Appendix A

Inventory Preparation and Quality Assurance Plan

DRAFT

Representative Community Emissions Inventory

Prepared for:

Western Governor's Association
Western Regional Air Partnership

January 13, 2005

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Introduction

Background

The Western Regional Air Partnership (WRAP) is a collaborative effort of tribal governments, state governments, and various federal agencies to implement the recommendations of the Grand Canyon Visibility Transport Commission and to develop the technical and policy tools needed by western states and tribes to comply with the U.S. Environmental Protection Agency's (EPA) regional haze rule. Other common western regional air quality issues raised by the WRAP membership may also be addressed. WRAP activities are conducted by a network of committees and forums composed of WRAP members and stakeholders who represent a wide range of viewpoints.

The EPA regional haze rule calls for visibility improvements in the national parks and wilderness areas in the country through the cooperation of state, tribal, and federal agencies. In order to identify the major sources of regional haze pollution, sources of visibility-related pollutants (mostly fine particulates) need to be analyzed and inventoried. The WRAP Emissions Forum is tasked with compiling emission inventory information for use in meeting regional haze rule requirements.

Alaska does not possess a coordinated statewide inventory of source-specific emission estimates. Instead, emission inventories have been developed as needed to support the development of state implementation plans (SIPs) and related maintenance plans for communities designated as nonattainment for specific criteria pollutants. Examples include Anchorage and Fairbanks for carbon monoxide (CO) and Juneau for particulate matter less than 10 microns in diameter (PM_{10}). While this approach to inventory development has worked well, it has left large portions of the state without any process for estimating criteria pollutant emissions. As a result, there is growing interest in and need for developing a statewide system for tracking pollutants.

Historically, EPA has developed statewide emission estimates for Alaska as part of the National Emission Inventory. The Alaska emissions data developed by EPA is of questionable accuracy as source-surrogates and temporal and spatial relationships developed from "lower-48" studies appear to produce large inaccuracies and inconsistencies when applied to Alaska.

Under the regional haze rule, four separate Alaskan Class I Federal areas are included that must be protected from visibility impairment. Regulations established under the regional haze rule require the development of emission inventories for these areas to support the selection of control strategies that mitigate any impairment resulting from manmade air pollution. Given the dispersed location of these areas and the need to document upwind source contributions, a significant fraction of the state will need to be inventoried for source-specific PM and related precursor emissions.

Alaska's four Class I areas that are impacted by the regional haze rule are as follows:

- Denali National Park and Preserve is located 240 miles north of Anchorage in the center of the Alaska Range. The park area totals more than 6 million acres. Denali is the only Class I site in Alaska that is easily accessible, is connected to the road system, and accommodates a wide variety of visitor uses.

- Tuxedni Wilderness Area is located in southcentral Alaska, in western lower Cook Inlet at the mouth of Tuxedni Bay. Tuxedni is composed of two islands, Chisik and Duck, totaling 6,402 acres. Tuxedni Wilderness Area is accessible only by small boats and planes, weather permitting.

- Simeonof Wilderness Area is located in the Aleutian Chain 58 miles from the mainland. It is one of 30 islands that make up the Shumagin Group on the western edge of Alaska. The island has an area of 25,141 acres. Access to Simeonof is difficult due to its remoteness and the unpredictable weather.

- Bering Sea Wilderness Area is located off the western coast of Alaska approximately 275 miles southwest of Nome. The Class I area consists of 41,113 acres and is made up of the St. Matthew Island Group (which totals approximately 81,340 acres). The Bering Sea Wilderness Area is one of the most isolated land masses in the United States, with few if any visitors.

Neither the Simeonof nor Bering Sea Class I area is likely to be impacted by emissions from the two principal population centers in the state (i.e., Anchorage and Fairbanks). Their location emphasizes the need to account for activity and emissions from rural areas and communities that are not located on the Alaska Highway System. Located between Anchorage and Fairbanks, the Denali National Park and Preserve may be impacted by emissions from both cities and emphasizes the need to account for emissions from communities located on the Alaska Highway System, as well as rural and outlying areas. Tuxedni sits on the west side of the Cook Inlet, roughly 120 miles southwest of Anchorage. It is not yet clear how much impact it receives from Anchorage or smaller communities on the Kenai Peninsula.

Approach

Sierra will follow the source-specific data collection and modeling procedures detailed in the EPA-approved Inventory Preparation Plan for Statewide Emission Inventory.[1] Several key steps, however, need to be completed prior to the collection of data. A brief review of these steps is presented below.

Community Selection – In consultation with the Project Manager, Sierra developed a framework to organize the 45 mid-size and 329 small communities into 108 common geographically distributed categories. These categories divide the state into the 27 separate counties (i.e., Boroughs), on- versus off-highway connection, and small versus midsize population levels (based on population definitions employed by the Alaska Department of Community and Economic Development). The resulting 108 categories

(27 x 2 x 2) contain numerous null sets as many regions are not connected to the highway system and no communities were distributed to those categories.

The next step in the process was to select a representative sample of communities to be surveyed. The following issues were considered in the selection of these communities:

- Geographic distribution (e.g., individual Boroughs, coastal versus interior, etc.);
- Transportation infrastructure (on versus off highway);
- Population (e.g., small, midsize, hubs, etc.);
- Proximity to Class I areas;
- Aggregate respresentativeness (overall suitability for scaling to other similar communities);
- Willingness to participate in the survey;
- Access to personnel within the community to facilitate data collection efforts; and
- Cost.

A key step in the process of selecting the communities to be surveyed was the identification of a tribal organization interested in participating in the study with personnel located in villages throughout the state. Prior to the conduct of the study, Sierra identified the Alaska Native Coalition on Employment and Training (ANCET) as an organization meeting these requirements and interested in participating. A vice president for employment and training in Kawerak, Inc., an ANCET member, worked with both Sierra and the Project Manager to select 14 separate communities to be surveyed:

- Sand Point
- Dillingham
- Arctic Village
- Northway Village
- Minto
- Huslia
- Bethel
- Barrow
- Buckland
- Stebbins
- Gambell
- Nome
- Port Graham
- Sitka

Since the selection of these communities does not guarantee their participation, it may be necessary to select replacements if local personnel are either unavailable or not interested in the study.

Seasonal Activity – Subsistence activities in Alaska vary dramatically between the summer and winter. Snow machine use during the winter is extensive and essentially nonexistent in the summer. Similarly, ATV and boat use during the summer is extensive and essentially nonexistent during the winter. The winter season is also obviously much longer than the summer season. Given these differences, a decision was made to conduct separate surveys of summer and winter activities in each of the selected communities.

Survey Design – A broad range of emission sources is located within each community (e.g., home heating, on-road and non-road vehicles and equipment, electric power generation, aircraft, commercial activity, etc.). In addition to the summer and winter variation, separate surveys will be required to collect information on fuel use and related activity metrics for each of the emission sources. The initial summer survey effort focused on residential fuel use. It was designed through consultation between Sierra, ANCET, the Project Manager, and the Alaska Tribal Coordinator for the WRAP. A separate survey will be used to obtain information on non-residential fuel use and equipment activities. Each of these surveys, residential and non-residential, will be conducted for the summer and the winter.

Conduct of the Survey – Contacts will initially be established with ANCET members to identify personnel available to conduct the survey. It is envisioned that a mixture of personnel will be involved in the study: ANCET member staff located at the regional offices (to help coordinate the identification of village personnel to collect the data) and in the villages (both to collect data and to select other local people to conduct the surveys) and local organizations (e.g., village youth groups) to supply people to conduct the surveys. To aid each organization/individual's willingness to participate, purchase orders with detailed scopes of work will be issued to pay them for their efforts. Payments will be issued upon receipt of completed survey materials to personnel conducting the surveys. They will be furnished with copies of the surveys and briefing materials, and conference calls will be held to review the goals of the study, discuss procedures to be followed, and answer any questions.

Pollutants Inventoried and Calendar Year(s) – Both annual and seasonal estimates for the following regional haze and criteria pollutants will be prepared: NOx, SOx, CO, VOC, PM_{10}, $PM_{2.5}$, NH_3, organic carbon and elemental carbon.

Organization

The remainder of this report is organized to address the methods that will be used to compute emissions from the data obtained in the surveys and the quality assurance procedures that will be employed in the development of the emission inventory estimates.

Emissions Data and Methodology

The development of an emissions inventory can be divided into four steps: (1) identifying the activity data needed to characterize source-specific operations, (2) conducting the survey, (3) selecting a methodology to translate activity measurements into emissions and (4) using those methods to combine activity measurements with appropriate emission factors to estimate emissions. Another step to be addressed in this study will be the extrapolation of emissions from the surveyed communities to represent overall emissions for the remaining communities in the state. Presented below is a review of the activity data needed to characterize each of the source categories, the methods that will be used to compute emissions for each source category, and the approach that will be used to extrapolate emissions from the surveyed communities to the rest of the state.

Collection of Activity Data

Point Sources – In developing community activity surveys, the definitions of stationary point sources (vs. those treated as lumped area sources) must be considered. This ensures emissions from sources such as power-generating facilities are neither double-counted (when combined with existing emission data complied by the Alaska Department of Environmental Conservation (ADEC)) nor omitted from consideration. Under the federal Consolidated Emissions Reporting Rule (CERR),[2] each state must submit emissions annually for all major or "Type A" point sources over 250 tons per year (tpy) of VOC, PM_{10}, $PM_{2.5}$, or NH_3 or over 2500 tpy of NOx, SOx, or CO for sources throughout the state. Alaska was required to submit its inventory of Type A point sources for calendar year 2001 by June 1, 2003. The CERR also requires states to submit emissions of "Type B" point sources over 100 tpy of VOC, NOx, SOx, PM_{10}, $PM_{2.5}$, or NH_3 or over 1,000 tpy of CO either every three years for all statewide sources or each year for one-third of the statewide sources. The first Type B inventory (for calendar year 2002 emissions) is due to EPA by June 1, 2004.

Facilities with actual emissions below these thresholds are treated as collective area sources (rather than point sources) in EPA NEI inventory submittals. EPA's most recent point source inventory for Alaska (1999 NEI) contains emission estimates from 28 unique facilities. This inventory, however, does not include all the facilities above the "Type B" cutoffs. Discussions with ADEC indicate that they are in the process of gathering emissions for all Type A and Type B point sources as mandated by the CERR. If that data is available, effort will be required to identify facilities with actual emissions less than the Type B thresholds so that they can be represented as area sources.

These requirements cover facilities on non-tribal lands. As stated in the CERR, tribes (and communities on tribal or Alaskan native lands) are encouraged but not required to develop and submit emission inventories to EPA. Thus in developing activity and emission source surveys for midsize and small Alaskan communities, several actions must be taken:

- Coordination with ADEC and review of its existing (and pending) point source inventories to ensure point source facilities and activity data collected during the surveys do not replicate data already obtained by the state or omit facilities and activity not collected by the state.

- Establish contact and work closely through statewide and regional Alaskan tribal coordinators to maximize participation in facility identification and activity surveys.

- After consultation with tribal coordinators, design community surveys in a "realistic" manner that matches the types and detail of requested activity data and source types with the anticipated level of available records and local knowledge.

The most common type of stationary point sources (or grouped area sources) we expect to find in the surveyed communities will consist of those related to fuel combustion for generation of electricity or heat and waste incineration. Thus, the overarching design of the point source survey will attempt to identify fuel consumption and type by activity type (equipment and process). Where available, data will be collected on seasonal operating patterns as well.

Area Sources – EPA guidance recommends a multi-step process for area source inventory development.[3] The first step, after defining end uses of the data, is to identify the source categories to be inventoried. The selection of sources is supposed to be based on the expected magnitude of emissions in the inventory area. In the case of Alaska, this is problematic since no inventory has previously been compiled for any area outside of Anchorage, Fairbanks, and Juneau. The following area sources are of obvious interest:

- Space heating;
- Electricity generation (the grid system in Alaska is limited and most of the state's 377 communities operate their own power plants, which in many areas are powered by Diesel engines);
- Wildfires (80% of the land mass is covered by national and state parks);
- Open burning (most communities do not have incinerators and employ some form of open burning for waste disposal [e.g., burn cages, burn boxes, etc.]); and
- Fugitive dust (this is an issue for many communities).

Many other sources appear to be of interest, but limited information is available to characterize activity levels, particularly in the smaller communities. Examples include the following:

- Aircraft refueling (there is substantial general, commercial, and military aircraft activity in Alaska; a separate discussion of aircraft is presented below);
- Petroleum vessel loading/unloading (most communities not located on the highway system receive their fuel via barge after ice is cleared from navigable waters);

- Agricultural/slash burning (there has been an effort to expand the amount of land available for agriculture; these burns are not considered "wildfires" and are not tracked by the Division of Forestry); and
- Wastewater treatment.

After accounting for the above source categories, a broad range of sources is still available for consideration. They range from asphalt paving (which may not be a significant issue in many of the smaller communities that are not located on the highway system) to commercial/consumer solvent use (which may be a significant source due to the use of gasoline by many residents as a solvent for cleaning portable equipment and small vehicles during maintenance and repair activities) to agricultural pesticides (which may be a significant issue in some communities). Given the rural nature of many of the communities, some of the unrepresentative practices (from a national perspective) may turn out to be significant contributors to local emissions. For example, many communities employ burn barrels as a method of waste disposal. EPA has developed emission estimates per kg of household waste combusted in burn barrels.[4] Effort, however, would be required to ensure that the quantity and type of wastes burned are representative of rural Alaska. Still another view is that space heating and electricity generation may be the dominant form of emissions production.

With regard to the survey, it should be designed to take advantage of information available on the storage capacity of fuel tanks located in rural communities. Two databases have been identified that track storage capacity:

- ADEC Spill Prevention and Response Division conducts surveys of storage tank capacity and organizes the data into separate searchable databases for underground and aboveground tanks (the latter database is still under development). Information on these databases can be accessed at the following website:
  http://www.state.ak.us/local/akpages/ENV.CONSERV/dspar/stp_home.htm.

- The Alaska Department of Community and Regional Affairs (DCRA) Division of Energy (now the Alaska Energy Authority) has conducted surveys of the condition of rural fuel storage facilities to determine which tanks are in need of restoration. The Division of Energy has a comprehensive rural bulk fuel program that encompasses over 150 small villages in rural Alaska that are not accessible by road. In most cases, the village fuel supply must be delivered by barge during a brief ice-free shipping season and stored throughout the year. Every village relies on aboveground tank farms for essential fuel storage, though few of these facilities presently meet minimum standards of safety or environmental protection. Insight into the condition of the tanks will be helpful in preparing estimates of breathing losses. The bulk fuel community database is not available online; however, many of the data collected in the community surveys have been incorporated into ADEC's storage tank databases.

Another source of rural energy data can be obtained from the Alaska Energy Authority's Power Cost Equalization (PCE) program. PCE is a program under which the State of Alaska pays a portion of the electric bills for consumers served by utilities participating in the program. Participation in the PCE program is limited by statute to utilities meeting certain requirements (e.g., use of Diesel-powered generators to provide more than 75 percent of the electric consumption of the utility, etc.). Data on installed generation capacity and related operating statistics can be used to estimate community-specific fuel consumption used to produce electric power on an annual basis. These data are typically published in a series of annual Alaska Electric Power Statistics reports.[5]

One approach to estimating rural energy consumption is to develop community-specific lists of storage capacity by fuel type (e.g., gasoline, Diesel, etc.) and assume that fuel is supplied only once per year to fill the tanks (informal discussions with suppliers have indicated that supply efforts often occur twice with a large spring refueling and a pre-winter topping off in late summer). Estimates of fuel used in electricity generation could be used to net out the fuel available for other forms of consumption. The surveys could be used to collect data on how fuel is used in the community (e.g., space heating, etc.) and the results could be used to distribute the estimate of fuel available for other forms of consumption. Sierra will determine the optimal method in consultation with the Project Manager based on the quality of the survey responses and collected data.

Non-road Sources – Nonroad sources include a varied assortment of mobile equipment, which can be generally categorized as follows:

- Recreational vehicles (e.g., all-terrain vehicles and off-road motorcycles);
- Logging equipment (e.g., chainsaws);
- Agricultural equipment (e.g., tractors);
- Construction equipment (e.g., graders and back hoes);
- Industrial equipment (e.g., fork lifts and sweepers);
- Residential and commercial lawn and garden equipment (e.g., leaf and snow blowers);
- Recreational and commercial marine vessels (e.g., power boats and oil tankers);[1] and
- Locomotive equipment (e.g., train engines and support equipment).[1]

The challenge of collecting survey data for nonroad sources is that there are over 80 different equipment categories and respondents in rural communities may quickly tire of responding to detailed surveys or questionnaires. While some of the equipment categories to be addressed are obvious (e.g., snowmobiles, all terrain vehicles [ATVs], outboard engines, etc.), it is unclear how many of the other categories are actually used in the rural areas (e.g., lawn mowers, string trimmers, etc.). Joint discussions between Sierra, the Project Manager, the Tribal Coordinator and the Kawerak, Inc. representative led to the selection of nonroad sources to be addressed separately in the summer and

[1] Although they will be included in the final version of the model, the current draft version of the NONROAD model is not capable of modeling emissions from oil tankers or other comparably large vessels, train engines, or aircraft.

winter surveys. The surveys are designed to collect information on household usage rates and fuel use for each of the selected sources (e.g., snow machines, boats, chain saws, snow blowers, etc).

On-road Sources – In order to calculate on-road vehicle emissions, both travel activity (e.g., vehicle miles traveled) and vehicle fleet and operating characteristics data must be collected. Our approach to obtaining each type of data is described separately below.

Vehicle Travel Activity - Under EPA NEI reporting requirements, statewide on-road mobile source emissions must be reported at the county level (i.e., borough or census area in Alaska) by roadway class. For criteria pollutants whose impacts are seasonal in nature, appropriate seasonal on-road emissions must be determined. For example, VOC and NOx ozone precursor emissions must be estimated for a typical summer workday; CO and PM emissions must be estimated for a winter workday.

The roadway class reporting categories, which are based on the roadway functional class scheme used in the Federal Highway Administration's Highway Performance Monitoring System (HPMS) database, are listed below.

- Urban – Interstate
- Urban – Other Freeways and Expressways
- Urban – Other Principal Arterial
- Urban – Minor Arterial
- Urban – Collector
- Urban – Local
- Rural – Interstate
- Rural – Other Principal Arterial
- Rural – Minor Arterial
- Rural – Major Collector
- Rural – Minor Collector
- Rural – Local

Vehicle Fleet and Operating Characteristics – A series of vehicle fleet parameters and operating conditions must be specified to produce representative vehicle emission factors using EPA's MOBILE6 emission factor model. These key emission factor model inputs are listed and how they will be collected or estimated are discussed below.

> Vehicle Registration Distributions – These consist of locally derived vehicle registration (i.e., population) distributions by age (or model year) and vehicle type. Data from the Alaska Division of Motor Vehicle (DMV) will be analyzed to determine the registration distributions by vehicle age and vehicle type. Given the small vehicle populations in some of the individual communities (and the fact that non-operated vehicles are not completely removed from the DMV database), these distributions will be compiled on a countywide basis.

Mileage Accumulation Rates – In past SIP inventory efforts in Alaska, local mileage accumulation rates were developed for Anchorage and Fairbanks from Inspection and Maintenance (I/M) program data collected from each community. I/M program data are not available for the remainder of the state. In addition, the national default mileage accumulation rates contained in MOBILE6 are likely to overstate mileage accumulation in midsize and small Alaskan communities that do not have extensive roadways systems as in large urban areas. (This is especially true for communities that are not connected to the state highway system and may have only a few tens of miles in their local roadway system.) Thus, local surveys will need to be conducted to obtain information on mileage accumulation rates for a representative sample of these communities. Both communities on and off the highway system will be included in the sample.

Fleet Mix – Having previously worked with Alaska's DMV database, Sierra has already determined that its fee-based vehicle category cannot be easily mapped to the vehicle types used by MOBILE6. For the midsize and small communities, data collected by ADOT&PF using automatic vehicle classifiers (AVCs) will be evaluated as a possible basis for development of local fleet mix inputs. The AVCs collect traffic counts by vehicle type (based on axle width and number of axles) and are used at locations throughout the state in conjunction with HPMS sampling. These data will be reviewed to determine how effectively the AVC classifications can be mapped to the vehicle type categories used in MOBILE6.

Vehicle Speeds – For travel within the midsize and small communities, speeds will be roughly estimated using posted speed limits by roadway type if travel data by roadway type can be obtained from ADOT&PF. If not, local estimates of average speed obtained from survey data will be used. For highway travel between communities, estimates based on posted speed limits will also be used. If these data are not readily available, MOBILE6 default speeds by roadway type will be assumed.

Fuel Sulfur Content – To properly estimate motor vehicle SO_2 emissions, MOBILE6 requires input on fuel sulfur content. In Alaska, gasoline sulfur content varies between 10 and 210 parts per million (ppm) and depends on the refinery supplying the fuel. In addition, the refiner's share of the market varies by community. As a result, effort will be required to obtain market share data for a representative sample of the midsize and small communities in the state. As a geographic phase-in area (GPA), Alaska is not required to meet the Tier 2 low sulfur gasoline requirements until 2007. The sulfur levels of Diesel fuel will be reduced in coming years as a result of restrictions contained in the Low Sulfur Diesel Rule.

Operating Modes – For the midsize and small communities throughout the state, national default values will be used since these data are not likely to be available or determined accurately via a survey.

Altitude – Since almost all of the vehicle travel in state occurs at altitudes below 2,500 feet, the entire state will be modeled as a low-altitude region. Thus, no survey data will be collected related to altitude.

Ambient Temperatures – Seasonal temperature data will be compiled for a set of climatically representative communities across the state from the National Climatic Data Center (NCDC).

Aircraft –Records kept by the FAA include only airports that can qualify for federal funding; that is, they meet certain minimum criteria for activity levels and accessibility. Because of this, the records do not include literally thousands of small private airstrips commonly found throughout Alaska. In addition, the aircraft model-specific data necessary to use emission models developed by the FAA are limited to the air carrier category (i.e., large commercial aircraft). Activity levels for air taxi, general aviation, and military aircraft are kept for larger airports; however, the data show operations only by aircraft categories and not by airframe model, which is necessary for modeling. For smaller airports and airstrips, records for any aircraft flying in and out of the site may not even be kept.

If Kodiak, King Salmon, Bethel or Kenai are selected to participate, data on aircraft activity are available. For the remaining communities, data on aircraft activity will need to be collected in the survey. Key items to be collected include the number of daily landing and take-off cycles (LTOs), and the aircraft type involved:

- Air carriers, which are larger turbine-powered commercial aircraft with at least 60 seats or 18,000 lbs payload capacity;
- Air taxis, which are commercial turbine or piston-powered aircraft with fewer than 60 seats or less than18,000 lbs payload capacity;
- General Aviation Aircraft, which are small piston-powered, non-commercial aircraft; and
- Military Aircraft.

Emission Calculation Methodologies

Copies of the completed surveys will be transmitted from Alaska to Sierra's offices in Sacramento by regular mail. The originals will be retained in Alaska so that questions can be addressed and so that backup copies can be produced in the event that they are lost in the mail. Sierra will review the results and discuss any issues with the local data coordinators. Sierra will also enter the results into a community/source-specific database that is tailored for use with the appropriate emission estimation methodologies. Appropriate QAP procedures will be followed in tracking and verifying the compilation of the survey results.

Once the data from the community surveys are complete and the results have been entered into the source-specific database, Sierra will calculate emission estimates. Both annual and seasonal estimates will be prepared for the following regional haze and

criteria pollutants: NOx, SOx, CO, VOC, PM_{10}, $PM_{2.5}$, NH_3, organic carbon, and elemental carbon. The approach will be to select a single community and follow the procedures outlined below to prepare emission estimates for each source category. This will be a "shakedown" effort and the results will be scrutinized in accordance with the QAP procedures specified in the next section. Notes will be prepared that document methods used to resolve unexpected issues (e.g., simplifying assumptions, etc.), key findings, etc. Once the methodologies and the resulting emission estimates for the first community have been verified, effort on the next community will begin. The same process will then be repeated before work on the next community begins. We believe that this process must be followed on a community-specific basis to ensure the integrity of the data, the calculation procedures, etc.

Presented below is a brief review of the methods that will be used to combine activity data collected in the surveys with appropriate emission factors to produce source-specific emission estimates.

Point Sources – Emissions from point sources will be computed using emission factor databases and methodologies appropriate to source configuration and operations found in Alaska. For the most part, AP-42 emission factors and methodologies will be used to develop emission factors for surveyed point sources as a function of the type of equipment and physical processes identified. Where available, emission factors and methodologies developed by Environment Canada for areas similar in climate and population density to Alaska's rural areas will be evaluated and used if demonstrably superior to US EPA approaches. Estimated actual emissions will then be calculated by combining selected emission factors with the appropriate activity data (e.g., fuel consumption).

Area Sources - EPA's guidance describes four basic approaches to emission estimation:

- Extrapolation from a sample set of sources (e.g., surveys, permit files, or other databases);
- Material balance method;
- Mathematical model; and
- Emission factors applied to activity levels.

The preferred EIIP approach is to extrapolate from a sample set of data for the industry/activity to the entire population. This approach, however, is based largely on the premise that permit data are used as the basis for extrapolation. As noted in the point source discussion, applicable thresholds eliminate most, if not all, area sources from consideration.

Material balance techniques are focused on the estimation of evaporative emissions and have limited applicability, but could be used as an alternate to conducting source testing for candidate sources. A variety of mathematical models are available to prepare emission estimates. Most are focused on specific categories of activity (e.g., WIND is used to estimate emissions from wind erosion, WATER8 is available to estimate emissions from wastewater treatment, etc.). Recently, EPA developed the Area Source

Emissions Model (ASEM).[6] It has the flexibility to provide emission estimates for a broad category of sources and activities using either a top-down or bottom-up approach. It provides state and county coverage and can estimate emissions on either an annual or monthly basis. A review of the available documentation,[7] however, indicates that the model provides estimates for only PM_{10}, $PM_{2.5}$, and NH_3. Additional algorithms are planned for calculating VOC, NOx, and SO_2 as funding becomes available.

The final method of estimating emissions is through the combination of emission factors (typically defined in units of grams per unit of activity) and activity estimates (measured in units compatible with the emission factors). This is the approach that ADEC has employed in preparing area source emission estimates for the SIP, toxic, and criteria pollutant emission inventories. It relies largely on the use of AP-42 emission factors and related methodologies to estimate emissions. This is the approach that we plan to employ in this study.

Non-road Sources – EPA's NONROAD model calculates tons of emissions for a given geographical area using the following factors:

- An equipment population;
- An equipment-specific emission factor (in grams per horsepower-hour);
- An average horsepower rating of the equipment;
- The estimated annual equipment activity (hours per year); and
- The average load factor.

In addition, seasonal (month or season) and day of week (i.e., weekend or weekday) adjustments are applied depending on whether the end-user requests an inventory estimate based on an annual, seasonal, or daily basis. The NONROAD model employs a "top-down" approach to calculate non-road source emissions. The NONROAD default equipment populations are based on national averages, then scaled down to represent smaller geographic areas on the basis of human population and proximity to recreational, industrial, and commercial facilities. EPA recognizes the limitations inherent in this "top-down" approach, and realizes that locally generated inputs to the model will increase the accuracy of the resulting output. Therefore, the data collected in the survey will be used to more accurately reflect the equipment population and activity levels in the various Alaskan communities addressed in the survey. Locomotive emissions will be calculated separately using EPA guidance emission factors (which are fuel based).

On-road Sources - Emissions for on-road mobile sources will be calculated by combining travel activity data (i.e., vehicle miles traveled) obtained from data sources or local surveys as described earlier with emission factors obtained from EPA's MOBILE6 vehicle emission factor model. Using data for each sampled community, local fleet inputs (e.g., registration fractions by vehicle type and model year) and operating characteristics will be compiled for input into MOBILE6.

A series of MOBILE6 runs will then be generated for each representative community fleet and operating characteristics. A simple spreadsheet or database will be used to calculate and report on-road vehicle emissions for each community. Where supported by

the disaggregated travel activity data (e.g., for on-highway communities), the emissions will be separated by vehicle type and roadway type (interstate, arterial, etc.) as contained in the Source Classification Code (SCC) structure for on-road sources. Where disaggregated travel activity data are not available, emissions will be assigned to a roadway type (or types) based on best judgment and noted as such.

Aircraft – The current FAA required method for estimating non-cruising (i.e., below the mixing height) aircraft emission inventories at airports employs the use of the EDMS model. The model combines specified aircraft and activity levels with default emissions factors in order to estimate annual aircraft inventories of CO, HC, NOx, SOx, PM_{10}, and $PM_{2.5}$ for a specific airport. Aircraft activity levels in EDMS are expressed in terms of LTOs, which consist of four non-cruising aircraft operating modes: taxi and idle, take-off, climb-out, and landing. Default values for the amount of time a specific aircraft spends in each mode, or the TIMs, are coded into EDMS, but may be updated with airport-specific numbers where available. In addition, the model includes updateable default settings for the mixing height and aircraft engine assignments. In order to use EDMS, a separate setup and model run for each airport or airbase is required, and each combination of aircraft model, engine type, and activity level to be considered in the modeling scenario must be explicitly entered. Currently, the model lacks the capability to accept multiple input files for multiple airports. As a result, set up for a study involving a large number of airports will be laborious and time-consuming.[8]

In addition to EDMS, fleet-average emission factors are available for CO, HC, NOx, and SOx from the EPA's "Procedures for Emission Inventory Preparation" (1992) for general aviation and air taxi aircraft.[9] Similar to the EDMS model, the fleet-average emission factors in the EPA procedures assume a default mixing height of 3,000 feet.[2] In addition, the EPA report includes factors for converting HC to VOC, with separate factors available for piston and turbine aircraft. These emission factors are helpful when total activity by aircraft category is given but aircraft model-specific data are unavailable.

EDMS will be used to compute emissions for the larger international and military airports and for the regional hubs. It is expected that more generalized fleet average emission factors will be used to characterize emissions at the hub destination airports (i.e., those with scheduled air taxi service from the regional hubs) and the smaller seasonal airfields.

Expansion of Individual Community Estimates to Borough Estimates

As discussed in the Introduction, communities will be allocated to a total of 108 separate categories (27 counties x 2 community sizes x 2 highway categories). Many of these categories, however, will not be populated with communities since many areas of the state are not connected to the highway system.

The method used to extrapolate emission estimates from the 14 surveyed communities to the remaining 360 communities will be to first extrapolate based on population to other

[2] Model users can set the mixing height to levels consistent with meteorological data for each airport. The levels used to compute emissions in this study should be consistent with those employed in the ongoing WRAP Alaska Aviation Emissions Inventory project.

communities within the same county/community size/highway category. Care should be taken to ensure that selected communities are in mutually exclusive categories (i.e., no two are located within one of the same 108 available categories). The next step will be to extrapolate from the 14 surveyed communities to the remaining communities that are co-located geographically (e.g., emissions from a surveyed Aleutians East Borough small off-highway community would be extrapolated to a small off-highway Aleutians West Census Area, etc.).

Extrapolated emissions, by source category for each community within each county, would then be totaled to compute county-level emission estimates in NIF v3.0 format. QAP procedures specified in the next section would be applied to confirm and document the validity of the results.

Quality Assurance Plan

This section presents a review of the QA procedures to be employed during the development of the representative community emission inventory. It includes all of the critical elements recommended in the U.S. EPA document *Guidance for the Preparation of Quality Assurance Plans for Ozone/Carbon Monoxide State Implementation Plan Emission Inventories*,[10] as well as guidance provided through the Emission Inventory Improvement Program (EIIP).[11] It also provides written instructions for the technical and quality aspects associated with development of the new emission inventories. It is designed so that QA/QC procedures are implemented throughout the entire inventory development process. This will ensure that the inventory is as complete, accurate, comparable, and representative as possible.

Inventory tasks and QC procedures will include data checking by the inventory development team (IDT) throughout the development of the inventory and final emission report. These procedures include, but are not limited to, the following:

- The development and implementation of written procedures for data collection, data assessment, data handling, calculation of emissions, and reporting;
- Adequate management and supervision of the work;
- Review of all calculations for technical soundness and accuracy, including verification that the appropriate emission factors were used and the impacts of controls were correctly addressed;
- Correct assignment of Source Category Codes;
- Assignment of DARS scores;
- Use of technically sound approaches when developing results based on engineering judgment;
- Documentation of the data in a manner that will allow reconstruction of all inventory development activities; and
- Maintenance of an orderly master file of all the data gathered and a copy-ready version of the final inventory submitted to the WRAP Emission Forum.

The emission inventories developed in accordance with this plan are for SIP development and are considered Level II, based on guidance provided by the 1996 EIIP. The estimates contained in the inventories will be used to make decisions about the need for and types of control strategies required to ensure reasonable progress in meeting visibility goals for Alaska's Class I areas. As a result, they must satisfy applicable quality assurance (QA) requirements.

The first step in this process is establishing the data quality objectives (DQO) for the new inventories. Table 1 presents a summary of the procedures to be employed in meeting the DQOs. It shows that considerable effort will be focused on meeting accuracy, completeness, representativeness, and comparability objectives. Table 2 shows the data quality indicators (DQIs) that will be used to measure progress towards the DQOs. The Data Attribute Rating System (DARS)[12] will be used to verify the desired inventory accuracy.

Table 1
Data Quality Objectives

DQO	Procedure for Achieving Objective
Accuracy	For point and onroad mobile sources, the data generator will check 100% of the calculations, and another equally qualified inventory development team member will check 20% of the calculations. For area and nonroad mobile sources, the data generator will check 100% of the calculations, and another equally qualified IDT member will check 10% of the calculations. In all cases, the data validator will develop a written summary of his or her activities, and will conduct follow-up activities to ensure that data are corrected as needed. If more than 5% of the calculations checked by the data validator need to be revised, then 100% of the calculations will be checked.
Completeness	Extensive planning will be conducted prior to data collection to identify all applicable emission sources. After identifying these sources, the goal will be to determine 100% of the emissions from the largest emitting sources from each source category and as many of the minor sources as possible within the time frame allotted for the work. Those sources identified but not included in the inventory will be identified in the data file and final report.
Representativeness	Technical personnel will review all of the primary source data AND compare them to previous emission results and similar results from comparable regions to determine the reasonableness of the emissions estimates and representativeness of the data.
Comparability	To ensure that the data are comparable, standard procedures will be followed and results will be presented in the same units that were used in previous criteria and toxic pollutant inventories.

Table 2
Data Quality Indicators

DQO	Inventory DQI Target Values
Accuracy	Achieve DARS score >= 0.7 for all area sources contributing >10% of total emissions of CO Achieve DARS score >=0.8 for all point sources >=100 tons per year (TPY). Achieve DARS score >=0.7 for onroad mobile source inventory. Achieve DARS score <=0.5 for nonroad mobile source inventory.
Completeness	100% of all point sources >=100 tpy. 90% of all other point sources
Representativeness	Community stratifications presented in the Introduction.
Comparability	Results to be compared to recent criteria and toxic pollutant inventories.

Managerial Responsibilities

Sierra will lead the preparation of the community emission inventories. Key assignments shall include those outlined below.

Source Inventory Development Managers – responsible for planning and leading source-specific inventory development activities.

QA/QC Coordinator – the person responsible for ensuring that adequate QA/QC procedures are incorporated into the inventory development process. The QA Coordinator's responsibilities and activities are as follows:

- Help develop the QAP;
- Provide QA training to inventory development and QA personnel;
- Attend inventory status meetings;
- Follow up on recommendation for corrective actions;
- Keep the Inventory Development Manager informed of actions;
- Work with the WRAP Project Manager to resolve any quality concerns that cannot be resolved at the inventory management level; and
- Maintain a file of findings and corresponding corrective actions.

The QA Coordinator reports directly to Sierra's Project Manager overseeing the development of the inventory. These reporting lines help provide an objective approach to the implementation of the QA program and reporting of quality issues.

Schedule

Data collection activities are to be completed by the end of January. Emission inventory estimates will be completed by the end of February and the draft report is to be completed by the end of March.

General QA/QC Procedures

QA/QC procedures described in this QAP were developed to help ensure data accuracy, completeness, representativeness, and comparability. These procedures have been incorporated in the technical procedures, where applicable, and will be implemented by the IDT throughout the planning, data collection, emission estimation, and reporting phases of the inventory development program.

QC procedures will be implemented by the IDT during inventory development to meet the technical objectives and DQOs. These activities will be conducted at the following steps in the inventory development process:

- Data collection;
- Data documentation;

- Calculation of emissions;
- Data checking and DARS scoring;
- Reporting; and
- Maintenance of the master file.

Data collection will be conducted according to U.S. EPA-approved procedures. The approach and supporting documents or references will be thoroughly documented and included in the emissions report.

All activities conducted by the IDT will be documented. The traditional approach is to use bound notebooks with indices to facilitate the retrieval of recorded information. An alternate approach is to record activities electronically and make this information available to team members located in different parts of the state. To enhance communication and productivity, team members will be allowed to employ either approach but will be encouraged to track information relative to the development of the inventory electronically. This daily log of activities will help another IDT member reproduce the emission results and allow an evaluation of data accuracy and completeness.

The following procedures are to be followed when documenting data in the notebooks:

- Data will recorded legibly and in black ink;

- Entries will be corrected by drawing a single line through the data and writing the correct data above or below the correction (with initials, date, and explanation of corrections to allow reconstruction of the work);

- Complete descriptions of all data sources will be included (references to be included in final inventory report);

- Units of measurements will provided for emission sources that are omitted from the final inventory (justification required in report);

- The procedures used to calculate emissions will be described and example calculations will be provided;

- The approach used to determine completeness for each source type will be described;

- Documents from which emission factors are taken will be identified and referenced; and

- The source, agency, group, or company providing information by telephone will be identified (include telephone number and date information was provided).

Worksheets and contact reports may also be used to maintain records of data sources or calculations; however, the same guidelines must be followed when recording information on them. A file will be developed specifically for these forms to ensure that they are retained and are easily located when the data are needed to calculate emissions. A contact report should include the date of contact; originator name, title, organization, and address of person contacted; and a summary. All worksheets, electronic spreadsheets, and notebooks will be reviewed periodically by the inventory development task leaders to determine whether the procedures described above are being followed. This review should be evidenced by a dated signature on the notebook pages or worksheets reviewed (i.e., reviewed by _____ on _____).

Data used in calculation emissions should be checked for data accuracy, reasonableness, and completeness. The results from data checking will be documented to further qualify the emission estimates. In addition to the DARS scores assigned, the number of data points checked assists reviewers in evaluating the accuracy of the completed emissions report. Documentation of DARS scoring and data checking should include descriptions of the rationale for scoring, the data checked, and the dated signature of the reviewer.

Data Reporting

Reporting will be accomplished by submitting written documentation and emissions summaries to the WRAP Emission Forum. All supporting documentation, project notebooks, data sheets, and calculations shall be submitted for review.

The report will include summary tables, raw listings of equipment, activity levels and emissions from individual sources, and a QA documentation section. A detailed inventory report allows comparison of baseline inventories between one area and another and the evaluation of the impact of control strategies, and also facilitates updates to the inventory and development of projection inventories.

In addition to EIIP guidance, the U.S. EPA report *Example Documentation Report for 1990 Base Year Ozone and Carbon Monoxide State Implementation Plan Emission Inventories*[13] will be followed. These documents provide guidance for presenting and documenting SIP emissions inventories, and contain examples of how to present and verify inventory development efforts. The QA documentation section of the emissions inventory will provide enough detail so that the inventory development described in the report can be compared to the information provided in this QAP. Any discrepancies will be identified and explained.

At a minimum, documentation should describe in general terms how the inventory data were collected and where they came from. The report will include the components listed below.

- A description of the geographic area included in the inventory, including documentation for any adjustments made to the original designated area. Documentation shall reference all sources of current or projected data, and include maps of borough boundaries for excluded areas.

- The base year of the emissions inventory.

- The population of the area, and the source of the population data.

- Efforts taken as part of QA program.

- Procedures used to temporally allocate each source category (e.g., selection of the months comprising the seasons, seasonal variations in activity levels at sources, daily variation in activity levels, etc.).

- Procedures used to spatially allocate the emissions inventory. If a dispersion model will be used for control strategy demonstrations, a map of the geographic area with the modeling domain and grid squares overlaid shall be included. The grid square sizes need to be indicated on the map.

The QA documentation section of the inventory report will describe each deviation from approved procedures or findings that could compromise the successful outcome of the inventory. Documentation of each finding will include a description of the action or data reviewed that led to the quality concern, along with a recommendation for corrective action. The QA documentation section of the inventory report will then discuss how the recommended corrective actions were implemented.

References

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5. Alaska Electric Power Statistics, 1960-1995, Co-Sponsored by Alaska Systems Coordinating Council and the State of Alaska, Department of Community and Regional Affairs, Twenty-first Edition, September 1996
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9. "Procedures for Emission Inventory Preparation Volume IV: Mobile Sources," Emission Planning and Strategies Division, Office of Mobile Sources and Technical Support Division, Office of Air Quality and Planning Standards, U.S. EPA, 1992.
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12. Beck, L.L., R.L Peer, L.A. Bravo, and Y. Yan, "A Data Attribute Rating System," presented at the Air & Waste Management Association Specialty Conference on Emission Inventory Issues, Raleigh, North Carolina, November 1994.
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Appendix B

Sample Residential and Non-Residential Surveys

Rural Alaska Fuel Use Survey

We use fuel everyday in our village. While fuel heats our homes, moves our vehicles, and cooks our food, it also creates air pollution. Too much air pollution causes health problems and dirties our skies. This survey will help determine how much air pollution is produced in villages.

We value clean air and the health of our village. At times, you may have noticed a brown layer of air near the horizon limiting your view. This is called haze and it has become a concern to people across the country. We need to learn how much air pollution in Alaska comes from factories, other countries, large Alaskan cities like Anchorage and Fairbanks, airplanes, or from rural villages.

Air pollution comes from many sources: power production, home heaters, wood stoves, trash burning, cars, trucks, boats, and 4-wheelers. There is little information on village fuel use and air pollution. This is why we need your help in filling out the survey. With your support we can use this information to figure out how much pollution is released into the surrounding air. Since different sources are used depending on the season, separate surveys will be conducted in the summer and the winter.

This survey is being funded by both tribal and state governments, through the Western Regional Air Partnership. They are interested in collecting data on a broad spectrum of villages across Alaska. The results will be provided to participating tribal councils in early 2005 and can be used to help keep our air clean and improve village health. Another benefit of this survey is a better understanding of fuel use and ideas for controlling costs.

Thank you for your help and willingness to work with us.

Summer Residential Fuel Use Survey

FUEL USED FOR HEATING PURPOSES

Fuel Use at Home

What types of fuel do you use for heat in the summer at home? (please mark a v next to each type that you use)

Wood	_____
Fuel Oil	_____
Propane	_____
Other (please specify)	_____

How much fuel do you use during a week or month in the summer at home? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Wood (cords)*	_____	_____	_____
Fuel Oil (gallons)	_____	_____	_____
Propane (gallons)	_____	_____	_____
Other (please specify)	_____	_____	_____

*1 cord = 4 ft x 4ft x 8ft stack

What heaters do you use for heat at home? (please mark a v next to each type that you use)

Wood Stove	_____
Heating with water (hydronic)	_____
Central oil furnace	_____
Toyo, Monitor heater	_____
Other (please specify)	_____

Fuel Use at Camp (If applicable)

What types of fuel do you use for heat in the summer at camp? (please mark a v next to each type that you use)

Wood	_____
Fuel Oil	_____
Propane	_____
Other (please specify)	_____

How much fuel do you use during a week or month in the summer at camp? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Wood (cords)*	_____	_____	_____
Fuel Oil (gallons)	_____	_____	_____
Propane (gallons)	_____	_____	_____
Other (pelase specify)	_____	_____	_____

*1 cord = 4 ft x 4ft x 8ft stack

What heaters do you use for heat at camp? (please mark a v next to each type that you use)

Wood stove	_____
Toyo, Monitor heater	_____
Other (please specify)	_____

FUEL USED FOR MOTORIZED EQUIPMENT

Fuel Use at Home

Do you operate any motorized equipment at home? (if yes, please mark the number of hours that you operate each type during the summer)

	Week	Month	Don't Know
Chain saw	_____	_____	_____
Brush/weed trimmer	_____	_____	_____
Generator	_____	_____	_____
Water Pump	_____	_____	_____
Other (please specify)	_____	_____	_____

How much fuel do you use in all of your motorized equipment during a week/month in the summer at home? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Gasoline (gallons)	_____	_____	_____
Diesel (gallons)	_____	_____	_____

Fuel Use at Camp (If applicable)

Do you operate any motorized equipment at camp? (if yes, please mark the number of hours that you operate each type during the summer)

	Week	Month	Don't Know
Chain saw	_____	_____	_____
Brush/weed trimmer	_____	_____	_____
Generator	_____	_____	_____
Water Pump	_____	_____	_____
Other (please specify)	_____	_____	_____

How much fuel do you use in all of your motorized equipment during a week/month in the summer at camp? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Gasoline (gallons)	_____	_____	_____
Diesel (gallons)	_____	_____	_____

OUTDOOR BURNING

Do you burn anything outdoors? (please specify with a v next to each type)

	Home	Camp
Open burn (trash burn)	_____	_____
Burn barrel	_____	_____
Camp/cook fires	_____	_____
Smokehouse	_____	_____

How many hours do you burn outdoors during a week/month in the summer at home? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Outdoor burn	_____	_____	_____
Burn barrel	_____	_____	_____
Camp/cook fires	_____	_____	_____
Smokehouse	_____	_____	_____

How many hours do you burn outdoors during a week/month in the summer at camp? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Outdoor burn	_____	_____	_____
Burn barrel	_____	_____	_____
Camp/cook fires	_____	_____	_____
Smokehouse	_____	_____	_____

FUEL USED FOR TRANSPORTATION

Do you own a vehicle? (if yes, please mark the number of gallons that you typically use during a week or month in the summer)

	Gasoline	Diesel	Week/Month/Don't Know
Car	_____	_____	_____
Pickup Truck/SUV	_____	_____	_____
Motorcycle	_____		_____

How many miles do you drive in a week during the summer?

Car	_____
Pickup Truck/SUV	_____
Motorcycle	_____

Do you own a boat? (if yes, please mark the number of hours that you operate each engine during a typical week or month in the summer)

	Boat #1	Boat #2	Boat #3	Week/Month/Don't Know
2-stroke outboard	_____	_____	_____	_____
4-stroke outboard	_____	_____	_____	_____
Inboard gasoline	_____	_____	_____	_____
Inboard Diesel	_____	_____	_____	_____

How much fuel do you use in your boat(s) during a week/month in the summer? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Gasoline (gallons)	_____	_____	_____
Diesel (gallons)	_____	_____	_____

Do you own a 4-wheeler?
(if yes, please mark how many by type)

2-stroke _____
4-stroke _____

How much fuel do you use in your 4-wheeler(s) during a week/month in the summer? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Gasoline (gallons)	_____	_____	_____

How many hours do you operate your 4-wheeler(s) during a week/month in the summer? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
2-stroke (hours)	_____	_____	_____
4-stroke (hours)	_____	_____	_____

Winter Residential Fuel Use Survey

FUEL USED FOR HEATING PURPOSES

Fuel Use at Home

What types of fuel do you use for heat in the winter at home? (please mark a v next to each type that you use)

Wood	_____
Fuel Oil	_____
Propane	_____
Other (please specify)	_____

How much fuel do you use during a week or month in the winter at home? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Wood (cords)*	_____	_____	_____
Fuel Oil (gallons)	_____	_____	_____
Propane (gallons)	_____	_____	_____
Other (please specify)	_____	_____	_____

*1 cord = 4 ft x 4ft x 8ft stack

What heaters do you use for heat at home? (please mark a v next to each type that you use)

Wood Stove	_____
Heating with water (hydronic)	_____
Central oil furnace	_____
Toyo, Monitor heater	_____
Other (please specify)	_____

Fuel Use at Camp (If applicable)

What types of fuel do you use for heat in the winter at camp? (please mark a v next to each type that you use)

Wood	_____
Fuel Oil	_____
Propane	_____
Other (please specify)	_____

How much fuel do you use during a week or month in the winter at camp? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Wood (cords)*	_____	_____	_____
Fuel Oil (gallons)	_____	_____	_____
Propane (gallons)	_____	_____	_____
Other (please specify)	_____	_____	_____

*1 cord = 4 ft x 4ft x 8ft stack

What heaters do you use for heat at camp? (please mark a v next to each type that you use)

Wood stove	_____
Toyo, Monitor heater	_____
Other (please specify)	_____

FUEL USED FOR MOTORIZED EQUIPMENT

Fuel Use at Home

Do you operate any motorized equipment at home? (if yes, please mark the number of hours that you operate each type during the winter)

	Week	Month	Don't Know
Chain saw	_____	_____	_____
Snow blower	_____	_____	_____
Generator	_____	_____	_____
Other (please specify)	_____	_____	_____

How much fuel do you use in all of your motorized equipment during a week/month in the winter at home? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Gasoline (gallons)	_____	_____	_____
Diesel (gallons)	_____	_____	_____

Fuel Use at Camp (If applicable)

Do you operate any motorized equipment at camp? (if yes, please mark the number of hours that you operate each type during the winter)

	Week	Month	Don't Know
Chain saw	_____	_____	_____
Snow blower	_____	_____	_____
Generator	_____	_____	_____
Other (please specify)	_____	_____	_____

How much fuel do you use in all of your motorized equipment during a week/month in the winter at camp? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Gasoline (gallons)	_____	_____	_____
Diesel (gallons)	_____	_____	_____

OUTDOOR BURNING

Do you burn anything outdoors? (please specify with a v next to each type)

	Home	Camp
Open burn (trash burn)	_____	_____
Burn barrel	_____	_____
Other	_____	_____

How many hours do you burn outdoors during a week/month in the winter at home? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Open burn	_____	_____	_____
Burn barrel	_____	_____	_____
Other	_____	_____	_____

How many hours do you burn outdoors during a week/month in the winter at camp? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Open burn	_____	_____	_____
Burn barrel	_____	_____	_____
Other	_____	_____	_____

FUEL USED FOR TRANSPORTATION

Do you own a vehicle? (if yes, please mark the number of gallons that you typically use during a week or month in the winter)

	Gasoline	Diesel	Week/Month/Don't Know
Car	_____	_____	_____
Pickup Truck/SUV	_____	_____	_____
Motorcycle	_____		_____

How many miles do you drive in a week during the winter?

Car	_____
Pickup Truck/SUV	_____
Snow Machine	_____

Do you own a snow machine? (if yes, please mark the number of hours that you operate each engine during a typical week or month in the winter)

	Snow Machine #1	Snow Machine #2	Snow Machine #3	Week/Month/Don't Know
2-stroke snow machine	_____	_____	_____	_____
4-stroke snow machine	_____	_____	_____	_____

How much fuel do you use in your snow machine(s) during a week/month in the winter? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Gasoline (gallons)	_____	_____	_____
Diesel (gallons)	_____	_____	_____

Do you own a 4-wheeler?
(if yes, please mark how many by type)

2-stroke _____
4-stroke _____

How much fuel do you use in your 4-wheeler(s) during a week/month in the winter? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
Gasoline (gallons)	_____	_____	_____

How many hours do you operate your 4-wheeler(s) during a week/month in the winter? (please mark the time period that is easiest to remember)

	Week	Month	Don't Know
2-stroke (hours)	_____	_____	_____
4-stroke (hours)	_____	_____	_____

SUMMER AND WINTER SURVEY
City Operations

FUEL USE

- Please indicate the amount of fuel typically purchased for city operations during each season.
  SUMMER (April to September)

  Diesel/Heating Oil _____ gallons, purchased _____times per (circle one) week / month

  Gasoline _____ gallons, purchased _____times per (circle one) week / month

  WINTER (October to March)

  Diesel/Heating Oil _____ gallons, purchased _____times per (circle one) week / month

  Gasoline _____ gallons, purchased _____times per (circle one) week / month

- Please estimate the percentage of each fuel used for the following (total 100% per fuel) during the **SUMMER**.

	% Diesel Fuel	% Gasoline
Heating	_____	__n/a__
Off-Road Equipment/Generators/Pumps	_____	_____
On-Road Vehicles/Trucks/Buses	_____	_____
Marine Vessels	_____	_____
Other, please specify _____	_____	_____
TOTAL	100%	100%

- Please estimate the percentage of each fuel used for the following (total 100% per fuel) during the **WINTER**.

	% Diesel Fuel	% Gasoline
Heating	_____	__n/a__
Off-Road Equipment/Generators/Pumps	_____	_____
On-Road Vehicles/Trucks/Buses	_____	_____
Marine Vessels	_____	_____
Other, please specify _____	_____	_____
TOTAL	100%	100%

FACILITY HEATING/CLIMATE CONTROL

- Please circle the type/s of heater used in the different city facilities (circle all that apply).

  Wood stove

  Water Heating (hydronic)/Boiler

  Central oil furnace

  Toyo, Monitor heater

  Propane

  Other, please specify_____

- Please indicate how often each heater is used during each season (fill any that apply).

	SUMMER	WINTER	UNITS
Wood stove	_____	_____	hours per (circle one) day / week / month
Water Heating (hydronic)/Boiler	_____	_____	hours per (circle one) day / week / month
Central oil furnace	_____	_____	hours per (circle one) day / week / month
Toyo, Monitor heater	_____	_____	hours per (circle one) day / week / month
Propane	_____	_____	hours per (circle one) day / week / month
Other	_____	_____	hours per (circle one) day / week / month

OTHER MOTORIZED EQUIPMENT

- Please identify the type of motorized equipment, if any, that are owned and operated by the city by indicating the fuel, size/capacity, and how often the typical equipment is used during each season.

	No. of Equipment	Characteristics
Generators	_____	fuel: (circle one) Diesel / Gasoline
		____ Hp rating, ____ kW capacity
		SUMMER USE (each piece): ___ hours per (circle one) day / week / month
		WINTER USE (each piece): ___ hours per (circle one) day / week / month
Water Pumps	_____	fuel: (circle one) Diesel / Gasoline
		____ Hp rating
		SUMMER USE (each piece): ___ hours per (circle one) day / week / month
		WINTER USE (each piece): ___ hours per (circle one) day / week / month

CITY VEHICLES AND ACTIVITY

- Please identify the types and number of city-owned vehicles.

	# of Gasoline-Powered	# of Diesel-Powered
Cars	_____	_____
Pickup Trucks/Vans/SUVs	_____	_____
4-Wheelers	_____	_____
Buses	_____	_____

- Approximately how many miles is each type of vehicle typically driven during each season?

	SUMMER	WINTER	UNITS
Cars	_____	_____	miles per (circle one) day / week / month
Pickup Trucks/SUVs	_____	_____	miles per (circle one) day / week / month
4-Wheelers	_____	_____	miles per (circle one) day / week / month
Buses	_____	_____	miles per (circle one) day / week / month

SUMMER AND WINTER SURVEY
School

FUEL STORAGE TANKS

- Please indicate the fuel tank sizes located in the schools and their refill frequencies for each season.

SUMMER (April to September)

Diesel/Heating Oil Tank _____ gallons filled _____times per (circle one) week / month

Gasoline Tank _____ gallons filled _____times per (circle one) week / month

WINTER (October to March)

Diesel/Heating Oil Tank _____ gallons filled _____times per (circle one) week / month

Gasoline Tank _____ gallons filled _____times per (circle one) week / month

FACILITY HEATING/CLIMATE CONTROL

- Please circle the type/s of heater used in the schools (circle all that apply).

Wood stove

Water Heating (hydronic)/Boiler

Central oil furnace

Toyo, Monitor heater

Propane

Other, please specify_____

- Please indicate how often each heater is used during each season (fill any that apply).

	SUMMER	WINTER	UNITS
Wood stove	_____	_____	hours per (circle one) day / week / month
Water Heating (hydronic)/Boiler	_____	_____	hours per (circle one) day / week / month
Central oil furnace	_____	_____	hours per (circle one) day / week / month
Toyo, Monitor heater	_____	_____	hours per (circle one) day / week / month
Propane	_____	_____	hours per (circle one) day / week / month
Other	_____	_____	hours per (circle one) day / week / month

OTHER MOTORIZED EQUIPMENT

- Please identify the type of motorized equipment, if any, that are used in the premises by indicating the fuel, size/capacity, and how often they are used during each season.

Generator (circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG

____ Hp rating, ____ kW capacity

SUMMER USE: ____ hours per (circle one) day / week / month

WINTER USE: ____ hours per (circle one) day / week / month

Water Pump (circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG

____ Hp rating, ____ kW capacity

SUMMER USE: ____ hours per (circle one) day / week / month

WINTER USE: ____ hours per (circle one) day / week / month

SCHOOL VEHICLES AND ACTIVITY

- Please identify the types and number of school-owned vehicles.

	# of Gasoline-Powered	# of Diesel-Powered
Cars	_____	_____
Pickup Trucks/SUVs	_____	_____
4-Wheelers	_____	_____
School Buses	_____	_____

- Approximately how many miles is each type of vehicle typically driven during each season?

	SUMMER	WINTER	UNITS
Cars	_____	_____	miles per (circle one) day / week / month
Pickup Trucks/SUVs	_____	_____	miles per (circle one) day / week / month
4-Wheelers	_____	_____	miles per (circle one) day / week / month
School Buses	_____	_____	miles per (circle one) day / week / month

SUMMER AND WINTER SURVEY
Wastewater Treatment Facility

MOTORIZED (NON-ELECTRIC) EQUIPMENT

- Please identify the type of motorized equipment, if any, that are used in the premises by indicating the fuel, size/capacity, and how often they are used during each season.

Generator	(circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG ____ Hp rating, ____ kW capacity SUMMER USE: ____ hours per (circle one) day / week / month WINTER USE: ____ hours per (circle one) day / week / month
Water Pump	(circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG ____ Hp rating SUMMER USE: ____ hours per (circle one) day / week / month WINTER USE: ____ hours per (circle one) day / week / month
Air Compressor	(circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG ____ Hp rating SUMMER USE: ____ hours per (circle one) day / week / month WINTER USE: ____ hours per (circle one) day / week / month
Gas Compressor	(circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG ____ Hp rating SUMMER USE: ____ hours per (circle one) day / week / month WINTER USE: ____ hours per (circle one) day / week / month

OFFICE HEATING/CLIMATE CONTROL

- Please circle the type(s) of heater(s) used in the facility (circle all that apply).

Wood stove

Water Heating (hydronic)/Boiler

Central oil furnace

Toyo, Monitor heater

Propane

Other, please specify_____

- Please indicate how often each heater is used during each season (fill any that apply).

	SUMMER	WINTER	UNITS
Wood stove	_____	_____	hours per (circle one) day / week / month
Water Heating (hydronic)/Boiler	_____	_____	hours per (circle one) day / week / month
Central oil furnace	_____	_____	hours per (circle one) day / week / month
Toyo, Monitor heater	_____	_____	hours per (circle one) day / week / month
Propane	_____	_____	hours per (circle one) day / week / month
Other	_____	_____	hours per (circle one) day / week / month

FACILITY VEHICLES AND ACTIVITY

- Please identify the types and number of facility-owned and operated vehicles.

	# of Gasoline-Powered	# of Diesel-Powered
Cars	_____	_____
Pickup Trucks/SUVs	_____	_____
4-Wheelers	_____	_____

- Approximately how many miles is each type of vehicle typically driven during each season?

	SUMMER	WINTER	UNITS
Cars	_____	_____	miles per (circle one) day / week / month
Pickup Trucks/SUVs	_____	_____	miles per (circle one) day / week / month
4-Wheelers	_____	_____	miles per (circle one) day / week / month

SUMMER AND WINTER SURVEY
Landfill

WASTE PROCESSESING

- Please fill in the total amount of refuse processed at the landfill

  Total Waste Processed _____ in tons per (circle one) day / month / year

- Please indicate the processing method used in the facility (circle method).

  Incinerator

  Open Burning

  Burning Cage

  Enclosed Burn Box

- Is refuse processed year-round or seasonally (e.g. more in the summer, winter, summer only, etc.)? Please explain.

  _____

  _____

LANDFILL EQUIPMENT

- Please identify the types and number of facility-owned and operated equipment.

	# of Gasoline-Powered	# of Diesel-Powered
Compactor	_____	_____
Front-End Loaders	_____	_____
Scrapers	_____	_____

- Approximately how long is each type of equipment operated during each season?

	SUMMER	WINTER	UNITS
Compactor	_____	_____	hours per (circle one) day / week / month
Front-End Loader	_____	_____	hours per (circle one) day / week / month
Scraper	_____	_____	hours per (circle one) day / week / month

FACILITY VEHICLES (Unless Included In City Operations)

- Please identify the types and number of facility-owned and operated vehicles.

	# of Gasoline-Powered	# of Diesel-Powered
Cars	_____	_____
Pickup Trucks/SUVs	_____	_____
Refuse Haulers	_____	_____

- Approximately how many miles is each type of vehicle typically driven during each season?

	SUMMER	WINTER	UNITS
Cars	_____	_____	miles per (circle one) day / week / month
Pickup Trucks/SUVs	_____	_____	miles per (circle one) day / week / month
Refuse Haulers	_____	_____	miles per (circle one) day / week / month

OTHER MOTORIZED (NON-ELECTRIC) EQUIPMENT (Unless Included In City Operations)

- Please identify the type of motorized equipment, if any, that are used in the premises by indicating the fuel, size/capacity, and how often they are used during each season.

Generator (circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG

____ Hp rating, ____ kW capacity

SUMMER USE: ____ hours per (circle one) day / week / month

WINTER USE: ____ hours per (circle one) day / week / month

Water Pump (circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG

____ Hp rating, ____ kW capacity

SUMMER USE: ____ hours per (circle one) day / week / month

WINTER USE: ____ hours per (circle one) day / week / month

OFFICE HEATING/CLIMATE CONTROL

- Please circle the type/s of heater used in the facility (circle all that apply).

Wood stove

Water Heating (hydronic)/Boiler

Central oil furnace

Toyo, Monitor heater

Propane

Other, please specify_____

- Please indicate how often each heater is used during each season (fill any that apply).

	SUMMER	WINTER	UNITS
Wood stove	_____	_____	hours per (circle one) day / week / month
Water Heating (hydronic)/Boiler	_____	_____	hours per (circle one) day / week / month
Central oil furnace	_____	_____	hours per (circle one) day / week / month
Toyo, Monitor heater	_____	_____	hours per (circle one) day / week / month
Propane	_____	_____	hours per (circle one) day / week / month
Other	_____	_____	hours per (circle one) day / week / month

SUMMER AND WINTER SURVEY
Fuel Supplier

FUEL SOLD

- Please indicate the amount of each fuel sold for each season.

SUMMER (April-September)

Diesel/Heating Oil	_____ gallons per month
Gasoline	_____ gallons per month
AvGas	_____ gallons per month
Propane	_____ gallons per month

WINTER (October-March)

Diesel/Heating Oil	_____ gallons per month
Gasoline	_____ gallons per month
AvGas	_____ gallons per month
Propane	_____ gallons per month

FUEL USE

- If known, please estimate the percentage of each fuel sold for the following purposes for each season (total 100% per fuel).

SUMMER (April-September)

	% Diesel Fuel	% Gasoline	% Propane
Residential Use (Heating/Cooking/etc.)	_____	_____	_____
Off-Road Equipment/Generators/Pumps	_____	_____	_____
On-Road Vehicles/Trucks/Buses	_____	_____	_____
Marine Industry	_____	_____	_____
Other, please specify _____	_____	_____	_____
TOTAL	100%	100%	100%

WINTER (October-March)

	% Diesel Fuel	% Gasoline	% Propane
Residential Use (Heating/Cooking/etc.)	_____	_____	_____
Off-Road Equipment/Generators/Pumps	_____	_____	_____
On-Road Vehicles/Trucks/Buses	_____	_____	_____
Marine Industry	_____	_____	_____
Other, please specify _____	_____	_____	_____
TOTAL	100%	100%	100%

SUMMER AND WINTER SURVEY
Klawock Airport (AKW)

AIRCRAFT ACTIVITY

- The following data was obtained from the Federal Aviation Administration. Please comment if these statistics seem reasonable for Klawock Airport.

	COMMENTS
Aircraft operations: Average of 38 per week	_____
82.5% commercial/air taxi	_____
17.5% general aviation	_____

GROUND SUPPORT EQUIPMENT

- Is all of the Ground Support Equipment used in the facility powered by Diesel? (circle answer) YES / NO

  If NO, please list equipment that are not Diesel-fueled and the alternate fuel:

  _____

  _____

  _____

  _____

GROUND ACCESS VEHICLES

- Please identify the types and number of airport/airstrip-owned and operated vehicles.

	# of Gasoline-Powered	# of Diesel-Powered
Cars	_____	_____
Pickup Trucks/SUVs	_____	_____
4-Wheelers	_____	_____
Buses	_____	_____

- Approximately how many miles is each type of vehicle typically driven in the airport/airstrip during each season?

	SUMMER	WINTER	UNITS
Cars	_____	_____	miles per (circle one) day / week / month
Pickup Trucks/SUVs	_____	_____	miles per (circle one) day / week / month
4-Wheelers	_____	_____	miles per (circle one) day / week / month
Buses	_____	_____	miles per (circle one) day / week / month

OFFICE HEATING/CLIMATE CONTROL

- Please circle the type/s of heater/s used in the facility (circle all that apply), if any.

  Wood stove

  Water Heating (hydronic)/Boiler

  Central oil furnace

  Toyo, Monitor heater

  Propane

  Other, please specify_____

- Please indicate how often each heater is used during each season (fill any that apply).

	SUMMER	WINTER	UNITS
Wood stove	_____	_____	hours per (circle one) day / week / month
Water Heating (hydronic)/Boiler	_____	_____	hours per (circle one) day / week / month
Central oil furnace	_____	_____	hours per (circle one) day / week / month
Toyo, Monitor heater	_____	_____	hours per (circle one) day / week / month
Propane	_____	_____	hours per (circle one) day / week / month
Other	_____	_____	hours per (circle one) day / week / month

FUEL STORAGE TANKS

- Please indicate the fuel tank sizes located in the premises, if any, and their refill frequencies for each season.

SUMMER (April to September)

AvGas Tank 1	_____ gallons, filled	_____ times per (circle one) week / month
AvGas Tank 2	_____ gallons, filled	_____ times per (circle one) week / month
Diesel/Heating Oil Tank 1	_____ gallons, filled	_____ times per (circle one) week / month
Diesel/Heating Oil Tank 2	_____ gallons, filled	_____ times per (circle one) week / month
Gasoline Tank 1	_____ gallons, filled	_____ times per (circle one) week / month
Gasoline Tank 2	_____ gallons, filled	_____ times per (circle one) week / month

WINTER (October to March)

AvGas Tank 1	_____ gallons, filled	_____ times per (circle one) week / month
AvGas Tank 2	_____ gallons, filled	_____ times per (circle one) week / month
Diesel/Heating Oil Tank 1	_____ gallons, filled	_____ times per (circle one) week / month
Diesel/Heating Oil Tank 2	_____ gallons, filled	_____ times per (circle one) week / month
Gasoline Tank 1	_____ gallons, filled	_____ times per (circle one) week / month
Gasoline Tank 2	_____ gallons, filled	_____ times per (circle one) week / month

SUMMER AND WINTER SURVEY
Medical Center

FACILITY HEATING/CLIMATE CONTROL

- Please circle the type/s of heater used in the clinic (circle all that apply).

  Wood stove

  Water Heating (hydronic)/Boiler

  Central oil furnace

  Toyo, Monitor heater

  Propane

  Other, please specify_____

- Please indicate how often each heater is used during each season (fill any that apply).

	SUMMER	WINTER	UNITS
Wood stove	_____	_____	hours per (circle one) day / week / month
Water Heating (hydronic)/Boiler	_____	_____	hours per (circle one) day / week / month
Central oil furnace	_____	_____	hours per (circle one) day / week / month
Toyo, Monitor heater	_____	_____	hours per (circle one) day / week / month
Propane	_____	_____	hours per (circle one) day / week / month
Other	_____	_____	hours per (circle one) day / week / month

OTHER MOTORIZED EQUIPMENT

- Please identify the type of motorized equipment, if any, that are used in the premises by indicating the fuel, size/capacity, and how often they are used during each season.

Generator 1 (circle one) Diesel/2-stroke gasoline/4-stroke gasoline/LPG
____ Hp rating, ____ kW capacity
SUMMER USE: ____ hours per (circle one) day / week / month
WINTER USE: ____ hours per (circle one) day / week / month

Generator 2 (circle one) Diesel/2-stroke gasoline/4-stroke gasoline/LPG
____ Hp rating, ____ kW capacity
SUMMER USE: ____ hours per (circle one) day / week / month
WINTER USE: ____ hours per (circle one) day / week / month

Water Pump (circle one) Diesel/2-stroke gasoline/4-stroke gasoline/LPG
____ Hp rating
SUMMER USE: ____ hours per (circle one) day / week / month
WINTER USE: ____ hours per (circle one) day / week / month

CLINIC VEHICLES AND ACTIVITY

- Please identify the types and number of clinic-owned and operated vehicles.

	# of Gasoline-Powered	# of Diesel-Powered
Cars	_____	_____
Pickup Trucks/Vans/SUVs	_____	_____

- Approximately how many miles is each type of vehicle typically driven during each season?

	SUMMER	WINTER	UNITS
Cars	_____	_____	miles per (circle one) day / week / month
Pickup Trucks/SUVs	_____	_____	miles per (circle one) day / week / month

FUEL STORAGE TANKS

- Please indicate the fuel tank sizes located in the premises and their refill frequencies for each season.

SUMMER (April to September)

Diesel/Heating Oil Tank _____ gallons, filled _____ times per (circle one) week / month

Gasoline Tank _____ gallons, filled _____ times per (circle one) week / month

WINTER (October to March)

Diesel/Heating Oil Tank _____ gallons, filled _____ times per (circle one) week / month

Gasoline Tank _____ gallons, filled _____ times per (circle one) week / month

SUMMER AND WINTER SURVEY
Electric Utility

POWER GENERATION

- If the facility uses an Internal Combustion (IC) Reciprocating Engine attached to a Generator, please fill in the following.
  IC Reciprocating Engine Characteristics:

  Rated Horsepower (Hp) _____

  Fuel (circle one) Diesel / Other, please specify_____

  Is it equipped with emission controls? (circle one) Yes / No / Don't Know

  If yes, please specify _____

- If the facility uses a Gas Turbine attached to a Generator, please fill in the following.
  Gas Turbine Engine Characteristics:

  Rated Horsepower (Hp) _____

  Fuel (circle one) Natural Gas / Jet Fuel / Other, please specify_____

  Is it equipped with emission controls? (circle one) Yes / No / Don't Know

  If yes, please specify _____

- Please fill in the following Generator characteristics.

  Rated Output (kW) _____

OTHER MOTORIZED (NON-ELECTRIC) EQUIPMENT

- Please identify the type of motorized equipment, if any, that are used in the premises by indicating the fuel, size/capacity, and how often they are used during each season.

Water Pump (circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG
____ Hp rating
SUMMER USE: ____ hours per (circle one) day / week / month
WINTER USE: ____ hours per (circle one) day / week / month

Air Compressor (circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG
____ Hp rating
SUMMER USE: ____ hours per (circle one) day / week / month
WINTER USE: ____ hours per (circle one) day / week / month

Gas Compressor (circle one) Diesel / 2-Stroke Gasoline / 4-Stroke Gasoline / LPG
____ Hp rating
SUMMER USE: ____ hours per (circle one) day / week / month
WINTER USE: ____ hours per (circle one) day / week / month

FUEL STORAGE TANKS

- Please indicate the fuel tank sizes located in the premises and their refill frequencies for each season.

SUMMER (April to September)

Diesel/Heating Oil Tank _____ gallons, filled _____ times per (circle one) week / month

Gasoline Tank _____ gallons, filled _____ times per (circle one) week / month

WINTER (October to March)

Diesel/Heating Oil Tank _____ gallons, filled _____ times per (circle one) week / month

Gasoline Tank _____ gallons, filled _____ times per (circle one) week / month

FACILITY HEATING/CLIMATE CONTROL

- Please circle the type/s of heater used in the facility (circle all that apply).

Wood stove

Water Heating (hydronic)/Boiler

Central oil furnace

Toyo, Monitor heater

Propane

Other, please specify_____

- Please indicate how often each heater is used during each season (fill any that apply).

	SUMMER (Apr-Sept)	WINTER (Oct-Mar)	UNITS
Wood stove	_____	_____	hours per (circle one) day / week / month
Water Heating (hydronic)/Boiler	_____	_____	hours per (circle one) day / week / month
Central oil furnace	_____	_____	hours per (circle one) day / week / month
Toyo, Monitor heater	_____	_____	hours per (circle one) day / week / month
Propane	_____	_____	hours per (circle one) day / week / month
Other	_____	_____	hours per (circle one) day / week / month

FACILITY VEHICLES AND ACTIVITY

- Please identify the types and number of facility-owned and operated vehicles.

	# of Gasoline-Powered	# of Diesel-Powered
Cars	_____	_____
Pickup Trucks/SUVs	_____	_____
Motorcycles	_____	_____
4-Wheelers	_____	_____
Heavy-Duty Trucks	_____	_____

- Approximately how many miles is each type of vehicle typically driven during each season?

	SUMMER	WINTER	UNITS
Cars	_____	_____	miles per (circle one) day / week / month
Pickup Trucks/SUVs	_____	_____	miles per (circle one) day / week / month
4-Wheelers	_____	_____	miles per (circle one) day / week / month
Heavy-Duty Trucks	_____	_____	miles per (circle one) day / week / month

Appendix C

Community Data and Designations

ALASKA COMMUNITY DATA AND DESIGNATIONS

Community	2005 (5/25/06) Population	Incorp_Type	DEC_LAT	DEC_LONG	CENSUS_AREA	POP_GRP	ON-HWY	Surrogate Used	(1 = yes, 0 = no) Elec Utility	Boat Reg
Adak	167	2nd Class City	51.8725	-176.62861	Aleutians West	Small	No	Sand Point	1	1
Afognak	0	Unincorporated	58.00775	-152.76794	Kodiak Island	Small	No	Sand Point	1	0
Akhiok	41	2nd Class City	56.94556	-154.17028	Kodiak Island	Small	No	Sand Point	1	1
Akiachak	644	Unincorporated	60.90944	-161.43139	Bethel	Small	No	Kongiganak	1	1
Akiak	378	2nd Class City	60.91222	-161.21389	Bethel	Small	No	Kongiganak	1	1
Akutan	773	2nd Class City	54.13556	-165.77306	Aleutians East	Small	No	Sand Point	1	1
Alakanuk	678	2nd Class City	62.68889	-164.61528	Wade Hampton	Small	No	Stebbins	1	1
Alatna	41	Unincorporated	66.56692	-152.66639	Yukon-Koyukuk	Small	No	Arctic Village	1	0
Alcan Border	11	Unincorporated	62.66176	-141.16123	Southeast Fairbanks	Small	No	Northway Village	1	0
Aleknagik	241	2nd Class City	59.27306	-158.61778	Dillingham	Small	No	Sand Point	1	1
Aleneva	46	Unincorporated	58.01418	-152.90944	Kodiak Island	Small	No	Sand Point	1	0
Allakaket	87	2nd Class City	66.56261	-152.64756	Yukon-Koyukuk	Small	No	Huslia	1	1
Alpine	0	Unincorporated	70.32953	-150.96541	North Slope	Small	No	Buckland	1	0
Ambler	283	2nd Class City	67.08611	-157.85139	Northwest Arctic	Small	No	Buckland	1	1
Anaktuvuk Pass	308	2nd Class City	68.14333	-151.73583	North Slope	Small	No	Buckland	1	0
Anchor Point	1767	Unincorporated	59.77667	-151.83139	Kenai Peninsula	Small	Yes	Sand Point	1	1
Anchorage	278241	Unified Home Rule Municipality	61.21806	-149.90028	Anchorage	Large	Yes	***	1	1
Anderson	546	2nd Class City	64.34417	-149.18694	Denali	Small	No	Northway Village	1	1
Andreafsky	145	located in St. Mary's	62.045305	-163.218629	Wade Hampton	Small	No	Stebbins	1	0
Angoon	497	2nd Class City	57.50333	-134.58389	Skagway-Angoon	Small	Yes	Klawock	1	1
Aniak	528	2nd Class City	61.57833	-159.52222	Bethel	Small	No	Kongiganak	1	1
Anvik	99	2nd Class City	62.65611	-160.20667	Yukon-Koyukuk	Small	No	Huslia	1	1
Arctic Village	147	Unincorporated	68.12694	-145.53778	Yukon-Koyukuk	Small	No	***	1	1
Atka	90	2nd Class City	52.19611	-174.20056	Aleutians West	Small	No	Sand Point	1	1
Atmautluak	304	Unincorporated	60.86694	-162.27306	Bethel	Small	No	Kongiganak	1	1
Atqasuk	247	2nd Class City	70.46944	-157.39583	North Slope	Small	No	Buckland	1	1
Attu Station	20	Unincorporated	52.9375	173.2375	Aleutians West	Small	No	Sand Point	1	1
Barrow	4199	1st Class City	71.29056	-156.78861	North Slope	Midsize	No	Buckland	0	1
Bear Creek	1884	Unincorporated	60.21128	-149.3087	Kenai Peninsula	Small	No	Port Graham	1	0
Beaver	64	Unincorporated	66.35944	-147.39639	Yukon-Koyukuk	Small	No	Huslia	1	1
Belkofski	0	Unincorporated	55.098882	-162.035477	Aleutians East	Small	No	Sand Point	1	0
Beluga	21	Unincorporated	61.17191	-151.16826	Kenai Peninsula	Small	No	Sand Point	1	1
Bethel	5960	2nd Class City	60.79222	-161.75583	Bethel	Midsize	Yes	***	1	1
Bettles	31	2nd Class City	66.91788	-151.51513	Yukon-Koyukuk	Small	No	Arctic Village	1	0
Big Delta	738	Unincorporated	64.1525	-145.84222	Southeast Fairbanks	Small	No	Northway Village	1	1
Big Lake	2982	Unincorporated	61.52559	-149.9415	Matanuska-Susitna	Midsize	Yes	Northway Village	0	1
Bill Moore's Slough	0	Unincorporated	62.945434	-163.761425	Wade Hampton	Small	No	Stebbins	1	0
Birch Creek	33	Unincorporated	66.25619	-145.84967	Yukon-Koyukuk	Small	No	Huslia	1	1
Brevig Mission	327	2nd Class City	65.33472	-166.48917	Nome	Small	No	Stebbins	1	1
Buckland	434	2nd Class City	65.97972	-161.12306	Northwest Arctic	Small	No	***	1	1
Buffalo Soapstone	755	Unincorporated	61.71777	-149.09835	Matanuska-Susitna	Small	No	Northway Village	0	0
Butte	3101	Unincorporated	61.54222	-149.03333	Matanuska-Susitna	Midsize	No	Northway Village	0	0
Cantwell	218	Unincorporated	63.39167	-148.95083	Denali	Small	Yes	Northway Village	1	1
Central	97	Unincorporated	65.5725	-144.80306	Yukon-Koyukuk	Small	Yes	Minto	1	1
Chalkyitsik	79	Unincorporated	66.65444	-143.72222	Yukon-Koyukuk	Small	No	Huslia	1	1
Chase	30				Matanuska-Susitna	Small		Northway Village	0	0
Chefornak	457	2nd Class City	60.16	-164.26583	Bethel	Small	No	Kongiganak	1	1
Chenega Bay	82	Unincorporated	60.06571	-148.01038	Valdez-Cordova	Small	No	Port Graham	1	1
Chevak	916	2nd Class City	61.52778	-165.58639	Wade Hampton	Small	No	Stebbins	1	1
Chickaloon	292	Unincorporated	61.79667	-148.46278	Matanuska-Susitna	Small	No	Northway Village	0	1
Chicken	14	Unincorporated	64.07333	-141.93611	Southeast Fairbanks	Small	No	Northway Village	1	1

ALASKA COMMUNITY DATA AND DESIGNATIONS

Community	2005 (5/25/06) Population	Incorp_Type	DEC_LAT	DEC_LONG	CENSUS_AREA	POP_GRP	ON-HWY	Surrogate Used	(1 = yes, 0 = no) Elec Utility	Boat Reg
Chignik	95	2nd Class City	56.29528	-158.40222	Lake & Peninsula	Small	No	Sand Point	1	1
Chignik Lagoon	86	Unincorporated	56.30995	-158.53142	Lake & Peninsula	Small	No	Sand Point	1	1
Chignik Lake	117	Unincorporated	56.25537	-158.76175	Lake & Peninsula	Small	No	Sand Point	1	1
Chiniak	52	Unincorporated	57.61657	-152.16402	Kodiak Island	Small	No	Sand Point	1	1
Chisana	9	Unincorporated	62.06611	-142.04083	Valdez-Cordova	Small	No	Port Graham	1	0
Chistochina	104	Unincorporated	62.565	-144.66472	Valdez-Cordova	Small	No	Port Graham	1	1
Chitina	110	Unincorporated	61.51583	-144.43694	Valdez-Cordova	Small	Yes	Port Graham	1	1
Chuathbaluk	95	2nd Class City	61.57194	-159.245	Bethel	Small	No	Kongiganak	1	1
Chuloonawick	0	Unincorporated	62.927203	-164.079228	Wade Hampton	Small	No	Stebbins	1	0
Circle	90	Unincorporated	65.82556	-144.06056	Yukon-Koyukuk	Small	No	Huslia	1	1
Clam Gulch	172	Unincorporated	60.23111	-151.39361	Kenai Peninsula	Small	Yes	Sand Point	1	1
Clark's Point	65	2nd Class City	58.84417	-158.55083	Dillingham	Small	No	Sand Point	1	1
Coffman Cove	156	2nd Class City	56.01389	-132.82778	Prince of Wales	Small	No	Klawock	1	1
Cohoe	1262	Unincorporated	60.36803	-151.3086	Kenai Peninsula	Small	No	Sand Point	1	0
Cold Bay	89	2nd Class City	55.18583	-162.72111	Aleutians East	Small	No	Sand Point	1	1
Coldfoot	11	Unincorporated	67.25639	-150.18417	Yukon-Koyukuk	Small	No	Arctic Village	1	0
College	12231	Unincorporated	64.85694	-147.80278	Fairbanks North Star	Midsize	No	***	1	0
Cooper Landing	344	Unincorporated	60.49	-149.83417	Kenai Peninsula	Small	No	Port Graham	1	1
Copper Center	452	Unincorporated	61.955	-145.30528	Valdez-Cordova	Small	Yes	Port Graham	1	1
Copperville	185	Unincorporated	62.07231	-145.41387	Valdez-Cordova	Small	No	Port Graham	1	0
Cordova	2288	Home Rule City	60.54278	-145.7575	Valdez-Cordova	Midsize	Yes	Port Graham	0	1
Council	0	Unincorporated	64.890706	-163.673088	Nome	Small	No	Stebbins	1	1
Covenant Life	252	Unincorporated	59.39907	-136.0783	Haines	Small	No	Klawock	1	0
Craig	1102	1st Class City	55.47639	-133.14833	Prince of Wales	Small	Yes	Klawock	1	1
Crooked Creek	145	Unincorporated	61.87	-158.11083	Bethel	Small	No	Kongiganak	1	1
Crown Point	82	Unincorporated	60.42222	-149.36667	Kenai Peninsula	Small	No	Port Graham	1	0
Cube Cove	0	Unincorporated	57.94063	-134.73911	Skagway-Angoon	Small	No	Klawock	1	0
Deering	139	2nd Class City	66.07497	-162.71274	Northwest Arctic	Small	No	Buckland	1	1
Delta Junction	1047	2nd Class City	64.03778	-145.73222	Southeast Fairbanks	Small	Yes	Northway Village	0	1
Deltana	1939	Unincorporated	63.85371	-145.22307	Southeast Fairbanks	Small	No	Northway Village	1	0
Diamond Ridge	732	Unincorporated	59.69904	-151.56071	Kenai Peninsula	Small	No	Sand Point	1	0
Dillingham	2370	1st Class City	59.03972	-158.4575	Dillingham	Midsize	Yes	***	1	1
Diomede	132	2nd Class City	65.758611	-168.953056	Nome	Small	No	Stebbins	1	1
Dot Lake	27	Unincorporated	63.58518	-144.16992	Southeast Fairbanks	Small	No	Northway Village	1	1
Dot Lake Village	33	Unincorporated	63.65864	-144.01413	Southeast Fairbanks	Small	No	Northway Village	1	0
Douglas	5082	located in Juneau	58.298947	-134.452699	Juneau	Midsize	Yes	***	1	1
Dry Creek	107	Unincorporated	63.61961	-144.61189	Southeast Fairbanks	Small	No	Northway Village	1	0
Eagle	137	2nd Class City	64.78806	-141.2	Southeast Fairbanks	Small	No	Northway Village	1	1
Eagle River-Chugiak	30000	located in Anchorage	61.32222	-149.56667	Anchorage	Midsize	Yes	***	1	1
Eagle Village	78	Unincorporated	64.78056	-141.11361	Southeast Fairbanks	Small	Yes	Northway Village	1	0
Edna Bay	41	Unincorporated	55.94889	-133.66222	Prince of Wales	Small	No	Klawock	1	1
Eek	291	2nd Class City	60.21889	-162.02444	Bethel	Small	No	Kongiganak	1	1
Egegik	81	2nd Class City	58.21556	-157.37583	Lake & Peninsula	Small	No	Sand Point	1	1
Eielson AFB	4552	Unincorporated	64.66444	-147.09944	Fairbanks North Star	Midsize	No	***	1	1
Eklutna	383	located in Anchorage	61.454528	-149.354478	Anchorage	Small	Yes	***	1	1
Ekuk	0	Unincorporated	58.814986	-158.557684	Dillingham	Small	No	Sand Point	1	1
Ekwok	118	2nd Class City	59.34972	-157.47528	Dillingham	Small	No	Sand Point	1	1
Elfin Cove	29	Unincorporated	58.19444	-136.34333	Skagway-Angoon	Small	No	Klawock	1	1
Elim	302	2nd Class City	64.6175	-162.26056	Nome	Small	No	Stebbins	1	1
Emmonak	740	2nd Class City	62.77778	-164.52306	Wade Hampton	Small	No	Stebbins	1	1
Ester	1841	Unincorporated	64.84722	-148.01444	Fairbanks North Star	Small	No	***	1	1

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Community	2005 (5/25/06) Population	Incorp_Type	DEC_LAT	DEC_LONG	CENSUS_AREA	POP_GRP	ON-HWY	Surrogate Used	(1 = yes, 0 = no) Elec Utility	Boat Reg
Evansville	20	Unincorporated	66.92491	-151.5061	Yukon-Koyukuk	Small	No	Arctic Village	1	0
Excursion Inlet	9	Unincorporated	58.42139	-135.43667	Haines	Small	No	Klawock	1	1
Eyak	145	located in Cordova	60.525059	-145.628293	Valdez-Cordova	Small	No	Port Graham	1	0
Fairbanks	31182	Home Rule City	64.83778	-147.71639	Fairbanks North Star	Large	Yes	***	1	1
False Pass	63	2nd Class City	54.85394	-163.40883	Aleutians East	Small	No	Sand Point	1	1
Farm Loop	1193	Unincorporated	61.63557	-149.13879	Matanuska-Susitna	Small	No	Northway Village	0	0
Ferry	36	Unincorporated	64.03708	-148.9445	Denali	Small	No	Northway Village	1	0
Fishhook	2784	Unincorporated	61.7562	-149.22467	Matanuska-Susitna	Midsize	No	Northway Village	0	0
Flat	0	Unincorporated	62.45361	-158.0075	Yukon-Koyukuk	Small	No	Arctic Village	1	0
Fort Greely	197	Unincorporated	63.8567	-145.85236	Southeast Fairbanks	Small	No	Northway Village	1	1
Fort Yukon	570	2nd Class City	66.56472	-145.27389	Yukon-Koyukuk	Small	No	Huslia	1	1
Four Mile Road	31	Unincorporated	64.60028	-149.11793	Yukon-Koyukuk	Small	No	Arctic Village	1	0
Fox	377	Unincorporated	64.95806	-147.61833	Fairbanks North Star	Small	Yes	***	1	0
Fox River	612	Unincorporated	59.8616	-151.01966	Kenai Peninsula	Small	No	Sand Point	1	0
Fritz Creek	1775	Unincorporated	59.74842	-151.2778	Kenai Peninsula	Small	No	Sand Point	1	1
Funny River	747	Unincorporated	60.48268	-150.84631	Kenai Peninsula	Small	No	Sand Point	1	0
Gakona	214	Unincorporated	62.30194	-145.30194	Valdez-Cordova	Small	Yes	Port Graham	1	1
Galena	654	1st Class City	64.73333	-156.9275	Yukon-Koyukuk	Small	No	Huslia	1	1
Gambell	660	2nd Class City	63.77972	-171.74111	Nome	Small	No	Stebbins	1	1
Game Creek	21	Unincorporated	58.05809	-135.51478	Skagway-Angoon	Small	No	Klawock	1	0
Gateway	3682	Unincorporated	61.57363	-149.25849	Matanuska-Susitna	Midsize	No	Northway Village	0	0
Georgetown	3	Unincorporated	61.923381	-157.61984	Bethel	Small	No	Arctic Village	1	0
Girdwood	1850	located in Anchorage	60.94167	-149.16667	Anchorage	Small	Yes	***	1	1
Glacier View	264	Unincorporated	61.94864	-147.22641	Matanuska-Susitna	Small	No	Northway Village	0	0
Glennallen	589	Unincorporated	62.10917	-145.54639	Valdez-Cordova	Small	Yes	Port Graham	1	1
Golovin	150	2nd Class City	64.54333	-163.02917	Nome	Small	No	Stebbins	1	1
Goodnews Bay	238	2nd Class City	59.11889	-161.5875	Bethel	Small	No	Kongiganak	1	1
Grayling	171	2nd Class City	62.90361	-160.06472	Yukon-Koyukuk	Small	No	Huslia	1	1
Gulkana	101	Unincorporated	62.27139	-145.38222	Valdez-Cordova	Small	No	Port Graham	1	1
Gustavus	459	Unincorporated	58.41333	-135.73694	Skagway-Angoon	Small	Yes	Klawock	1	1
Haines	1525	Unincorporated	59.23583	-135.445	Haines	Small	Yes	Klawock	1	1
Halibut Cove	23	Unincorporated	59.595	-151.225	Kenai Peninsula	Small	No	Sand Point	1	1
Hamilton	0	Unincorporated	62.894577	-163.842871	Wade Hampton	Small	No	Stebbins	1	0
Happy Valley	477	Unincorporated	59.93583	-151.73722	Kenai Peninsula	Small	Yes	Sand Point	1	0
Harding-Birch Lakes	237	Unincorporated	64.36943	-146.59941	Fairbanks North Star	Small	No	***	1	0
Healy	1012	Unincorporated	63.85694	-148.96611	Denali	Small	Yes	Northway Village	0	1
Healy Lake	29	Unincorporated	64.02689	-144.66162	Southeast Fairbanks	Small	No	Northway Village	1	0
Hobart Bay	3	Unincorporated	57.43577	-133.34062	Skagway-Angoon	Small	No	Klawock	1	0
Hollis	137	Unincorporated	55.48389	-132.6675	Prince of Wales	Small	Yes	Klawock	1	1
Holy Cross	205	2nd Class City	62.19944	-159.77139	Yukon-Koyukuk	Small	No	Huslia	1	1
Homer	5435	1st Class City	59.6425	-151.54833	Kenai Peninsula	Midsize	Yes	Dillingham	1	1
Hoonah	861	1st Class City	58.11	-135.44361	Skagway-Angoon	Small	Yes	Klawock	1	1
Hooper Bay	1133	2nd Class City	61.53111	-166.09667	Wade Hampton	Small	No	Stebbins	1	1
Hope	139	Unincorporated	60.92028	-149.64028	Kenai Peninsula	Small	No	Port Graham	1	1
Houston	1447	2nd Class City	61.63028	-149.81806	Matanuska-Susitna	Small	No	Northway Village	0	1
Hughes	69	2nd Class City	66.04889	-154.25556	Yukon-Koyukuk	Small	No	Huslia	1	1
Huslia	265	2nd Class City	65.69861	-156.39972	Yukon-Koyukuk	Small	No	***	1	1
Hydaburg	369	1st Class City	55.20806	-132.82667	Prince of Wales	Small	Yes	Klawock	1	1
Hyder	91	Unincorporated	55.91694	-130.02472	Prince of Wales	Small	Yes	Klawock	1	1
Igiugig	50	Unincorporated	59.32778	-155.89472	Lake & Peninsula	Small	No	Sand Point	1	1
Iliamna	86	Unincorporated	59.75472	-154.90611	Lake & Peninsula	Small	No	Sand Point	1	1

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Ivanof Bay	2	Unincorporated	55.91123	-159.48612	Lake & Peninsula	Small	No	Sand Point	1	1
Jakolof Bay	39	Unincorporated	59.45305	-151.52114	Kenai Peninsula	Small	No	Sand Point	1	0
Juneau	31193	Unified Home Rule Municipality	58.30194	-134.41972	Juneau	Large	Yes	***	1	1
Kachemak	457	2nd Class City	59.67	-151.43417	Kenai Peninsula	Small	No	Sand Point	1	0
Kaguyak	0	Unincorporated	56.85942	-153.76695	Kodiak Island	Small	No	Sand Point	1	0
Kake	598	1st Class City	56.97583	-133.94722	Wrangell-Petersburg	Small	Yes	Klawock	1	1
Kaktovik	276	2nd Class City	70.13194	-143.62389	North Slope	Small	No	Buckland	1	1
Kalifornsky	6748	Unincorporated	60.41833	-151.29	Kenai Peninsula	Midsize	No	Dillingham	1	0
Kaltag	227	2nd Class City	64.32722	-158.72194	Yukon-Koyukuk	Small	No	Huslia	1	1
Kanatak	0	Unincorporated	57.56667	-156.03333	Kodiak Island	Small	No	Sand Point	1	0
Karluk	27	Unincorporated	57.57021	-154.45433	Kodiak Island	Small	No	Sand Point	1	1
Kasaan	61	2nd Class City	55.54006	-132.4022	Prince of Wales	Small	Yes	Klawock	1	1
Kasigluk	534	Unincorporated	60.89506	-162.51799	Bethel	Small	No	Kongiganak	1	1
Kasilof	526	Unincorporated	60.33692	-151.27665	Kenai Peninsula	Small	Yes	Sand Point	1	1
Kenai	6777	Home Rule City	60.55444	-151.25833	Kenai Peninsula	Midsize	Yes	Dillingham	1	1
Kenny Lake	417	Unincorporated	61.68361	-144.85234	Valdez-Cordova	Small	No	Port Graham	1	1
Ketchikan	7685	Home Rule City	55.34222	-131.64611	Ketchikan Gateway	Midsize	Yes	Sitka	0	1
Kiana	380	2nd Class City	66.975	-160.42278	Northwest Arctic	Small	No	Buckland	1	1
King Cove	723	1st Class City	55.06167	-162.31028	Aleutians East	Small	No	Sand Point	1	1
King Island	0	Unincorporated	64.96937	-168.06493	Nome	Small	No	Stebbins	1	0
King Salmon	420	Unincorporated	58.68833	-156.66139	Bristol Bay	Small	No	Sand Point	1	1
Kipnuk	688	Unincorporated	59.93889	-164.04139	Bethel	Small	No	Kongiganak	1	1
Kivalina	385	2nd Class City	67.72694	-164.53333	Northwest Arctic	Small	No	Buckland	1	1
Klawock	780	1st Class City	55.55222	-133.09583	Prince of Wales	Small	Yes	***	1	1
Klukwan	109	Unincorporated	59.3996	-135.89331	Skagway-Angoon	Small	Yes	Klawock	1	0
Knik River	632	Unincorporated	61.47097	-148.86064	Matanuska-Susitna	Small	No	Northway Village	0	0
Knik-Fairview	10271	Unincorporated	61.54078	-149.59373	Matanuska-Susitna	Midsize	No	Northway Village	0	0
Kobuk	130	2nd Class City	66.90857	-156.88102	Northwest Arctic	Small	No	Buckland	1	1
Kodiak	6088	Home Rule City	57.78889	-152.4019	Kodiak Island	Midsize	Yes	Dillingham	0	0
Kodiak Station	1975	Unincorporated	57.73813	-152.50368	Kodiak Island	Small	No	Sand Point	1	1
Kokhanok	179	Unincorporated	59.4416	-154.75514	Lake & Peninsula	Small	No	Sand Point	1	1
Koliganek	167	Unincorporated	59.72861	-157.28444	Dillingham	Small	No	Sand Point	1	1
Kongiganak	427	Unincorporated	59.88	-163.054	Bethel	Small	No	***	1	1
Kotlik	609	2nd Class City	63.03417	-163.55333	Wade Hampton	Small	No	Stebbins	1	1
Kotzebue	3120	2nd Class City	66.89828	-162.59585	Northwest Arctic	Midsize	No	Buckland	0	1
Koyuk	350	2nd Class City	64.93194	-161.15694	Nome	Small	No	Stebbins	1	1
Koyukuk	97	2nd Class City	64.88093	-157.70103	Yukon-Koyukuk	Small	No	Huslia	1	1
Kupreanof	37	2nd Class City	56.81444	-132.98056	Wrangell-Petersburg	Small	No	Klawock	1	0
Kwethluk	721	2nd Class City	60.81222	-161.43583	Bethel	Small	No	Kongiganak	1	1
Kwigillingok	361	Unincorporated	59.86393	-163.13322	Bethel	Small	No	Kongiganak	1	1
Lake Louise	91	Unincorporated	62.28218	-146.54385	Matanuska-Susitna	Small	No	Northway Village	0	0
Lake Minchumina	19	Unincorporated	63.88278	-152.31222	Yukon-Koyukuk	Small	No	Huslia	1	1
Lakes	7773	Unincorporated	61.60696	-149.30545	Matanuska-Susitna	Midsize	No	Northway Village	0	0
Larsen Bay	97	2nd Class City	57.53854	-153.97844	Kodiak Island	Small	No	Sand Point	1	1
Lazy Mountain	1238	Unincorporated	61.64779	-148.96363	Matanuska-Susitna	Small	No	Northway Village	0	0
Levelock	54	Unincorporated	59.115	-156.85667	Lake & Peninsula	Small	No	Sand Point	1	1
Lime Village	28	Unincorporated	61.35639	-155.43556	Bethel	Small	No	Arctic Village	1	0
Livengood	28	Unincorporated	65.52444	-148.54472	Yukon-Koyukuk	Small	No	Arctic Village	1	0
Lowell Point	96	Unincorporated	60.07143	-149.43436	Kenai Peninsula	Small	No	Port Graham	1	0
Lower Kalskag	252	2nd Class City	61.51222	-160.35806	Bethel	Small	No	Kongiganak	1	1
Lutak	36	Unincorporated	59.38269	-135.64291	Haines	Small	No	Klawock	1	0

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Manley Hot Springs	74	Unincorporated	65.00111	-150.63389	Yukon-Koyukuk	Small	Yes	Minto	1	1
Manokotak	437	2nd Class City	58.98139	-159.05833	Dillingham	Small	No	Sand Point	1	1
Marshall	370	2nd Class City	61.87778	-162.08111	Wade Hampton	Small	No	Stebbins	1	1
Mary's Igloo	0	Unincorporated	65.141898	-165.043931	Nome	Small	No	Stebbins	1	0
McCarthy	70	Unincorporated	61.43333	-142.92167	Valdez-Cordova	Small	No	Port Graham	1	1
McGrath	347	2nd Class City	62.95639	-155.59583	Yukon-Koyukuk	Small	No	Huslia	1	1
McKinley Park	139	Unincorporated	63.73278	-148.91417	Denali	Small	No	Northway Village	1	1
Meadow Lakes	6332	Unincorporated	61.61579	-149.58254	Matanuska-Susitna	Midsize	No	Northway Village	0	0
Mekoryuk	192	2nd Class City	60.38806	-166.185	Bethel	Small	No	Kongiganak	1	1
Mendeltna	72	Unincorporated	62.04944	-146.53833	Valdez-Cordova	Small	No	Port Graham	1	0
Mentasta Lake	126	Unincorporated	62.93155	-143.79273	Valdez-Cordova	Small	No	Port Graham	1	1
Metlakatla	1397	Federal Law (Indian Reservation)	55.12959	-131.57496	Prince of Wales	Small	No	Klawock	1	1
Meyers Chuck	15	Unincorporated	55.74083	-132.25639	Prince of Wales	Small	No	Klawock	1	1
Miller Landing	0	located in Homer	59.66589	-151.43787	Kenai Peninsula	Small	No	Sand Point	1	0
Minto	202	Unincorporated	65.15333	-149.33694	Yukon-Koyukuk	Small	Yes	***	1	1
Moose Creek	648	Unincorporated	64.71	-147.14361	Fairbanks North Star	Small	No	***	1	0
Moose Pass	218	Unincorporated	60.4875	-149.36889	Kenai Peninsula	Small	Yes	Port Graham	1	1
Mosquito Lake	163	Unincorporated	59.4735	-136.14671	Haines	Small	No	Klawock	1	0
Mountain Village	786	2nd Class City	62.08556	-163.72944	Wade Hampton	Small	No	Stebbins	1	1
Mud Bay	140	Unincorporated	59.1655	-135.37792	Haines	Small	No	Klawock	1	0
Naknek	577	Unincorporated	58.72833	-157.01389	Bristol Bay	Small	No	Sand Point	1	1
Nanwalek	222	Unincorporated	59.35639	-151.92083	Kenai Peninsula	Small	No	Sand Point	1	1
Napaimute	0	Unincorporated	61.532364	-158.634949	Bethel	Small	No	Kongiganak	1	0
Napakiak	373	2nd Class City	60.69667	-161.95194	Bethel	Small	No	Kongiganak	1	1
Napaskiak	428	2nd Class City	60.70806	-161.76611	Bethel	Small	No	Kongiganak	1	1
Naukati Bay	106	Unincorporated	55.88077	-133.195	Prince of Wales	Small	No	Klawock	1	1
Nelchina	67	Unincorporated	61.99052	-146.7704	Valdez-Cordova	Small	No	Port Graham	1	0
Nelson Lagoon	70	Unincorporated	56.00194	-161.20278	Aleutians East	Small	No	Sand Point	1	1
Nenana	549	Home Rule City	64.56389	-149.09306	Yukon-Koyukuk	Small	Yes	Minto	0	1
New Allakaket	32	Unincorporated	66.54268	-152.64769	Yukon-Koyukuk	Small	No	Arctic Village	1	0
New Stuyahok	461	2nd Class City	59.45278	-157.31194	Dillingham	Small	No	Sand Point	1	1
Newhalen	180	2nd Class City	59.72	-154.89722	Lake & Peninsula	Small	No	Sand Point	1	0
Newtok	315	Unincorporated	60.94278	-164.62944	Bethel	Small	No	Kongiganak	1	1
Nightmute	234	2nd Class City	60.47944	-164.72389	Bethel	Small	No	Kongiganak	1	1
Nikiski	4187	Unincorporated	60.71605	-151.34066	Kenai Peninsula	Midsize	No	Dillingham	1	1
Nikolaevsk	304	Unincorporated	59.81194	-151.61056	Kenai Peninsula	Small	No	Sand Point	1	1
Nikolai	109	2nd Class City	63.01333	-154.375	Yukon-Koyukuk	Small	No	Huslia	1	1
Nikolski	31	Unincorporated	52.93806	-168.86778	Aleutians West	Small	No	Sand Point	1	1
Ninilchik	785	Unincorporated	60.05139	-151.66889	Kenai Peninsula	Small	Yes	Sand Point	1	1
Noatak	473	Unincorporated	67.57111	-162.96528	Northwest Arctic	Small	No	Buckland	1	1
Nome	3508	1st Class City	64.50111	-165.40639	Nome	Midsize	No	Bethel	0	1
Nondalton	203	2nd Class City	59.97185	-154.84779	Lake & Peninsula	Small	No	Sand Point	1	1
Noorvik	628	2nd Class City	66.83833	-161.03278	Northwest Arctic	Small	No	Buckland	1	1
North Pole	1595	Home Rule City	64.75111	-147.34944	Fairbanks North Star	Small	Yes	***	0	1
Northway	87	Unincorporated	62.96167	-141.93722	Southeast Fairbanks	Small	Yes	Northway Village	1	1
Northway Junction	78	Unincorporated	63.01306	-141.80306	Southeast Fairbanks	Small	No	Northway Village	1	0
Northway Village	99	Unincorporated	62.98222	-141.95167	Southeast Fairbanks	Small	No	***	1	0
Nuiqsut	411	2nd Class City	70.2175	-150.97639	North Slope	Small	No	Buckland	1	1
Nulato	310	2nd Class City	64.71944	-158.10306	Yukon-Koyukuk	Small	No	Huslia	1	1
Nunam Iqua	204	2nd Class City	62.53361	-164.84111	Wade Hampton	Small	No	Stebbins	1	1
Nunam Iqua	204	2nd Class City	62.53361	-164.84111	Wade Hampton	Small	No	Stebbins	1	1

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Nunapitchuk	516	2nd Class City	60.89689	-162.45683	Bethel	Small	No	Kongiganak	1	1
Ohogamiut	0	Unincorporated	61.592798	-161.875456	Wade Hampton	Small	No	Stebbins	1	0
Old Harbor	200	2nd Class City	57.20278	-153.30389	Kodiak Island	Small	No	Sand Point	1	1
Oscarville	59	Unincorporated	60.72278	-161.77	Bethel	Small	No	Kongiganak	1	1
Ouzinkie	191	2nd Class City	57.92361	-152.50222	Kodiak Island	Small	No	Sand Point	1	1
Paimiut	2	Unincorporated	61.70139	-165.83944	Wade Hampton	Small	No	Stebbins	1	0
Palmer	5382	Home Rule City	61.59972	-149.11278	Matanuska-Susitna	Midsize	Yes	Northway Village	0	1
Pauloff Harbor	0	Unincorporated	54.45885	-162.70036	Aleutians East	Small	No	Sand Point	1	0
Paxson	37	Unincorporated	63.03333	-145.49167	Valdez-Cordova	Small	No	Port Graham	1	1
Pedro Bay	62	Unincorporated	59.78722	-154.10611	Lake & Peninsula	Small	No	Sand Point	1	1
Pelican	115	1st Class City	57.96083	-136.2275	Skagway-Angoon	Small	No	Klawock	1	1
Perryville	114	Unincorporated	55.91278	-159.14556	Lake & Peninsula	Small	No	Sand Point	1	1
Petersburg	3155	Home Rule City	56.8125	-132.95556	Wrangell-Petersburg	Midsize	Yes	Sitka	1	1
Petersville	16	Unincorporated	62.49639	-150.76556	Matanuska-Susitna	Small	No	Northway Village	0	0
Pilot Point	73	2nd Class City	57.56417	-157.57917	Lake & Peninsula	Small	No	Sand Point	1	1
Pilot Station	565	2nd Class City	61.93889	-162.875	Wade Hampton	Small	No	Stebbins	1	1
Pitka's Point	103	Unincorporated	62.03278	-163.28778	Wade Hampton	Small	No	Stebbins	1	0
Platinum	38	2nd Class City	59.01306	-161.81639	Bethel	Small	No	Kongiganak	1	1
Pleasant Valley	695	Unincorporated	64.89003	-146.88745	Fairbanks North Star	Small	No	***	1	0
Point Baker	22	Unincorporated	56.35278	-133.62111	Prince of Wales	Small	No	Klawock	1	1
Point Hope	702	2nd Class City	68.34778	-166.80806	North Slope	Small	No	Buckland	1	1
Point Lay	238	Unincorporated	69.73586	-163.01178	North Slope	Small	No	Buckland	1	1
Point MacKenzie	244	Unincorporated	61.33767	-150.04456	Matanuska-Susitna	Small	No	Northway Village	0	0
Pope-Vannoy Landing	6	Unincorporated	59.55682	-154.49271	Lake & Peninsula	Small	No	Sand Point	1	0
Port Alexander	75	2nd Class City	56.24972	-134.64444	Wrangell-Petersburg	Small	No	Klawock	1	1
Port Alsworth	106	Unincorporated	60.2025	-154.31278	Lake & Peninsula	Small	No	Sand Point	1	1
Port Clarence	25	Unincorporated	65.26222	-166.84583	Nome	Small	No	Stebbins	1	0
Port Graham	134	Unincorporated	59.35139	-151.82972	Kenai Peninsula	Small	No	***	1	1
Port Heiden	89	2nd Class City	56.94839	-158.62902	Lake & Peninsula	Small	No	Sand Point	1	1
Port Lions	220	2nd Class City	57.8675	-152.88222	Kodiak Island	Small	No	Sand Point	1	1
Port Protection	54	Unincorporated	56.32194	-133.60944	Prince of Wales	Small	No	Klawock	1	1
Port William	0	Unincorporated	58.48333	-152.58333	Kodiak Island	Small	No	Sand Point	1	1
Portage Creek	37	Unincorporated	58.90016	-157.66153	Dillingham	Small	No	Sand Point	1	1
Primrose	84	Unincorporated	60.34361	-149.34417	Kenai Peninsula	Small	No	Port Graham	1	0
Prudhoe Bay	2	Unincorporated	70.25528	-148.33722	North Slope	Small	No	Buckland	1	1
Prudhoe Bay	2	Unincorporated	70.25528	-148.33722	North Slope	Small	No	Buckland	1	1
Quinhagak	642	2nd Class City	59.74889	-161.91583	Bethel	Small	No	Kongiganak	1	1
Rampart	16	Unincorporated	65.505	-150.17	Yukon-Koyukuk	Small	No	Huslia	1	1
Red Devil	36	Unincorporated	61.76111	-157.3125	Bethel	Small	No	Huslia	1	1
Red Dog Mine	33	Unincorporated	68.07184	-162.89091	Northwest Arctic	Small	No	Buckland	1	0
Ridgeway	2062	Unincorporated	60.52888	-151.03677	Kenai Peninsula	Midsize	No	Dillingham	1	0
Ruby	185	2nd Class City	64.73944	-155.48694	Yukon-Koyukuk	Small	No	Huslia	1	1
Russian Mission	329	2nd Class City	61.785	-161.32028	Wade Hampton	Small	No	Stebbins	1	1
Saint George	128	2nd Class City	56.6	-169.54167	Aleutians West	Small	No	Sand Point	1	1
Saint Mary's	570	1st Class City	62.05306	-163.16583	Wade Hampton	Small	No	Stebbins	1	1
Saint Michael	427	2nd Class City	63.47806	-162.03917	Nome	Small	No	Stebbins	1	1
Saint Paul	488	2nd Class City	57.12222	-170.275	Aleutians West	Small	No	Sand Point	1	1
Salamatof	906	Unincorporated	60.61889	-151.3425	Kenai Peninsula	Small	No	Sand Point	1	0
Salcha	953	Unincorporated	64.52954	-146.86473	Fairbanks North Star	Small	No	***	1	1
Sand Point	939	1st Class City	55.33972	-160.49722	Aleutians East	Small	No	***	1	1
Savoonga	695	2nd Class City	63.69417	-170.47889	Nome	Small	No	Stebbins	1	1

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Saxman	405	2nd Class City	55.31833	-131.59583	Ketchikan Gateway	Small	No	Klawock	1	1
Scammon Bay	509	2nd Class City	61.84278	-165.58167	Wade Hampton	Small	No	Stebbins	1	1
Selawik	830	2nd Class City	66.60389	-160.00694	Northwest Arctic	Small	No	Buckland	1	1
Seldovia	287	1st Class City	59.43806	-151.71139	Kenai Peninsula	Small	No	Sand Point	1	0
Seldovia Village	148	Unincorporated	59.4426	-151.70773	Kenai Peninsula	Small	No	Sand Point	1	1
Seward	2606	Home Rule City	60.10417	-149.44222	Kenai Peninsula	Midsize	Yes	Port Graham	1	1
Shageluk	129	2nd Class City	62.68222	-159.56194	Yukon-Koyukuk	Small	No	Huslia	1	1
Shaktoolik	224	2nd Class City	64.33389	-161.15389	Nome	Small	No	Stebbins	1	1
Shemya Station	27	Unincorporated	52.72458	174.11205	Aleutians West	Small	No	Sand Point	1	1
Shishmaref	581	2nd Class City	66.25667	-166.07194	Nome	Small	No	Stebbins	1	1
Shungnak	259	2nd Class City	66.88806	-157.13639	Northwest Arctic	Small	No	Buckland	1	1
Silver Springs	107	Unincorporated	62.01788	-145.34499	Valdez-Cordova	Small	No	Port Graham	1	0
Sitka	8947	Unified Home Rule Municipality	57.05306	-135.33	Sitka	Midsize	Yes	***	1	1
Skagway	834	1st Class City	59.45833	-135.31389	Skagway-Angoon	Small	Yes	Klawock	1	1
Skwentna	75	Unincorporated	61.95861	-151.18111	Matanuska-Susitna	Small	No	Northway Village	0	1
Slana	103	Unincorporated	62.70694	-143.96111	Valdez-Cordova	Small	No	Port Graham	1	1
Sleetmute	92	Unincorporated	61.7025	-157.16972	Bethel	Small	No	Huslia	1	1
Soldotna	3869	1st Class City	60.48778	-151.05833	Kenai Peninsula	Midsize	No	Dillingham	1	1
Solomon	8	Unincorporated	64.56083	-164.43917	Nome	Small	No	Stebbins	1	0
South Naknek	76	Unincorporated	58.71556	-156.99806	Bristol Bay	Small	No	Sand Point	1	1
Stebbins	596	2nd Class City	63.52222	-162.28806	Nome	Small	No	***	1	1
Sterling	4983	Unincorporated	60.53722	-150.76472	Kenai Peninsula	Midsize	No	Dillingham	1	1
Stevens Village	68	Unincorporated	66.00639	-149.09083	Yukon-Koyukuk	Small	No	Huslia	1	1
Stony River	42	Unincorporated	61.78306	-156.58806	Bethel	Small	No	Arctic Village	1	0
Sunrise	24	Unincorporated	60.88972	-149.42111	Kenai Peninsula	Small	No	Port Graham	1	0
Susitna	22	Unincorporated	61.41668	-150.59917	Matanuska-Susitna	Small	No	Northway Village	0	0
Sutton-Alpine	1265	Unincorporated	61.79664	-148.84528	Matanuska-Susitna	Small	Yes	Northway Village	0	1
Takotna	39	Unincorporated	62.98861	-156.06417	Yukon-Koyukuk	Small	No	Huslia	1	1
Talkeetna	873	Unincorporated	62.32389	-150.10944	Matanuska-Susitna	Small	Yes	Northway Village	0	1
Tanacross	149	Unincorporated	63.38528	-143.34639	Southeast Fairbanks	Small	Yes	Northway Village	1	1
Tanaina	6622	Unincorporated	61.66384	-149.43106	Matanuska-Susitna	Midsize	No	Northway Village	0	0
Tanana	281	1st Class City	65.17194	-152.07889	Yukon-Koyukuk	Small	No	Huslia	1	1
Tatitlek	102	Unincorporated	60.86472	-146.67861	Valdez-Cordova	Small	No	Port Graham	1	1
Tazlina	186	Unincorporated	62.05079	-145.43588	Valdez-Cordova	Small	No	Port Graham	1	0
Telida	2	Unincorporated	63.38389	-153.28222	Yukon-Koyukuk	Small	No	Arctic Village	1	0
Teller	263	2nd Class City	65.26361	-166.36083	Nome	Small	No	Stebbins	1	1
Tenakee Springs	98	2nd Class City	57.78083	-135.21889	Skagway-Angoon	Small	No	Klawock	1	1
Tetlin	150	Unincorporated	63.13722	-142.51611	Southeast Fairbanks	Small	Yes	Northway Village	1	1
Thom's Place	9	Unincorporated	56.19467	-132.21179	Wrangell-Petersburg	Small	No	Klawock	1	0
Thorne Bay	486	2nd Class City	55.68778	-132.52222	Prince of Wales	Small	Yes	Klawock	1	1
Togiak	779	2nd Class City	59.06194	-160.37639	Dillingham	Small	No	Sand Point	1	1
Tok	1459	Unincorporated	63.33667	-142.98556	Southeast Fairbanks	Small	Yes	Northway Village	1	1
Toksook Bay	596	2nd Class City	60.53028	-165.1025	Bethel	Small	No	Kongiganak	1	1
Tolsona	20	Unincorporated	62.08899	-146.09968	Valdez-Cordova	Small	No	Port Graham	1	0
Tonsina	95	Unincorporated	61.65583	-145.17528	Valdez-Cordova	Small	No	Port Graham	1	0
Trapper Creek	436	Unincorporated	62.31667	-150.23139	Matanuska-Susitna	Small	No	Northway Village	0	1
Tuluksak	466	Unincorporated	61.1025	-160.96167	Bethel	Small	No	Kongiganak	1	1
Tuntutuliak	399	Unincorporated	60.34306	-162.66306	Bethel	Small	No	Kongiganak	1	1
Tununak	328	Unincorporated	60.58513	-165.25549	Bethel	Small	No	Kongiganak	1	1
Twin Hills	71	Unincorporated	59.07917	-160.275	Dillingham	Small	No	Sand Point	1	1
Two Rivers	623	Unincorporated	64.87222	-147.03833	Fairbanks North Star	Small	No	***	1	1

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Tyonek	199	Unincorporated	61.06806	-151.13694	Kenai Peninsula	Small	No	Sand Point	1	1
Uganik	0				Kodiak Island	Small		Sand Point	1	0
Ugashik	15	Unincorporated	57.51306	-157.3975	Lake & Peninsula	Small	No	Sand Point	1	1
Umkumiute	0	Unincorporated	60.49832	-165.19885	Bethel	Small	No	Kongiganak	1	0
Unalakleet	710	2nd Class City	63.87306	-160.78806	Nome	Small	No	Stebbins	1	1
Unalaska	4297	1st Class City	53.87361	-166.53667	Aleutians West	Midsize	Yes	Dillingham	1	1
Unga	0	Unincorporated	55.18277	-160.50635	Aleutians East	Small	No	Sand Point	1	0
Upper Kalskag	276	2nd Class City	61.53766	-160.30721	Bethel	Small	No	Kongiganak	1	0
Valdez	4454	Home Rule City	61.13083	-146.34833	Valdez-Cordova	Midsize	Yes	Port Graham	1	1
Venetie	184	Unincorporated	67.01389	-146.41861	Yukon-Koyukuk	Small	No	Huslia	1	1
Wainwright	520	2nd Class City	70.63694	-160.03833	North Slope	Small	No	Buckland	1	1
Wales	151	2nd Class City	65.60917	-168.0875	Nome	Small	No	Stebbins	1	1
Wasilla	6413	1st Class City	61.58139	-149.43944	Matanuska-Susitna	Midsize	Yes	Northway Village	0	1
Whale Pass	76	Unincorporated	56.11528	-133.12083	Prince of Wales	Small	Yes	Klawock	1	1
White Mountain	224	2nd Class City	64.68139	-163.40556	Nome	Small	No	Stebbins	1	1
Whitestone Logging Camp	3	Unincorporated	58.0574	-135.40562	Skagway-Angoon	Small	No	Klawock	1	0
Whittier	188	2nd Class City	60.77306	-148.68389	Valdez-Cordova	Small	No	Port Graham	1	1
Willow	1932	Unincorporated	61.74722	-150.0375	Matanuska-Susitna	Small	Yes	Northway Village	0	1
Willow Creek	185	Unincorporated	61.81972	-145.21222	Valdez-Cordova	Small	No	Port Graham	1	0
Wiseman	17	Unincorporated	67.41	-150.1075	Yukon-Koyukuk	Small	No	Huslia	1	1
Womens Bay	703	Unincorporated	57.6936	-152.62291	Kodiak Island	Small	No	Sand Point	1	0
Woody Island	0	Unincorporated	57.78	-152.35522	Kodiak Island	Small	No	Sand Point	1	0
Wrangell	1974	Home Rule City	56.47083	-132.37667	Wrangell-Petersburg	Small	Yes	Sitka	1	1
Y	1063	Unincorporated	62.15427	-149.79892	Matanuska-Susitna	Small	No	Northway Village	0	0
Yakutat	619	Home Rule Borough	59.54694	-139.72722	Yakutat	Small	Yes	Klawock	1	1