



# **ECO-HEALTH IN THE AMERICAS LEGAL WORKING PAPER SERIES**

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## **DRILL, BABY, DRILL: IMPACT ASSESSMENT OF OIL AND GAS EXPLORATION IN THE ARCTIC NATIONAL WILDLIFE RESERVE (USA)**

By Dr Maya Prabhu & Melissa Young

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## **Summary**

Since 1969, numerous studies examining potential impacts of oil and gas development have been conducted in the Alaskan Arctic, including the coastal plain, or "1002 Area," of the Arctic National Wildlife Refuge ("ANWR"). The most comprehensive statement resulting from an environmental impact study of the 1002 Area is the *Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment: Report and Recommendation to the Congress of the United States of America and Final Legislative Environmental Impact Statement.* ("1002 Area FLEIS"). In the long-standing controversy regarding energy development in the ANWR and the ongoing debate in the United States concerning the sources and development of fossil fuels, the 1002 Area FLEIS issued in 1987 has been a common reference point for both proponents and opponents of resource development in the area. A closer look at 1002 Area FLEIS is timely and relevant in light of continuing controversy with respect to development in the ANWR and current national and international concerns about the future of non-renewable energy sources, climate change, trans-boundary pollution, increasing market interdependence, and national security.

The ANWR consists of 19 million acres of wilderness in north-eastern Alaska. What is referred to as the coastal plain of the ANWR is a 1.5 million acre area flanked by the Beaufort Sea to the north and the U.S./Canadian border to the east. Proponents of development on the coastal plain see the area as a potentially viable source of domestic oil and gas supplies that could bolster U.S. economic stability and national security, while opponents wish to preserve an area of pristine wilderness that, as some see it, may only produce relatively negligible amounts of oil and gas.

Inupiat and Gwich'in aboriginal populations are located in and near the ANWR. The village of Kaktovik, mainly inhabited by Inupiat Inuit, lies within the boundaries of the ANWR itself, near the coastal plain. The environmental impact statement ("EIS") of the coastal plain was mandated by the *Alaska National Interest Lands Conservation Act* ("ANILCA")<sup>1</sup>, which changed the ANWR from a Range to a Refuge, expanded its acreage, and designated lands within it as wilderness with the exception of the coastal plain. Although resource development within the ANWR remains prohibited without express congressional consent, section 1002 of *ANILCA* recognized the potential of oil and gas reserves beneath the coastal plain and required the preparation of a comprehensive

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<sup>1</sup> Public Law 96-487-DEC. 2, 1980

assessment of the potential impact of oil and gas development on the coastal plain ecosystems, wildlife, and subsistence ways of living. Development has yet to occur in the 1002 Area and the 1002 Area FLEIS remains one of the most comprehensive documents regarding impacts of oil and gas development on the coastal plain of the ANWR.

This case analysis reviewed the scope and process of environmental impact assessment ("EIA") as outlined by U.S. statutes and regulations, and how the process was applied to the study of the coastal plain of the ANWR. While the EIS at issue in this case analysis complied with the mandated legislative process and took considerable care in reviewing potential impacts upon ecological systems and wildlife, it paid little attention to health or gender concerns. Moreover, the EIS drew minimal attention to any nexus between environmental impacts and human health and welfare.

Issues that are being studied and analysed in greater depth prior to finalization of this case analysis include compliance of the EIS with relevant international laws and agreements, as well as original stakeholder participation in an EIS process that was completed over twenty years ago.

Further analysis will be required to deepen the examination of cross-cutting issues that development in such an area entails, including integration of gender and health indicators in the EIS, provisions for transparency and public participation in the EIS, and governance challenges in the EIS (inter-institutional collaboration or fragmentation), as well as to further discussion on the implementation of the EIS outcomes and the broader implications for eco-health policy-making in the Americas.

## Introduction

One of the most contentious elements of the national energy debate in the United States remains the issue of energy development in the ANWR.<sup>2</sup> Administered by the Fish and Wildlife Service ("FWS") in the Department of the Interior ("DOI"), the ANWR is an area covering 19 million acres in north-eastern Alaska.<sup>3</sup> Within the ANWR, its coastal plain spans 1.5 million acres.<sup>4</sup> Climate change, the future of non-renewable energy development, instability in the Middle East, the volatile cost of oil, natural disasters, national security and ongoing fears of the threat of terrorism have prompted an increasingly pressing interest in the Refuge.

This case analysis is timely in light of these concerns and the potential impacts of projects that are subsumed in increasingly interdependent

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<sup>2</sup> U.S., Congressional Research Service, M. Lynne Corn, Bernard A. Gelb, Pamela Baldwin, *CRS Report for Congress, Arctic National Wildlife Refuge (ANWR): New Directions in the 110<sup>th</sup> Congress* (RL33872) (February 8, 2007) at Summary [CRS: New Directions].

<sup>3</sup> CRS: New Directions, *surpa* at note 1.

<sup>4</sup> *Ibid.*

trade processes and market dynamics. Illustrative of the view of those in support of oil and gas exploration in the ANWR, former United States President George W. Bush stated, on April 29, 2008:

They [Congress] repeatedly blocked environmentally safe exploration in ANWR. The Department of Energy estimates that ANWR could allow America to produce about a million additional barrels of oil every day, which translates to about 27 millions of gallons of gasoline and diesel every day. That would be about a 20-percent increase of oil -- crude oil production over U.S. levels, and it would likely mean lower gas prices. And yet such efforts to explore in ANWR have been consistently blocked.... we'll look at any idea in terms of energy, except I will tell you this, that if Congress is truly interested in solving the problem, they can send the right signal by saying we're going to explore for oil and gas in the U.S. territories, starting with ANWR. We can do so in an environmentally friendly way.<sup>5</sup>

Current United States President Barack Obama has stood in opposition to drilling in the 1002 Area and is reported to have stated:

I strongly reject drilling in the Arctic National Wildlife Refuge because it would irreversibly damage a protected national wildlife refuge without creating sufficient oil supplies to meaningfully affect the global market price or have a discernable impact on U.S. energy security.<sup>6</sup>

However, President Obama's own positions on oil and gas development in Alaska highlight the continuing tensions that underscore the relevance of this case analysis. While the President has expressed his opposition to drilling in the ANWR, he has also supported leasing more of the National Petroleum Reserve, which is located on the opposite end of Alaska's North Slope from the ANWR, for oil and gas production and for the building of an Alaska Natural Gas Pipeline.<sup>7</sup>

Proponents of energy development in the ANWR see this coastal plain as one of the most promising oil and gas prospects in the United States.<sup>8</sup> Opponents see one of the world's last remaining pristine environments worthy of rigorous protection on environmental and social grounds. In the midst of this debate, an EIS that is now over two decades old has become the focal point of arguments by both opponents and proponents of resource development in the ANWR.

The ultimate recommendation put forth by former Secretary of the Interior ("Secretary") Donald Hodel in the 1002 Area FLEIS was for Congress to make available for consideration the entire Arctic Refuge coastal plain for oil and gas leasing.<sup>9</sup> Yet, current U.S. laws still prohibit oil

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<sup>5</sup> <http://www.whitehouse.gov/news/releases/2008/04/20080429-1.html>

<sup>6</sup> Presidential Candidates Views on ANWR – The Democrats, available at [http://www.anwr.org/archives/presidential\\_candidates\\_views\\_on\\_anwr\\_a\\_the\\_democrats.php](http://www.anwr.org/archives/presidential_candidates_views_on_anwr_a_the_democrats.php)

<sup>7</sup> Andrew C. Revkin, *The Obama Energy Speech, Annotated*, The New York Times, August 5, 2008, available at <http://dotearth.blogs.nytimes.com/2008/08/05/the-obama-energy-speech-annotated/>

<sup>8</sup> CRS: New Directions, *surpa* at note 1.

<sup>9</sup> 1002 Area FLEIS summary

and gas leasing in the ANWR.<sup>10</sup> As such, the focal point of the debate surrounding the ANWR is whether energy development should be permitted, and under what conditions, or whether the U.S. should continue to maintain the ANWR as a protected area in which such development is impermissible.

The 1002 Area FLEIS determined both full and more limited leasing activities in the 1002 Area will have major impacts upon the human environment in the region, as well as upon the natural environment and the animal populations. In terms of understanding potential impacts of development upon local communities in the 1002 Area, the 1002 Area FLEIS examined impacts in terms of a balance between economic or social well-being. Under the alternatives of full or partial leasing on the coastal plain, the 1002 Area FLIES concluded that a shift in lifestyle, new intersections between wage economies and subsistence living, as well as risks for increased drug use, alcohol use, and mental illness were potential major impacts. However, although indicators such as environmental health, social health, disease, and culture are recognized as determinants of human health and well-being,<sup>11</sup> there is minimal discussion in the 1002 Area FLEIS of potential health impacts from changes to the environment and to economic or social well-being or from the output of oil and gas development in the region.

Looking to recent publications on the issue of integrating health impact assessment and environmental impact assessment in the United States, it appears that this lack of health analysis in the 1002 Area is entirely in line with the developmental history of EIS processes in the United States under NEPA.<sup>12</sup> Reviews of Canadian and U.S. publications offer possible avenues to take in integrating health analysis into environmental assessment including the integration of health analysis within each step of the EIA process from initial scoping processes, to baseline health and environmental analysis, to the production of the final report and/or the inclusion of health impact assessments ("HIA") in the EIS process via the mandatory public/stakeholder participation requirements of the EIS process under NEPA.

## Methodology

This case analysis is based upon a review of the impact assessment documents, court opinions, governmental and non-governmental papers, studies, websites, and research, health database searches, literature and dissertation searches within databases including Lexis, LegalTrac, AcademicElite, JSTOR, SpringerLink, and ProQuest and communications with stakeholders.

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<sup>10</sup> *Ibid* at Summary

<sup>11</sup> Marmot M, Wilkinson R, eds, *The Social Determinants of Health: the Solid Facts*, 2<sup>nd</sup> ed., 2003, World Health Organization; World Health Organization, *The Determinants of Health*, available at <http://www.who.int/hia/evidence/doh/en/index.html>; Public Health Agency of Canada, *Determinants of Health*, available at <http://www.phac-aspc.gc.ca/ph-sp/determinants/determinants-eng.php?option=print>

<sup>12</sup> See Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008 and Aaron Wernham, *Inupiat Health and Proposed Alaskan Oil Development: Results of the First Integrated Health Impact Assessment/Environmental Impact Statement for Proposed Oil Development on Alaska's North Slope*, *EcoHealth* v.4:500, 2007.

## Case Details

### History of the ANWR

Since the creation of the ANWR, the U.S. Congress has addressed various efforts seeking to pass legislation to both enable and prevent energy development in the 1002 Area of the ANWR.<sup>13</sup> At the heart of this legislative tug of war has been the 1002 Area FLIES. As such, an initial understanding of the 1002 Area FLEIS is best framed within a concise review of history of the ANWR.

The statutory and administrative law surrounding the creation of the ANWR has been described as a “confused mess” due to the fact that the precursor to the ANWR was conceived at the same time as the admission of Alaska into the Union.<sup>14</sup> In December of 1960, the Secretary announced the formal withdrawal of certain lands in Alaska for the purpose of preserving the “unique wildlife, wilderness and recreational values” of north-eastern part of the State.<sup>15</sup> This withdrawal of lands established the Arctic National Wildlife Range, the precursor to the ANWR.

In 1971, the U.S. Congress established the **Alaska Native Claims Settlement Act** (“ANCSA”) to resolve aboriginal land claims against the United States.<sup>16</sup> Under ANCSA, village corporations were created that received roughly 22 million acres in Alaska, some of which is within the ANWR.<sup>17</sup> The Kaktovic Inupiat Corporation is the village corporation within the ANWR and currently has rights to four townships along the coastal plain area of the Refuge.<sup>18</sup> No subsurface rights were provided within the Refuge.<sup>19</sup>

At the time of the withdrawal of the ANWR lands in 1960, the Refuge’s mineral wealth was unknown. This was to change dramatically in 1968 when the Atlantic-Richfield Company discovered 9.8 billion barrels of oil west of the ANWR at Prudhoe Bay.<sup>20</sup> The U.S. government passed the **National Environmental Policy Act** (“NEPA”) of 1969,<sup>21</sup> requiring full disclosure of the environmental costs of major development ventures. The Prudhoe Bay discovery led to an explosion of exploration and development in the region, which prompted Congress to scrutinize the integrity of the federal lands in Alaska. Congress’s response to the boom in oil development was to enact the **Alaska National Interest Lands Conservation Act** (“ANILCA”) in 1980.<sup>22</sup> The ANILCA changed the area

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<sup>13</sup> I.e. see U.S., Congressional Research Service *CRS Report for Congress, Arctic National Wildlife Refuge (ANWR): Controversies for the 109th Congress* (RL33523).

<sup>14</sup> Todd Grover, “Arctic equity? The Supreme Court’s Resolution of *United States v. Alaska*. (Arctic National Wildlife Refuge)” (Winter 1998) 28.4 *Environmental Law* 1169(1) [Grover].

<sup>15</sup> Public Land Order 2214, 25 Fed. Reg. 12,598, 12,598 (Dec. 8, 1960); see also Grover, *supra* note 8 at n. 36.

<sup>16</sup> CRS: *New Directions*, *supra* note 1 at 2

<sup>17</sup> *Ibid.*

<sup>18</sup> *Ibid.*

<sup>19</sup> *Ibid.*

<sup>20</sup> Grover, *supra* note 8.

<sup>21</sup> 42 U.S.C. §§ 4321- 4347, as amended.

<sup>22</sup> Public Law 96-487-DEC. 2, 1980; Grover, *supra* note 8.

from Range to Refuge status and expanded the area to 19 million acres. Specifically, s. 1003 of the *ANILCA* prohibits resource development within the ANWR without express congressional consent:

§1003. Production of oil and gas from the Arctic National Wildlife Refuge is prohibited and no leasing or other development leading to production of oil and gas from the range shall be undertaken until authorized by an Act of Congress.

Section 1002 of the *ANILCA* required the Secretary of the Interior to prepare a report to Congress including a comprehensive assessment of the potential impact of mineral development on the coastal plain ecosystems and wildlife.<sup>23</sup> Discussed in more detail below, this over-20-year-old study of the coastal plain area of the ANWR conducted under s. 1002 of the *ANILCA* remains the most comprehensive Federal Legislative EIS ("FLEIS") of potential impacts of oil and gas development on the coastal plain of the Refuge.

## EIS Legislative Framework

As discussed above, the 1002 Area FLEIS was conducted pursuant to *ANILCA*, *NEPA*, as well as the *CEQ NEPA Regulations*.<sup>24</sup> *NEPA* sets forth the national environmental policy of the United States and establishes an interdisciplinary process to be followed by agencies in order to reduce or prevent environmental degradation.<sup>25</sup> Title I of *NEPA* advocates the continuing responsibility of the United States Federal Government to "use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources."<sup>26</sup>

Section 102(2) of *NEPA* contains "action-forcing" provisions to ensure that Federal agencies act according to the letter and spirit of the *Act*.<sup>27</sup> The purpose of the *CEQ NEPA Regulations* is to implement section 102(2) of *NEPA*.<sup>28</sup> The EIS procedure of *NEPA* is specifically implemented by section 1502.2 of the *Regulations*. Provided by s.102(2) of the *Act*, all agencies of the Federal Government shall include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment a detailed statement by the responsible official.<sup>29</sup> This section also requires agencies to study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources. Under section 102(2) of *NEPA*, each agency of the Federal Government must comply with that section

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<sup>23</sup> *Ibid.*

<sup>24</sup> Council on Environmental Quality, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, 40 C.F.R. (hereinafter "*CEQ NEPA Regulations*")

<sup>25</sup> Charles H. Eccleston, *Environmental Impact Statements: A Comprehensive Guide to Project and Strategic Planning*, published in 2000, published by John Wiley & Sons, New York etc, at page 335.

<sup>26</sup> Section 101(b) (42 USC § 4331), under Title I of the *NEPA*.

<sup>27</sup> *CEQ NEPA Regulations* at §1500.1(a)

<sup>28</sup> *CEQ NEPA Regulations* at §1500.1(a)

<sup>29</sup> *NEPA* at §4332

unless existing law applicable to the agency's operations expressly prohibits or makes compliance impossible.<sup>30</sup>

The scope of activities caught by *NEPA* is rather wide. Impact statements are required for all "major Federal actions"<sup>31</sup> that will *significantly* affect the quality of the human environment.<sup>32</sup> Under section 1508.27 of the *Regulations* the meaning of the term "significantly" requires considerations of both context and intensity, which, in turn, specifies factors to be considered when determining whether a proposed action will have a significant impact on the environment.

Considerations of intensity refer to the severity of the impact, while considerations of context require proposed actions "to be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality [;] significance varies with the setting of the proposed action." Short- and long-term effects are relevant in this consideration.

The *Regulations* also consider the potential cumulative impacts of proposed activities under section 1508.7 ():

Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

There is a limit, however, to the scope of activities requiring impact statements. Stated throughout the *CEQ NEPA Regulations* is the qualification that some categories of Federal actions do not individually or cumulatively have a significant effect on the human environment (Sec. 1508.4) and are, therefore, exempt from requirements to prepare an environmental impact statement. These are instances when a Federal Agency makes a "*finding of no significant impact.*"<sup>33</sup> In such a case, a Federal agency creates a document briefly presenting the reasons why an action will not have a significant effect on the human environment and for which an environmental impact statement therefore will not be prepared.<sup>34</sup> Yet, a less rigorous environmental assessment, and not an environmental impact statement, may still be required.

Additionally, no statement or assessment of environmental impacts is required of proposed actions that fall under a "categorical exclusion" ("CE"). A CE falls under a category of actions that do not individually or cumulatively have a significant effect on the human environment, which have been found to have no such effect in procedures adopted by a

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<sup>30</sup> *CEQ NEPA Regulations* at §1500.6

<sup>31</sup> *CEQ NEPA Regulations* at §1508.18 defines Major Federal Action.

<sup>32</sup> Section 102(2)(A) (42 USC § 4332), under Title I of the *NEPA* and *CEQ NEPA Regulations* at §1502.4; There are, however, some exceptions to *NEPA*'s applicability. Notably, in *Andrus v Sierra Club*, 442 U.S. 347 (1979), it was unanimously held by the United States Supreme Court that *NEPA* does not require environmental impact statements to be prepared for agency appropriations requests.

<sup>33</sup> *CEQ NEPA Regulations* at §1508.13.

<sup>34</sup> *CEQ NEPA Regulations* at §1508.13.



Federal agency in implementation of the regulations (Sec. 1507.3), and for which, therefore, neither an environmental assessment nor an environmental impact statement is required.<sup>35</sup> Nonetheless, any procedures that may be a CE shall also provide for extraordinary circumstances in which a normally excluded action may have a significant environmental effect.<sup>36</sup>

If it is determined that significant environmental effects may/will occur, then a "detailed statement by the responsible official" is required regarding:

- (i) the environmental impact of the proposed action,
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the proposed action,
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.<sup>37</sup>

The *CEQ NEPA Regulations* define both "environmental assessment" and "environmental impact statement." Per section 15.08.11, an "environmental impact statement" means a detailed written statement as required by section 102(2)(C) of the Act. An "environmental assessment" is required if there is uncertainty about the significant environmental effects of a proposed action.

The scope of an individual environmental impact statement is set out in section 1508.25 of the *Regulations*. The scope consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement and may depend on its relationships to other statements (Secs.1502.20 and 1508.28).<sup>38</sup> To determine this scope, agencies must consider three types of actions, three types of alternatives, and three types of impacts, including:

- (a) Actions (other than unconnected single actions) which may be:
  - 1. Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:
    - (i) Automatically trigger other actions which may require environmental impact statements.

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<sup>35</sup> *CEQ NEPA Regulations* at §1508.4

<sup>36</sup> *CEQ NEPA Regulations* at §1508.4

<sup>37</sup> Section 102(2)(C)(42 USC § 4332), under Title I of the *NEPA*.

<sup>38</sup> *CEQ NEPA Regulations* at §1508.25

- (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.
  - (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.
- 2. Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.
- 3. Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.

(b) Alternatives, which include:

- 1. No action alternative.
- 2. Other reasonable courses of actions.
- 3. Mitigation measures (not in the proposed action).

(c) Impacts, which may be: (1) Direct; (2) indirect; (3) cumulative.

The requirements, contents, and format of an EIS are set out in section 1502.1 to 1502.25 of the *CEQ NEPA Regulations*. Among other things, an EIS must succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration.<sup>39</sup>

Notably, the *CEQ NEPA Regulations* describe the stating of alternatives to the proposed action to be “the heart of the environmental impact statement.”<sup>40</sup> In endeavouring to determine alternatives, agencies shall:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
- (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
- (d) Include the alternative of no action.
- (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.<sup>41</sup>

<sup>39</sup> *CEQ NEPA Regulations* at §1502.14

<sup>40</sup> *CEQ NEPA Regulations* at §1502.14

<sup>41</sup> *CEQ NEPA Regulations* at §1502.14

Each environmental impact statement is required to discuss the environmental consequences of any proposed action. This discussion has to include considerations of any adverse environmental effects which cannot be avoided should the proposal be implemented.<sup>42</sup> However, despite this requirement, the term “*adverse environmental effect*” is not defined as a whole within either *NEPA* or its implementing *Regulations*.

A report prepared by the Duke Centre for Environmental Solutions, entitled “*Adverse Effects and Similar Terms in U.S. Law*,” surveyed the use of terms including “adverse effects” “adversely affect,” “risk,” “endanger,” and “threat” across all U.S. federal statutes, federal agency regulations, and federal judicial opinions issued since 1970.<sup>43</sup> The report noted that the most frequent uses of the specific term “adverse effect” appear in Title 42 of the U.S. Code, which contains *NEPA*. The report concludes that federal statutes give little or no definition or guidance regarding the precise meanings or intended interpretations of “adverse effect” and related terms.<sup>44</sup> As such, the authors suggest that the lack of precise definitions leaves interpretation and application largely in the hands of agency staff and/or agency scientists.<sup>45</sup> Indeed, under the *NEPA* process, it is the agencies themselves who are required to determine if their proposed actions have significant environmental effects.

U.S. Federal courts have briefly addressed what constitutes “adverse environmental effects” when reviewing EIS filings under *NEPA*.<sup>46</sup> In ***Metropolitan Edison Co. v. People Against Nuclear Energy (PANE)***, 103 S.Ct. 1556 (1983), the issue was whether public fear of nuclear power and associated mental health impacts were the kind of “adverse environmental effect” covered by *NEPA*.<sup>47</sup> It was held that this provision “does not require the agency to assess every impact or effect of its proposed action, but only the impact or effect on the environment”; there must be a reasonably close causal relationship between a change in the physical environment and the effect at issue.<sup>48</sup>

The *CEQ NEPA Regulations* offer definitions of “affecting” and “effects”:

Sec. 1508.3 Affecting.

"Affecting" means will or may have an effect on.

Sec. 1508.8 Effects.

"Effects" include:

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<sup>42</sup> *CEQ NEPA Regulations* at §1502.16

<sup>43</sup> Kelsey Stansell, Mark Marvelli, and under the supervision of Professor Jonathan B. Wiener, Faculty Director of the Duke Center for Environmental Solutions, *Adverse Effects and Similar Terms in U.S. Law*, 2005, at page 2.

<sup>44</sup> *Adverse Effects and Similar Terms in U.S. Law*, 2005 at page 3.

<sup>45</sup> *Adverse Effects and Similar Terms in U.S. Law*, 2005 at page 3.

<sup>46</sup> *Adverse Effects and Similar Terms in U.S. Law*, 2005 at page 9.

<sup>47</sup> *Adverse Effects and Similar Terms in U.S. Law*, 2005 at page 9.

<sup>48</sup> *Adverse Effects and Similar Terms in U.S. Law*, 2005 at page 9.

(a) Direct effects, which are caused by the action and occur at the same time and place.

(b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, **historic, cultural, economic, social, or health**, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. [emphasis added]

As specified in section 1508.14 of the *Regulations*, the "human environment" is defined to include:

[T]he natural and physical environment and the relationship of people with that environment. (**See the definition of "effects"** (Sec. 1508.8).) This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. **When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.** [emphasis added]

## EIS Process

The impact statement process begins with a lead agency publishing a Notice of Intent (per section 1508.22) in the Federal Register. This notice shall describe the proposed action and possible alternatives, describe the agency's proposed scoping process, and state the name and address of a contact person within the agency.<sup>49</sup>

Next, there shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.<sup>50</sup> It is this process that is termed "scoping." Among other things, the scoping procedure also establishes the significant issues to be analyzed in the EIS, and identifies and eliminates issues which are not significant or which have been covered by prior environmental review.<sup>51</sup>

After the scoping process, it is time for a draft EIS be completed and submitted. These drafts must be prepared in accordance with the scope

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<sup>49</sup> CEQ NEPA Regulations at §1501.7

<sup>50</sup> CEQ NEPA Regulations at §1501.7

<sup>51</sup> CEQ NEPA Regulations at §1501.7

decided upon in the scoping process and public comments must be obtained pursuant to section 1503 of the *Regulations*.<sup>52</sup>

A Final Legislative EIS is ultimately prepared and must respond to the comments garnered from the section 1503 public participation process. A FLEIS shall discuss opposing views that were not adequately discussed in the draft statement and shall indicate the agency's response to the issues raised.<sup>53</sup> Upon the publication of a FLEIS, the environmental protection agency will publish a Notice of Availability in the Federal Register.<sup>54</sup> It is then a decision of the Federal agency, generally at least 30 days after the publishing of the FLEIS, whether to move forward with their proposed action.<sup>55</sup>

Finally, a Record of Decision ("ROD") must be issued by an agency.<sup>56</sup> An ROD must state what the decision is with respect to the proposed action; identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable; identify and discuss all such factors including any essential considerations of national policy which were balanced by the agency in making its decision and state how those considerations entered into its decision; and state whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not.<sup>57</sup>

Until an ROD is issued, no action concerning the proposal shall be taken which would have an adverse environmental impact or limit the choice of reasonable alternatives.<sup>58</sup>

Cooperation between Federal officials and Federal agencies is mandated by *NEPA*. Inter-agency cooperation is further implemented by sections 1501 of the *CEQ NEPA Regulations*. This section of the *Regulations* focuses upon, *inter alia*:

(b) Emphasizing cooperative consultation among agencies before the environmental impact statement is prepared rather than submission of adversary comments on a completed document.

(c) Providing for the swift and fair resolution of lead agency disputes.<sup>59</sup>

More specifically, section 1501.6 focuses upon cooperating agencies. The purpose of this section is to emphasize agency cooperation *early* in the *NEPA* process. A cooperating agency can, upon the request of a lead agency, be any other Federal agency which has jurisdiction by law and any other Federal agency which has special expertise with respect to any

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<sup>52</sup> *CEQ NEPA Regulations* at §1502.9(a)

<sup>53</sup> *CEQ NEPA Regulations* at §1502.9(b)

<sup>54</sup> *CEQ NEPA Regulations* at §1506.10

<sup>55</sup> *CEQ NEPA Regulations* at §1506.10

<sup>56</sup> *CEQ NEPA Regulations* at §1505.2

<sup>57</sup> *CEQ NEPA Regulations* at §1505.2

<sup>58</sup> *CEQ NEPA Regulations* at §1506.1

<sup>59</sup> *CEQ NEPA Regulations* at §1501.1

environmental issue. There is no specific requirement for health to be an area of expertise or jurisdiction of any cooperating agency.

Section 1500.1(b) of the *CEQ NEPA Regulations* stipulates that NEPA procedures must insure that environmental information is available to public officials and citizens *before* decisions are made and before actions are taken. Additionally, section 1500.2 of the *CEQ NEPA Regulations* mandates that Federal agencies shall, among other things, and to the fullest extent possible, encourage and facilitate public involvement in decisions which affect the quality of the human environment. There is no specific requirement that health officials may or must be involved in such public participation.

Procedurally, public engagement may begin, to a degree, as early as the initial scoping process described in section 1501.7. During the scoping process, the lead agency shall:

Invite the participation of affected Federal, State, and local agencies, any affected Indian tribe, the proponent of the action, and other interested persons (including those who might not be in accord with the action on environmental grounds), unless there is a limited exception under Sec. 1507.3(c). An agency may give notice in accordance with Sec. 1506.6.

Next, after the preparation and submission of a draft EIS to the Federal Register, an agency shall obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved or which is authorized to develop and enforce environmental standards, appropriate state and local agencies, "Indian tribes, when the effects may be on a reservation," and any agency which has requested that it receive statements on actions of the kind proposed.<sup>60</sup>

## Analysis

### ***Existing provisions for health considerations in the legislation***

The 1002 Area FLEIS was drafted in compliance with the above-mentioned legislative requirements regarding content and process. Specifically, it was conducted in accordance with *NEPA* and its Regulations, and the *ANILCA*. As explained by the United States Court of Appeals for the Ninth Circuit in ***Trustees for Alaska et. al., v. Donald P. Hodel, Secretary, United States Department of the Interior, et al.***, 806 F.2d 1378 (9th Cir. 1986) ("*Alaska v. Hodel*"):

Section 1002(h) of the Alaska National Interest Lands Conservation Act (ANILCA), 16 U.S.C. Sec. 3142(h), concerns the resources of the 1.5 million acre coastal plain of the Arctic National Wildlife Refuge (ANWR). Section 1002(h) requires that the Secretary of Interior (Secretary) submit

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<sup>60</sup> *CEQ NEPA Regulations* at §1503.1

a report to Congress (1002 report) containing: (1) specific information about potential oil and gas production and fish and wildlife within the coastal plain of the ANWR; and (2) recommendations concerning possible exploration, development, and production of oil and gas within the coastal plain, and what additional legal authority would be necessary to protect fish and wildlife if such development were to take place. The Secretary had five years and nine months from the effective date of the statute to complete the 1002 report, which was due no later than September 2, 1986.

No health agency was a lead or cooperating agency in the preparation of the 1002 Area FLEIS. It was prepared by the U.S. Fish and Wildlife Service in cooperation with the U.S. Geological Survey and the Bureau of Land Management. Its subject was oil-related activities reasonably foreseeable at some point in time throughout the 1002 area and related reasonably foreseeable significant adverse impacts.<sup>61</sup> In 1987, the 1002 Area FLEIS was lodged with the U.S. Congress by Interior Secretary Donald Hodel.<sup>62</sup> This FLEIS details the results of nearly 60 individual field studies conducted by the DOI between 1981 and 1985.<sup>63</sup> The 1002 Area FLEIS presents the findings of its field studies and analyzes the potential consequences of 5 management alternatives for the 1002 Area: full leasing, limited leasing, further exploration, no action, and wilderness designation.

The findings of the report are presented in separate chapters addressing the existing environment (Chapter II); an assessment of oil and gas potential and petroleum geology (Chapter III); an assessment of development and transportation infrastructure (Chapter IV); alternatives (Chapter V); environmental consequences (Chapter VI); the 1002 area's potential contribution to the U.S. need for domestic sources of oil and gas (Chapter VII); the Secretary's recommendations (Chapter VIII); and a summary of consultation and public comments. The FLEIS examines potential impacts upon the human environment in Chapters II and VI.

The FLEIS confirms the 1002 Area of the ANWR to have a high biological wealth:

The Arctic Refuge is the only conservation system unit that protects, in an undisturbed condition, a complete spectrum of the arctic ecosystem in North America.

...

The 1002 Area is the most biologically diverse part of the Arctic refuge and is the centre of wildlife activity...the area presents many opportunities for scientific study of a relatively undisturbed ecosystem.<sup>64</sup>

The ultimate recommendation put forth by Secretary Hodel in 1987 was for Congress to make available for consideration the entire Arctic Refuge

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<sup>61</sup> 1002 Area FLEIS at page 106

<sup>62</sup> Grover, *supra* note 8.

<sup>63</sup> Grover, *supra* note 8 at n. 47.

<sup>64</sup> 1002 Area FLEIS at page 44.

coastal plain for oil and gas leasing.<sup>65</sup> Secretary Hodel specified in the FLEIS that, although the whole area should be considered for leasing, only a small percentage would actually be leased, and an even smaller percentage would be explored.<sup>66</sup> Finally, the Secretary suggested that if oil is discovered “a still smaller percentage would be developed.”<sup>67</sup> This statement is premised on the fact that the 1002 Area FLEIS found that the small region was *potentially* rich in oil and gas resources.<sup>68</sup> This potential was confirmed by the 1998 U.S. Geological Survey (“USGS”) report on the oil and gas potential of the 1002 Area.<sup>69</sup>

In examining what was analysed in the 1002 Area FLEIS with respect to human health and well-being, one may consider what is mandated with respect to human health and well-being in the relevant legislation. The text of the *NEPA* incorporates references to both human health and healthful surroundings. The purposes of *NEPA* include the stimulation of the “health and welfare of man.”<sup>70</sup> The federal government of the United States is charged with a continuing responsibility to use all practical means to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may, among other things, assure healthful surroundings for Americans, and “attain the widest range of beneficial uses of the environment without degradation, *risk to health* or safety, or other undesirable and unintended consequences.”<sup>71</sup> Additionally, the *NEPA* explicitly sets out that the U.S. Congress “recognizes that each person should enjoy a healthful environment.”<sup>72</sup> The *NEPA* stipulates that all policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in the *NEPA*.<sup>73</sup> In short, *NEPA* establishes policy, sets goals (section 101), and provides means (section 102) for carrying out the policy and, in doing so, it does employ language directed at human health.<sup>74</sup>

The language of the *CEQ NEPA Regulations* also indicates a capacity to include health considerations in impact assessment. As the *NEPA* stipulates that all regulations are to be interpreted and administered in accordance with the policies set forth in the *NEPA*,<sup>75</sup> it should also follow that the *CEQ NEPA Regulations* must be interpreted and administered in accordance with those policies. The Regulations themselves require that Federal agencies shall, “to the fullest extent possible Encourage and facilitate public involvement in decisions which affect the quality of the *human environment*.” and shall “use the *NEPA* process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of *the human*

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<sup>65</sup> 1002 Area FLEIS summary.

<sup>66</sup> 1002 Area FLEIS summary.

<sup>67</sup> 1002 Area FLEIS summary.

<sup>68</sup> 1002 Area FLEIS at page 56.

<sup>69</sup> USGS, *The Oil and Gas Resource Potential of the Arctic National Wildlife Refuge 1002 Area*, Alaska Open File Report 98-34.

<sup>70</sup> NEPA Sec. 2 [42 USC § 4321].

<sup>71</sup> NEPA Sec. 101(b) [42 USC § 4331].

<sup>72</sup> NEPA Sec. 101(c) [42 USC § 4331].

<sup>73</sup> Sec. 102 (1) [42 USC § 4332].

<sup>74</sup> Council on Environmental Quality, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 C.F.R. (hereinafter “*CEQ NEPA Regulations*”) at §1500.1(a).

<sup>75</sup> *CEQ NEPA Regulations* at §1500.3



*environment*".<sup>76</sup> This language reflects the requirement under NEPA of a detailed statement on proposals for legislation and other major Federal actions significantly affecting the quality of *the human environment*. The language of section 101(b) of the NEPA is echoed in section 1002.2(f) of the Regulations, which states:

Federal agencies shall to the fullest extent possible:

(f) Use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the *human environment*.

The "human environment" is a defined term under the *CEQ NEPA Regulations*:

**Sec. 1508.14 Human environment.**

"Human environment" shall be interpreted comprehensively to include the natural and physical environment *and the relationship of people with that environment*. (See the definition of "effects" (Sec. 1508.8).) This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.

In including the relationship between people and their physical environment, the definition of the human environment refers directly to the definition of "effects". The terms "effect" and "impact" are used interchangeably in the *NEPA* legislative scheme. The definition of the term "effect" includes not only ecological impacts (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), but also aesthetic, historic, cultural, economic, social, **or health**, whether direct, indirect, cumulative, beneficial or detrimental.<sup>77</sup>

## Existing context for health considerations in the legislation

As discussed above, a requirement of NEPA that is binding upon all Federal Agencies is the inclusion of a detailed statement in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment.<sup>78</sup> However, in considering the scope of the 1002 Area FLEIS, from the outset the context and legislative requirements pertaining

<sup>76</sup> *CEQ NEPA Regulations* at §1502.2(d) and (e)

<sup>77</sup> *CEQ NEPA Regulations* at §1508.8

<sup>78</sup> Sec. 102 (2) [42 USC § 4332]

to this EIS may have been particularly focused upon ecological and biological impacts upon the environment as opposed to health impacts. The EIS procedure of *NEPA* is specifically implemented by section 1502.2 of the *CEQ NEPA Regulations*, however, the 1002 Area FLEIS was not mandated solely under *NEPA*. This FLEIS was required under *ANILCA*, which provided for the context for the document and greatly sets out the research context of the assessment process.

The purposes and policies of *ANILCA* speaks to the overall context of any impact assessment required under it. Broadly, purposes and policies of *ANILCA* include:

- the preservation of lands and waters in Alaska having significant natural, scenic, historic, archaeological, geological<sup>79</sup>
- the preservation, in a natural state, extensive unaltered arctic tundra, boreal forest, and rainforest ecosystems<sup>80</sup>
- the protection of resources related to subsistence needs, the provision of opportunities for rural residence to continue their subsistence way of life, and the use of public lands in Alaska in a manner that causes the “least adverse impact as possible” on persons dependent upon subsistence was of life<sup>81</sup>
- balancing economic and social needs of the State of Alaska and its people with the national interest in the scenic, natural, cultural, and environmental values of Alaska’s public lands<sup>82</sup>

As discussed above, the *ANILCA* changed the area from Range to Refuge status and expanded the area to 19 million acres. In expanding existing ranges such as the ANWR, the *ANILCA* also sets out purposes specific to each Refuge. Such purposes also inform the context of any impact assessments required under *ANILCA*. With respect to the ANWR, its purposes include:

- the conservation of fish and wildlife populations and habitats, including polar bears, migratory birds, and the Porcupine caribou herd (with consideration for the Western Arctic caribou herd)<sup>83</sup>
- the fulfillment of international treaty obligations of the United States with respect to fish and wildlife and their habitats<sup>84</sup>
- consistent with the two above-mentioned purposes, the provision of opportunities for continued subsistence uses by local residents<sup>85</sup>
- consistent with the first above-mentioned purpose, ensuring to the maximum extent possible water quality and necessary water quality within the ANWR<sup>86</sup>

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<sup>79</sup> *ANILCA* s. 101(a)

<sup>80</sup> *ANILCA* s. 101(b)

<sup>81</sup> *ANILCA* s. 101(b) and (c), s. 802(1), and ss 801-816

<sup>82</sup> *ANILCA* s. 101(d)

<sup>83</sup> *ANILCA* s. 303(2)(B)(i)

<sup>84</sup> *ANILCA* s. 303(2)(B)(ii)

<sup>85</sup> *ANILCA* s. 303(2)(B)(iii)

<sup>86</sup> *ANILCA* s. 303(2)(B)(iv)

The purposes and policies of the *ANILCA* and of each Refuge have in common the goals of preserving healthy populations of fish and wildlife and protecting opportunities for subsistence living. However, while impacts upon fish and wildlife and the concept of subsistence living may today be seen to touch upon a variety of determinants of human health ranging from diet to customs, the language of the *ANILCA* in general, and with respect to subsistence living in particular, is not couched in terms of human health but, rather, solely in terms ecological and cultural values.

The context of the 1002 Area itself is still more specific and directly informs the EIS carried out under both *ANILCA* and *NEPA*. The *ANILCA* designates the entirety of the ANWR as wilderness pursuant to the *Wilderness Act* (78 Stat. 892) with the exception of the 1002 Area.<sup>87</sup> The coastal plain, or the 1002 Area, was excluded from this designation. In fact, the purpose of s. 1002 of the *ANILCA* was not only to require an EIS of the area, but to authorize exploratory activity for oil and gas in a manner that “avoids significant adverse effects on the fish and wildlife and other resources”:

The purpose of this section is to provide for a comprehensive and continuing inventory and assessment of the fish and wildlife resources of the coastal plain of the Arctic National Wildlife Refuge; an analysis of the impacts of oil and gas exploration development, and production, and to authorize exploratory activity within the coastal plain in a manner that avoids significant adverse effects on the fish and wildlife and other resources.

### **Interpretations of the concepts relevant to health considerations in impact assessment**

Reading the *NEPA* and its regulations together, they do appear to set out a mandate for the incorporation of considerations both health risks and health impacts throughout the environmental impact statement process. There is, however, very little case law considering requirements for health impact analysis in the *NEPA* EIS process.<sup>88</sup> The decision of Chief Justice Rehnquist in *PANE*, *supra*, generally acknowledges the notion that, subject to limits, human health impacts indeed fall within the gambit of *NEPA*:

All the parties agree that effects on human health can be cognizable under NEPA, and that human health may include psychological health. The Court of Appeals thought these propositions were enough to complete a syllogism that disposes of the case: *NEPA* requires agencies to consider effects on health. An effect on psychological health is an effect on health. Therefore, *NEPA* requires agencies to consider the effects on psychological health asserted by *PANE*. See 678 F.2d, at 228. *PANE*, using similar reasoning, contends that because the psychological health damage to its members would be caused by a change in the environment (renewed operation of TMI-1), *NEPA* requires the NRC to consider that damage. See

<sup>87</sup> *ANILCA* s. 702(3); *Wilderness Act*, Pub. L. No. 88-577, 78 Stat. 890, 890-91 (1964).

<sup>88</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008 at page 993

Brief for Respondent 23 Although these arguments are appealing at first glance, we believe they skip over an essential step in the analysis. They do not consider the closeness of the relationship between the change in the environment and the "effect" at issue. [emphasis added]

Notwithstanding the general acknowledgment of a consideration of health impacts under NEPA, *PANE* places limits upon the possible interpretations of health impacts within the context of the concepts of "adverse environmental effects" and "environmental impact" as they are found in the section of the *CEQ NEPA Regulations* mandating the creation of EIS reports.<sup>89</sup> The Court in *PANE* determined that human health and welfare are *ends* that Congress protects by *means* of protecting the physical environment and that there must be a causal link between a change in the environment and an impact/effect upon human health in order for such an impact to qualify for consideration as an "adverse environmental effects" and "environmental impact" in an EIS. The Court offered an example of the limitation against considering health impacts absent any connection to changes to the environment:

To determine whether § 102 requires consideration of a particular effect, we must look at the relationship between that effect and the change in the physical environment caused by the major federal action at issue. For example, if the Department of Health and Human Services were to implement extremely stringent requirements for hospitals and nursing homes receiving federal funds, many perfectly adequate hospitals and homes might be forced out of existence. The remaining facilities might be so limited or so expensive that many ill people would be unable to afford medical care and would suffer severe health damage. Nonetheless, NEPA would not require the Department to prepare an EIS evaluating that health damage because it would not be proximately related to a change in the physical environment.

A general understanding that human health and welfare are protected by the NEPA and its regulations exists in the limited case law on the matter and can also be supported by a literal interpretation of the text of both the NEPA and its implementing regulations. Despite this, however, the 1002 Area FLEIS indicates, and more recent publications affirm, that until very recently environmental assessment in the U.S. has not incorporated an assessment of health impacts into the EIS process.<sup>90</sup>

To address the concept of "health impacts" for the purposes of an EIS, one may first consider what is meant by "health." Health is not a defined term in the NEPA or its regulations. A common definition of health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, and, the extent to which an individual or a group is able, on the one hand, to realize aspirations and to satisfy needs, and on the other, to change or cope with the environment.<sup>91</sup> The

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<sup>89</sup> § 102(C)

<sup>90</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008.

<sup>91</sup> Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization,

1986 World Health Organization (WHO) *Ottawa Charter on Health Promotion* states that health is a resource for everyday life, not the objective of living, and is a positive concept emphasizing social and personal resources, as well as physical capacities<sup>92</sup>

The WHO has determined that a variety of factors affect the health of individuals and communities. Whether people are healthy, or not, is determined by factors of their circumstances and environment.<sup>93</sup> These factors or conditions are known as health determinants and include<sup>94</sup>:

- income and social status
- education and literacy
- employment and working conditions
- the physical environment
- the social environment
- personal health practices and coping skills
- social support networks
- culture and customs
- food
- addiction
- genetics
- gender

According to authors Rajiv Bhatia and Aaron Wernham, the programs and projects subject to impact assessments not only influence the physical environment, but also industry, employment patterns, regional economies, the built environment, social organization and culture, all of which are important determinants of health<sup>95</sup>. The authors go on to state:

Environmental change – including issues as diverse as global warming, deforestation, fisheries loss, and suburban sprawl is now seen as a priority challenge to public health. The World Health Organization (WHO), for example, recently estimated that over 25% of the burden of human illness worldwide can be attributed to modifiable environmental conditions (Frumkin 2004; Pruss-Ustun and Corvalan 2006), and evidence linking social conditions such as employment, transportation, housing, food resources, social hierarchy, economic disparity and social capital to health outcomes continues to grow in strength and depth (Marmot and Wilkinson 2006).

Such knowledge of the intersection between environmental change and human health is still confronted with the fact that, for the purposes of

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no. 2, p. 100) and entered into force on 7 April 1948; World Health Organization 1984; and Health Canada, 2004, *Canadian Handbook on Health Impact Assessment*, Vol 1. The Basics, available at [http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol\\_1/chap\\_1-eng.php#1](http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol_1/chap_1-eng.php#1)

<sup>92</sup> World Health Organization 1986 Ottawa Charter on Health Promotion, Geneva: World Health Organization

<sup>93</sup> World Health Organization, *The Determinants of Health*, available at <http://www.who.int/hia/evidence/doh/en/index.html>

<sup>94</sup> Marmot M, Wilkinson R, eds, *The Social Determinants of Health: the Solid Facts*, 2<sup>nd</sup> ed., 2003, World Health Organization; World Health Organization, *The Determinants of Health*, available at <http://www.who.int/hia/evidence/doh/en/index.html>; Public Health Agency of Canada, *Determinants of Health*, available at <http://www.phac-aspc.gc.ca/ph-sp/determinants/determinants-eng.php?option=print>

<sup>95</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008 at page 991

environmental impact assessment, the *NEPA* and its regulations lack a defined concept of “health” or “health impacts.” Case law, such as the decision in *PANE*, and opinions of the health community, such as are expressed by the WHO, above, offer some assistance in interpreting how health impacts can be considered in relation to environmental changes. The area of Health Impact Assessment (“HIA”) may offer further understanding of the concept of health impacts.

There are various definitions of HIA, one main definition being that it is a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.<sup>96</sup> Following numerous procedural steps and providing for stakeholder participation, HIA is largely patterned after EIA processes.<sup>97</sup> Within the context of HIA, “health impacts” may be defined as the overall effects, direct or indirect, of a policy, strategy, programme or project on the health of a population.<sup>98</sup>

HIA processes may be carried out independently of EIA processes or they may be more formally integrated into an EIA process.<sup>99</sup> In some European Union members HIA processes are carried out separately from EIA processes and are applicable to a range of public policy decisions that are not subject to EIA, whereas, in Canada, Health Canada has provided guidance on possible methods for integrating health assessment into environmental assessment processes and it is reported that Canada has had measured recent success in including consideration of health determinants in EIA practices.<sup>100</sup> By contrast, despite the wording and the apparent intention of *NEPA* with respect to the protection of human health, the evolution of EIA practice in the United States has lacked a comprehensive approach to the consideration of health impacts.<sup>101</sup> The 1002 Area FLEIS fits neatly into this evolutionary history of EIA practice in the United States.

Prior to issuing the final EIS of the 1002 Area, the Secretary was required to produce an initial baseline study of “fish and wildlife of the coastal plain and their habitat” that was to analyze, among other things, the potential effects of oil and gas exploration, development, and production on the culture and lifestyle (including subsistence) of affected Native and other people.<sup>102</sup> The Secretary was then required to establish initial guidelines, based upon the initial baseline study, governing the carrying out of

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<sup>96</sup> European Centre for Health Policy, WHO Regional Office for Europe. (1999) *Gothenburg Consensus Paper*. Health impact assessment: main concepts and suggested approach. Brussels: WHO at page 4.

<sup>97</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008 at page 993

<sup>98</sup> European Centre for Health Policy, WHO Regional Office for Europe. (1999) *Gothenburg Consensus Paper*. Health impact assessment: main concepts and suggested approach. Brussels: WHO at page 4.

<sup>99</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008 at page 993.

<sup>100</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008 at page 993; Health Canada, 2004, *Canadian Handbook on Health Impact Assessment*, Vol 1. The Basics, available at [http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol\\_1/chap\\_1-eng.php#1](http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol_1/chap_1-eng.php#1)

<sup>101</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008 at page 993.

<sup>102</sup> ANILCA s.1002(c)

exploratory activities in the area.<sup>103</sup> It is Section 1002(h) of the ANILCA that required that the Secretary of Interior (Secretary) submit a report to Congress (1002 report) containing specific information about potential oil and gas production and fish and wildlife within the coastal plain of the ANWR, and recommendations concerning possible exploration, development, and production of oil and gas within the coastal plain, and what additional legal authority would be necessary to protect fish and wildlife if such development were to take place.<sup>104</sup>

Recent Canadian experience has found it advisable to have health components incorporated into all stages of an environmental assessment process, including the earliest stages such as scoping.<sup>105</sup> Scoping determines the significant issues and environmental effects to be considered in the impact assessment, and can therefore also allow for the identification of any health issues that may need to be addressed.<sup>106</sup> Once environmental and health issues of through scoping, the baseline health status of the population that will be affected should be obtained in order to effectively assess potential impacts upon human health and permit the monitoring of changes to environmental health once a project is in place.<sup>107</sup> Examples of types of quantitative and qualitative information that may be used to describe baseline health are set out in Health Canada's *Canadian Handbook on Health Impact Assessment*<sup>108</sup>

## Use of health considerations in the 1002 Area FLEIS

Chapter II of the The 1002 FLEIS included in the report required under section 1002(h) reviews the then-existing physical environment of the 1002 Area. There is some discussion of the existing environment with respect to local populations, however, such analysis is subsumed within the larger analysis of the existing environment and wildlife, and offers only a succinct review of population figures, the socio-cultural system (which is a brief statement regarding the importance of subsistence living), existing land use (which is largely a fuller discussion of subsistence land use and ownership in and around Kaktovik, including a review of the importance of the porcupine caribou), and a review of state and local governing systems (which mentions that the local government provides water, sewage, sanitation, and health services – at the time Kaktovik is reported to have a health clinic staffed by a health aide). This discussion of the existing “human environment” is not focused upon health impacts, gives no indication that health impacts were considered within the scope of the impact assessment, and does not contain enough analysis that

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<sup>103</sup> ANILCA s.1002(e)

<sup>104</sup> As summarized in *Alaska v. Hodel*

<sup>105</sup> Health Canada, 2004, *Canadian Handbook on Health Impact Assessment*, Vol 1. The Basics, available at [http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol\\_1/chap\\_2-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol_1/chap_2-eng.php)

<sup>106</sup> Health Canada, 2004, *Canadian Handbook on Health Impact Assessment*, Vol 1. The Basics, available at [http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol\\_1/chap\\_2-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol_1/chap_2-eng.php)

<sup>107</sup> Health Canada, 2004, *Canadian Handbook on Health Impact Assessment*, Vol 1. The Basics, available at [http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol\\_1/chap\\_2-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol_1/chap_2-eng.php)

<sup>108</sup> Health Canada, 2004, *Canadian Handbook on Health Impact Assessment*, Vol 1. The Basics, available at [http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol\\_1/chap\\_2-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol_1/chap_2-eng.php) at Table 2.3

could credibly amount to an analysis of the baseline health status of any local populations.

The 1002 Area FLIES then reviews the potential impacts and possible mitigation actions within the context of 4 of the 5 alternatives for development: A) full leasing, B) limited leasing, C) further exploration, and D) no action. Chapter VI of the FLEIS reviews the “environmental consequences” of the alternative actions. Effects described in the assessment are classified as major, moderate, minor or negligible. A *major* impact upon the human environment is defined by the FLEIS to be one that:

Requires substantial changes in government policies, planning, or budgeting, and is likely to affect the economic or social well-being of the residents.<sup>109</sup>

Major impacts upon the physical and biological environmental are defined, respectively, as:

Widespread modification of considerable severity in landforms, surface appearance, or distribution of physical resources, or contamination of these resources, lasting several tens of years. Modification would occur during development/production phase.

Widespread long-term change in habitat availability or quality which would likely modify natural abundance or distribution of the species. Modification will persist at least as long as modifying influences exist, that is, for field life.<sup>110</sup>

Alternative “A” is full leasing of the 1002 Area and is the preferred Alternative of the Secretary. Under this alternative all federal subsurface ownerships of the 1002 area would be available for development through a leasing program administered by the DOI and the FLEIS presumes that major portions of the 1002 Area would be available for leasing.<sup>111</sup> The document discusses or implies a number of environmental impacts in greatly detail, including the following (discussed for the purposes of this case analysis because they are determined to be major to moderate impacts and may that pertain to determinants of human health and well-being):

- Water
- Porcupine caribou, culture, and subsistence living
- Diet, culture, and subsistence living
- Interaction of subsistence and wage-based cash economies

## Water

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<sup>109</sup> 1002 Area FLEIS Page 107

<sup>110</sup> 1002 Area FLEIS Page 107

<sup>111</sup> 1002 Area FLEIS Page 97



With respect to the physical environment, the 1002 Area FLIES anticipates major impacts upon water and ambient noise levels arising under Alternative "A".<sup>112</sup> Exploratory drilling requires the use of heavy construction equipment and large amounts of water.<sup>113</sup> The 1002 Area FLEIS estimates that as much as 15 million gallons of water could be required to drill one exploratory well.<sup>114</sup> To mitigate the use and presence of such large amounts of water with respect to each well, the 1002 Area FLEIS recommends the creation of double-lined reserve pits for water storage beside each well. In addition to use in exploratory drilling, the 1002 Area FLEIS suggest that water from reserve pits could be used to water roads created in the region in an effort to reduce air born dust.<sup>115</sup> However, the 1002 Area FLEIS also notes that the contents of such pits could include cuttings, drilling mud composed of barium, benzoate, and heavy metals (such as iron magnesium, zinc, chromium, and lead), salts (mainly sodium chloride and potassium chloride), alkali (such as calcium and magnesium bicarbonate), and perhaps liquid hydrocarbons.<sup>116</sup> The report states that the accepted manner of abandoning exploratory well pits is to inject the fluid down into the well once drilling is complete so that the drilling mud and fluid become part of the permafrost.<sup>117</sup> Other concerns include temporary minor contamination of the tundra by escaping grey water, and minor leaks and spills from operating equipment.<sup>118</sup>

As discussed above, the physical environment is a determinant of human health and well-being. It is interesting to note that while the recommended course of abandoning an exploratory well is to inject drilling fluid into the well in anticipation that the material will become part of the permafrost, the 1002 Area FLEIS also reports that some melting of the permafrost would be an "unavoidable impact" of Alternative "A."<sup>119</sup> With its thin permafrost layers, the 1002 Area is particularly sensitive to intrusion.<sup>120</sup> For example, seismic tests conducted in the region in the 1980s caused damage simply due to vehicular traffic, which left permanent tire marks in the region due to melted permafrost.<sup>121</sup> Furthermore, oil production in nearby Pruhoe Bay has been found to have reduced, among other things, the sustainability of permafrost.<sup>122</sup> Given the sensitivity of the permafrost and prior experience with oil and gas development in the area, the recommended course manner of disposal may also bear revisiting given contemporary concerns regarding climate

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<sup>112</sup> 1002 Area FLEIS Page 166

<sup>113</sup> 1002 Area FLEIS Page 111

<sup>114</sup> 1002 Area FLEIS Page 111

<sup>115</sup> 1002 Area FLEIS at page 112.

<sup>116</sup> 1002 Area FLEIS Page 111

<sup>117</sup> 1002 Area FLEIS Page 111

<sup>118</sup> 1002 Area FLEIS Page 111

<sup>119</sup> 1002 Area FLEIS Page 144

<sup>120</sup> Bonnie Docherty, *Challenging Boundarie: The Arctic National Wildlife Refuge and International Law*, NYU Environmental Law Journal, Volume 10, 2001, at page 83 and 107; Benjamin Sovacool, *Environmental Damage, Abandoned Treaties and Fossil-Fuel Dependence: The Coming Costs of Oil-and-Gas Exploration in the "1002 Area" of the Arctic National Wildlife Refuge*, Environment, Development and Sustainability (2007) 9:187–201 at page 190.

<sup>121</sup> Bonnie Docherty, *Challenging Boundarie: The Arctic National Wildlife Refuge and International Law*, NYU Environmental Law Journal, Volume 10, 2001, at page 83 and 107.

<sup>122</sup> Benjamin Sovacool, *Environmental Damage, Abandoned Treaties and Fossil-Fuel Dependence: The Coming Costs of Oil-and-Gas Exploration in the "1002 Area" of the Arctic National Wildlife Refuge*, Environment, Development and Sustainability (2007) 9:187–201 at page 190.

change or more recent concerns with permafrost degradation in Arctic regions.

There is also no comprehensive health impact analysis in the 1002 Area FLEIS stemming from anticipated water contamination due to major, moderate, or minor impacts and/or risks, such as leaching, that may be inherent in the use and disposal of contaminated reserve pit drilling fluid under Alternative "A." From a human health perspective, this may bear further examination in light of the anticipated presence of barium, benzoate, heavy metals, sodium chloride, potassium chloride, alkali, and liquid hydrocarbons in the drilling fluids, coupled with the recommended course of action in disposing of such fluids upon the abandonment of exploratory wells.

## Porcupine Caribou, Culture, and Subsistence Living

With respect to the biological environment, the 1002 Area FLEIS predicts major and moderate impacts upon various species of mammal including major impacts upon the Porcupine Caribou herd, which migrates annually across the refuge. Impacts include the disruption of calving areas and long-term changes in habitat availability or quality, which would likely modify the natural abundance or distribution of the herd in the 1002 Area.<sup>123</sup>

The 1002 Area FLEIS details the cultural and subsistence importance of the Porcupine Caribou to the Inupiat.<sup>124</sup> Kaktovik is the only community identified as being near the 1002 area, of which nearly 90 percent was of Inupiat Inuit descent at the time of the drafting of the 1002 Area FLEIS.<sup>125</sup> The FLEIS found that 68 percent of the land used by Kaktovik for subsistence use was inside the ANWR.<sup>126</sup> As of 1978, 85 percent of the community obtained all or most of their food supply from subsistence activities including hunting, fishing, and gathering.<sup>127</sup> The FLEIS also found that Kaktovik residents depended mostly upon the Caribou, sheep, waterfowl, and other birds for subsistence, with Caribou being the staple of the diet.<sup>128</sup> Caribou is also found to be important for feasts, garments, boot soles, and blankets.<sup>129</sup>

Although not considered in the 1002 Area FLEIS, the indigenous Gwich'in people in the region also rely on this Porcupine caribou herd as an integral part of their culture and for subsistence.<sup>130</sup> To the Gwich'in, it is not the 1002 Area, but the *Izhik Gwats'an Gwandaii Goodlit*, "The Sacred Place Where All Life Begins."<sup>131</sup> Roughly nine thousand Gwich'in people live on or near the migratory route of the Porcupine River Caribou Herd in communities in Alaska, Yukon, and the Northwest Territories.<sup>132</sup>

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<sup>123</sup> 1002 Area FLEIS Pages 118-124, 166

<sup>124</sup> 1002 Area FLEIS Pages 139-142.

<sup>125</sup> 1002 Area FLEIS Page 36

<sup>126</sup> 1002 Area FLEIS Page 36

<sup>127</sup> 1002 Area FLEIS Page 36

<sup>128</sup> 1002 Area FLEIS Page 37

<sup>129</sup> 1002 Area FLEIS Page 37

<sup>130</sup> [http://www.arcticrefugeaction.org/about\\_refuge/2004Gwichinbrochure.pdf](http://www.arcticrefugeaction.org/about_refuge/2004Gwichinbrochure.pdf) at page 1

<sup>131</sup> <http://www.gwichinsteeringcommittee.org/GSChumanrightsreport.pdf> at page 4

<sup>132</sup> <http://www.gwichinsteeringcommittee.org/gwichinnation.html>

Representatives of the Gwich'in people have expressed that their way of life is inextricably tied to the calving grounds of the Porcupine caribou in the ANWR:

The Porcupine Caribou Herd is the central food source for the Gwich'in people, providing much of the protein for people in these villages.<sup>134</sup> Caribou is also the most nutritious food available to the Gwich'in. In the Prudhoe Bay area of Alaska's North Slope, where intensive oil development began in the 1970s, the reduction of traditional subsistence hunting due to disruption of food species led to an "increased incidence of cancer and diabetes and disruption of traditional social systems." In the remote Gwich'in villages, caribou is also the most reliable long-term food source, because other wild sources are less dependable and groceries cost twice as much as they do in the city.<sup>17</sup> Caribou is an essential part of the Gwich'in diet. In addition to food, the caribou have provided the Gwich'in with medicine, clothing, shelter, and various tools such as awls and skin scrapers. The caribou is also central to the culture and spirituality of the Gwich'in...<sup>133</sup>

## Diet, Culture, and Subsistence Living

Under Alternative "A" anticipated effects upon subsistence are directly related to the availability of subsistence resources, reductions of which will adversely effect subsistence uses.<sup>134</sup> Resources of greatest concern include the caribou herds in the region. While cash-based living was found to be present in the community, subsistence culture was noted to be closely and intricately tied to the larger cultural framework of values of the Inupiat and had served as an anchor for traditional culture.<sup>135</sup> The FLEIS concludes that the ability of the Inupiat of Kaktovik to maintain their way of life in a mixed cash-based/subsistence economy would depend upon various factors including the manner in which resources are developed; regional, local, and individual efforts to manage socio-cultural impacts; and the health of subsistence resources.<sup>136</sup> The question of how impacts anticipated under Alternative "A" would effect other populations such as the Gwich'in merits further examination.

As discussed above, an examination of impacts upon subsistence uses is certainly mandated by NEPA and *ANILCA*, however, the analysis in the FLEIS does not examine any nexus between adverse impacts upon mammals and their subsistence use by local populations, and any related health impacts. Recent publications note that the Inupiat continue to rely heavily on hunting, fishing, and whaling not only as a source of employment and the cornerstone of their culture and social organization, but such subsistence foods remain a source of nutrition and the foundation of their diet.<sup>137</sup> Moreover, recent studies of Inupiat populations

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<sup>133</sup> <http://www.gwichinsteeringcommittee.org/GSChumanrightsreport.pdf> at pp 6-7

<sup>134</sup> 1002 Area FLEIS Page 139

<sup>135</sup> 1002 Area FLEIS Page 36

<sup>136</sup> 1002 Area FLEIS Page 36 and 140

<sup>137</sup> Robert J. Wolfe, Research Director, Alaska Department of Fish and Game: Division of Subsistence, ADF&G, Juneau, March 2000, *Subsistence in Alaska: A Year 2000 Update* at page 1; Aaron Wernham, *Inupiat Health and Proposed Alaskan Oil*

found that they consider subsistence foods to be nutritionally superior to store-bought foods and that native foods provide protection from cold and hunger<sup>138</sup> The Alaska Department of Fish and Games, Division of Subsistence, reported recently that:

The subsistence food harvest provides a major part of the nutritional requirements of Alaska's population. The annual rural harvest of 375 lbs per person contains 242% of the protein requirements of the rural population (that is, it contains about 118 grams of protein per person per day; about 49 grams is the mean daily requirement) (see Fig. 6). The subsistence harvest contains 35% of the caloric requirements of the rural population (that is, it contains about 840 Kcal daily, assuming a 2,400 Kcal/day mean daily requirement). The urban wild food harvests contain 15% of the protein requirements and 2% of the caloric requirements of the urban population (see Fig. 6).<sup>139</sup>

Although the 1002 Area FLEIS acknowledges that Caribou, among other fish and mammals, are a staple in the diet of Kaktovik Inupiat, there is no discussion of the health impacts resulting from a change of the staple diet, whether the growth of a cash economy in the area would result in access to and consumption of different foods of differing quality, and whether such a change in consumption would have any health impacts (for example, there is now data that demonstrates a subsistence diet and active lifestyle are the dominant protective factors against diabetes and complications of diabetes<sup>140</sup>).

## **Interaction of Subsistence and Wage-based Cash Economies**

The FLEIS also considers the potential economic impacts of oil development in the 1002 Area upon the local population in terms of an influx of people and job creation. The report considers the potential socio-cultural impact would be the greatest impact upon the local population.<sup>141</sup> It is found that an increase in new residents would have a *substantial adverse impact* upon the subsistence harvest resources, development would disturb a people accustomed to geographic and cultural isolation, and the importance of cash in the existing mixed economy would grow dramatically.<sup>142</sup> The FLEIS concludes that negative impacts could include a diminishing of traditional native culture, a influx of persons who do not share the local value system, and "a feeling among villagers that they are losing control of their lives."<sup>143</sup>

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*Development: Results of the First Integrated Health Impact Assessment/Environmental Impact Statement for Proposed Oil Development on Alaska's North Slope*, EcoHealth v.4:500, 2007 at page 502.

<sup>138</sup> Stephanie Lynne Martin, *Determinants of Well-Being in Inupiat and Yupiat Eskimos: Do Communities Matter?*, PhD Dissertation, 2005, University of Texas at Dallas, ProQuest, UMI No. 3163253 at page 33.

<sup>139</sup> Robert J. Wolfe, Research Director, Alaska Department of Fish and Game: Division of Subsistence, ADF&G, Juneau, March 2000, *Subsistence in Alaska: A Year 2000 Update* at page 3

<sup>140</sup> Aaron Wernham, Inupiat Health and Proposed Alaskan Oil Development: Results of the First Integrated Health Impact Assessment/Environmental Impact Statement for Proposed Oil Development on Alaska's North Slope, EcoHealth v.4:500, 2007 at page 505.

<sup>141</sup> 1002 Area FLEIS Page 139

<sup>142</sup> 1002 Area FLEIS Page 139

<sup>143</sup> 1002 Area FLEIS Page 139

The health impacts of the interaction of traditional subsistence living with an increasingly cash and job based economy are not discussed in the 1002 Area FLEIS. Dr. Stephanie Lynne Martin recently published research regarding mixed subsistence and wage-based living among Inupiat populations. Dr. Martin makes a compelling argument that that long-standing community connections remain important and that, while cash based jobs may provide material well being, it may not mean overall satisfaction and can detract from cultural and community ties.<sup>144</sup> Dr. Martin concludes:

[O]verall, this research demonstrates that the key to the quality of life is maintaining family ties, and social support. The empirical analysis demonstrates the importance of participating in groups at the level of household, extended family, informal networks, and community for satisfaction<sup>145</sup>

Although it is the favoured and, ultimately recommended outcome by the DOI, the FLEIS concludes the Alternative "A," or full leasing, could also have a *major* impact upon Kaktovik, and possibly other communities, and that oil development could significantly alter the traditional way of life; alternatively, "development could be viewed as a net economic benefit to the villages."<sup>146</sup> In light of this, one may note that the WHO advises that determinants such as where we live, our environment, genetics, income, education, and our relationships have *considerable* impacts on health, whereas the more commonly considered factors such as access and use of health care services often have *less* of an impact.<sup>147</sup>

Additionally, although the 1002 Area FLEIS concludes that public health endeavours and organizations may benefit economically, yet there may be an increase in alcoholism, drug use, and mental illness.<sup>148</sup> In addition to being determinants of health and well-being, the analysis of which may inform an evaluation of health impacts, mental illness, subsistence abuse and dependency, alcohol abuse and dependency are also recognized mental health illnesses by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition ("DSM-IV").<sup>149</sup> To minimize undesirable socio-cultural and socioeconomic impacts, such as chemical dependency, boom and bust cycles, and cultural disorientation, the EIS offers the rather minimalist and vague suggestion that what is required is the development "of plans in conjunction with are residents and organizations to properly manage [such] impacts on communities."<sup>150</sup>

## Other Alternatives

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<sup>144</sup> Stephanie Lynne Martin, *Determinants of Well-Being in Inupiat and Yupiat Eskimos: Do Communities Matter?*, PhD Dissertation, 2005, University of Texas at Dallas, ProQuest, UMI No. 3163253 at 133.

<sup>145</sup> Stephanie Lynne Martin, *Determinants of Well-Being in Inupiat and Yupiat Eskimos: Do Communities Matter?*, PhD Dissertation, 2005, University of Texas at Dallas, ProQuest, UMI No. 3163253 at page 136.

<sup>146</sup> 1002 Area FLEIS Page 139

<sup>147</sup> World Health Organization, *The Determinants of Health*, available at <http://www.who.int/hia/evidence/doh/en/index.html>

<sup>148</sup> 1002 Area FLEIS Page 139

<sup>149</sup> (1994) DSM-IV, APA

<sup>150</sup> 1002 Area FLEIS Page 169

The discussion for Alternative "A", above, is largely applicable to Alternative "B", which considered the impact of limited leasing in the ANWR. Impacts upon the above-discussed physical, biological, and human environment are similar to those under Alternative "A". Under this alternative the same areas of the 1002 Area would be available for leasing, save for the most frequently used concentrated calving areas of the Porcupine Caribou.<sup>151</sup> In terms of human impacts, this Alternative would require roughly 1/3 fewer workers and support personnel than full leasing and the increase of population of Kaktovik would be less dramatic.<sup>152</sup> The FLEIS finds that the socio-cultural changes and incursions onto traditional subsistence resource lands as anticipated under option "A" would also exist in this instance, but possibly to a lesser extent.<sup>153</sup> The FLEIS specifically states that if Congress enacts legislation to authorize the DOI to lease only a portion of the 1002 area, then the Secretary of the Interior must, prior to actual lease sales, determine the effects of oil development upon subsistence living in compliance with s. 810 of *ANCILA*.<sup>154</sup> The economic benefits at the state and local levels, while likely smaller than those possible under Alternative "A," would still be "major."

Alternative "C" permits only further exploration in the 1002 Area. Such activity would consist of seismic work and surface geological studies. Impacts upon the human environment would include only minimal impacts upon recreation, archaeology, and subsistence land use.<sup>155</sup>

Under Alternative "D" the general physical and environmental conditions of the 1002 Area would continue as-is. All else remaining the same, socio-economic and socio-cultural changes would continue in the same manner as they had been occurring.<sup>156</sup>

## Public Participation

As discussed above, public and agency participation is an aspect of the EIS process under *NEPA*. Prior to making the required detailed statement, the Federal official responsible for a particular EIS is required to consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved.<sup>157</sup> The public involvement requirements under *NEPA* are refined under by the *Regulations*; namely, § 1506.6, which specifies, among other things, that the involved federal agencies will make "diligent efforts" to involve the public in preparing and implementing their *NEPA* procedures.

Authors A. Wernham and R. Bhatia make a compelling argument that *NEPA* already has adequate language regarding the inclusion of health analysis within impact assessment processes, yet due to various

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<sup>151</sup> 1002 Area FLEIS Page 100

<sup>152</sup> 1002 Area FLEIS Page 151

<sup>153</sup> 1002 Area FLEIS Page 151

<sup>154</sup> 1002 Area FLEIS Page 151

<sup>155</sup> 1002 Area FLEIS Page 154

<sup>156</sup> 1002 Area FLEIS Page 155.

<sup>157</sup> Section 102(c)( 42 USC § 4332), under Title I of the *NEPA*.

Institutional, organizational, and disciplinary factors health has not evolved as a central focus of modern EIA practice<sup>158</sup> In fact, author A. Wernham, in what is reportedly the first HIA formally integrated into a federal EIA reported in the United States, very recently participated in a process whereby the Alaska Inter-Tribal Council (AITC), in cooperation the North Slope Borough (NSB), successfully advocated for the inclusion of HIA-based analyses in a number of federal EIS's for oil and gas development on the North Slope<sup>159</sup> Based upon this experience, and in reviewing this nascent process of HIA/EIA integration in the United States, Authors Wernham and Bhatia conclude that the public participation requirements under the NEPA process provide an ideal avenue through to include HIA in EIA.<sup>160</sup> They determine that, if health experts present HIA findings via the public participation processes mandated by *NEPA* directly on behalf of or in cooperation with an affected stakeholder in the EIA process, lead agencies are inclined to accept reasoned and sound public health arguments as justification to expand the scope of an impact assessment.<sup>161</sup>

In light of these very recent developments in HIA/EIA integration in the United States, one may note that achieving adequate public participation in relation to such development proved to be a struggle decades earlier. In ***Alaska v. Hodel***, *supra*, Trustees for Alaska and other environmental groups took legal action against the DOI and the Fish and Wildlife Service during the preparation of the draft 1002 Area FLEIS over the adequacy of public participation.

In ***Alaska v. Hodel***, *supra*, the Secretary and the Fish and Wildlife Service sought review of the District Court's order enjoining them from submitting the requisite 1002 report to Congress until they complied with the *NEPA*. Among other things, the Secretary and the Fish and Wildlife Service had argued that *NEPA* and its implementing regulations did not require public comment on a legislative proposal before its submission to Congress. It was contended by the Plaintiffs that the DOI has failed to comply with the public participation provisions of *NEPA* and provide for public participation in the preparation of the draft report in advance of its submission to Congress.<sup>162</sup> Among other things, the Plaintiffs alleged that under *NEPA* and the *CEQ NEPA Regulations*, the DOI must circulate a draft EIS for public notice and comment before submitting the 1002 report to Congress. The DOI countered that it would prepare a report, but it would not be circulated prior to its submission to Congress. By order of the district court upon summary judgment of the *NEPA* complaints, the DOI was compelled to circulate both the draft and final legislative EIS, to permit public review and comment of the same, to hold public meetings

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<sup>158</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008

<sup>159</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008 at page 995.

<sup>160</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008

<sup>161</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008 at page 996.

<sup>162</sup> 1002 Area FLEIS Page 193

on the draft legislative EIS, with all public and departmental comments forwarded to Congress along with the final legislative EIS.

In making this holding, the Court stated:

14. NEPA is essentially a procedural statute designed to insure that environmental issues are given proper consideration in the decision making process. See *City of Davis v. Coleman*, 521 F.2d 661, 670 (9th Cir.1975). Section 102(2)(C) of NEPA requires agencies to include a detailed environmental impact statement with "proposals for legislation and other major federal actions significantly affecting the quality of the human environment..." 42 U.S.C. Sec. 4332(2)(C). Congress has directed that the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies of NEPA "to the fullest extent possible." 42 U.S.C. Sec. 4332; *Lathan v. Brinegar*, 506 F.2d 677, 687 (9th Cir.1974) (en banc).

15 Executive Order, the CEQ issued regulations to federal agencies for implementing NEPA. Exec.Order No. 11991, 42 Fed.Reg. 26,967 (1977). The CEQ regulations are binding on all federal agencies and provide formal guidance to the courts for interpreting NEPA requirements. 43 Fed.Reg. 55,978 (1978). The CEQ's interpretation of NEPA is entitled to substantial deference. *Andrus v. Sierra Club*, 442 U.S. 347, 358, 99 S.Ct. 2335, 2341, 60 L.Ed.2d 943 (1979). Thus, the Trustees may have a right to comment on the draft LEIS before the Secretary submits the 1002 report to Congress if the CEQ regulations require such a procedure.

...

18 Section 1506.8 establishes a modified procedure for preparing an EIS on legislative proposals. Except for specified exceptions, section 1506.8 permits an agency to transmit a single LEIS to Congress and to federal, state, and local agencies, and the public for review and comment. No final, revised EIS is necessary. 43 Fed.Reg. 55,978, 55,987 (1978).

..

20 The Trustees contend that the proposal here falls within one of the specified exceptions set forth in section 1506.8 and therefore the Department must provide presubmission public comment. Subsection 1506.8(b)(2)(ii) provides that proposals resulting from a "study process required by statute" must follow the normal draft/final procedures established in section 1503.1.

..

22 We find that section 1002(h) is a study process required by statute under subsection 1506.8(b)(2)(ii)...

...

23 Moreover, the CEQ regulations make clear that the main reason for following a modified procedure for legislative statements is a concern that the LEIS be submitted to Congress before Congress acts. In its summary of major innovations in the regulations, the CEQ states that the regulations provide accelerated procedures for legislative proposals "to fit better with Congressional schedules." 43 Fed.Reg. 55,978, 55,979 (1978). In its comments to section 1506.8, the CEQ states that the timing of votes



and hearings for legislative proposals is not within the agency's control. 43 Fed.Reg. 55,978, 55,988 (1978). Section 1500.5(j) states that agencies shall reduce delay by using accelerated procedures for proposals for legislation. 40 C.F.R. Sec. 1500.5(j) (1985). This time concern does not exist when a "study process" includes a set time frame that permits the agency to anticipate and plan for congressional schedules. In fact, it is doubtful that when Congress specifically requests information and recommendations from an agency in the context of a study process--as it did here and in the two example Acts--that Congress will act without the agency's report.

24 Congress requires federal agencies to comply with the policies of NEPA to the fullest extent possible. 42 U.S.C. Sec. 4332. One of the policies of NEPA is to encourage and facilitate public involvement in decisions concerning environmental issues. 40 C.F.R. Sec. 1500.2(d) (1985). In fact, the CEQ regulations interpret NEPA to require public comment generally. See, e.g., 40 C.F.R. Secs. 1500.1(b), 1500.2(b), (d), 1503.1, 1506.6. The modified procedures for legislative proposals appear to be a narrow exception, not the norm. In view of the stated purpose of NEPA, we hold that the Department failed to comply with subsection 1506.8(b)(2)(ii) by deciding to submit the 1002 report without an opportunity for public comment.

As a result of the court-ordered process, the draft and final legislative EIS were made public November 24, 1986, with a comment period lasting until February 6, 1987.<sup>163</sup> Public meetings, in which more than 200 people participated, were held January 5, 1987, in Anchorage Alaska; January 6, in Kaktovik, Alaska; and January 9, 1987, in Washington, D.C. Copies of the draft and final legislative EIS reports were also sent to the government of Canada and the governments of the Yukon and the Northwest territories.<sup>164</sup>

The final legislative EIS, which is the 1002 Area FLEIS, is a 2 volume document; the first volume being the report, and the second volume being an appendix containing public comments and responses. Comments were received regarding impacts upon water and air quality, caribou and other mammals, how environmental impacts would be mitigated, the risk of oil spills, cumulative effects of development, and socio economic issues.

The potential impact upon the Porcupine Caribou and the Central Arctic herd of Caribou resulting from opening up the 1002 Area of the ANWR to oil and gas leasing and development, which is the ultimate recommendation of the FLEIS, generated much of the commentary.<sup>165</sup> From a review of the summary of comments, it would appear that specific concerns regarding health impacts were either not specifically raised, not raised in the focussed and concerted manner advocated for by authors A. Wernham and R. Bhatia, or were raised and disregarded. The chapters we see in the 1002 Area FLIES addressing the human environment were not

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<sup>163</sup> 1002 Area FLEIS Page 193

<sup>164</sup> 1002 Area FLEIS Page 194

<sup>165</sup> 1002 Area FLEIS Page 194

commented upon but, rather, added as the NEPA-required response to the public comments.

#### *Further Study*

The 1002 Area FLEIS concludes that any leasing and operations could be subsequent to further environmental evaluations at appropriate stages for each subsequent lease sale and for all development stages:<sup>166</sup>

Depending on the decision of the Congress, this programmatic LEIS may suffice for initial leasing. However, exploration proposals normally require site-specific NEPA evaluations, and any development and production proposal would require site-specific EIS. Any further EIS on development of the 1002 would, to the extent appropriate, be tiered on this programmatic LEIS.<sup>167</sup>

However, going forward, some express concerns with the duration of time that has elapsed since the issuance of the FLEIS, as well as with perceived flaws with the assessment:

Development opponents, and NEPA supporters, argue that the 19-year gap and changed circumstances since the last analysis necessitates a thorough update, and stress the flaws they found in the 1987 FLEIS.<sup>168</sup>

The conclusion reached above is that subsequent evaluations may be tiered upon the 1002 Area FLEIS. From a health assessment perspective, this may raise concerns give the lack of health considerations in the original 1002 Area FLEIS. However, the words “to the extent appropriate” indicate room to consider the continued appropriateness of tiering subsequent studies upon the current FLEIS, as well as the extent to which such tiering may be appropriate. The latter consideration may indicate room to pursue health considerations in new, subsequent, or supplemental EIS processes, precedent for which has now been established in the development of EIA/HIA integration in the United States and Alaska in particular.<sup>169</sup>

## **Conclusions**

As discussed above, health may be described as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, and, the extent to which an individual or a group is able, on the one hand, to realize aspirations and to satisfy needs, and on the other, to change or cope with the environment.<sup>170</sup> Although the NEPA

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<sup>166</sup> 1002 Area FLEIS Page 105

<sup>167</sup> 1002 Area FLEIS Page 4

<sup>168</sup> CRS: New Directions, *supra* note 1 at 10.

<sup>169</sup> Aaron Wernham, *Inupiat Health and Proposed Alaskan Oil Development: Results of the First Integrated Health Impact Assessment/Environmental Impact Statement for Proposed Oil Development on Alaska’s North Slope*, EcoHealth v.4:500, 2007

<sup>170</sup> Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948; World Health Organization 1984; and Health Canada, 2004, *Canadian Handbook on Health Impact Assessment*, Vol 1. The Basics, available at [http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol\\_1/chap\\_1-eng.php#1](http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide/vol_1/chap_1-eng.php#1)

and its regulations require consideration of health risks and health effects, this legislation offers no concrete definitions of health nor any guidance of how health risks or effects are to be measured and considered.

Authors Wernham and Bhatia make compelling arguments that *NEPA* already has adequate language regarding the inclusion of health analysis within impact assessment processes, yet due to various Institutional, organizational, and disciplinary factors health has not evolved as a central focus of modern U.S. EIA practice:

EIA practice evolved primarily in agencies with mandates for environmental management and protection. Currently, neither responsible agencies nor public health officials generally view EIA as an avenue to address health objectives (Noble and Bronson 2006). Assumptions about the appropriate scope of EIA naturally derive from the regulatory mandates of the agencies undertaking EIA and, with time, have become entrenched as precedents (California Department of Transportation 1997; Cole 2004). Thus, currently EIA is largely accomplished by agency staff or by private consultants who lack health expertise. Regulatory agencies rarely request input from health agencies, and there is no established mechanism or expectation for such interaction.

In addition, U.S. EIA statutes do not explicitly describe the kinds of public health effects to be included in an EIA, and to date there is no guidance that specifies the appropriate scope, standards, or methods for analyzing health effects. In the absence of such guidance, the specific health-related requirements of environmental regulatory acts such as the Clean Air Act (1990) and Clean Water Act (1972) often define the scope of health concerns within EIA.

The rigid boundaries among disciplines of knowledge along with semiautonomous development of knowledge in each field have been long-standing obstacles to interdisciplinary thought and practice necessary for integrated impact assessment (Rattle and Kwiatkowski 2003) .<sup>171</sup>

The 1002 Area FLEIS found that, in the event of full or partial leasing of the coastal plain, contamination of and/or changes to ecosystems and food sources would occur, population shifts would occur, subsistence ways of living would be impacted and interact increasingly with wage-based economy, social and cultural experiences would be altered, local populations could lose a sense of control over their lives and communities, and that, although net economic benefits could occur, exploration and development in the area also could bring with it mental stressors and dependencies. Yet, fitting with the evolution of EIA in the United States absent any meaningful consideration of health impacts, the 1002 Area does not engage in any health impact analysis of these findings. Given the context of the FLEIS and set out in *NEPA* and *ANILCA*, with their focus upon fish, wildlife, and subsistence protection, this is not entirely surprising. Moreover, the analysis was conducted by the agencies who

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<sup>171</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, *Env. Health Perspectives* v.116 n.8 2008

are not focussed upon human health issues per se. Finally, the summary of public feedback indicate that health impacts were either not specifically raised, not raised in a focussed and concerted manner by or on behalf of any stakeholders, or were raised and disregarded.

The manner in which health considerations may best be incorporated into U.S. environmental assessment cannot be answered by an examination of the 1002 Area FLEIS alone and certainly merits further study. However, the 1002 Area FLEIS does provide an clear example of what remains lacking in an impact analysis when no manner of health analysis is included in the process. Looking to both the recent Canadian and U.S. efforts to integrate health considerations in environmental assessment, future EIS's of the coastal plain may consider integrating health analysis into each step of an environmental assessment and/or the nascent American process of integrating HIA into the EIA process via the public participation requirements under *NEPA*.

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