied to the land and the environment. He was trained in traditional forecasting and reports that those methods are now virtually useless because of the rapid changes in weather. Harder snow now makes it more difficult for him and others to build igloos and the caribou herds are now generally thinner than in the past.

Stanley Tocktoo, PO Box 128, Shishmaref, AK 99772, USA. Telephone: (907) 649-8594. Mr. Tocktoo is the mayor of Shishmaref and a carving, sewing and language instructor at Shishmaref School. He is active in Shishmaref Emergency Services search and rescue and is a lifelong resident and subsistence hunter. He reports that erosion has destroyed the community's traditional drying rack area, and that changes in the ice have trapped people in town until it is too late to get to fish in the inland rivers. Mr. Tocktoo has also noticed that the community is beginning to experience health impacts due to the decreased availability of country food, encouraging a switch to store-bought food.

Robbie Tookalak, PO Box 50, Umiujaq, Quebec, JOM IYO, Canada. Telephone: home: (819) 331-7094; work: (819) 331-7000. Born February 2, 1944. Mr. Tookalak has been the mayor of Umiujaq for nine years. Prior to that he was the major of Umkuijuapiq for six and a half years and has worked for the Municipal Corporation since 1978. He reports that the winter comes later in the season and that the spring thaw is much more rapid. He has also noticed an increase in vegetation. He has difficulty traveling because the weather is less predictable and because of the duration of storms.

Kenneth Toovak, PO Box 381, Barrow, AK 99723, USA. Telephone: (907) 852-6335. Born 1923. Mr. Toovak was born and raised in Barrow and has lived there all his life. He served for years as an assistant to the scientists at the Naval Arctic Research Labs and was granted an Honorary Doctorate from the University of Alaska at Fairbanks for that work. He has noticed that the sun feels hotter than in the past; that snow now melts far more rapidly in the spring; and that Barrow is now more in danger from flooding because of the decrease in the shore-fast ice which used to break up big waves before they came to the shore.

Alec Tuckatuck, PO Box 18, Kuujjuarapik, Quebec, JOM IGO, Canada. Telephone: work: (819) 929-3348; home: (819) 929-3021. Born 1938. Mr. Tuckatuck is the president of Sakkug Landholding Corporation. He was born south of Kuujjuarapik in 1938. He began hunting at an early age, because his father died when he was 12 years old. Mr. Tuckatuck has three daughters and 12 grandchildren. He reports that the denning period for seals has become shorter because

of the reduction in sea ice. He is forced to buy more store-bought food these days because he is no longer able to catch enough country food to feed his whole family.

Clara Tomic, PO Box 58, Umiujaq, Quebec, JOM IYO, Canada. Telephone: (819) 331-7095. Born 1950. Mrs. Tomic came to Umiujaq in 1984. She and her husband, Isaac, have 4 children, 18 grandchildren and 3 great-grandchildren. Many of the lakes in her area have less water or have dried up completely and she has experienced rashes and sunburn that she had not experienced before.

Isaac Tomic, PO Box 58, Umiujaq, Quebec, JOM IYO, Canada. Telephone: (819) 331-7095. Born 1947. Mr. Tomic and his wife, Clara, have 4 children, 18 grandchildren and 3 great-grandchildren. He hunts on the land, and has noticed a reduction in the population of fish and seals, as well as changes in weather patterns and a decrease in precipitation.

Sheila Watt-Cloutier, P.O. Box 2099, Iqaluit, Nunavut, X0A 0H0, Canada, Telephone: (867) 979-4661. Ms. Watt-Cloutier is Chair of the Inuit Circumpolar Conference (ICC), the Inuit organization that represents the interests internationally of Inuit resident in Canada, Greenland, Alaska, and Chukotka in the Far East of the Federation of Russia. Currently living in Iqaluit, Nunavut, she was born in Kuujuaq, Nunavik (northern Quebec) in 1953, and was raised traditionally in her early years before attending school in southern Canada. She is a mother of two and a grandmother of one. Ms. Watt-Cloutier is an avid berry picker and eats a diet of country food whenever possible. She is particularly concerned that her grandson will not be able to live the Inuit hunting and food-sharing culture that has sustained Inuit physically and spiritually for generations.

Moses Weetaltuk, PO Box 301, Kuujuarapik, Quebec, JOM IGO, Canada. Telephone: (819) 929-1086. Born 1954. Mr. Weetaltuk was born near James Bay on Cape Hope Island. He moved to Kuujuarapik in 1960 to attend school. He has three adopted children and has been a subsistence hunter all his life. Mr. Weetaltuk reports that the winter sea ice comes much later and thaws much earlier in the season, resulting in a shorter hunting period and dangerous spring conditions. He has also noticed a change in bear habitat and an increase in the strength of the winds.

Stephen Weyiouanna, PO Box 80, Shishmaref, AK 99772, USA. Telephone: (907) 649-3631. Born 1930. Mr. Weyiouanna has lived in Shishmaref most of his life. He reports that a beach in his community that used to be wide enough to serve as a landing strip for small planes is now only a few feet wide.

Geddes Wolki, PO Box 88, Sachs Harbour, NT X0E 0Z0, Canada. No telephone. Born November 28, 1933. Mr. Wolki was born on Big Bluff, about 20 miles north of Lenny Harbour on Banks Island. He has lived and hunted on Banks Island most of his life. He reports that stronger winds now blow more dust and mud onto the snow and ice and accelerate its melting. The quality of the land in Mr. Wolki's community has changed because of permafrost melting, and the ground is now wetter, with many puddles.

Lena Wolki, PO Box 88, Sachs Harbour, NT, X0E 0Z0, Canada. Telephone: (867) 690-3013. Mrs. Wolki was born on Victoria Island and moved to Banks Island when she was young. Her father died when she was three, so she and her mother did the necessary hunting and traveling. She has 5 children. Her husband trapped and she prepared the furs. It is now harder for Mrs. Wolki and others to teach children about the land because of changes in the spring weather. Changes in the water levels in lakes and rivers have affected fishing and land travel in her community.

Jerry Wongitillin, PO Box 20, Savoonga, AK, 99769, USA. Telephone: (907) 984-6676. Mr. Wongitillin was raised in Savoonga and served as mayor for 40 years. Throughout his youth, he spent as much as six months each year camping on the land. He reports that the ice goes out earlier and comes in later every year. Polar bears in Mr. Wongitillin's community are now sometimes left on the island in large numbers by rapidly receding ice and have to be shot lest they endanger the town.

ENDNOTES

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- ¹ Remarks by Sheila Watt-Cloutier, Chair of Inuit Circumpolar Conference, to the United Nations Environment Programme “Champions of the Earth” Award Ceremony, New York (April 19, 2005), available at <http://www.inuitcircumpolar.com/index.php?ID=294&Lang=En>.
- ² INUIT TAPIIRIT KANATAMI (“ITK”), *Cultural Origins*, available at <http://www.itk.ca/5000-year-heritage/cultural-origin.php>.
- ³ ITK, *Cultural Origins*, at <http://www.itk.ca/5000-year-heritage/our-ancestors.php>.
- ⁴ ITK, *Early History*, at <http://www.itk.ca/5000-year-heritage/early-history.php>.
- ⁵ *Id.*
- ⁶ ITK, *Our Ancestors*, at <http://www.itk.ca/5000-year-heritage/our-ancestors.php>.
- ⁷ MARGIE ANN GIBSON & SALLIE B. SCHULLINGER, ANSWERS FROM THE ICE EDGE: THE CONSEQUENCES OF CLIMATE CHANGE ON LIFE IN THE BERING AND CHUKCHI SEAS at 5 (Arctic Network & Greenpeace USA, June 1998) available at <http://archive.greenpeace.org/climate/arctic/reports/testimonies.pdf> (last visited October 26, 2005).
- ⁸ ITK, *Out 5000-year Heritage*, at <http://www.itk.ca/5000-year-heritage>.
- ⁹ GIBSON & SCHULLINGER, *supra* note 7 at 5-6.
- ¹⁰ *Id.* at 6.
- ¹¹ *Id.* at 5-6.
- ¹² Remarks by Sheila Watt-Cloutier, Chair of the Inuit Circumpolar Conference, The World Bank Environmentally and Socially Sustainable Development Week, Washington, DC (March 30, 2005), available at <http://www.inuitcircumpolar.com/index.php?ID=290&Lang=En>.
- ¹³ NUNAVUT SOCIAL DEVELOPMENT COUNCIL (“NSDC”), ON OUR OWN TERMS: THE STATE OF INUIT CULTURE AND SOCIETY, (2000), at 75-76.
- ¹⁴ Remarks by Sheila Watt-Cloutier, Chair of the Inuit Circumpolar Conference, The World Bank Environmentally and Socially Sustainable Development Week, Washington, DC, (March 30, 2005), available at <http://www.inuitcircumpolar.com/index.php?ID=290&Lang=En>.
- ¹⁵ ITK, *Traditional Knowledge: Facts and Concepts*, at <http://www.itk.ca/environment/tek-facts.php>.
- ¹⁶ Arctic Climate Impact Assessment, Impacts of a Warming Climate: Final Overview Report (“ACIA Overview”) 668 (Cambridge University Press 2004), available at <http://www.amap.no/acia/> (last visited February 4, 2005).
- ¹⁷ *Id.*, at 669.
- ¹⁸ ITK, *Inuit Today*, at <http://www.itk.ca/5000-year-heritage/inuit-today.php>.
- ¹⁹ ACIA Overview, *supra* note 16, ch. 12 at 669.
- ²⁰ NSDC, *supra* note 13, at 84.
- ²¹ ITK, *Initiatives*, at <http://www.itk.ca/sed/initiatives-ipr.php>.
- ²² ITK, *Environment*, at <http://www.itk.ca/environment/index.php>.
- ²³ Remarks by Sheila Watt-Cloutier, Chair of the Inuit Circumpolar Conference, The World Bank Environmentally and Socially Sustainable Development Week, Washington DC (March 30, 2005), available at <http://www.inuitcircumpolar.com/index.php?ID=290&Lang=En>.
- ²⁴ ITK, *Understanding Inuit Knowledge*, at <http://www.itk.ca/environment/tek-understanding.php>.
- ²⁵ ACIA Overview, *supra* note 16, ch. 12 at 672.
- ²⁶ ACIA Overview, *supra* note 16, ch. 12 at 655 (citation omitted).
- ²⁷ GIBSON & SHULLINGER, *supra* note 7, at 6; ACIA Overview, *supra* note 16, ch. 12 at 655.
- ²⁸ See ACIA Overview, *supra* note 16, ch. 12 at 655; Richard G. Condon, *Modern Food Sharing Networks and Community Integration in the Central Canadian Arctic*, in ARCTIC December 1998.

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- ²⁹ GIBSON & SHULLINGER, *supra* note 7, at 6; ACIA Overview, *supra* note 16, ch. 12 at 655.
- ³⁰ ACIA Overview, *supra* note 16, ch. 12, at p. 667 (citations omitted).
- ³¹ Charles Wohlforth, *The Īñupiaq Supercomputer: What The Whale Hunters Know & Some Scientists Want To Discover*, ANCHORAGE PRESS, Vol. 10, Ed. 45 (Nov. 8 – Nov. 14, 2001), available at <http://www.anchoragepress.com/archives/document097a.html>.
- ³² Terry Fenge, *The Inuit and Climate Change*, ISUMA at 81 (Winter 2001); see also NSDC, *supra* note 13, at 79 (describing the concept of IQ as including all aspects of the Inuit way of life); ACIA Overview, *supra* note 16, ch. 3, at 64 (describing the various terms for the concept of traditional knowledge, and their shortcomings as descriptive names).
- ³³ Wohlforth, *supra* note 31.
- ³⁴ ITK, *Traditional Knowledge*, at <http://www.itk.ca/environment/tek-index.php>.
- ³⁵ Intergovernmental Panel on Climate Change (hereinafter IPCC), <http://www.ipcc.ch/>.
- ³⁶ C.K. Folland, et al., *Observed Climate Variability and Change*, in *Climate Change 2001: The Scientific Basis* 101 (J.T. Houghton et al., 2001).
- ³⁷ *Id.*
- ³⁸ *Id.*
- ³⁹ Committee on the Science of Climate Change, National Research Council, *Climate Change Science: An Analysis of Some Key Questions* 3 (National Academy Press 2001).
- ⁴⁰ See, e.g., United States Environmental Protection Agency, Global Warming, available at <http://www.epa.gov/oar/globalwarming.nsf/content/climate.html> (“[G]lobal average surface temperature (the average of near surface air temperature over land, and sea surface temperature) has increased since 1861. Over the 20th century the increase has been 0.6, plus or minus 0.2 degrees Celsius.”).
- ⁴¹ Climate Change Science Program and the Subcommittee on Global Change Research, *Our Changing Planet* (2004), available at <http://www.usgcrp.gov/usgcrp/Library/ocp2004-5/ocp2004-5-hi-clivar.htm>.
- ⁴² World Meteorological Organization, *WMO Statement on the Status of the Global Climate in 2004*,₂ (summarizing information provided by the Hadley Centre of the Met Office, United Kingdom; the Climatic Research Unit, University of East Anglia, United Kingdom; the National Climatic Data Center and the Climate Prediction Center of the National Oceanic and Atmospheric Administration (NOAA), United States; and contributions from Argentina, Australia, Canada, China, France, Germany, Iceland, India, Japan, Mauritius, New Zealand, Norway, Russia, Sweden, Switzerland, as well as from the International Research Institute for Climate Prediction in New York, the IGAD Climate Prediction and Applications Centre in Nairobi, and the AGRHYMET Centre in Niamey) (2005), available at <http://www.wmo.ch/index-en.html>.
- ⁴³ *Id.*, at 4.
- ⁴⁴ ACIA Overview, *supra* note 16.
- ⁴⁵ *Id.*
- ⁴⁶ Oleg Anisimov et al., Polar Regions (Arctic and Antarctic), in *Climate Change 2001: Impacts, Adaptation, and Vulnerability* 811 (James J. McCarty et al., eds., Cambridge University Press 2001).
- ⁴⁷ ACIA Overview, *supra* note 16, at 82.
- ⁴⁸ *Id.*
- ⁴⁹ U.S. General Accounting Office, *Flooding and Erosion in Alaska Native Villages* (“GAO Flood Report”), GAO-04-142, Dec. 2003, at 8.
- ⁵⁰ *Id.*, at 88-89.
- ⁵¹ *Id.*, at 7.
- ⁵² Church et al., *Changes in Sea Level*, in *Climate Change 2001: Impacts, Adaptation, and Vulnerability* 641 (James J. McCarty et al., eds., Cambridge University Press 2001).
- ⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ Oleg Anisimov *et al.*, *supra* note 46.

⁵⁶ NASA Goddard Space Flight Center, *Greenland's Receding Ice*, available at: <http://svs.gsfc.nasa.gov/stories/greenland/>.

⁵⁷ David Shukman, *Greenland Ice Melt 'Speeding Up*, BBC News World Edition, July 28, 2004, at <http://news.bbc.co.uk/1/hi/world/europe/3922579.stm>.

⁵⁸ Habiba Gitay, *Ecosystems and Their Goods and Services*, in *Climate Change 2001*, at 247.

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.* at 271.

⁶² Terry L. Root, *et al.*, *Fingerprints of Global Warming on Wild Animals and Plants*, 421 *Nature* 57, 58 (2003).

⁶³ Camille Parmesan & Gary Yohe, *A Globally Coherent Fingerprint of Climate Change Impacts Across Natural Systems*, 421 *Nature* 37, 38 (2003).

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ US Global Change Research Program, *US National Assessment of the Potential Consequences of Climate Variability and Change Educational Resources Regional Paper: Alaska* (2003) <http://www.usgcrp.gov/usgcrp/nacc/education/alaska/ak-edu-5.htm>.

⁶⁷ *Id.*

⁶⁸ Gian-Reto Walther *et al.*, *Ecology: All Change*, 416 *Nature* 389, 392 (2002).

⁶⁹ *Id.*

⁷⁰ To avoid potentially conflicting regulatory regimes, the UNFCCC and Kyoto Protocol exempt from their control measures gases controlled by the Montreal Protocol. *See, e.g.*, UNFCCC, Art. 4.

⁷¹ IPCC, *Summary for Policy Makers: Third Assessment Report 5* (2001); National Oceanic and Atmospheric Administration, *Greenhouse Gases*, available at: <http://lwf.ncdc.noaa.gov/oa/climate/gases.html#INTRO>.

⁷² T.J. Blasing and Sonja Jones, "Current Greenhouse Gas Concentrations," Feb. 2005, at http://cdiac.esd.ornl.gov/pns/current_ghg.html.

⁷³ U.S. Environmental Protection Agency, *U.S. Emissions Inventory 2005*, available at <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ResourceCenterPublicationsGHGEmissionsUSEmissionsInventory2005.html>.

⁷⁴ TAR, *Synthesis Report, Summary for Policymakers* (2001), at 4 ("there is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities"). Addressing criticism that not enough is known about the climate system to unequivocally establish a causal linkage between the buildup of greenhouse gases in the atmosphere and observed climate changes during the 20th century, the IPCC explains that obtaining the desired degree of certainty would require, in effect, turning the planet into a massive scientific laboratory.

⁷⁵ *Id.* at 697. These consistencies include, among other things, global warming and diminished Arctic sea-ice extent, and glacial retreat. *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.* at 728.

⁷⁹ *Id.*

⁸⁰ Naomi Oreskes, *The Scientific Consensus on Climate Change*, 306 *SCIENCE* 1686 (2004), available at <http://www.sciencemag.org/cgi/content/full/306/5702/1686#ref9> (last visited Oct. 26, 2005).

⁸¹ *Id.*

⁸² See, e.g., National Geographic Society, *Strange Days on Planet Earth*, television documentary available at http://www.pbs.org/strangedays/index_flash.html; see also, Tim Appenzeller, et al., *Signs from Earth*, National Geographic Society Magazine (September 2004).

⁸³ See www.ourplanet.com/aaas/pages/atmos02.html.

⁸⁴ American Meteorological Society, *Bull. Am. Meteorol. Soc.* 84, 508 (2003).

⁸⁵ American Geophysical Union, *Human Impacts on Climate* (December 2003), available at http://www.agu.org/sci_soc/policy/climate_change_position.html (last visited Aug. 4, 2004).

⁸⁶ National Assessment Synthesis Team, *Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change*, at 6 (Cambridge University Press, 2001).

⁸⁷ *Id.* at 284.

⁸⁸ *Id.* at 285.

⁸⁹ National Academy of Sciences Committee on the Science of Climate Change, *Climate Change Science: An Analysis of Some Key Questions* at 1 (National Academy Press, Washington, DC, 2001).

⁹⁰ *Id.* at 5.

⁹¹ See Third National Communication of the United States of America Under the United Nations Framework Convention on Climate Change (U.S. Department of State, May 2002) (“U.S. Climate Action Report - 2002”), available at <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ResourceCenterPublicationsUSClimateActionReport.html>.

⁹² See *id.* at 4.

⁹³ *Id.* at 85.

⁹⁴ *Id.* at 110.

⁹⁵ See The Climate Change Research Initiative, available at: <http://www.climatescience.gov/about/ccri.htm>.

⁹⁶ Climate Change Science Program and the Subcommittee on Global Change Research, available at: <http://www.usgcrp.gov/usgcrp/Library/ocp2004-5/ocp2004-5-hi-clivar.htm>.

⁹⁷ See, e.g., Jennifer Lee, “Exxon Backs Groups That Question Global Warming” Jennifer Lee, *New York Times*, May 28, 2003 (reporting that “the company [Exxon Mobil], the world’s largest oil and gas concern, has increased donations to Washington-based policy groups that, like Exxon itself, question the human role in global warming and argue that proposed government policies to limit carbon dioxide emissions associated with global warming are too heavy handed.”); S. van den Hove, M. Le Menestrel, H.-celsius. de Bettignies, *Climate Policy* 2 (1), 3 (2003).

⁹⁸ See, e.g., U.S. Environmental Protection Agency, *The Potential Effects of Climate Change on the United States* (1989), at 25 (noting that polar surface air may warm by as much as three times the global average).

⁹⁹ ACIA Overview, *supra* note 16, at 10.

¹⁰⁰ *Id.* at 20.

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.*

¹⁰⁴ *Id.*

¹⁰⁵ G. McBean, et al., *Arctic Climate – Past and Present* (Pre-release Version, Mar. 24, 2005), at 54.

¹⁰⁶ *Id.*

¹⁰⁷ U.S. Interagency Climate Change Science Program (observing that the Arctic region warmed at an annual average rate of 0.3°C per decade over sea ice (those portions of the Arctic Ocean where 80% of ocean surface is covered by ice), 0.5°C per decade over the high latitude (poleward of 60 degrees North)

region of Eurasia, and 1.0°C over the high latitude region of North America), *available at* <http://www.climatescience.gov/about/ccri.htm>.

¹⁰⁸ ACIA Overview, *supra* note 16, at 11, 16; GIBSON & SCHULLINGER, *supra* note 7, at 6.

¹⁰⁹ ACIA Overview, *supra* note 16, at 11, 16; GIBSON & SCHULLINGER, *supra* note 7, at 5-6.

¹¹⁰ GIBSON & SCHULLINGER, *supra* note 7, at 6; SHEILA WATT-CLOUTIER, TERRY FENGE, & PAUL CROWLEY, RESPONDING TO GLOBAL CLIMATE CHANGE: THE PERSPECTIVE OF THE INUIT CIRCUMPOLAR CONFERENCE ON THE ARCTIC CLIMATE IMPACT ASSESSMENT, (“Watt-Cloutier, *et al.*”), *available at* <http://www.inuitcircumpolar.com/index.php?ID=267&Lang=En> (last visited Nov. 2, 2005).

¹¹¹ *See generally* GIBSON & SCHULLINGER, *supra* note 7, (comparing western scientific observations to Inuit observations of climate change); ACIA Overview, *supra* note 16, ch. 3 at 64; Wohlforth, *supra* note 31; Watt-Cloutier, *et al.*, *supra* note 110.

¹¹² *See* ACIA Overview, *supra* note 16, at 18-19, 22 (dividing the Arctic into four “sub-regions,” and describing effects that are common to all and noting effects that differ according to sub-region).

¹¹³ ACIA Overview, *supra* note 16, at 10.

¹¹⁴ *Id.* at 20, 34-39 (describing feedback loops that increase the rate of arctic warming).

¹¹⁵ ACIA Overview, *supra* note 16, at 12-13; NIKITTUITTUQ LTD., INUIT QAUJIMAJANGIT, INUIT KNOWLEDGE OF CLIMATE CHANGE, SOUTH BAFFIN: A SAMPLE OF INUIT EXPERIENCES OF RECENT CLIMATE AND ENVIRONMENTAL CHANGES IN PANGNIRTUNG AND IQALUIT NUNAVUT 5-7, 10-13, 20-23 (April 2003) (“SOUTH BAFFIN”); NIKITTUITTUQ LTD., INUIT QAUJIMAJANGIT, INUIT KNOWLEDGE OF CLIMATE CHANGE, NORTH BAFFIN: A SAMPLE OF INUIT EXPERIENCES OF RECENT CLIMATE AND ENVIRONMENTAL CHANGES IN CLYDE RIVER, POND INLET, RESOLUTE, GRISE FIORD, NUNAVUT 8-13 (April 2003) (“NORTH BAFFIN”).

¹¹⁶ ACIA Overview, *supra* note 16, at 10, 13; GIBSON & SCHULLINGER, *supra* note 7, at 12, 14, 15; SOUTH BAFFIN, *supra* note 115, at 11-12, 13-14, 18, 20, 22, Appendix B at 2, 8, 16, 51, 55, 56, 58, 60, Appendix C at 27-29, 43-46, 62; GOLDER ASSOCIATES, LITERATURE REVIEW AND GAP ANALYSIS OF KITIKMEOT REGION, NUNAVUT 9-10, 11 (March 31, 2003) (“KITIKMEOT REGION”); INUIT TAPIRIIT KANATAMI ET AL., LABRADORIMIUT OBSERVATIONS ON CLIMATE AND ENVIRONMENTAL CHANGE: PERSPECTIVES FROM COMMUNITIES OF THE LABRADOR NORTH COAST 20, 31, 43 (April 30-May 1, 2002) (“LABRADORIMIUT OBSERVATIONS”); NORTH BAFFIN, *supra* note 115, Appendix B at 10, 24, 28, Appendix C at 9-10, 45, Appendix D at 3-4, Appendix E at 7, 9, 14, 17, 22, 27; INUIT TAPIRIIT KANATAMI ET AL., ARCTIC CLIMATE CHANGE: OBSERVATIONS FROM THE INUVIALUIT SETTLEMENT REGION, AKLAVIK WORKSHOP 17-18 (January 30-31, 2002) (“AKLAVIK WORKSHOP”); DEPARTMENT OF SUSTAINABLE DEVELOPMENT, GOVERNMENT OF NUNAVUT, INUIT QAUJIMAJANGIT HILAP ALUNGUMINGANUT, INUIT KNOWLEDGE OF CLIMATE CHANGE: A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, BAKER LAKE AND ARVIAT, NUNAVUT 26-27 (September 2001) (“A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT”); INUIT TAPIRIIT KANATAMI ET AL., ARCTIC CLIMATE CHANGE: OBSERVATIONS FROM THE INUVIALUIT SETTLEMENT REGION: PAULATUK WORKSHOP 24 (September, 2003) (“PAULATUK WORKSHOP”).

¹¹⁷ ACIA Overview, *supra* note 16, at 75; SOUTH BAFFIN, *supra* note 115, at 18, 23-24, Appendix B at 16, 51-52, Appendix C at 28, 29, 44-46, 62; NORTH BAFFIN, *supra* note 115, at 32, Appendix B at 16, 24, Appendix E at 7, 22; KITIKMEOT REGION, *supra* note 116, at 10-11; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 26-27; GRAHAM ASHFORD & JENNIFER CASTLEDEN, INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT, INUIT OBSERVATIONS ON CLIMATE CHANGE, FINAL REPORT § 4.3 (June 2001) (“ASHFORD & CASTLEDEN”).

¹¹⁸ ACIA Overview, *supra* note 16, at 75; KITIKMEOT REGION, *supra* note 116, at 10-11; SOUTH BAFFIN, *supra* note 115, at 18, 23, Appendix B at 16, 51-52, Appendix C at 2-3, 4, 20, 28, 29, 43, 45-46, 62; 192, 256, 320, 486, NORTH BAFFIN, *supra* note 115, at 32, Appendix B at 24, 28, Appendix C at 45, Appendix

E at 7, 14, 22; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 115, at 26-27; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 31, 43; PAULATUK WORKSHOP, *supra* note 116, at 24.

¹¹⁹ ACIA Overview, *supra* note 16, at 25; SOUTH BAFFIN, *supra* note 115, Appendix B at 55, Appendix C at 27, 43-43, 58, 62; NORTH BAFFIN, *supra* note 115, Appendix B at 10, 24, 45, Appendix E at 14, 22; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 26-27; PAULATUK WORKSHOP, *supra* note 116, at 24; KITIKMEOT REGION, *supra* note 116, at 12-13; KANGIQSUJUAQ WORKSHOP, Executive Summary (“KANGIQSUJUAQ WORKSHOP”) 3; INUIT TAPIRIIT KANATAMI ET AL., INUIT OBSERVATIONS ON CLIMATE AND ENVIRONMENTAL CHANGE: PERSPECTIVES FROM KANGIQSUJUAQ 15 (January 15-16, 2003); (“PERSPECTIVES FROM KANGIQSUJUAQ”); INUIT TAPIRIIT KANATAMI ET AL., ARCTIC CLIMATE CHANGE: OBSERVATIONS FROM THE INUVIALUIT SETTLEMENT REGION, INUVIK WORKSHOP 10 (“INUVIK WORKSHOP”); LABRADORIMIUT OBSERVATIONS, *supra* note 115, at 18, 35, 42.

¹²⁰ ACIA Overview, *supra* note 16, at 25.

¹²¹ ACIA Overview, *supra* note 16, at 12, 13, 17, 34, 75, SOUTH BAFFIN, *supra* note 115, at 24, Appendix B at 2, 54, 56, 60, Appendix C at 28, 44-45, 56, 62; NORTH BAFFIN, *supra* note 115, Appendix B at 45, Appendix C at 9-10, Appendix D at 3-4, Appendix E at 9, 14, 17, 27; AKLAVIK WORKSHOP, *supra* note 116, at 17-18, 28.

¹²² SOUTH BAFFIN, *supra* note 115, Appendix B at 45, 55, 56, Appendix C at 5, 45, 58, 62; NORTH BAFFIN, *supra* note 115, Appendix B at 10, 18, Appendix D at 3-4, 13, Appendix E at 14; KITIKMEOT REGION, *supra* note 116, at 9.

¹²³ ACIA Overview, *supra* note 16, at 25.

¹²⁴ ACIA Overview, *supra* note 16, at 10; SOUTH BAFFIN, *supra* note 115, at 25, Appendix B at 13, 16, 23, 42, 46, 52-53, 65, Appendix C at 6, 17, 45, 57, 61, 65, 67; NORTH BAFFIN, *supra* note 115, at 30, Appendix B at 8, 10, 29, Appendix C at 34, 39, Appendix D at 18; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 32; INUIT TAPIRIIT KANATAMI et al, INUIT OBSERVATIONS ON CLIMATE AND ENVIRONMENTAL CHANGE: PERSPECTIVES FROM ARCTIC BAY, NUNAVUT 3, 11, 18 (2004) (“PERSPECTIVES FROM ARCTIC BAY”); INUIT TAPIRIIT KANATAMI ET AL, INUIT OBSERVATIONS ON CLIMATE AND ENVIRONMENTAL CHANGE: PERSPECTIVES FROM IVUJIVIK 3, 10, 15 (November 5-6, 2002) (“PERSPECTIVES FROM IVUJIVIK”); A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 23; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 16; KITIKMEOT REGION, *supra* note 116, at 11.

¹²⁵ ACIA Overview, *supra* note 16, at 12.

¹²⁶ INUIT TAPIRIIT KANATAMI ET AL., ARCTIC CLIMATE CHANGE: OBSERVATIONS FROM THE INUVIALUIT SETTLEMENT REGION, HOLMAN ISLAND WORKSHOP at 13 (2002) (“HOLMAN ISLAND WORKSHOP”); SOUTH BAFFIN, *supra* note 115, Appendix B at 16, 23, 66, 84, Appendix C at 17, 46, 66; NORTH BAFFIN, *supra* note 115, Appendix B at 4, 19, 25, 42, 43, Appendix C at 32, 34, 39; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 17, 32, 36; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 3, 11, 17, 18; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 3, 10, 15; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 23; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 16.

¹²⁷ ACIA Overview, *supra* note 16, at 35; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 16, 25; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 16; SOUTH BAFFIN, *supra* note 115, at 25, Appendix B at 17, 4, Appendix C at 25, 53.

¹²⁸ NORTH BAFFIN, *supra* note 115, Appendix B at 24, 40-41, 44, Appendix C at 46-47, Appendix E at 25; SOUTH BAFFIN, *supra* note 115, Appendix C at 52.

¹²⁹ NORTH BAFFIN, *supra* note 115, Appendix A at 40.

¹³⁰ ACIA Overview, *supra* note 16, at 8, 11, 12, 14; AKLAVIK WORKSHOP, *supra* note 116, at 17; INUVIK WORKSHOP, *supra* note 119, at 13; ASHFORD & CASTLEDEN, *supra* note 117, at §§ 4.1, 4.2; ; NORTH BAFFIN, *supra* note 115, Appendix B at 3-4, Appendix C at 40, Appendix D at 8, 21, Appendix E at 10; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 33; SOUTH BAFFIN, *supra* note 115, Appendix C at 21, 45; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 15; INUIT TAPIIRIT KANATAMI ET AL, INUIT OBSERVATIONS ON CLIMATE AND ENVIRONMENTAL CHANGE: PERSPECTIVES FROM PUVIRNITUQ 12 (2002) (“PERSPECTIVES FROM PUVIRNITUQ”); INUIT TAPIIRIT KANATAMI ET AL., ARCTIC CLIMATE CHANGE: OBSERVATIONS FROM THE INUVIALUIT SETTLEMENT REGION, TUKTOYAKTUK WORKSHOP 10 (2002) (“TUKTOYAKTUK WORKSHOP”).

¹³¹ Increased erosion is also caused by the decreased sea ice, leaving more open water susceptible to the wind. ACIA Overview, *supra* note 16, at 78; AKLAVIK WORKSHOP, *supra* note 116, at 17, 27, 28; ASHFORD & CASTLEDEN, *supra* note 117, at § 4.1; PERSPECTIVES FROM KANGIQSUJUAQ *supra* note 119, at 15; Fenge, *supra* note 32, at 82; NORTH BAFFIN, *supra* note 115, Appendix B at 3-4, Appendix C at 40, Appendix E at 10; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 33; SOUTH BAFFIN, *supra* note 115, Appendix B at 56, Appendix C at 21, 45.

¹³² ACIA Overview, *supra* note 16, at 11.

¹³³ ACIA Overview, *supra* note 16, at 25; Barbara Travis, International Arctic Research Center of the University of Alaska Fairbanks, Research Highlight (Mar. 31, 2005), at http://www.iarc.uaf.edu/highlights/coastal_climate/index.php (last visited Apr. 14, 2005) (describing an October 19, 2004, storm in Alaska and its contributing factors).

¹³⁴ ACIA Overview, *supra* note 16, at 79.

¹³⁵ ACIA Overview, *supra* note 16, at 96.

¹³⁶ *See, e.g.* ACIA Overview, *supra* note 16, at 96.

¹³⁷ ACIA Overview, *supra* note 16, at 96; NORTH BAFFIN, *supra* note 115, at 21, 25, Appendix D at 4, 7; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 15; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 13; SOUTH BAFFIN, *supra* note 115, Appendix C at 12, 61; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 12.

¹³⁸ *Id.*

¹³⁹ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 19; NORTH BAFFIN, *supra* note 115, Appendix B at 6;

¹⁴⁰ *Id.*

¹⁴¹ SOUTH BAFFIN, *supra* note 115, Appendix C at 14, 57.

¹⁴² ACIA Overview, *supra* note 116, at 92; AKLAVIK WORKSHOP, *supra* note 116, at 18; INUVIK WORKSHOP, *supra* note 119, at 17; PAULATUK WORKSHOP, *supra* note 116, at 25; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 12, 13, 20-22; NORTH BAFFIN, *supra* note 115, Appendix B at 43, Appendix D at 4, 12, Appendix E at 2, 5; SOUTH BAFFIN, *supra* note 115, at 26, Appendix B at 29, 33, 52, 62, Appendix C at 4, 60, 61, 66; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 3, 17-18; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 10; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 16; KITIKMEOT REGION, *supra* note 116, at 11; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 23.

¹⁴³ ACIA Overview, *supra* note 16, at 96; AKLAVIK WORKSHOP, *supra* note 116, at 11, 18; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 15-16; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 3, 17-18; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 12-13, 19, 21; NORTH BAFFIN, *supra* note 115, at 6, 21, 26, Appendix E at 2; SOUTH BAFFIN, *supra* note 115, at 19, 26, Appendix B at 22, 29, 43, 52, Appendix C at 14, 57, 61, 66.

¹⁴⁴ ACIA Overview, *supra* note 16, at 90; AKLAVIK WORKSHOP, *supra* note 116, at 15, 17, 20, 27; HOLMAN ISLAND WORKSHOP, *supra* note 124, at 14; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE

CHANGE IN NUNAVUT, *supra* note 116, at 27, 37; SOUTH BAFFIN, *supra* note 115, Appendix B at 18, 58, 76, 85, Appendix C at 46; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 3, 10, 22-23; PERSPECTIVES FROM PUVIRNITUQ, *supra* note 130, at 16; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 37, 43; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

¹⁴⁵ NORTH BAFFIN, *supra* note 115, Appendix B at 46; SOUTH BAFFIN, *supra* note 115, Appendix B at 17, Appendix C at 46.

¹⁴⁶ ACIA Overview, *supra* note 16, at 90; NORTH BAFFIN, *supra* note 115, Appendix B at 46; SOUTH BAFFIN, *supra* note 115, Appendix B at 17, Appendix C at 18, 46.

¹⁴⁷ ACIA Overview, *supra* note 16, at 75; SOUTH BAFFIN, *supra* note 115, Appendix B at 76, 85.

¹⁴⁸ ACIA Overview, *supra* note 16, at 14, 68; AKLAVIK WORKSHOP, *supra* note 116, at 20; PAULATUK WORKSHOP, *supra* note 116, at 17; ASHFORD & CASTLEDEN, *supra* note 117, at §4.1; NORTH BAFFIN, *supra* note 115, Appendix B at 11, 20, 25, 32, 35, 48, Appendix C at 33, Appendix D at 2, 8, 21, Appendix E at 3, 8, 27; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 32-33; SOUTH BAFFIN, *supra* note 115, Appendix B at 17, 37, 48, 58, 77-78, 85, Appendix C at 20, 33-34, 48, 63, 65; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 13, 16; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 10-11, 15, 18; KITIKMEOT REGION, *supra* note 116, at 12; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 11; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

¹⁴⁹ ACIA Overview, *supra* note 16, at 70-73, 76-77; AKLAVIK WORKSHOP, *supra* note 116, at 16, 20, 28; INUVIK WORKSHOP, *supra* note 119, at 13, 16; PAULATUK WORKSHOP, *supra* note 116, at 21; NORTH BAFFIN, *supra* note 115, Appendix B at 5, 48, Appendix C at 45, Appendix E at 26; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 34; SOUTH BAFFIN, *supra* note 115, Appendix B at 85, Appendix C at 55, 67; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 3, 11-12, 17; KITIKMEOT REGION, *supra* note 116, at 12; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 30, 31, 40, 42; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 3; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 10.

¹⁵⁰ ACIA Overview, *supra* note 16, at 76-77; SOUTH BAFFIN, *supra* note 115, Appendix B at 48; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 17.

¹⁵¹ ACIA Overview, *supra* note 16, at 16; PAULATUK WORKSHOP, *supra* note 116, at 17; NORTH BAFFIN, *supra* note 115, Appendix B at 20, 25, 48, Appendix C at 33, Appendix D at 2, 8; SOUTH BAFFIN, *supra* note 115, Appendix B at 17, Appendix C at 63; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 13; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 10, 15, 18.

¹⁵² SOUTH BAFFIN, *supra* note 115, Appendix C at 20, 48, 55; NORTH BAFFIN, *supra* note 115, Appendix B at 5, 20.

¹⁵³ ACIA Overview, *supra* note 16, at 34-35; NORTH BAFFIN, *supra* note 115, at 21, Appendix B at 19, 23, 41, Appendix C at 5-6, 45, Appendix D at 20, Appendix E at 1, 3-4; SOUTH BAFFIN, *supra* note 115, at 16, Appendix B at 52, 55, 56, Appendix C at 30; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 10; KITIKMEOT REGION, *supra* note 116, at 10.

¹⁵⁴ ACIA Overview, *supra* note 16, at 10, 34-35.

¹⁵⁵ Arctic Climate Impact Assessment (“ACIA Full Report”) 1042, at ch. 4 at 100 (Cambridge University Press, 2005) available at <http://www.acia.uaf.edu>.

¹⁵⁶ *Id.* at 100.

¹⁵⁷ ACIA Overview, *supra* note 16, at 24 (quotation omitted).

¹⁵⁸ ACIA Overview, *supra* note 16, ch. 12 at 663 (citation omitted).

¹⁵⁹ ACIA Overview, *supra* note 16, at 95; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 15; SOUTH BAFFIN, *supra* note 115, at 23-24, Appendix B at 44, 54, Appendix C at 62; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 26-28; AKLAVIK WORKSHOP, *supra*

note 116, at 17; NORTH BAFFIN, *supra* note 115, Appendix B at 45, Appendix D at 3; KITIKMEOT REGION, *supra* note 116, at 12-13; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 18, 35, 42; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 16; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 26.

¹⁶⁰ ACIA Overview, *supra* note 16, at 95; SOUTH BAFFIN, *supra* note 115, at 24 Appendix B at 43-44, Appendix C at 62; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 27; NORTH BAFFIN, *supra* note 115, Appendix D at 3; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 18, 35, 42.

¹⁶¹ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, Appendix C at 2.

¹⁶² A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 26, 28; SOUTH BAFFIN, *supra* note 115, at 18, 24, Appendix B at 15, 18, Appendix C at 16; AKLAVIK WORKSHOP, *supra* note 116, at 17; NORTH BAFFIN, *supra* note 115, Appendix D at 3-4.

¹⁶³ KITIKMEOT REGION, *supra* note 116, at 9; SOUTH BAFFIN, *supra* note 115, Appendix C at 44.

¹⁶⁴ SOUTH BAFFIN, *supra* note 115, Appendix C at 44.

¹⁶⁵ ACIA Overview, *supra* note 16, at 97; NORTH BAFFIN, *supra* note 115, Appendix B at 45; SOUTH BAFFIN, *supra* note 115, Appendix B at 44; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 18, 35, 42; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 16.

¹⁶⁶ Interview with Ronald Brower of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioner.

¹⁶⁷ ACIA Overview *supra* note 16, at 95-96; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 26-27; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 15; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 18; NORTH BAFFIN, *supra* note 115, Appendix B at 45; SOUTH BAFFIN, *supra* note 115, Appendix B at 59.

¹⁶⁸ Interview with Roy Nageak of Barrow, Alaska, Sept. 15, 2005, video-taped recording on file with petitioner.

¹⁶⁹ Interview with Ronald Brower of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioner.

¹⁷⁰ Interview with Eugene Brower of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioner.

¹⁷¹ Interview with Roy Nageak of Barrow, Alaska, Sept. 15, 2005, video-taped recording on file with petitioner.

¹⁷² Interview with Lucas Ittulak of Nain, Newfoundland and Labrador, Sept. 26, 2005, video-taped recording on file with petitioner.

¹⁷³ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, Appendix C at 30.

¹⁷⁴ ACIA Overview, *supra* note 16, at 96; HOLMAN ISLAND WORKSHOP, *supra* note 126, at 13; SOUTH BAFFIN, *supra* note 115, Appendix B at 16, 23, 66, 84, Appendix C at 17, 46, 66; NORTH BAFFIN, *supra* note 115, Appendix B at 4, 19, 25, 42, 43, Appendix C at 32, 34, 39; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 17, 32, 36; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 3, 11, 17, 18; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 3, 10, 15; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 16, at 23; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 16.

¹⁷⁵ Interview with Lucas Ittulak of Nain, Newfoundland and Labrador, Sept. 26, 2005, video-taped recording on file with petitioners.

¹⁷⁶ SOUTH BAFFIN, *supra* note 115, Appendix C at 66.

¹⁷⁷ *Id.*

¹⁷⁸ ACIA Overview, *supra* note 16, at 96; SOUTH BAFFIN, *supra* note 115, Appendix B at 23, Appendix C at 17; NORTH BAFFIN, *supra* note 115, Appendix B at 43, Appendix C at 34, 39; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 32.

¹⁷⁹ LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 32.

¹⁸⁰ Interview with Heather Angnatok of Nain, Newfoundland and Labrador, Sept. 28, 2005, video-taped recording on file with petitioner.

¹⁸¹ ACIA Overview, *supra* note 16, at 97; NORTH BAFFIN, *supra* note 115, Appendix D at 1; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 17-18; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 10, 15.

¹⁸² ACIA Overview, *supra* note 16, at 97; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 26, 28; SOUTH BAFFIN, *supra* note 115, at 18, 23-24, Appendix B at 16, 51-52, 56, Appendix C at 4, 29, 39; NORTH BAFFIN, *supra* note 115, Appendix B at 28, Appendix E at 17; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 16; AKLAVIK WORKSHOP, *supra* note 116, at 17-18; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 22, 43; PAULATUK WORKSHOP, *supra* note , at 24.

¹⁸³ SOUTH BAFFIN, *supra* note 115, Appendix C at 45; PAULATUK W116ORKSHOP, *supra* note 116, at 24; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 22, 43.

¹⁸⁴ Jacobie Panipak of Clyde River, video-tape recording on file with petitioner (“*The ice use to freeze more smoothly. Today it crumbles as it freezes.*”).

KITIKMEOT REGION, *supra* note 116, at 11; SOUTH BAFFIN, *supra* note 115, Appendix B at 24, Appendix C at 18, 46, 67; PAULATUK WORKSHOP, *supra* note 116, at 24; NORTH BAFFIN, *supra* note 115, at 17-18, Appendix B at 9, 24, 38; HOLMAN ISLAND WORKSHOP, *supra* note 126, at 14.

¹⁸⁵ AKLAVIK WORKSHOP, *supra* note 116, at 17; SOUTH BAFFIN, *supra* note 115, Appendix B at 41, Appendix C at 16; NORTH BAFFIN, *supra* note 115, Appendix D at 3-4.

¹⁸⁶ AKLAVIK WORKSHOP, *supra* note 116, at 17; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 18; SOUTH BAFFIN, *supra* note 115, Appendix B at 43.

¹⁸⁷ PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 18; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 26.

¹⁸⁸ *Id.*

¹⁸⁹ SOUTH BAFFIN, *supra* note 115, Appendix B at 56; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 3, 15; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 16.

¹⁹⁰ Interview with Ken Toovak of Barrow, Alaska, Sept. 12, 2005, video-taped recording on file with petitioner.

¹⁹¹ Interview with Eugene Brower of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioner.

¹⁹² SOUTH BAFFIN, *supra* note 115, Appendix B at 17, Appendix C at 53.

¹⁹³ Interview with David Haogak of Sachs Harbour, Nunavut, Sept. 3, 2005, video-taped recording on file with petitioner.

¹⁹⁴ Interview with Heather Angnatok of Nain, Newfoundland and Labrador, Sept. 28, 2005, video-taped recording on file with petitioner.

¹⁹⁵ ACIA Overview, *supra* note 16, at 89, 111; SOUTH BAFFIN, *supra* note 115, Appendix B at 56, Appendix C at 17, 30; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 21.

¹⁹⁶ KITIKMEOT REGION, *supra* note 116, at 9; NORTH BAFFIN, *supra* note 115, Appendix B at 40-41; SOUTH BAFFIN, *supra* note 115, at 14-15, Appendix B at 46, Appendix C at 16.

¹⁹⁷ *Id.*

¹⁹⁸ SOUTH BAFFIN, *supra* note 115, Appendix B at 46.

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- ¹⁹⁹ PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 3, 15; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 3, 18; NORTH BAFFIN, *supra* note 115, at 21, Appendix B at 10, Appendix C at 45, Appendix D at 18; SOUTH BAFFIN, *supra* note 115, Appendix C at 66.
- ²⁰⁰ NORTH BAFFIN, *supra* note 115, Appendix B at 39.
- ²⁰¹ GIBSON & SCHULLINGER, *supra* note 7, at 13-14.
- ²⁰² SOUTH BAFFIN, *supra* note 115, Appendix B at 23; NORTH BAFFIN, *supra* note 115, Appendix B at 43, Appendix C at 34, 39.
- ²⁰³ ACIA Overview, *supra* note 16, at 58-59, 94.
- ²⁰⁴ ACIA Overview, *supra* note 16, at 58-59.
- ²⁰⁵ *Id.*
- ²⁰⁶ *Id.*
- ²⁰⁷ ACIA Overview, *supra* note 16, at 59; ASHFORD & CASTLEDEN, *supra* note 117, at §4.1; HOLMAN ISLAND WORKSHOP, *supra* note 126, at 14.
- ²⁰⁸ “[Y]ears with little or no ice...resulted in years with virtually no surviving seal pups, when in other years, these numbered in the hundreds of thousands.” ACIA Overview, *supra* note 16, at 58.
- ²⁰⁹ ACIA Overview, *supra* note 16, at 94; PERSPECTIVES FROM KANGIJSUJUAQ, *supra* note 119, at 23; NORTH BAFFIN, *supra* note 115, Appendix D at 14.
- ²¹⁰ ACIA Overview, *supra* note 16, at 94.
- ²¹¹ GAO Flood Report, *supra*, note 49, at 8.
- ²¹² Interview with Isa Piungituaq of Clyde River, Nunavut, Aug. 27, 2005, video-taped recording on file with petitioner.
- ²¹³ ASHFORD & CASTLEDEN, *supra* note 117, at § 4.3; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 4.
- ²¹⁴ See ASHFORD & CASTLEDEN, SUPRA NOTE 117, SUPRA NOTE 117, at § 4.3 .
- ²¹⁵ *Id.*
- ²¹⁶ ACIA Overview, *supra* note 16, at 117; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 4.
- ²¹⁷ ACIA Overview, *supra* note 16, at 72.
- ²¹⁸ *Id.*
- ²¹⁹ NORTH BAFFIN, *supra* note 115, at 27, Appendix E at 16.
- ²²⁰ Interview with Isa Piungituaq of Clyde River, Nunavut, Aug. 27, 2005, video-taped recording on file with petitioner.
- ²²¹ ALASKA REGIONAL ASSESSMENT GROUP, PREPARING FOR A CHANGING CLIMATE: THE POTENTIAL CONSEQUENCES OF CLIMATE VARIABILITY AND CHANGE (“ARAG”) (1999) at 19, available at <http://www.besis.uaf.edu/regional-report/regional-report.html> (last visited Mar. 29, 2005). See also ACIA Overview, *supra* note 16, at 68-70; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 16, 34; SOUTH BAFFIN, *supra* note 115, Appendix C at 17-18; NORTH BAFFIN, *supra* note 115, Appendix D at 15.
- ²²² See *id.*
- ²²³ See *id.*
- ²²⁴ ARAG, *supra* note 221, at 19. See also ACIA Overview, *supra* note 16, at 68-70; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 16, 34; SOUTH BAFFIN, *supra* note 115, Appendix C at 17-18; NORTH BAFFIN, *supra* note 115, Appendix D at 15.
- ²²⁵ Interview with James Qillaq of Clyde River, Nunavut, Aug. 30, 2005, video-taped recording on file with petitioner.
- ²²⁶ ARAG, *supra* note 221, at 19.
- ²²⁷ ACIA Overview, *supra* note 16, at 70; COMMITTEE ON THE STATUS OF ENDANGERED WILDLIFE IN CANADA (COSEWIC) (2004), COSEWIC ASSESSMENT AND UPDATE STATUS REPORT ON THE PEARY CARIBOU AND THE BARREN-GROUND CARIBOU (DOLPHIN AND UNION POPULATION) IN CANADA, at iii

and viii, *available at*

http://www.sararegistry.gc.ca/virtual_sara/files/cosewic/sr%5Fpeary%5Fcaribou%5Fe%2Epdf.

²²⁸ ACIA Overview, *supra* note 16, at 71.

²²⁹ ACIA Overview, *supra* note 16, at 94; AKLAVIK WORKSHOP, *supra* note 116, at 28; PAULATUK WORKSHOP, *supra* note 116, at 24.

²³⁰ ACIA Overview *supra* note 16 at 68-70

²³¹ ACIA Overview, *supra* note 16, at 10.

²³² *Id.*

²³³ *Id.*

²³⁴ *Id.*

²³⁵ ACIA Overview, *supra* note 16, at 94; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 18; NORTH BAFFIN, *supra* note 115, Appendix D at 14; Fenge, *supra* note 32, at 82; ASHFORD, SUPRA NOTE 117, at § 4.2; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 26-27; PAULATUK WORKSHOP *supra* note 116, at 24.

²³⁶ PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 16.

²³⁷ Interview with Roy Nageak of Barrow, Alaska, Sept. 15, 2005, video-taped recording on file with petitioner.

²³⁸ ASHFORD & CASTLEDEN, *supra* note 117, at § 4.2.

²³⁹ *Id.*

²⁴⁰ *Id.*

²⁴¹ Interview with Jerry Wongitillin of Savoonga, Alaska, Sept. 17, 2005, video-taped recording on file with petitioner.

²⁴² LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 17, 32; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, Appendix D at 7.

²⁴³ Interview with Heather Angnatok of Nain, Newfoundland and Labrador, September 28, 2005, video-taped recording on file with petitioner.

²⁴⁴ SOUTH BAFFIN, *supra* note 115, Appendix B at 62.

²⁴⁵ ACIA Overview, *supra* note 16, at 8, 11, 12; AKLAVIK WORKSHOP, *supra* note 116, at 17; INUVIK WORKSHOP, *supra* note 119, at 13; ASHFORD & CASTLEDEN, *supra* note 117, at §§ 4.1, 4.2; NORTH BAFFIN, *supra* note 115, Appendix B at 3-4, Appendix C at 40, Appendix D at 8, Appendix E at 10; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 33; SOUTH BAFFIN, *supra* note 115, Appendix C at 21, 45; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 15; PERSPECTIVES FROM PUVIRNITUQ, *supra* note 130, at 12; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 10.

²⁴⁶ ACIA Overview, *supra* note 16, at 90; AKLAVIK WORKSHOP, *supra* note 116, at 28; ASHFORD & CASTLEDEN, *supra* note 117, at §§ 4.1, 4.2; SOUTH BAFFIN, *supra* note 115, Appendix C at 45.

²⁴⁷ ASHFORD & CASTLEDEN, *supra* note 117, at Executive Summary.

²⁴⁸ GAO Flood Report, *supra* note 49, at 7.

²⁴⁹ ACIA Overview, *supra* note 16, at 95; ASHFORD & CASTLEDEN, *supra* note 117 at Executive Summary.

²⁵⁰ ASHFORD & CASTLEDEN, SUPRA NOTE 117 at Executive Summary.

²⁵¹ Interview with David Haogak of Sachs Harbour, Northwest Territories, Sept. 3, 2005, video-taped recording on file with petitioner.

²⁵² AKLAVIK WORKSHOP, *supra* note 116, at 27-28, 42; INUVIK WORKSHOP, *supra* note 119, at 10.

²⁵³ ACIA Overview, *supra* note 16, at 90.

²⁵⁴ *Id.*

²⁵⁵ *Id.*

²⁵⁶ Interview with Apak Qaqqasiq of Clyde River, Nunavut, Aug. 27, 2005, video-taped recording on file with petitioner.

²⁵⁷ ACIA Full Report, *supra* note 155, ch. 6 at 215.

²⁵⁸ *Id.*

²⁵⁹ ARAG, *supra* note 221, at 20; INUVIK WORKSHOP, *supra* note 119, at 13; Watt-Cloutier et al. *supra* note 110.

²⁶⁰ ARAG, *supra* note 221, at 20.

²⁶¹ Interview with Eugene Barrow of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioners.

²⁶² INUVIK WORKSHOP, *supra* note 119, at 20.

²⁶³ Interview with Roy Nageak of Barrow, Alaska, Sept. 15, 2005, video-taped recording on file with petitioners.

²⁶⁴ ACIA Overview, *supra* note 16, ch. 6 at 219.

²⁶⁵ ACIA Overview, *supra* note 16, ch. 6 at 215

²⁶⁶ GAO Flood Report, *supra* note 49, at highlights.

²⁶⁷ ACIA Overview, *supra* note 16, at 78.

²⁶⁸ Barbara Travis, International Arctic Research Center of the University of Alaska Fairbanks, Research Highlight (Mar. 31, 2005), at http://www.iarc.uaf.edu/highlights/coastal_climate/index.php (last visited Nov. 9, 2005) (describing an October 19, 2004, storm in Alaska and its contributing factors).

²⁶⁹ ACIA Overview, *supra* note 16, at 79.

²⁷⁰ ACIA Overview, *supra* note 16, at 81; AKLAVIK WORKSHOP, *supra* note 116, at 27-28, 42; INUVIK WORKSHOP, *supra* note 119, at 10; NORTH BAFFIN, *supra* note 115, Appendix B at 12, 24, 25, 46; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 1.

²⁷¹ ACIA Overview, *supra* note 16, at 11.

²⁷² Interview with Roy Nageak of Barrow, Alaska, Sept. 15, 2005, video-taped recording on file with petitioner.

²⁷³ Interview with Eugene Brower of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioner.

²⁷⁴ GAO Flood Report, *supra* note 49, at 27.

²⁷⁵ Interview with Nora Kuzuguk of Shishmaref, Alaska, Sept. 21, 2005, video-taped recording on file with petitioner.

²⁷⁶ Interview with John Sinnok of Shishmaref, Alaska, Sept. 20, 2005, video-taped recording on file with petitioner.

²⁷⁷ Interview with Stanley Tocktoo of Shishmaref, Alaska, Sept. 20, 2005, on file with petitioner.

²⁷⁸ Barbara Travis, International Arctic Research Center of the University of Alaska Fairbanks, Research Highlight (Mar. 31, 2005), at http://www.iarc.uaf.edu/highlights/coastal_climate/index.php (last visited Apr. 14, 2005).

²⁷⁹ *See Generally* GAO Flood Report, *supra* note 49.

²⁸⁰ ARAG, *supra* note 221, at 20; ACIA Overview, *supra* note 16, at 11.

²⁸¹ NORTH BAFFIN, *supra* note 115, Appendix B at 12, 24, 25, 46.

²⁸² ACIA Overview, *supra* note 16, ch. 6 at 235.

²⁸³ ASHFORD & CASTLEDEN, *supra* note 117, at §4.1; NORTH BAFFIN, *supra* note 115, Appendix C at 33.

²⁸⁴ AKLAVIK WORKSHOP, *supra* note 116, at 18.

²⁸⁵ AKLAVIK WORKSHOP, *supra* note 116, at 12; PAULATUK WORKSHOP, *supra* note 116, at 17; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 10, 15, 18; NORTH BAFFIN, *supra* note 115, Appendix E at 3; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 33; SOUTH BAFFIN, *supra* note 115, Appendix B at 17, 48, 58, 85, Appendix C at 48, 63;

PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 13; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 15, 18; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 11; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

²⁸⁶ ACIA Overview, *supra* note 16, at 16; PAULATUK WORKSHOP, *supra* note 116, at 17; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 13; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 10, 15.

²⁸⁷ Interview with Paul Rookok of Savoonga, Alaska, Sept. 17, 2005, video-taped recording on file with petitioner.

²⁸⁸ PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 15.

²⁸⁹ Interview with Rosemund Martin of Savoonga, Alaska, Sept. 17, 2005, video-taped recording on file with petitioner.

²⁹⁰ ARAG, *supra* note 221, at 19.

²⁹¹ Interview with Pitseolak Alainga of Iqaluit, Nunavut, Aug. 24, 2005, video-taped recording on file with petitioner.

²⁹² Interview with Evie Anilniliak of Pangnirtung, Nunavut, Sept. 7, 2005, video-taped recording on file with petitioner.

²⁹³ Interview with Stanley Tocktoo of Shishmaref, Alaska, Sept. 20, 2005, video-taped recording on file with petitioner.

²⁹⁴ AKLAVIK WORKSHOP, *supra* note 116, at 16, 28; INUVIK WORKSHOP, *supra* note 119, at 13; NORTH BAFFIN, *supra* note 115, Appendix B at 5, Appendix E at 27; SOUTH BAFFIN, *supra* note 115, Appendix C at 20, 48; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 18; KITIKMEOT REGION, *supra* note 16, at 12; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 11; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

²⁹⁵ ACIA Overview, *supra* note 16, at 58; NORTH BAFFIN, *supra* note 115, Appendix B at 5; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 34; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

²⁹⁶ Interview with Tony Mannernaluk of Rankin Inlet, Nunavut, Aug. 29, 2005, video-taped recording on file with petitioner.

²⁹⁷ Interview with Ben Kovic of Iqaluit, Nunavut, Aug. 24, 2005, video-taped recording on file with petitioner.

²⁹⁸ ACIA Overview, *supra* note 16, at 94; SOUTH BAFFIN, *supra* note 115, Appendix B at 28; AKLAVIK WORKSHOP, *supra* note 116, at 28; PAULATUK WORKSHOP, *supra* note 116, at 24.

²⁹⁹ ACIA Overview, *supra* note 16, at 94; AKLAVIK WORKSHOP, *supra* note 116, at 16, 28; INUVIK WORKSHOP, *supra* note 119, at 13; NORTH BAFFIN, *supra* note 115, Appendix B at 5, Appendix E at 27; SOUTH BAFFIN, *supra* note 115, Appendix C at 20, 48; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 18; KITIKMEOT REGION, *supra* note 16, at 12; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 11; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

³⁰⁰ INUVIK WORKSHOP, *supra* note 119, at 13.

³⁰¹ AKLAVIK WORKSHOP, *supra* note 116, at 27-28; INUVIK WORKSHOP, *supra* note 119, at 10.

³⁰² ARAG, *supra* note 221, at 20; INUVIK WORKSHOP *supra* note 119, at 13.

³⁰³ ACIA Overview, *supra* note 16, ch. 6 at 215.

³⁰⁴ *Id.* at 235.

³⁰⁵ ACIA Full Report, *supra* note 155, ch. 6 at 219.

³⁰⁶ ACIA Overview, *supra* note 16, ch. 6 at 235.

³⁰⁷ ACIA Overview, *supra* note 16, at 96.

³⁰⁸ ACIA Overview, *supra* note 16, at 96; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 13, 19; NORTH BAFFIN, *supra* note 115, at 26, Appendix D at 4, Appendix E at 1; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 19.

³⁰⁹ Interview with Jerome Tattuinee of Rankin Inlet, Nunavut, Aug. 30, 2005, video-taped recording on file with petitioner.

³¹⁰ *Id.* Appendix C at 36.

³¹¹ AKLAVIK WORKSHOP, *supra* note 116, at 10, 12, 29; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 15; NORTH BAFFIN, *supra* note 115, Appendix B at 7; SOUTH BAFFIN, *supra* note 115, at 26, Appendix C at 57; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 3; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 16; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 13.

³¹² NORTH BAFFIN, *supra* note 115, at 26, Appendix D at 1, 7; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 17; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 41; PERSPECTIVES FROM PUVIRNITUQ, *supra* note 130, at 3.

³¹³ Interview with Eugene Brower of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioner.

³¹⁴ Interview with Eugene Brower of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioner.

³¹⁵ Interview with Roy Nageak of Barrow, Alaska, Sept. 15, 2005, video-taped recording on file with petitioner.

³¹⁶ PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 3, 15; NORTH BAFFIN, *supra* note 115, Appendix E at 17; SOUTH BAFFIN, *supra* note 115, Appendix C at 17; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 21-22; KITIKMEOT REGION, *supra* note 16, at 11.

³¹⁷ PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 3, 15; NORTH BAFFIN, *supra* note 115, Appendix E at 17; SOUTH BAFFIN, *supra* note 115, Appendix C at 17; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 21-22; KITIKMEOT REGION, *supra* note 16, at 11.

³¹⁸ *Id.*

³¹⁹ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, Appendix C at 34.

³²⁰ AKLAVIK WORKSHOP, *supra* note 116, at 11, 18; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 19; NORTH BAFFIN, *supra* note 115, at 26, Appendix D at 7; SOUTH BAFFIN, *supra* note 115, Appendix B at 22, Appendix C at 57; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 15.

³²¹ NORTH BAFFIN, *supra* note 115, Appendix D at 1; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 17-18; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 15.

³²² SOUTH BAFFIN, *supra* note 115, Appendix C at 57; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 15; KITIKMEOT REGION, *supra* note 16, at 14.

³²³ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 13; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 10.

³²⁴ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, Appendix C at 16.

³²⁵ PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 3, 22, 24, 28; LABRADORIMIUT OBSERVATIONS, *supra* note 116 at 41.

³²⁶ PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 16, 19.

³²⁷ ACIA Overview, *supra* note 16, at 10.

³²⁸ LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 34.

³²⁹ Interview with Sappa Fleming of Kuujjuarapik, Quebec, Sept. 17, 2005, video-taped recording on file with petitioner.

³³⁰ LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 34.

³³¹ ARAG, *supra* note 221, at 20; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 16-17; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 19; INUVIK WORKSHOP, *supra* note 119, at 10; PERSPECTIVES FROM PUVIRNITUQ, *supra* note 130, at 16.

³³² Interview with Sarah Ittulak of Nain, Newfoundland and Labrador, Sept. 26, 2005, video-taped recording on file with petitioner.

³³³ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 17-18.

³³⁴ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 18-19.

³³⁵ *Id.*

³³⁶ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 18-19.

³³⁷ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, Appendix C at 2-3.

³³⁸ NORTH BAFFIN, *supra* note 115, Appendix C at 43; SOUTH BAFFIN, *supra* note 115, at 26.

³³⁹ Interview with Annie Napayok of Whale Cove, Nunavut, Aug. 30, 2005, video-taped recording on file with petitioner.

³⁴⁰ See ACIA Overview, *supra* note 16, at 10; SOUTH BAFFIN, *supra* note 115, Appendix B at 30, 41, 51, Appendix C at 15; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 17; NORTH BAFFIN, *supra* note 115, Appendix D at 21, Appendix C at 5-6, 41, 43; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 38, 51; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 9; ASHFORD & CASTLEDEN, *supra* note 117, at § 4.2; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 17; INUVIK WORKSHOP, *supra* note 119, at 13; SOUTH BAFFIN, *supra* note 115, at 26.

³⁴¹ See ACIA Overview, *supra* note 16, at 90, 110; AKLAVIK WORKSHOP, *supra* note 116, at 15, 16, 17, 20, 27; HOLMAN ISLAND WORKSHOP, *supra* note 126, at 14; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 27, 37; SOUTH BAFFIN, *supra* note 115, Appendix B at 18, 58, 76, 85, Appendix C at 46; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 3, 10, 22-23; PERSPECTIVES FROM PUVIRNITUQ, *supra* note 130, at 16; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 37, 43; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

³⁴² ACIA Overview, *supra* note 16, at 90-91; AKLAVIK WORKSHOP, *supra* note 116, at 15, 17, 20, 27; HOLMAN ISLAND WORKSHOP, *supra* note 126, at 14; NORTH BAFFIN, *supra* note 115, Appendix B at 46; Appendix E at 10; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 27, 37; SOUTH BAFFIN, *supra* note 115, Appendix B at 18, 58, 58, 76, 85, Appendix C at 46; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 3, 10; PERSPECTIVES FROM PUVIRNITUQ, *supra* note 130, at 16; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 37; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

³⁴³ AKLAVIK WORKSHOP, *supra* note 116, at 19; SOUTH BAFFIN, *supra* note 115, Appendix B at 58, Appendix C at 7-8, 20-21, 49; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 10; PERSPECTIVES FROM PUVIRNITUQ, *supra* note 130, at 11, 16; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

³⁴⁴ Interview with John Sinnok of Shishmaref, Alaska, Sept. 20, 2005, video-taped recording on file with petitioner.

³⁴⁵ AKLAVIK WORKSHOP, *supra* note 116, at 19; SOUTH BAFFIN, *supra* note 115, Appendix C at 20-21, 49; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

³⁴⁶ SOUTH BAFFIN, *supra* note 115, Appendix C at 20-21.

³⁴⁷ Interview with James Qillaq of Clyde River, Nunavut, Aug. 30, 2005, video-taped recording on file with petitioner.

³⁴⁸ Interview with Willie Jooktoo of Kuujjuarapik, Quebec, Sept. 17, 2005, video-taped recording on file with petitioner.

³⁴⁹ NORTH BAFFIN, *supra* note 115, Appendix B at 24, 44, Appendix C at 46-47, Appendix E at 25; SOUTH BAFFIN, *supra* note 115, Appendix C at 52.

³⁵⁰ *Id.*

³⁵¹ AKLAVIK WORKSHOP, *supra* note 116, at 18; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 31; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 16.

³⁵² A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, Appendix C at 9.

³⁵³ ACIA Overview, *supra* note 16, at 110; ARAG, *supra* note 221, at 19; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 3; PERSPECTIVES FROM PUVIRNITUQ, *supra* note 130, at 11; SOUTH BAFFIN, *supra* note 115, Appendix B at 69.

³⁵⁴ ACIA Overview, *supra* note 16, at 10, 16, 17, 58, 94, 96, 110, 119, 121; SOUTH BAFFIN, *supra* note 115, Appendix B at 69.

³⁵⁵ ACIA Overview, *supra* note 16, at 10, 16, 17, 58, 94, 96, 110, 119, 121; SOUTH BAFFIN, *supra* note 115, Appendix B at 69.

³⁵⁶ ACIA OVERVIEW, SUPRA NOTE 16, at 110; INUVIK WORKSHOP, *supra* note 119, at 20; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 15; NORTH BAFFIN, *supra* note 115, Appendix B at 20; SOUTH BAFFIN, *supra* note 115, Appendix B at 69; PERSPECTIVES FROM PUVIRNITUQ *supra* note 130, at 11; LABRADORIMIUT OBSERVATIONS, *supra* note 116 at 30, 40, 45; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 3; PERSPECTIVES FROM PUVIRNITUQ, *supra* note 130, at 14.

³⁵⁷ Interview with Alec Tuckatuck of Kuujjuarapik, Quebec, Sept. 18, 2005, video-taped recording on file with petitioner.

³⁵⁸ Interview with Sappa Fleming of Kuujjuarapik, Quebec, Sept. 17, 2005, video-taped recording on file with petitioner.

³⁵⁹ ACIA Overview, *supra* note 16, at 16, 110; HOLMAN ISLAND WORKSHOP, *supra* note 126, at 14; SOUTH BAFFIN, *supra* note 115, Appendix B at 69; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 15.

³⁶⁰ Interview with Willie Jooktoo of Kuujjuarapik, Quebec, Sept. 17, 2005, video-taped recording on file with petitioner.

³⁶¹ ACIA Overview, *supra* note 16, at 110.

³⁶² LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 41.

³⁶³ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 34; SOUTH BAFFIN, *supra* note 115, Appendix C at 67; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 37.

³⁶⁴ *See* ACIA Overview, *supra* note 16, at 68-70; SOUTH BAFFIN, *supra* note 115, Appendix B at 24, Appendix C at 18, 67; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 34; NORTH BAFFIN, *supra* note 115, Appendix D at 15; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 18, 21; PERSPECTIVES FROM PUVIRNITUQ *supra* note 130, at 16.

³⁶⁵ ACIA OVERVIEW, SUPRA NOTE 16, at 120; PAULATUK WORKSHOP *supra* note 116, at 16; PAULATUK WORKSHOP, *supra* note 116, at 12; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 34; SOUTH BAFFIN, *supra* note 115, Appendix B at 57; PERSPECTIVES FROM PUVIRNITUQ, *supra* note 130, at 16; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 12, 17, 31, 39.

³⁶⁶ PAULATUK WORKSHOP *supra* note 116, at 12, 16; PAULATUK WORKSHOP, *supra* note 116, at 3-4; SOUTH BAFFIN, *supra* note 115 Appendix B at 57; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 12, 17, 31, 39.

³⁶⁷ NORTH BAFFIN, *supra* note 115, Appendix E at 9, 12, 23; PERSPECTIVES FROM ARCTIC BAY, *supra* note 124, at 3, 13, 19, 22, 26.

³⁶⁸ INUVIK WORKSHOP, *supra* note 119, at 16; TUKTOYAKTUK WORKSHOP *supra* note 130, at 12; SOUTH BAFFIN, *supra* note 115, Appendix B at 57.

³⁶⁸ NORTH BAFFIN, *supra* note 115, Appendix D at 21; LABRADORIMIUT OBSERVATIONS *supra* note 116, at 17, 19.

³⁶⁹ LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 31; PAULATUK WORKSHOP, *supra* note 116, at 16;

³⁷⁰ ACIA Overview, *supra* note 16, at 58; HOLMAN ISLAND WORKSHOP, *supra* note 126, at 13; SOUTH BAFFIN, *supra* note 115, Appendix C at 67; NORTH BAFFIN, *supra* note 115, Appendix E at 26; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 12.

³⁷¹ ACIA Overview, *supra* note 16 at 58.

³⁷² HOLMAN ISLAND WORKSHOP *supra* note 126, at 13; NORTH BAFFIN, *supra* note 115, Appendix C at 23.

³⁷³ ACIA Overview, *supra* note 16, at 111.

³⁷⁴ NORTH BAFFIN, *supra* note 115, Appendix D at 21; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 17, 19.

³⁷⁵ ACIA Overview, *supra* note 16, at 95, 97; AKLAVIK WORKSHOP, *supra* note 116, at 31, 45; INUVIK WORKSHOP, *supra* note 119, at 13, 16, 18-19; NORTH BAFFIN, *supra* note 115, at 30, 33, Appendix B at 20, 34, 47, Appendix C at 45, Appendix B at 9, Appendix E at 1, 3, 19, 26; SOUTH BAFFIN, *supra* note 115, Appendix B at 57;

PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 12, 17; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 42; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 11.

³⁷⁶ *Id.*

³⁷⁷ ACIA Overview, *supra* note 16, at 111; PAULATUK WORKSHOP *supra* note 116, at 23; INUVIK WORKSHOP, *supra* note 119, at 19, 30 ; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 11; PERSPECTIVES FROM IVUJIVIK, *supra* note 124, at 23.

³⁷⁸ ACIA Overview, *supra* note 16, at 111.

³⁷⁹ ACIA Overview, *supra* note 16, at 111.

³⁸⁰ Interview with Roy Nageak of Barrow, Alaska, Sept. 15, 2005, video-taped recording on file with petitioner.

³⁸¹ Interview with Eugene Brower of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioner.

³⁸² ACIA Overview, *supra* note 16, at 111.

³⁸³ AKLAVIK WORKSHOP, *supra* note 116, at 17, 18, 27; INUVIK WORKSHOP, *supra* note 119, at 13; KANGIQSUJUAQ WORKSHOP *supra* note 119, at 19 NORTH BAFFIN, *supra* note 115, at 21, 31, Appendix B at 44, Appendix E at 3-4, 24; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 27, 37; SOUTH BAFFIN, *supra* note 115, Appendix C at 30.

³⁸⁴ KANGIQSUJUAQ WORKSHOP *supra* note 119, at 11; SOUTH BAFFIN, *supra* note 115, Appendix C at 30; NORTH BAFFIN, *supra* note 115, at 21, 31, Appendix E at 3-4, 24; NORTH BAFFIN, *supra* note 115, Appendix C at 45.

³⁸⁵ Interview with Roy Nageak of Barrow, Alaska, Sept. 15, 2005, video-taped recording on file with petitioner.

³⁸⁶ ACIA OVERVIEW, SUPRA NOTE 16, at 90; AKLAVIK WORKSHOP, *supra* note 116, at 27; INUVIK WORKSHOP, *supra* note 119, at 13; NORTH BAFFIN, *supra* note 115., Appendix B at 44; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 29.

³⁸⁷ Interview with Eugene Brower of Barrow, Alaska, Sept.14, 2005, video-taped recording on file with petitioner.

³⁸⁸ ACIA Overview, *supra* note 16, at 90; AKLAVIK WORKSHOP, *supra* note 116, at 18; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 29.

³⁸⁹ Interview with Tony Mannernaluk of Rankin Inlet, Nunavut, Aug. 29, 2005, video-taped recording on file with petitioner.

³⁹⁰ Interview with Roy Nageak of Barrow, Alaska, Sept. 15, 2005, video-taped recording on file with petitioner.

³⁹¹ ACIA Overview, *supra* note 16, at 94.

³⁹² ACIA OVERVIEW, SUPRA NOTE 16, at 94; AKLAVIK WORKSHOP, *supra* note 116, at 28; PAULATUK WORKSHOP, *supra* note 116, at 24; LABRADORIMIUT OBSERVATIONS, *supra* note 116, at 30.

³⁹³ Interview with Ronald Brower of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioner.

³⁹⁴ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116 at 34-35.

³⁹⁵ Interview with Pitseolak Alaing of Iqaluit, Nunavut, Aug. 24, 2005, video-taped recording on file with petitioner.

³⁹⁶ AKLAVIK WORKSHOP, *supra* note 116, at 16, 18, 24; INUVIK WORKSHOP, *supra* note 119, at 10, 14, 17; HOLMAN ISLAND WORKSHOP, *supra* note 126, at 12; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 35-36; PERSPECTIVES FROM KANGIQSUJUAQ, *supra* note 119, at 18; KITIKMEOT REGION *supra* note 116, at 12.

³⁹⁷ INUVIK WORKSHOP, *supra* note 119, at 15; A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 36.

³⁹⁸ A SAMPLE OF INUIT EXPERIENCES OF CLIMATE CHANGE IN NUNAVUT, *supra* note 116, at 31-32; PERSPECTIVES FROM KANGIQSUJUAQ *supra* note 119, at 3, 10, 17, 22; PERSPECTIVES FROM PUVIRNITUQ *supra* note 130, at 16; LABRADORIMIUT OBSERVATIONS *supra* note 116, at 37.

³⁹⁹ PERSPECTIVES FROM KANGIQSUJUAQ *supra* note 119, at 10, 15, 17, 22-23; PERSPECTIVES FROM PUVIRNITUQ *supra* note 130, at 16.

⁴⁰⁰ Interview with Jerome Tattuinee of Rankin Inlet, Nunavut, Aug. 30, 2005, video-taped recording on file with petitioner.

⁴⁰¹ Interview with Eugene Brower of Barrow, Alaska, Sept. 14, 2005, video-taped recording on file with petitioner.

⁴⁰² SOUTH BAFFIN, *supra* note 115, Appendix C at 23; PERSPECTIVES FROM PUVIRNITUQ *supra* note 130, at 16.

⁴⁰³ World Resources Institute, Climate Analysis Indicators Tool (CAIT), available at <http://cait.wri.org>. This on-line tool combines information from sources such as the Marland study cited *infra*, the United Nations, the World Bank, and the International Energy Agency in a database allowing comparison and analysis of reputable climate data. (See <http://cait.wri.org/faq-about-cait.php> for more information.)

⁴⁰⁴ *Id.*

⁴⁰⁵ *Id.*

⁴⁰⁶ *Id.*

⁴⁰⁷ *Id.*

⁴⁰⁸ *Id.*

⁴⁰⁹ Kevin Baumert & Jonathan Pershing, *Climate Data: Insights and Observations*, 27, 13 (Pew Center for Global Climate Change 2004), available at http://www.pewclimate.org/global-warming-in-depth/all_reports/climate_data/index.cfm. Another study shows that, because CO₂ persists in the atmosphere for long periods of time, about 31% of today's global-mean surface temperature increase can be attributed to U.S. CO₂ emissions from fossil fuels. Elzen and Schaeffer, "Responsibility for Past and Future Global Warming: Uncertainties in Attributing Anthropogenic Climate Change," 54 *Climatic Change* 29, 68 (2002) (data as of 1990).

⁴¹⁰ Baumert & Pershing, *supra* note 409, at 40 n.16.

⁴¹¹ *Id.*

⁴¹² CAIT, *supra* note 403.

⁴¹³ U.S. Energy Information Administration (EIA), Emissions of Greenhouse Gases in the United States 2003, Dec. 2004, *available at* http://www.eia.doe.gov/oiaf/1605/ggrpt/emission_tbls.html.

⁴¹⁴ EIA, Annual Energy Outlook 2005, <http://www.eia.doe.gov/oiaf/aeo/emission.html>.

⁴¹⁵ CAIT, *supra* note 403.

⁴¹⁶ *Id.* (5.4 tons per U.S. citizen versus 1 ton of carbon per person globally in 2000).

⁴¹⁷ *Id.* (5.4 versus 2.2 tons of carbon per person in 2000).

⁴¹⁸ *Id.* (5.4 versus 0.6 tons per person in 2000).

⁴¹⁹ Baumert & Pershing, *supra* note 409, at 10.

⁴²⁰ CAIT, *supra* note 403.

⁴²¹ *Case of Mary and Carrie Dann* (“Dann”), Report N° 75/02, Case 11.140 (United States), Inter-Am. C.H.R., 2002 ¶ 125 (2002), *available at* <http://www.cidh.oas.org/annualrep/2002eng/USA.11140.htm>.

⁴²² “As a result of customary practices, possession of the land should suffice for indigenous communities lacking real title to property of the land to obtain official recognition of that property.” *Caso de la Comunidad Mayagna (Sumo) Awas Tingni* (“Awas Tingni”), Inter-Am. Ct. H.R. Ser. C, No. 79 ¶ 151 (Nicaragua) (2001), *available at* http://www.corteidh.or.cr/seriecpdf_ing/seriec_79_ing.pdf (last visited Nov. 11, 2005).

⁴²³ *Aloeboetoe et al. Case, Reparations*, Inter-Am. Ct. H.R.(ser. C) No. 15 ¶ 96 (Suriname) (1993), *available at* http://www.corteidh.or.cr/seriecpdf_ing/seriec_15_ing.pdf.

⁴²⁴ The Court couched the reparations award in terms of benefits to the heirs of the deceased when it ordered the government of Suriname to reopen a school and medical dispensary in the Saramaka village as reparation for having murdered several of the tribe’s members. *Id.*

⁴²⁵ *Dann*, *supra* note 421, at ¶ 126.

⁴²⁶ Resolution of the IACHR on the Problem of Special Protection for Indigenous Populations, Inter-Am. C.H.R., OEA/Ser.L/V/II.29, doc. 38, rev. (1972) *quoted in* The Human Rights Situation of the Indigenous People in the Americas, Inter-Am. C.H.R., OEA/Ser.L/V/II.108, Doc. 62 (2000) at 1, n.1, *available at* <http://www.cidh.org/Indigenas/TOC.htm> (“In that resolution the Commission called on the member states ‘to implement the recommendations made by the Inter-American and Indian Conferences... and, in particular, the provisions contained in Article 39 of the Inter-American Charter of Social Guarantees’”); *See also* Report on the Situation of Human Rights of a Segment of the Nicaraguan Population of Miskito Origin, Inter-Am. C.H.R., OEA/Ser.L/V/II.62, doc. 10, rev. 3 (1983) at 81 § 2-B-15.

⁴²⁷ *Dann*, *supra* note 421, at ¶ 127.

⁴²⁸ Mary and Carrie Dann, two sisters belonging to the Western Shoshone people, challenged the United States’ purported extinguishment of the aboriginal title to their lands, which resulted in trespass actions against the sisters. The Commission found that the extinguishment of title, done without the informed consent of the Western Shoshone people, violated the sisters’ right to property and judicial protection. *Dann*, *supra* note 421.

⁴²⁹ *Id.* at ¶ 129 (emphasis added).

⁴³⁰ *Id.*

⁴³¹ *Id.* at ¶ 125 (citing IACHR, The Human Rights Situation of the Indigenous People in the Americas, *supra* note 426, at 21-25; *Maya Indigenous Communities of the Toledo District (Belize Maya)*, Case 12.053, Inter-Am. C.H.R. Report 40/04 (2004) (Belize) at ¶ 95 (citing same).

⁴³² *Dann*, *supra* note 421, at ¶ 131 (*quoting* the American Declaration of the Rights and Duties of Man, (“American Declaration”), Organization of American States (O.A.S.) Res. XXX (1948), *reprinted in*

Basic Documents Pertaining to Human Rights in the Inter-American System, OEA/Ser.L/V/I.4 rev.8 (May 2001) at 16, Preamble).

⁴³³ *Belize Maya*, *supra* note 431, at ¶ 94.

⁴³⁴ *Id.* at ¶ 96.

⁴³⁵ *Id.* at ¶ 98.

⁴³⁶ *Case of Yanomami Indians*, Case 7615 (Brazil), Inter-Am. C.H.R., OEA/Ser.L/V/II.66 doc. 10 rev. 1 at 6, (1985), available at <http://www.cidh.org/annualrep/84.85eng/Brazil7615.htm> (last visited Nov. 11, 2005).

⁴³⁷ *Id.* at 7.

⁴³⁸ Office of the Commissioner for Human Rights, General Comment No. 23: The Rights of Minorities (art. 27), U.N. HRC, 50th Sess., 1314th mtg., at ¶ 6.2(1994), available at <http://www.unhcr.ch/tbs/doc.nsf/0/fb7fb12c2fb8bb21c12563ed004df111?OpenDocument>.

⁴³⁹ Convention Concerning Indigenous and Tribal Peoples in Independent Countries (ILO Convention No. 169) (revised and expanded version of ILO No. 107), June 27, 1989, art. 15.1, 72. ILO Official Bull. 59, reprinted in 28 I.L.M. 1382, Article 14.1, available at <http://www.unhcr.ch/html/menu3/b/62.htm> (last visited Nov. 11, 2005).

⁴⁴⁰ Ksentini, Fatma Zorah, Review Of Further Developments In Fields With Which The Sub-Commission Has Been Concerned: Human Rights And The Environment, U.N. Doc. E/CN.4/Sub.2/1994/9, (July 6, 1994) (“Ksentini Final Report”), at ¶ 88.

⁴⁴¹ *Awas Tingni*, *supra* note 422, at 39.

⁴⁴² *Belize Maya*, *supra* note 431, at 148.

⁴⁴³ *Id.* at ¶ 147.

⁴⁴⁴ *Report on the Human Rights Situation in Ecuador* (“Ecuador Report”), OEA/Ser.L/V/II.96, Ch. 9, available at <http://cidh.org/countryrep/ecuador-eng/index%20-%20ecuador.htm>, (quoting and citing generally Ksentini Final Report, *supra* note 440, at ¶¶ 77, 78-93).

⁴⁴⁵ *Id.*

⁴⁴⁶ Ecuador Report, *supra* note 444, ch. VIII.

⁴⁴⁷ *Id.*

⁴⁴⁸ ILO Convention No. 169, *supra* note 439, at art. 7.4.

⁴⁴⁹ *Id.* at art. 15.1.

⁴⁵⁰ Inter-Am. C.H.R., Proposed American Declaration on the Rights of Indigenous Peoples, art. 13, OEA/Ser.L/V/II.110, Doc. 22 (Mar. 2001), available at <http://cidh.org/Indigenas/Indigenas.en.01/index.htm>.

⁴⁵¹ U.N. Econ. & Soc. Council, Sub-Comm. on Prevention of Discrimination & Prot. of Minorities, Draft United Nations Declaration on the Rights of Indigenous Peoples, art. 28, in Report of the Sub-Commission on Prevention of Discrimination and Protection of Minorities on its Forty-Sixth Session 105 et seq., E/CN.4/Sub.2/1994/56.

⁴⁵² *Id.* at art. 28.

⁴⁵³ *Case Concerning the Gabcikovo-Nagymaros Project (Hungary v. Slovakia)*, 1997 I.C.J. 92, (Sept. 25) (separate opinion of Vice-President Weeramantry), at ¶ A(b).

⁴⁵⁴ See, e.g., International Covenant on Economic, Social and Cultural Rights (“ICESCR”), Dec. 16, 1966, art. 1(2), 6 I.L.M. 360, 365, 993 U.N.T.S. 3, (signed by U.S. on Oct. 5, 1977) at art. 1(2); Convention on the Rights of the Child, Nov. 20, 1989, art. 6, 28 I.L.M. 1448, 1577 U.N.T.S. 3, art. 29(e) (signed by U.S. on Feb. 16, 1995); Additional Protocol to the American Convention on Human Rights in the Area of Economic Social and Cultural Rights (“Protocol of San Salvador”), Nov. 14, 1988, art. 11, O.A.S.T.S. No. 69, 28 I.L.M. 156; African Charter on Human and Peoples’ Rights, adopted June 27, 1981, OAU Doc. CAB/LEG/67/3 rev. 5, 21 I.L.M. 58 (1982), entered into force Oct. 21, 1986, art. 23 (“[a]ll peoples

shall have the right to a generally satisfactory environment favorable to their development.”); African Charter on the Rights and Welfare of the Child, entered into force Nov. 29, 1999, art. 14(2)(c), OAU Doc. CAB/LEG/24.9/49, art. 14 § 1(c) (“to ensure the provision of . . . safe drinking water.”); Final Draft Charter of Fundamental Rights of the European Union, Sept. 28, 2000, art.37 2000 O.J. (C 364) 1, 17, *available at* (“A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development.”); Convention on Biological Diversity, entered into force Dec. 29, 1993, preamble, 31 I.L.M. 818, 1760 U.N.T.S. 79; North American Agreement on Environmental Cooperation, Sept. 14, 1993, Preamble cl. 8 32 I.L.M. 1482 (1993); Rio Declaration on Environment and Development, U.N. ESCOR, at princ. 1, 14, U.N. Doc. A/CONF.151/26 (Vol. I) (1992) [hereinafter Rio Declaration] (“[h]uman beings . . . are entitled to a healthy and productive life in harmony with nature” and recognized the importance of controlling “any activities and substances that cause severe environmental degradation.”); G.A. Res. 45/94, U.N. GAOR, 45th Sess., U.N. Doc. A/45/749 (1990) (“all individuals are entitled to live in an environment adequate for their health and well-being.”); G.A. Res. 55/107, U.N. GAOR, 55th Sess., at 3(k), U.N. Doc. A/Res/55/107 (2000) (“affirming that a democratic and equitable international order requires, inter alia, the realization of . . . the entitlement of every person and all peoples to a healthy environment.”); CHR Res. 2000/62, U.N. ESCOR, 56th Sess., at para. 3(k), U.N. Doc. E/CN.4/RES/2000/62 (2000) (“a democratic and equitable international order requires, inter alia, the realization of . . . [t]he right to a healthy environment for everyone.”).

⁴⁵⁵ Ecuador Report, *supra* note 444, at Ch. 8.

⁴⁵⁶ GIBSON & SCHULLINIGER, *supra* note 7, at 6.

⁴⁵⁷ ACIA OVERVIEW, SUPRA NOTE 16, at 11, 16; GIBSON & SCHULLINIGER, *supra* note 7, at 5-6.

⁴⁵⁸ See ACIA Overview, *supra* note 16, at 16; GIBSON & SCHULLINIGER, *supra* note 7, at 6;

Watt-Cloutier, *et al.*, *supra* note 110.

⁴⁵⁹ ACIA Overview, *supra* note 16, at 94; ALASKA NATIVE SCIENCE COMMISSION, NATIONAL SUBSISTENCE TECHNICAL - PLANNING MEETING FOR THE PROTECTION OF TRADITIONAL & TRIBAL LIFEWAYS 15 (April 2003) ; ALASKA REGIONAL ASSESSMENT GROUP, THE POTENTIAL CONSEQUENCES OF CLIMATE VARIABILITY AND CHANGE: ALASKA 5 (1999 Center for Global Change and Arctic System Research), *available at* <http://www.besis.uaf.edu/regional-report/Preface-Ex-Sum.pdf> (last visited Feb. 8, 2005);

⁴⁶⁰ Wohlforth, *supra* note 31, (quoting John Tidwell).

⁴⁶¹ “To hunt, catch and share these foods is the essence of Inuit culture.” ACIA Overview, *supra* note 16, at 94.

⁴⁶² Ecuador Report, *supra* note 444, ch. VIII.

⁴⁶³ “Every person has the right to take part in the cultural life of the community, to enjoy the arts, and to participate in the benefits that result from intellectual progress, especially scientific discoveries.” American Declaration, *supra* note 432, at art. XIII.

⁴⁶⁴ Charter of the Organization of American States, arts. 2(f), 3(m), 30, 48, *reprinted in* Basic Documents Pertaining to Human Rights in the Inter-American System, OAS/Ser.L/V/I.4 Rev. 9, (January 2003), *available at* <http://cidh.org/basic.eng.htm> (Member States are “individually and jointly bound to preserve and enrich the cultural heritage of the American peoples”).

⁴⁶⁵ American Convention on Human Rights (“American Convention”), arts. 16, 48, *reprinted in* Basic Documents Pertaining to Human Rights in the Inter-American System, OAS/Ser.L/V/I.4 Rev. 9, (January 2003), *available at* <http://cidh.org/basic.eng.htm> (“Everyone has the right to associate freely for ideological, religious, political, economic, labor, social, cultural, sports, or other purposes”).

⁴⁶⁶ *Id.* at art. 26 (“The States Parties undertake to adopt measures . . . with a view to achieving progressively . . . the full realization of the rights implicit in the economic, social, educational, scientific,

and cultural standards set forth in the Charter of the Organization of American States as amended by the Protocol of Buenos Aires”).

⁴⁶⁷ Universal Declaration of Human Rights (“Universal Declaration”), G.A. Res. 217A (III), U.N. GAOR, 3rd Sess., at 72, U.N. Doc A/810 (1948), art. 27.1 (“Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.”)

⁴⁶⁸ International Covenant on Civil and Political Rights (“ICCPR”), art. 27, Dec. 16, 1966, art. 6, 6 I.L.M. 368, 999 U.N.T.S. 171 (ratified by U.S. on June 8, 1992) (members of minority groups “shall not be denied the right, in community with other members of their group, to enjoy their own culture, to profess and practice their own religion, or to use their own language”).

⁴⁶⁹ International Covenant on Economic, Social and Cultural Rights (“ICESCR”), Dec. 16, 1966, art. 12, 6 I.L.M. 360, 365, 993 U.N.T.S. 3, art. 15(1) (signed by U.S. on Oct. 5, 1977) (“The States Parties to the present Covenant recognize the right of everyone [t]o take part in cultural life”).

⁴⁷⁰ “It has been the Commission’s longstanding view that the protection of the culture of indigenous peoples encompasses the preservation of ‘the aspects linked to productive organization, which includes, among other things, the issue of ancestral and communal lands.’” *Belize Maya*, *supra* note 431, at ¶ 120 (quoting Inter-Am. C.H.R., Report on the Situation of Human Rights of a Segment of the Nicaraguan Population of Miskito Origin, (“Miskito Report”) OEA/Ser.L/V/II.62, Doc. 10 rev. 3 81 Part II, ¶ 15 (1983)).

⁴⁷¹ *Awax Tingni*, *supra* note 422, at ¶ 149.

⁴⁷² *Belize Maya*, *supra* note 431, at ¶¶ 154-156.

⁴⁷³ *Yanomami*, *supra* note 436, at 5-6.

⁴⁷⁴ Ecuador Report, *supra* note 444, at ch. IX (citing the Ksentini Final Report, *supra* note 440, at ¶¶ 77, 78-93).

⁴⁷⁵ General Comment No. 23, *supra* note 438, at ¶¶ 7, 9.

⁴⁷⁶ *Belize Maya*, *supra* note 431, at ¶ 141.

⁴⁷⁷ *Bernard Ominayak and the Lubicon Lake Band v. Canada*, U.N. HRC, 45th Sess., Supp. No. 40, at 27, U.N. Doc. CCPR/C/38/D/167/1984 (1990).

⁴⁷⁸ *Id.* at ¶ 33.

⁴⁷⁹ United Nations’ Draft Declaration on the Rights of Indigenous Peoples, *supra* note 451, at art. 7.

⁴⁸⁰ *Id.* at art. 14

⁴⁸¹ 16 U.S.C. 3111(1) (emphasis added).

⁴⁸² ACIA Overview Report, *supra* note 16, ch. 4 at 100.

⁴⁸³ *Id.*

⁴⁸⁴ Wohlforth, *supra* note 31.

⁴⁸⁵ SOUTH BAFFIN, *supra* note 115, Appendix C at 23.

⁴⁸⁶ American Declaration, *supra* note 432, at art. XXIII.

⁴⁸⁷ Inter-Am. C.H.R., Annual Report of the Inter-American Commission on Human Rights 1993, OEA/Ser.L/V/II.85, doc. 9 rev. (1994) ch. 6 at 464.

⁴⁸⁸ American Convention, *supra* note 465, at art. 21.

⁴⁸⁹ Universal Declaration, *supra* note 467, at art. 17.

⁴⁹⁰ Convention for the Protection of Human Rights and Fundamental Freedoms, Nov. 4, 1950, 213 U.N.T.S. 221 (“European Convention”), Protocol 1, art. 1 (“Every natural or legal person is entitled to the peaceful enjoyment of his possessions. No one shall be deprived of his possessions except in the public interest and subject to the conditions provided for by law and by the general principle of international law.”).

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- ⁴⁹¹ African Charter on Human and Peoples' Rights, *supra* note 454, at art. 14, ("The right to property shall be guaranteed. It may only be encroached upon in the interest of public need or in the general interest of the community and in accordance with the provisions of appropriate laws.").
- ⁴⁹² *Belize Maya*, *supra* note 431, at ¶ 140.
- ⁴⁹³ *Awat Tingni*, *supra* note 422, at ¶ 149.
- ⁴⁹⁴ *Awat Tingni*, *supra* note 422, at ¶ 149.
- ⁴⁹⁵ *Id.*
- ⁴⁹⁶ *Belize Maya*, *supra* note 431, at ¶ 153, 194.
- ⁴⁹⁷ *Id.* at ¶ 117.
- ⁴⁹⁸ *Id.*
- ⁴⁹⁹ *Id.* at ¶ 152.
- ⁵⁰⁰ *Dann*, *supra* note 421, at ¶ 129.
- ⁵⁰¹ Proposed American Declaration on the Rights of Indigenous Peoples, *supra* note 450, at art. 18.2.
- ⁵⁰² ILO Convention No. 169, *supra* note 439, at art. 14.1.
- ⁵⁰³ United Nations' Draft Declaration on the Rights of Indigenous Peoples, *supra* note 451, at art. 26 (emphasis added).
- ⁵⁰⁴ *Belize Maya*, *supra* note 431, at ¶ 140.
- ⁵⁰⁵ *Id.*
- ⁵⁰⁶ *Id.* at ¶¶ 149-150 (citing with approval Communication N° 155/96, African Comm. Num. & Peoples' Rights, Done at the 30th Ordinary Session, held in Banjul, The Gambia from 13-27 October 2001, available at http://www1.umn.edu/humanrts/africa/comcases/155-96.html#_ftnref7).
- ⁵⁰⁷ ACIA Overview, *supra* note 16, at 24.
- ⁵⁰⁸ James Bay and Northern Quebec Agreement and Complementary Agreements, available at http://www.ainc-inac.gc.ca/pr/agr/que/jbnq_e.PDF (last visited Nov. 28, 2005); Western Arctic Claim: Inuvialuit Final Agreement, available at http://www.ainc-inac.gc.ca/pr/agr/inu/wesar_e.pdf (last visited Nov. 28, 2005); Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada, ("NLCA") available at http://www.ainc-inac.gc.ca/pr/agr/pdf/nunav_e.pdf (last visited Nov. 28, 2005); Land Claims Agreement Between the Inuit of Labrador and Her Majesty the Queen in Right of Newfoundland and Labrador and in Right of Canada, available at http://www.ainc-inac.gc.ca/pr/agr/lab/labi_e.pdf (last visited Nov. 28, 2005).
- ⁵⁰⁹ 33 U.S.C. 1601, *et seq.*
- ⁵¹⁰ NLCA, *supra* note 508, at art. 17.
- ⁵¹¹ *Belize Maya*, *supra* note 431, at ¶ 140.
- ⁵¹² ACIA Overview, *supra* note 16, at 25, 30.
- ⁵¹³ *Id.* at 25.
- ⁵¹⁴ ACIA Overview, *supra* note 16, at 80.
- ⁵¹⁵ ACIA Overview, *supra* note 16, at 79.
- ⁵¹⁶ ACIA Overview, *supra* note 16, at 12.
- ⁵¹⁷ ACIA Overview, *supra* note 16, at 94.
- ⁵¹⁸ *Awat Tingni*, *supra* note 422, at ¶ 144; The European Court of Human Rights has also expansively defined property "to cover both movable and immovable property, immaterial rights, economic interests, goodwill (for example, one's good reputation) and pension." Human Rights Internet, *The Human Rights Databank: The Right to Property*, at <http://www.hri.ca/doccentre/docs/handbook97/property.shtml> (last visited Nov. 16, 2005).
- ⁵¹⁹ Proposed American Declaration on the Rights of Indigenous Peoples, *supra* note 450, art. 20; *see also* Draft United Nations Declaration on the Rights of Indigenous Peoples, *supra* note 451, art. 29 ("Indigenous peoples are entitled to the recognition of the full ownership, control and protection of their

cultural and intellectual property ... and the right to special measures to control, develop and protect their sciences, technologies and cultural manifestations, including human and other genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs and visual and performing arts”); *see also* Convention on Biological Diversity, *supra* note 454, arts. 8(j), 10(c).

⁵²⁰ Proposed American Declaration on the Rights of Indigenous Peoples *supra* note 450, art. 18.2.

⁵²¹ ILO Convention 169, *supra* note 439, art. 14.1 (“measures shall be taken ... to safeguard the right... to use lands not exclusively occupied by them, but to which they have traditionally had access for their subsistence and traditional activities”).

⁵²² *Belize Maya*, *supra* note 431, at ¶ 140.

⁵²³ *Awes Tingni*, *supra* note 422, at ¶ 144.

⁵²⁴ Todd Phillips and Jason Van Russell, “Winter Storm Disrupts Pang Fishing Season,” in NUNATSIAQ NEWS, March 15, 1996..

⁵²⁵ *Awes Tingni*, *supra* note 422, at ¶ 144.

⁵²⁶ Wohlforth, *supra* note 31.

⁵²⁷ Proposed American Declaration on the Rights of Indigenous Peoples, *supra* note 450, art. 29.

⁵²⁸ NLCA, *supra* note 508, at art. 5.

⁵²⁹ 16 U.S.C. § 3121(a).

⁵³⁰ Proposed American Declaration on the Rights of Indigenous Peoples, *supra* note 450, at art. 28.

⁵³¹ Fenge, *supra* note 32, at 82.

⁵³² *Belize Maya*, *supra* note 431, at ¶ 144.

⁵³³ American Declaration, *supra* note 432, at art. XI.

⁵³⁴ Protocol of San Salvador, *supra* note 454, at art. 10.

⁵³⁵ Article 25(1) of the Universal Declaration of Human Rights, *supra* note 467, assures the right to “a standard of living adequate for the health and well-being of himself and his family, including ... medical care and necessary social services.”

⁵³⁶ Article 12 of the ICESCR, *supra* note 469, provides:

1. The states parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health.
2. The steps to be taken by the states parties to the present Covenant to achieve the full realization of this right shall include those necessary for: (b) the improvement of all aspects of environmental and industrial hygiene; (c) the prevention, treatment and control of epidemic ... and other diseases.

⁵³⁷ African Charter on Human and Peoples’ Rights, *supra* note 454, at art. 16 (“Every individual shall have the right to enjoy the best attainable state of physical and mental health.”).

⁵³⁸ *See* Yamin, 95 Am. J. Pub. Health 1156, 1157 (2005) (citing Toebes B. *The Right to Health as a Right in International Law*. Oxford, England: Intersentia/Hart; 1999).

⁵³⁹ *Yanomami*, *supra* note 436, at 8.

⁵⁴⁰ *Id.*

⁵⁴¹ *Belize Maya*, *supra* note 431, at ¶¶ 154-156.

⁵⁴² Constitution of the World Health Organization, July 22, 1946, 14 U.N.T.S. 185, 186.

⁵⁴³ Stockholm Convention on Persistent Organic Pollutants, U.N. Environment Programme, U.N. Doc. UNEP/POPS/CONF/2 (2001) (signed by U.S. on May 23, 2001), *available at* <http://untreaty.un.org/English/notpubl/27-15E.doc>.

⁵⁴⁴ Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, art. 1, U. N. Doc MP.WAT/AC.1/1999/1 (1999), *available at* <http://www.euro.who.int/Document/Peh-ehp/ProtocolWater.pdf>.

⁵⁴⁵ Rio Declaration on Environment and Development, *supra* note 454, at Princ. 14.

⁵⁴⁶ Economic and Social Council, Commission on Human Rights, Human Rights and Indigenous Issues: Report of the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous people, Rodolfo Stavenhagen Addendum, Mission to Canada, U.N. Doc. E/CN.4/2005/88/Add.4, at ¶ 94, (“Stavenhagen Addendum”).

⁵⁴⁷ Ksentini Final Report, *supra* note 440, at ¶¶ 176-187.

⁵⁴⁸ *Id.* at ¶ 176

⁵⁴⁹ *Id.* at ¶ 176.

⁵⁵⁰ Hunt, Paul, Right of Everyone to the Highest Standard of Physical and Mental Health: Addendum, Mission to Peru, ¶ 54, U.N. Doc. E/CN.4/2005/51/Add.3 (2005).

⁵⁵¹ Ksentini Final Report, *supra* note 440, at ¶ 183 (citations omitted).

⁵⁵² U.N. C.E.S.C.R., Substantive Issues Arising in the Implementation of the International Covenant on Economic, Social and Cultural Rights, ICESCR General Comment 14, 22nd Sess., at ¶ 4, U.N. Doc. E/C.12/2000/4 (2000).

⁵⁵³ *Id.* at ¶ 59.

⁵⁵⁴ WHO Executive Board, WHO’s human health and environment programme, 57th Sess., at ¶ 3, Res. EB57.R28 (1976).

⁵⁵⁵ *Id.* at preamble.

⁵⁵⁶ WHO Executive Board, WHO’s contribution to the international efforts towards sustainable development, 83rd Sess., at ¶¶ 3, 4, Res. EB83.R15 (1989).

⁵⁵⁷ ACIA Overview, *supra* note 16, at 110.

⁵⁵⁸ PAULATUK WORKSHOP, *supra* note 116, at 23; TUKTOYAKTUK WORKSHOP, *supra* note 130, at 11.

⁵⁵⁹ ACIA Overview, *supra* note 16, at 10.

⁵⁶⁰ ASHFORD & CASTLEDEN, *supra* note 117, at §4.1.

⁵⁶¹ ACIA Overview, *supra* note 16, at 111.

⁵⁶² *Id.*

⁵⁶³ *Id.*

⁵⁶⁴ ACIA Overview, *supra* note 16, at 111.

⁵⁶⁵ American Declaration, *supra* note 432, at art. I.

⁵⁶⁶ ICCPR, *supra* note 468, at art. 6 (“[e]very human being has the inherent right to life. This right shall be protected by law”); Universal Declaration of Human Rights, *supra* note 467, (“Everyone has the right to life.”); American Convention, *supra* note 465, at art. 4.1 (“Every person has the right to have his life respected. This right shall be protected by law....”); European Convention, *supra* note 490, at art. 2.1, 5.1 (“Everyone’s right to life shall be protected by law.”; “Everyone has the right to liberty and security of person.”).

⁵⁶⁷ Office of the U.N. High Commissioner for Human Rights, Status of Ratifications of the Principal International Human Rights Treaties (June 9, 2004) at 11, at <http://www.unhchr.ch/pdf/report.pdf> (last visited Mar. 18, 2005).

⁵⁶⁸ Inter-Am. C.H.R., Signatures and Current Status of Ratifications: American Convention on Human Rights, at <http://www.cidh.org/Basicos/basic4.htm#9> (last visited Nov. 18, 2005).

⁵⁶⁹ *See, e.g.*, U.S. Const. Amend. V, XIV, § 1. In Latin America, the constitutions of Chile (art. 19); Colombia (art. 11); Costa Rica (art. 21); Ecuador (art. 23); Nicaragua (art. 23); Paraguay (art. 4); Peru (art. 2.1); Dominican Republic (art. 8.1); and Venezuela (art. 43) explicitly state the right to life. Georgetown University y Organización de Estados Americanos, *Base de Datos Políticos de las Américas: Derecho a la integridad personal*, at <http://www.georgetown.edu/pdba/Comp/Derechos/integridad.html> (last visited Mar. 18, 2005).

⁵⁷⁰ *Yanomami*, *supra* note 436.

⁵⁷¹ *Id.*

⁵⁷² Ecuador Report, *supra* note 444, at ch. 8.

⁵⁷³ *Id.*

⁵⁷⁴ Ecuador Report, *supra* note 444, at ch. 8.

⁵⁷⁵ *Id.*

⁵⁷⁶ *E.H.P. v. Canada*, U.N. H.R.C., 17th Session, at ¶ 8, U.N. Doc. CCPR/C/17/D/67/1980 (1982), available at <http://www.unhchr.ch/tbs/doc.nsf/0/fd1dce90b1957160c1256abe003484d9?OpenDocument> (last visited Nov. 16, 2005).

⁵⁷⁷ *General Comment No. 6: The right to life*, U.N. HRC, 16th Session, at ¶ 5, U.N. Doc. A/37/40 (1982), available at [http://www.unhchr.ch/tbs/doc.nsf/\(Symbol\)/84ab9690ccd81fc7c12563ed0046fae3?Opendocument](http://www.unhchr.ch/tbs/doc.nsf/(Symbol)/84ab9690ccd81fc7c12563ed0046fae3?Opendocument) (last visited Nov. 18, 2005).

⁵⁷⁸ A study of the Inuvialuit in Sachs Harbour further found, “In the winter, the sea ice is thin and broken, making travel dangerous for even the most experienced hunters. In the fall, storms have become frequent and severe, making boating difficult.” ASHFORD & CASTLEDEN, *supra* note 117, at Executive Summary.

⁵⁷⁹ ACIA Overview, *supra* note 16, at 58-61, 68-69, 96.

⁵⁸⁰ 16 U.S.C. 3111(2).

⁵⁸¹ ACIA Overview, *supra* note 16, at 96.

⁵⁸² ACIA Overview *supra* note 16, at 95.

⁵⁸³ ICCPR, *supra* note 468, at art. 1(2).

⁵⁸⁴ Draft United Nations Declaration on the Rights of Indigenous People, *supra* note 451, at art. 21.

⁵⁸⁵ Proposed American Declaration on the Rights of Indigenous Peoples, *supra* note 450, art. 15.

⁵⁸⁶ *Dann*, *supra* note 421, at ¶ 129.

⁵⁸⁷ Proposed American Declaration on the Rights of Indigenous Peoples, *supra* note 450, at art. 18.4 (emphasis added).

⁵⁸⁸ Proposed American Declaration on the Rights of Indigenous Peoples, *supra* note 450, at art. 15.

⁵⁸⁹ *Concluding Observations: Sweden 24/04/2002*, U.N. HRC, 74th Sess., at ¶ 15, U.N. Doc. CCPR/CO/74/SWE (2002) (citing ICCPR, arts. 1, 25, and 27), available at <http://www.unhchr.ch/tbs/doc.nsf/0/5d974f7dcf82864dc1256b960038d029?Opendocument> (last visited Nov. 18, 2005).

⁵⁹⁰ *Concluding Observations: Canada 07/04/99*, U.N. HRC, 65th Sess., at ¶ 8, U.N. Doc. CCPR/C/79/Add.105 (1999) (citing ICCPR, art. 1(2)).

⁵⁹¹ *Lubicon Lake Band*, *supra* note 477, at ¶ 32.2.

⁵⁹² The Committee has jurisdiction over complaints by individuals under the Optional Protocol to the ICCPR, but the right to self-determination, including a people’s right to their own means of subsistence, is a collective right, over which the Committee decided it did not have jurisdiction. “There is, however, no objection to a group of individuals, who claim to be similarly affected, collectively to submit a communication about alleged breaches of their rights.” *Lubicon Lake Band*, *supra* note 477, at ¶ 32.1.

⁵⁹³ *Id.* at ¶ 33.

⁵⁹⁴ Draft United Nations Declaration on the Rights of Indigenous Peoples, *supra* note 451, at art. 21.

⁵⁹⁵ ILO Convention No. 169, *supra* note 439, at art. 14.1.

⁵⁹⁶ *Id.* at art. 23.1.

⁵⁹⁷ ACIA Overview, *supra* note 16, at 11.

⁵⁹⁸ ACIA Overview, *supra* note 16, at 10.

⁵⁹⁹ American Declaration, *supra* note 432, at art. VIII.

⁶⁰⁰ American Declaration, *supra* note 432, at art. IX.

⁶⁰¹ Universal Declaration of Human Rights, *supra* note 467, at art. 12, 13(1).

⁶⁰² ICCPR, *supra* note 468, at art. 12, 17.

⁶⁰³ American Convention on Human Rights, *supra* note 465, at art. 11, 22.

⁶⁰⁴ European Convention on Human Rights, *supra* note 490, at Protocol 1, art. 2.1, 8.

⁶⁰⁵ African Charter on Human and Peoples' Rights, *supra* note 454, at art. 4, 12.1.

⁶⁰⁶ See Georgetown University y Organización de Estados Americanos, *Libertad de Circulación y Residencia*, at <http://www.georgetown.edu/pdba/Comp/Derechos/circulacion.html> (last visited Nov. 18, 2004).

⁶⁰⁷ *Yanomami*, *supra* note 436, at 8.

⁶⁰⁸ *Id.* at 2.

⁶⁰⁹ *Id.*

⁶¹⁰ *Lopez Ostra v. Spain*, 303-C Eur. Ct. H.R. (ser. A) (1994) (Spain “did not succeed in striking a fair balance between the interest of the town’s economic well-being ... and the applicant’s effective enjoyment of her right to respect for her home and her private and family life.”).

⁶¹¹ *Case Of Guerra And Others V. Italy*, European Court Of Human Rights, No. 116/1996/735/932 (1998), available at <http://www.eel.nl/cases/ECHR/guerra.htm> (last visited Nov. 18, 2005).

⁶¹² *Case of Fadeyeva v. Russia*, European Court of Human Rights, No. 55723/00 (2005).

⁶¹³ *Yanomami*, *supra* note 436 at ¶ 2(f), available at <http://www.worldlii.org/eu/cases/ECHR/2005/376.html> (last visited Nov. 18, 2005).

⁶¹⁴ *Dann*, *supra* note 421, at ¶ 97 (citing Inter Am. C.H.R., Report of the Situation of Human Rights of Asylum Seekers within the Canadian Refugee Determination System, Doc. OEA/Ser.L/V/II.106, Doc. 40 rev. ¶ 38 (February 28, 2000), available at <http://www.cidh.org/countryrep/Canada2000en/table-of-contents.htm> (last visited Apr. 12, 2005); *Case of Juan Raul Garza* (United States) (“*Garza*”) Report N° 52/01, Case 12.243, Annual Report of the IACHR (2000) at ¶¶ 88, 89).

⁶¹⁵ American Convention on Human Rights, *supra* note 465, at art. 29.

⁶¹⁶ *Belize Maya*, *supra* note 431, at ¶ 86 (citing Inter-Am. Court H.R., Advisory Opinion OC-10/89, Interpretation of the American Declaration of the Rights and Duties of Man Within the Framework of Article 64 of the American Convention on Human Rights, July 14, 1989, Ser. A. No. 10 ¶ 37 (1989); Inter-Am. Court H.R., Advisory Opinion OC-16/99, The Right to Information on Consular Assistance in the Framework of the Guarantees of the Due Process of Law, Ser. A N° 16 ¶ 115 (1999); *Case of Ramón Martínez Villareal* (United States) (“*Villareal*”), Report N° 52/02, Case N° 11.753, Annual Report of the IACHR 2002 ¶ 60 (2002)).

⁶¹⁷ *Belize Maya*, *supra* note 431, at ¶ 87 (citing *Garza*); *Dann*, *supra* note 421.

⁶¹⁸ *Belize Maya*, *supra* note 431, at ¶ 87 (citing *Garza*, *supra* note 614, at ¶ 89; Inter Am. C.H.R., Report of the Situation of Human Rights of Asylum Seekers within the Canadian Refugee Determination System, Doc. OEA/Ser.L/V/II.106, Doc. 40 rev. (February 28, 2000), ¶ 38; *Case of Juan Carlos Abella* (Argentina) (“*Abella*”) Report N° 55/97, Case 11.137, Annual Report of the IACHR 1998, ¶¶ 157-171 (1998); *Villareal*, *supra* note 616, at ¶ 77;); *Dann*, *supra* note 421 at ¶ 97).

⁶¹⁹ *Awas Tingni*, *supra* note 422, at ¶ 146.

⁶²⁰ The Right to Information on Consular Assistance, *supra* note 616, at 115; *accord* Juridical Condition and Human Rights of the Child, Inter-Am. Court H.R., Advisory Opinion OC-17/02, (2002) (interpreting rights in the Convention in light of the International Convention on the Human Rights of the Child); Juridical Condition and Rights of the Undocumented Migrants, Inter-Am. Court H. R., Advisory Opinion OC-18 (2003).

⁶²¹ *Belize Maya*, *supra* note 431, at ¶ 86 (citing Inter-Am. Court H.R., *Interpretation of the American Declaration*, *supra* note 616; Inter-Am. Court H.R., The Right to Information on Consular Assistance, *supra* note 616; *Villareal*, *supra* note 616, at ¶ 60.

⁶²² The Right to Information on Consular Assistance, *supra* note 616, (citing “*Other Treaties*” *Subject to the Advisory Jurisdiction of the Court (Art. 64 American Convention on Human Rights)*, Advisory Opinion OC-1/82, Sept. 24, 1982, (Ser. A) No. 1; opinion, ¶ 1) (Emphasis in original.).

⁶²³ *Case of Coard et al (United States) (“Coard”)*, Report No. 109/99, Case No. 10.951, ¶ 40.

⁶²⁴ “*Other Treaties*” *Subject to the Advisory Opinion of the Court*, *supra* note 622, at ¶ 34, 43.

⁶²⁵ United Nations Framework Convention on Climate Change (“Framework Convention”), 1771 U.N.T.S. 107, reprinted at 31 I.L.M. 849 (1992), *available at* <http://unfccc.int/resource/docs/convkp/conveng.pdf> (last visited May 12, 2005). The status of U.S. ratification and entry into force is available at http://unfccc.int/parties_and_observers/parties/items/2228.php (last visited May 12, 2005).

⁶²⁶ Framework Convention, *supra* note 625, at art. 2.

⁶²⁷ *Id.*, art 4.1(b) (Parties shall “formulate, implement, publish and regularly update national ... programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases”).

⁶²⁸ *Id.*, art. 4.2(a) (committing developed countries to “tak[e] the lead in modifying long-term trends in anthropogenic emissions consistent with the objective of the Convention, recognizing that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal protocol would contribute to such a modification”), art 4.2(b) (reporting requirements specifically referencing “the aim of returning individually or jointly to their 1990 levels these anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol”). *See also* Climate Change Secretariat, *The Kyoto Protocol to the Convention on Climate Change “Introduction”* p.1.

⁶²⁹ Vienna Convention on the Law of Treaties, art. 26, 1155 U.N.T.S. 331, reprinted at 8 I.L.M. 679 (1969), *available at* <http://www.un.org/law/ilc/texts/treaties.htm> (last visited May 12, 2005). The United States signed the Vienna Convention, and, although it did not subsequently ratify the Convention, the U.S. Department of State recognizes its provisions as “the authoritative guide to current treaty law and practice.” S. Exec. Doc.L., 92d Cong., 1st sess. (1971) p. 1.

⁶³⁰ U.S. Climate Action Report – 2002, *supra* note 91, (“[T]otal U.S. greenhouse gas emissions are projected to increase by 43 percent between 2000 and 2020. This increased growth in absolute emissions will be accompanied by a decline in emissions per unit of GDP.”).

⁶³¹ *See* Review of the third national communication of the United States, *infra* note 711, and accompanying text.

⁶³² President George W. Bush, Speech Discussing Global Climate Change, June 11, 2001, *available at* <http://www.whitehouse.gov/news/releases/2001/06/20010611-2.html> (last visited May 12, 2005).

⁶³³ U.S. Climate Action Report – 2002, *supra* note 91.

⁶³⁴ *Id.* at 50-52, 78.

⁶³⁵ U.S. Climate Action Report – 2002, *supra* note 91, at 5.

⁶³⁶ Pew Center on Global Climate Change, http://www.pewclimate.org/policy_center/analyses/response_bushpolicy.cfm.

⁶³⁷ *See* David Hunter, James Salzman & Durwood Zaelke, *International Environmental Law and Policy* at 420 (Foundation Press, 2d ed. 2002).

⁶³⁸ Trail Smelter Arbitration (U.S. v. Can.) (1941), 3 R.I.A.A. 1938, 1965 (1949).

⁶³⁹ Corfu Channel Case (U.K. v. Alb.), 1949 I.C.J. 4, 22 (Apr. 9).

⁶⁴⁰ *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion*, 1996 I.C.J. 226, 241-42.

⁶⁴¹ Stockholm Declaration of the United Nations Conference on the Human Environment, Principle 21, G.A. Res. 2997, U.N. GAOR, 27th Sess., U.N. Doc. A/ Conf.48/14/Rev/1, 11 I.L.M. 1416 (1972); Rio Declaration on Environment and Development, *supra* note 454, at Principle 2. The Heavy Metals

Protocol to the Convention on Long-Range Transboundary Air Pollution, which the United States has accepted, echoes the Rio Declaration's agreement that states must prevent transboundary harm. Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Heavy Metals, preamble, June 24, 1998, U.N. Doc. E/ECE/EB.AIR/66/1999, U.N. Sales No. E.99.II.E.21 (1999).

⁶⁴² North American Agreement on Environmental Cooperation, preamble, U.S.-Can.-Mex., Sept. 14, 1993, 32 I.L.M. 1480 (entered into force Jan. 1, 1994) ("REAFFIRMING the sovereign right of States to exploit their own resources pursuant to their own environmental and development policies and their responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction").

⁶⁴³ Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, preamble, Dec. 29, 1972, 1046 U.N.T.S. 120.

⁶⁴⁴ See Presidential Proclamation No. 7219, 64 Fed. Reg. 48701 (Aug. 2, 1999) (UNCLOS reflects international law).

⁶⁴⁵ See U.N. Convention on the Law of the Sea, art. 194, 1833 U.N.T.S. 3, reprinted at 21 I.L.M. 1261 (entered into force Nov. 16, 1994).

⁶⁴⁶ Framework Convention, preamble, *supra* note 625.

⁶⁴⁷ *Gabcikovo-Nagymaros Project*, *supra* note 453, at ¶ 140.

⁶⁴⁸ *Id.* (separate opinion of Vice President Weeramantry) T §A.

⁶⁴⁹ Ecuador Report, *supra* note 444, at ch. 8.

⁶⁵⁰ Rio Declaration on Environment and Development, *supra* note 454, at Principle 15; Hunter, Salzman & Zaelke, *supra* note 637, at 406.

⁶⁵¹ United States Position on Precaution, Dec. 4, 2000, available at <http://usinfo.org/usia/usinfo.state.gov/topical/global/environ/latest/00120407.htm>.

⁶⁵² UNEP Global Ministerial Environment Forum (GMEF), Malmö Ministerial Declaration ¶3 (2000).

⁶⁵³ Hunter, Salzman & Zaelke, *supra* note 637, at 410; The Stockholm Convention, ratified by 71 countries including Australia, Brazil, Canada, China, Germany, Mexico, Spain, the United Kingdom, and signed by the United States, regards precaution as "underl[ying] the concerns of all the Parties and . . . embedded within" the Convention. Stockholm Convention on Persistent Organic Pollutants, Participants, at <http://www.pops.int/documents/signature/signstatus.htm> (last visited Jul. 25, 2005); Stockholm Convention on Persistent Organic Pollutants (POPS), preamble (2001).

⁶⁵⁴ Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Heavy Metals, preamble, June 24, 1998, U.N. Doc. E/ECE/EB.AIR/66/1999, U.N. Sales No. E.99.II.E.21 (1999); Agreement for the Implementation of the Provisions of the UN Convention on the Law of the Sea of 10 December 1982, Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, art. 6, UN Doc. A/CONF.164/37, 34 ILM 1542, at 1563 (1995), available at http://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm (stating that "States shall apply the precautionary approach widely" and that the "absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.").

⁶⁵⁵ The Stockholm Convention formulates the precautionary principle in an active manner, stating that Parties "shall decide, in a precautionary manner," whether to list chemicals as persistent organic pollutants. Stockholm Convention on Persistent Organic Pollutants (POPS), art.8.9 (2001) (emphasis added). The Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (Bamako Convention) defines the precautionary approach as, inter alia, "preventing the release into the environment of substances which may cause harm to humans or the environment without waiting for scientific proof regarding such harm." Bamako Convention, art. 4(3)(f) (1991). Additionally, the 1996 Protocol to the London (Dumping)

Convention declares that “[i]n implementing this protocol, Contracting Parties shall apply a precautionary approach to environmental protection . . . when there is reason to believe that wastes or other matter introduced in the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal relation between inputs and their effects.”

⁶⁵⁶ Framework Convention, art. 3.3, *supra* note 625.

⁶⁵⁷ Framework Convention, art. 3.3, *supra* note 625.

⁶⁵⁸ *See infra* Part III.D.3

⁶⁵⁹ President George W. Bush, Speech Discussing Global Climate Change, *supra* note 632.

⁶⁶⁰ U.S. Climate Action Report – 2002, *supra* note 91, at p. 73.

⁶⁶¹ Concerning the Factory at Chorzów (Claim for Indemnity), 1928 P.C.I.J. (ser. A) No. 17, at 29 (Indemnity) (Merits).

⁶⁶² Corfu Channel Case (U.K. v. Alb.), 1949 I.C.J. 4 (Apr. 9); *Gabcikovo-Nagymaros Project*, *supra* note 453.

⁶⁶³ *Gabcikovo-Nagymaros Project*, *supra* note 453, at para. 150.

⁶⁶⁴ *See* Restatement (Third) of the Law of Foreign Relations §601 (1987).

⁶⁶⁵ Stockholm Declaration of the United Nations Conference on the Human Environment, Principle 21, *supra* note 641; Rio Declaration on Environment and Development, *supra* note 454, at Principle 2; *see also* Hunter, Salzman & Zaelke, *supra* note 637, at 425.

⁶⁶⁶ Velasquez Rodriguez Case, Compensatory Damages (Art. 63(1) American Convention on Human Rights), Judgment of July 21, 1989 Inter-Am.Ct.H.R. (Ser. C) No. 7 (1990), ¶ 54.

⁶⁶⁷ Rio Declaration on Environment and Development, *supra* note 454, at Principle 16 (“National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.”). This principle originated in a 1972 set of recommendations by the Organisation for Economic Co-operation and Development Council, which stated that “the cost of [ensuring adequate environmental protection] should be reflected in the cost of goods and services which cause pollution in production and/or consumption.” OECD Council, *Recommendation of the Council on Guiding Principles Concerning International Economic Aspects of Environmental Policies*, C(72)128 (1972).

⁶⁶⁸ UNEP Global Ministerial Environment Forum (GMEF), Malmö Ministerial Declaration ¶11 (2000).

⁶⁶⁹ World Summit on Sustainable Development, Plan of Implementation, par. 14(b), 2002, *available at* http://www.johannesburgsummit.org/html/documents/summit_docs/2309_planfinal.htm.

⁶⁷⁰ President George W. Bush, Speech Discussing Global Climate Change, *supra* note 632.

⁶⁷¹ U.S. Climate Action Report – 2002, *supra* note 91, at p. 73.

⁶⁷² CAIT, *supra* note 403 (5.4 tons per U.S. citizen versus 1 ton of carbon per person globally in 2000).

⁶⁷³ *Id.* (5.4 versus 2.2 tons of carbon per person in 2000).

⁶⁷⁴ *Id.* (5.4 versus 0.6 tons per person in 2000).

⁶⁷⁵ *Id.*

⁶⁷⁶ Department of State, Climate Change Fact Sheet, May 18, 2005, *available at* <http://www.state.gov/g/oes/rls/fs/46741.htm>. *See also* U.S. Government Accountability Office (GAO), Preliminary Observations on the Administration’s February 2002 Climate Initiative, Oct. 1, 2003, <http://www.gao.gov/new.items/d04131t.pdf>, at 1.

⁶⁷⁷ Preliminary Observations on the Administration’s February 2002 Climate Initiative, *supra* note 676, Appendix 1.

⁶⁷⁸ EPA, Climate Leaders, at <http://www.epa.gov/climateleaders> (last visited September 27, 2005).

⁶⁷⁹ Climate VISION: Program Mission, <http://www.climatevision.gov/mission.html> (last visited September 27, 2005).

⁶⁸⁰ *Id.*

⁶⁸¹ United States Department of Agriculture (USDA), Press Release, USDA Targeted Incentives for Greenhouse Gas Sequestration, Jun. 6, 2003, *available at* <http://www.state.gov/g/oes/rls/fs/2004/39485.htm>.

⁶⁸² EIA, Voluntary Reporting of Greenhouse Gases Program Brochure, *available at* <http://www.eia.doe.gov/oiaf/1605/Brochure.html> (last visited September 27, 2005).

⁶⁸³ U.S. Office of Management and Budget (OMB), Federal Climate Change Expenditures Report to Congress 10, Mar. 2005, http://www.whitehouse.gov/omb/legislative/fy06_climate_change_rpt.pdf (current and projected expenditures by individual program), at 3.

⁶⁸⁴ Climate Change Fact Sheet, *supra* note 676. *See also* Preliminary Observations on the Administration's February 2002 Climate Initiative, *supra* note 676, at 5.

⁶⁸⁵ Climate Change Science Program, Strategic Plan: Executive Summary, Jul. 2003, *available at* <http://www.climatechange.gov/Library/stratplan2003/final/ccspstratplan2003-execsum.pdf>.

⁶⁸⁶ Climate Change Technology Program, About the U.S. Climate Change Technology Program, <http://www.climatechange.gov/about/index.htm> (last visited Jul. 7, 2005).

⁶⁸⁷ Climate Change Fact Sheet, *supra* note 676.

⁶⁸⁸ *Id.* *See also* Climate Change Expenditures, *supra* note 683; and Robert Marlay, *Climate-Friendly Technologies—A U.S. Priority* at 10, Dec. 15, 2004, *available at* <http://www.climatechange.gov/library/2004/marlay-part1-paris-dec2004s.pdf> (percentage of CCTP spending on various technologies).

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⁶⁹¹ DOE, Carbon Sequestration Leadership Forum, *available at* <http://www.fe.doe.gov/programs/sequestration/csrf> (last visited Jul. 8, 2005).

⁶⁹² Generation IV International Forum, *at* <http://gen-iv.ne.doe.gov/intl.html> (last visited Jul. 8, 2005).

⁶⁹³ Climate Change Fact Sheet, *supra* note 676.

⁶⁹⁴ EPA, In Brief: The U.S. Greenhouse Gas Inventory 7, 2005, *available at* [http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/RAMR5CZKVE/\\$File/ghgbrochure.pdf](http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/RAMR5CZKVE/$File/ghgbrochure.pdf) at 7.

⁶⁹⁵ EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2003 ES-14, Figure ES-2, 2005, *available at* [http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/RAMR69V4ZS/\\$File/05_complete_report.pdf](http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/RAMR69V4ZS/$File/05_complete_report.pdf).

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⁷⁰⁸ Robert Fabricant, EPA General Counsel, Aug. 28, 2003, available at <http://www.icta.org/doc/FabricantMemoAug282003.pdf>.

⁷⁰⁹ Environmental Protection Agency, Control of Emissions from New Highway Vehicles and Engines: Notice of Denial of Petition for Rulemaking, 68 Federal Register 52,922, 52,925 (Sept. 8, 2003), available at <http://www.epa.gov/airlinks/co2petition.response.pdf>.

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⁷⁶⁶ Rules of Procedure of the Inter-American Commission on Human Rights, Article 31.1.

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⁷⁶⁸ See *Juan Carlos Bayarri v. Argentina*, Case No. 11.280, Commission Report No. 2/01, January 19, 2001, OEA/ser. L/V/II.111 doc.20 rev., ¶ 27 fn.12 (citing *Velásquez Rodríguez Case*, Inter-Am.Ct.H.R., Judgment of July 29, 1988, Series C. No. 4, ¶ 63 (“[The exhaustion requirement] speaks of ‘generally recognized principles of international law.’ Those principles refer not only to the formal existence of such remedies, but also to their adequacy and effectiveness, as shown by the exceptions.”)).

⁷⁶⁹ *DeShaney v. Winnebago Country Dept. of Social Serv.*, 489 U.S. 189, 196 (1989); see also *Harris v. McRae*, 448 U.S. 297, 317-318 (1980) (Fifth Amendment’s Due Process Clause establishes no obligation to fund abortions or other medical services); *Lindsey v. Normet*, 405 U.S. 56, 74 (1972) (Fourteenth Amendment’s Due Process Clause establishes no obligation to provide adequate housing); *Youngberg v. Romeo*, 457 U.S. 307, 317 (1982) (“As a general matter, a State is under no constitutional duty to provide substantive services for those within its border.”).

⁷⁷⁰ “Every person has the right to fix his residence within the territory of the state of which he is a national, to move about freely within such territory, and not to leave it except by his own will.”

⁷⁷¹ See *Attorney Gen. of New York v. Soto-Lopez*, 476 U.S. 898, 902 (1986).

⁷⁷² U.S. Const. Art. IV, 2, cl. 1. “The Citizens of each State shall be entitled to all Privileges and Immunities of Citizens in the several States.” *Id.*; see also *Corfield v. Coryell*, 6 F. Cas. 546 (C.C.E.D. Pa. 1823) (No. 3230).

⁷⁷³ “No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States.” U.S. Const. amend. XIV, 1; see also *Edwards v. California*, 314 U.S. 160, 177 (Douglas, J., concurring) and at 181 (Jackson, J., concurring) (1941).

⁷⁷⁴ U.S. Const. Art. 1, 8, cl. 3. “The Congress shall have Power ... to regulate Commerce with foreign Nations, and among the several States” See also *Edwards v. California*, 314 U.S. 160 (1941).

⁷⁷⁵ U.S. Const. amends. V, XIV, 1. See also *Aptheker v. Secretary of State*, 378 U.S. 500 (1964).

⁷⁷⁶ See, e.g., American Declaration, Art. VIII, *supra*, n. 432.

⁷⁷⁷ See, e.g., *Soto-Lopez*, 476 U.S. at 905 (1986) (The constitutional right to travel is “more precisely, the right of free interstate migration.” “A state law implicates the right to travel when it actually deters such travel....”).

⁷⁷⁸ See, e.g., *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419 (1982).

⁷⁷⁹ *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003 (1992).

⁷⁸⁰ *Dolan v. City of Tigard*, 512 U.S. 374 (1994).

⁷⁸¹ *Florida Rock Industries, Inc. v. U.S.*, 45 Fed. Cl. 21, 24 (1999) (“[T]he Takings Clause is triggered by regulation”).

⁷⁸² *Id.*

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⁷⁸⁴ *See Roe v. Wade*, 410 U.S. 113, 152 (1973) (finding that the right to privacy includes only those personal rights “implicit in the concept of ordered liberty” such as family planning, child-rearing, and abortion); *Paul v. Davis*, 424 U.S. 693, 712-13 (1976) (finding that a specific constitutional guarantee must provide a substantive basis for the privacy right).

⁷⁸⁵ *F.D.I.C. v. Meyer*, 510 U.S. 471 (1994) (citing *Loeffler v. Frank*, 486 U.S. 549, 554 (1988); *Federal Housing Admin. v. Burr*, 309 U.S. 242, 244 (1940)).

⁷⁸⁶ 28 U.S.C. § 1346(b). *See also F.D.I.C. v. Meyer*, 510 U.S. 471 (1994) (the United States cannot be sued in tort unless the claim alleges, “*inter alia*, that the United States would be liable to the claimant as a private person in accordance with the law of the place where the act or omission occurred.” (Quotations omitted.)).

⁷⁸⁷ 28 U.S.C. § 2680(a).

⁷⁸⁸ *See Massachusetts v. Environmental Protection Agency*, 415 F.3d 50, 54 (D.C. Cir. 2005).

⁷⁸⁹ *See* 28 U.S.C. § 1346(b). *See also F.D.I.C. v. Meyer*, 510 U.S. 471 (1994) (the United States cannot be sued in tort unless the claim alleges, “*inter alia*, that the United States would be liable to the claimant as a private person in accordance with the law of the place where the act or omission occurred.” (Quotations omitted.)).

⁷⁹⁰ *See, e.g., Long Beach v. New York*, 445 F. Supp. 1203, 1219 (D.N.J. 1978) (“[G]enerally it has been held that there is no constitutional right to ... [environmental] ... protection.”); *Tanner v. Armco Steel*, 340 F. Supp. 532 (S.D. Tex. 1972) (“[N]o legally enforceable right to a healthful environment . . . is guaranteed by the Fourteenth Amendment or any other provision of the Federal Constitution.”).

⁷⁹¹ Environmental Protection Agency, Control of Emissions from New Highway Vehicles and Engines: Notice of Denial of Petition for Rulemaking, 68 Federal Register 52,922, 52,925 (Sept. 8, 2003).

⁷⁹² *Id.* at 52,931 (“EPA would decline the petitioners’ request to regulate motor vehicle [greenhouse gas] emissions [under the CAA] even if it had authority to promulgate such regulations.”).

⁷⁹³ *See Massachusetts v. Environmental Protection Agency*,

⁷⁹⁴ *Neira Alegria Case*, Preliminary Objections, Inter-Am. Ct. H.R., Judgment of December 11, 1991, Ser. C, No. 13, para. 29.

⁷⁹⁵ *See Massachusetts v. Environmental Protection Agency*, 415 F.3d 50 (D.C. Cir. 2005).

⁷⁹⁶ *See* 42 U.S.C. § 4321 (“Congressional Declaration of Purpose: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.”).