



Networked Governance, Institutional Change, and Governmental Coordination for a Dynamic Social-Environmental System: Coastal Management in Arctic Alaska, 1977-2023

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The shoreline in east Nome with wood debris from ex-Typhoon Merbok, stone revetments protecting Front Street, human footprints, and a gold dredge on the horizon.

Source: Nicholas Parlato.

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List of Acronyms

ABWC	Alaska Beluga Whale Committee
ACMP	Alaska Coastal Management Program (state)
ADF&G	Alaska Department of Fish and Game (state)
AETC	Assistance to Environmentally-Threatened Communities
AEWC	Alaska Eskimo Whaling Commission
AIS	Automatic Identification System
AMBCC	Alaska Migratory Bird Co-Management Council
ANC	Alaska Nanuq Commission
ANCSA	Alaska Native Claims Settlement Act
ANILCA	Alaska National Interest Lands Conservation Act
ANWR	Arctic National Wildlife Refuge
APMA	Application for Permits to Mine in Alaska (state program, DNR)
ASTAR	Arctic Strategic Transportation and Resources (state program, DNR)
BOEM	Bureau of Ocean Energy Management (federal, DOI)
BLM	Bureau of Land Management (federal, DOI)
BSEE	Bureau of Safety and Environmental Enforcement (federal, DOI)
BWA	Barrow Whaling Captains Association
CAO	Central Arctic Ocean
CCIAP	Community Coastal Impact Assistance Program (joint state-federal, DCRA)
CCPP	Community Coastal Protection Project (DCRA)
CIAP	Coastal Impact Assistance Program (joint state-federal, DCRA)
CMP	Coastal Management Program (municipal/borough/CRSA)
CPC	Coastal Policy Council (state)
CRP	Consistency Review Process
CRSA	Coastal Resource Service Area
CWAT	Community Winter Access Trails (DOTPF)
CZMA	Coastal Zone Management Act
DCOM	Division of Coastal and Ocean Management (state, DNR)
DCRA	Department of Community and Regional Affairs (state)
DEC	Department of Environmental Conservation (state)
DEH	Division of Environmental Health
DGC	Division of Governmental Coordination (state)
DGGS	Division of Geological and Geophysical Surveys (state)
DMLW	Division of Mining, Land, and Water (state, DNR)
DMTS	Delong Mountain Transportation System
DNR	Department of Natural Resources (state)
DOI	Department of the Interior (federal)
DOT&PF	Department of Transportation and Public Facilities (state)
DW	Division of Water (state, DEC)
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EWC	Eskimo Walrus Commission (USFWS)
IAD	Institutional Analysis and Design (Elinor Ostrom)
ICZM	Integrated Coastal Zone Management
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service (federal, see BOEM)
MSP	Marine Spatial Planning

MXAK	Marine Exchange of Alaska
NAB	Northwest Arctic Borough
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NIILAAS	Networked Interests, Institutions, and Legacies on Arctic Alaska Shores
NMFS	National Marine Fisheries Service (federal, NOAA)
NPR-A	National Petroleum Reserve-Alaska
NPS	National Park Service (federal)
NOAA	National Oceanic and Atmospheric Administration (federal, DOC)
NSB	North Slope Borough
NWP	nationwide permits
OCM	Office of Coastal Management (state)
OCRM	Office of Ocean and Coastal Resource Management (federal)
OCS	Outer Continental Shelf
OPMP	Office of Project Management and Permitting (state, DNR)
ORPC	Ocean Renewable Power Company
SENA	Social-Environmental Network Analysis
SNA	Social Network Analysis
SPAR	Spill Prevention and Response (state, DEC)
SS	Subsistence Section (state, ADFG)
USACE	Army Corps of Engineers (federal)
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service (federal, DOI)
WEAR	Waste Erosion Assessment and Review (state, DEH)

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ABSTRACT

This report represents findings from the Networked Institutions, Interests, and Legacies on Arctic Alaska Shores (NIILAAS) Project, which analyzed changes in institutions of coastal resource governance in Arctic Alaska over a period of 47 years, from the passage of the Alaska Coastal Management Act in 1977 (based on the 1972 national Coastal Zone Management Act (CZMA)) to the present. Using qualitative methods and grounding the investigation in the methodological tenets of Institutional Analysis and Design (IAD) and Social-Environmental Network Analysis (SENA), we mapped substantial transformations in the configuration of governance bodies, the distribution of rights and authorities, and the character of diverse approaches to the use, development, and exploitation of coastal areas of the Bering, Chukchi, and Beaufort seas. We find that the Alaska Coastal Management Program (ACMP) evinced 3 distinct institutional periods: the first consisting of program development and relationship-building; the second of robust collaboration among federal, state, and local interests; and the third of dilution and centralization by the State of Alaska. Regarding the landscape of coastal management today, we find significantly lower metrics of communication and coordination across the Arctic coast and less comprehensive approaches by all actors to the coastal zone as a whole. Current programs in the region are unevenly distributed, subject to complex ownership and jurisdictional boundaries, driven by unprecedented security concerns, and limited in their capacity to sustainably empower local communities to make decisions for their homelands and waters.

1 Introduction

The world ocean provides services, resources, and “gifts of nature” (Gomez-Baggethun et al. 2010: 1211) that benefit human communities both on the coast and deep inland. The ocean’s contributions to human well-being extend across spatial, temporal, and political scales. Despite the formation of territorialized administrative and regulatory regimes in the world ocean (e.g., United Nations Convention on the Law of the Sea, Commission on the Limits of the Continental Shelf) border-spanning commercial networks for shipping and resource development have potential to cause difficult-to-regulate transboundary socioecological and political impacts. In addition, the externalities of regulated activities in federal waters (e.g., fisheries, offshore energy development) can flow into state, Tribal, and local scale jurisdictions which may not be prepared to meet the challenges. In the Arctic, attention to *intraregional* connectivity, coordination, and interdependence is consistently overshadowed by larger-scale, often international, geopolitical and geoeconomic concerns originating in centers of power (Hermann 2020). For example, the need to address negative local impacts of carbon-intensive development, including the challenging boom-and-bust cycles of a volatile market, is often deprioritized in considerations of national energy security. In northern Alaska, the incipient wave of development and activity presaged by, among other things, commercial fisheries research in the Beaufort Sea, the Nome port expansion project, and increasing traffic on Russia’s Northern Sea Route, is being addressed with little concern for how social-environmental systems and their legal authorities are intra-regionally enmeshed. As the rule sets (institutions) governing different actors and activities have changed, how have the capacities of different actors to coordinate activities and communicate information been impacted?

According to Elinor Ostrom, the theory of collective action is the central subject of political science (Ostrom 1998). Nowhere is this perhaps truer than in the study of institutions, the systems of rules, norms, procedures, and strategies which bind people together to achieve specific ends. However, institutions are not always easy to discern. For the purposes of this research, we use the following definition, frequently utilized in rational choice theory:

institutions are enduring regularities of human action in situations structured by rules, norms, and shared strategies, as well as by the physical world. The rules, norms, and shared strategies are constituted and reconstituted by human interaction in frequently occurring or repetitive situations. Where one draws the boundaries of an institution depends on the theoretical question of interest (Crawford and Ostrom 1995).

The subjects of interest in this report are Integrated Coastal Zone Management (ICZM) and management of marine vessel traffic, both of which demonstrate particular spatial and network governance techniques that shape authority over and access to coastal and maritime spaces and resources for diverse groups. In particular, this report addresses the governance precedents set under the ACMP and the consequences of its termination for an increasingly dynamic and contested era of Arctic development and environmental change. In Alaska, communities living on the Arctic coast are both culturally and dietarily reliant on the traditional practice of subsistence, the seasonal harvesting of wild foods guaranteed for Alaska Native Peoples under the 1980 Alaska National Interest Land Conservation Act (ANILCA) and the 1972 Marine Mammal Protection Act (MMPA). Other rural residents of Alaska also have rights to subsistence

harvest of select species on state-managed lands under Alaska Statute 16.06.258 and ANILCA. Subsistence-dependent communities in Alaska have had the burden of fighting hundreds of legal and political battles with government and private actors to retain their access to subsistence, preserve the long-term sustainability and health of the environment and subsistence species, and ensure their food security.

Social scientists engaged with coastal Indigenous communities have recognized the central importance of ocean access and marine resource use for multiple indicators of well-being, a challenge that is exacerbated under present conditions of climate change, legal enclosure, and varied forms of ocean grabbing¹ (Bennett et al. 2015, Bavinck et al. 2017, Huntington et al. 2019, Szablowski 2019, Owusu et al, 2023). Bennett et al. (2018) highlights a range of potential institutional, economic, and material barriers to resource access and exercise of rights, including permits and licenses, physical access, resource health and availability, and financial (in)dependence. Access to marine resources in particular is underwritten by access to multilevel decision-making and knowledge-making spaces where coastal and ocean-dependent communities can assert their rights and needs (van Tatenhove 2013).

Numerous federal executive policies express the U.S. government's commitments to empowering local and Indigenous communities in maritime Alaska and elsewhere to address climate-related challenges in the marine and coastal environment: the 2022 U.S. Arctic Strategy, the Investing In America Agenda's commitment to Protecting Coastal Communities and Restoring Marine Resources, Executive Orders 13990 (On Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis), 13754 (On the Northern Bering Sea Climate Resilience Area), and 14008 (On Tackling the Climate Crisis at Home and Abroad), the Office of Science and Technology Policy 2022 memorandum on Indigenous Knowledge, Joint Secretarial Order No. 3403 on Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters, and the National Ocean Biodiversity Strategy. All of these valuable policy instruments emphasize conservation of marine and coastal environments as a core focus, but do not recognize or confer rights or authorities to Alaska's coastal communities. Such rights and authorities did, however, exist under the ACMP, supporting local self-determination and stewardship of coastal environments.

Understanding the legacy of the ACMP and the 13-year institutional void in Alaska's coastal areas is essential for designing, advancing, and implementing equitable and just programs moving into the future. In 2024, the State of Alaska is the only ocean-adjacent U.S. state without a coastal management program, despite having more coastline itself than all other coastal states combined. Our research clarifies a few aspects of the *why* of the ACMP's termination (well-covered in Wilson 2018), but the primary focus is on the *what* and *how* of coastal management during and after the program's termination to provide guidance for the future of federal, state, local, and Tribal relationships. In short, this report addresses how changing institutions in Arctic Alaska, including legislative reforms, governmental reorganization, and the regulations and standards for diverse forms of resource use, have transformed how and to what extent local peoples can participate in managing their own environment.

¹ Ocean grabbing refers to when small-scale activities such as local fishing or other local uses of the marine and coastal spaces are pushed aside or legally denied access for development. Legal enclosure is often the mechanism by which this privatization occurs (Knott 2024).

As the U.S. advances its Arctic Strategy and seeks to exert greater influence over the region, sometimes in tension with other Arctic and non-Arctic nations, the absence of the ACMP has unexpectedly pronounced effects. As a brief case in point, the planned modification of the Port of Nome, which has been deemed essential for advancing U.S. interests in the Arctic, evinces legal inconsistencies related to the ACMP. Sections 4(c)(9) and 9(c) of the Deepwater Port Act of 1974 prohibit the ownership, construction, and operation of a deepwater port if the adjacent coastal state, with a pipeline running between the port and mainland, does not have or is not making reasonable progress towards the establishment of a coastal zone management program. As the Port of Nome modification is already progressing to the awarding of contracts, the inconsistency is ostensibly to be addressed by a corrective provision in Senator Liza Murkowski's 2022 Arctic Commitment Act (S.4736), but nonetheless calls attention to the complex legacy left by the ACMP and the legal-political path dependencies that institutional change generates.

In what other ways have the legacies of the ACMP endured and what kind of institutions have risen to fill the void? This question drove our mapping of relations of connectivity and power over the ACMP's lifespan and subsequent investigation into what kind of relationships and networks have emerged in its stead. The ACMP was a bureaucratic system that reached across departmental silos and, for a time, was committed in large part to securing and recognizing the right of local governments and the state to an enforceable set of policies over federal land and water uses and responsibilities. Given the mission and goals of our research funder, Bureau of Ocean Energy Management (BOEM), which focus on developing resources of the U.S. Outer Continental Shelf (OCS) in an environmentally and economically responsible way, our research project sought to achieve the following objectives:

1. Determine what present-day stakeholders identify as essential for coherent maritime network governance and effective cooperation in a governmentally fragmented dynamic maritime system now and into the future.
2. Identify current levels of institutional capacity to anticipate, monitor, and regulate changes in the coastal and offshore environments related to increasing amounts of larger vessels and vessels with hazardous cargo.
3. Determine the current structure and strength of present communication networks and flows of information across areas of governance.
4. Compare risk perception and risk preparedness across authorities and stakeholders.
5. Provide guidelines and evidence for enhancing regional well-being through improved levels and modes of communication and risk preparedness among key stakeholders and partners.

Bennett (2019) extols the value of governance research to understand the dynamics of power and decision-making around marine and coastal resources and to diagnose institutional traits that result in differential outcomes for different stakeholders and nonhuman communities. To what extent socially equitable and environmentally sustainable governance models can be successfully implemented depends not just on government policy, but on the commitment of government agencies to Indigenous and local inclusion, collaboration, and capacity-building, without which trust is irrevocably diminished. Questions of Tribal sovereignty, cultural persistence, food security, environmental justice, equity, and environmental health hinge on the ability of current institutions to adapt to the paradigmatic shift occasioned by the Anthropocene.

The planning, contestation, and development of coastal infrastructure in the Arctic offers a valuable site to investigate these tensions and synergies between local, Indigenous interests in environmental stewardship and self-governance and those of national and regional governments, corporate actors, and international bodies. Examining the history and present-day controversies of marine and coastal governance can thus provide insight into alternative governance arrangements towards more inclusive, ecologically sound, and better fitting environmental management practices, where fit indicates a good match between human-generated rules and desired outcomes that avoids unexpected externalities, perverse incentives (such as free-riding or short-term profit), and other surprises that may impede goal attainment (Young 2008, Ekstrom and Young 2009, Cox 2012, Meek 2013).

BOEM's executive commitments direct it to perform timely, inclusive stewardship with meaningful engagement of Indigenous Peoples. To design rules and management processes that fit such core values in the High North one must understand the distinct trajectory of coastal management in Arctic Alaska. We consequently sought to answer three broad questions in our research.

1. How have the institutions and practices of coastal management in Arctic Alaska evolved over the past fifty years?
2. What has the termination of the Alaska Coastal Management Program meant for local, state, and federal involvement in decision-making around diverse parts of the Arctic coast?
3. What kind of programs and partnerships focus on coastal issues in Arctic Alaska today and are they capable of meeting the emerging governance needs around coastal erosion, ecological transformation, and other climate impacts?

2 Methods

While this region along the northern and western coasts of Alaska is sparsely populated, it is crowded with interests, public, private, and sovereign operating across jurisdictions and scales of action. Arctic Alaska brings together diverse governments and institutions, from Tribes and Boroughs to the Arctic Council, whose influences are inscribed with static geospatial boundaries over a dynamic and complex environmental system. Highlighting the spatial dimensions of diverse government legal regimes, our research builds a bridge between earlier research on the predecessor to BOEM, the U.S. Minerals Management Service (MMS). Interdisciplinary experts (Haley et al. 2011: 458) examined MMS's capacity to accurately represent regional, in particular Indigenous, interests in its operations given,

the governance systems managing human uses of the marine environment are fragmented along agency and jurisdictional lines; additionally, existing governance strategies are often not aligned with spatial and temporal characteristics of the marine system (Crowder et al. 2006).

Their conclusions, shortly before the demise of the ACMP, included "strengthening local powers under the Alaska CZMA, expanding co-management, establishing a regional citizens' advisory council, or establishing marine protected areas" (ibid. 470). But none of these suggestions have come to pass; fragmentation and disconnection across interests and goals remain and, in many cases, have increased. Because, as Meek (2011) asserts, understanding the effectiveness of

contemporary institutions of environmental governance requires knowing the sequence of events and policy choices that preceded and contributed to them, we aim to elucidate both historic and current dynamics in the study region.

Our study was originally proposed as a Phase 1 mapping study of the key intraregional interests and their scope of activities in the region in preparation for a full-scale Delphi project that would seek separate funding to engage with regional experts about their decision-making processes given the absence of the Coastal Zone Management Program. However, the abundance of the data available from archival research and information gathering conversations has made this project much more extensive than a Phase 1. Within the parameters of this project, we have developed a detailed SENA map that captures relationships of influence over decision-making and responsibility over elements of the coastal environment as well as ecological relationships that constitute that environment. The methodology used to produce the evidence and conclusions in this report is outlined below.

2.1 Study Parameters

Our study period for the region spans forty-six years, from 1977 to 2023. This research took as its geographic focus the inland, nearshore, and offshore areas of Northern Alaska formerly encompassed by the *coastal zone*. Four former Coastal Districts: the North Slope Borough (NSB), Northwest Arctic Borough (NAB), Bering Straits Coastal Resource Service Areas (Bering Straits CRSA), and the City of Nome are located along more than 2000 miles of shoreline stretching from the villages of Stebbins-St. Michael on the southern Norton Sound to the Alaska-Canada border on the Beaufort Sea. The coastal zone additionally included St. Lawrence, Diomedede, and King Islands in the Bering Sea. Habitat types covered within the coastal zone included estuaries, wetlands, tide flats, rocky islands, sea cliffs, barrier islands, lagoons, river basins, lakes, streams, and uplands. These coastal habitats and features demonstrate high local variability in permafrost content, sediment types, sea ice dynamics, and accessibility. Twenty-eight permanent, predominantly Alaska Native settlements lie in the former Arctic coastal zone, all of whom rely heavily on subsistence species and resources for food and cultural security. Development in the region has been historically limited by geographic, climatic, and economic factors, but several large resource basins have drawn extractive industries to construct extensive infrastructural networks. These include the NSB oil and gas complex, centered on Prudhoe Bay, the Red Dog zinc and lead mine in the northern NAB, and the multimodal gold mining industry centered around Nome.

According to federal policy, the coastal zone was a legally bound territory that overlaid and consolidated an otherwise complex mosaic of land ownership and government jurisdictions (Figure 2-1). Under the ACMP, certain procedures and protocols were effective only within the coastal zone. In the absence of the coastal zone designation, jurisdictions are arrayed as follows: the Bureau of Land Management, U.S. Fish and Wildlife Service (USFWS), and National Park Service (NPS) control and permit all activities taking place on federal lands (to the mean low tide line). The State of Alaska controls and permits all activities on state lands and in the adjacent territorial sea, which extends three nautical miles seaward from the mean low tide line. The North Slope and Northwest Arctic Boroughs have zoning and permitting authority over all land within their borders and into the adjacent territorial sea, including sea ice. BOEM, the National Oceanic

and Atmospheric Administration (NOAA), the U.S. Coast Guard (USCG), and other federal agencies have jurisdiction over the U.S. Exclusive Economic Zone (EEZ).

2.2 Data Collection

To identify relationships between changes in governance and changes in the socio-ecological composition of Alaska's Arctic coast, we undertook a mix of archival analysis and qualitative information gathering. Archival materials were acquired through searches at the Alaska State Archive in Juneau, through public information requests to the Alaska Department of Natural Resources (DNR), and internet searches of reports, handbooks, evaluations, press releases, and defunct web portals (using the Internet Archive, Wayback Machine: <https://web.archive.org/>) from both state and federal agencies. We gathered digital and physical archives consisting of various drafts and iterations of coastal plans, program evaluations conducted by the NOAA, U.S. Army Corps of Engineers (USACE) public documents and reports, maps and project reports, descriptive lists of projects, public guides and handbooks, meeting minutes, and articles from the Nome Nugget and Anchorage Daily News.

Archives also provided a wealth of interagency communications that reveal the unfamiliar and experimental nature of the ACMP and demonstrate the social processes of understanding, informing, and representing institutions within an environmental management structure. These archival materials, stretching over thirty-four years, also convey the presence, absence, creation, and elimination of institutions over time, such that periods of network durability and transformation are identifiable, informing the decision to chronologize coastal management in Alaska into four periods. Because of the partialness of archival and documentary sources, our analysis is episodic rather than exhaustive.

Adding to this wealth of qualitative data, we conducted semi-structured information gathering sessions with: 20 representatives and employees of the State of Alaska agencies that were previously part of the ACMP, 4 individuals retired from such service, 3 employees of federal agencies, 13 representatives of municipal and Tribal organizations in the NSB, and 7 representatives of Bering Straits municipal and Tribal organizations, for a total of 47 participants. Identifying potential participants was done through state, Borough, and municipal staff directories and snowball sampling. Initial outreach was accompanied by introductory project materials found in Appendix C.

The information gathering guide is available in Appendix D. In these conversations, we pursued information on degrees and types of interaction among institutional actors; vectors of information flow; and perceived historic changes in governance processes, structures, and areas of responsibility. Conversations lasted from forty-five minutes to one and a half hours and were conducted over zoom, phone, and in person at governmental offices and in the cities of Utqiagvik and Nome. Transcripts and field notes were analyzed for pertinent nodes (state and nonstate organizations, development projects, environmental elements) and connections (information flows and interactions such as permitting, coordination, consultation, management, joint planning, funding, and research). Information gained through conversations was correlated with archival materials to identify four coastal management phases, each with a distinct community of institutional actors present and engaged in distinct connections and interactions.

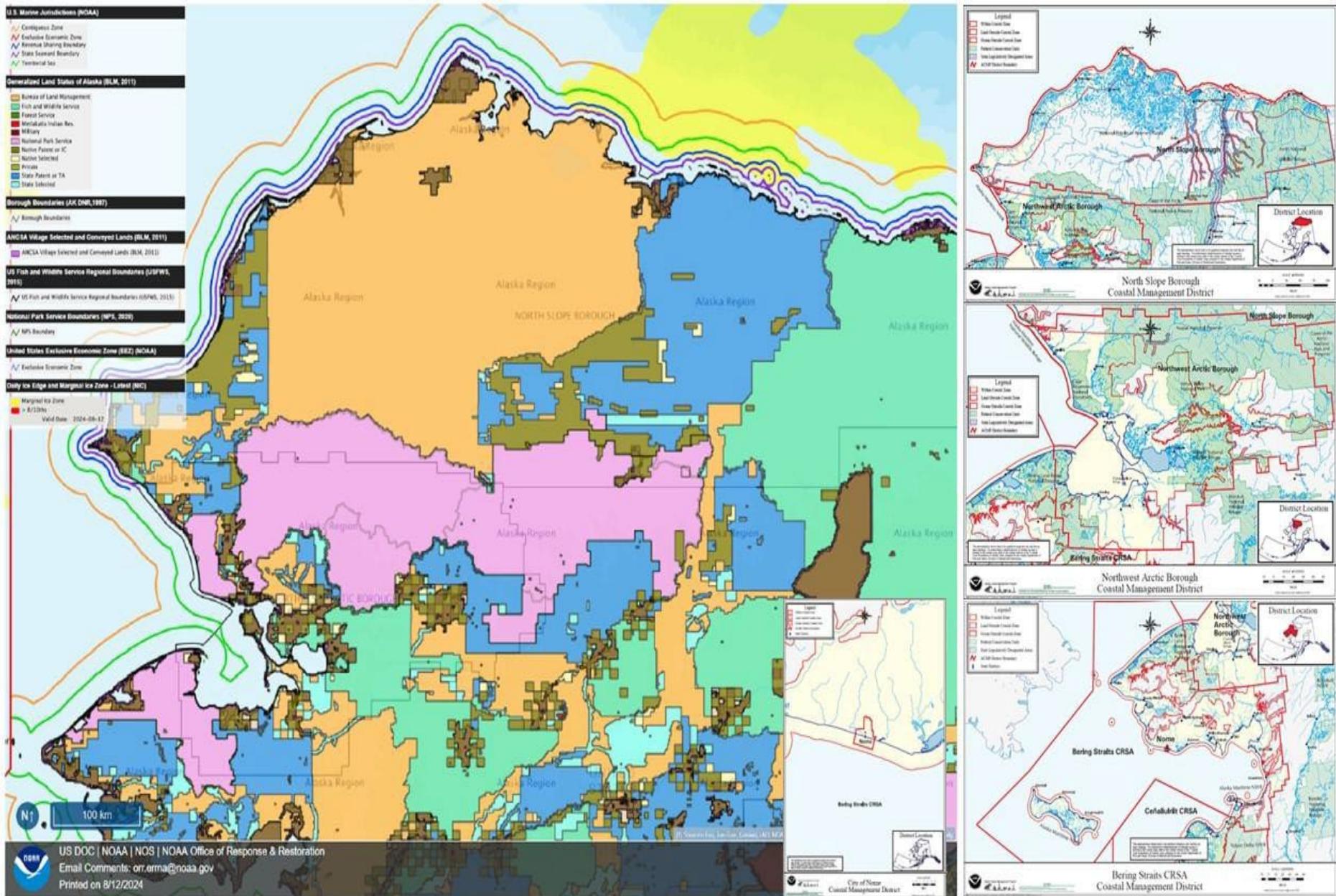


Figure 2-1: Land Ownership Map of Northern Alaska

Note: Accessed through the NOAA ERMA online tool, alongside official State of Alaska maps of each of the four ACMP Coastal Districts under study.

2.3 Analytic Methods

The research output consists of two major components: an institutional analysis and a social-environmental network analysis.

2.3.1 Institutional Analysis

Institutions matter because they create and channel power in social-ecological systems (Lovecraft 2008, Robards and Lovecraft 2010). In situations of contested natural resource use, institutions play a central role in determining if and how a particular resource can be conserved, allocated, extracted, and managed. Whether a resource can be treated as a private, public, or common resource is determined by the presence or absence of particular types of institutions, such as property rights or conservation designations. Rule sets that enshrine relationships among resources, management bodies, jurisdictions, and users also shape avenues of influence and communication over policy goals, implementation, and enforcement. In addition, organizations and individuals in large multi-scale regimes exercise agency in creating and utilizing linkages, inserting their own goals onto scientific and technical activities in an effort to influence the “norms, rules, ideas and particular sets of information across multiple institutions” (Selin and DeVeer 2003: 41). For a current example, consider the ongoing discussions of the Central Arctic Ocean (CAO) Fisheries Agreement that touch on issues of process (e.g., what political mechanism is best suited to CAO management), property ownership (e.g., quota systems, limited entry schemes), conservation (e.g., spatial, species, and ecosystem-based management), data production (e.g., responsible scientific authority), and operational rules (e.g., types of fishing gear permitted). Nations, industries, scientists, and others invested in the fate of the CAO concurrently jockey for positions of advantage in relation to economic or domestic political goals. Currently the CAO is governed by a moratorium, but this will expire in 2037 and a new set of rules will be decided upon. In this way institutions directly affect human activities and ecosystem functions; how well the new rules match the problem of conservation versus use depends on the fit between institution and the dynamic ecosystem.

The institution of the 1972 CZMA at the national level enshrined direct local scale participation as a core feature of any state coastal management program. Each state adopted this mandate in its own way dependent on regional conditions. Alaska, as only the third state in the nation to adopt a coastal management program and with a level of social-environmental complexity found in no other state, innovated institutional structures unparalleled among the world’s large subnational jurisdictions. We use Ostrom’s (1998) Institutional Analysis and Design framework and principles to analyze the ACMP’s central decision-making space, the Consistency Review Process (CRP), and other spaces that have emerged in the ensuing years. One can read more deeply about this method in Appendix A. However, two terms used in the body of the report require specific definitions: the *action situation* (e.g., National Environmental Policy Act [NEPA] process, Tribal consultation, CRP) is the limited set of factors at play in multi-actor, resource-use decision-making contexts which feature different *action arenas*, defined as goal-driven organizational groupings (e.g., DNR, National Marine Fisheries Service [NMFS], NSB). Once the program structure had stabilized, after fending off multiple political, legal, and procedural threats, the ACMP operated well for communities, in particular, Indigenous villages, who were able to engage more deeply and substantively (on the basis of statutory standing) with state and

federal agencies; exercise control over the siting and standards of development, construction, and extractive activities within their mapped coastal zone; access agency-level arenas of decision-making over the scope and conduct of development; and access funds to conduct research and participate in environmental management processes.

2.3.2 Social-Environmental Network Analysis (SENA)

Like institutional analysis, social network analysis (SNA) is a methodological strategy to understand social structure and dynamics in which multiple methods and approaches can be identified (Emirbayer and Goodwin 1994, Lewis 2011). Considering diverse scales of social organization, from agencies, companies, and organizations to families and individuals, SNA seeks to answer fundamental questions about why and how actors engage and commit to cooperate (or not) with others (Bodin et al. 2020). While social network analysis sometimes has a normative aspect to identify desirable network characteristics and outcomes (Bodin et al. 2020), it primarily supports the understanding of relational patterns and social dynamics (O'Neill et al. 2013). As applied to governance settings, Lewis (2011) asserts that the findings of social network analysis can help address the fragmentation and boundary-spanning difficulties inherent to today's complex multilateral and multi-level decision-making arrangements. It can reveal connections that cross formal organizational boundaries and thus influence decisions and outcomes in less predictable ways.

Our research makes use of SENA methods exemplified in the case studies of Rathwell and Peterson (2012), Meinen-Dick et al. (2021), and Eider et al. (2023). During information gathering sessions with representatives of state, municipal, and borough organizations, participants were asked to name and characterize the governmental organizations with whom they regularly interact. Participants named specific programs, mandates, and outreach obligations that were used to create directed, unweighted links among social nodes and between social and environmental nodes. To develop the social-environmental network map, we employed Microsoft Excel to code and track relevant nodes and ties, then input the data into the network mapping tool, Kumu (<https://kumu.io/>). Social nodes were coded for their type (state agency, coastal district, program, etc.), periods of operation or relevance, and areas of jurisdiction and authority. Environmental nodes were coded for type (species, landscape, resource development activity, infrastructure). Social-social ties were coded for type (funding, research partnership, consistency review participation, permitting, etc.), periods of operation or relevance, and strength (formality of interaction). Social ties to environmental nodes represent areas of permitting authority based on legislation and policy, whether for managing particular species or permitting particular interventions in natural systems. Environmental-environmental ties demonstrate ecological relationships such as predator-prey and habitat. The network map subsequently reveals centrality of particular actors (number of ties) within dynamic system configurations, access of actors to particular action arenas and subnetworks, and changing areas of authority over resources, species, and environments. These variables are shown to change significantly in each identified period of coastal management, representing shifting balances of power among differently positioned actors and action arenas.

Throughout the report, we present still images from the dynamic, interactive SENA map (accessible at <https://NIILAAS.kumu.io/arctic-alaska-coastal-management-transformations-from-1999-2023-5dad109e-11ca-46ad-a6fc-983711861154>). The map visually represents the

changing roles and responsibilities among a range of actors with respect to Arctic Alaska's nonhuman nature and the relationships enacted among those nonhuman actors. The full version of the SENA map covers all of what is described below, but also includes information on other major institutional changes not covered in this report. Interacting with the map offers insight into patterns of political dynamics and environmental transformation, occasioned by changing institutions.

3 Narrative of Findings

Chapter 3 of this report presents a factual narrative of the development, operation, and gradual dismantling of the ACMP, assembled from archival materials and select informants who had previously played a role in the program. It subsequently lays out key areas of coordination, regulation, and communication among sub-state jurisdictions and state and federal agencies in Alaska's Arctic coastal region today. Due to the dozens of state and federal agencies involved in the ACMP (and in coastal management in general), the complexity of multilevel interactions among different actors, and the high rates of organizational change captured in this study, the narrative and the SENA map make extensive use of acronyms. Please refer to the List of Acronyms on pages 4-5.

3.1 Phase 1: Development of the ACMP, 1977-1998

The ACMP, which was established under Governor Jay Hammond and ran 34 years from 1977 until its annulment in 2011, had its legal roots in the 1972 U.S. CZMA. Among the congressional findings compelling adoption of the national legislation were:

“There is a national interest in the effective management, beneficial use, protection, and development of the coastal zone”

“New and expanding demands for food, energy, minerals, defense needs, recreation, waste disposal, transportation, and industrial activities in the Great Lakes, territorial sea, exclusive economic zone, and Outer Continental Shelf are placing stress on these areas and are creating the need for resolution of serious conflicts among important and competing uses and values in coastal and ocean waters.”

“Because of their proximity to and reliance upon the ocean and its resources, the coastal states have substantial and significant interests in the protection, management, and development of the resources of the exclusive economic zone that can only be served by the active participation of coastal states in all Federal programs affecting such resources and, wherever appropriate, by the development of state ocean resource plans as part of their federally approved coastal zone management programs” (Public Law 92-583).

Alaska, which has more coastal area than all other states combined, was the third state in the nation to develop its own program, following only Oregon and Washington. As conceived, each state program would involve all levels of government, guided by the NOAA at the federal level, relevant state-level departments and agencies, and importantly, local governments, who were

tasked with advocating for and implementing their own coastal management priorities through the development of enforceable policies (CRS Report R45460).

The structure of each state’s program, however, was determined by the state itself. In Alaska’s program, Coastal Districts were formed either as part of existing jurisdictions (boroughs or municipalities) or as CRSA in the unorganized borough (see Figure 3-1); these substate jurisdictions were empowered to develop and enforce independent management plans in conformity with an overarching state program. Development and adoption of the ACMP, and its approval by the Secretary of Commerce, gave the State of Alaska and local actors advantages in rule-setting and decision-making, including the right to participate in binding consistency reviews for federal and state actions affecting the coast (Valentine 1994, 32-33). Each Coastal District established formal legal boundaries for their coastal zones, including important resource use areas, critical habitat areas, and customary use areas. The patchwork of federal and state land tenure arising from the Alaska Native Claims Settlement Act (ANCSA) and the ANILCA was subsumed under the unified review and permitting system of the ACMP.

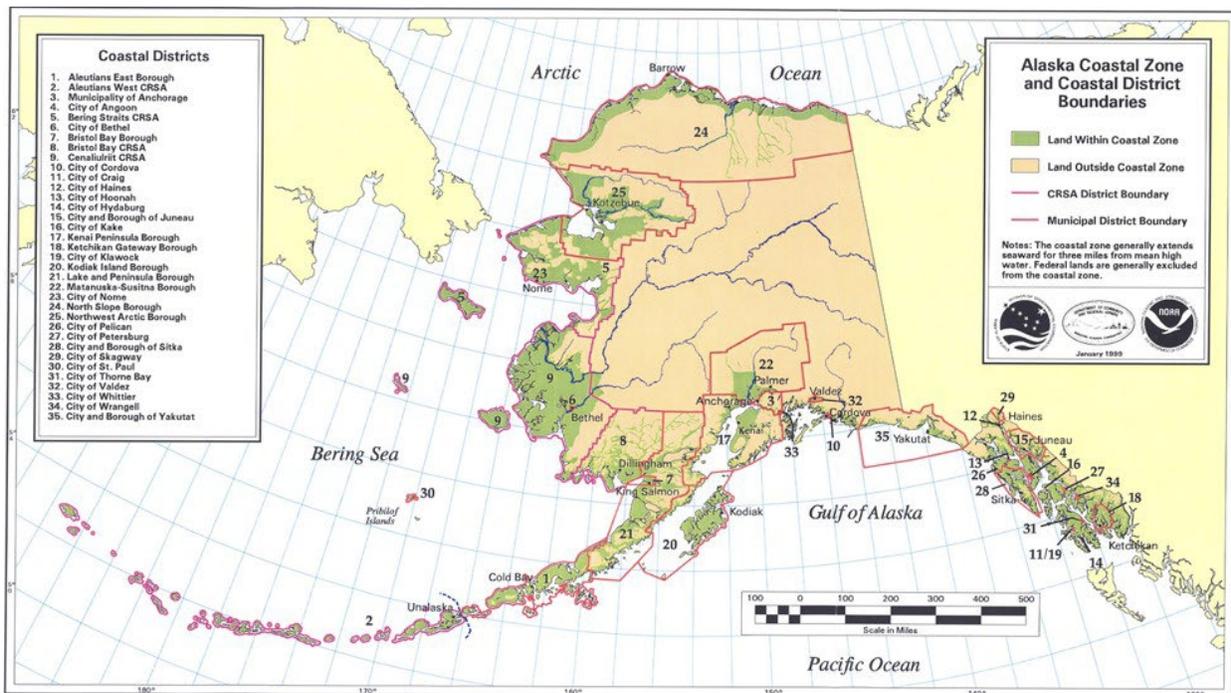


Figure 3-1: Map Depicting the Territories of the 35 Coastal Districts Active at the Height of the ACMP

The authorities and capacities afforded to Coastal Districts constitute one of the fundamental innovations of Alaska’s program. As described in a 1984 ACMP local involvement report, “participation in the ACMP by a coastal district does not confer independent regulatory authority but rather provides a basic mechanism for securing local participation in resource development decisions which impact coastal communities” (DCRA 1984: 2). District coastal management boards could set enforceable policies, regulations, and standards over activities within coastal zone boundaries (ACMP Handbook Sec. 46.40.030). This right was secured by State Administrative Order 54, which “requires that the views of local governments be given ‘great weight.’ Whether that formulation or some other is adopted in the new order and regulations, the

participating local entities must be assured a viable part in the permit review” (NOAA 1984: 14). An independent study of the program indicated that in the ACMP’s formative years the success of local participation varied across coastal districts (Valentine 1994). Subsequent federal assessments and public comments from Coastal District representatives, however, indicate that Districts did achieve meaningful participation in the program by the early 2000s. Participation in the program further made both the State of Alaska and Coastal Districts eligible for federal funding towards program staffing and implementation, including coastal restoration and conservation. For Alaska, as one of the first adopters, the process of standing up the program involved the complex task of constructing a governance network and establishing newly devolved roles and responsibilities for its participants.

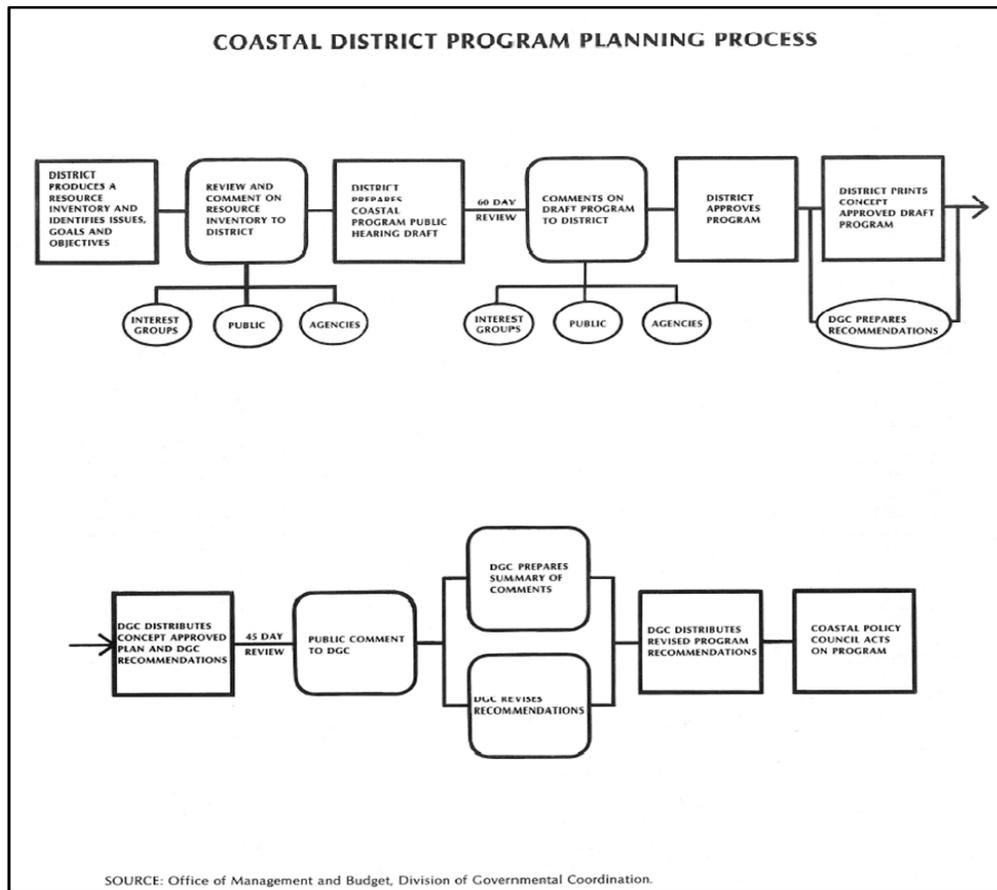


Figure 3-2: Diagram Depicting the Approval Process for Submitted Coastal District Plans and Enforceable Policies

Source: Local Involvement with Alaska Coastal Management: Past Experience and Future Prospects, a report from the Interdistrict Conference Project, July 1984.

Central to the development of the ACMP was the Alaska Coastal Policy Council (CPC), which was housed in the Governor’s Office and staffed by the ACMP office in the Division of Policy Development and Planning (NOAA 1980). The CPC consisted of 9 public members nominated from each of 9 general State regions outlined in the Act and representatives from each of 7 State

government agencies (ACMA 1977). The CPC was charged with reviewing and approving coastal district management plans (Alaska had 35 by 1990) and eventually became an official advocacy body for Coastal District rights. In 1982, the ACMP was relocated from the Division of Policy Development and Planning to the newly established Division of Governmental Coordination (DGC) with NOAA funding managed by the Alaska Office of Coastal Management (OCM) (NOAA 1984). Figure 3-3 shows the process by which the CPC and DGC collaborated to review and approve Coastal District plans. In their first years, these bodies were also tasked with coordinating state agencies in the development of standards and standardized review procedures for coastal projects. In parallel, and often at cross-purposes with DGC and the Office of Coastal Management, the state Department of Community and Regional Affairs (DCRA) engaged with coastal districts and municipalities to develop their regional enforceable policies, coordinate grant funding and technical assistance, and conduct meetings and workshops. By 1982, understanding and collaboration between OCM and DCRA had improved, and DGC succeeded in securing a Memorandum of Understanding with the Commissioners of the Alaska Department of Fish and Game (ADF&G), DNR, and Department of Environmental Conservation (DEC) to provide a unified interagency review of development activities requiring permits from more than one State agency (NOAA 1984).

The essence of the ACMP lay in the DGC-coordinated CRP, which brought together state and federal resource agencies, relevant Coastal Districts, and project applicants (often corporations) with the purpose of determining whether a state or federally sponsored project (e.g., road or port construction, utility work, exploration and development projects) met both state and district standards and stipulations (see Figure 3-3). The CRP itself was far from satisfactory for both Coastal Districts and agencies throughout much of this first phase; DGC staff disagreed internally on their responsibilities for involving Coastal Districts in the CRP and for consulting and enforcing Coastal District policies (Valentine 1994). But the CRP nonetheless represented the most effective approach available for coordinating the review of projects and implementation and enforcement of plans (*ibid.*). Agencies participating in a CRP were determined by the kind of permits necessitated by the project application; many CRPs required only a single agency's review and approval, and others could be expedited if DGC had categorically determined the needed permits concerned routine, accepted, and well-understood activities. In the event that permits were required from only one agency, that agency would assume responsibility for coordinating with the applicant and affected Coastal District. At the conclusion of a CRP, that action situation either dissolves or is stabilized through a project approval and allowed to materialize in the form of, for example, a new road or exploration well with requisite monitoring and permit evaluation. The character, composition, and effectiveness of CRPs, however, varied case-by-case.

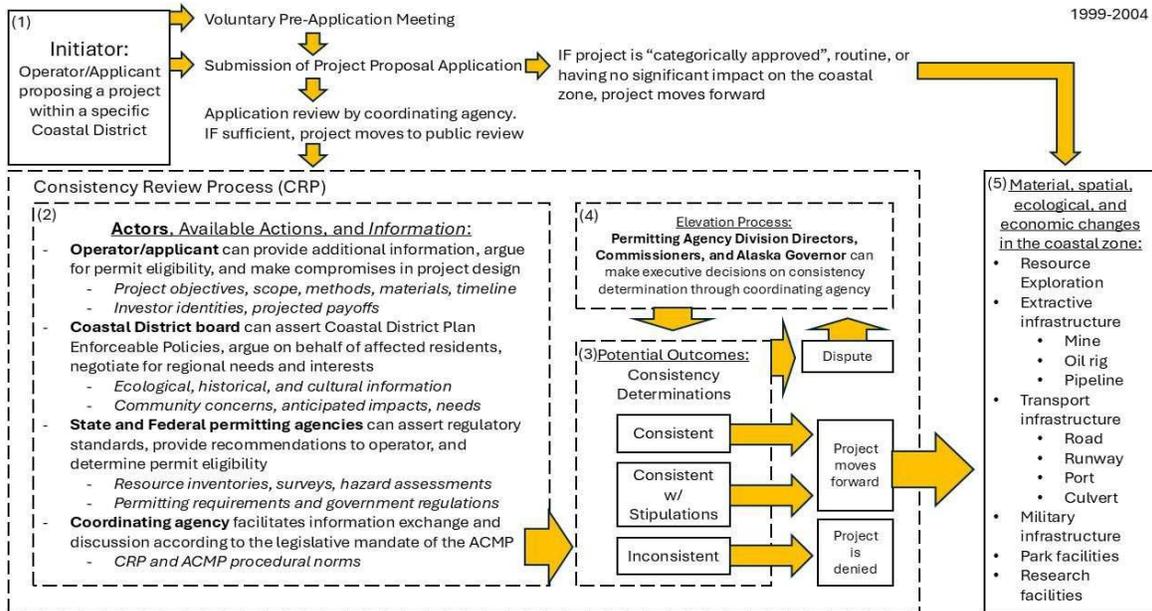


Figure 3-3: Idealized Representation of the Consistency Review Process as an Action Situation

Source: Ostrom 1990

Note: A CRP was initiated when a federal, state, or private entity wished to conduct economic activities within the coastal zone. The process brought together four types of actors, each with a clear set of available actions, rights, and information resources. The coordinating agency (DGC or, after 2003, DNR) weighed input and made a consistency determination, which could face dispute and elevation, or move forward with the awarding of permits.

Archival research indicates the greatest urgencies at the time of program adoption included: regulation of the newly operational North Slope oil complex, centered on Prudhoe Bay, and oil and gas exploration on the OCS in the Bering and Chukchi seas. The NSB, a predominantly Iñupiat municipality, had successfully drafted its enforceable policies by 1978, with the stated goal of “safeguard[ing], as comprehensively as possible, the fish and game resources on which the subsistence economy and culture of the local residents depend” (Maynard and Partch 1989: 7). Their original regional plan for Prudhoe Bay, called the Mid-Beaufort Coastal Zone District, not only zoned the oil fields under Borough authority, but established a permit system under the NSB for both oil and non-oil-related uses. In response, the CPC indicated that NSB had exceeded their authority in seeking extensive regulatory oversight over oil development, leading them to retract it in 1980. A NSB plan would not be approved by the CPC until April 1985, but would again face termination, now from the federal Office of Ocean and Coastal Resource Management (OCRM), in 1986.

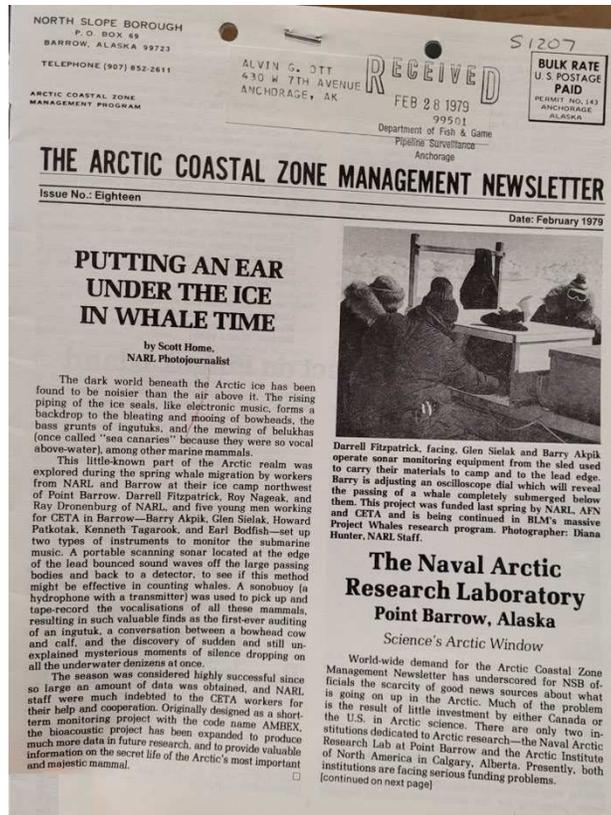


Figure 3-4: Front Cover of the February 1979 Edition of ACZM Newsletter

Note: Published by the North Slope Borough between 1977 and 1979.

This was perhaps the most crucial time period for NSB participation in the program as, between 1977 and 1988, miles of road on the North Slope increased from 138 to 357, the number of drill sites from 22 to 95, and exploration sites from 63 to 104 (Lovecraft et al. 2022). Figure 3-4, depicting a short-lived coastal management newsletter, demonstrates the importance attributed to the ACMP by the NSB in the program's earliest years. In 1988, the federal evaluation of the ACMP took a harsh stance on what they saw as inadequate state agency engagement with and support for the NSB, citing failures to share expertise, provide essential information, and uphold efforts to monitor and enforce environmental compliance by the oil industry. Even without a coastal management plan, however, NSB representatives were able to take part in state planning processes throughout the 1980s and 90s, with the notable success of creating Conflict Avoidance Agreements (Winter 2013) to protect bowhead whales and reduce or eliminate conflicts and interference with subsistence bowhead whaling timing and practices.

The other challenge, posed by imminent exploration leases in the OCS, was compounded by two institutional factors: the contested status of OCS review under the ACMP (see Figure 3-5) and the municipal status of nearly half of Alaska's landmass, including much of Western Alaska, known as the unorganized borough. Without an overarching borough government, Iñupiat and Yupik communities of the Seward Peninsula and Northwest Arctic were organized into the Bering Straits and NANA CRSAs, which lacked land use and zoning rights and depended on the state to enforce their enforceable policies (Wilson 2018). The enforceable policies and governance for the two CRSAs, however, would take nearly a decade to stand up, with assistance

from the DCRA in drafting plans and from the ADF&G and DEC in cataloging natural resources. By 1984, no formal structures or process had been established for CRSAs and, noting that the unorganized borough would likely face some of the most intensive development over the coming years, federal evaluators recommended improved funding, training, and capacity-building for CRSA Boards. Only with the 1990 CZMA amendments, which broadened the CRP regulations to address both direct and indirect effects on the coastal zone (NOAA 2020, 4-5), could any Arctic Coastal Districts provide enforceable input on OCS development. By this time, over 996 leases and 71 exploratory wells were already active (Cicin-Sain et al. 1992). Implementation of institutions takes time; identifying, crafting, and legally securing the goal of the ACMP to create local control or heavily weighted local input on OCS, took 13 years of this initial phase.

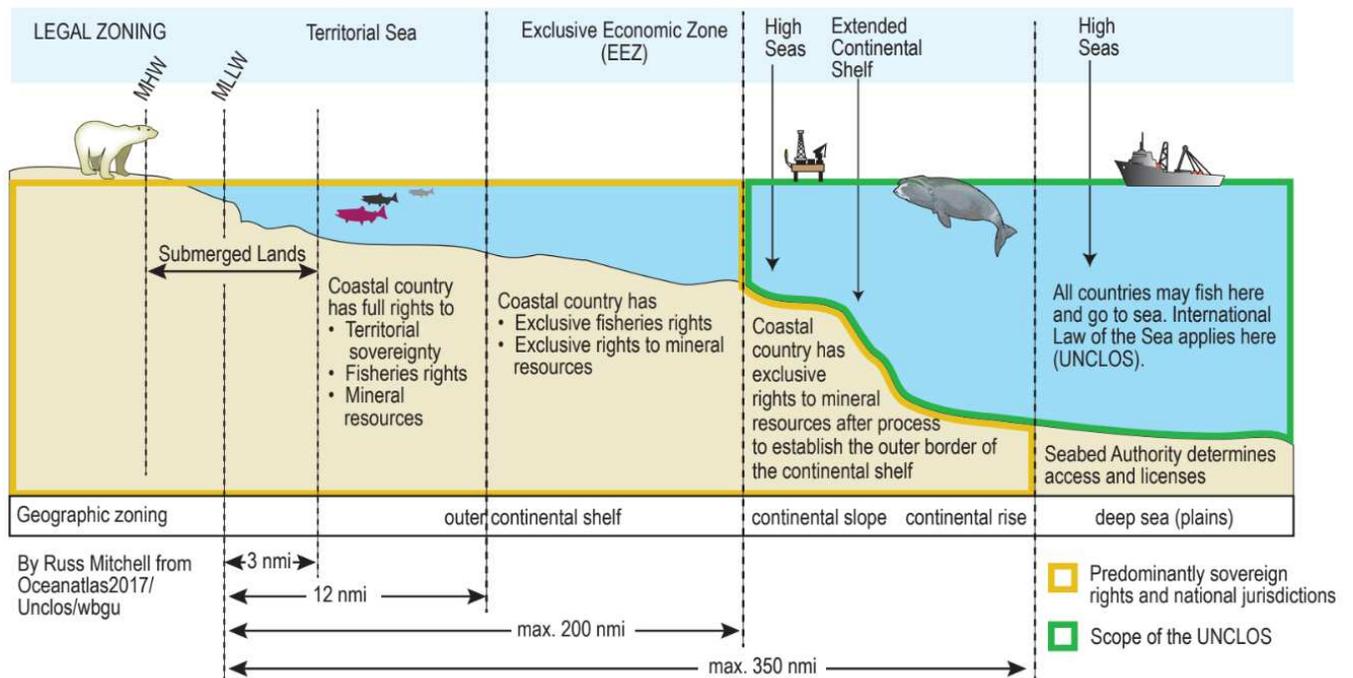


Figure 3-5: Depiction of the Lateral Areas of Jurisdiction Within National Waters

Since Congressional amendments to the CZMA in 1990, coastal states (and with them, Coastal Districts) are empowered to participate in CRPs for activities beyond the territorial sea if they are determined to pose direct or indirect impacts to the coastal zone.

Despite the difficulty of politically organizing Bering Strait communities, the Bering Straits CRSA enforceable policies were certified in 1987, only one year after the NANA region became the NAB, and just a year before a major sale of Chukchi Sea leases in May 1988. The Bering Straits CRSA enforceable policies, however, would go into effect only in 1989, while the NAB enforceable policies would not have full geographic coverage of the municipality until 1998, when lands were transferred from the NSB, limiting the extent to which their board could participate in CRPs concerning their resources. Representatives of the Bering Straits CRSA reported that many stipulations put forward in their enforceable policies were not sufficiently recognized or addressed by the DGC in the CRP process (Valentine 1994: 100).

At the municipal level, the Nome CMP, covering 21 square miles of the second-class city's jurisdiction, was approved in 1983. According to a report for the MMS, the community of Nome sought its own program primarily to enhance its planning capacity, capitalize on potential offshore oil development, and protect the city from any adverse impacts (MMS 1987). The Nome CMP was created immediately following Nome's successful legal annexation of 4,953 acres of land and 5,760 acres of offshore water area and despite efforts by the Bering Straits CRSA organizers to integrate Nome into a region-wide plan, which would have required Nome to compromise with subsistence-focused Tribes and Alaska Native Corporations (ibid.). In this process, Nome differentiated itself from the rest of the region as a service center, which has distinct interests in relation to the industries and infrastructure concentrated in its limits. Among the key enforceable policies in the Nome CMP were water quality protections against mining and drilling, strict rules for public facility construction, a subsistence priority for fishing, and the requirement that large-scale employers wanting to develop the region would fund the construction of worker housing.

Designing rules and pivoting social-legal-economic expectations was a slow and contentious process, but not unsuccessful (Valentine 1994). In fact, Valentine's report, though indicative of many perceived shortcomings of the ACMP, demonstrates the messy social learning process that accompanies any new introduction of legal or regulatory norms. Writing in 1994, Valentine captured a contested space of unwieldy new policies, roles, and functions for governments that had never before been networked towards shared goals. Program design and goals inherently shifted the balance of power among participating organizations, who in turn took advantage of their newfound positions or their established social and political capital to support, undermine, and interpret what were entirely novel governance opportunities. Valentine observed diverse and often contradictory stances taken by various agencies and Coastal Districts, revealing no single clear position among any grouping of actors regarding the effectiveness or value of the ACMP. But in spite of such complexity, program officials and Coastal District representatives, spearheaded by the DGC and CPC, continued to iterate various provisions, procedures, and norms of the program, with major amendments to the Alaska Coastal Management Act and Alaska Administrative Code enacted in 1990, 1993, and 1994.

Throughout this first phase, federal evaluations repeatedly exhorted the lead state agencies to provide more comprehensive guidance to Coastal Districts in the formulation of their plans and more opportunities for local actors to learn about and engage with the program (NOAA 1984, 1987, 1988, 1990, Valentine 1994). Encountering issues of regulatory misapplication, inconsistencies in policy language, and industry resistance, this iterative process of performance and plan review and refinement at all levels of government could be understood as the weaving-together of the ACMP network, whereby trust relationships were fostered and congruent procedures and expectations of the program established. Despite challenges highlighted by Valentine (1994), this emerging trust in and engagement with the program, found at both state and Coastal District levels, resulted in collaborative efforts at program improvement, including propositions for capacity-sharing among agencies and Coastal Districts, improved review coordination, financed devolution of monitoring and compliance enforcement to Districts, and public information and education initiatives (NOAA 1992).

Over the 21 years of this initial phase, local, state, and federal representatives engaged in a collective learning process centered around the novel concept of the coastal zone as a space of

common interest. By 1999, an array of research publications, guidance documents, handbooks, convenings, and political programs had elaborated on and integrated the ACMP into the fabric of state decision-making (Figure 3-6). With the NAB Coastal District boundaries formalized, all Coastal District policies approved, statutory amendments codified, and the ACMP handbook in its final definitive print, 1999 marks the end of Phase 1 and the beginning of Phase 2.

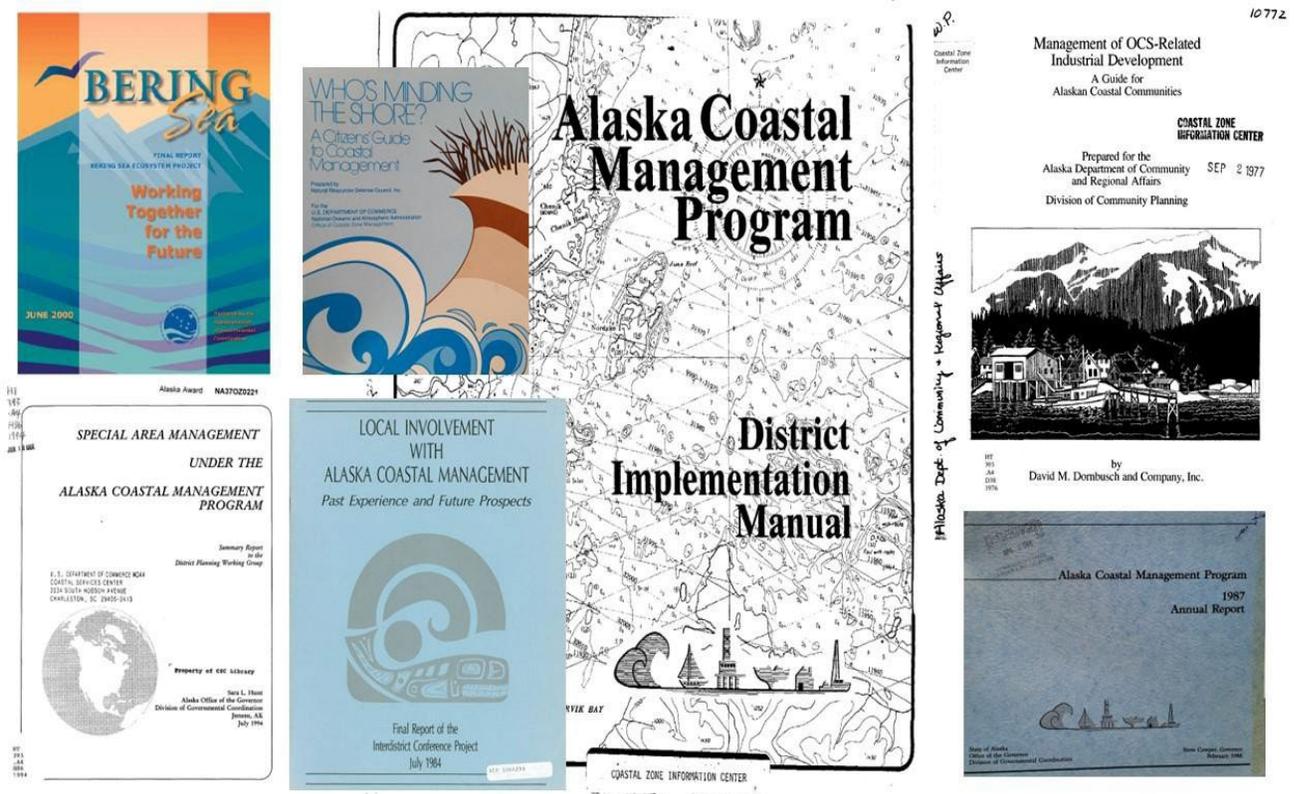


Figure 3-6: A Selection of Publications, Reports, and Guidance Documents from the First Phase of the Alaska Coastal Management Program

3.2 Phase 2: ACMP Institutional-Ecological Network, 1999-2003

Once the two boroughs, the City of Nome, and the Bering Straits CRSA had formalized their management plans and zoning, the 1990 CZMA Amendment Bill had subjected OCS activities to coastal management review, and the CRP had been standardized, a relatively durable superstructure stabilized the governance network in Arctic Alaska (Figure 3-7). Except for Nome, the three other coastal districts identified subsistence as the primary and highest priority use for all lands and waters within their district boundaries. The NAB furthermore included conservation and customary use stipulations in its plan for specific areas of cultural and ecological significance (e.g., Sisoalik Spit, Cape Krusenstern, Selawik River). This dense and highly interconnected configuration represents Phase 2 for the ACMP’s Arctic coastal districts, a phase that represents the peak of the ACMP network’s strength in the Arctic, but that lasted only five years.

Phase 2 of the ACMP’s full operation in coastal Arctic Alaska witnessed major physical and spatial transformations of the coastal social-environmental system significantly affecting

humans, economies, industries, ecosystems, animals, and cultural activities. These included regular maintenance dredging and harbor improvements at the Port of Nome; the expansion of the DeLong Mountain Transportation System (DMTS) for the Red Dog Mine; lease sales in the Chukchi and Beaufort Seas; statewide gravel mine rehabilitations; and the construction of the Northstar, Alpine, and Badami extraction facilities on the North Slope. Dramatic landscape and seascape changes in coastal Arctic Alaska related to these projects were the geo-ecologically complex mobilizations of materials in the North Slope oil complex, including sea water injection sites; disposal pits for drilling muds, pipelines, and gravel mines and islands; the first noted increase in thermokarst formation in the NSB (Raynolds et al. 2014); DMTS infrastructure including a shallow-water port, haul road, and heavy metal-rich tailings ponds; several major spills of fuel, tailings, and wastewater at Red Dog Mine (Gestring 2020); and intensified sea ice retreat and coastal erosion (Maslanik et al. 1999, Hufford and Partain 2004, Jones et al. 2009). This list leaves out other intangible and tangible outcomes that are too numerous to recount here related to the identity and transformations of the North Slope region such as shifts in cultural norms, unreported accidents, creation of legacy pollution, transfers of wealth, fragmentation of ecosystems, and generalized industrial development (Lovecraft et al. 2022). Indigenous observations further attest to significant region-wide changes in sea ice, animal health, and weather (Krupnik and Jolly 2002).

Relational changes to the human portions of the network during this time include regular communications and information-sharing among the widest range of actors (Coastal Districts, state and federal agencies, and project operators) and the standardization of the procedurally mandated forum of the CRP for regular, timely negotiation. Figure 3-8 through Figure 3-11 show each Coastal District connected to the DGC and receiving program assistance from the CPC and DCRA. The mandate and commitments of the DGC to conduct the CRP in accordance with ACMP guidelines ensured that Coastal Districts were able to legitimately assert their enforceable policies (captured in the connections between the District and environmental elements) alongside the state and federal agencies coordinated by the DGC.

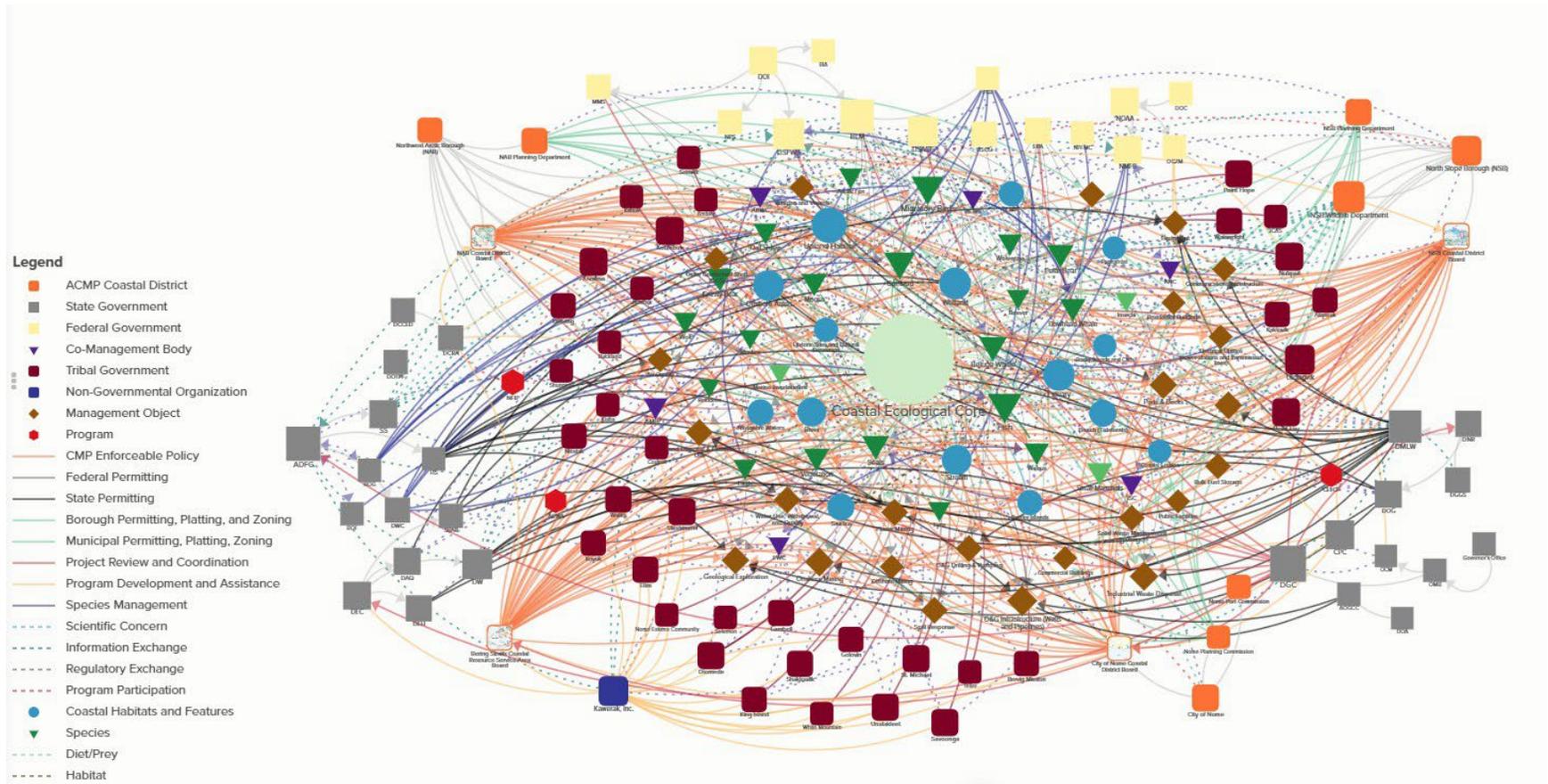


Figure 3-7: All-inclusive SENA Map for 2002, Depicting high Connectivity and High Levels of Coastal District Authority

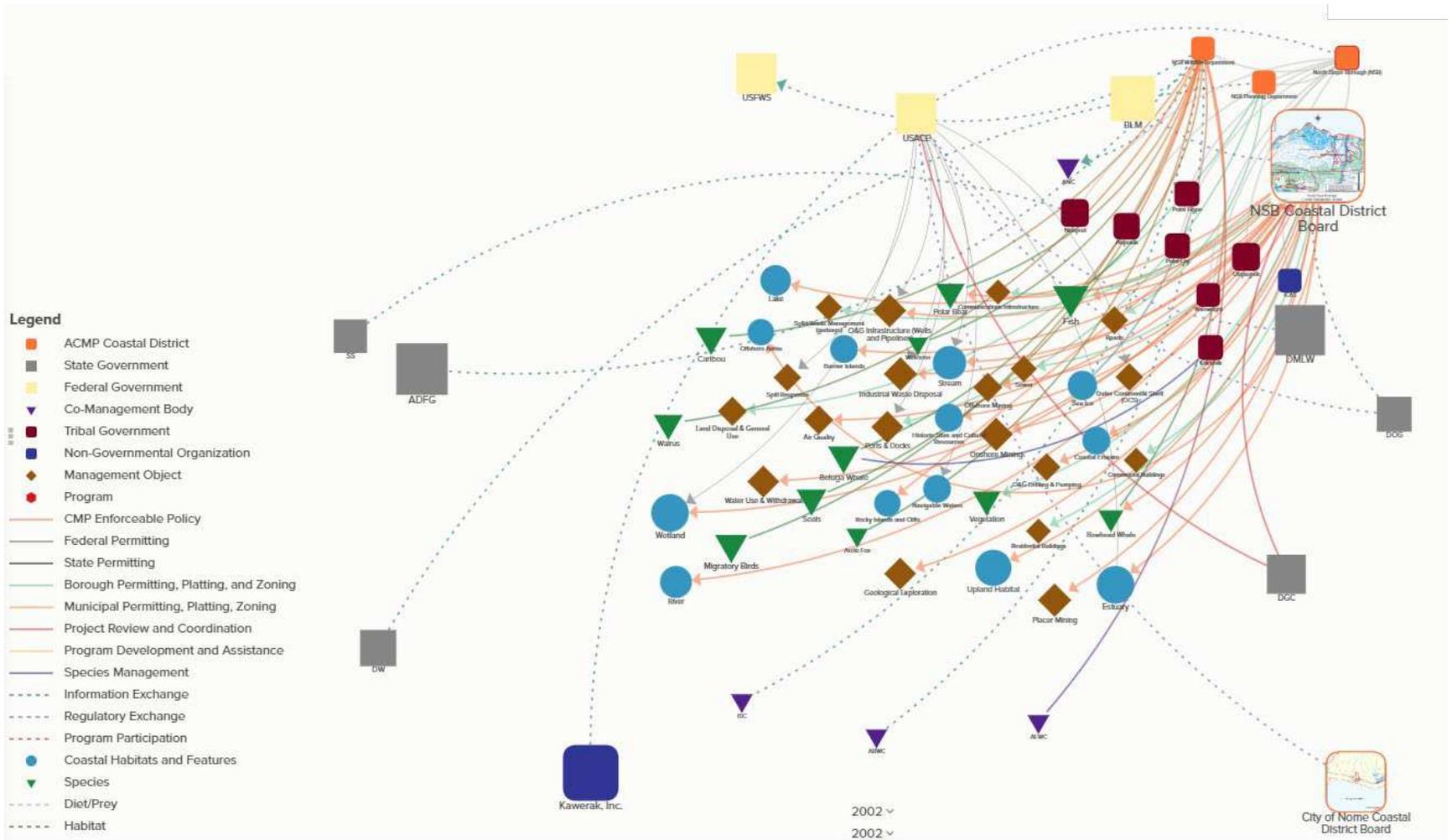


Figure 3-8: North Slope Borough SENA Map for 2002

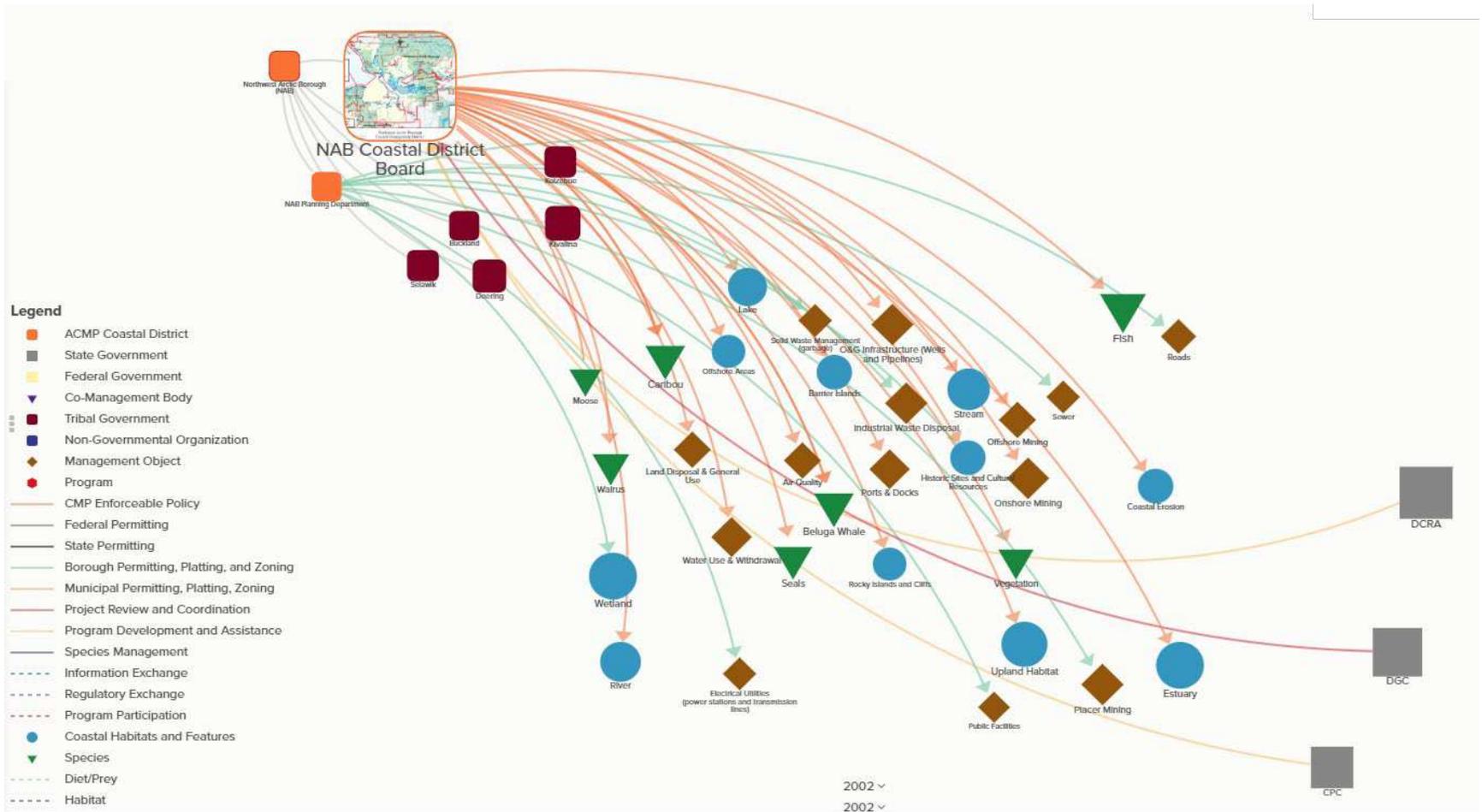


Figure 3-9: Northwest Arctic Borough SENA Map for 2002

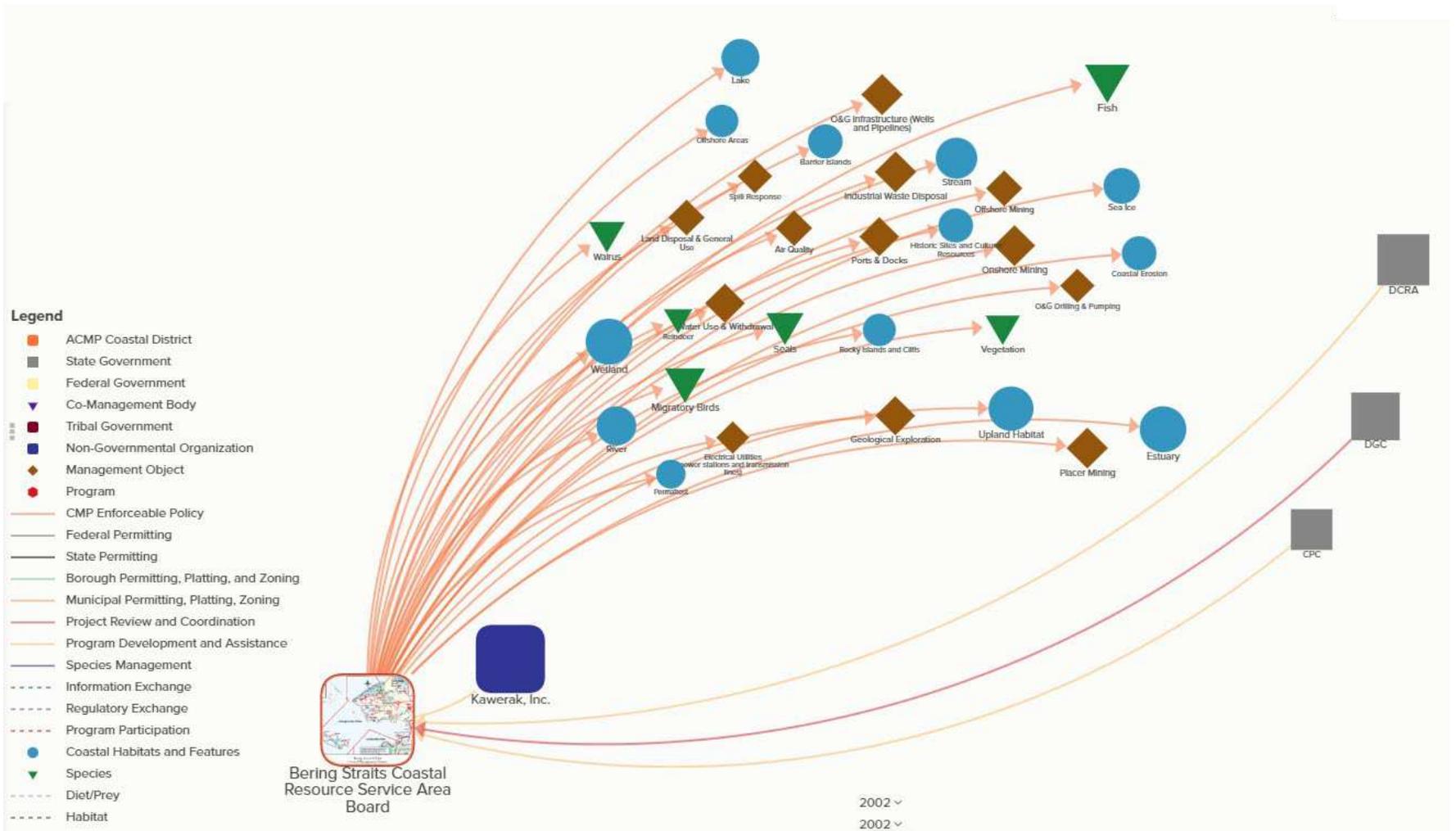


Figure 3-10: Bering Straits CRSA SENA Map for 2002

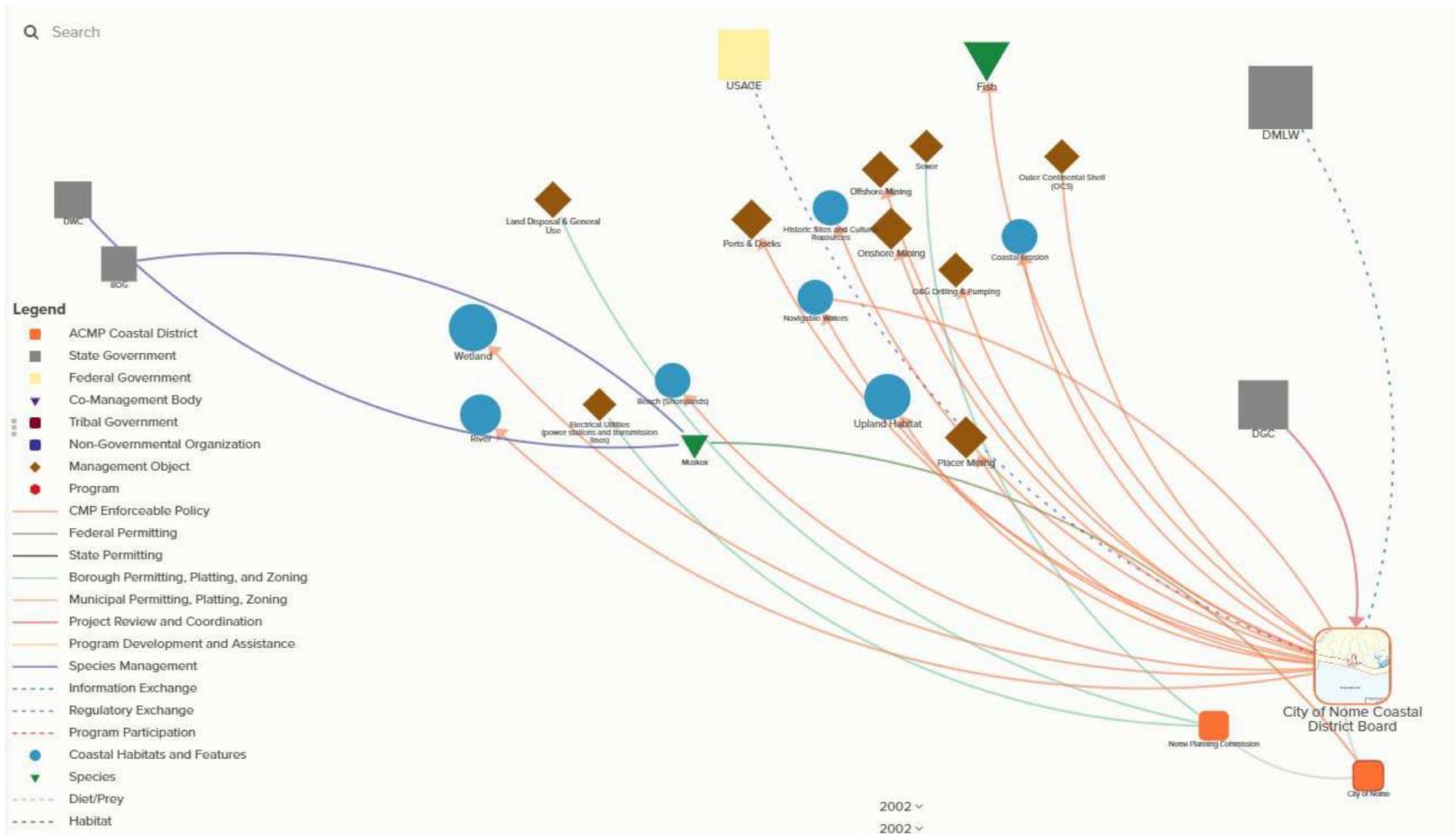


Figure 3-11: City of Nome Coastal District SENA Map for 2002

While the CRP succeeded in mediating smaller projects, some disputes around larger projects were elevated to the judiciary, most notably by the NSB in response to OCS lease sales to ensure protection of subsistence resources. This phase saw the greatest amount of authority and responsibility for the Coastal Districts. Coastal Districts were formally empowered to implement their plans through participation in state and federal consistency reviews, local land use plans and regulations, land use and building permits, capital improvement programs, land sales, acquisition or leasing, cooperative agreements, general permits, participation in state and federal planning projects, and public engagement. State agencies had unified and streamlined their internal project review process, developed an ACMP working group, exchanged regular communications with federal agencies and Coastal Districts on program improvement, created Memoranda of Understanding with federal agencies, and distributed an ACMP newsletter. Coastal District conferences had been held in 1984, 1990, and 1992, and ACMP workshops were held annually from 1993 onward.

The CRP, directed from the Governor's Office through the DGC and CPC, not only instated regular and consistent communication among a range of institutional actors, but supported Coastal Districts to apply their own standards and policies to major decisions affecting the coast. The importance of subsistence to CMPs allowed for the direct advancement of Indigenous values and interests in CRPs, which were realized in multiple decisions to site projects outside of sensitive ecological areas and ensure quality monitoring efforts. Available CRP summaries for all active coastal districts in the state for the years 1997–2003 reveal 537 consistent reviews, 10 inconsistent, and 1,130 consistent with stipulations frequently based on Coastal District plans, indicating that Coastal District participation impacted over two thirds of permitting decisions. Coastal Districts were located more centrally to decision-making spaces than prior to the program. DGC, as a coordinating agency without a stake in the outcomes of project proposals, helped ensure that the widest range of institutional actors had relatively equal roles to play in decision-making (Figure 3-12). NOAA program evaluations served to develop relational accountabilities and adherence to the requirements of the CZMA. The number of institutions involved in project development, the frequency and quality of information sharing, and the reliability of procedures are all considered high during this period.

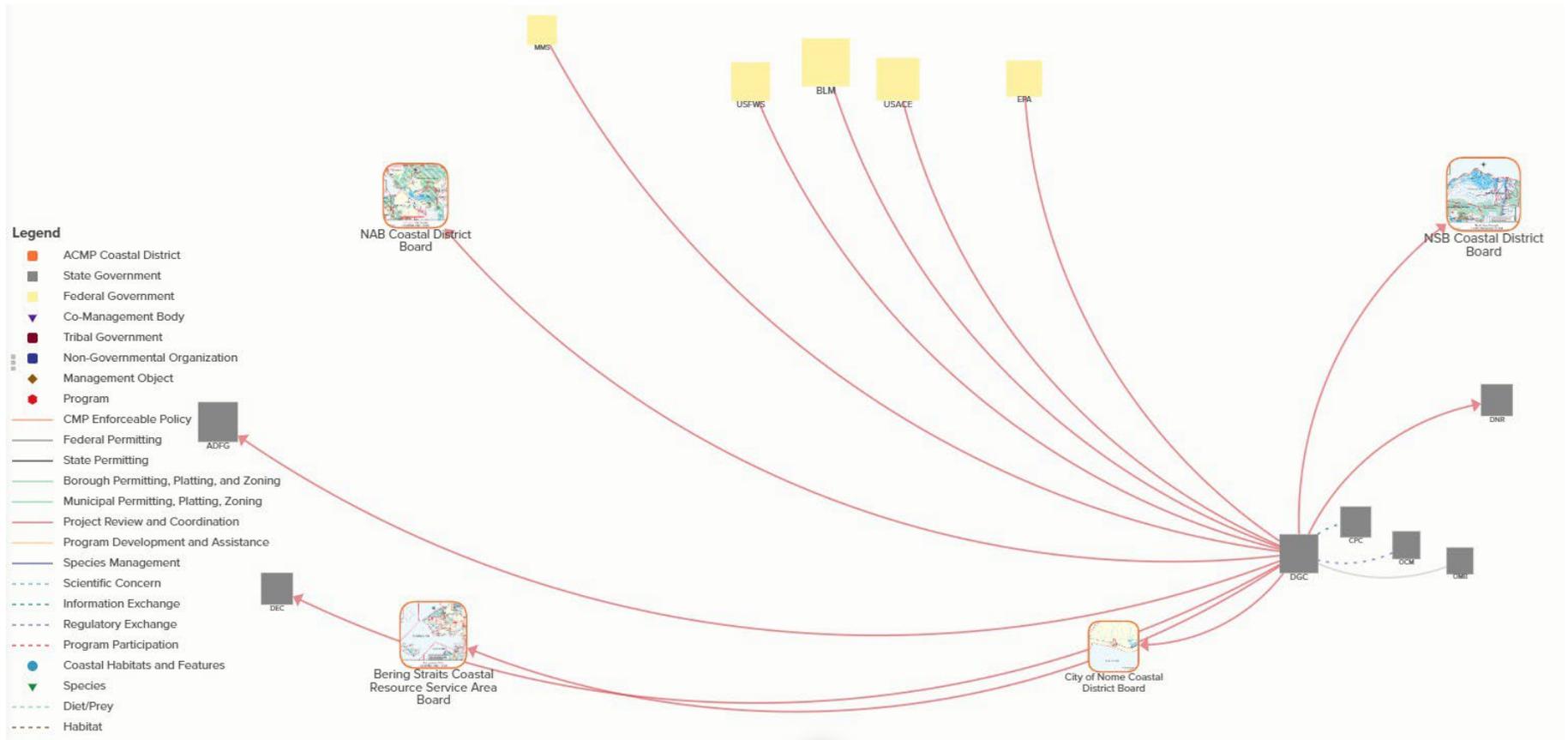


Figure 3-12: Division of Governmental Coordination Relationships for Facilitating the Consistency Review Process

3.3 Phase 3: ACMP Institutional-Ecological Network, 2003-2011

The third phase of coastal management began in 2003, after Governor Frank Murkowski pushed the controversial decision to radically alter the structure, requirements, and authorities of the program. The key changes implemented included movement of the ACMP into the State of Alaska DNR, first under the Office of Project Management and Permitting, then in 2008, under the newly established Division of Coastal and Ocean Management (DCOM), the revision of internal program standards and regulations in 2004, and requirements for major overhauls of district enforceable policies to comply with the new standards. The consequences of these institutional changes were severe, especially for the Coastal Districts, several of which disintegrated due to complicated new requirements that District plan policies “must relate to the uses and practices identified in the new ACMP regulations; may not address any matters regulated by DEC (i.e., air, land, and water); may not adopt, duplicate, repeat, restate, or incorporate by reference a State standard or other State or federal law; must be clear and concise as to the activities and persons affected by its requirements, and use precise, prescriptive and enforceable language” (NOAA 2008: 10).

Figure 3-13, Figure 3-14, and Figure 3-15 show how the nullification of enforceable policies restricted the areas over which Coastal Districts had authority, with the NAB and NSB still operationalizing Borough zoning and permitting powers, and the Bering Straits CRSA deprived of all decision-making power. New plans took significant effort and resources to devise, were not necessarily enforceable, and ultimately offered them only a fraction of the oversight and authority that they had enjoyed previously. The Bering Straits CRSA’s revised enforceable policies, drafted in 2007, lost all provisions relating to subsistence protection, environmental health, and mining oversight. These were in the final stages of DNR approval when the program terminated in 2011. The NSB resubmitted its plan in 2007 (NSB 2007), which was rejected by both the state and federal governments, and ultimately opted to dissolve its district and incorporate applicable provisions into Borough code Title 19. The NAB successfully resubmitted its plan in 2010, one year before the program’s annulment, though the single approved policy concerned wind generation facilities and birds. The NAB has subsequently incorporated other applicable provisions into Borough Title 9. The City of Nome successfully amended and passed its plan in 2006 (Figure 3-16), albeit with much more limited areas of enforcement and many of them pro-development rather than conservation.

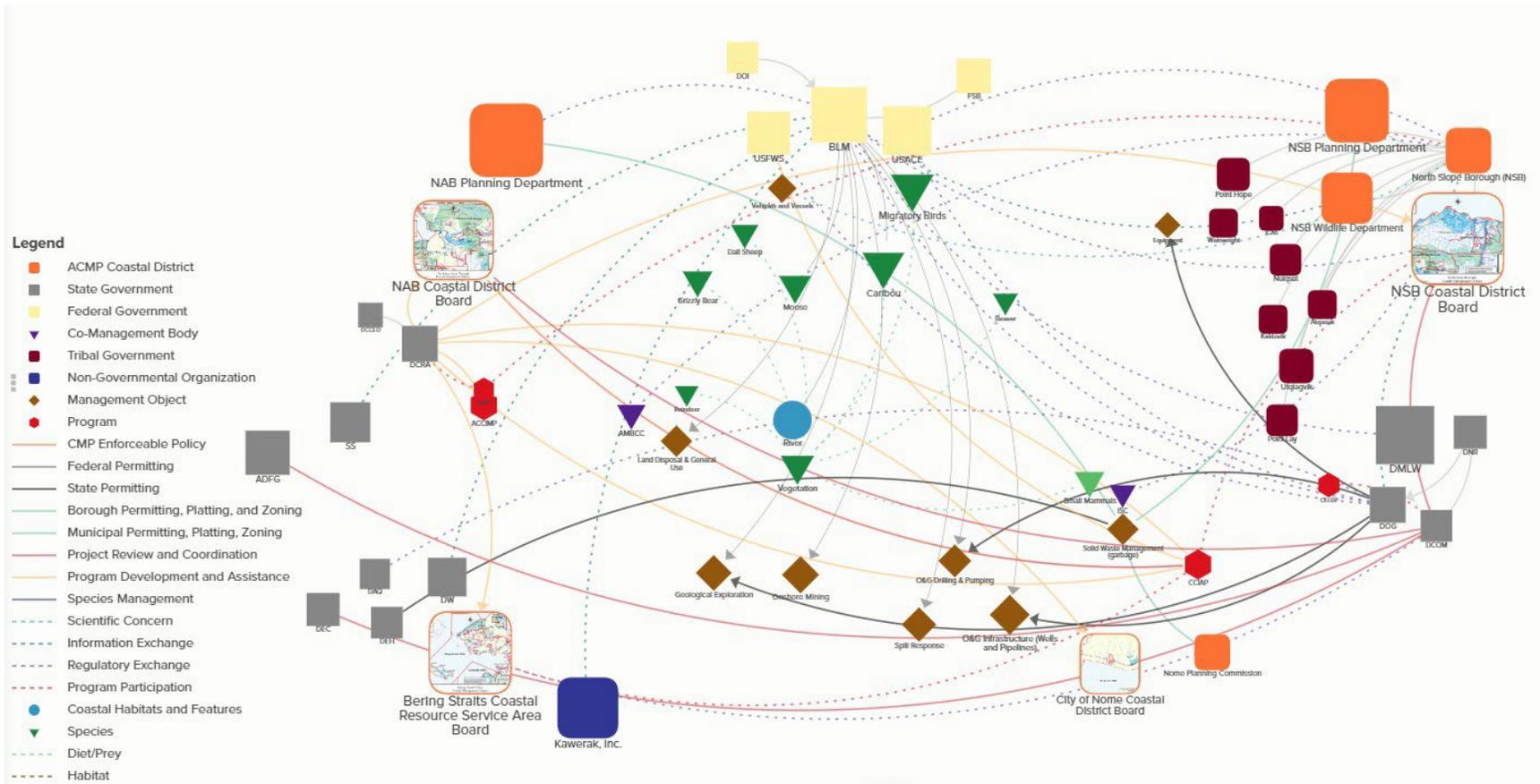


Figure 3-13: North Slope Borough SENA Map for 2009 (without operational enforceable policies)

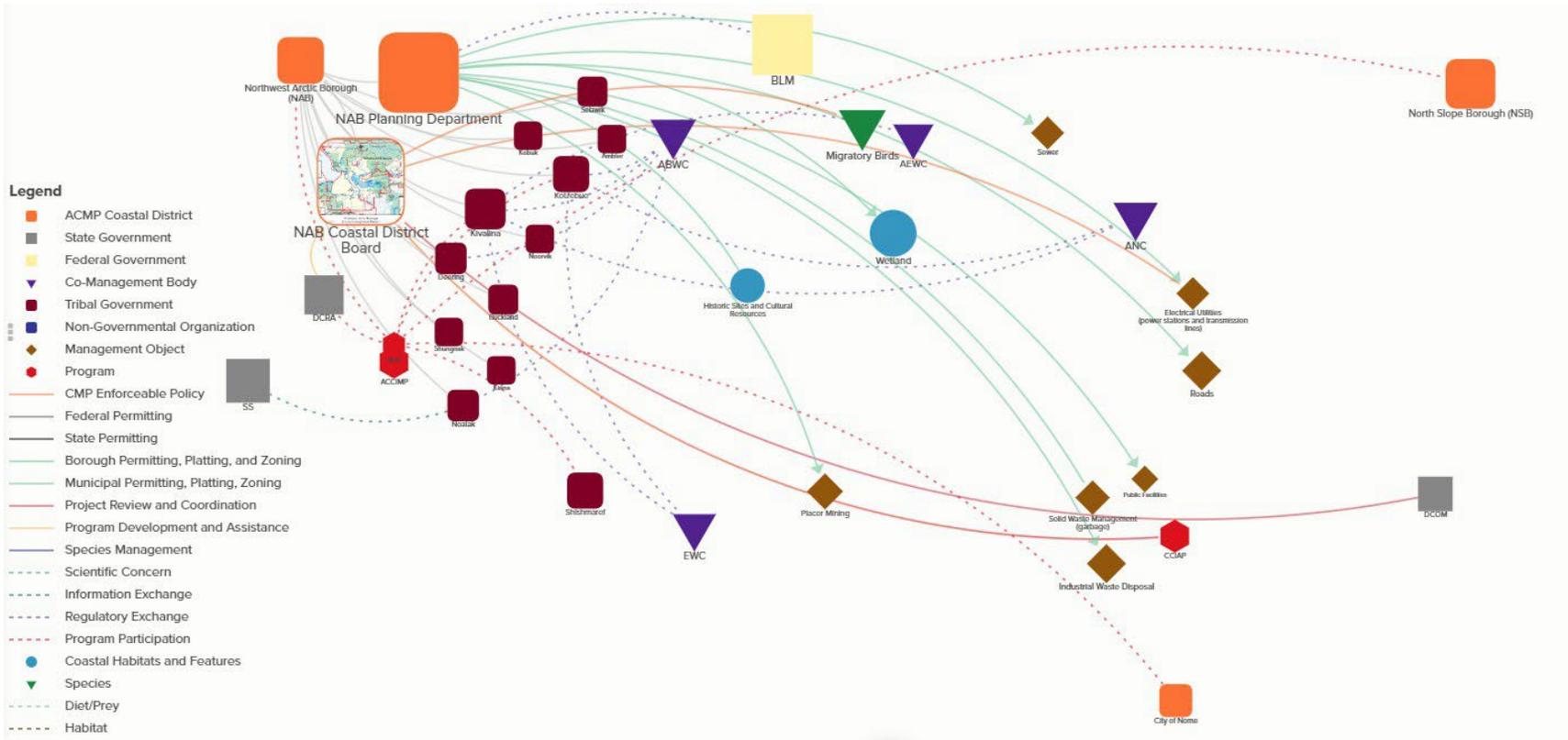


Figure 3-14: Northwest Arctic Borough SENA Map for 2009 (with only one approved enforceable policy)

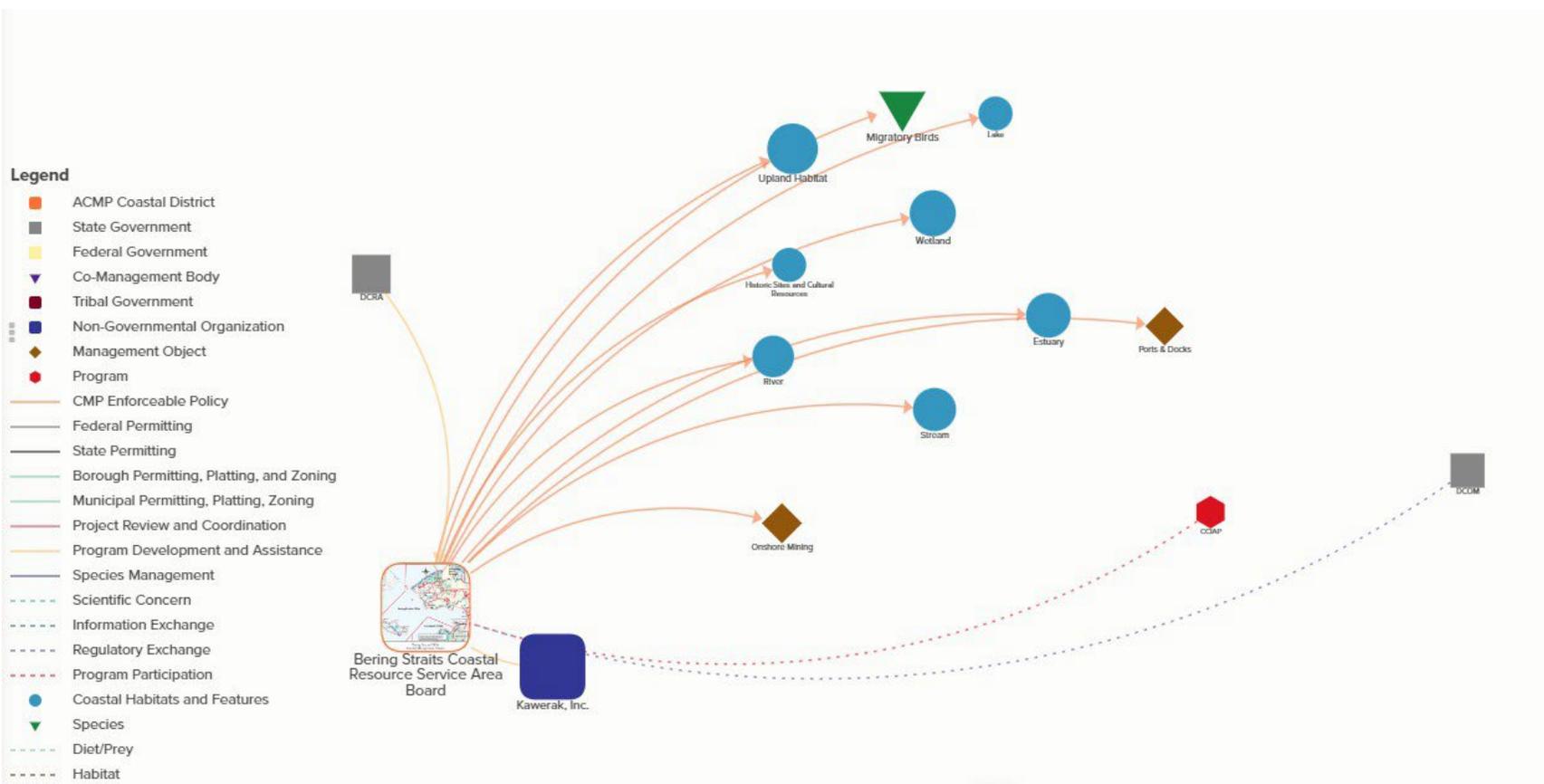


Figure 3-15: Bering Straits CRSA SENA Map for 2011 (with restricted enforceable policies)

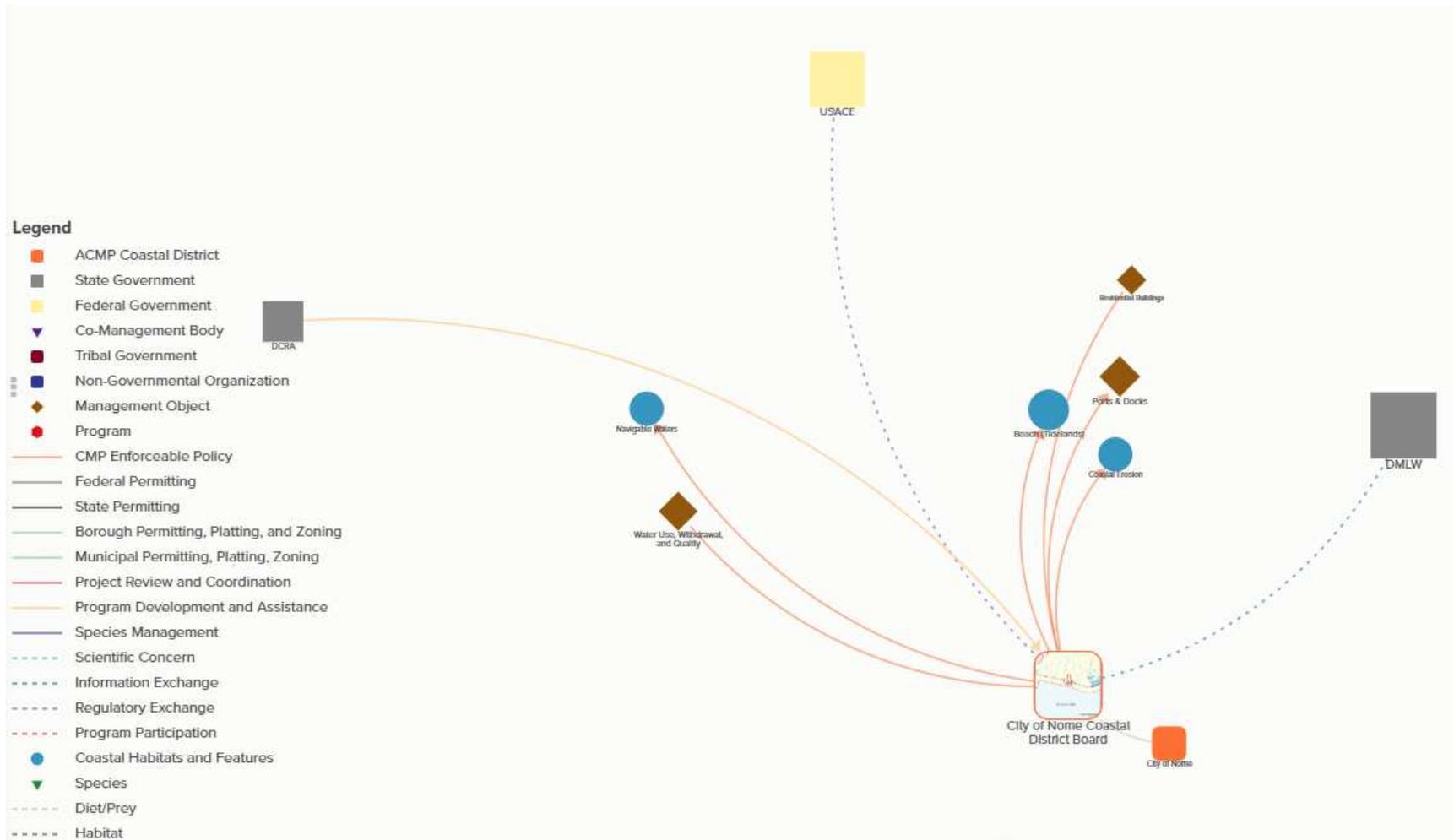


Figure 3-16: City of Nome Coastal District SENA Map for 2009 (with restricted enforceable policies)

From 2003 to 2011, when coastal districts brought their interests and concerns to DNR with regards to a specific project, they were frequently rebuffed and directed to provide more rigorous scientific evidence for their concerns or even told outright that their concern interfered with state prerogatives and were legally invalid. On a procedural level, DNR could provide consistency approvals to projects in phases, without accounting for cumulative impacts or later phases that may entail higher risks. Sentiments attributed to Paul Rookok, Sr., then-Chair of the Bering Straits CRSA, state:

“it appears that DNR has been attempting, through its implementation of the Coastal Program, to eliminate [Coastal District plans’] effectiveness... He described the circumstances that resulted in the termination of DNR funding to the CRSA after an audit of the CRSA, and that the State has subsequently assigned program director duties to a state employee located in Nome (which is not actually within the Bering Straits CRSA)... He specifically mentioned the CRSA’s unsuccessful attempts to designate subsistence use areas and obtain technical assistance from the State to attain the information/mapping required for designation” (NOAA 2008: 45).

Johnny Aiken, former Planning Director of the North Slope Borough, similarly expressed that:

“the amendments to the Coastal Program have greatly reduced its effectiveness and that there is now little incentive for coastal districts to participate in the process... Mr. Aiken described in detail the challenges that the Borough faced during the coastal management plan amendment process, specifically citing: the difficulty in designating special areas; different interpretations of the requirements and regulations over time; and the significant cost to revise the plan and develop maps for subsistence area designations. He also described specific issues where the Borough believes that DNR has either changed its interpretation of the regulations or ignored the criteria as described in the ACMP as Amended program document.” (NOAA 2008: 35)

Similar sentiments can be found in public comment documents and meeting minutes from multiple Coastal Districts during a 2008 reevaluation process for the ACMP. Dissatisfaction with the program changes, however, was not limited to Coastal Districts. Jon Kurland, a representative of NOAA’s NMFS, indicated his agency’s concerns about:

“reduced coordination between the Coastal Program and federal and state regulatory and reviewing agencies... changes to the habitat standard [that] have reduced the scope of resources that receive “effective” protection, and... the standards for restoration and replacement of habitat being weakened...” (NOAA 2008: 44)

Of the 10 current and former state employees consulted for this research who were involved in the ACMP, 7 affirmed that following 2003, the ACMP ceased to involve Coastal Districts in a meaningful way, with most enforceable policies eliminated and regular instances of obstruction by DNR. In what was described by one participant as procedural chaos, Alaska’s DNR could use its coordinating role to discount permitting requirements or fail to solicit input and joint review with other state or federal agencies. The creation of a *List of Expedited Consistency Reviews and*

State Authorizations Subject to the ACMP, also known as the ABC List, while meant to streamline CRP, also raised interagency tensions over permitting jurisdiction and involvement.

As designated under the ABC List, the vast majority of development activities impacting the coast could now be permitted without a CRP, and therefore without Coastal District involvement, as categorically or generally consistent determinations. Additionally, DNR barred any discussion or consideration of land, air, or water quality from the CRP, essentially requiring DEC to issue those permits regardless of actual known impacts or concerns. Four participants conceded that after 2003, the ACMP primarily served state interests in regulating federal activities and turned key accountability mechanisms into checkboxes for DNR-approved activities. In sum, the federal agencies responsible for activities related to the State could not count on such activities having been thoroughly reviewed, questioned, or approved by local coastal residents or even the full range of participating State agencies.

The transformations undertaken by the Governor and State of Alaska agencies in this phase appear to run counter to Valentine's (1994: 36) observation that developers tend to view local government as more amenable to their interests and state regulations as cumbersome and invasive. Reasons for the Phase 3 reforms are numerous, but certainly arose from enduring ambiguities and tensions in the ACMP itself, including confusion around the diverse roles of Districts and agencies; the specificity, applicability, and enforceability of Coastal District policies; competing expectations around relative authorities; and procedural norms (*ibid.*). In conjunction with the widespread Coastal District prioritization of subsistence and programmatic receptivity to traditional and local knowledge, it is likely that the ACMP appeared, in the eyes of agencies and industry, to afford Districts an excessive role in decision-making, even while many Districts themselves believed their powers did not go far enough (*ibid.* 148-49). The reforms thus represented a direct response by the State government to both spoken and unspoken concerns about programmatic rigor and balance of power. However, the net effect was a dramatic dilution of many of the ACMP's core features and advantages, with clear State preferences for development over conservation made clear in the selective denials and approvals of revised District policies, as well as other procedural shakeups under the Office of Project Management and Permitting and Division of Coastal and Ocean Management.

During this third phase of the ACMP (2003-2011), some of the sources of physical and spatial transformations in the Arctic coastal region included coastal erosion mitigation efforts in Barrow (now Utqiagvik); multiple offshore lease sales and exploratory wells; North Slope oil field infrastructure expansions including the Ooguruk prospect, a breakwater extension at the Port of Nome, and the short-lived Rock Creek Mine project near Nome. Landscape and seascape level changes with relevance to these projects included an increase in coastal erosion rates for the Beaufort Sea (Jones et al. 2020), flood and erosion impacts from the November 2011 Bering Sea cyclone, a decrease in Pacific cod recruitment in the Bering Sea, and sea ice first reaching a summer low that was more than two standard deviations away from the average extent in the satellite record.

Relational changes that took place include the creation of an ACMP public information website, reduced levels of face-to-face contact and information-sharing between State agencies and Coastal Districts, less engaged coordination around technical and legal assistance, declines in CRP participation, the exclusion of DEC from meaningfully participating in the CRP, and

reduced collaboration between DNR and DCRA. During this period, the federally sponsored Coastal Impact Assistance Program (CIAP), which was not directly part of the ACMP, helped fund Coastal Districts' second round of planning, mapping, and surveying; the NSB undertook a process of documenting and mapping important archaeological and cultural sites, Bering Straits CRSA updated its resource inventory and important habitat areas, and NAB conducted baseline ecological and subsistence studies. All three larger coastal districts used CIAP funds to strengthen their positions with regard to protecting subsistence and cultural resources. None of them, however, were able to leverage these plans to reclaim the advisory and oversight role they had previously enjoyed, as shown by the absent or sparse enforceable policy connections in Figure 3-13, Figure 3-14, Figure 3-15, and Figure 3-16. By the time the ACMP was discontinued, the network constructed in its first phase had been severely attenuated, with increased centrality for DNR,² reduced centrality for NAB and the City of Nome, the peripheralization of the Bering Straits CRSA, and elimination of the NSB Coastal District.

The elimination of the CPC and DGC and the consolidation of their functions into DNR, an agency with notable interest in the outcomes of resource development, minimized the potential applicable scope of Coastal District enforceable policies. Coordinating and permitting responsibilities were centralized through policies that plainly peripheralized Coastal Districts. Not only were Districts systematically excluded from CRPs and so unable to advocate for subsistence species and other nonhumans, but DEC had its permitting authority over environmental quality subjugated to the State's DNR priorities. Flows of technical and scientific assistance between the state and Coastal Districts saw major reductions in both quantities and channels. The number of actors involved in project development, the frequency and quality of information sharing, and the reliability of procedures are all considered low during this period.

3.4 Phase 4: Post-ACMP Institutional-Ecological Network, 2012-2023

The ACMP was allowed to sunset in 2011 after years of long, heated exchange in the legislature over its advantages and downsides. It is not within the scope of this report to discuss the political atmosphere that allowed for this turn of events (see Wilson 2018), but suffice it to say that the loss of the program was objectively harmful to the self-determination of coastal communities and to the State of Alaska itself. According to a NOAA press release in 2019, the state sacrificed over 2.5 million dollars in annual funding from the federal government. The document goes on to observe that "Alaska has lost the ability to influence federal agency activities and federal license or permit activities that affect Alaska coastal uses or resources through the CZMA federal consistency provision. Federal agencies and applicants for federal authorizations no longer have to conduct their activities consistent with state policies as was required by the CZMA" (NOAA 2019, 2). The State, in effect, sacrificed all authority over projects taking place on federal lands and beyond the territorial sea (3-nautical mile line) to streamline its own development goals without local input or interference.

The ACMP having been terminated, and with it the CRP, different actors in the state lost organizational capacity and formal legal capabilities while the state agencies were liberated from obligations of accountability, though they also lost substantial influence over federal actions. Boroughs and Tribes lost the organizational structure of Coastal District; the ability to assert

² This period notably begins under the deregulatory governorship of Frank Murkowski. The role of DNR Commissioner starts in the hands of Tom Irwin, a mining industry veteran. It ends with sitting Senator Dan Sullivan.

needs and interests directly to operators and agencies during CRP pre-application meetings; and the right to create and enforce policies over many federal and state activities within coastal zone boundaries.

State agencies, specifically DNR, ADF&G, and DEC, no longer had the obligation to engage in regular, transparent cross-agency communication and notification; were absolved of the responsibility to jointly ensure development project applications are thoroughly vetted and permitted during CRP pre-application meetings; and lost the knowledge of all relevant agency and other representatives who should provide input on project proposals. The state agencies also lost the formal right to assert state environmental standards and economic interests to federal agencies permitting projects in Alaska. The question under investigation in the ensuing section, “what institutional arrangements shape the coastal management system today and do they fulfill these lost functions?”, requires that we extrapolate particular types of relationships from the formal legal roles, responsibilities, and capacities described above.

3.5 Management of Alaska’s Arctic Coasts in 2024

In 2024, it has been over a decade since the sunset of the ACMP. Without the overarching structure of the ACMP, management of coastal development in Arctic Alaska has had to adapt to ever-increasing levels of interest in Arctic resources and ecosystems and the unprecedented environmental challenges facing coastal communities. Some of the relationships secured under the ACMP remain in place, but in attenuated or exclusionary form. The communities and municipalities formerly organized as Coastal Districts, or CRSAs, and their ability to assert priorities, especially those associated with subsistence, have been retained in two main ways: both the NAB and NSB incorporated select enforceable provisions from their CMPs into local ordinances under permitting Titles 9 (NAB) and 19 (NSB); Bering Strait Tribes and villages make extensive use of public comment and advocacy through Kawerak, Inc.; and the City of Nome has retained municipal capacity to adopt coastal management policies, but has not yet done so. In other words, the three larger Arctic Coastal Districts found ways to continue to press the local importance of subsistence and its supporting components (e.g., habitat, knowledge sharing, monitoring) without the structure of the ACMP. We discuss these resilient values below.

3.6 Local Coastal Authorities

a. Northwest Arctic Borough

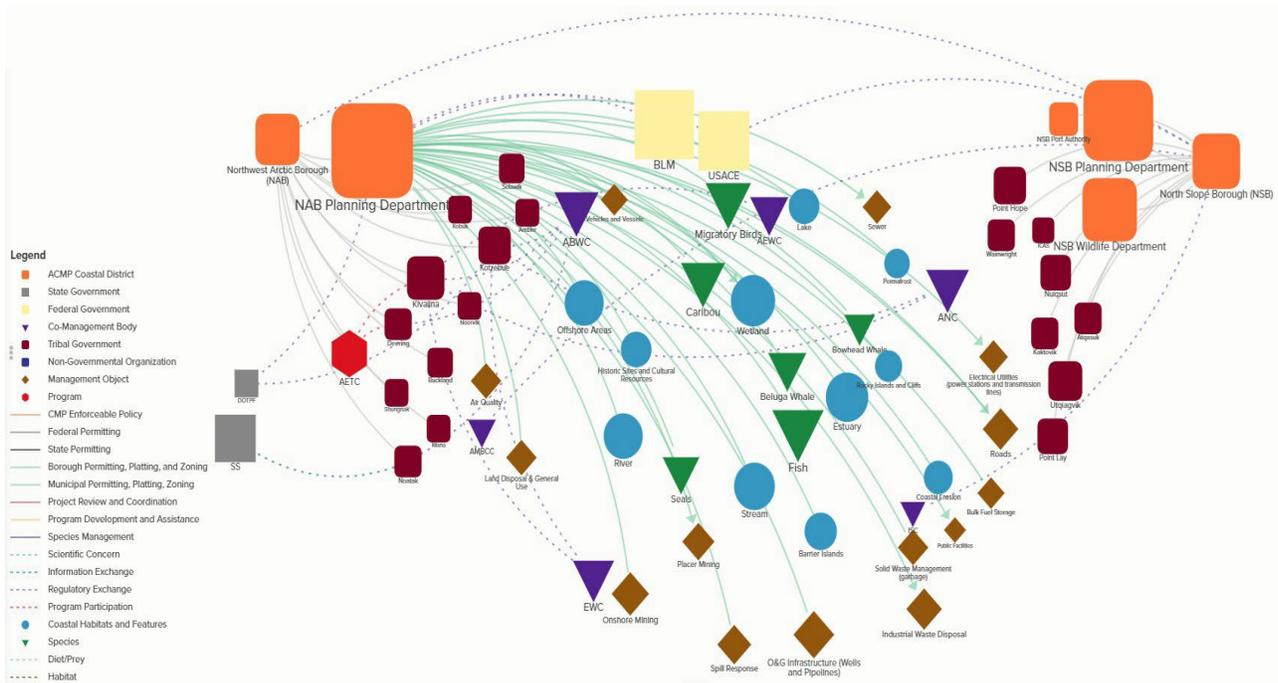


Figure 3-17: Northwest Arctic Borough SENA Map for 2023

The NAB land and water permitting regulations (Title 9) contain requirements for both major and minor uses of coastal areas including wetland fill, transport infrastructure, mineral resource development, and assorted public utilities and facilities in differentially designated districts (village, subsistence conservation, habitat conservation, general conservation, resource development, and transportation corridors). Figure 3-17 shows how the NAB has preserved many areas of authority, including for subsistence, in Title 9 regulations. Borough boundaries extend to the 3 nautical mile territorial sea and regulations apply to private, state, borough, and federal lands and waters, unless preempted by other laws. Importantly, the NAB asserts that “tidelands, submerged lands, waters and ice seaward to the borough boundary of an adjoining district are within the subsistence conservation district unless otherwise mapped. Boundaries indicated as following shorelines are construed to follow such shorelines, and in the event of change of the shoreline shall be construed as moving with the actual shoreline” (9.12.010 C). According to the NAB’s zoning map and regulations, all the subsistence conservation subdistricts zoned under its ACMP enforceable policies are still operational. And though Alaska Statute 38.04.065 ensures local government participation in state land planning processes, the requirement that the State adhere to local plans is curbed by declarative language.

Other stipulations address exclusively terrestrial concerns and enshrine the Borough’s ability to negotiate with and withhold approval for different projects across its land base. The Borough maintains its own standards for diverse land and water uses while advocating for compliance with applicable state and federal standards for air and water quality, dredging, and subsistence protection. NAB also collaborates with State and Federal actors, for example, with the Alaska DOT&PF and the USACE on assorted road projects and the Cape Blossom port project. While

Borough regulations, whether actualized through zoning, planning, or platting, cannot contradict or supersede state or federal regulations for government-led activities, they are uniformly required for private project operators. Interestingly, both the NAB and NSB ordinances still directly reference the ACMP and CRP despite the program’s termination.

b. North Slope Borough

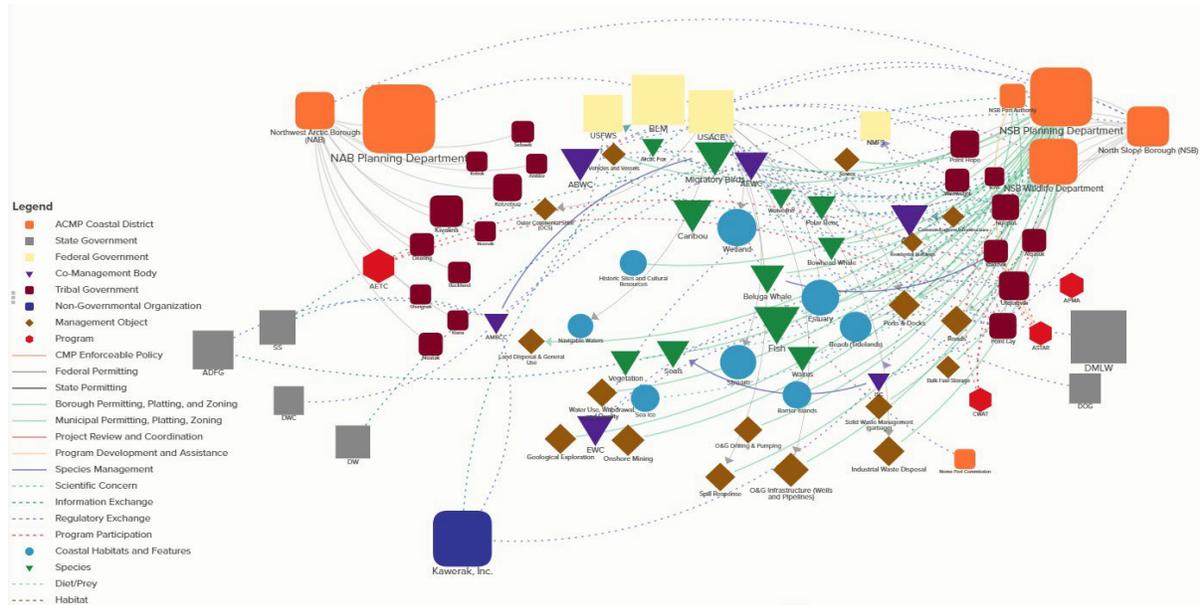


Figure 3-18: North Slope Borough SENA Map for 2023

The NSB regulations (Title 19), in contrast to the NAB’s, build on the region’s 50 years of experience with onshore and offshore oil and gas development to include technical stipulations on siting, timing, and technological methods for extractive activities. These stipulations are backed by policies for protecting ecological and subsistence resources that require operators to “take all feasible and prudent steps” (19.70.050 J-3) to ensure compliance. According to department representatives of the NSB, the Borough government has permitting, planning, and zoning authority across the Borough’s land base and over all forms of industrial construction and development, though as with NAB, under Alaska Statute 38.04.065 these cannot contradict or supersede relevant state and federal regulations or land use plans.

The NSB Comprehensive Plan reiterates the applicability of policies to all the specific habitats and bodies of water identified in the original Coastal District enforceable policies, extending to the 3 nautical mile edge of the territorial sea. Because the vast majority of NSB land is zoned as “Conservation”, development projects on state and federal lands often require rezoning of conservation areas as industrial use areas. Furthermore, the NSB has and does convene relevant parties, especially Tribes and Native Corporations, for pre-application meetings on development proposals and, as shown in Figure 3-18, maintains multiple regulatory exchange relations with federal agencies regarding activities in the Arctic National Wildlife Refuge (ANWR) and National Petroleum Reserve–Alaska (NPR-A). The NSB Planning Department assesses and delivers verdicts on approximately 400 permits a year, addressing everything from oil and gas projects and ice road construction to communications towers and urban infrastructure. Precedents

set during the ACMP era appear to have solidified close communication and coordination between the NSB and oil companies on the Slope, resulting in regular public meetings and engagement on potentially disruptive activities, what might be called an arrangement of political and economic interdependence (Lovecraft et al. 2022). The most notable of these are the Conflict Avoidance Agreements for bowhead whale protection, negotiated among industry, NSB, the Alaska Eskimo Whaling Commission (AEWC), and the Barrow Whaling Captains Association. Nevertheless, the NSB has no formal rights to enforce regulations over OCS leasing or development on state or federal land.

The NSB wildlife department receives funding from the Bureau of Land Management (BLM) to conduct regular research and surveys, particularly in the NPR-A, the results of which they share with industry, BLM, DNR, and ADF&G. They are actively in communication with BLM for the Community Winter Access Trails (CWAT) program, which supports the maintenance of tundra trails through the NPR-A for caravan travel between communities. Contentious but sustained relations with USFWS complicate not just development but transport and subsistence for the village of Kaktovik in the ANWR.

On the state level, NSB is partnered with OPMP on the Arctic Strategic Transportation and Resources (ASTAR) project, which supports information gathering and analysis of gravel resources and road construction projects in the region. The NSB also entered into a 5-year research partnership with DEC's Division of Water between 2011 and 2016 to survey and catalog all major rivers, streams, and estuaries on the Slope. DNR's Division of Oil and Gas regularly communicates with the NSB, informing them of activities that require public consultation and encouraging them to put notices out to stakeholders. Lastly, because the Home Rule Borough ordinances are applicable for all activities within NSB borders, BLM is required to follow them, unless they contradict or aim to supersede federal regulations.

The NSB has also established both a new department and a new office that enhance Borough powers over several coastal issues. First, the Port Authority was created in 2021 and, following the development of a long-range development plan, has expanded to a staff of three, who are primarily engaged in grant writing and other types of fundraising to achieve unmet capital needs for infrastructure projects. The Port Authority is the NSB's primary agency contact on the ASTAR program, whose first project will be a "triangle road" connecting the villages of Wainwright, Atqasuk, and Utqiagvik. They are also engaged with the USACE on planning and feasibility studies for the construction of a seawall for Utqiagvik and consultations with other NSB villages facing coastal erosion challenges. But the development of a deep draft port on the North Slope remains speculative and complicated, especially because encouraging or enabling more maritime activity poses a threat to subsistence species like bowhead whales. Second, the Office of Emergency and Risk Management, which grew out of the NSB Emergency Planning Committee and was created in 2016, coordinates emergency response based on plans developed in 2007–2008 and additionally completed a Multi-Jurisdictional Hazard Mitigation Plan in 2023 to become eligible for FEMA funding and programs. This Office, though still in its infancy, collaborates with departments and villages NSB-wide, including the Tribal government, Iñupiat Community of the North Slope.

c. Bering Straits Region and City of Nome

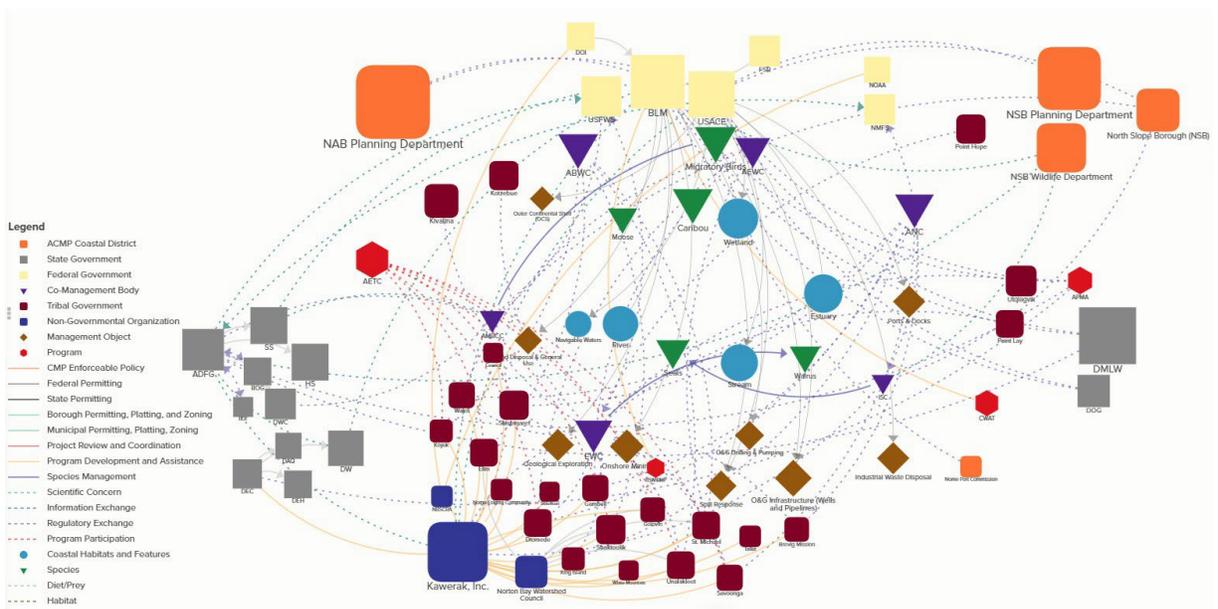


Figure 3-19: Bering Straits SENA Map for 2023

In contrast to the two Boroughs, the region formerly consolidated under the Bering Straits CRSA has not been able to reappropriate its enforceable policies towards coastal community empowerment in decision-making. To do so would either require it to form a Borough from its unincorporated territory, a legal but time- and resource-intensive process or convince the State government to apply the rules this coastal area would suggest. The latter, however, remains practically impossible given the long-standing interests of the Alaska State Government as demonstrated in the annulment of the ACMP.

Notably, the regional Tribal nonprofit consortium, Kawerak, Inc., which previously provided administrative support to the Bering Straits CRSA, has taken on major governance roles in the region, but currently has no formal legal relationship for resource management with the state of Alaska and circumscribed bilateral relationships federal government. Only if authorized or invited by a Tribe can Kawerak take part in formal government-to-government (G2G) consultation with federal executive agencies. As shown on Figure 3-19, Kawerak connects multiple programmatic and informational relationships among Tribal, state, and federal agencies, but permitting authorities are absent from their network. Kawerak is also home to the Eskimo Walrus Commission (EWC), which represents Tribal interests in federal co-management of Pacific walrus and operates under a cooperative agreement with the USFWS. At Kawerak, ACMP-era documents and plans are consulted infrequently and many staff familiar with the program have since retired or moved onto other work. Current Kawerak staff proactively, and at invitation, provide comment on behalf of regional Tribes to public notices by USACE, BLM, DNR, DEC, and BOEM but such informal public comment opportunities are limited in both scope and efficacy. Tribal governments in the region have participated in numerous programs related to coastal resilience and hazard mitigation, but these programs do not confer political rights or legal authorities. Jointly, sovereign Tribal governments, community representatives, and Kawerak, Inc. have built coalitions and partnerships for specific coastal and marine initiatives such as the Northern Bering Sea Climate Resilience Area (URL: www.nbscra.com). Additionally,

the Norton Bay Watershed Council, which has existed since 2012, is composed of representatives from five regional Tribes and engaged in advocacy, planning, and conservation efforts.

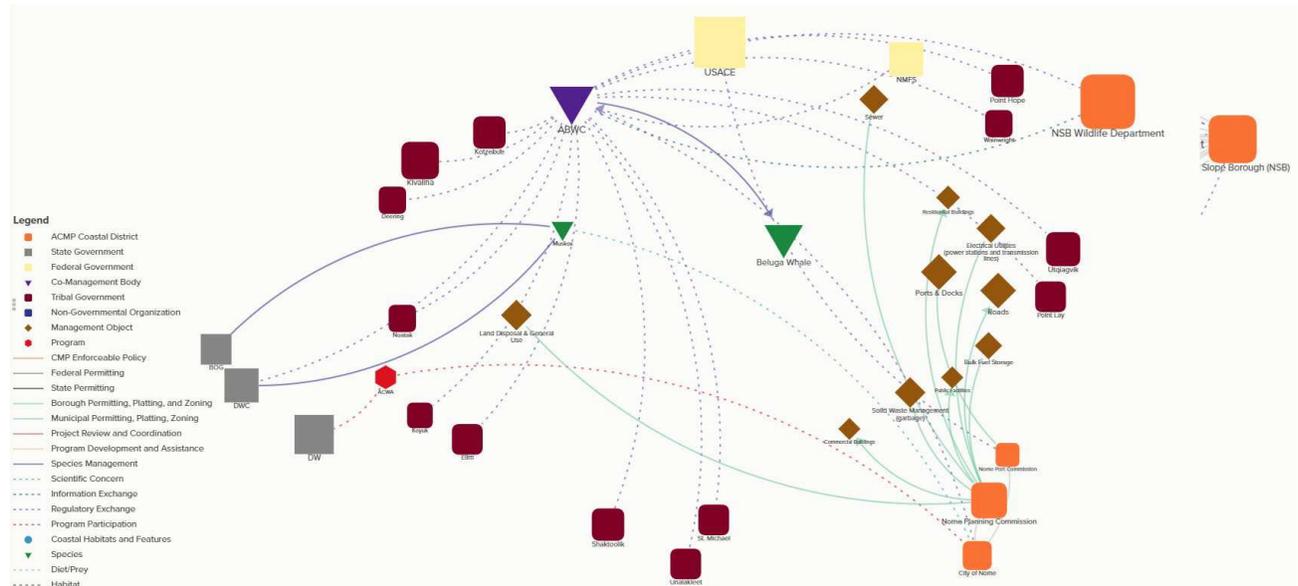


Figure 3-20: City of Nome SENA Map for 2023

The City of Nome relinquished its environmental stipulations after 2011, incorporating only general provisions into its zoning and site development standards, with no reference to the coast, shoreline, tidewater area, or rivers. This is evidenced on Figure 3-20 by the lack of habitat features in their network. The Nome Port Commission has operated for decades, but since the nomination to expand the port into the United States’ first Arctic deep draft port, their activities and responsibilities have expanded. They participate in regular meetings with representatives of USACE and U.S. Department of Transportation regarding the port expansion. As a municipality in the unincorporated territory of the State, the City of Nome would have to be engaged in a broader effort to create a Borough as noted above for the Bering Straits Region.

3.7 State of Alaska Agencies

The executive regulatory departments of the State of Alaska have adapted to the absence of the ACMP through a mix of programs, project-specific coordination efforts, and region-specific partnerships. On select areas of concern, the State works closely with the NSB and NAB governments, but despite substantial outreach and interaction with coastal communities, none of the relationships between the state and Tribal governments are formally bilateral, i.e. unlike the federal government, the State of Alaska has no trust responsibility to Tribes. As opposed to the procedural equity afforded to community-scale representatives under the ACMP, development projects taking place on state land today entail only limited levels of public notice and consultation. Several programs, however, function through grant funding, research partnerships, and advisory support.

3.7.1 Alaska Department of Natural Resources

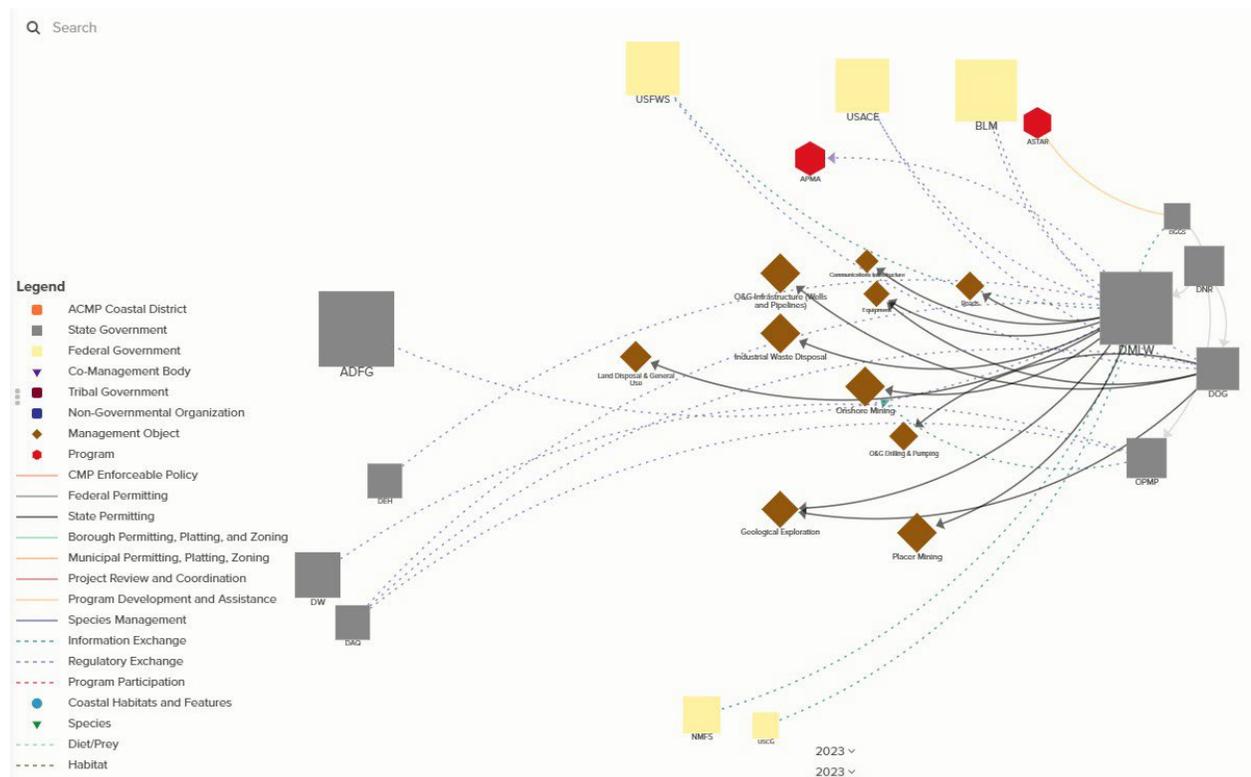


Figure 3-21: Alaska Department of Natural Resources SENA Map for 2023

DNR, as the last responsible agency for the ACMP, fulfills its coordinating and communication function in two main ways: the Office of Project Management and Permitting (OPMP) and the Application for Permits to Mine in Alaska (APMA) within the Division of Mining, Land, and Water (DMLW). Figure 3-21 shows interactions between DNR and other agencies prompted by projects requiring multiple agencies’ permits, though the full range of relationships are only traceable using the live Kumu map (URL: <https://niilaas.kumu.io/arctic-alaska-coastal-management-transformations-from-1999-2023>).

OPMP was created in 2003 to accommodate the transfer of the ACMP to DNR. From 2003 to 2008, OPMP headed coordination processes for large-scale projects and the ACMP. In 2008, the ACMP was transferred to the newly established DCOM, which also served as the lead agency for the CIAP program until 2011, when it was eliminated, resulting in the transfer of CIAP responsibilities to OPMP until the conclusion of the program in 2017. CIAP funds were administered to the NSB to establish inter-community trails, develop a conservation plan for the Ikpikpuk River Delta, conduct wildlife and oceanographic studies, and improve permitting processes. CIAP funds were administered to NAB to establish coastal protection programs, enhance their own management capacity, institute marine debris management, and research subsistence and energy conservation measures. Today, at the prerogative of prospective project operators, OPMP provides project coordination among state and federal agencies for large-scale projects, expediting otherwise complicated permitting requirements, ensuring coherence in the permitting process, and avoiding conflict among agencies. Such large-scale operators of mining

and drilling sites voluntarily enter a contractual relationship with OPMP at a project-specific price and OPMP provides support both at the outset and during subsequent permit renewals. OPMP is also partnered with the NSB on ASTAR.

The DMLW, which handles state land leasing and disposals and provides permits for a range of land uses (most notably placer mining, section dredge mining, and mineral exploration), has created the APMA process to streamline permitting. Under the State Mineral Development Policy, DMLW solicits specific information from mining applicants through APMA, assesses the project scope and geography, and circulates information to other relevant state and federal agencies. This process bears resemblance to the CRP, but excludes borough, municipal, and Tribal governments from its informational and regulatory exchange. DMLW additionally maintains a permanent consultative relationship with the Red Dog Mine and manages the easements connecting the mine to the port, the system known as the Delong Mountain Transportation System.

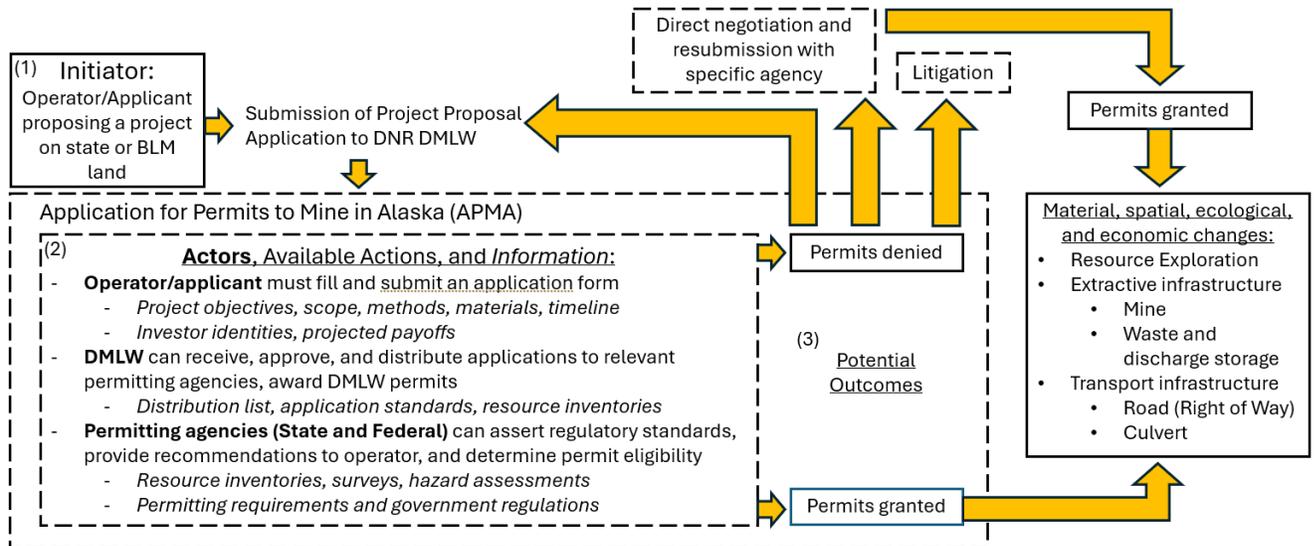


Figure 3-22: Representation of the Application for Permits to Mine in Alaska as an Action Situation

DMLW receives a completed application from a prospective operator, determines whether basic standards of information and planning are met, and circulates the application to all relevant permitting agencies. Unlike the CRP, APMA does not involve direct participation from local communities.

Though Alaska Statute 38.04.065 obligates DNR to involve borough and municipal governments in planning processes and to conduct planning in accordance with local plans, the APMA process does not involve local governments. The DNR’s North Slope (2021) and Northwest Area Plans (2008) were developed in consultation with the respective borough governments and their comprehensive plans, but “they cannot establish land use designations or other planning requirements for state land. State land use designations are decided on a regional basis through the state land use planning process and local plans do not supersede state plans for the use of

state lands” (North Slope Area Plan 2021:2-17). Additionally, “DNR will comply with provisions of the borough comprehensive plan and zoning ordinance (if applicable) regarding the location and density of land development except to the extent that local requirements are inconsistent with an overriding state interest” (ibid. 2-48), leaving compliance with local regulations on state-owned land voluntary. This means that in general, DNR only establishes relationships with villages and coastal communities on an *ad hoc* basis or in the event that a project overlaps or is adjacent to ANCSA or native allotment lands. These relationships rarely extend beyond the public notice and comment process under the 945 Public Notice Requirement; this practice of public engagement has also declined. DNR Area Plans, which were previously circulated among affected Districts for consistency review with other agencies, no longer do so. Aside from specific projects managed by these two subdivisions, DNR generally issues its permits for oil and gas, right of ways, and water use and discharge independently from other agencies.

The department fulfills its research and information-delivery functions primarily through the Division of Geological and Geophysical Surveys (DGGs), whose units conduct scientific assessments of diverse geologic hazards for planning, hazard mitigation, and emergency response. According to participants, DGGs engages with other agencies and municipalities only on an *ad hoc* basis in response to specific project requirements or technical questions. They are also invited to provide input for area management plans, transportation plans, and pipeline routing assessments. Many public reports and studies are available online.

3.7.2 Alaska Department of Fish and Game

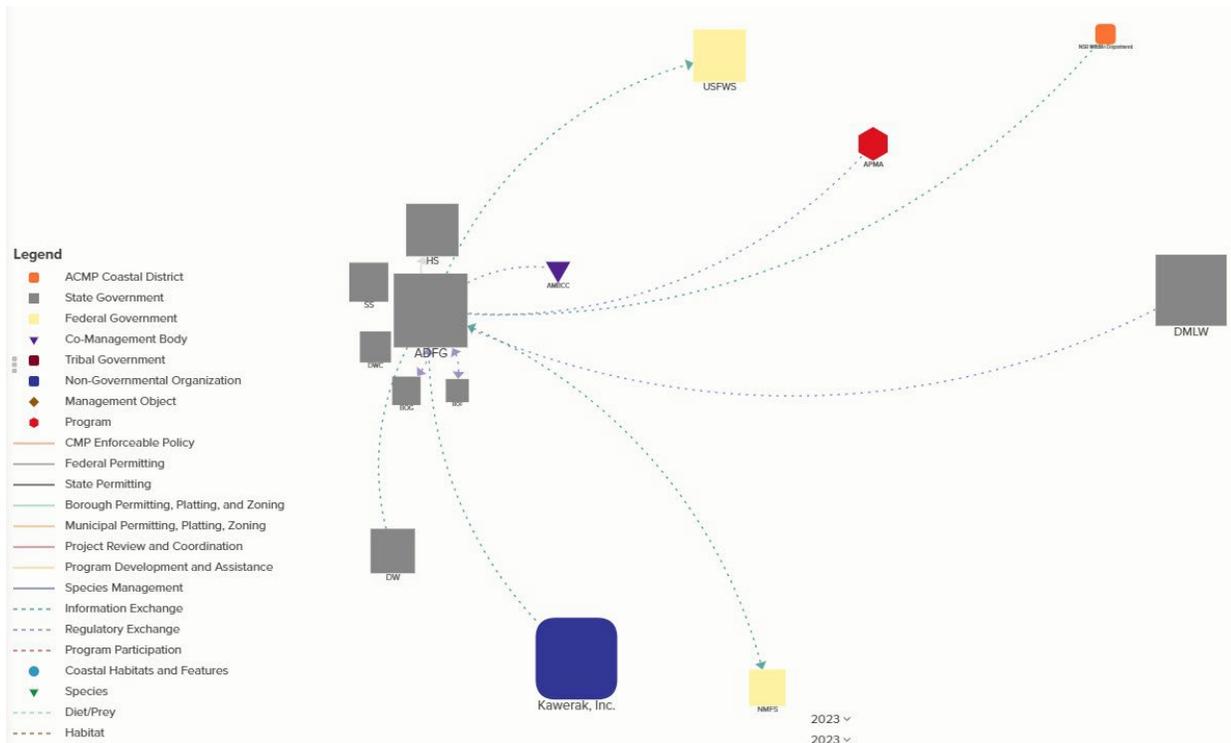


Figure 3-23: Alaska Department of Fish and Game SENA Map for 2023

Note: Shown with reduced focus due to high levels of secondary interconnectivity.

3.7.3 Alaska Department of Environmental Conservation

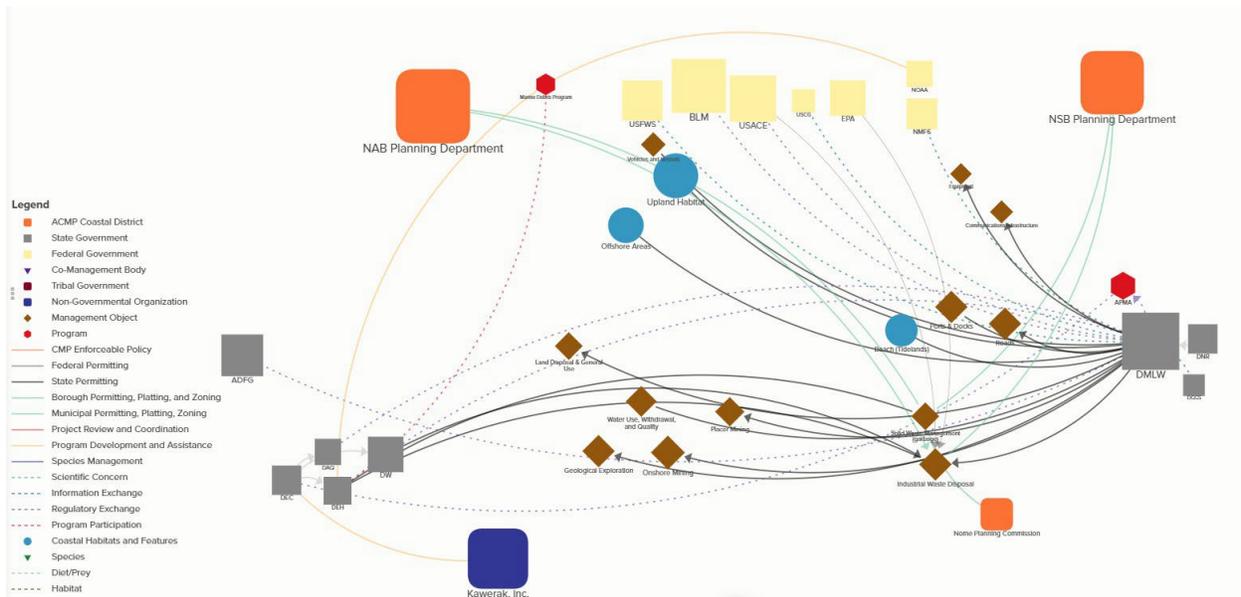


Figure 3-25: DEC Division of Environmental Health SENA Map for 2023

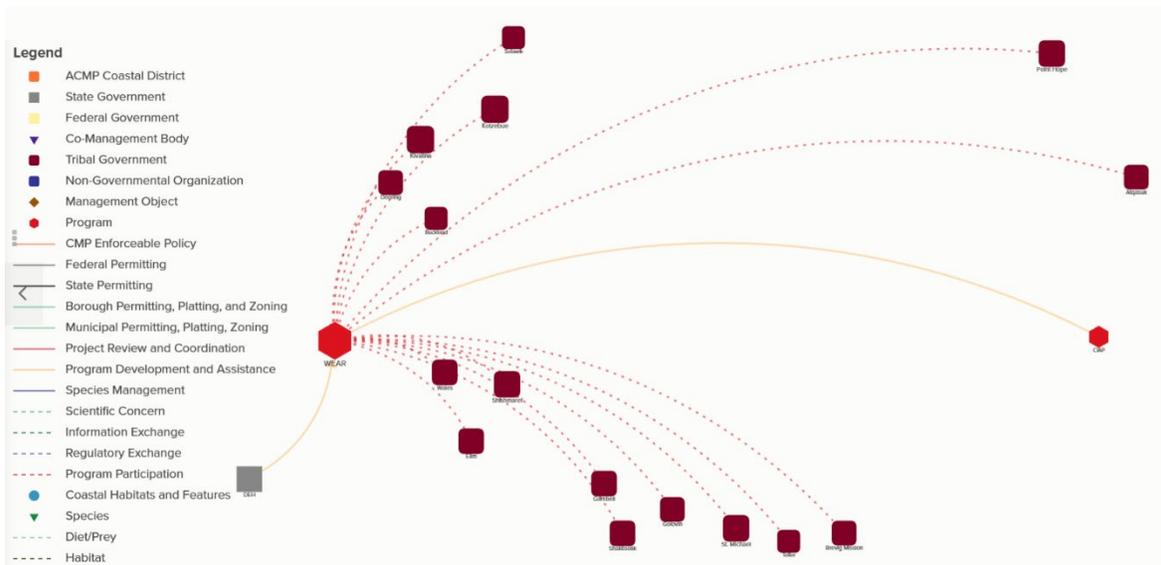


Figure 3-26: Division of Environmental Health's Waste Erosion Assessment and Review Project, 2012–2014

By virtue of its role as the state’s program manager for both national Clean Air and Clean Water Acts, the DEC consistently takes part in interagency review processes for development, including APMA. Working primarily alongside DNR’s Division of Mining, Land, and Water, they provide integrated, Environmental Protection Agency (EPA)-consistent permits for air and water pollution, as well as solid waste and water runoff management (Figure 3-25). This applies to projects on state lands as well as projects administered by federal agencies such as the USACE

and BLM. DEC is currently developing competency to administer Resource Conservation and Recovery Act subtitle C for the creation and management of hazardous waste disposal sites, which is currently done by EPA. The department shares environmental quality data with ADF&G on an ad hoc basis.

DEC’s primary relationship to coastal communities (city, village, and borough governments) is through the permitting and compliance-monitoring process for assorted facilities, including landfills, wastewater treatment, power stations, and municipal buildings, all typically accompanied by a public comment period. They also run several programs that support capacity in communities, most notably the Division of Environmental Health (DEH)-led Waste Erosion Assessment and Review (WEAR) program (Figure 3-26), which surveyed rural landfills at risk from erosion, the Alaska Clean Water Actions Program, which collaborated with Nome Eskimo Community and the City of Nome to conduct bacteriological monitoring of beaches, and the NOAA-partnered program for marine debris, which supports communities in monitoring, removing, and disposing of seaborne jetsam. Lastly, the Division of Oil Spill Prevention and Response creates and maintains an oil spill contingency plan for all of Arctic and Western Alaska, which includes local input, but is developed foremost with the USCG and EPA.

3.7.4 Department of Community and Regional Affairs

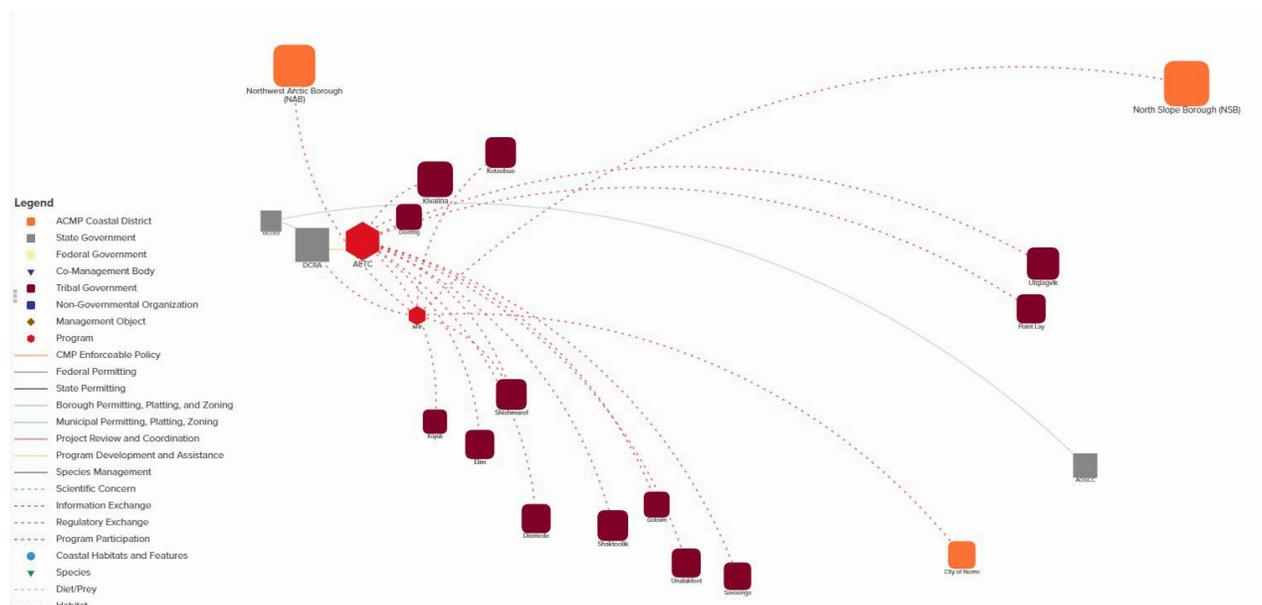


Figure 3-27: Division of Community and Regional Affairs SENA Map for 2023

The DCRA, as one of the original coordinating and regional support bodies for the ACMP, also housed several important programs in the post-ACMP period, though all of these have since concluded, their legacy carried forward mainly through the Assistance to Environmentally Threatened Communities (AETC) program (Figure 3-27). Previously, the Alaska Community Coastal Protection Project (CCPP) was created to assess the relocation and erosion mitigation needs of three communities in the Arctic region, Shishmaref, Shaktoolik, and Kivalina and concluded in 2016 with the creation of Strategic Management Plans and Inter-Agency Planning Groups. Most notably, the Community Coastal Impact Assistance Program (CCIAP), which was

funded by the United States Congress to provide funding to coastal state subdivisions located near active or potential OCS activities, was distributing funds and coordinating projects from 2008 to 2017. While not exclusively housed in DCRA (funding of agencies and municipalities through the CIAP program was largely determined by state priorities), a substantial portion of CCIAP funds were administered through competitive grants by DCRA. Originally managed by both DCOM and DCRA, the program outlived the termination of DCOM and the ACMP and supported (former) coastal districts to undertake numerous projects. The Bering Strait Coastal Association, which inherited the legacy of the Bering Straits CRSA, received CCIAP funds to complete their coastal plan and surveys, which, in the absence of the ACMP, would be used to provide information, guide sustainable development, augment public comments, and inform state and federal resource agencies about the region.

4 Analysis of findings and policy implications

Observing the above four periods of coastal management in Alaska, the apparent trend in network configuration has been movement from a decentralized and inclusive structure to a centralized and siloed structure. The first phase (1977–1999) involved the gradual formation of relationships among a wide range of entities. Phase two (1999–2003) demonstrated high levels of connectivity (active communication, information-sharing, and formal joint processes) and more comparable levels of centrality for all participating actors under the central coordinating nodes of the DGC and CPC. The third phase (2003–2011) demonstrated overall lower levels of connectivity, with the definitive peripheralization of Coastal Districts, and heightened centrality of State agencies in relation to projects and coastal ecosystems. The fourth and final phase (2011–2023), extending from the termination of the ACMP to the present-day, demonstrates medium levels of connectivity between State agencies and entities formerly consolidated as Coastal Districts, mostly consisting of time-limited projects and programs, permitting and compliance interactions, and certain forms of data and information sharing. In this fourth phase, State agencies retain their centrality with regards to resources in State territorial waters and State lands, but the borough governments exercise planning, zoning, and permitting powers and have taken on the role of coordinating public comment periods and consultation across all waters and on land.

Despite the efforts of DNR to retain some of the valuable coordinating functions that the ACMP had granted to it, participants from all agencies attested to the loss of communication and persistent lack of interpersonal connections across agencies since 2011 (i.e., knowing exactly whom to contact, invite, inform, and consult within agencies or subunits). Without aspiring operators filling out a coastal project questionnaire and having it distributed across State networks, specific information about a proposed site, its tenure, and its risks can and often do go unidentified. One participant suggested that DNR in particular benefits from this arrangement, insofar as they can independently write their permits and move development projects forward without consulting other agencies. Under this assumption, many projects may go forward without all requisite permits, which can lead to legal conflicts down the line.

Coordinating services offered by OPMP and DMLW, while valuable for large, established operators, are likely to be too costly for smaller projects, which, under the ACMP, would otherwise receive the same standardized attention and scrutiny. Lastly, only BLM is obliged by its own policy to adhere to municipal and state regulations when conducting work on federal

lands in Alaska; other federal agencies, such as BOEM, USFWS, NPS, and NMFS, communicate with the state, but without the ACMP are not obliged to account for anything other than federal law. These agencies engage in standard public comment and NEPA processes with stakeholders and rightsholders and, in Alaska, engage Tribes, Tribal Consortia, and ANCSA Corporations in G2G consultation when actions are determined to potentially affect Tribal trust resources. The general absence of Indian Country in Alaska, however, makes the requirement to engage in G2G consultation complicated and ambiguous.

It is clear that the loss of the ACMP dramatically reduced both Alaska and federal agencies' obligations to fully engage with coastal community representatives at all stages of project development. With the conclusion of the ACMP, the state's relationship to Tribal and coastal communities has shifted from a decentralized, yet effective governmental process of coordination and inclusion to a more diffuse and less committal governance approach of risk assessment and mitigation, consultation, and technical support. The State's engagement with boroughs and municipalities is circumscribed and, with regards to activities on State land, limited to ensuring local zoning compliance. Public comment periods emanating from the permitting agencies themselves are often poorly publicized and non-transparent in the extent to which public comments impact decision-making (Emerson et. al, 2022, Grote 2024, Lapping 1975).

The State of Alaska recognized Tribes as political entities in 2022, in a bill that stated "Today, Alaska's state government formally recognizes all of Alaska's 229 federally recognized tribes with Governor Mike Dunleavy's signing of House Bill 123. The measure itself does not impact the current legal status of Alaska Tribes or change the State's responsibility or authority." Several State agencies actively serve coastal communities and both village and Tribal governments through aforementioned programs, and DOT&PF in particular must abide by regulations set forth by organized borough governments. In the unorganized borough of the former Bering Straits CRSA region, much of which conforms to the recent BLM (2019) Bering Sea-Western Interior Management Area, the prevalence of current state-owned land (29%) was nearly tripled by proposed land transfers that could have subjected regional subsistence and other natural resources to virtually unrestricted state access (Figure 4-1). No active plans to incorporate the region and seek borough status were recorded during this study.

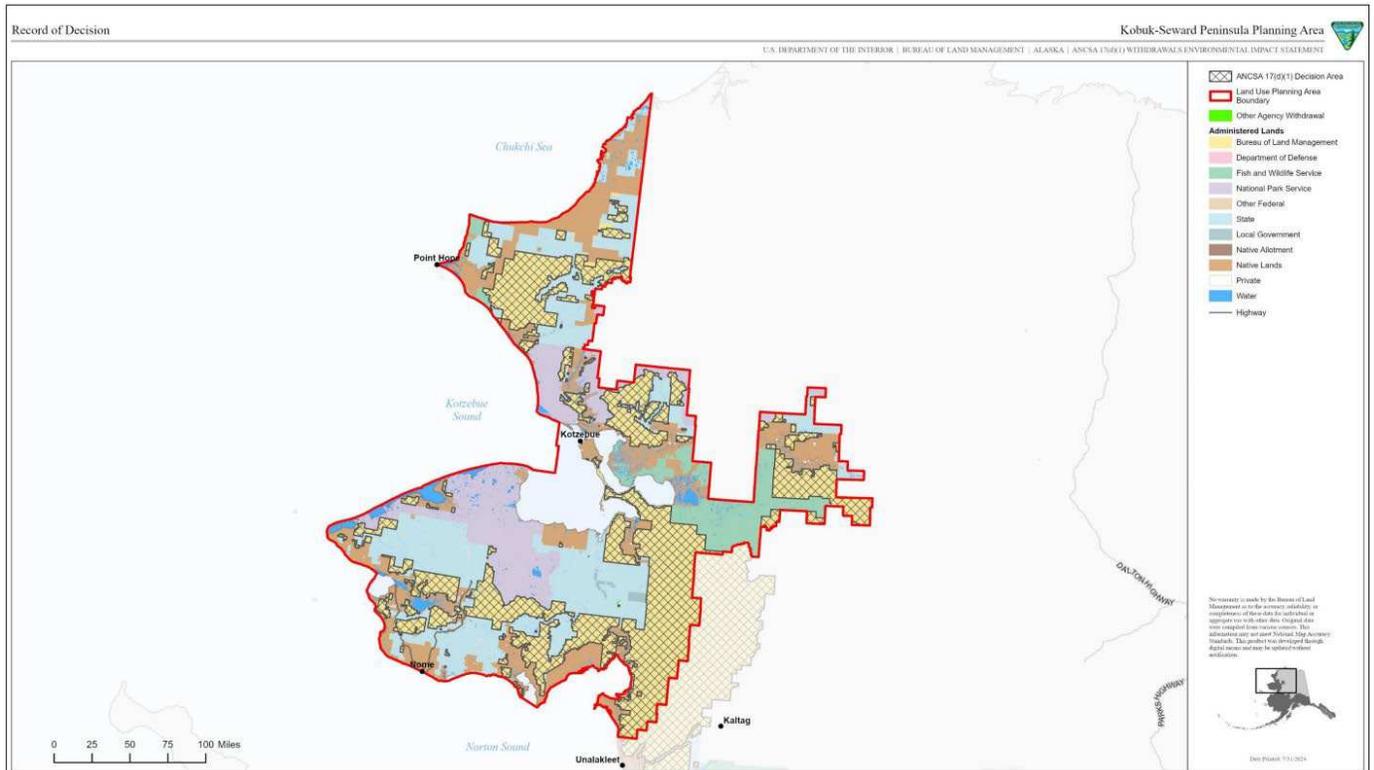


Figure 4-1: Map of Now-Retained ANCSA Land Withdrawals in the Kobuk-Seward Peninsula Planning Area.

Note: Regions marked with yellow crosshatch were nearly transferred into state ownership in 2021, but public intervention and a BLM Environmental Impact Study have, as of August 27, 2024, ensured the continued withdrawal of the lands from development and their stewardship under the federal government.

Source: ANCSA 17(d)(1) Withdrawals: Final Environmental Impact Statement, Department of the Interior Bureau of Land Management, August 2024, p. 6.

4.1 An Institutional Vacuum in Arctic Alaska

The foremost finding of this research is that in the absence of the ACMP, a significant institutional vacuum has left both the State of Alaska and coastal communities without vital authorities, organizational capacity, grant opportunities, and funding. Considering the evolving role of Integrated Coastal Zone Management programs in other U.S. states to support climate change planning and adaptation (Laschever 2023), the lack of this institutional framework in Alaska has meant that communities, boroughs, and municipalities are left to rely on multiple uncoordinated or time-limited programs and funding opportunities to meet coastal management needs. Such programming is demonstrably insufficient for a region where climate change is altering the environment at least four times as fast as lower latitudes. The risks are even further intensified if, as Glaeser and Glaser (2023, 23) argue in *Coastal Management Revisited*,

“Decreased local control over natural resources increases poverty, alienation and normative insecurity among ecosystem users and leads to failures of ecosystem management. Especially where local livelihoods strongly depend on surrounding

ecosystems, the ‘keep-people out’ management approach often turns out to be ‘socially illiterate’, usually undermining both the social and ecological viability of ecosystem management.”

Today, the commitments of federal and state agencies to engage with one another, substate governments, and coastal communities are irregular and dependent on the patchwork land ownership regimes and the federal NEPA process (discussed below) to determine accountability, rather than the inclusive coastal zone. For the two borough governments, their rights to enforce policy or permits or to provide input on development activities now terminate with the three-mile territorial sea, compared to the ACMP’s inclusion of the EEZ and OCS, but are applicable to all land and water uses not preempted by state or federal law. Though the two boroughs have retained many of their ACMP enforceable policies in local ordinances, communities in the Kawerak Region and the City of Nome have been especially disenfranchised without a borough government. In the unincorporated borough, only projects passing through or adjacent to lands owned by Alaska Native Corporations or Native Allotments require any sort of engagement from the permitting agency. The development of federal and state area plans no longer requires local review, but such plans recommend consulting with borough authorities if permitted activities may impact subsistence. With the increasing extremity of sea ice loss, coastal erosion, permafrost thaw, and the heightened threat of storms like ex-typhoon Merbok, this institutional vacuum presages greater difficulties for these communities.

As an example, the Graphite One mine, located on state-owned land on the Seward Peninsula, has weighed infrastructure routing options that obviate the need to enter into contractual relations with Alaska Native landowners, requiring only a right-of-way permit from DNR (JDS Energy and Mining Inc. 2022: 20-12). The proposed mine, currently in the feasibility study and exploration phase for development in the Kigluaik Mountains south of the Imuruk Basin, lies along the edge of the former Bering Straits CRSA boundary. Compliance with the Bering Straits CRSA plan would have required pre-application agreement with regional stipulations on waste disposal, road construction, and water quality, but instead, concerned Tribes are limited to informal engagement channels and public comment opportunities to voice their opposition to instream flow reservation permits. Graphite One has conducted extensive and regular community engagement and established a Subsistence Advisory Council (ibid.), but information shared in these processes carries no legal obligations for the company.

The kinds of programs for coastal management that have been implemented since 2011 are of a fundamentally different nature than the ACMP. Where the ACMP entailed a robust mandate for direct local democratic input in development and conservation decisions, involving the creation and funding of permanent, representative Coastal District boards and enforceable policies, the programs being implemented today mainly relate to research and planning focused on climate change adaptation. Programs run out of the DCRA over the past decade, including the CIAP, AETC, and the CCPP are, as their names imply, concentrated on questions of critical infrastructure, community relocation, and various forms of security. Due to their limited funding, however, these programs typically only contribute materially to a handful of communities (those facing imminent climate impacts), though they may help develop assessments or reports for others. Hard infrastructure projects such as those funded through the 2021 Infrastructure Investment and Jobs Act are decided through a competitive grant process and are not designed to provide sustained funding for community development. Considering that adequate federal

funding has not been committed to activities like community relocations for the villages of Shishmaref or Kivalina despite a growing number of reports and evaluations on urgent coastal community needs (Ristroph 2023), the current governance approach to managing Alaska's Arctic coastal areas appears weak, uncoordinated, and declarative.

Briefly, it is worth drawing attention to the recently approved NOAA program, *Stronger, Together: Expanding Climate Adaptation Technical Assistance for Frontline Alaska Native Communities*, managed by the Alaska Native Tribal Health Consortium and funded through the Biden Administration's Climate Resilience Regional Challenge 2020. The grant was awarded by NOAA's OCM and aims to establish a community climate risk assessment program, expand technical assistance capacities for Tribal adaptation, and enhance networking and knowledge sharing among Alaska Tribal climate adaptation experts and practitioners. From this description alone, it should be clear that this initiative aspires to address some of the local capacities lost with the ACMP, especially around networking and knowledge sharing. As with other programmatic interventions, however, *Stronger, Together* is time-limited and will require repeated applications for funding in the future.

4.2 Multi-Scalar Debates over Risk Perception and Emergency Preparedness

Since 2017, the State's DEC Oil Spill Response and Preparedness Division has engaged with the USCG and the Bureau of Safety and Environmental Enforcement (BSEE) to develop unified plans for offshore spill response, complimenting the state's existing protocols for onshore oil spill response. A representative of the DEC Spill Prevention and Response (SPAR) shared that while robust contingency plans are in place, the difficulties of maintaining communication with rural and coastal communities are a persistent issue.

For developing local plans and building local capacity for response, the representative noted that funding limitations and regular changeover in Tribal government staff make relationship-building and momentum-building around particular preparedness efforts difficult. Getting the right people into early communications is critical, which implies the need to avoid expending energy and resources on relationships that may not contribute long-term to agency goals.

Recent instances of oil spill preparedness activities hosted by the USCG failed to adequately solicit the interest and attendance of community members in the Bering Strait Region (Warren 2024). This was due to the last minute nature of the engagement component, which did not consider the timing of communication or community subsistence schedules. Research participants additionally highlighted that an active emergency situation does not entail a predetermined response and that the urgent need to adopt one or another strategy in the moment is not conducive to consulting stakeholders or rightsholders. Emergency response should subsequently prioritize connectivity, coordination, and coverage in relation to communities and their resources, if they wish to ensure the fastest and most effective mobilization of responses.

Research participants identified the Alaska Clean Seas program as an important component of emergency preparedness, particularly around large-scale pollution events. The nonprofit organization provides various types of support to Alaskan energy developers, including contingency plan development, consulting on equipment and training, and waste management services at each individual production unit.

From the perspective of another DNR representative, future sources of risk lie in the need to dismantle and remove large industrial infrastructures at the end of their field life during decommissioning. The process of assessing the value and determining the fate of defunct assets is made more challenging by climate change, as thawing permafrost and eroding coastlines create novel hazards for both laborers and the environment.

4.3 Complications in Outer Continental Shelf Governance

The BOEM, formerly the Minerals Management Service, is the lead federal agency responsible for evaluating, leasing, and managing oil, gas, and renewable energy resources on the OCS. BOEM's primary management mandate is supported by the BSEE, also housed in the Department of the Interior, which conducts safety assessments of offshore energy development activities and enforces permits for drilling (e.g., well control), pollution prevention, waste disposal, worker safety, and other environmental compliances. Despite several notable lease sales on Alaska's OCS, none of these have reached the development stage except the joint state-federal Northstar development; Shell's multiple failed test wells and the Obama Administration's ban on Arctic offshore drilling have likely contributed to the stagnation of Arctic OCS exploration. The legal strength of the drilling moratorium likely means no further nonrenewable energy exploration in the region, but the potential for renewable energy (Meadows et al. 2023) and critical minerals mining, not to mention the large physical infrastructure that will need to be deployed to construct and maintain such installations or other exploration and development, continue to make OCS governance in Alaska salient.

Following 1990 Congressional amendments to Section 307 of the CZMA, federal OCS activities including offshore exploration and mineral and energy development became subject to coastal management program review if they are identified as having direct or indirect impacts on the coastal zone. Arctic Coastal Districts' older ACMP-era enforceable policies addressed OCS development expressly with regard to oil and gas production, with policies for wind turbines directed at onshore facilities.

Section 3, 4(C) of the OCS Land Act (1953) declares regarding CZMA-participating coastal states that

“such States, and through such States, affected local governments, are entitled to an opportunity to participate, to the extent consistent with the national interest, in the policy and planning decisions made by the Federal Government relating to exploration for, and development and production of, minerals of the outer Continental Shelf”

Section 11 c(2) further elaborates that

“The Secretary [of Interior] shall not grant any license or permit for any activity described in detail in an exploration plan and affecting any land use or water use in the coastal zone of a State with a coastal zone management program approved pursuant to section 306 of the Coastal Zone Management Act of 1972 (16 U.S.C. 1455), unless the State concurs or is conclusively presumed to concur with the

consistency certification accompanying such plan pursuant to section 307(c)(3)(B)”

While it was active, the City of Nome’s CMP EP 25.040 *Community Impacts* declared,

“The City shall review and comment on development and production plans of OCS leaseholders and State, federal permit applications for OCS-related development, and permits for mineral development on or offshore that may impact Nome.”

The NSB and NAB enforceable policies included several that assert locally determined stipulations on offshore drilling related to facility siting, safety from geophysical hazards, fish and marine mammal protections, and emergency response and cleanup plans. The Bering Straits CRSA’s enforceable policies on offshore energy and mineral development were extensive and included recommendations on subsistence resource and habitat protection, ice hazard safety, effluent discharge and sediment disposal. None of the enforceable policies from these Coastal Districts, however, directly address OCS development, indicating a primary focus on activities in the offshore territorial sea, likely due to the drafting of policies prior to the 1990 amendment. This does not mean such policies were not applied to OCS projects. It instead fell to the ACMP coordinating agency to determine whether there were sufficient risks or potential impacts from an OCS project to warrant a CRP.

The 2003–2005 reforms of the ACMP obligated the State of Alaska to conduct appropriate public notice procedures for OCS plans, but the DNR-developed list of consistency determinations included Army Corps of Engineer nationwide permits (NWP) for OCS oil, gas, and mineral development under “generally consistent determinations” (NWP-8), which did not require a CRP and therefore no public notice requirements.

The ACMP and its later program amendments were themselves subject to the NEPA process, a core mechanism in approaching accountability and transparency with regard to large and small-scale development affecting federal public lands. In the lifetime of the ACMP, the NEPA process constituted an important supplement to the CRP, as the NEPA public engagement process provided non-binding comments on project parameters whereas the ACMP recognized Coastal District Board participation as binding for CRPs. Environmental assessments by the MMS for OCS lease sales in 2003 and 2010 corroborate that federal agencies would not finalize an Environmental Impact Statement (EIS) or authorize development activities to move forward prior to the conclusion of a CRP. In short, there used to be a local and state input guarantee which no longer exists after 2011.

Today, BOEM is taking steps to engage more deeply with Alaska’s coastal communities. In BOEM’s environmental justice best practices guide, they highlight working with Indigenous holders of traditional knowledge for agency research and responsible management. Also cited is the BOEM and, more broadly, Department of the Interior (DOI) commitment to G2G consultation with Tribes, though it is unclear when this is applied during federal actions taking place far from shore. At the outset of the NEPA process, obligatory scoping of issues relating to federal actions involves public input. But today it remains the prerogative of the agency and its

personnel under directives from executive leadership to determine whether identified impacts from activities in the OCS warrant more extensive public or community engagement.

4.4 Governing Increasing Vessel Traffic in the American Arctic

Nationally, coastal zone management programs are not formally empowered to address issues of vessel traffic routing or management. Their capacity to engage with the USCG and vessel operators lies in collaborative relationships with the management of regional ports and harbors. However, most coastal U.S. states have either implemented or entered initial stages of developing Marine Spatial Planning (MSP) programs and plans, which extensively address sea traffic management and responsible shipping. Some of these MSP programs emerged from the administrative context of ICZM, such that Washington's MSP requires review from and inclusion in their ICZM program and Oregon's ocean planning division is housed under their CMP. Both Pacific Northwest states' plans include oil spill preparedness and response and vessel wastewater discharge, but do not address vessel routing or sea traffic management.

Currently, in Alaska, sea traffic management is conducted by the nonprofit Marine Exchange of Alaska (MXAK), in partnership with the USCG and state port authorities. MXAK maintains state-of-the-art facilities to ensure 24/7 monitoring of Automatic Identification System (AIS)-equipped vessel operations in Alaskan waters and maintains the ability to communicate with and provide guidance to vessels. Their efforts, however, do not compensate for the troubling lack of response capability in Alaska's Arctic waters. Between 2016 and 2024, the amount of vessel traffic in the Bering Strait has doubled (Arctic Watch workshop report, forthcoming), but according to the Alaska Chadux Network, another nonprofit providing spill response equipment and training across the state, neither hub communities nor villages north of the Aleutians have even the most rudimentary means of containing or mitigating a hazardous ocean spill. MXAK has partnered with the Chadux Network, as well as Kawerak, Inc., and the U.S. Marine Mammal Commission to implement a Tribally-centered program of vessel monitoring and subsistence-centered geofencing called Arctic Watch (URL: <https://arcticwatch.org/>), but this effort remains nascent and will need extensive resources to become a sustainable basis for vessel management in northern Alaska. As the state with the longest coastline and an immense dependence on the health of the ocean, the state of Alaska has an imperative to undertake an inclusive and equitable marine spatial planning process in addition to reconstituting some form of integrated coastal management.

4.5 Developing the Port of Nome Without Requirement of Local Input

The Port of Nome, selected in 2021 to become America's first Arctic deep draft port, is currently moving forward in reviewing contract bids with the USACE on the large port infrastructure expansion project. Kawerak, Inc., representing Tribal interests formerly consolidated under the Bering Straits CRSA, has submitted and published comments on the port's feasibility report (2020) and more recently on their *Strategic Development Plan Update* (2024), both of which highlight inadequacies in the design of the project, particularly as they relate to the safety and success of subsistence harvesters and the engagement efforts made by the Port Commission and USACE. Kawerak's recommendations are extensive and deserve scrutiny and attention that cannot be provided in this report. However, the content of their recommendations can be said to concern numerous subjects that previously would have been subject to Bering Straits CRSA

Environmental Plan and Consistency Review Process, and likely undergone major reviews and revisions before reaching its current stages. Its fixed siting in Nome legally delimits whose interests and input are required to advance the project, despite its wide geographic and temporal scope of anticipated environmental consequences. While the port expansion would have fallen under the jurisdiction of the City of Nome Coastal District, the Bering Straits CRSA may have had a stronger claim to enforce its own policies due to its express provisions on facility design, construction, and maintenance.

In the Arctic Commitment Act introduced to Congress by Liza Murkowski in 2022, Section 10 proposes an amendment to the Deepwater Port Act of 1974. In section 4 (33 U.S.C. 1503), subsection (c)(9), the Act proposes adding a parenthetical statement exempting Alaska from the requirement to have a coastal management program in place in the event a deepwater port is connected to a pipeline. This suggests that Alaska should be treated as exceptional as regards to the application of the Deepwater Port Act, is not required to have the ACMP to undertake deepwater port development and is poised to connect an oil or gas pipeline to the Port of Nome. That such progress has been made in planning and funding the port expansion in violation of this provision of the Deepwater Port Act and without adequate Indigenous engagement shows how national security interests in the Arctic can entirely overshadow questions of procedural justice, equity, and environmental health.

4.6 The Multifaceted Role of Security

The significance of the size of Alaska’s waters and resources is noted in the BOEM website’s Alaska region page: “Alaska’s Outer Continental Shelf is enormous: at 1.3 billion acres, about 65 percent of the size of the entire contiguous U.S. That expanse comprises immense energy and mineral resources. Alaska’s OCS is estimated to contain 24.69 billion barrels of oil, 124.03 trillion cubic feet of natural gas, and 3,800 gigawatts of potential wind, tidal, and wave energy. As an important partner in America’s energy security and overall Arctic security, we are committed to managing the development of these natural resources in an environmentally and economically responsible way” (BOEM 2024). The recently signed agreement in April 2024 between two U.S. Department of Interior Bureaus, BOEM and BSEE, and the USCG “to strengthen interagency cooperation in the advancement of safe and environmentally sustainable non-mineral (renewable) energy development, including offshore wind, on the Outer Continental Shelf” (BSEE 2024) is a useful example of working to provide energy security to the U.S. but it is also an indication of the role that BOEM can play in other forms of security. Below we touch on three of the areas for which our research has security implications. These three are interrelated when one considers BOEM’s mandate and regional capacity for action that engages many national and international rule sets.

4.6.1 Food Security

For Alaska Native communities living in the Arctic, the ocean is their garden (Huntington et al. 2017). Subsistence foods gathered from the land and sea, including marine mammals, fish, clams, crabs, and seabirds, compose on average 15 percent to 22 percent of communities’ caloric intake, but provide disproportionately high levels of essential nutrients (Walch and Bersamin 2020). Understanding food security only in terms of calories or nutrition, however, overlooks the essence of subsistence foods to cultural identity, preservation, and transmission (ICC-Alaska

2015). Sustainable access to subsistence foods in Alaska Native communities provides a way of life that is affordable and spiritually fulfilling. The high cost and low nutritional and cultural value of foods available at village grocery stores makes them an unsuitable alternative to wild caught and gathered subsistence foods. Of paramount political importance, the Alaska Constitution establishes an equal access rule to fish and game resources for residents and a 1989 court case declared ANILCA's rural priority to be in conflict with the state's Constitution. In other words, the State of Alaska recognizes no legal difference in rights to accessing State resources for those who are Indigenous or rural, compared with any other Alaska citizen. But under the ACMP, prior to 2003, Coastal Districts were enabled and encouraged to establish numerous enforceable policies for the prioritization, protection, and preservation of subsistence resources. If one considers the additional power of federal wildlife co-management bodies (e.g., AEWG, EWC, Alaska Migratory Bird Co-Management Council) created between 1977 and 2000 in combination with the ACMP, local assessment of development risks to subsistence had more proportionate weight in relation to the assessments of State agencies ADF&G and DNR. Archival evidence of the movement of the ACMP into DNR and the subsequent revisions of enforceable policies shows that subsistence-centered policies were uniformly declared inadmissible and denied approval by the State government.

Since 2019, compounding pressures from climate change, unsustainable commercial harvests, and bycatch have resulted in a collapse of Western Alaska salmon populations as far north as the Norton Sound (Shoen et al 2023, Westley 2020, Gannon 2019). Though the ACMP did not cover fisheries management, but only impacts of development on fish passage and habitat, its history is instructive with regards to the troubled division of state and federal jurisdictions and responsibilities in Alaska. The ACMP's capacity to consider multiscalar and transboundary coastal impacts by bringing all stake and rightsholders together could inform future restructuring of federal-state-community relations regarding the management of anadromous fish, who spend their lives in marine, littoral, and riverine environments. Enhanced coordination between ADF&G and NMFS, along with extensive and meaningful community engagement, could improve socio-ecological outcomes for salmon and the Alaska Native Peoples who have stewarded them for generations. The recently instituted 7-year moratorium on Chinook fishing for Yukon River communities represents a troubling compromise after decades of community advocacy and warnings about the consequences of current management paradigms. At this critical juncture for the long-term health of Western Alaska and particularly Yukon River salmon, exploring the possibilities of robust co-management arrangements among communities and agencies could go a long way in restoring and protecting this critical cultural and food resource.

4.6.2 Energy Security

The U.S. Marine Energy Act of 2020 defines marine energy as energy from waves, tides, ocean currents, free-flowing rivers and man-made channels, as well as from differentials in salinity, temperature, and pressure (116th Congress). Kilcher et al. (2021), in an overview of marine energy capacity of the U.S., find that optimized Alaska production from wave resources in the EEZ would meet 21 percent of the U.S. electricity needs equivalent to powering 83,000,000 homes. Based on the 2021 National Renewable Energy Laboratory report noted above, the U.S. National Hydropower Association has already begun to promote such efforts as a way to lessen the dependence on diesel for remote and isolated Alaska villages. It notes the success of the private company Ocean Renewable Power Company (ORPC) in creating river-generated power

and indicates that the Department of Energy's Water Power Technologies Office has awarded funding to the ORPC-led team to commence site studies and develop permitting and development plans.

The potential for developing marine energy on the Alaska OCS and coastal region inherently entails moving large amounts of materials via marine transit, likely in combination with overland travel. This process would entail contacting and working with numerous organizations and individuals from the municipal and Tribal levels up to national and potentially international levels. Our research demonstrates that the current ability for local coastal interests to be impactful in relation to state or federal resource decisions has been weakened by the removal of the ACMP. Consequently, any BOEM efforts in relation to such projects would need to operate differently than the current context requires; BOEM would have to ensure procedurally equitable processes for engaging all potentially affected stake and rightsholders, with transparent criteria for how contributions are weighed, evaluated, and acted upon. Seasonally ice-covered federal waters (EEZ) would be subject to any efforts at harmonization of rules, approaches, and coastal inhabitant participation in perpetuity. There is currently no common interpretation of appropriate management rules for ice-covered areas of the Arctic Ocean under Article 234 of the United Nations Convention on the Law of the Sea, which instead provides coastal states significant freedom in acting on the Article's language. Kraska and Baker (2014) make a strong case for the recognition of the interrelated movements of pollutants, marine mammals, fish, and plankton, vital to trophic functioning, which flow freely across human boundaries and borders, via international mechanisms.

4.6.3 National Security

In the Alaska maritime regime, considering both State and Federal waters, environmental change affects national security. The current international effort to secure nations' outer continental shelves is paralleled by a slow but notable global push for infrastructure development on the submerged lands three nautical miles from states' shores. What, for example, will happen to the regulation of the seabed as development compounds vulnerabilities across maritime jurisdictions? In the case of Alaska, a multidisciplinary team recently addressed this issue:

In Alaska, environmental change impacts military security. With melting sea ice comes new foreign military and commercial traffic to Alaska's coasts, which *U.S. maritime security vessels are currently underprepared to address in the event of an emergency*. Environmental change also impacts physical and cultural security. Coastal erosion has sparked relocation processes for villages like Newtok and Napakiak. Warming temperatures impact migratory patterns of a wide range of subsistence animals and affect hunting, whaling and fishing practices. The security landscape thus ranges from military protection of the U.S. homeland to safeguarding Alaska-specific Indigenous food security and well-being and involves a complex network of actors attempting to protect individuals, communities, institutions, territorial integrity and the international community. Central to assuring the security of these entities is protection of vital infrastructure in Alaska's Arctic (Lovecraft et al. 2024: 20).

Arctic security is certainly a U.S. federal responsibility and has been primarily a military affair. However, it is impossible for federal agencies to address all the concerns related to human and territorial security given the complex nature of coastal and marine governance. Those state-level agencies that provide protection include the State Defense Force, Division of Homeland Security and Emergency Management, State Troopers, ADF&G, and Alaska National Guard, among others. There are several important agencies at the state level that are intertwined with marine concerns such as the Coastal Hazards Program of the DNR which tracks flooding, erosion, and permafrost degradation, and recently forecasted coastal infrastructure exposure to erosion.

For oil spills on the coast, the Alaska SPAR has measures and plans in place. The Alaska DOF&PF Ports and Harbors Section also focuses on the coast and has partnered with the USACE to evaluate additional potential deepwater port locations in light of the increase in maritime traffic. The Alaska Marine Highway System and the Alaska Naval Militia have purview further from the coasts. In this way while the federal government has primary authority over national defense and homeland security, Alaska's terrestrial and marine territory is critical to national security. In order to create effective human and environmental security from the international scale to small coastal communities, BOEM and its sister bureaus must work to partner with the State of Alaska to avoid costly duplication, promote equity, and find practical Alaska-based solutions.

5 Recommendations

- 1. BOEM should consider initiating dialogue with a wide range of stakeholders and rightsholders in Alaska and among federal agencies on developing an integrated marine spatial planning effort for Alaska's EEZ, OCS, and territorial sea.**

MSP is rapidly gaining traction around the world for its ability to coordinate and mediate between multiple diverse uses of marine resources. States across the country have already developed robust MSP portfolios and integrated MSP into development and conservation planning. If BOEM anticipates developing renewable energy resources on the Alaska OCS, such as wind, tidal, or wave energy, it should apply MSP tools and processes early on and prior to feasibility or environmental impact studies to streamline decision-making. MSP's emphasis on engagement with ocean resource users is designed to optimize both social and ecological outcomes of the process.

Though it is not an outright replacement for ICZM, MSP can institute a similar form of networked governance that supports continuous engagement, relationship and trust-building, and proactive problem-solving among stakeholders, Tribes, and other rightsholders. International examples of MSP feature varying levels of stakeholder engagement, with those based in the United States and Australia incorporating Indigenous and local governmental stakeholders in more active and participatory roles (Collie et al. 2013). The subsequent recommendations listed here can be facilitated by the pursuit of an MSP program in Alaska's surrounding ocean, perhaps through a reinstatement and update of the Obama-era Executive Order 13547, which established a National Ocean Council and National Policy for the Stewardship of the Ocean, Coasts, and Great Lakes.

Tireless efforts to identify the fit between coastal governance goals and the procedures and mechanisms for their realization did occur under the ACMP. This lesson is important to bear in

mind should BOEM and or other agencies seek to shift the current constellation of actors towards a more inclusive, Indigenous-focused, information-rich, transparent, and accessible process of coastal decision-making. Unlike elected political officials, agencies span electoral cycles and can maintain specific kinds of stewardship pathways and inclusive processes for a region over the decades needed to meet such goals.

2. BOEM should stay apprised of other developments taking place in nearshore and onshore areas of coastal communities who may be affected by activities taking place in the OCS.

In the absence of a clearinghouse of information under the ACMP, lack of communication among agencies and communities can result in compounding social-environmental pressures that can overwhelm local capacity. Currently, Alaska Native communities along the Bering Sea coast are dealing with what can only be described as a pile-on of government demands in diverse areas of resource management. Communities and Tribes in Western Alaska are overburdened by requests to collaborate, engage in consultation and public comment, and contribute to scoping large federal initiatives. In 2024 alone, Tribes have had to respond to BLM's proposed opening of ANCSA D-1 lands to mining; organize to protest HJR 22, which would dramatically alter subsistence management in the state; oppose NOAA's planned survey on the effects of bottom-trawling in the Northern Bering Sea, where commercial trawling has been off-limits for decades; contribute to the USCG's development of Western Alaska Oil Spill Planning Criteria; engage with government agencies over the ongoing salmon crisis on the Yukon and Kuskokwim rivers (and the impacts of the seven year moratorium on Yukon Chinook); lobby for amendments to HR 6285 Alaska's Right to Produce Act, which would nullify the Northern Bering Sea Climate Resilience Area; and provide Tribal perspectives on marine geoengineering research that had already received millions of dollars in funding. These acute concerns interfere with meeting day-to-day community needs, pursuing competitive grant funding, attending meetings, all while preserving and revitalizing culture, language and subsistence. The complex risks stemming from these actions push Tribal governments and consortia, like Kawerak, Inc., to the limits of their capacity to respond with reviews and comments. Both federal and state agencies must recognize the harmful burden that disengaged and uncoordinated actions like this place on communities.

Federal agencies such as BOEM have published guidance and best practices documents related to engagement with Tribes in Alaska and the U.S. and with environmental justice more broadly. Such documents are extremely valuable and demonstrate commitments from national executive leadership to righting historic wrongs that have marginalized communities of color, Tribal governments, Indigenous Peoples, and others. It must be noted, however, that such documents denote norms, with no prescribed forms of accountability, rather than rules, whose violation entails concrete consequences and accountabilities and often lack budget allocations from Congress. When based in binding legal instruments like Executive Orders (e.g. EO14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*), such best practices and guidelines carry greater weight. But the tangible difference such documents make is often difficult to calculate. Essential to the success of soft policy instruments like these is therefore regular and transparent measurement and evaluation of impacts, conducted with oversight from affected communities. Federal agencies seeking to address issues of social, environmental, racial, and economic justice have responsibilities beyond the publication and distribution of

recommendations and should strive to track and empirically validate whether relevant government processes produce more equitable and just outcomes.

3. BOEM, and DOI more widely, should establish a federally funded program similar to the Coastal Impact Assistance Program to help ensure up-to-date community resource inventories and community response capacity for development initiatives on the OCS.

Though this study did not involve extensive information-gathering from federal agencies and employees, the significance of federal resource management in Alaska necessitates it be addressed. As described above, the ACMP helped to consolidate otherwise hard-bounded jurisdictions spanning the land-sea divide and among management units (Figure 2-1). Within the Department of Interior alone, the ACMP brought together representatives from the BLM, BOEM, NPS, and USFWS, who through the CRP were provided the opportunity to interact with NOAA, EPA, the DOT&PF, and the USACE. In light of the federal trust relationship with Tribal governments and the many executive policies described at the beginning of the report, these federal agencies should consider enhancing their G2G consultations and public engagement efforts with rules that approximate those jettisoned with the ACMP. Alaska's ineligibility for CIAP funds poses a particularly problematic capacity gap. For proposed land use changes, blue growth projects, renewable energy initiatives, and resource planning and scoping, DOI agencies could divert resources to affected communities (in the former coastal zone or elsewhere) to not only compensate their participation in consultations, but like CIAP, provide technical and organizational support to prepare, inform, and equip them to participate in genuinely meaningful ways. Absent the ACMP, this would constitute a distinct type of program, but in light of the demonstrable loss of social capital among former Coastal Districts and the State of Alaska's noted disregard of Tribal interests, it is incumbent on federal agencies to extend themselves and their resources to work respectfully and collaboratively with Alaska Native Tribes and local communities.

4. Any planned BOEM activities in the OCS of the Alaskan Arctic should engage in Tribal consultation in a timely and respectful manner (as per BOEM Tribal Guidance and Consultation Policies/Procedures), especially with regard to the NEPA process.

The federal trust relationship and responsibility to Tribal governments in the United States is actualized through many avenues including G2G consultations. Though the White House called for the standardization of Tribal consultation procedures in 2022, G2G consultations have historically been treated by agencies as a discretionary duty, a box checking exercise rather than an obligation or opportunity (Blumm and Pennock 2022, O'Neil 2023). Unfunded, inadequate, or perfunctory Tribal consultation practices can have serious consequences. As Blumm and Pennock (2022: 104) write,

Tribes frequently have a land management approach distinct from that of other governments and entities, which non-Tribal officials do not adequately understand. Policies and regulations formed without Tribal consultation, or any consideration of Tribal values or rights at all, can consequently force a management scheme on Tribes inconsistent with their needs, historical resource management programs, and legal rights. Tribes also place considerable cultural, religious, and historical significance on places, sacred sites, and resources that other land managers often do not recognize or protect. Moreover, when Tribes

must defend their rights and resources after being left out of federal decision making, the result is often significant expenditures of funding, time, and legal resources that would otherwise be unnecessary.

In Alaska, the conditions and circumstances that obligate the federal government to initiate such consultations are ambiguous due to the ANCSA, the prominence of Alaska Native Corporations, and the absence of Indian Country (besides the Metlakatla community) in the state (Shearer 2007). However, federally recognized Tribes in Alaska are not only the holders of inherent aboriginal rights but are legally entitled to meaningful consultation on decisions that concern them. The question of whether a federal agency should initiate consultation is relatively clear when impacts affect lands, waterways, or species within a Reservation, but difficult when Indigenous rights are de-territorialized and poorly understood.

Alaska Native communities living on the coast are deeply dependent on the bounty of the ocean, a fact that has underpinned the creation of marine mammal co-management bodies but has not always led to appropriate Tribal consultation around marine resources. It is essential that prior to any decision-making around lands, waters, or other resources used by Alaska Native Tribes, consultation processes are initiated, funded, and sustained. Consultation with Native Corporations alone is inadequate.

O’Neil (2023) details the failure of BLM to engage in adequate consultation with Alaska Native communities regarding the Ambler Access Project, for which a NEPA process was conducted and an EIS completed before any Tribal consultation was initiated. Among the violations committed by the BLM were the failure to enter into consultation after changes to the project and permits, the failure to study or consider Tribal resources or cultural landscapes in the EIS, active discouragement of Tribal participation, and the failure to consider alternative, less environmentally damaging alternative routes for the Ambler Road.

Though a major lawsuit and subsequent delays to the project resulted from this malfeasance, BLM and other agencies remain only loosely bound to undertake consultations. As O’Neil writes, “to identify possible impacts, BLM wields vast decision-making power: it “may or may not” meet with official representatives of Alaska Native Tribal governments or ANCSA Corporations, need only employ “reasonable” efforts to hold meetings with Tribal officials, and need only give “good faith consideration” to any issues raised by tribes during consultation” (2023: 706). Strengthening such language and its enforceability across DOI and other federal departments and adequately funding Tribal consultations may be able to prevent similar conflicts and harms from taking place in the future.

5. Future Research Needs

As the Arctic undergoes a rapid and unprecedented transformation, the need for novel and applied research only continues to grow. There are, of course, major needs to better understand changes in the environment, including, for example, the impacts of sea ice loss on marine ecosystems and the changing dynamics of Arctic storms. There are also significant questions regarding infrastructure design and economics, Indigenous food security and sovereignty, and cultural dimensions of climate change. With respect to institutions of environmental governance and management, we offer several suggestions for innovative research programming.

- a. Research that can further elucidate the relationship between social capital and environmental risk.
- b. Research that assesses the impacts of borders and jurisdiction on environmental health.
- c. Research that investigates the dynamics of state and federal funding for programs and services in Arctic Alaska.
- d. Research that empirically examines the legal and political mechanisms underlying NOAA's ecosystem-based management in Alaska's maritime regions.

6 References

- Bennett, N. J., Govan, H., and Satterfield, T. (2015). Ocean grabbing. *Marine Policy*, 57, 61-68.
- Bennett, N. J., Whitty, T. S., Finkbeiner, E., Pittman, J., Bassett, H., Gelcich, S., and Allison, E. H. (2018). Environmental stewardship: A conceptual review and analytical framework. *Environmental Management*, 61, 597-614.
- Bennett, N. J. (2019). Marine social science for the peopled seas. *Coastal Management*, 47(2), 244-252.
- Berardi, G. (1998). Natural Resource Policy, Unforgiving Geographies, and Persistent Poverty in Alaska Native Villages. *Natural Resources Journal*, 38, 85-108.
- BLM (2004). Alpine Satellite Development Plan Environmental Impact Statement Record of Decision.
- BLM (2008). Kobuk-Seward Peninsula Record of Decision and Approved Management Plan. September 2008.
- BLM (2019). Bering Sea-Western Interior Resource Management Plan and Environmental Impact Statement.
- Blumm, M. C., and Pennock, L. (2022). Tribal consultation: Toward meaningful collaboration with the federal government. *Colorado Environmental Law Journal*, 33, 1.
- Briassoulis, H. (2019). Governance as Multiplicity: the Assemblage Thinking Perspective. *Policy Sciences*, 52, 419-450.
- Bering Straits CRSA (1989). Bering Straits Coastal Resource Service Area Coastal Management Plan: Enforceable and Administrative Policies. Effective Date: December 22, 1989.
- Bodin, Ö., and Tengö, M. (2012). Disentangling intangible social–ecological systems. *Global Environmental Change*, 22(2), 430-439.
- Bodin, Ö., Mancilla García, M., and Robins, G. (2020). Reconciling conflict and cooperation in environmental governance: a social network perspective. *Annual Review of Environment and Resources*, 45(1), 471-495.
- BOEM (2024). BOEM’s Alaska OCS Region. <https://www.boem.gov/regions/alaska-ocs-region>
- BSEE (2024). U.S. Coast Guard, BSEE and BOEM Sign Agreement to Advance Safe and Environmentally Sustainable Energy Development. <https://www.bsee.gov/newsroom/latest-news/statements-and-releases/press-releases/us-coast-guard-bsee-and-boem-sign>
- Buschman, V.Q. (2021). Indigenous Contributions to Arctic Biodiversity Conservation. Dissertation, University of Washington.
- Chircop, A. and Czarski, M. (2020) Polar Code implementation in the Arctic Five: has harmonisation of national legislation recommended by AMSA been achieved? *The Polar Journal*, 10:2, 303-321
- Clark, N., & Szerszynski, B. (2020). Planetary social thought: The Anthropocene challenge to the social sciences. John Wiley & Sons.

- Collie, J. S., Beck, M. W., Craig, B., Essington, T. E., Fluharty, D., Rice, J., and Sanchirico, J. N. (2013). Marine spatial planning in practice. *Estuarine, Coastal and Shelf Science*, 117, 1-11.
- Cox, M. (2012). Diagnosing institutional fit: a formal perspective. *Ecology and Society*, 17(4).
- Crona, B., Ernstson, H., Prell, C., Reed, M., and Hubacek, K. (2011). Combining social network approaches with social theories to improve understanding of natural resource governance. *Social networks and natural resource management: uncovering the social fabric of environmental governance*, 44-72.
- Crawford, S. E., and Ostrom, E. (1995). A grammar of institutions. *American Political Science Review*, 89(3), 582-600.
- CRS (Congressional Research Service) 2019. Coastal Zone Management Act (CZMA): Overview and Issues for Congress. URL: <https://crsreports.congress.gov>, R45460.
- Dittmer, J. (2014). Geopolitical Assemblages and Complexity. *Progress in Human Geography* 38(3), 385-401.
- DCOM (2011). Fact Sheet. Alaska Department of Natural Resources.
- DCRA (2011). Planning Powers for Alaska Communities. https://dot.alaska.gov/creg/planning/assets/Planning_Power_for_Alaskan_Communities.pdf
- DCRA (1984). Local Involvement with Alaska Coastal Management: Past Experience and Future Prospects. Final Report of the Interdistrict Conference Project.
- DNR (2004). List of Expedited Consistency Reviews and State Authorizations Subject to the ACMP, Volume I. DNR, Office of Project Management and Permitting.
- Dodds, K. (2010). Flag planting and finger pointing: The Law of the Sea, the Arctic and the political geographies of the outer continental shelf. *Political Geography*, 29(2), 63-73.
- Eider, D., Partelow, S., Albrecht, S., Adrianto, L., and Kluger, L. C. (2023). SCUBA tourism and coral reefs: a social-ecological network analysis of governance challenges in Indonesia. *Current Issues in Tourism*, 26(7), 1031-1050.
- Ekstrom, J. A., and Young, O. R. (2009). Evaluating functional fit between a set of institutions and an ecosystem. *Ecology and Society*, 14(2).
- Emerson, K., Baldwin, E., Scott, T.A., Pidot, J.R., Lien, A.M., Currim, F., Bethard, S., Ram, S., Miller, M.L., and López-Hoffman, L. (2022). Toward NEPA performance: A framework for assessing EIAs. *Environmental Impact Assessment Review*, 97, 106879.
- Emirbayer, M., and Goodwin, J. (1994). Network analysis, culture, and the problem of agency. *American Journal of Sociology*, 99(6), 1411-1454.
- Foley, P. and Mather, C. (2019) Ocean grabbing, terraqueous territoriality and social development, *Territory, Politics, Governance*, 7:3, 297-315.
- Frumkin, H., Shane, B., and Schottland, T. (2024). Box 17-1 Ecosystem Services and Nature's Contributions to People. *Climate Change and Public Health*, 359, 367.
- Gannon, G. (2019). The Nexus between Environmental Stress, Resource Governance and Demographic Change in Norton Sound, Alaska. Thesis, University of Saskatchewan.

- Gestring, B. (2020). Alaska Metal Mines: The track record of impacts to land and water from the failure to capture and treat mine pollution. Earthworks. www.earthworks.org/alaska-mines.pdf
- Glaeser, B. and Glaser, M. (2023). Coastal Management Revisited: Navigating towards Sustainable Human-Nature Relations. Cambridge Scholars Publishing: Newcastle upon Tyne.
- Gómez-Baggethun, E., De Groot, R., Lomas, P. L., and Montes, C. (2010). The history of ecosystem services in economic theory and practice: From early notions to markets and payment schemes. *Ecological Economics*, 69(6), 1209-1218.
- Grote, K. M. (2024). Indigenous peoples and the power (lessness) of public participation: Assessing effects of Indigenous community input in the Alaskan Coastal Plain oil and gas leasing program environmental impact statement. *Environmental Science & Policy*, 158, 103787.
- Hermann, V. (2020). A Tipping Point for Arctic Regimes: Climate Change, Paradiplomacy, and a New World Order. In Spohr, K., Hamilton, D. S., and Moyer, J. C. (Eds.). (2021). *The Arctic and World Order*. Brookings Institution Press, pp. 97-119.
- Hufford, G., and Partain, J. (2004). Climate change and short-term forecasting for Alaskan northern coasts. *National Weather Service*.
- Huntington, H. P., Gearheard, S., Holm, L. K., Noongwook, G., Opie, M., and Sanguya, J. (2017). Sea ice is our beautiful garden: Indigenous perspectives on sea ice in the Arctic. *Sea Ice*, 583-599.
- Huntington, H. P., Carey, M., Apok, C., Forbes, B. C., Fox, S., Holm, L. K., et al. (2019). Climate change in context: putting people first in the Arctic. *Regional Environmental Change*, 19, 1217-1223.
- ICC-Alaska (Inuit Circumpolar Council-Alaska) (2015). Alaskan Inuit Food Security Conceptual Framework: How to Assess the Arctic From an Inuit Perspective: Summary Report and Recommendations Report. Anchorage, AK.
- JDS Energy and Mining Inc. (2022). Preliminary Feasibility Study Technical Report: Graphite One Project, Alaska, USA. <https://www.graphiteoneinc.com/wp-content/uploads/2022/10/JDS-Graphite-One-NI-43-101-PFS-20221013-compressed.pdf>
- Jones, B.M., C. D. Arp, M. T. Jorgenson, K. M. Hinkel, J. A. Schmutz, and P. L. Flint (2009). Increase in the rate and uniformity of coastline erosion in Arctic Alaska. *Geophysical Research Letters*, 36.
- Jones, B. M., Irrgang, A. M., Farquharson, L. M., Lantuit, H., Whalen, D., et al. (2020). Coastal permafrost erosion. *Arctic Report Card*, 15.
- Kilcher, Levi, Michelle Fogarty, and Michael Lawson. 2021. Marine Energy in the United States: An Overview of Opportunities. Golden, CO: National Renewable Energy Laboratory. <https://www.nrel.gov/docs/fy21osti/78773.pdf>
- Knott, C., Wiber, M. G., & Mather, C. (2024). Aquaculture's offshore frontier: learning from the Canadian courts on ocean grabbing, ocean privatization, and property as process. *Maritime Studies*, 23(1), 5.

- Kraska, J. and Baker, B. (2014). Emerging Arctic Security Challenges. Policy Brief, Center for a New American Security.
https://www.files.ethz.ch/isn/178414/CNAS_EmergingArcticSecurityChallenges_policybrief.pdf
- Krupa, M. B., Cunfer, M. M., and Clark, J. (2020). Who's Winning the Public Process? How to Use Public Documents to Assess the Equity, Efficiency, and Effectiveness of Stakeholder Engagement, *Society and Natural Resources*, 33:5, 612-633
- Krupnik, I., and Jolly, D. (2002). *The Earth Is Faster Now: Indigenous Observations of Arctic Environmental Change. Frontiers in Polar Social Science*. Arctic Research Consortium of the United States, 3535 College Road, Suite 101, Fairbanks, AK 99709.
- Lapping, M.B. (1975). Environmental Impact Assessment Methodologies: A Critique. *Environmental Affairs*, 4,123.
- Laschever, E. S. (2023). The Coastal Zone Management Act in its sixth decade: an unsung cornerstone in the nation's response to climate and ocean change. *Coastal Management*, 51(4), 231-243.
- Lewis, J. M. (2011). The future of network governance research: Strength in diversity and synthesis. *Public Administration*, 89(4), 1221-1234.
- Lovecraft, A. L. (2008). Climate change and Arctic cases: A normative exploration of social-ecological system analysis.
- Lovecraft, A., Lee, O., Parlato, N. (2022). System identity and transformation in petroleum jurisdictions: A multi-method approach for the North Slope Borough, Alaska. *PLOS Sustainability and Transformation*.
- Lovecraft, A.L., Boylan, B., Bennett, A., Connor, B., Parlato, N., Fresco, N., Meek, C, Hirshberg, D. (2024). Alaska's changing Arctic: Coastal infrastructure issues and trends for the Alaska State Legislature and its citizens (M. Biermann, H. McFarland eds). Center for Arctic Policy Studies, International Arctic Research Center, University of Alaska Fairbanks.
- Maslanik, J. A., Serreze, M. C., and Agnew, T. (1999). On the record reduction in 1998 western Arctic sea-ice cover. *Geophysical Research Letters*, 26(13), 1905-1908
- Maynard, and Patch 1989. North Slope Borough Coastal Management Program. Woodward-Clyde Consultants.
- Meadows R., Cooperman A., Koleva M., Draxl C., Kilcher L., Baca E., Strout Grantham K., DeGeorge E., Musial W., Wiltse N., Guerra Fernandez O. J. (National Renewable Energy Laboratory, Golden, CO). 2023. Feasibility study for renewable energy technologies in Alaska offshore waters. Anchorage (AK): U.S. Department of the Interior, Bureau of Ocean Energy Management, Alaska OCS Region. 131 p. Report No.: OCS Study BOEM 2023-076. Contract No.: M17PG00012.
- Meek, C. L. (2011). Conservation of Marine Mammals in Alaska: The Value of Policy Histories for Understanding Contemporary Change. In, Lovecraft and Eicken (eds.), North by 2020: Perspectives on Alaska's Changing Social-Ecological Systems. University of Alaska Press, Fairbanks, AK, pp. 359-376.

- Meek, C. L. (2013). Forms of collaboration and social fit in wildlife management: A comparison of policy networks in Alaska. *Global Environmental Change*, 23(1), 217-228.
- Meinzen-Dick, R., Chaturvedi, R., Kandikuppa, S., Rao, K., Rao, J. P., Bruns, B., and Eldidi, H. (2021). Securing the commons in India: Mapping polycentric governance. *International Journal of the Commons*, 15(1), 218–235
- Merculieff, L. (2002). Linking Traditional Knowledge and Wisdom to Ecosystem Based Approaches in Research and Management.
- MMS (1987). Institutional Change in Nome: 1980-1986, Technical Report 127. OCS Study No. MMS S6-0124.
- MMS (2003). Beaufort Sea Planning Area, Oil and Gas Lease Sales 186, 195, and 202. Volume 1.
- MMS (2009). Shell Offshore Inc. 2010 Outer Continental Shelf Lease Exploration Plan, Camden Bay, Alaska. Environmental Assessment.
- NAB (1998). Northwest Arctic Borough Coastal Management Program Enforceable and Administrative Policies. January 7, 1998.
- NAB Borough Code. Chapter 9.12 Zoning Districts.
- NOAA (1980). Evaluation of the Alaska Coastal Management Program for the Period from July 1979 through March 1980.
- NOAA (1981). Performance Review Findings for the Alaska Coastal Management Program for the Period from April 1980 through May 1981.
- NOAA (1982). Evaluation Findings for the Alaska Coastal Management Program June 1981 through March 1982.
- NOAA (1984). Evaluation Findings for the Alaska Coastal Management Program Covering the Period from April 1982 through September 1983 and the Alaska Coastal Energy Impact Program Covering the Period from August 1977 through September 1983.
- NOAA (1987). Performance Review Findings for the Alaska Coastal Management Program for the Period from October 1983 through November 1985.
- NOAA (1988). Evaluation Findings for the Alaska Coastal Management Program for the Period from December 1985 through October 1987.
- NOAA (1990). Evaluation Findings for the Alaska Coastal Management Program for the Period from November 1987 through September 1989.
- NOAA (1992). Evaluation Findings for the Alaska Coastal Management Program September 1989 through September 1991.
- NOAA (1995). Final Evaluation Findings for the State of Alaska's Coastal Management Program September 1991 through June 1995.
- NOAA (1998). Final Evaluation Findings for the Alaska Coastal Management Program for the Period from July 1995 through May 1998.
- NOAA (2004). Evaluation Findings for the Alaska Coastal Management Program June 1981 from November 1998 to September 2002.

- NOAA (2008). Final Evaluation Findings Alaska Coastal Management Program October 2002 – August 2007.
- NOAA (2019). The Withdrawal of the Alaska Coastal Management Program. May 8, 2019. NSB (1979a). The Arctic Coastal Zone Management Newsletter. February 1979.
- NOAA (2020). CZMA Federal Consistency Overview. Office for Coastal Management, National Ocean Service. February 24, 2020.
- NSB (1979b). The Arctic Coastal Zone Management Newsletter. May 1979.
- NSB (1979c). The Arctic Coastal Zone Management Newsletter. June 1979.
- NSB (1988). North Slope Borough Coastal Management Program Enforceable Policies. Effective Date: May 6, 1988.
- NSB (2007). North Slope Borough Resolution Serial No. 16-2007: A Resolution in Support of the North Slope Borough’s Revised Draft Coastal Management Plan.
- OG (1987). Alaska Coastal Management Program: 1987 Annual Report. Office of the Governor.
- OG (2000). *Bering Sea Ecosystem Project: Working Together for the Future, Final Report*. Office of the Governor, Division of Governmental Coordination.
- O’Neil, K. (2023). In the Room Where It Happens: How Federal Appropriations Law Can Enforce Tribal Consultation Policies and Protect Native Subsistence Rights in Alaska. *Wash. L. Rev.*, 98, 659.
- Ostrom, E. 1998. Behavioral approach to the rational choice theory of collective action. *American Political Science Review*, 92(1), 1-22.
- Owusu, V., Lawer, E. T., Adjei, M., & Ogbe, M. (2023). Impact of offshore petroleum extraction and “ocean grabbing” on small-scale fisheries and coastal livelihoods in Ghana. *Maritime Studies*, 22(2), 17.
- Rathwell, K. J., and Peterson, G. D. (2012). Connecting social networks with ecosystem services for watershed governance: a social-ecological network perspective highlights the critical role of bridging organizations. *Ecology and Society*, 17(2).
- Raynolds, M. K., Walker, D. A., Ambrosius, K. J., Brown, J., Everett, K. R., Kanevskiy, M., Kofinas, G. P., Romanovsky, V. E., Shur, Y., Webber, P. J. (2014). Cumulative geoeological effects of 62 years of infrastructure and climate change in ice-rich permafrost landscapes, Prudhoe Bay Oilfield, Alaska. *Global Change Biology*, 20, 1211-1224.
- Richardson, T. and Weszkalnys, G. (2014). Introduction: Resource Materialities. *Anthropological Quarterly*, 87(1), 5-30.
- Ristroph, B. (2023). Pacific Community Relocations: Comparing Relocation Efforts in Alaska and Pacific. Policy Brief No. 157, Toda Peace Institute.
- Robards, M. D., and Lovcraft, A. L. (2010). Evaluating comanagement for social-ecological fit: indigenous priorities and agency mandates for Pacific Walrus. *Policy Studies Journal*, 38(2), 257-279.

- Schoen, E., Howard, K., Murphy, J., Schindler, D., Westley, P., von Biela, V. (2023). Divergent Responses of Western Alaska Salmon to a Changing Climate. NOAA Technical Report OAR ARC; 23-13, Arctic Report Card 2023.
- Schwenke, T., and Holzkämper, E. (2020). Social (-ecological) network analysis in environmental governance—central publications, important concepts and areas of application. *Human Ecology Review*, 26(2).
- Szablowski, D. (2019). “Legal enclosure” and resource extraction: Territorial transformation through the enclosure of local and indigenous law. *The Extractive Industries and Society*, 6(3), 722-732.
- Selin, H., and VanDeveer, S. D. (2003). Mapping institutional linkages in European air pollution politics. *Global Environmental Politics*, 3(3), 14-46.
- Shearer, A. M. (2007). Implementing government-to-government relationships between federal agencies and Alaska Native tribes. *Alaska Journal of Anthropology*, 5(2), 97-107.
- State of Alaska (1977). An Act Relating to the Management of the Coastal Resources of the State; and Providing for an Effective Date.
- State of Alaska (1999). Alaska Coastal Management Program Handbook. Division of Governmental Coordination.
- Steinberg, P. E. (1999). The maritime mystique: sustainable development, capital mobility, and nostalgia in the world ocean. *Environment and Planning D: Society and Space*, 17(4), 403-426.
- Steinberg, P. E., Tasch, J., Gerhardt, H., Keul, A., and Nyman, E. A. (2015). *Contesting the Arctic: Politics and imaginaries in the circumpolar North*. Bloomsbury Publishing.
- Todd, Z. (2014). Fish pluralities: Human-animal relations and sites of engagement in Paulatuuq, Arctic Canada. *Études/Inuit/Studies*, 38(1-2), 217–238.
- Ulturgasheva, O. and Bodenhorn, B. (2022). *Risky Futures: Climate, Geopolitics and Local Realities in the Uncertain Circumpolar North*. Berghahn Books.
- U.S. Congress (1976). Coastal Zone Management Act: Public Law 92-583.
- Valentine, C. (1994). The Role of Local Governments in the Alaska Coastal Management Program: Local Coastal Management Plans and the State Consistency Review Process. Internship Report, Marine Resource Management Program, College of Oceanic and Atmospheric Sciences, Oregon State University.
- Van Tatenhove, J. P. (2013). How to turn the tide: developing legitimate marine governance arrangements at the level of the regional seas. *Ocean and Coastal Management*, 71, 296-304.
- Walch A, and Bersamin A. (2020). Traditional food intake is positively associated with diet quality among low-income, urban Alaska Native women. *Journal of Hunger and Environmental Nutrition*, 15(2), 264-272.
- Warren, C. (2024). Communities Feel Unprepared for Potential Oil Spill at Sea. Nome Nugget, 7.4.2024.

- Westley, P. A. (2020). Documentation of en route mortality of summer chum salmon in the Koyukuk River, Alaska and its potential linkage to the heatwave of 2019. *Ecology and Evolution*, 10(19), 10296-10304.
- Wienrich, N., and Lukyanova, O. (2022). *Marine Conservation in the Arctic: A Regional Perspective*. IASS Study, Potsdam, August 2022.
- Wilson, R. (2018). *Why Did Alaska Eliminate the Alaska Coastal Management Program?* MA Thesis. School of Natural Resources and Extension, University of Alaska Fairbanks.
- Winter, C. G. (2013). Collaborative Decisionmaking in the Arctic under the Marine Mammal Protection Act and a Proposal for Enhanced Support from the Federal Government. *Environmental Law Reporter - News & Analysis*, 43, 10938.
- Young, O. R. (2008). Building regimes for socioecological systems: institutional diagnostics. In (Young, King, Schroeder eds.) *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers*. The MIT Press.

APPENDIX A

FURTHER METHODOLOGICAL BACKGROUND

Our institutional analysis relies on methods developed by economist Elinor Ostrom to normatively describe and taxonomize rules for governing common pool resources (CPR). We treat the northern coastal region of Alaska as a commons because while we recognize that any pieces (e.g., animals, extracted minerals, plants) of the Alaska Arctic coastal zones are subject to becoming private or public goods based on jurisdictional rules, we argue, as with sea ice (Lovecraft et al. 2012) that these coastal regions create an inherently interdependent common pool resource system in which system users are socioecologically interdependent (Sarker et al. 2008). Consequently, externalities, positive or negative, in one area of management (e.g., ship traffic) will likely impact another (e.g., marine mammal harvests). The interdependencies currently “transcend the space and levels of management” of the resource system (Brondizio et al. 2009: 4), but this does not imply that the policy goals of the interested parties are the same. In economic theory a common pool resource is one from which it is difficult to physically exclude actors from taking from the resource and their use of the resource means fewer of it left for others. The classic example is a lake of fish that may be surrounded by a fence that it is easy for anyone to get through, or an ocean of resources that has many permeable boundaries. While the concept can be stretched to fit many contexts, it is key to note that Ostrom’s 1990 work, *Governing the Commons*, was founded upon finding rule sets, institutions, that were neither state run nor solely marketplace solutions to resource problems. She sought and documented a third way in her research, the resource users themselves would create the institutions by which they managed their resources.

In her 2005 book, *Understanding Institutional Diversity*, Ostrom further develops the concept of the action situation, referring to the limited set of factors at play in resource-use decision-making contexts. She identifies seven variables that compose and define an action situation: participants, positions, potential outcomes, action-outcome linkages, control exercised by participants, types of information, costs and benefits assigned to actions and outcomes. As a largely qualitative phenomenon, the action situation is to be understood through the nonlinear relational dynamics between its actors, their individual perspectives and motives, and the presence or absence of key information at different locations and times. Ostrom (2010a: 652) additionally elaborates a typology of the rules that affect and can be mobilized by participants in an action situation:

- (i) Boundary rules that specify how actors were to be chosen to enter or leave these positions
- (ii) Position rules that specify a set of positions and how many actors hold each one
- (iii) Choice rules that specify which actions are assigned to an actor in a position
- (iv) Information rules that specify channels of communication among actors and what information must, may, or must not be shared
- (v) Scope rules that specify the outcomes that could be affected
- (vi) Aggregation rules (such as majority or unanimity rules) that specify how the decisions of actors at a node were to be mapped to intermediate or final outcomes
- (vii) Payoff rules that specify how benefits and costs were to be distributed to actors in positions

Within a given action situation are also multiple *action arenas*, select organizational groupings (e.g., work teams, agencies, departments, corporations, legislatures) that encounter a given action situation from different institutional positionings. Action situations are determined largely based on the rule sets that establish their norms of conduct, again dependent on the type of resource and decision-making under study, while action arenas are determined by the actors or participants. She uses a network metaphor to declare that action arenas are nodes on an organizational or network lattice of an action situation, with each node under the influence of specific norms and rules. Both action situations and arenas are, however, temporally bound, such that they may only exist for the duration of a lawsuit, a presidency, a project, etc. Still, any given situation remains compositionally flexible, with actors capable of moving across and into arenas to influence patterns and outcomes at different rule levels. These rule levels are seemingly simple but matter enormously to policy problem definition, implementation, and questions of equity.

Constitutional Rules- What rule set governs the region in question? What rule set determines hierarchical and organizational structures throughout a resource tenure system?

Collective Choice Rules- Who gets to set the rules for the operational level? What rule set determines how the diverse actors within or outside of those structures can be integrated and interrelated to each other? Who is allowed to be in which spaces of relative power over issues of common interest?

Operational Rules- Where and how are resource-centered operations executed? What rule set determines how the material activities of labor and capital are to be conducted and distributed? These include, Includes rules of harvest (permitted times and seasons), project execution (e.g., easements, leases, permits), design (e.g., EPA stipulations, industry/USACE standards), responsible procedure (e.g., OSHA, Title IX, Clean Water Act).

We use Ostrom's framework to analyze the ACMP's central institutionalized action situation, the Consistency Review Process (CRP), and other action situations that have emerged in the ensuing years because the creation, operation, and removal of an institution in a commons is exactly what we want to understand.

“The basic strategy is to identify those aspects of the physical, cultural, and institutional setting that are likely to affect the determination of who is to be involved in a situation, the actions they can take and the costs of those actions, the outcomes that can be achieved, how actions are linked to outcomes, what information is to be available, how much control individuals can exercise, and what payoffs are to be assigned to particular combinations of actions and outcomes” (Ostrom 1990: 55).

This broad scope of factors, according to Ostrom, allows institutional analysis to fluidly address complex and evolving systems of cooperation, incentivization, and rule-building. Institutional analysis contains a nested set of building blocks to help investigate social and socio-natural environmental interactions and outcomes from different resource management practices and can support inquiries on multiple-use, conflict, security, and sustainability situations. Its breadth and generality make institutional analysis a “metatheoretical language” (2010a: 646) that can help scholars and resource managers synthesize and understand the clusters of variables composing systems of resource use and management. Since Ostrom began elaborating on this framework in the 1980s, many of these variables have become standardized such that new analyses can rely on the empirical, lexical, and coding innovations of other researchers.

At the scale of the coastal governance network, the Institutional Analysis and Design's (IAD) design principles evaluate how different rule sets and agencies within the ACMP contributed to select indicators of sustainability and equity. This analysis draws on both the archival and informational session data, which provide insight into rule sets as idealized legal codes and *in situ* norms of activity. For each period, the effectiveness of the institutions in balancing conservation and development interests is assessed by the strength of its collective-choice and operational-level design elements, with particular emphasis on the inclusivity of rightsholders in decision-making arrangements. Each period thus evinces distinct variations of the action situation, the limited set of factors at play in the contexts of resource use and decision-making, featuring different action arenas, select organizational groupings (e.g., work teams, agencies, departments, boards) that encounter a given action situation from different institutional positionings. Using the same criteria, we then compare the ACMP action situations to those present in 2023, accounting for emerging areas and modes of governance, organizational structures, and relationships among levels of government.

Systems scientist Helen Briassoulis (2017, 2018) has elaborated on the concept of the environmental governance network by reframing it as a response assemblage, consisting of routine and habitual management approaches or pathways enacted by variously empowered state and non-state actors. The assemblage, however, is not fundamentally centered on human agents but includes the objects of management in the assemblage, such that the material relations among both human and nonhuman elements are of primary concern, and management actions result in changes in the total assemblage.

Throughout the report, we will refer to the response assemblage as the total set of dynamic relations constituting the coastal zone, including organizations, rule sets, projects, and the diverse geophysical and ecological components of the environment. The social-environmental governance network is a rich graphical means of representing select relations within the coastal governance assemblage as a diagram but cannot be said to capture all extant relations or actors within the assemblage.

Generating or filling in the data for the human components of a network model can be accomplished through a range of methods, including interviews, surveys, and an analysis of correspondences and initiatives (Kratke and Brandt 2009). Additional analysis of a structural or processual nature, as well as mapping, can further elucidate the social and environmental consequences of the arrangement of subject positions (Lewis 2011). Methods used for investigating the ecological dimensions within a social-ecological network include tracing records of resource use by human and non-human actors, incorporating known food webs and ecological dynamics into the network, and devising perception metrics for cultural attitudes towards the environment (Schwenke and Holzkamper 2020, Bodin et al. 2020). Bodin and Tengö (2012) suggest steps for engaging with the nonhuman in SNA, beginning with identifying types of linkages (extraction, harvest, recycle, ecosystem services), defining social actors and ecological resources, and applying the links. This kind of SNA, especially in conjunction with IAD, supports our effort to understand complex coastal and marine governance in the American Arctic.

The Social-Environmental Network Analysis (SENA) map, created with Kumu, demonstrates changing relationships among institutional and nonhuman actors in Alaska's Arctic coastal zone over time. Below are screenshots that demonstrate some of the critical findings of the research, but the interactive map itself is useful for in-depth identification of specific permitting and regulatory authorities over diverse elements in the coastal environment, including landscape features, infrastructures, human activities, and animal species. Two connection types were unique to the era of the ACMP: Consistency Review Process (CRP)

coordination and Coastal Management Plan enforceable policies. Twelve connection types are extant in the assemblage today that echo or continue relationships from the ACMP era. These are: Federal, State, Borough, and Municipal Permitting, Program Development and Assistance, Species Management, Program Participation, Research and Information Exchange, Regulatory Exchange, Funding, Environmental Concern, and Subdivision. Below we lay out what each of the connection types means in detail.

Federal Permitting: permitting processes over activities taking place on federal lands and waters, including those issued by USACE, DOI agencies, and the EPA.

State Permitting: permitting processes over activities taking place on state lands and waters, including those issued by DNR, DEC, and ADF&G.

Borough Zoning, Permitting, Platting: permitting processes over activities taking place within the boundaries of a Home-Rule Borough by planning departments and commissions.

Municipal Zoning, Permitting, Platting: permitting processes over activities taking place within the boundaries of a Home-Rule City by planning departments and commissions.

CRP Coordination: (only during ACMP) distribution of proposed project materials and information to all participating ACMP entities, scheduling of teleconferences, gathering and assessing written commentary and input, arbitrating initial disputes, ensuring procedural equity among agencies and Coastal Districts.

Program Development and Assistance: the delivery of financial and technical resources and services to organizations to support participation or creation of programs.

Program Participation: Tribal, organizational, municipal, or Borough participation in a funded program that does not entail legal rights or authorities.

Species Management: processes of management or co-management involving scientific assessments of wildlife health and the setting of hunting, fishing, and conservation objectives.

Regulatory Exchange: Two-way communication on specific projects or management concerns, sharing official documents and communiques, substantive exchanges for decision-making, broadly the realm of officialdom.

Information Exchange: Typically one-way provision of data and information on management objects, research and scientific information, public materials and listservs.

Funding: delivery of financial resources, unconnected to other processes.

Environmental Concern: Area of notable scientific or managerial interest without legal dimensions.

Subdivision: Divisions, bureaus, boards, and other component organizations of larger departments or territorial governments, decision-making power is constrained or subordinated to parent organizations. Tribal Governments are sovereign political bodies but work closely with village governments and village corporations- subdivision connections for Tribal governments refers mainly to territorial subordination.

APPENDIX B

ACMP NETWORK ANALYSIS METRICS

Below, we provide the core quantitative results for two important metrics in the social-environmental network analysis: degree centrality and betweenness. Degree centrality represents the number of connections a particular node has, or in other words, how many other nodes it is connected to. Betweenness is understood as a measure of how frequently a particular node lies on the shortest path between two other elements. Nodes with high centrality are vital for the survival and maintenance of the network. Nodes with high betweenness are central junctures for the flow of information and influence and function as key bridges in the network. Because the SENA incorporates social-environmental, social-social, and environmental-environmental ties, these metrics represent not just relationships among organizations/agencies, but nonhuman nodes as well. High degree centrality represents a node's general connectivity across the total social-environmental system, comprising channels of influence, organizational nesting, and environmental concern. High betweenness, in contrast, represents the strength of a connective or brokering function for a given node.

It is worth qualifying that the metrics presented below should not be read as a fully accurate portrayal of the positions of nodes for two reasons: data collection was qualitative and there may be connections missing from the map, and the diversity of connection types are not equivalent or comparable on a one-to-one basis. Notable caveats include connections representing purely organizational relations like subdivisions and, in the case of Kawerak Inc., an arguably disproportionate number of ties due to Tribal relations, which, while politically important, may misrepresent the organization's centrality in relation to state or federal agency nodes. In order to provide the best range of pertinent calculations, each phase is represented by four filtered datasets: all nodes and connections, social nodes and connections with non-ecological or habitat management objects, social nodes and connections, and social nodes and connections without Tribal governments. None of these results are independently optimal. Each set aims to eliminate certain biases inherent to the complex types of relationships and actors in the network. For example, by removing the numerical bias introduced by Tribal government affiliations with borough governments and Kawerak Inc., the known centrality and betweenness of the Division of Governmental Coordination in Phase 2 become measurable. Results presented below were calculated using the social network analysis tool provided by Kumu.

Phase 2: representative year 2002 (all nodes and connections)

Centrality:

1. NSB Coastal District Board (45 connections)
2. Bering Straits CRSA (41 connections)
3. NAB Coastal District Board (38 connections)
4. City of Nome Coastal District Board (27 connections)
5. Kawerak, Inc. (27 connections)
6. DMLW (25 connections)

7. NSB Wildlife Department (20 connections)
8. BLM (20 connections)
9. Fish (20 connections)
10. Alaska Beluga Whale Committee (ABWC) (19 connections)

Betweenness:

1. Kawerak, Inc. (.160)
2. NAB Coastal District Board (.108)
3. NSB Coastal District Board (.102)
4. Northwest Arctic Borough (.097)
5. BLM (.089)
6. DMLW (.074)
7. NSB Wildlife Department (.073)
8. North Slope Borough (.069)
9. Bering Straits CRSA (.065)
10. DGC (.062)

Phase 2: representative year 2002 (social nodes and connections and management objects)

Centrality:

1. Kawerak, Inc. (27 connections)
2. DMLW (22 connections)
3. NSB Coastal District Board (21 connections)
4. Bering Straits CRSA (21 connections)
5. City of Nome Coastal District Board (19 connections)
6. NAB Coastal District Board (18 connections)
7. ABWC (18 connections)
8. Alaska Nanuq Commission (ANC) (17 connections)
9. BLM (17 connections)
10. EWC (16 connections)

Betweenness:

1. Kawerak, Inc. (.221)
2. Northwest Arctic Borough (.135)

3. BLM (.108)
4. DMLW (.108)
5. NAB Coastal District Board (.096)
6. North Slope Borough (.095)
7. DGC (.086)
8. City of Nome Coastal District Board (.074)
9. ABWC (.070)
10. ADFG (.070)

Phase 2: representative year 2002 (only social nodes and connections)

Centrality:

1. Kawerak, Inc. (27 connections)
2. ABWC (18 connections)
3. ANC (17 connections)
4. EWC (16 connections)
5. DGC (15 connections)
6. North Slope Borough (15 connections)
7. Northwest Arctic Borough (13 connections)
8. ADFG (13 connections)
9. AEWK (13 connections)
10. DMLW (11 connections)

Betweenness:

1. Kawerak, Inc. (.247)
2. Northwest Arctic Borough (.149)
3. BLM (.129)
4. DGC (.117)
5. ABWC (.107)
6. North Slope Borough (.102)
7. ADFG (.087)
8. DMLW (.076)
9. EWC (.062)
10. U.S.FWS (.051)

Phase 2: representative year 2002 (only social nodes and connections, no Tribal governments)

Centrality:

1. DGC (15 connections)
2. ADFG (13 connections)
3. DMLW (11 connections)
4. BLM (11 connections)
5. U.S.FWS (10 connections)
6. NSB Wildlife Department (9 connections)
7. Kawerak, Inc. (8 connections)
8. CPC (7 connections)
9. North Slope Borough (7 connections)
10. Division of Water (DW) (7 connections)

Betweenness:

1. DGC (.203)
2. BLM (.180)
3. DMLW (.141)
4. ADFG (.135)
5. NSB Wildlife Department (.095)
6. U.S.FWS (.082)
7. North Slope Borough (.072)
8. City of Nome (.071)
9. Kawerak, Inc. (.068)
10. City of Nome Coastal District Board (.064)

Phase 3: representative year 2011 (all nodes and connections)

Centrality:

1. Kawerak, Inc. (27 connections)
2. DMLW (25 connections)
3. NSB Wildlife Department (20 connections)
4. BLM (19 connections)
5. ABWC (19 connections)

6. ANC (18 connections)
7. EWC (17 connections)
8. Migratory Birds (17 connections)
9. Fish (16 connections)
10. North Slope Borough (15 connections)

Betweenness:

1. Kawerak, Inc. (.147)
2. DMLW (.122)
3. BLM (.121)
4. Northwest Arctic Borough (.088)
5. NSB Wildlife Department (.087)
6. Subsistence Section (SS) (.086)
7. ABWC (.066)
8. North Slope Borough (.062)
9. Migratory Birds (.057)
10. BOEM (.056)

Phase 3: representative year 2011 (social nodes and connections and management objects)

Centrality:

1. Kawerak, Inc. (27 connections)
2. DMLW (22 connections)
3. ABWC (18 connections)
4. ANC (17 connections)
5. EWC (16 connections)
6. BLM (16 connections)
7. North Slope Borough (15 connections)
8. Northwest Arctic Borough (14 connections)
9. ADFG (13 connections)
10. AEW (13 connections)

Betweenness:

1. Kawerak, Inc. (.199)

2. BLM (.135)
3. DMLW (.130)
4. Northwest Arctic Borough (.116)
5. SS (.090)
6. ADFG (.085)
7. North Slope Borough (.084)
8. BOEM (.069)
9. ABWC (.067)
10. DW (.062)

Phase 3: representative year 2011 (only social nodes and connections)

Centrality:

1. Kawerak, Inc. (27 connections)
2. ABWC (18 connections)
3. ANC (17 connections)
4. EWC (16 connections)
5. North Slope Borough (15 connections)
6. Northwest Arctic Borough (14 connections)
7. ADFG (13 connections)
8. AEWB (13 connections)
9. DMLW (11 connections)
10. BLM (10 connections)

Betweenness:

1. Kawerak, Inc. (.228)
2. Northwest Arctic Borough (.137)
3. ADFG (.105)
4. BLM (.099)
5. North Slope Borough (.093)
6. ABWC (.089)
7. DMLW (.078)
8. SS (.073)
9. DCOM (.061)

10. DW (.054)

Phase 3: representative year 2011 (only social nodes and connections, no Tribal governments)

Centrality:

1. ADFG (13 connections)
2. DMLW (11 connections)
3. BLM (10 connections)
4. U.S.FWS (10 connections)
5. NSB Wildlife Department (9 connections)
6. DCRA (9 connections)
7. Kawerak, Inc. (8 connections)
8. DW (8 connections)
9. DCOM (7 connections)
10. North Slope Borough (7 connections)

Betweenness:

1. ADFG (.165)
2. DMLW (.153)
3. BLM (.129)
4. DCOM (.091)
5. U.S.FWS (.089)
6. SS (.089)
7. NSB Wildlife Department (.077)
8. DW (.077)
9. DCRA (.061)
10. City of Nome (.060)

Phase 4: representative year 2023 (all nodes and connections)

Degree:

1. NAB Planning Department (37 connections)
2. NSB Planning Department (31 connections)
3. Kawerak, Inc. (27 connections)
4. DMLW (25 connections)

5. NSB Wildlife Department (21 connections)
6. BLM (21 connections)
7. Fish (19 connections)
8. ABWC (19 connections)
9. ANC (18 connections)

EWC (17 connections)

Betweenness:

1. NAB Planning Department (.178)
2. Kawerak, Inc. (.146)
3. NSB Planning Department (.114)
4. Northwest Arctic Borough (.098)
5. BLM (.088)
6. North Slope Borough (.076)
7. DMLW (.070)
8. NSB Wildlife Department (.066)
9. USACE (.064)
10. Fish (.050)

Phase 4: representative year 2023 (social nodes and connections and management objects)

Centrality:

1. Kawerak, Inc. (27 connections)
2. NSB Planning Department (22 connections)
3. DMLW (22 connections)
4. NAB Planning Department (19 connections)
5. BLM (18 connections)
6. ABWC (18 connections)
7. ANC (17 connections)
8. EWC (16 connections)
9. North Slope Borough (16 connections)
10. Northwest Arctic Borough (14 connections)

Betweenness:

1. Kawerak, Inc. (.206)
2. Northwest Arctic Borough (.122)
3. North Slope Borough (.114)
4. NAB Planning Department (.113)
5. BLM (.112)
6. NSB Planning Department (.107)
7. DMLW (.091)
8. USACE (.080)
9. ADFG (.066)
10. ABWC (.053)

Phase 4: representative year 2023 (only social nodes and connections)

Centrality:

1. Kawerak, Inc. (27 connections)
2. ABWC (18 connections)
3. ANC (17 connections)
4. EWC (16 connections)
5. North Slope Borough (16 connections)
6. Northwest Arctic Borough (14 connections)
7. ADFG (13 connections)
8. AETC (13 connections)
9. AEWG (13 connections)
10. BLM (12 connections)

Betweenness:

1. Kawerak, Inc. (.249)
2. Northwest Arctic Borough (.137)
3. North Slope Borough (.125)
4. BLM (.112)
5. ADFG (.084)
6. ABWC (.082)
7. DMLW (.079)

8. USACE (.066)
9. SS (.052)
10. DW (.051)

Phase 4: representative year 2023 (only social nodes and connections, no Tribal governments)

Centrality:

1. ADFG (13 connections)
2. BLM (12 connections)
3. DMLW (11 connections)
4. NSB Wildlife Department (10 connections)
5. U.S.FWS (9 connections)
6. USACE (8 connections)
7. North Slope Borough (8 connections)
8. Kawerak, Inc. (8 connections)
9. DW (8 connections)
10. Alaska Migratory Bird Co-Management Council (AMBCC) (6 connections)

Betweenness:

1. BLM (.199)
2. DMLW (.161)
3. North Slope Borough (.126)
4. ADFG (.124)
5. National Flood Insurance Program (NFIP) (.111)
6. NSB Wildlife Department (.108)
7. Kawerak, Inc. (.097)
8. USACE (.090)
9. DW (.089)
10. DCRA (.081)

APPENDIX C
OUTREACH MATERIALS

Networked Institutions, Interests, and Legacies on Arctic Alaska Shores (NIILAAS)

Background

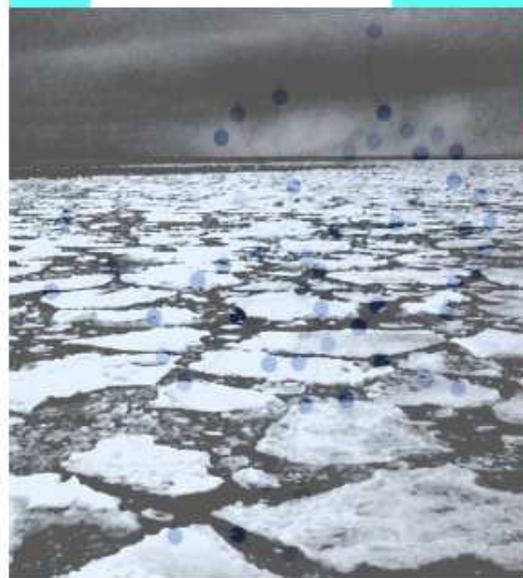
In 2011, the Alaska Coastal Management Program (ACMP) was discontinued by the Alaska State Legislature resulting in the State, Municipalities, and Tribes losing a significant tool to shape decisions on the use of Federal lands and waters. The NIILAAS team is interested in how different State of Alaska agencies, Tribal governments, Borough governments, and civil society organizations connect and communicate with one another today on issues concerning the coastal region stretching north from Nome to the Canadian border in the Beaufort Sea. By coasts, we mean the nearshore marine environment (up to 12 nautical miles from land), beaches, and coastal wetlands, watersheds, and upland habitats. By issues, we mean to address the planning, siting, and construction of hard infrastructure, natural resource development, subsistence regulation, safety and emergency management, and nearshore vessel traffic.



UAF Team
Nicholas Parlato, PhD Student
Heather Payenna, MA Student
Dr. Amy Lauren Lovecraft, PI
Dr. Chanda Meek, Co-PI

Objectives

- ◊ To understand the relationships among organizations and the coastal environment
- ◊ To understand the consequences of the end of the ACMP for government and other resource management organizations
- ◊ To create network maps of information and resources that are involved in coastal management.
- ◊ To collect information and data that accurately states how project participants are involved and impacted
- ◊ To ensure participants have fair access to research products



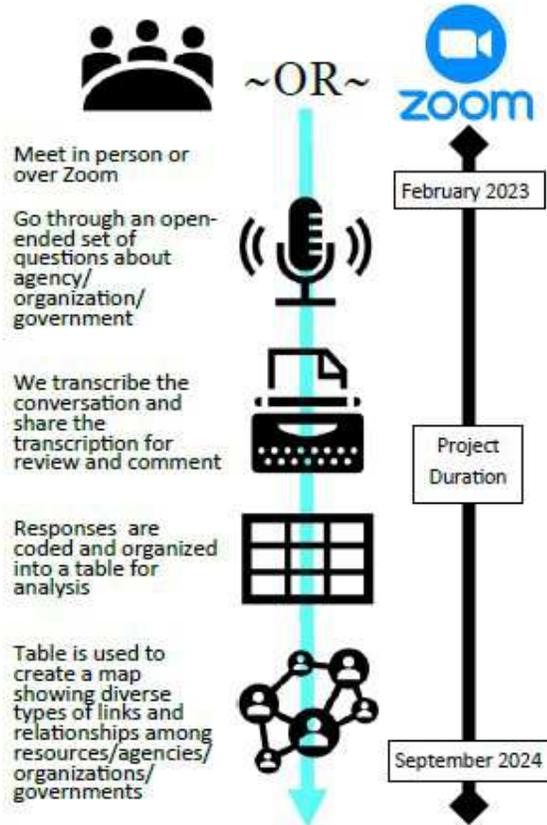
NILAS, noun. [uncountable] newly frozen sea ice in the form of a smooth sheet less than 10 centimeters (4 inches) thick. From Saami (for *stripe*)

What we are asking

Volunteer one hour of your time to share with us information and knowledge about your agency/organization/Tribe's role or history regarding coastal management and resources. Follow-up conversations may be requested.

Why do this?

- ◊ Threats to regional security, such as climate change, species decline, ice loss, and coastal erosion are prompting all areas and levels of government to explore adaptive responses and resilience
- ◊ This study may be able to guide participant organizations to enhance connections and communications with a range of other organizations and individuals involved in coastal stewardship and management
- ◊ There has not been any research conducted on the institutional legacy of the ACMP or on the changing character of Alaska's coastal resource governance systems



What is a social-ecological network map?

- ◊ A visual representation of relationships among human organizations and elements of nature
- ◊ A tool for enhancing the sustainability and resilience of natural resource management
- ◊ Takes account of social, ecological, and spatial relationships



International Arctic Research Center

For any questions, comments, or concerns, please contact:
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APPENDIX D

INFORMATION GATHERING GUIDE

PROFESSIONAL

1. How long have you worked at ?
2. Can you describe the professional, geographic, and sectoral areas over which you have managerial or decision-making authority?
 1. Do you/does your organization:
 1. Conduct scientific research or assessments?
 2. Permit coastal activities and easements?
 3. Approve applications concerning coastal activities?
 4. Conduct inspections of any kind?
 5. Create public notices?
 6. Hold public hearings?
 1. (Can the public contribute/comment, engage)
 7. Convey or transfer lands and waters? (e.g. municipal entitlements,)
3. What are your organization's priorities with regard to resource management?
4. What kind of information do you rely on to make decisions regarding use of coastal zones, land, and marine resources?
5. Have you had other roles within this organization and what did they entail?

NETWORK

1. How often do you interact with, and through what programs:
 1. Federal employees
 2. State employees
 3. Representatives of (other) boroughs or cities
 4. Representatives of (other) Tribal governments
 5. Representatives of the armed forces (U.S.CG, USACE)
 6. Representatives of private corporations
2. What are the top five organizations, agencies, departments, that you interact with?
3. What kinds of information and data do you share with these organizations?
4. What kind of decision-making spaces do you access regularly and what elements of the coastal space do

they have authority over? E.g. boards, committees, forums, councils

1. Do you feel like you and your organization are able to influence decisions in these spaces?
2. What kind of conflicts between actors, coastal resource uses, strategic priorities do you encounter in your work?
3. Can you provide an example of a negotiating success you have achieved in your role with?
5. What organizations, if any, do you feel that you and your agency need to engage with more? What kind of capacity is necessary to do this?
6. Have there been any major changes to where and how your organization operates in your tenure?

CZMA (if employee was present in sector prior to 2011)

1. Are you familiar with the CZMA/ACMP?
 1. If yes, in what ways did it impact or structure your role and responsibilities?
 2. What are some of the major changes you noticed after the dissolution of the program?
 3. (for Tribal and civil representatives) In what ways and through what channels since 2011 have you sought to assert control over coastal management in your region?
 4. (for state and federal employees) Are there any specific channels through which you have been able to maintain professional relationships with representatives of organizations that were excluded from coastal management processes?

CAPACITY, CHALLENGES, AND RESOURCES

1. What documents, policies, and laws form the basis of your [organization's] activities?
 1. Are these available and well-understood among [organization] staff?
 2. Do you feel like organizational staff have the ability to interpret or change these texts should they feel it necessary?
2. What kind of challenges do you anticipate your organization facing in the area of coastal health, development, resilience, management?
 1. Do you feel like your organization is well-positioned and adequately-resourced in order to respond to these challenges?
 2. Are there other agencies, organizations, or departments that you think are well-suited or well-positioned to deal with these challenges?
 3. Does your organization have priorities that it is currently unable to fund?
 4. Can you describe what changes would make your organization more effective and resilient?

Can you describe what changes in management/governance would help ensure/improve the health and resilience of the coastal area?



U.S. Department of the Interior (DOI)

The DOI protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)

BOEM's mission is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.



BOEM Environmental Studies Program

The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM's Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).