

AN ABSTRACT OF THE THESIS OF

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Title: Toxic Politics at 64N, 171W: Addressing Military Contaminants on St. Lawrence Island, Alaska

Abstract approved:

John A. Young

St. Lawrence Island, Alaska is home to two Formerly Used Defense Sites (FUDS) under remediation by the U.S. Army Corps of Engineers since 1985. After more than two decades the local residents continue to be concerned about inadequate site characterization and cleanup. During the summer of 2005, I collected ethnographic and geographic data in two Native Villages, Gambell and Savoonga, about local people's perceptions of the contaminated sites and the remediation efforts by federal agencies. The historical context of the DOD occupation, site closure and remediation has impacted both the local natural resources and the people of St. Lawrence Island. This thesis will present these findings and a how global political and strategic interest in the Bering Strait has created a human environmental crises.

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Toxic Politics at 64N, 171W: Addressing Military Contaminants on St. Lawrence
Island, Alaska

by
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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Kai A. Henifin, Author

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CH. 1- Introduction

Standing outside the Nome, Alaska airport on a chilly grey September morning in 2005, I felt anxious about the two and a half weeks of field research ahead. My research assistant, La Belle Urbanec¹, and I struggled to load our overweight luggage over to the Bering Air terminal to catch a flight to St. Lawrence Island. We planned to visit the two native villages on the island, Savoonga and Gambell, for nine days each to interview local residents about their perceptions, knowledge gained through experiences of military contaminants (Milton 1996:60; Ingold 1991). We were both interns for the non-profit organization, Alaska Community Action on Toxics (ACAT), which has worked with the communities since the early 1990's.

After a quick forty-five minute flight from Nome to Savoonga, we had our first glimpse of St. Lawrence Island. Out the window of the plane we could see the vast tundra and the in-numerable pools of water that dot the island's surface. Before our trip Viola Waghiyi, a former resident who was born and raised on the island and is now the current ACAT project coordinator for St. Lawrence Island, organized accommodations and provided a list of potential participants to help us begin our research. We had worked hard to prepare for our fieldwork. La Belle and I were aware of the need to be flexible and accommodating to the unique characteristics of these communities.

In the spring of 2005 I contacted ACAT to find out about research possibilities in Alaska for the summer. I never imagined a project like the one on St. Lawrence

¹ La Belle Urbanec was an EPA intern with ACAT during the time of the 2005 field research, and she traveled to St. Lawrence Island with me to help with data collection.

Island. I was told that the communities on the island had been dealing with a long cleanup of Formerly Used Defense Sites (FUDS), referred to here after as “contaminated sites”, and that they were concerned that the U.S. Army Corps of Engineers and their contractors had not adequately identified military debris and contaminants. Local residents were requesting that these contaminated sites be documented by ACAT. My field research in September 2005 was motivated by this request and a desire to record local knowledge, the knowledge that local people have about their environment, in this case specifically about the effects of Department of Defense (DOD) contaminated sites on the island. My goal was to help local people in their struggle for an adequate and complete cleanup of these contaminated sites.

While on the island our job was to interview local residents who had knowledge of the military contamination in the local environment. From the beginning we focused on the personal experiences, values and beliefs of the St. Lawrence Island residents. We heard that local residents wanted to create a geographic map indicating the locations of buried debris. We used a Geographic Position Systems (GPS) to collect data about the location of the contaminated sites. Interviews and GPS data provided the main content for this thesis to document local perceptions of the DOD contaminated sites and current cleanup work on these sites.

We had the opportunity to talk with a number of residents who held varying perceptions of the contaminants, but still expressed a common desire for full cleanup of the contaminated sites. The information that community participants shared with us was at times both shocking and familiar, revealing the frustration and pain they have

experienced during the DOD occupation and cleanup. My research revealed a case of environmental injustice and local activism. This thesis explores how value and beliefs influence the two communities' perceptions of the contaminated sites and how perceptions are translated into action.

I begin by describing the St. Lawrence Island community, the DOD and the nonprofit organization (ACAT), in order to frame the research in Chapter 2. A review of environmental justice, perceptions, participatory research and social movement literature follows in Chapter 3. A description of the mixed method approach to this research, semi-structured interviews and GPS data collection, are the topic in Chapter 4. I dedicate Chapter 5 to major themes emerging from the field research. Chapter 6 contains a discussion and conclusion analyzing the findings in the context of the literature in this field. Finally, I present recommendation for future action in Chapter 7.

CH.2- Historical Background

In this chapter I will provide background on the St. Lawrence Island Community, their land ownership, the U.S. Department of Defense (DOD) occupation of the Island, the cleanup of contaminated after the DOD site closures, the Independent Non-profit organization who facilitated this research and the perceptions analysis report completed by the EPA.

St. Lawrence Island Community

St. Lawrence Island is located approximately 150 miles south of the Arctic Circle, 38 miles east of the Chukchi Peninsula and 200 miles west of Nome, Alaska. The island is closer to Siberia than mainland Alaska and the people are ethnically

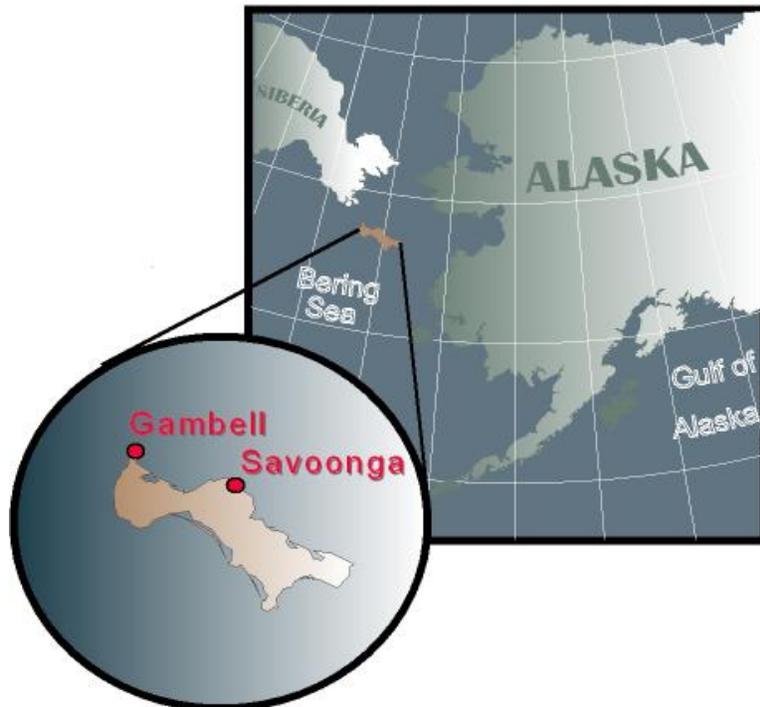


Figure 1. A map of the two villages, Gambell and Savoonga, on St. Lawrence Island, Alaska. (For metadata see Appendix A)

different than many of their Alaskan neighbors (Rennick 1987). St. Lawrence Island has two year-round villages, Gambell and Savoonga, where the descendents of Siberian Yupik peoples live. Each village has approximately six hundred and fifty residents. The island has three types of governing bodies: tribal governments (locally referred to as the IRA council, from under the Indian Reorganization Act of 1934), city governments, and village corporations. The IRA councils are a cultural entities or traditional systems responsible for the subsurface resources on the Island. Former under ANCSA in 1971, the two village corporations were set up as economic entities to stimulate development, responsible for income generated from surface resources such as tourism. The city governments are infrastructure entities responsible for all city workers.

The people of St. Lawrence Island live a subsistence lifestyle, dependent upon local natural resources. The sea provides 65 to 80 percent of their protein, while the land provides a substantial supply of eggs, greens and fruits (berries) (Jolles 2002:27; Burgess 1974). The subsistence lifestyle, with an emphasis on the word “lifestyle” is a network of social, economic and religious systems that bind the community together. The most important task that people perform is food gathering for their family, because without food no one survives (Jolles 2002). There are grocery stores in each of the villages, but the goods are three to four times the mainland price due to transportation costs and most people prefer to eat traditional foods instead of store-bought items.

The two year-round villages on St. Lawrence Island have very different histories and are uniquely different in their identities. Siberian Yupik peoples have inhabited the village of Gambell since approximately 500 A.D. (Jolles 2002; Dumond 1998). The village of Savoonga was established more recently in 1916. The current village of Savoonga is the site of a reindeer herding camp set up by President Roosevelt in 1903. After the island's population was decimated in the 1878-80 famine (Burgess 1974), reindeer were introduced to the island to add a stable food source to supplement the traditional diet of marine mammals. The herding camp attracted local people who permanently settled in that location, which is now the village of Savoonga. Gambell is still perceived as the more traditional of the two villages, but both communities share many of the same values and beliefs.

Land Ownership

Land is central to the St. Lawrence Islanders' cultural identity. Their ancestry, lifestyle and culture are all tied to the island. In 1867, Russia sold the territory of Alaska to the United States for \$7.2 million, establishing the American national boundary between the St. Lawrence Island peoples and their Siberian relatives. In 1934, the United States government passed the Indian Reorganization Act (IRA) giving local tribal governments power to make decisions about their land to "prevent the sale, disposition, lease or encumbrance of tribal lands, interests in land, or other tribal assets without the consent of the tribe" (Berger 1985:115). This act established tribal governments in Native villages that are recognized by the United States government and offer protection for native lands. The loss of land is catastrophic for

native villages because it severs their ties to traditional life and the opportunity for self-sufficiency (Berger 1985).

In 1971, Congress passed the Alaska Native Claims Settlement Act (ANCSA) which reserved 197 million acres of land, about sixty percent of the state, for the federal government. Native peoples received 44 million acres of land, about ten percent of Alaska's territory. This act extinguished local peoples' rights to hunt and fish on the remaining land. In addition to the removal of land from native use, ANCSA set up twelve regional corporations (one "at large" for Alaskan Natives living outside of the state) and more than two hundred village corporations in Alaska.

"By enacting ANCSA in this manner, Congress strongly rejected the concept of tribal government where land could be held 'in trust' by the U.S. Department of Interior- seeing such an arrangement as a serious impediment to Native assimilation" (Chance 1994:175).

Communally owned land was transferred to Village or Regional Corporations and privately owned shares of corporation stocks was given to individual community members born before December 18, 1971. Those who were born after this date had no claim to native land, cutting off children and grandchildren of shareholders from rights to their land (Berger 1985).

On St. Lawrence Island the Gambell and Savoonga tribal governments decided not to participate in ANCSA; instead they chose to receive title to the 1.136 million acres of land in the former St. Lawrence Island reserve. Two village corporations were established, together receiving the title to the surface and subsurface estate.

Though the St. Lawrence Island residents gave up almost all of the ANCSA cash benefits, they continue to control their rights to their island (Berger 1985).

U.S. Department of Defense (DOD) Occupation

The American military presence in the Bering Sea was minimal until the early 1940's when the DOD built a network of bases including weather stations, aircraft radio relay and monitoring stations to protect the U.S. against Japan. The U.S. government applied eminent domain, which is the inherent power of the government to expropriate private property, without the owner's consent, for public use. This power is commonly used to acquire property for public projects such as military installations. After Pearl Harbor was attacked, this network was augmented with aircraft warning stations and several thousand troops. In the early 1950's the fear of a Japanese attack gave way to fear of an increasingly powerful Soviet Russia. Aircraft Control and Warning radar stations were built to monitor Soviet military aircraft, linking the communication network from Arctic Alaska to Canada (ACAT 2006).

In 1946, St. Lawrence Island was selected as a location for DOD sites. In Gambell the Army built a base on the north side of Troutman Lake and the Air Force built a base at the base of Sivuqaq Mountain (see Figure 2). A radar system was set up on top of Sivuqaq Mountain, which was connected to Navy submarine detection equipment to monitor Soviet shipping activity. From 1948 to the early 1950s, seven military installations in Gambell were used by Army, Air Force, Navy and National Guard (ACAT 2006; Denfeld 1994). The military sites closed in 1956 and the abandoned buildings were torn down and buried.

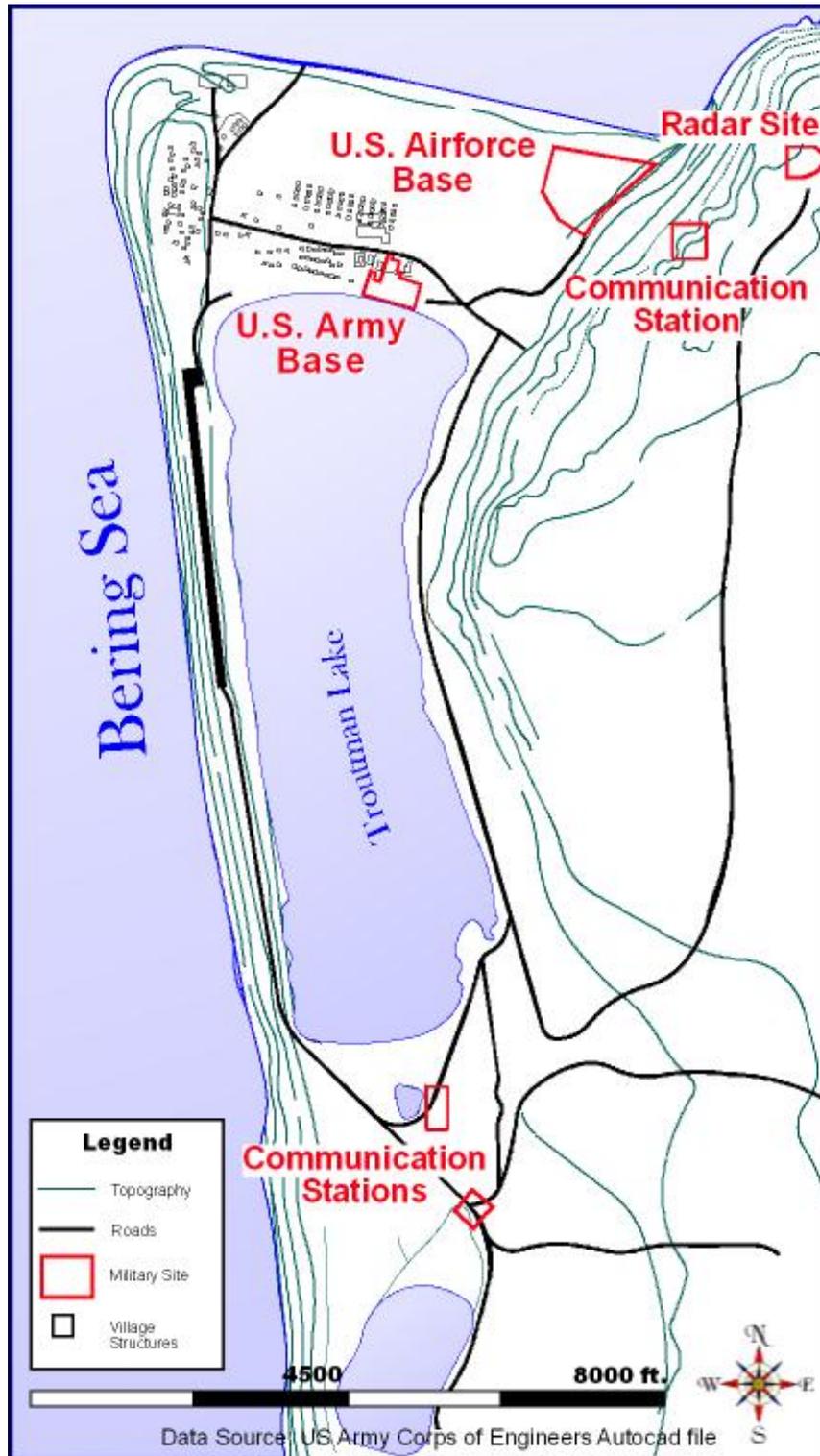


Figure 2. A map of Gambell, location of U.S. Army and Air Force bases, including the radar and communication stations. (For metadata see Appendix A)

During the depth of the Cold War, new radar systems were developed to link the radar and communication stations across the Arctic to provide reliable multi-channel communication under all weather conditions. These stations became commonly known as “White Alice” Sites² in Alaska. Each of the DOD sites on St. Lawrence Island were self-contained outpost with housing for operations crews and support staff, and an airstrip for delivery of supplies and personnel (ACAT 2006).

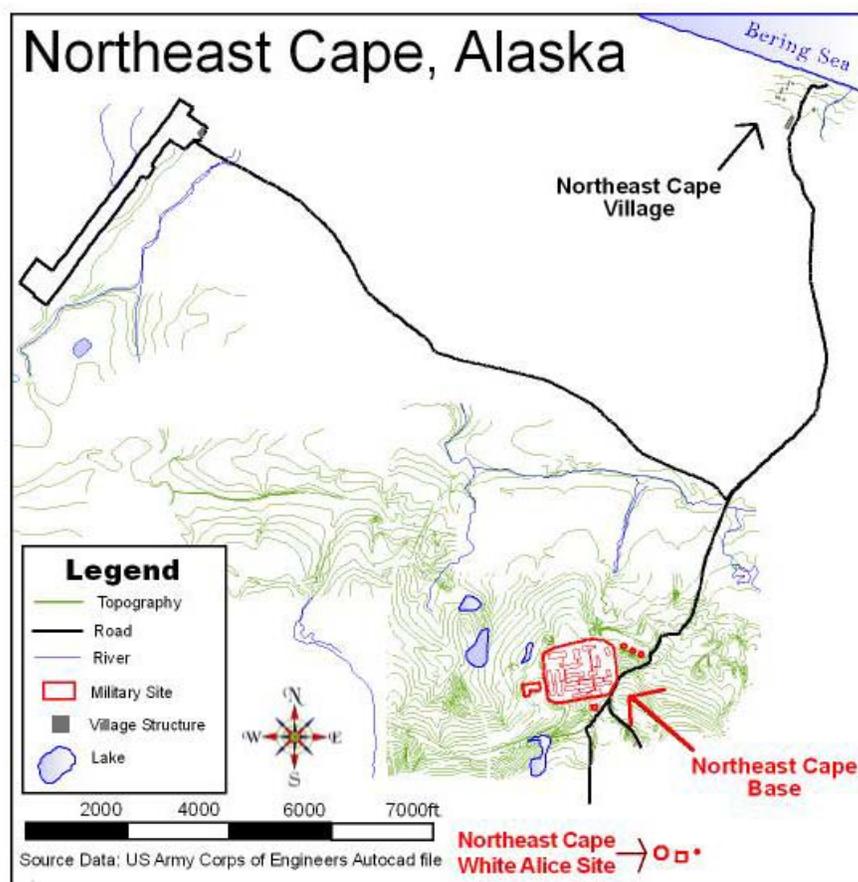


Figure 3. A map of Northeast Cape, location of the military base and White Alice Site. (For metadata see Appendix A)

² The name “White Alice” was given to these stations, because “white” represents the arctic landscape and “ALICE” stands for the acronym Alaska Integrated Communications and Electronics (ACAT 2006).

In 1952 the DOD built a “White Alice” site at Northeast Cape on the eastern tip of St. Lawrence Island (Zamzow 2002). The small seasonal village of Northeast Cape is located just north of the DOD site. The village had year-round residents while the DOD occupied the island, the residents moved there when they were hired by the DOD to work at the site. By 1958 forty-nine White Alice sites were in full operation across Alaska and the Northeast Cape site continued to operate until 1972. After the Cold War ended the military facilities were closed, the abandoned buildings left standing, and the residents of Northeast Cape were relocated. The empty buildings were left intact with minimal removal of equipment due to the high cost of transportation (Denfeld 1994).

Cleanup of Contaminated Sites

In 1984, the Defense Environmental Restoration Program-Formerly Used Defense Sites (DERP-FUDS) program, referred to in this paper as the “contaminated sites cleanup”, was initiated and funded by the DOD and administered by the U.S. Army Corps of Engineers. A year later, the U.S. Army Corps of Engineers subcontractor conducted a file search and preliminary reconnaissance of the contaminated sites near Gambell to investigate the materials left by the military and collected samples (MWH 2003). In 1986, the contractors began a cleanup, which was halted because of community concern over the disposal of the debris into a mono-fill on the island (ACAT 2006).

From 1991 to 1992, the Army Corps of Engineers contractor interviewed Gambell and Savoonga residents about the military activity on the island. Site cleanup

investigations were conducted from 1994-98 in Gambell to identify surface debris, and in 1999 some contaminated soil was removed from the contaminated site by the Army Corps of Engineers contractors (MWH 2002). In 2000, the Army Corps conducted an analysis of historic photos to identify suspected buried ordnances. Thirty-eight sites were identified for cleanup and a Restoration Advisory Board (RAB), hence referred to as the “advisory board”, was established. To date thirty-four of the thirty-eight contaminated sites have been identified, cleaned up and closed. By 2003, approximately 50 tons of metallic debris from two former DOD landfills were removed by local contractors under the Department of Defense Native American Lands Environmental Mitigation Program (NALEMP), hence referred to as the “local cleanup” (MWH 2003).

In 1986 cleanup efforts at Northeast Cape began. In 1992 the Army Corps of Engineers contractors estimated that there were 36,200 containers of potentially hazardous or toxic waste and more than 30,000 cubic yards of potentially contaminated soil, and unsafe structures or debris present at the Northeast Cape site (Ecology and Environment Inc 1992; MWH 2002). The EPA identified petroleum contamination as predominately diesel (about 220,000 gallons of diesel fuel), Polychlorinated biphenyls (PCBs), Volatile Organic Compounds (VOCs)³, pesticides, brominated flame-retardants and metals in the soil and in the water. One of the biggest concerns at Northeast Cape has been the 160,000 gallons of diesel fuel spilled into the Suqitughneq (Suqi) River, an important fresh water source and local fishing

³ Volatile Organic Compounds (VOCs) are molecular compounds released by petroleum products when they evaporate.

spot (Zamzow 2002). The residents of St. Lawrence Island along with ACAT prompted the Army Corps of Engineers and their contractors to remove hazardous debris rather than dispose of it in an on-site unlined mono-fill (ACAT 2006).

Table 2-1 Documents published by U.S. Army Corps of Engineers during the Gambell and NECape cleanup.

Gambell		NECape	
Date	Document Name	Date	Document Name
1992	Draft-Chemical Data Acquisition Plan, Site Inventory Update, Gambell, St. Lawrence Island	1985	Draft Environmental Assessment
1992	Draft Final Chemical Data Acquisition Plan Site Inventory from Ecology and Environment	1992	Chemical Data Acquisition Plan
1993	Remedial Investigation	1993	Remedial Investigation
1996	Final Investigation- Derived Waste Handling Report	1996	Final Investigation Derived Waste Handling Report
1997	Draft Phase II Report	1999	Pre-Final Phase II
1997	Phase II Report Updated by Shannon and Wilson	2000	Draft Phase II
1997	Draft of Geophysical Anomaly Investigation	2000	Health Consultation, from The State Division of Epidemiology
1999	Phase II Report, Site 5	2000	Draft Report, Health Concerns
1999	Interior Removal Action-Debris Removal	2001	Remedial Investigation work plan
2000	Ordnance and Explosive Waste	2001	Phase III
2001	Ordnance and Explosive Waste	2001	Draft Risk Assessment, Work plan for Human Health and Ecological Risk
2001	Debris Removal Report, Oil Spill Consultants	2003	Work plan for Demolishing Buildings
2001	Supplemental Remedial Investigation Work plan	2003	Phase III, Remedial Investigation Report for NECape
2003	NALEMP Project	2003	Final Risk Assessment, Human Health and Ecology
2005	Phase IV Remedial Investigation	2005	Phase IV Remedial Investigation

In 2003, the Army Corps cleaned up the building debris from the Northeast Cape contaminated sites. Approximately 50 tons of metal debris and three tons of

incidental contaminated soil was containerized and removed. In 2005, a final debris and contaminated soil cleanup was completed. The Army Corps reported at the 2005 advisory board meeting that they would continue investigation at the Northeast Cape site in summer 2006.

In 2005, when I was on St. Lawrence Island, I attended an advisory board meeting where the U.S. Army Corps of Engineer staff, a subcontractor, and an EPA representative (referred to hereafter as “government agencies”) came to the island to present information about the cleanup work completed during the 2005 summer. The presentation focused primarily on work completed at Northeast Cape, where the cleanup crew had encountered barrels with petroleum products in military landfills, which require further investigation. Throughout the presentation the U.S. Army Corps of Engineers emphasized two points: monetary and time limitations of the remediation. They sought to close the contaminated sites within the next two years. No further action by the Army Corps of Engineers would be taken to cleanup these sites after being closed.

Independent Non-profit Organization

In 1990 Annie Alowa, a former Village Health Aide worker from Savoonga, met Pamela Miller, an environmental activist, and they began to work collaboratively to address concerns about the increase in cancer rates on St. Lawrence Island after the DOD occupation. Pamela Miller started a non-profit environmental advocacy organization, Alaska Community Action on Toxics (ACAT), soon after meeting Annie. ACAT’s work has expanded since then to include a program dedicated to

human and environmental health on St. Lawrence Island. Viola Waghiyi, a former Savoonga resident, directs this program, and has hired and trained local residents to do research in Gambell and Savoonga.

Viola Waghiyi and other local residents continue Annie Alowa's legacy of advocacy for the St. Lawrence Island communities. ACAT was granted money to fund a Community Based Participatory Research Project (CBPR). Since 2006 they've conducted human health surveys and work together with the Norton Sound Health Providers to increase the capacity for health service in the Bering Strait Region.

Perceptions Analysis Conducted by the EPA

The EPA Federal Facilities Restoration and Reuse office funded a research project in October 1998 to investigate perceptions of Native Alaskan communities about military contaminant sites. The purpose of this report was to develop a communication policy for the EPA, which would address the concerns in Native communities about military contaminants. Local residents from twenty-one Native communities and fourteen government agencies were interviewed to document how rural communities in Alaska identify, interpret, and define the risk of hazardous substances to human health and the environment at federal facilities and contaminated sites. This research concluded that villagers supported military construction activities and operations conducted for the purpose of defense, but that contaminants from the military had impacted local wild foods causing increased cancer rates. The report also found that the military focused on getting environmental jobs done efficiently and cost effectively, and that communities perceived the Government-to-Government (GTG)

process of communication to be better than the RAB (advisory board) model. “Under these [GTG] agreements tribes were able to bring in experts to help interpret documents and assess sites, build capacity and knowledge about contamination and the remediation procedure” (Resource Solutions 2001:9).

The major theme in all the interviews was that the community did not trust the U.S. government, despite the U.S. Army Corps of Engineers efforts to document the hazards and address community concerns. The report stated that contaminants had impacted protected rights and land trust resources, adding that the communities were ideal for a participatory role in which they could be directly involved in project assessments and consensus-based decisions. The draft version also stated that:

“Among national sociopolitical movements that bear on the Alaska environmental cleanup scene today, especially in relation to Alaskan rural Native villagers, are the civil rights movement of the 1960s, the Native claims in Alaska and formation of the regional Native Corporations in 1971 with the shift of land ownership to these Corporations, and the environmental justice movement. The latter forward the idea that many of the hazardous waste sites in the U.S. were disproportionately located near minority communities (Bullard 1994; Mohai & Bryant 1992) although the reasons for this fact continue to be debated” (Resource Solutions 2001:4).

These findings were removed in the final EPA report, leaving no comment about such environmental justice implications in regards to this federally funded program.

CH.3- Literature Review

In this Chapter I will discuss academic discourse of perception and knowledge, traditional ecological knowledge (TEK), participatory research (including participatory mapping), and define social movements to develop the framework for the environmental justice theory used in this research. “The vision of environmental justice is the development of a holistic, community-based, participatory and integrative paradigm for achieving healthy and sustainable communities for all people” (Lee 2005:217). In the past three decades the environmental justice movement has not generated the major structural change needed to redistribute the environmental costs of industrialization. Despite the efforts of the movement, environmental degradation and social inequalities continue to increase (Pellow 2005; Cable et. al 2005). Activists and professionals within the movement must strive towards a more democratized system, where community collaboration and interdisciplinary discourse are paramount (Lee 2005). This chapter will show how community perceptions, land issues, social movements and participatory research relate to the current environmental justice movement literature and describe the future approach advocated by activists and academics.

Environmental Justice Past and Present

The environmental movement emerged in the mid 1960’s, when American industries were producing copious quantities of highly toxic substances. Public concern increased in the 1970’s when new organizations made environmental issues more mainstream and professional (Cable et. al 2005; Brulle 1996; Szasz 1994).

Tragedies such as the *Love Canal*⁴ brought hazardous waste into media headlines in the 1980's. Local action in such communities turned hazardous waste disposal into a full-fledged issue prompting the environmental movement to expand its boundaries to include an increasingly diversified set of local pollution problems. By this period Americans had lost faith in the commitment of government and private industry to protect them from hazardous waste (Szasz 1994).

In the 1990's communities began to mobilize against the construction of hazardous waste sites near neighborhoods. This campaign was known as "Not in My Backyard" or NIMBY, which was later expanded and renamed "Not in Anyone's Backyard". Activists in the environmental justice movement, such as Robert Bullard, pushed grass-root environmental groups to focus on multi-issue, multi-racial, and multi-regional issues (Agyeman et. al 2003). The environmental justice movement distinguished itself from the general environmental movement by addressing issues faced by those outside of the dominant cultural, political and economic elite classes who bear the brunt of the industrial production (Pellow 2005). Environmental justice initiatives attempt to redress the disproportionate incidence of environmental contamination in poor and/or communities of color, to secure the right of all people to live unthreatened by the risk posed by environmental degradation and contamination and to afford equal access to natural resources that sustain life and culture (Checker 2005; Adamson et. al 2004).

⁴ In 1978, Niagara Falls residents reported concerns and health risks. When authorities investigated the problem they discovered a hazardous dumpsite under the Love Canal neighborhood.

Barbara Rose Johnston said that environmental degradation is not a new challenge to human survival, but that the characteristics of degradation have changed. Environmental degradation is one way in which minority populations are victims of cultural discrimination. The link between human rights abuses and environmental degradation is a bi-product of selective victimization resulting from dysfunctional governance and inadequate responses to environmental crises that contribute to the formation of social movements. This victimization is a preexisting social condition that results in the loss of critical resources and a healthy environment, “exposing certain groups to hazardous environmental conditions while others are free to live, recreate, procreate, and die in a healthy setting” (Johnston et. al 1994:11).

Current environmental justice discourse criticizes environmentalism for not advocating for major structural changes needed to redistribute more equitably environmental costs of industrialization (Cable et. al 2005). Two common strategies used by environmental justice activists are litigation and public pressure. Litigation uses federal statutes, traditional environmental statutes and new state laws to remedy potential or existing environmental discrimination (Gordon & Harley 2005). Title VI of the Federal Civil Rights Act of 1964, forbids discrimination based on race and is often used as the basis of environmental justice lawsuits (Cable et. al 2005; Agyeman et. al 2003).

“[To prove] that a community is contaminated because of its racial or ethnic makeup, a plaintiff must provide evidence that a specific person or group of people deliberately caused the contamination as a race conscious act. Because

most contaminations happen over long periods of time and for a variety of race related reasons, it is almost impossible to prove intention” (Checker 2005:117). This argument is so difficult to make that most of the lawsuits based on Title VI are unsuccessful. The knowledge of local people put into lawsuits could be used in other ways, to inform others about environmental programs, which might bring new people into the movement (Cable et. al 2006:62).

The other commonly used strategy in the environmental justice movement is political pressure. Movement critics argue that political pressure is less problematic than litigation. The primary resource for political pressure is “social capital” (Pellow 2005), a concept defined as “the features of social organization such as networks, norms and social trust that facilitate, coordinate and cooperate for mutual benefits” (Lee 2005:221). The challenge then is how to develop this resource in a community that suffers disproportionate exposure to environmental risk. Social capital is often scarce in working-class, impoverished and minority communities. Participatory research is a tactic used by environmental justice activists and academics to build the social capital necessary for political pressure (Pellow 2005).

“The large numbers needed for political pressure are more likely to be mobilized in a participatory research collaboration because community residents observe that, rather than outside ‘experts’, insiders-their own neighbors-are defining the problems and calculating the options” (Cable et. al 2005:74).

Facilitating the expansion of social capital in the community in turn creates a knowledgeable, invested and active group of people ready and willing to mobilize.

Perceptions and Knowledge

Perceptions come into being as individuals act in the world. Knowledge is created through action, and the meaning of these actions varies from individual to individual because they engage with the world in different ways (Milton 1996; Ignold 1992). As individuals act in the world they develop local knowledge about their natural surroundings within their cultural context. These values and experiences determine individual's perceptions of the natural world, and they react according to these perceptions. Environmental justice often involves communities "learning from direct experiences and discovering new information and concepts in the process of 'doing'" (Lee 2005:221). Perceptions and environmental justice are linked through experiences and the development of knowledge about the world in communities burdened with risks from contaminants.

Mary Douglas, an anthropologist who has done extensive research on perception in the field of social science, said that the content of cultural perspectives is determined by the form of social organizations that people are required to sustain, not necessarily what exists in the 'real' world (Milton 1996; Douglas 1966). Douglas points out that in the case of risk inflicted by outside groups for political reasons, the concept of "[risk] perception may not be the issue at all, but indignation at bamboozlement and exploitation" (Douglas 1985:34). In order to understand risk perceptions, Douglas urges trying to understand the institution that supports public

perception whatever it may be. One of the ways that anthropologists can contribute to environmental justice research is by looking at the treatment of local people by outside institutions as well as the social institutions within the culture that support misguided perceptions (Douglas 1985).

In Native Alaskan communities perceptions and interpretations of contamination and contaminant issues must be understood on “the basis of their own language, system of knowledge, values, experiences and practices on the land” (Poirier and Brooke 2000:78). Perceptions are the result of experience, knowledge and cultural systems. Poirier and Brooke argue that perceptions and feelings about the environment are often more prevalent than factual information. An individual’s perception of environmental risk is often socially mediated because the environmental damage is presented through community interaction. Perception research can provide information about the characteristic differences between groups and improve communication (Weber et. al 2000).

Traditional Ecological Knowledge and Communication

“Given that many human environmental crises emerge from situations where local people are excluded from the decision-making process, efforts to transform decisions or conditions often hinge on information flows and communication tools” (Johnston 1997:333). When dealing with contaminant issues, the “hard science” facts and figures come into conflict with cultural, social and economic realities. Communities that seek to bridge gaps between western science and traditional ecological knowledge systems are faced with the challenges of two knowledge

systems that are value laden (Poirier and Brooke 2000). The problem with studies that integrate traditional ecological knowledge into western science is that it causes the compartmentalization, distillation and translation of systems based on two different ontological and epistemological principles (Nadasdy 1999: Poirier and Brooke 2000).

“All the current emphasis on Traditional Ecological Knowledge, though needed, reflects nevertheless a definite modernist concern, with epistemology, or with knowing rather than with being, neglecting the local ontological principles that inform systems of knowledge” (Poirier and Brooke 2000:79).

Such conflicts between knowledge systems often break down communication between agencies and communities.

Traditional ecological knowledge is not just a knowledge system, but rather a way of life. Poirier and Brooke’s work with the Inuit of Salluit illustrate how traditional ecological knowledge informs local people about their subsistence resources. Hunter-gatherers have a deep trust in the environment, despite the uncertain risk contaminants. The socio-cultural importance of local foods has continued in the Salluit community despite major changes in the last decades (Poirier and Brooke 2000). Eating habits embody the values and the identity of Native peoples. “Elders and senior hunters have a profound understanding and highly developed knowledge and capacity for detecting unfit [traditional] food in addition to an awareness of abnormalities and sicknesses occurring among animals” (Poirier and Brooke 2000:83). Local hunter’s confidence in their own knowledge causes them to become suspicious when biologists tell them that an animal that looks healthy could be

contaminated. This does not mean that they are not concerned about contamination but that they trust their own means for identifying edible and non-edible animals (Poirier and Brooke 2000).

Communication in Native communities is based on reciprocity where two systems of knowledge, values and practices on the land are considered on equal footing (Poirier and Brooke 2000). Western science has imposed itself on communities as the only source of un-biased information. In reality western scientist often justifies exposure to contaminants using scientific jargon, such as the measurement parts per million to describe acceptable levels of exposure to hazardous materials.

“The perceptions of risk change with time, sometimes because scientific research produces clear results, and sometimes because, on the contrary, scientific uncertainties cannot be dispelled, and a feeling of danger creeps in” (Agyeman et. al 2003:218). Environmental justice activists say that it is essential to minimize the amount time that the decision-making process takes to ensure action in communities faced with environmental problems (Arquette et. al 2002).

Participatory Research

“In environmental protection the most important task would not be to change cultural traditions but rather to improve informational and communication capacities” (Jänicke 2002:9). One way to increase communication capacities is through participatory research methods. Participatory research places community members as active participants in the process of knowledge-generation and elaboration, rather than

mere objects of someone else's study (Tandon et. al 2002). Participatory research brings scientists and local community members together to pursue a solution to a problem. It is an attempt to present people as researchers in pursuit of the answers to questions of their daily struggle and survival (Park et. al 1993; Tandon et. al 1988).

Participatory research is committed to the underprivileged as well as to social action, and enters into the political arena. Minority populations are often forced through their lack of access to the decision and policy-making process to live with a disproportionate share of environmental problems that impact their quality of life (Margoluis 2005). Melissa Checker argues that participatory models challenge the scientific paradigm, which asserts that accurate and reliable of information can only be found through the scientific method.

“Building participatory and community-driven research models... these efforts show how grassroots activists are challenging the notion that only empirical science is accurate or reliable, and asserting the value of experiential data. They recognize that science is fallible and that facts can always be disputed with more facts. Thus, they question whose representation of the ‘truth’ is ‘privileged’ and whose is ‘silenced’” (Checker 2000:186).

When researchers and community members form a partnership, they learn about the dimensions of oppression, the structural contradictions, and the transformative potential of collective action (Park et. al 1996). These social developments are people-centered, self-regulating organizations rather than the production-centered,

hierarchical organizations that treat people and the environment as external costs (Tandon et. al 2002: Korten 1984).

Participatory action research (PAR) extends beyond basic participatory research methods, as participants are encouraged to use their own research to formulate their own policy. “Proponents of participatory action research believe that people most affected have the most say in the ways that their own realities are analyzed and in the course of action taken to improve their condition” (Ervin 2005:221). Local people who are assisted by trained professional researchers as equal co-investigators conduct participatory action research. The idea is to eventually have the participants take over the research on their own. “Generally, the researchers have a very strong commitment to social justice and are more than willing to relinquish their influence” (Ervin 2005:222). Participatory action research faces challenges because non-traditional actors are conducting the research. The main method for the research is group discussion, which often delays the decision-making process and takes a great amount of patience on the part of the western researchers (Ervin 2005). These research challenges are outweighed by the benefits, the democratization of the decision-making process and community control over policies.

Map Making as a Participatory Method

Using participatory research methods such as participatory mapping is one way to work towards more equitable involvement of community members in planning, management, and decision-making processes. Chuenpagdee, Fraga, and Euán-Avila (2004) show that participatory practices where community members and scientists are

involved in a partnership arrangement, and where power is shared between governments and user groups, can be highly beneficial for both groups. During their work on a coastal resource management project in San Felipe, México, they found that, “many community members expressed strong interest in taking part in management activities, and that their local knowledge about the resources can be useful, despite their lack of formal training” (Chuenpagdee et. al 2004:160). In order for these types of partnerships to work to their full potential, trust and respect must exist within and between various user groups (Chuenpagdee et. al 2004).

Participatory mapping is a method used to engage local people in identifying their local natural resources and geography.

“A byproduct of the [GIS] methodology can be the emergence of *environmental democracy*- networks of associations across federal, state, and local organizations that facilitate coordination and cooperation for promoting community oriented collective actions towards the environment” (Parisis et. al 2003:216).

Developing participatory methods means overcoming stereotypes about local people. Bunyan Bryant points out that western scientists often make assumptions about the “smartness” of community groups believe them to be too emotional and too irrational to understand complex scientific issues. These assumptions make it difficult to develop constructive partnerships between communities and scientists. Providing opportunities for people to reclaim access in the decision making process requires an equal footing. Participatory research methods facilitate effective collaboration

between scientists and local community members to deal with environmental problems.

Social Movements

US government officials and agencies have disenfranchised native peoples from the political decision-making process. It is important to acknowledge that methods such as participatory research do not empower communities; they create opportunities for Native peoples to participate more fully. Native peoples have always been empowered by their land and their people. Land is the centerpiece in Alaska (Berger 1985). Economic and military development does not go unchallenged in Alaska because land is so valued. The value of the land extends beyond monetary worth. The land's highest value remains as a natural and cultural resource to the Native peoples of Alaska.

“Subsistence rights of the Iñupiat and other Alaska Natives have a long unwritten history closely linked to customs and codes ensuring the survivability of individuals, families, and villages: respect for the spiritual relationship with the land; and the need to conserve resources” (Chance 1994:177).

The rationale for exploiting these resources by the U.S. government or private industry is their monetary value.

During the last years of World War II, the modern age of Native American protests began, and it grew to maturity during the struggle against termination in the 1950's. In 1943, tribal leaders were urged to form a pan-Indian organization, The

National Congress of American Indians (NCAI), to lobby for and against particular legislation. Tribal delegates were sent to Washington D.C. between 1954 and 1970 to protest government attempts at termination. They lobbied to secure decision-making power for all programs that would affect their tribes. In 1964, the rise in activism by the Afro-American civil rights leaders motivated Native Americans to fight for subsistence and sovereignty rights. Native Americans of the Pacific Northwest staged “fish-ins” to retain rights to fish and hunt on their land. Several leaders from the Sioux formed the American Indian Civil Rights Council. The Indian Land Rights Association was organized to restore traditional tribal lands, condemning the idea behind the Indian Claims Commission that monetary settlements could ultimately satisfy all Native Americans grievances (Olson and Wilson 1984:160). The new pan-Indian activists focused on one major objective: tribal self-determination.

In the 1970s, Native American leaders were determined to restore tribal governments in order to retain real power over medical, educational and economic programs in their communities (Olson and Wilson 1984). During this period the combination of pan-Indian activism and growing interest in Native American affairs impacted Congress. At the end of the termination programs in 1970 “President Richard Nixon announced his support for an indefinite continuation of the federal government’s trust relationship with Native American tribes” (Olson and Wilson 1984:194). In 1978, the Indian Claims Commission expired and all outstanding cases were transferred to the United States Court of Claims. To satisfy demands of Alaskan

tribes, in 1971 Congress passed the Alaska Native Claims Settlement Act (ANCSA) (Olson and Wilson 1984).

When Congress passed ANCSA, it considered tribal governments to be an impediment to assimilation. The Act was to serve as a vehicle for circumscribing ownership and management of land, money, and corporate assets. It also sought to extinguish the aboriginal title that Alaska Natives held to their land as well as their right to hunt and fish on those lands.

“When a law stands between the Natives and their resources, when it does not take basic economic realities into account, when it conflicts with Native principles or beliefs, compliance with the law is low. Natives do not regard such non-compliance as lawlessness: they regard it as adherence to their own cultural traditions” (Berger 1985:65).

Environmental justice and human rights are often connected by their common cause, securing everyone’s rights to be treated fairly. Article 27 of the United Nations’ International Covenant of Civil and Political Rights specifically addresses the unique situation of Native or indigenous peoples to uphold the rights of a minority “to enjoy their own culture” (Berger 1985:180). This ensures peoples’ rights to the natural resources on their land and the stability of subsistence practices. Berger suggests that the question of ANCSA is not one of guilt, present or past, but the continuing injustice, and the distinctive feature of the injustices, past and present, which has been done to indigenous people (Berger 1985:182).

“The sovereignty movement has arisen from a positive sense of communal Native identity, and frustration with the present confusion of corporations, municipalities, and the plethora of state agencies that can be traced, directly or indirectly, to ANCSA” (Berger 1985:148).

Sovereignty in these communities gave Native people a forum to fight for rights to their natural and cultural resources.

Environmental Justice Case Study

The U.S. government tested 67 atomic and thermonuclear weapons in the Marshall Islands from 1946 to 1958. Some local people were relocated during the testing to avoid acute exposure to the nuclear blasts. Holly Barker, an anthropologist, describes the injustices, injury and death that the Marshallese’ have suffered as a result of the nuclear testing. She says, “The history of the Marshall Islands represents the extreme in colonial domination where the powerful decided that the powerless should sacrifice their health and their lands to science, medicine, and global political and strategic interests” (Barker 2004:153). The U.S. government research interests outweighed the concerns for the safety, health and well-being of the Marshallese people and their island. The U.S. government used their power to control or suppress information about the testing program so that local people were unable to seek compensation or support for their radiation-related injuries and damages. “Historical and ethnographic data demonstrate that the U.S. government ignored or covered up an array of knowledge critical to the Marshall Islands’ intersections with Cold War” (Barker 2004:156). Recognition by the U.S. and Republic of Marshall Islands (RMI)

of a more complete history of the testing program will show the full scale of injustices, injuries and damages experienced by the Marshallese. The cleanup, adequate medical care and compensation for the Marshallese are expensive but are only a fraction of the cost to cleanup domestic facilities like Hanford.

Baker's work points to the "fundamental concepts" in applied anthropology, working with communities to better understand local problems and help leaders to take steps to address them in culturally and locally appropriate ways. The research she conducted on the Marshall Island's used participatory action research methods with local people participating as participants and researchers. Local students were trained to collect, analyze, transcribe and translate data, which they used to later produce educational presentations about testing projects. Barker said, "involving local people in my research also provides me with a check to make sure that my investigations are of value to the communities" (Barker 2004:143).

CH. 4 Methods

My research techniques focus on the *emic* perspective often used by anthropologists, thus separating my research from previous investigations not done by anthropologists. The emic perspective looks to those inside the culture to inform those outside the culture. Anthropologists gain this unique perspective by conducting ethnographic interviews and participatory observation. Above all, anthropological studies seek to distinguish insider's categories and labels from those of outsiders; they seek to find insider's internal systems and beliefs. Three features of culture are: 1) culture exists in people's minds and is expressed through what they say and do; 2) culture consists of perceptions and interpretations; and 3) culture is the mechanism through which human beings interact with their environment (Milton 1996:66). The anthropological approach can offer a more holistic interpretation of environmental problems, contributing to more inclusive environmental discourse. Each culture is unique in the way in which it approaches the natural environment; therefore it is necessary to understand the cultural context of environmental problems.

Before arriving on St. Lawrence Island, I submitted letters to the leaders in Savoonga and Gambell to request permission to come to the island and conduct this research. They granted permission and ACAT helped create a list of potential local residents who would have knowledge about the contaminated sites and/or the clean-up of those sites. Viola Waghiyi made contact with several local residents by telephone to introduce the research and inform them about La Belle and my arrival. Our goal

was to interview, separately or in small groups, 20-30 individuals (15-17 from each village) and collect geographic data about the contaminated sites.

Local residents had raised concern to ACAT about contaminated sites and other debris not documented by the U.S. Army Corps of Engineers. Documentation of these sites was a priority during our field research. We also posed the following questions to local residents during the research: 1) What role has the local community played in documenting the contaminants on St. Lawrence Island? 2) How has the local community been impacted by the occupation and clean-up activity by the DOD over the past 40 years? and 3) How does the community perceive the effects of contamination? I asked these questions with the intention to collect ethnographic data about local residents' perceptions of the contaminated sites.

Ethnographic literature has long elicited a sympathetic understanding of the people being studied, putting anthropologists in a position to become advocates for these communities. Alexander Ervin calls this "Advocacy Anthropology", defined as "work to strengthen the representation of marginal groups and to help laypersons overcome barriers to more meaningful participation in society" (Ervin 2005:139; Schensul and Schensul 1978). The idea is to provide the very best evidence to support a position through the stages of the advocacy (Ervin 2005). In this case the findings of this research will be returned to the communities on St. Lawrence Island and to ACAT to demonstrate the need for adequate and complete clean-up of the contaminated sites.

In order to provide the "best evidence", the sample population for this research was limited to persons over the age of eighteen years old who had knowledge about

the DOD occupation or clean-up efforts. This initial group of participants included people involved in a range of activities, from Alaska Territorial Guards who served during the DOD occupation to Village Health Aides who treated local residents exposed to military contaminants. Viola Waghiyi contacted community members by telephone to explain in Siberian Yupik the purpose of our trip and the information we were interested in gathering. On the island we contacted each person by telephone to request an informal interview. Upon our arrival to the island, local residents made additional recommendations for potential residents to interview in the communities. This type of sampling is called “snowball sampling”, used in studies with difficult-to-find populations (Bernard 2002). The limited time frame required us to rely on local residents to identify individuals in the community who had first hand knowledge. This procedure yielded a large number of interviews in a short amount of time, providing a wide range of perspectives.

We interviewed twenty-eight people⁵ during three weeks (nine days in Savoonga and twelve days in Gambell). Seventy-five percent (N=21) were male and twenty-five percent (N=7) were female. Participants ranged in age from 30-80 years of age and held a variety of positions in the community (see Table 4-1). In this patrilineal society, men hold jobs outside the home more often than women. Many of the men held positions in the Alaska Territorial Guard or in the tribal government, and/or worked on the physical clean-up of military debris. The women worked as former or current health aids and one woman worked on a DOD contaminated site.

⁵ The Oregon State University IRB approved this research in June 29, 2005.

These occupations are consistent with the traditional roles of men and women on the island. Men are hunters who are familiar with the natural resources and surrounding area; they took jobs that utilize these skills. Women traditionally stay at home and are caretakers of family and community; they took jobs as Village Health Aides. Our sample had a higher number of men because the information that we sought was related to the buried and abandoned materials from the contaminated sites where men had worked.

Table 4-1 Participants interviewed during this field research and demographic information.

Pseudonym	Village	Age	Gender	Comments
Allen	Savoonga	40-50	M	Family closely associated with NECape
Donald	Gambell	50-60	M	Former I.H.S. worker
Doug	Gambell	60-70	M	Elder
Ethan	Savoonga	50-60	M	Elder, NG
Evan	Savoonga	60-70	M	Elder, Family closely associated with NECape
Fred	Gambell	40-50	M	Clean-up crew at NECape
Greg	Savoonga	50-60	M	RAB member
Harry	Savoonga	60-70	M	Elder, NG
Ian	Gambell	30-40	M	NALEMP crew
Lou	Savoonga	40-50	M	Clean-up crew at NECape
Murray	Gambell	60-70	M	Elder, former military personnel
Nancy	Savoonga	40-50	F	Former Village Health Aide
Nathan	Gambell	70-80	M	Elder, former military personnel
Neil	Gambell	40-50	M	Community Liaison
Norman	Gambell	70-80	M	Elder, former military personnel
Oliver	Savoonga	40-50	M	RAB Member
Olivia	Savoonga	60-70	F	Elder, family closely associated with NECape
Pauline	Savoonga	50-60	F	Elder, Former Village Health Aide
Peter	Savoonga	50-60	M	Clean-up crew at NECape
Reese	Gambell	40-50	M	City employee
Robert	Savoonga	50-60	M	Resource Manager
Robin	Savoonga	40-50	F	Former Health Aide
Rose	Gambell	40-50	F	Former Health Aide
Roy	Savoonga	50-60	M	Elder
Ryan	Gambell	30-40	M	City employee
Seth	Gambell	50-60	M	City employee
Hugo	Savoonga	40-50	M	Worked at NECape
Zoe	Gambell	30-40	F	Village Health Aide

This research used semi-structured interviews or “dialogue” (Park et. al 1993), intended to allow participants to open up and express themselves in their own terms and at their own pace but at the same time focusing on the topic. We developed an interview guide, consisting of a set of questions and topics to ensure reliable, comparable qualitative data (Bernard 2002). The interviews lasted anywhere from forty-five minutes to two-and-half hours. Twenty-five of the twenty-eight interviews were recorded with a digital audio recorder. The remaining three interviews were recorded with hand written notes as requested by the participants. After each interview we wrote a brief summary to highlight the major themes and additional questions to consider.

In addition to the semi-structured interviews, we conducted participatory mapping. Participatory mapping⁶ is a research method that uses “the practice of the people in the community taking part in the research process as active members” (Park et. al 1993:10). A USGS map and aerial photographs were used to identify the location of military debris, contaminants and the location of subsistence foods. A sheet of mylar was laid over these maps of St. Lawrence Island and aerial photos of the village for participants to mark with a pen the location of important features. In Gambell a key participant who knew a lot about the local culture (Bernard 2002:187) helped to collect geographic data about the contaminated sights using a global positioning system (GPS). While collecting GPS data, La Belle worked on photo documentation of the debris as well as the participatory mapping.

⁶ See Appendix A for more information on Participatory mapping and a further description of its use in this research.

Our data were entered into a geographic information system (GIS) to produce a comparative map, showing the boundaries of contaminated sites as designated by the U.S. Army Corps of Engineers and their contractors, as well as the boundaries of contaminated sites as designated by local residents. Thus, we specifically identified local residents' knowledge of the buried hazardous material. Our key participant who worked on the mapping had extensive knowledge about the buried military debris and contaminants because he had spent many years interviewing elders about the location



Figure 4. In Gambell collecting GPS data of buried debris in the field with Neil. (Photo taken by La Belle Urbanec, 2005)

of these materials. In addition, the key participant brought maps and photos to elders who could not physically travel to the contaminated sites to ask them to identify the

location. Then we used the GPS unit to collect geographic data on contaminated sites and debris in the field.

In collecting data on St. Lawrence Island we used triangulation, a methodological principle that employs a combination of techniques (Ervin 2005). I used three data collection techniques: document review, semi-structured interviews and participatory mapping. In this way I was able to collect both qualitative and quantitative data about the perceptions of military contaminants on St. Lawrence Island. This concurrent procedure combined qualitative and quantitative data to provide a comprehensive analysis of the research problem (Creswell 2003).

I transcribed and indexed the audio-recorded interviews. Using inductive or “open” coding, I identified categories and concepts as they emerged in the text. This coding technique is grounded in the data and allows understanding to emerge from the transcripts (Bernard, 2002). I submitted a draft copy of the initial findings to six participants, three in each village, for review and comment. Each participant received a draft copy of the report, along with a self-addressed stamped envelope, phone card and a letter from me stating that they could submit their comments by mail, by telephone conversation or by email. This opportunity for local people to review the report before publication was important for accuracy as well as maintenance of trust between the community and researcher. Historically communities had little or no control over what outsiders wrote about them.

Next, I combined GPS coordinate data with geographic data provided by the U.S. Army Corps of Engineers and United State Geological Survey (USGS). A rough

draft copy of the data was completed using a variety of GIS and image processing programs including: ArcGIS 9.0, Auto Cad, MicroCam, Macromedia Freehand and Adobe Photoshop. I sent this map to a key participant for review and corrections. The mailing included a return postage so that the participant could send the draft map back with corrections.

Consistent with the advocacy approach, participants were involved at each stage of the process of research to provide guidance and advice. Peter Parks says that in participatory research the real investigator is not the traditional researcher but “rather it is the ordinary people with problems to solve who form a partnership with the researcher, for learning about the dimensions of oppression, the structural contradictions, and transformative potentials open to collective action” (Park et. al 1993).

CH. 5 Findings

During a two week period in September 2005, I interviewed twenty-eight St. Lawrence Island community members from Savoonga and Gambell about the Department of Defense (DOD) activity on the Island during the war, after the DOD sites were closed, and during the cleanup of those sites. The information in this chapter is organized according to the themes that I identified in the community interviews: 1) immense cultural value of land; 2) the contaminants left behind by the DOD; 3) negative impact of contaminants on local subsistence; 4) local perceptions formed by the DOD dumping; 5) continued exposure due to lack of contamination information; and 6) active community response to contaminated sites. These themes reflect the value system of the St. Lawrence Island communities, which contributes to their perceptions and action.

Immense Cultural Value of Land

The traditional name of St. Lawrence Island is *Sivuqaq*, translated as “to wring out”. I was told by a participant that the name comes from the Island’s creation story. St. Lawrence Island was made by “the creator” when he reached into the sea and took a handful of gravel from the bottom and wrung it out, creating the land. Today you can see the imprints of “the creators” hands all around the island’s coastline. This story illustrates the local belief that god or “the creator” gave the land to the people of St. Lawrence Island.

The land connects the people of St. Lawrence Island to their ancestors, their culture and their food. Lou, a Savoonga resident involved in the cleanup at Northeast Cape, describes the peoples' relationship to their land:

“Everything [my grandparents] taught me just came back to me, that God put us all here for a purpose. They taught me that our ancestors since time immemorial, that God put us here to be the caretakers of our mother earth, protectors of our mother earth and all of the beings that live in it. Grandfather said that the land could not be given away, signed away or diminished in any way shape or form. Sovereignty is a given right to the four brothers in the world: east, west, north and south: four brothers we believe in.” (Interview with Lou, 2005)

He points out that local people see themselves as “caretakers” of the land, a responsibility given to them by god and carried out by their ancestors.

Local residents' feel a responsibility to protect their land also as 'caretakers' of the animals that inhabit the land. Fred, a resident of Gambell and cleanup crewmember, illustrates the importance of the land for migratory birds and sea mammals:

“[St. Lawrence Island is the] most important island in the Bering Sea; it is almost like a roadhouse for all the migratory birds. In the spring time the birds and marine mammals stop to rest and feed, continue on. If something happened in the fall migration, they stop around. All the animals' of concern are here, this acts like a roadhouse for the animals from the sea- lots of them have their young here.” (Interview with Fred, 2005)

The local people understand the important role that the land plays in migratory patterns of birds and sea mammals. Therefore, they feel that they are responsible as 'caretakers' of the land to protect the territorial habitat so that the birds and sea mammals can feed, rest and have their young on the Island.

The term used to characterize the food gathering lifestyle of the St. Lawrence Islanders is “subsistence”. In English this term identifies them as a hunter-gatherer community. Ryan, a Gambell city employee, points out the limitations of this term:

“I don’t really like the word subsistence; it does not give our livelihood or way of life justice. It is pretty weak in comparison to how we live out here.” (Interview with Ryan, 2005)

Murray, a Gambell elder, uses the term in a context that describes a social system rather than simply a food gathering activity:

“Everybody here helps each other; it does not matter who you are, [you are] still helped. It is our custom; it is our way of life. Subsistence is our life out here; it is our lifestyle so we help each other. Regardless of who is not in our families we help. That is why we are here today.” (Interview with Murray, 2005)

When local people use the term ‘subsistence’, they are referring to a larger social, ecological and spiritual system that sustains their community. Part of this system is the hunting and gathering of local resources for food, but the other part is the local ‘lifestyle’. Local people believe they are the caretakers of the land and all the living things on their land. They are responsible for the habitat that birds and sea mammals use for their migratory patterns. In turn these animal populations are maintained so that local people can hunt them for food. This food is distributed among all people in the community to ensure their survival and their continued stewardship of the land. This cycle connects the land, animals and people together, all reliant on one another.

The Contaminants Left Behind by the DOD

In the 1960's, the Russian threat subsided and the DOD no longer needed the large military camps on St. Lawrence Island. The former military sites were closed and all the building and materials were left behind or buried:

“When [the military] decided to close their radar sites, tension between us and Russia softened up, they left. When they left they only took their rucksack [filled with their military and civilian clothing] and rifle. That is all they took.” (Interview with Norman, 2005)

Local people observed the closure process, including the departure of the military personnel. The only items that were removed from the sites were personal belongings; the DOD buried materials in Gambell and left materials on the surface at Northeast Cape because it would cost the government more to remove the materials from the island.

The materials that were buried in Gambell include (but are not limited to): all terrain vehicles (tanks, weasels and cats), structures (Quonset huts), electrical devices (transformers), generators, marston matting, communication towers, oil drums, ammunition, petroleum products (diesel, stove oil, transformer fluid, and gasoline), water purification equipment, and food. As the population of the Gambell village grew, new houses were built on top of the buried debris. Local residents who occupy these houses report health problems from the buried materials. The contaminants associated with these burials are: Diesel Range Organics (DRO- petroleum products), arsenic (metals) and PCB's (transformer fluid).

Military personnel disposed of petroleum products (diesel fuel, gasoline, and stove oil) in Gambell during the site closure process. They punctured holes in the sides of the barrels and the contents drained into the gravel:

“At the time the army had 30 million gallons of oil, stove oil and diesel. They punched holes [of] sides, the barrels, and drained it into the ground” (Interview with Norman, 2005)

A military sergeant told Norman that the DOD had a ten-year supply of petroleum products on the island, in case the military was cut off from the mainland. Norman estimated that 30 million gallons of petroleum products drained into the soil and has accumulated under the new housing. Local people are concerned about the diesel range organics from the petroleum products, which can be dangerous when



Figure 6. In Gambell, barrels unburied by the local clean-up project (Photo taken by Kai Henifin)

inhaled as VOC (Volatile Organic Compounds). These contaminants are trapped underground in the permafrost most of the year, but as the soil warms up residents report smelling the petroleum.

Some empty barrels were buried in the Gambell village while others were loaded onto boats, taken out to sea and dumped. Murray, an elder in Gambell remembers the removal of the barrels from the island:

“[The military filled] out these big LSD’s, they call them, then they went to the southwest about 300 miles from here; then they released [the barrels], sunk them in the ocean, three or four times. To clear out most of the empty barrels that were left behind.” (Interview with Murray, 2005)

Another elder in Gambell, Norman, remembers this same incident. He reported that they carried 350,000 barrels. These barrels were dumped into the ocean just southwest of Gambell. Residual petroleum products and the metal barrels (containing arsenic, mercury, lead or zinc) contaminated the local marine resources and environment.

The buried debris under the gravel in Gambell has caused a variety of health problems. Donald, a Gambell resident and former city employee, talks about dealing with the buried debris:

“There are materials under the new houses. They were working on that water and fuel project, the pipe line... we had to have another four hundred feet of pipe to go around because of the junk and the debris.” (Interview with Donald, 2005)

“Gambell is growing, we are heading towards the mountain. What people want to do now is to have everything cleaned out before we build houses over it.” (Interview with Norman, 2005)

The city crews have run into the buried debris during many of their construction projects. Debris makes it more difficult to put in basic city infrastructure. They have encountered debris under the new houses, the new high school, the washeteria (city water facility), and the city snow fence.

Local people in Gambell are also concerned about unexploded ordinance buried around the village, particularly in Troutman Lake:

“They [left] a lot more ammunition; they throw a lot of it in the lake, down here. Some of our local divers, see them down there, they wear snorkels and see them down there. It is only 7-8 ft. of water at this end (north end), this side is all shallow. So the ammunition is still down there in the bottom of the lake.” (Interview with Norman, 2005)



Figure 7. In Gambell, a military tank unburied by NALEMP (local cleanup) project in summer 2005. (Photo taken by: Kai Henifin)

The U.S. Army Corps of Engineers subcontractor investigated the community’s concerns of unexploded ordinance but none were found. All around the village 30 and 50 caliber shells are mixed in with the gravel, along with scattered ammunition cases found on the surface. The military ammunitions have a full metal (steel) jackets, which means that it is not a hazard unless discharged from a gun. Even though the ammunition is not a direct hazard, eight out of thirteen Gambell residents identified it

as military contamination. The ammunition cases are a visible eye sore that the community wants them removed.



Figure 8. In Gambell, 30 and 50 caliber shells found on the south end of Troutman Lake (on the left). A military issue ammunition case, found in the Gambell village (on the right). (Photos taken by: Kai Henifin)

When the military closed the site at Northeast Cape, they left an abandoned the base buildings and materials on the surface. The debris left at Northeast Cape were similar to those buried in Gambell, including (but not limited to): all terrain vehicles (tanks, weasels, and cats), buildings (plywood, asbestos panels, cement pads and Quonset huts), electrical devices (transformers), generators, marston matting, communication towers, oil drums, ammunition, petroleum products (diesel, stove oil, transformer fluid, and gasoline), water purification equipment, and food. The contaminants associated with these sites are: Diesel Range Organics (petroleum products), arsenic (metals) and PCB's (transformer fluid). The primary concern at Northeast Cape is PCB contamination in the Suqi River and drainage basin. Residents of the Northeast Cape village were relocated after the military sites were closed.

Average blood serum levels of Island residents tested for PCB's (polychlorinated biphenyls) show the persistence of organic pollutants that stay in the body and environment for a long time and travel long distances. The PCB levels in St. Lawrence Islanders are six to nine times higher than the national average, with the highest levels in the Savoonga residents who hunt and gather near the Northeast Cape site. PCBs are linked to cancers in the liver, skin and intestines.

Negative Impacts of Contaminants on Local Subsistence

Military contaminants also have broader impacts on local subsistence resources. Roy, a resident in Savoonga who lived at Northeast Cape, talked about the dumping that took place while the military was active. He describes his memories of living at Northeast Cape with his parents during the occupation:

“When [the military] spilled the oil, they just pumped it out to the ocean. The soil was all soaked in oil. Everything was just soaked with oil; when they pumped it out, a bunch of ducks died. Half a day they would dump it; all that fuel went down. We could not eat the seal because it was soaked with oil. We couldn't eat fish either.” (Interview with Roy, 2005)

Roy and his family lived in the village just north of the U.S. military site at Northeast Cape, and when oil was pumped out into the ocean in front of the village the local resources were contaminated. Two major subsistence foods, seal and fish, were covered in oil and inedible. Seals and fish are important resources in the community, used for a variety of purposes ranging from food to raw materials (used in art, clothing, etc.).

Local people lived off what they could hunt and gather locally. When these resources became contaminated, they had to look for other sources of food. Lou

describes the alternatives people resorted to when subsistence years were bad or the food was contaminated:

“One thing I look at and get mixed emotions on is... most of the people who lived there at Northeast Cape were very poor and some years the subsistence or something was very hard. And so, [the military] would dump the daily trash at the dumps, the whole village would go there... every man, women and child and just scrounge through there and eat whatever we can eat.” (Interview with Lou, 2005)



Figure 9. In Savoonga, whale jawbone being cleaned before the bone and baleen are used. Behind the jaw bone is a seal blind used by hunters, who hide inside until a seal comes onto the beach and is within striking distance of the hunter. (Photo taken by: Kai Henifin)

Nine of the twenty-eight research participants recounted their memories of going to the military landfills to gather food. When traditional sources of food and materials

were unavailable, the people used military dumps to supplement their diet and local resources.

Sea mammals are a central part of St. Lawrence Island culture. Culturally hunters are major key providers of a valuable resource in the communities; sea mammals in particular are highly prized. Donald, a Gambell resident who is a whaling boat captain, talks about the condition of meat:

“If I don’t like the condition of the food content of what we caught I am not going to bring it in, that would make me a bad hunter. It would make me a bad person. I only bring the good stuff, like it or not.” (Interview with Donald, 2005)

Hunters would never provide subsistence foods impacted by contaminated into the community lose respect; therefore, it is important for hunters to be selective. A hunter who brings back unhealthy meat will be seen in the community as a poor hunter and provider; his reputation will be questioned.

Selection of animals is based on the hunters’ traditional knowledge of sea mammals. They are able to distinguish a healthy animal from an unhealthy animal based on their experience and knowledge:

“We caught one walrus, looked perfectly healthy, fat walrus and we killed it. There were no lumps on it anywhere and one of my crew members was working on it, we cut it open and there was like ... mass puss, like some kind of milky color. We did not want anything to do with that walrus, so we took the tusks out. We’ve never seen one like that before.” (Interview with Lou, 2005)

“Once in a while [the hunters] will run into something unusual; some of the organs are deformed. A bearded seal was green and slimy all over inside of the torso”. (Interview with Ian, 2005).

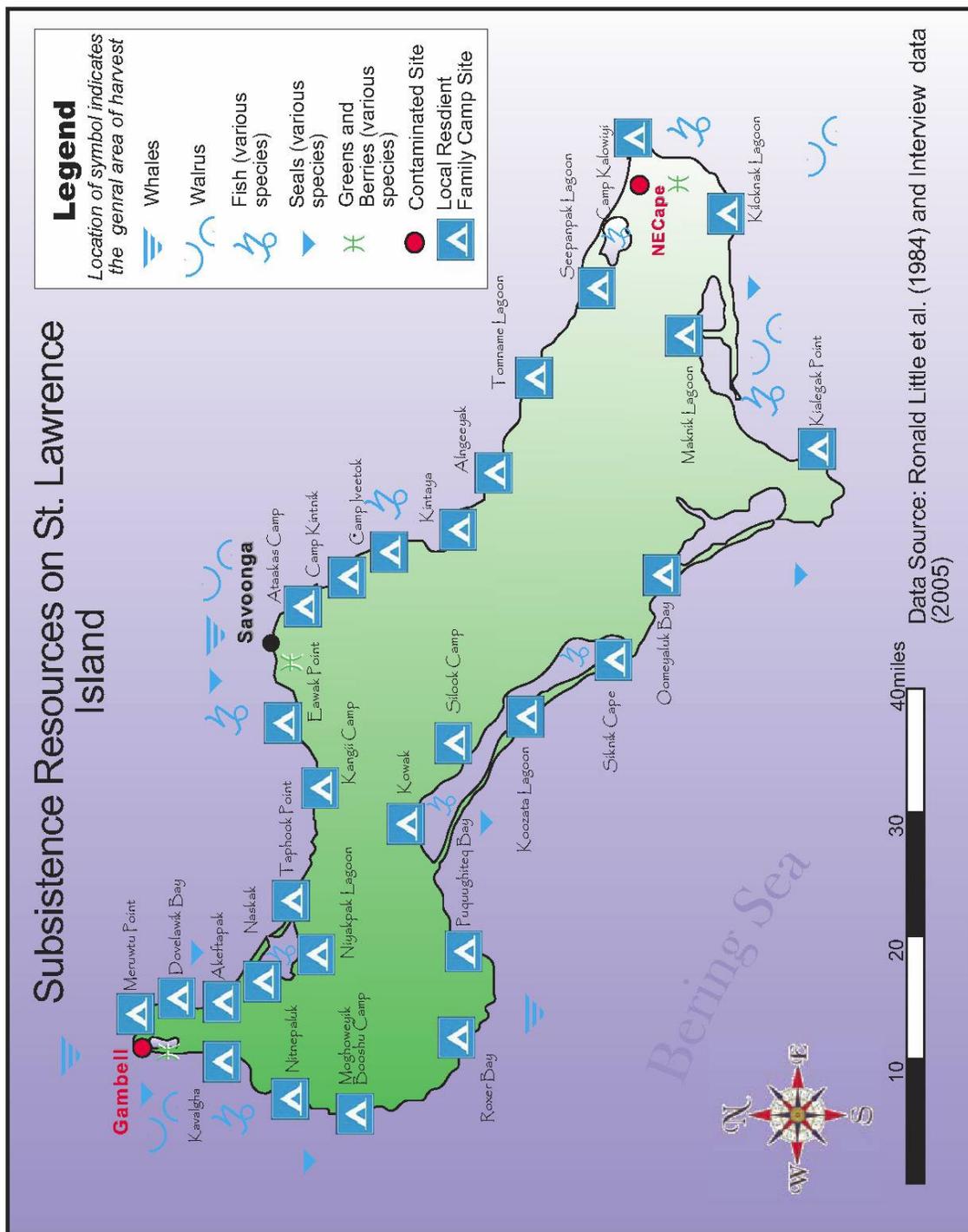


Figure 10. A map of subsistence Resource on St. Lawrence Island in proximity to the DOD contaminated sites. (See metadata in Appendix A)

Though some animals appear healthy on the outside, when butchered at the kill site, some are found to have unusual qualities. For example hunters reported seeing a walrus with three tusks, a baby walrus born without flippers, puss in the female walrus mammary glands, puss in the walrus' and seal's stomach and intestines, and skinny walrus and seals. The local hunters know these animals are unhealthy and not good for people to eat, and they do not bring them back to the island. They have directly observed such changes in animal health.

Sea animals are not the only subsistence food that has been affected by the DOD contaminated sites. Greens and berries, commonly gathered by women, have also been impacted by the DOD activity on the island. Olivia, a Savoonga resident who lived at Northeast Cape when the military was active, talks about picking plants in the area:

“I never picked any [greens] out [at Northeast Cape]; trucks go back and forth, stuffs all over, that's why I don't want to pick up anything.” (Interview with Olivia, 2005)

Olivia was aware that the dust on the greens and berries near the contaminated sites was harmful. Later, scientific studies showed that the greens and berries near roads were covered in dust laden with PCB's. She did not need to be told by scientists that these plants had been exposed to contaminants and therefore should not be picked.

Local Perceptions Formed by the DOD Dumping

During my interviews I found no evidence to validate the assumptions made by the government agencies doing the cleanup that the St. Lawrence Island people are angry that the DOD came to their island. The information that I received from the

community was that they have always acted in support of the military. This point was reinforced to me by a research participant, upon their review of a draft copy of this thesis. He pointed out that the community holds no resentment towards the U.S. military, and that its members have been very cooperative during the DOD cleanup. He stated that the government agencies are unconcerned with completing the cleanup and their assumptions about local people are incorrect.

Local people's perception of the U.S. military and the DOD cleanup reflect frustration as a result of the process of site closure and the slow response in starting the cleanup:

“I want to say that, that the military was here for national security and that I have no qualms with it. I am glad the military was here because they came to defend our people, but it is the manner that they left. It was too long before there was any action. That was our peoples sacrifice; our people volunteered to defend our country, but it does not do them justice to have that long go by from the time when the military left until they started cleaning up, to much time passed before there was anything done.” (Interview with Ryan, 2005)

Local people supported the wartime military occupation of the island. They volunteered as Alaska Territorial Guards (ATG) during this period, willing to serve in the U.S. military to defend their people and land. The issue that local people have with the U.S. military and government agencies is that they left contaminated materials on the island and they took a long time before they began cleanup work.

Lou illustrates the community frustration with the DOD's treatment of local people after the war:

“I believe that this island played a critical role in deterring Russia from even thinking of trying to sneak through Alaska. So, it is typical of how this country treats the minorities, such as us, our people.” (Interview with Lou, 2005)

The people of St. Lawrence Island have supported the U.S. military, and are proud of the role the Island played in defending against foreign invaders. But in return they feel that government agencies, have given them “typical” minority treatment. This treatment refers to the lack of credit given for their efforts in the war as well as the lack of power they have in the clean up process of the contaminated sites.

The Wastefulness of the DOD

During the site closure in Gambell, local people watched the military bury everything from their camps. The site closure left a lasting impact on them. Doug, an elder from Gambell, points out how local people could have used the materials that were buried:

“They just dismantled their camp-site and buried it.. I guess there were a couple of good size generators that they could have given away. If they had, they wouldn’t have to drain all that diesel; could be used to run the generators. I don’t see why they did not do that.” (Interview with Doug, 2005).

Local people living on the island during the base closure could have used many of the items that were buried, including: food, medicine, water purification systems, electronic equipment, and all terrain vehicles. Ian, a Gambell resident and a current cleanup crew-members, expresses his feeling about what was left by the U.S. military:

“It is kind of amazing what [the military] done, I guess everything was fairly new and in working condition, and they just buried it. From some of the people in the community that were around they talk about, that a lot of stove oil or diesel fuel was also there and available and some of them kind of wonder why [the military] did not hand it out to the people of Gambell for them to use.” (Interview with Ian, 2005)

Local people perceive the burial of equipment in new or good condition, to be wasteful and selfish. The community questions why it had to be buried when they

could have used it. If the DOD gave the St. Lawrence Island residents the generators and the fuel to run them, they would not have had to dump it or buried it, thus avoiding the cost of contamination.

Lack of Information about Contaminants

One of the first things I noticed on the island was that local residents relied on each other for day-to-day information about local activity. In every household there was a CB (citizen's band) radio with people chattering back and forth. Because most of the conversations were in Yupik, we did not know what was said, but it was obvious that they were an important part of the daily activities. In a community involved in daily communication with each other about activities on the Island, it is understandable that the lack of knowledge about the impacts the contaminated sites would make them very fearful.

In the early 1970's information about the harmful effects of chemicals such as PCB's, asbestos and heavy metals on human health became public knowledge. The St. Lawrence Island people were unaware that they had been exposed to many of these contaminants, and they became very fearful when they found out that these chemical were on the island:

“Back there in '63 we did not know these chemicals that are not good for humans, like PCB or something like that. But later on we find out that it is very bad. These transformer oils that were in there are the bad stuff that they put in there, back then, not knowing that it was bad. Later we find out that they were not supposed to be touched.” (Interview with Murray, 2005)

The transformer fluids contain the toxic chemical known now as PCBs, which were banned by the EPA in 1978 because they cause cancer. Scientists discovered that this chemical can be absorbed through the skin when humans come into contact with it.

Before people were warned that PCBs were harmful to human health, local people had been exposed. Doug describes how he was exposed to these military contaminants:

“I spent some time over at [Northeast Cape] I was very young, before high school I still remember playing in the muck over there, in their stew of oil and chemicals, who knows what is in the drums. I was in there playing, stepping on this muck and without knowing how harmful it could be.” (Interview with Doug, 2005)



Figure 11. Northeast Cape former base, before the U.S. Army Corps of Engineers building removal project in 2004-2005. (Photo published by Alaska Community Action on Toxics)

At the Northeast Cape site where the buildings and debris were abandoned, local people came into direct contact with military contaminants (PCBs, mirex and asbestos). Later these chemicals were banned by the EPA.

Reports and presentations given to local people about the DOD cleanup, say that the chemicals and materials in the contaminated sites are not harmful to human health:

“[Army Corps of Engineers] say there is nothing to fear about contamination, about everything that [they spilled] or left behind.” (Interview with Murray, 2005)

On the other hand, outside researcher indicate the harmful effects of these materials on human health. Conflicting information causes the community to feel frustrated and confused.

Another long-term exposure problem for local people is from building materials salvaged from the Northeast Cape contaminated site. Local people who needed plywood or insulation panels, salvaged building materials from these sites. People brought contaminated materials to many of their campsites and homes around the island:

“The people in the village did not know what was in the military site; they took plywood with asbestos. They moved some of this material to Savoonga and their camps. People do not want to give up the building materials.” (Interview with Allen, 2005)

“[The DOD] left some of the wall and the floorings that were used in some houses. We did the same thing to our house, added another 10-12 ft, behind our house with the help of plywood and two-by-four’s out of the old army camps after they abandoned them.” (Interview with Seth, 2005)

Contaminated materials have been integrated into structures and have been exposing people to contaminants for twenty or thirty years:

“Whatever you took from [former military site] and you used it to build a cabin or something, [the U.S. Army Corps of Engineers] can’t touch it because it is already, gone” (Interview with Hugo, 2005)

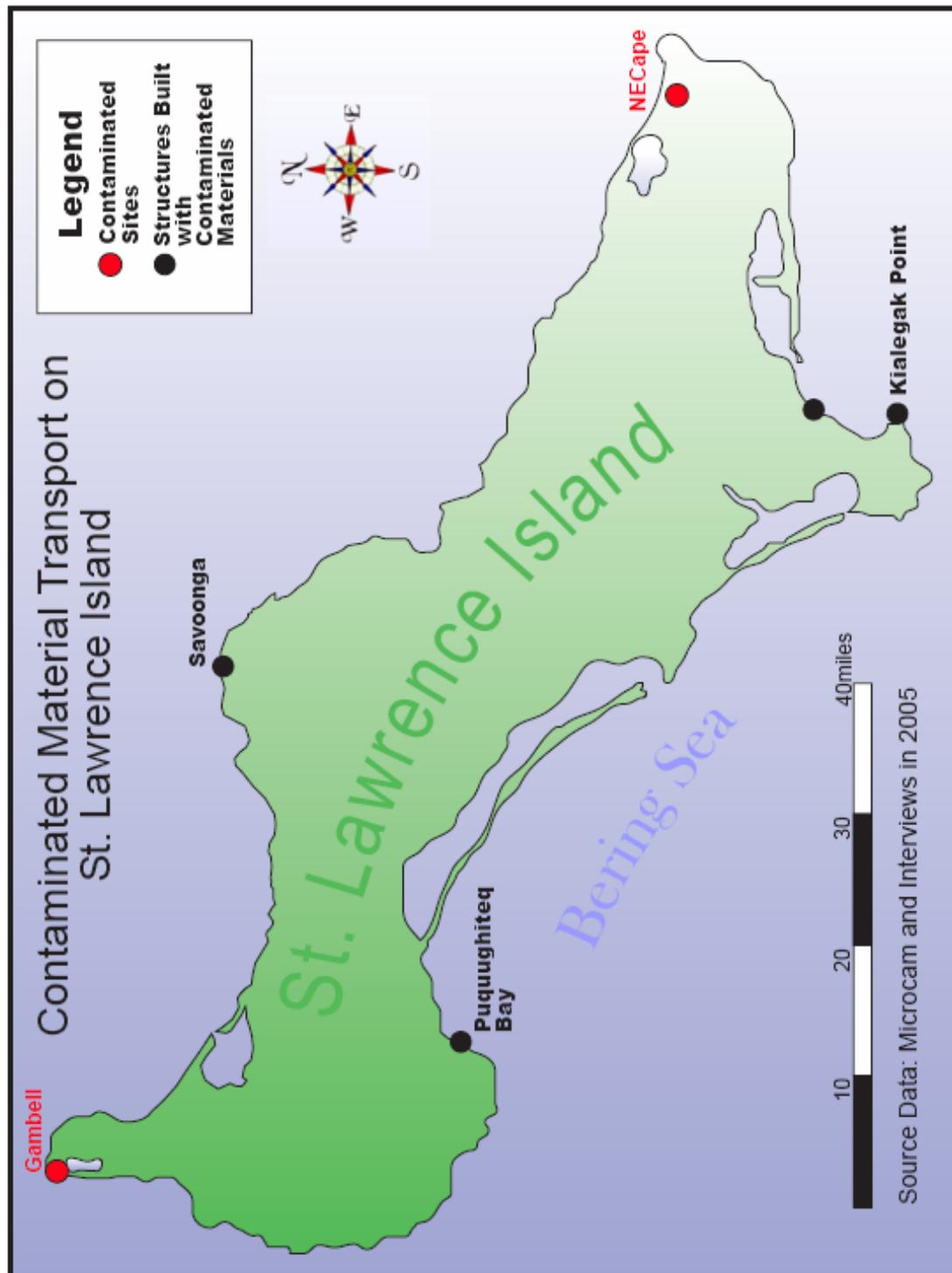


Figure 12. A map showing the distance building materials traveled from the Northeast Cape contaminated site to other locations around St. Lawrence Island. (Data from interviews with Robin, Robert and Larry in 2005) (See Metadata in Appendix A)

The US Army Corps of Engineers will not cleanup these materials because they are out of the scope of work.

Local residents who helped to tear down the buildings in Gambell and Northeast Cape were exposed to asbestos. Many of the people who did this work died of cancer:

“A lot of those guys that tore down those buildings that were there, they’re dead now, of cancer. Maybe they inhaled that asbestos or something, you know. I understand that it was infested with it, asbestos, all those guys that worked on it.” (Interview with Lou, 2005)

This is an example of why people associate exposure to contaminated sites with increased cancer rates in the St. Lawrence Island communities.

The DOD argues that there is no scientific evidence linking tearing down buildings to cancer. Therefore, they do not acknowledge that the increase in cancer rates is a result of contaminated sites; instead they point to exposure to a wide range of chemicals including those found in cigarettes. This argument is problematic because local people say they smoked cigarettes before the military came to the island when there were lower rates of cancer. However, no consistent medical reports were kept because there was never a permanent physician on the island. In the past year ACAT has worked with community researchers to collect family medical histories from local residents, to document change in human health on the island.

The community has worked to gain better understanding and knowledge of the impact of the contaminants to their environment and health by becoming members and getting involved in the advisory board meetings held by the Army Corps of Engineers:

“[The advisory board’s] job is to try to inform as many people as possible, from all these massive documents that were being generated by the Army Corps of Engineers. But then we found out that we could not understand any portions, there were some portions [that we could understand], but not the main portion of the document.” (Interview with Oliver, 2005)

This participation has been partially successful; people are still dissatisfied with some of the cleanup process. The advisory board meetings function as a forum for information to be presented by the government agencies involved in the cleanup to the local people. However, much of the information is not understood by local people. A scientist from State University of New York (SUNY), Dr. Ronald Scrudato, was selected to help the community interpret the documents, but he lives in New York and cannot attend many of the meetings.

After fifty years of interaction with the DOD, the St. Lawrence Island communities have developed perceptions based on their knowledge and experiences that have impacted their current actions with the contaminated sites. The high value that local residents place on their land and their communities’ shows in their efforts to hold the DOD accountable and ensure a adequate and complete cleanup. The assumption that the St. Lawrence Island residents are resentful about the occupation by the DOD is a misinterpretation of the frustration and hurt that they feel about the contamination left on their island.

Active Community Response to Contaminated Sites

The residents of St. Lawrence Island now understand that the DOD has left them with hazardous contaminants and debris. Concern about the human health effects linked to these debris and contaminants continues to be an important issue.

One of the first people to speak out against the DOD contaminated sites was a former health aide from Savoonga, Annie Alowa. When she worked as a Village Health Aide on the Island, she became very concerned about increased cancer rates in Savoonga and Gambell after the military left. Annie tried to talk to the government agencies about what they could do to help her community, but she received no response. Then she met Pamela Miller, now the director of ACAT, and they began working together to identify the DOD contaminated sites on St. Lawrence Island:

“In ‘88 and ‘89, we just started seeing people dying, and stuff like that. Annie Alowa was furious about the contaminants, the landfills and stuff like that they dumped over there. She died of cancer. She wanted to fight against what was going on over there.” (Interview with Allen, 2005)

Today the community carries on Annie’s fight to hold the DOD accountable for the contaminated sites. Including community health aides, debris cleanup crews, and community researchers.

There are widely varying perceptions in the local community about the contaminated sites as a result of their different experiences. Fred has been a part of the local cleanup crew in Gambell, and he has no confidence in U.S. Army Corps of Engineers work:

“I learned one thing, after working for three summers; nobody can completely clean-up what was in the making for 24 years, in a matter of a few summers. I don’t think anybody could do this, to do any cleanup, in a short period of time with limited funds. Whatever is over there is in the making for 20 years.” (Interview with Fred, 2005)

Fred described the problem with hiring outside contractors to work during the short summer season. Funding for the cleanup is limited and a lot of the money goes into bringing in outside cleanup crew’s. The local cleanup crew does not require travel

expenses because its members are already living on the island. Local people are also available for year-round work. Fred believes that the U.S. Army Corps of Engineers will not get it done in a few summers because he knows the work and feels that local people should be hired instead of outside contractors.

Another local resident, Robin, a former health aide who lives in Savoonga, also felt discouraged about the cleanup work:

“Anything, debris, that was left out at Northeast Cape, whether they buried it or not, it has been in our soil for so long, it has been in our environment, our air and our soil for so long. No matter how much they clean it, it is always going to be contaminated.” (Interview with Robin, 2005)

Her comments reflect the ongoing problems due to the length of time the contaminants have been in the environment. As a former Village Health Aide, she understands the effects of long-term exposure on local people. Chemicals such as PCBs accumulate in the body, increasing in concentration over time. In her work, she has seen many people become ill following the military occupation of the island and is discouraged about the contaminants that continue to persist in the environment.

Disbelief about the existence of contaminants is another local perception of the military contaminants. Ian, a local cleanup crew member in Gambell, points out that some people think there are no contaminants:

“Maybe [remediation reports] fairly straight forward, or not so straight forward, there is some talk, questions about it. Sometimes they might, there is talk that they might be pulling our legs and that there is no toxics.” (Interview with Ian, 2005)

The cleanup work that he and his crew are asked to complete requires that they remove metal debris buried in Gambell. The scope of the work does not allow them to

sample for other contaminants and have received not received any reports on these chemicals and their effects. Withholding such information contributes to erroneous perceptions.

The U.S. Army Corps of Engineers process for the cleanup is highly structured. Local people feel that this process delays the cleanup work:

"Instead of making presentation and publication, do more cleaning time. Especially procedures, the company has to wait until there is a whole book, to see what they are supposed to do." (Interview with Doug, 2005)

Documents identifying the contamination take a long time to produce and local people feel that this delays the cleanup process. Although they want to be informed about the contaminated sites, they feel that the government agencies are using deliberate tactics to slow the cleanup process.

However, the local clean-up project referred to as NALEMP (Native American Land Environmental Mitigation Program) run by the tribal government and funded by the U.S. Army Corps of Engineers has received positive support from local residents:

"[NALEMP] doing a good job, but to me the overall clean-up project is not so good". (Interview with Doug, 2005)

"The IRA people are cleaning up, they are doing a lot better job than other contractors [the U.S. Army Corps of Engineers hired." (Interview with Norman, 2005)

The local cleanup projects hire local residents to work at both the Gambell and Northeast Cape sites. Residents felt that their work is more thorough than that of the outside contractors hired by the U.S. Army Corps of Engineers.

After the DOD closed the sites on St. Lawrence Island, the local communities lived with the contaminated materials for twenty years before the government agencies

began their cleanup. During that time these agencies did not give them any information about the hazardous materials on their land. Local people were exposed to contaminated sites and became concerned about the increase in cancer rates. During the remediation the local people have taken a participatory role and have worked with the U.S. Army Corps of Engineers and their contractors to cleanup the contaminants and debris, but remain skeptical of the end result.

Ch. 6- Discussion and Conclusion

I began this research very naïve about military contaminants and the ongoing environmental degradation, which disproportionately impact the lives of Native Alaskans. After visiting St. Lawrence Island, I feel compelled to help the local people fight for a complete and adequate cleanup by challenging the current structure that disenfranchises them from decision-making and policy-making processes. Environmental justice discourse encourages academics and professionals to move towards a more holistic, community-based, participatory and integrated paradigm to achieve healthy sustainable communities (Lee 2005). Anthropological and participatory research not only address issues from the insiders' perspective but also facilitate opportunities for community members to be active in the research and work towards solving their local environmental problems. Partnerships between local people and western scientists will prompt the structural changes within state and federal agencies that Cable (2005) argues will redistribute more equitably the environmental costs of industrialization. The environmental problems on St. Lawrence Island are a result of the U.S. government blindly pursuing political and strategic interests in the Bering Strait Region. My research suggests that these problems have been further exacerbated by dysfunctional government agencies, "one-size-fits-all" policies and inadequate communication during the cleanup of the contaminated sites.

Structural Change

Authors writing about environmental justice link human rights abuses to environmental degradation. Barbara Johnston (1997) says this “victimization” is a “pre-existing social condition” of discrimination that allows the exposure of certain groups to hazardous conditions while others are free to live in a healthy setting. She points to two reasons for this victimization: “dysfunctional governance” and “inadequate responses” to environmental crises. The U.S. governments’ early attempts to assimilate Native Alaskan’s have left local tribal governments fragmented and weakened (Berger 1985). On St. Lawrence Island there are currently three governing bodies: the IRA (tribal government), village corporation and the city. This structure dilutes the decision-making power by distributing it across three groups. Local people said that they have the most confidence in the local tribal government and would like to see them take more control over the cleanup decisions and policy process. When there is no identified central governing body responsible for decisions, the system can be manipulated by outside groups. The federal agencies working on the St. Lawrence Island contaminated sites cleanup have capitalized on this fragmentation by developing a unilateral system in which the U.S. agencies are the sole decision makers.

With no local authority over the cleanup process there has been an “inadequate response” by the DOD and U.S. Army Corps of Engineers to the environmental crisis. Local St. Lawrence Island residents have voiced concerns about the inadequate characterization of the sites and the slow response to the cleanup but have not received

satisfactory answers. People are frustrated and discouraged about the ability of federal agencies to do the job. They believe the agencies are trying to avoid taking responsibility for adequate and complete cleanup of the contaminated sites.

Similar to the case in the Marshall Islands, reported by Holly Barker (2004), the St. Lawrence Island peoples are also forced to sacrifice their health and their land to global political and strategic interests. The DOD selected St. Lawrence Island as the site for communication bases because of its strategic location to Japan and Russia. Although local residents supported this action for “national security” reasons and the “defense of the people”, they feel that their sacrifices are not acknowledged. One participant credited the mistreatment of local people as an act of discrimination against minority communities. Historically the DOD has not taken responsibility for the effects of military contamination on human and environmental health in minority communities. These “powerless” groups often do not have enough political or economic power to force the DOD or federal agencies responsible for the cleanup to do an adequate and complete job.

Recently, local people on St. Lawrence Island have begun to acknowledge their rights and are working to regain control over decisions and cleanup policies. The local tribal government has been able to engage in GTG agreements with the U.S. government, but has not achieved equal footing. As long as an unjust system exists, in which one group has more power than the other, human rights abuses and environmental degradation will continue. Structural changes within federal and local

agencies must take place to ensure justice and to restore a healthy environment on St. Lawrence Island.

Recognizing Knowledge

Knowledge systems are value laden, Poirier (2000) says, filtered through language, experiences, and practices on the land. Therefore, two knowledge systems cannot be integrated because one often compartmentalizes, distills or translates the other (Nadasky 1999; Poirier and Brooke 2000). Knowledge systems must be valued as uniquely different. Poirier's describes the Salluit, Inuit people's traditional ecological knowledge (TEK) as "highly developed knowledge" that allows them to determine animal health. On St. Lawrence Island, local people similarly use their TEK to determine the health of sea mammals and plants. Local peoples trust this knowledge system because it has maintained them and their communities for thousands of years.

Western culture and science often downplays the significance of traditional knowledge and related subsistence practices. People on St. Lawrence Island prefer to call this their "way of life", rather than limit it to the term subsistence, which only describes their food gathering techniques. This "way of life" links cultural customs and codes to ensure the survival of individuals, families and villages (Chance 1994). The most notable example of the St. Lawrence Island way of life is the responsibility that hunters feel for their community and their ability to assess the health of animals. Hunter's do not bring unhealthy animals into the community because they "don't look normal" and because they would be seen as an inadequate provider. Their decisions

about which animals are acceptable to provide for their communities have implications for the over-all health and social strength of the community. Hunters' traditional knowledge therefore ensures the survival of everyone in the village, and they take this responsibility very seriously.

One of the challenges that local people have with western scientific reports is their stated level of uncertainty about the effects of exposure to contamination, which causes a feeling of anger (Agyeman 2003). The U.S. Army Corps of Engineers contaminated sites cleanup policies are based on western scientific research and investigations. Poirier (2000) says that western science perceives itself as the source of "un-biased" information. The opinions of local people are solicited, but are secondary to scientific investigations. Bryant (1995) points out that western scientists make assumptions about the lack of "smartness" of communities considered too emotional and too irrational to understand complex scientific issues. Local people are viewed as being too emotional to be "scientific" and un-educated in considering contaminated sites. Assumptions based on differing perceptions between federal agencies and local residents create obstacles for development of an equal partnership. In this research agency employees were not named in order to avoid placing personal blame and to preserve the tenuous working relationship between these two groups. Despite ongoing efforts by both groups to work together, there are still problems with assumptions made by federal agencies, which make collaborative work difficult.

The EPA report (Resource Solutions 2001) on the cleanup of Federal Facilities, including the FUDS program, recommends Government-to-Government

(GTG) agreements because it allows tribes to bring in their own “experts” to interpret the cleanup process. Federal agencies focus on the “need” for scientists to explain things to local people. The federal agencies assume that the local communities are unable to understand complex scientific issues. These assumptions about the intelligence of local people make it difficult to construct partnerships between the two groups. The GTG agreements, if executed properly, have the potential to facilitate effective collaboration between agencies and local people to develop solutions to the current environmental devastation on St. Lawrence Island.

One of the major challenges that the EPA found in their research was that communities engaged in federal facilities cleanup programs “[did] not trust the U.S. government despite their efforts to document the hazards and to meet the community concerns”. On St. Lawrence Island the U.S. Army Corps of Engineers contractors interviewed local residents about the contaminated sites, but did not take their concerns and information into consideration. Local people perceive the reports and presentation by the U.S. Army Corps of Engineers to be inadequate and obstructive to the cleanup process. Local residents have not developed partnerships with federal agency scientists based on trust and reciprocity, and therefore are reluctant to trust them. St. Lawrence Island people are confident that they can identify contaminated plants and animals based on their traditional knowledge without scientific reports. This is not to say that western scientists don’t have anything to contribute but that local people distrust scientific research because it does not consider local knowledge. When local people and western scientists participate in a collaborative partnership

based on trust and respect opportunities emerge for understanding between the two knowledge systems.

Information and Communication

Transforming the decision-making process or current conditions on St. Lawrence Island means that information exchange and communication must be improved between federal agencies and local people. Johnston (1997) says that structural changes hinge on information and communication tools. During the cleanup of the contaminated sites, the U.S. Army Corps of Engineers told local people that there is “nothing to fear about contamination”. These statements mislead the community about the possible human health and environmental affects of military contamination. Chemicals such as PCBs and asbestos have been associated with cancer, and local people were exposed to them not knowing that it could be harmful. Concern about these chemicals has prompted local people to question whether the federal agencies are accurately characterizing the contaminated sites. Since many local people don’t have the scientific background to understand the reports and presentation given by the U.S. Army Corps of Engineers, they are frustrated.

Information is a critical component of the decision-making process, which the local residents of St. Lawrence Island have been excluded. Johnston states that the human environmental crises emerge because of exclusion of local people from the decision making process. This point is reinforced by Margoluis (2005), who says that the lack of access to decision-making and policy-making forces local people to live with disproportionate environmental problems. The local people of St. Lawrence

Island have been forced to live with military contamination in their environment for the past three decades because they have little power in the cleanup decisions and policies. The concerned voices of local people had not been adequately addressed and therefore exposure to the contamination continues.

Applied Anthropologists have worked to counteract local disenfranchisement by conducting participatory and participatory action research. Researching local issues with local participation develops “social capital”, which includes networks, norms, social trust that facilitates coordination and cooperation for mutual benefit. Pellow (2005) said, that social capital creates a large group of knowledgeable and active people who can be mobilized quickly to apply political pressure tactics in addressing environmental justice issues. Pellow argues that litigation does not create change, because of its costly nature and the difficulty in setting precedent. On St. Lawrence Island local people do not consider litigation a viable option because they prefer to avoid direct confrontation and conflict. This cultural norm in Native Alaskan communities was pointed out by Berger who described local non-compliance with federal laws that conflict with traditional values. In a cultural sense, litigation would not be appropriate way to deal with the conflict over contaminated site cleanup.

Political pressure is the strategy that the current environmental discourse supports because it allows local people to pursue solutions to their own environmental problems (Park et. al 1993). This strategy has been a culturally acceptable form of action for the St. Lawrence Island communities. The process of mounting political pressure requires the participation of local people. When local people move from the

objects of research to participants in research, they take an active role in the decision-making and policy-making process (Tandon et. al 2002). Involvement in the design and research creates trust and respect for the knowledge of communities and empowers local people to speak out.

Participatory action research (PAR) is an evolved form of participatory research that allows local people to define their own realities (Ervin 2005). PAR engages local people not only as participants but also as researchers. Parisi's (2004) work in Mexico is an example of doing PAR with geographic information systems (GIS) methodologies, collecting geographic data about the natural landscape from the perspective of local peoples. On St. Lawrence Island this strategy was used to collect geographic data about the location of buried and surface contaminants. The resulting data showed that the U.S. Army Corps of Engineers descriptions of the contaminated sites and the communities' knowledge of these sites were very different. Some areas not identified by the U.S. Army Corps of Engineers were located and identified as areas of concern by the local people. Parisi et. al (2003) points out that doing PAR using GIS methodologies is a movement towards environmental democracy, in which all people have an equal say in decisions about the local environment.

Barker (2004) describes the training of local people in ethnographic data collection. Their involvement ensured that her data was reflective of community values. Education and training of local community members not only makes research more culturally and locally appropriate, but it also develops local infrastructure which can support further scientific study. On St. Lawrence Island local people have been

trained to do cleanup work and now feel that they could do the sampling as well. The western scientific community must be willing to acknowledge the abilities of local communities to be trained to conduct scientific research and to collaborate as equals. Policies developed for local circumstances will better address local environmental degradation than “one-size-fits-all” policies which address problems under a large umbrella often in disregard of local constraints.

Current environmental degradation issues facing the people of St. Lawrence Island result from a western culture system in which local people have been disenfranchised from the decision-making process. Federal agencies continue to make blanket policies that do not validate local concerns and knowledge resulting in continued exposure to contamination. These policies allow agencies to exclude local participation and avoid responsibility for their actions. Intentional discriminatory action on the part of the federal agencies to dump contamination on minority and/or poor communities is almost impossible to prove. It is more constructive and positive to think of solutions to current environmental degradation than to dwell on past violations of human rights. The people of St. Lawrence Island strive to cooperate with the federal agencies and work towards an adequate and complete remediation of the contaminated sites. Federal agencies must recognize the value of local knowledge and allow local people to collaborate in decision-making and policy-making. Allowing the St. Lawrence Island people to participate fully in the cleanup process will help resolve the human right abuses and environmental degradation currently burdening the island. My specific recommendations follow.

Ch.7- Recommendations

This research revealed a wide variety of injustices committed by the US government and US agencies on St. Lawrence Island. In order to move forward, local people, academics, professionals, and agencies need to work towards a more equitable environmental policy. Local residents' voices must be heard in the decision-making process, or the injustice will continue. In this chapter I will present three recommendations for the cleanup of the St. Lawrence Island contaminated sites: 1) develop participatory action research; 2) develop a regional environmental network; 3) expand government-to-government (GTG) relationships with the local tribal government; and 4) develop cultural education programs for federal agency personnel.

Training Local People for Research and Cleanup

Local cleanup workers have been trained to remove buried debris and are confident that they can be trained to do soil and water sampling. Currently participatory action research funded by the National Institute of Environmental Health Sciences (NIEHS) administered by ACAT is underway on the Island and in the Norton Sound region. The project works closely with the leadership and community to ensure they become familiar with the process. The project has mobilized local people and produced important information about the health of the environment and the community.

The people on St. Lawrence Island have collaborate in this participatory research and have developed a wide range of knowledge about the contaminated sites, but some federal employees still make assumptions about the lack of "smartness" of

local community members. The success of local projects shows their capacity to characterize the contamination and participate in the cleanup process. The US Army Corps of Engineers and the US EPA should provide funding opportunities for the community to conduct their own investigations and sampling. This change would eliminate the costs of hiring contractors who must travel long distances and can only do the work during the brief summer field season (June-September). The U.S. Army Corps of Engineers is concerned about cost and time constraints. Employing local people would cut down on cleanup costs, and the community would be a year-round resource for all cleanup process.

Develop a Local Environmental Network Center

An important part of justice is education and the exchange of information. Similar to the environmental movement in the lower forty-eight states and in the urban areas of Alaska, the Bering Strait region would benefit from a “center for the environment”. Rural communities already have an informal communication network through the local radio station (KNOM) to provide a forum for local people to speak out about contamination issues. Local residents on St. Lawrence Island utilize this forum to communicate with other rural communities in the area where local people are dealing with the cleanup and impacts of contaminated sites. However, there is no central facility where people can receive information about local environmental research, policies or issues. Several communities in the Bering Strait region are burdened with the consequences of contaminated sites and on-going resource extraction practices. The University of Alaska Fairbanks campus in Nome could be

used to house a center where local people could access environmental information. The center could also provide trained scientists who could help local people understand agency reports. This would eliminate the need to bring scientists from long distance to explain these reports. This facility could also be used to train local people for cleanup or research projects.

This recommendation requires that government agencies fund these projects and provide opportunities for Bering Strait communities to network with each other. Developing infrastructure in Nome will provide education, jobs and community development. Government agencies such as the U.S. Army Corps of Engineers and the U.S. EPA spend a large amount of money bringing in outside contractors and researchers. This money could better be spent locally developing opportunities for local people and distributing funds more equitably to those who need it the most.

Including Tribal Government in the Decision-Making Process

The EPA report, cited in this paper, concluded that the government-to-government (GTG) agreements worked more effectively than advisory boards. The St. Lawrence Island community wanted to see the tribal government take a bigger role in the cleanup programs. Using GTG's to facilitate this process would allow the community to voice their concerns to local leaders who could then bring them directly to the attention of government and policy making agencies. Currently advisory board meetings allow anyone to voice their concerns in a public setting, but many local people don't feel comfortable with this format. Additionally, using GTG would empower leaders acting on behalf of their communities to have a stronger voice in the

decision-making process. Developing partnerships between the U.S. policy making agencies and local tribal government would strengthen the local community voice and eliminate communication barriers in the current structure.

Develop Cultural Education Programs for Federal Agencies

Partnerships between local communities and federal agencies must be based on reciprocity and trust. The local residents on St. Lawrence Island do not trust the federal agencies because they have not developed a reciprocal relationship. Education about local peoples knowledge, culture and customs would improve the interactions between the two groups. One of the tactics used in this research to overcome barriers to communication was to utilize social networks within the community. As outside researchers, we knew that making contacts on the island through Viola Waghiyi and ACAT, who have a reputation on the island of being trust-worthy, would make local residents more comfortable and open when talking to us. We also brought a gift to each community member who participated in the research. Federal agency personnel also could develop trust with community members if they understood their social networks on the island and the cultural importance of reciprocity.

All four recommendations focus on giving a stronger voice to the local residents of St. Lawrence Island. Injustices have been committed by the US government and its agencies under the current environmental policy-making structure. This must change. The community is ready, willing and able to take on a more participatory role. It is now up to the US Army Corps of Engineers and the US EPA to implement more just procedures and policies.

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APPENDIX

Appendix A

The participatory mapping research on St. Lawrence Island was conducted during the field season, Summer 2005 with local community members. Various materials were used to collect the data such as: USGS maps overlaid with mylar for people to draw on, Aerial maps of the villages overlaid with mylar for people to draw on and a global positioning systems (GPS unit) to collect geographic points in the landscape. All these data collected on St. Lawrence Island were collected from the perspective of local people. Therefore errors in these data may be qualified by the purpose of this research to show the communities view of the contaminated sites. These data were brought back to Oregon State University for processing and (Figure 5-1) was returned to local community members for comments and revisions.

Data from the U.S. Army Corps of Engineers was acquired pursuant to the Freedom of Information Act, 5 USC 552. Figures 2-2 and 3-2 are reference maps created with USACE Autocad files. Figure 5-1 was created using USACE Autocad files with data from the local community to illustrate the differences in geographic perceptions of contaminated sites in Gambell, Alaska. Figure 5-6 references data from the Robbins and Little, as well as ethnographic interviews. Figure 6-6 references data from ethnographic interviews.

I processed all of these data sets using participatory mapping techniques and my knowledge of geographic information science (GISci). “For many, visual display has always been the essence of GIS, and indeed the origins of GIS as we understand it today partly lie in the development of computer-assisted cartography” (Longley,

2001:263). Creating visual displays of local people's geographic perceptions of local contaminated sites supported the ethnographic data collected. Participatory mapping research is one of many participatory research methods, which can be used to gain insider perspective to environmental degradation issues.

Map Metadata

Figure 1

St. Lawrence Island Location Map

Data Source: Digital Chart of the World (DCW)

Projection: Cylindrical Equal-Area

Programs: MicroCam and Macromedia Freehand

Created by: Kai Henifin

Figure 2

Gambell DOD Site Location Map

Data Source: USGS (St. Lawrence Island 1:240,000) and US Army Corps of Engineers Autocad files

Projection: UTM (Universal Transverse Mercator)

Datum: NAD 27 (North American Datum of 1927)

Programs: ESRI ArcGIS 9.0, Abode Illustrator and Macromedia Freehand

Created by: Kai Henifin

Figure 3

Northeast Cape DOD Site Location Map

Data Source: USGS (St. Lawrence Island 1:240,000) and US Army Corps of Engineers Autocad files

Projection: UTM (Universal Transverse Mercator)

Datum: NAD 27 (North American Datum of 1927)

Programs: ESRI ArcGIS 9.0, Abode Illustrator and Macromedia Freehand

Created by: Kai Henifin

Figure 5

Comparative Map of Gambell Contaminated Sites

Data Source: USGS (St. Lawrence Island 1:240,000), Aeromap aerial photo (2' pixel), US Army Corps of Engineers Autocad files, and GPS data from (2005)

Projection: UTM (Universal Transverse Mercator)

Datum: NAD 27 (North American Datum of 1927)

Programs: ESRI ArcGIS 9.0, MicroCam, Macromedia Freehand, NOAA UTM conversion C-program

Created by: Kai Henifin

Figure 6**Subsistence Resource and DOD Site Location Map****Data Source:** DCW, Little R. and Robbins, L. (1984) and Interview data (2005)**Projection:** Cylindrical Equal-Area**Programs:** MircoCam and Macromedia Freehand**Created by:** Kai Henifin**Figure 7****Salvaged Materials Location Map****Data Source:** DCW and Interview data (2005)**Projection:** Cylindrical Equal-Area**Programs:** MircoCam and Macromedia Freehand**Created by:** Kai Henifin

Appendix B

Open-ended, semi-structured ethnographic interviews will be conducted, but as is usual with anthropological research, the anthropologists involved know that these questions are only the starting point in the process of gathering information. Anthropologists are trained to be flexible to adapt their interviews to different interviewees, acknowledging that different life experiences, age and gender will influence interviews to go into new and exciting directions. The interviews will be based upon questions such as:

How long have you lived on Saint Lawrence Island? Have you lived anywhere else?

What do you do on Saint Lawrence Island? What is your position in the community?

Do you participate in subsistence practices? If so, what, when and where? Could you show me the location of these items? If not, where do you get your food?

How do you prepare these items? When do you eat these items?

Are there other types of subsistence practices taking place on the island by others? If so, what, when and where?

What are the biggest health issues on Saint Lawrence Island today?

Were you on Saint Lawrence Island when the US military bases were active? If so, what was your experience with the US military like?

Were you on Saint Lawrence Island when the Army Corps of Engineers was conducting the clean-up? If so, what was your experience with the Army Corps of Engineers like?

What was the Army Corps of Engineers cleaning up? Do you have concerns about these materials today?

Do you know what areas were cleaned-up? Could you show me where these sites are?