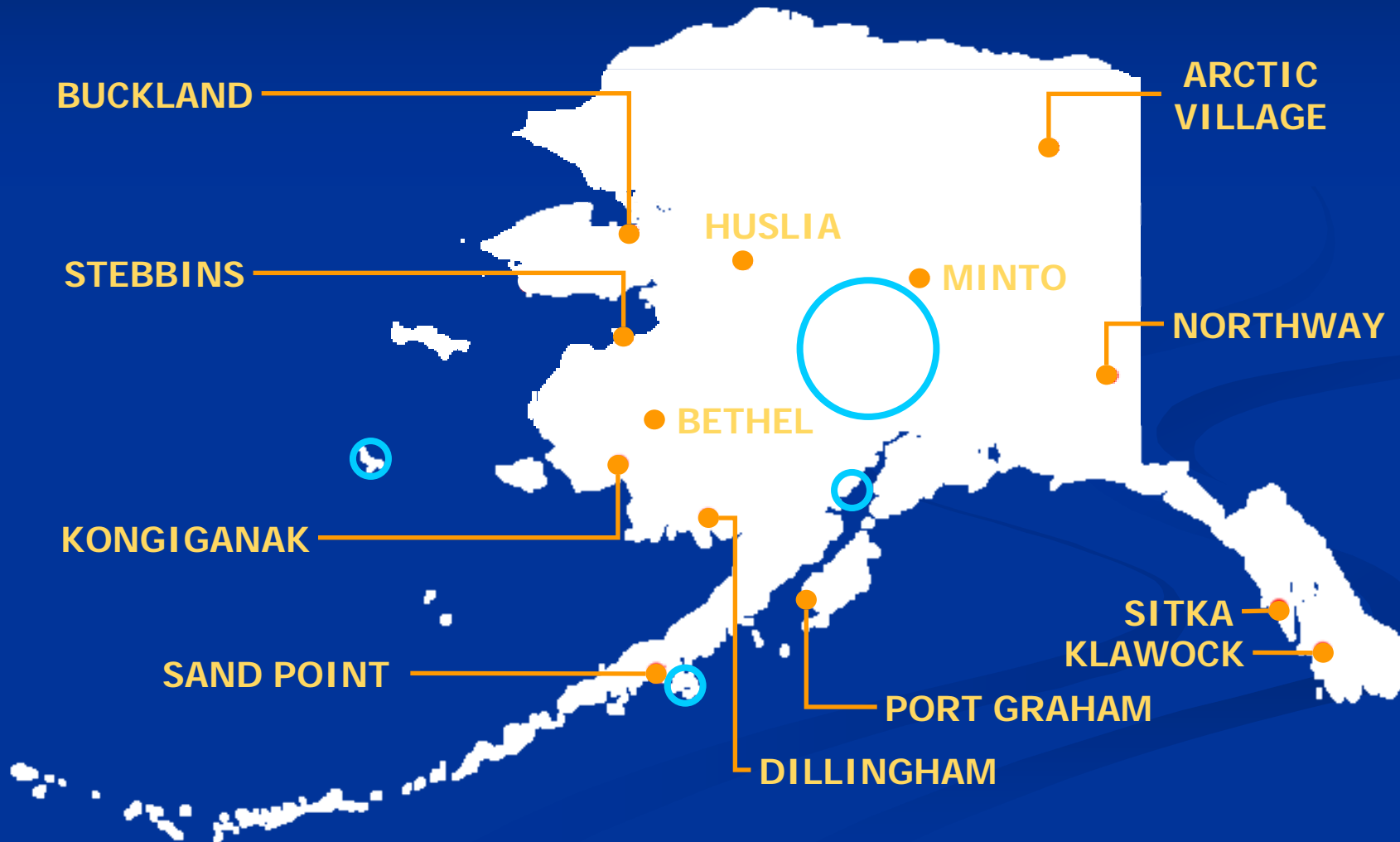


Approach

- Worked with Alaska Native Coalition on Employment and Training (ANCET) members to identify target communities
- Selected a total of 13 communities
- Recruited local ANCET staff and village youth to conduct surveys
- Worked directly with local tribes to conduct the surveys in several communities

Alaska Communities Participating in WRAP Survey



Approach (continued)

- Sent letter to tribal council explaining study
- Set up contracts with ANCET members
- Conducted residential surveys (home interviews)
- Conducted non-residential surveys
- Computed community specific emissions
- Report results to tribal councils
- Extrapolate results to rest of communities

Arctic Village Survey

- Contracted with TCC to manage data collection; Nena John was hired to conduct the surveys.
- Collected data from 30-31 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Arctic Village Survey (continued)

- Nonresidential activity and fuel use data were collected for the following facilities:
 - Arctic Village Electric Company
 - Arctic Village Health Clinic
 - Fuel Supplier
 - Landfill
- Because responses to the non-residential surveys were limited, activity and fuel use for the facilities were estimated using survey data from Port Graham and other sources for the following:

Arctic Village Survey (continued)

- Arctic Village Airport (ARC) emissions derived from WRAP 2002 Alaska Aviation Emission Inventory.
- Arctic Village Electric Company fuel use was estimated from Port Graham after adjusting for population.
- Amount of refuse generated and burned in landfill was based on Port Graham estimate of 104.5 lbs per person per month.
- Nonroad equipment activity at landfill were derived from equipment use for Port Graham landfill.

Summary

- Wood burning and gasoline are responsible for most of the air pollution in Arctic Village
- Wood burning is of particular concern as it is the dominant source of Particulates
- Particulates are known to be a toxic air pollutant
- People should be educated to avoid wood smoke when possible
- Gasoline emissions can be minimized by keeping vehicles and equipment in good repair

Bethel Survey

- Contracted with ONC (Rose Kalistook) to conduct the surveys
- Collected data from 62-63 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Bethel Survey (continued)

- Non-residential emissions and fuel use were derived as follows:
 - Arthur Dale Lake Airport, Bethel Airport, Bethel Seaplane Base, and Hangar Lake Seaplane Base emissions were derived from WRAP 2002 Alaska Aviation Emission Inventory.
 - Bethel Utilities Corporation Diesel fuel use (3,134,918 gal/year) was derived from the 2005 Power Cost Equalization (PCE) report and total annual emissions were derived from DEC Major Point Source data.

Bethel Survey (continued)

- Port commercial marine vessel emissions were estimated from Kodiak vessel emissions from 2004 after adjusting for population, local fishing vessel registration data, and local seasonal activity.
- Emissions and fuel use for the following facilities were based on facility-specific seasonal estimates for Dillingham adjusted using local population:
 - ❖ City Operations
 - ❖ Landfill
 - ❖ Wastewater Treatment Facility
 - ❖ Bethel Schools
 - ❖ Yukon-Kuskokwim Delta Regional Hospital

Summary

- Wood burning and gasoline are responsible for most of the air pollution in Bethel
- Information on options to improve wood stove efficiency and reduce smoke are available and should be presented to the public
- Particulates are known to be a toxic air pollutant
- Gasoline emissions can be minimized by keeping vehicles and equipment in good repair

Buckland Survey

- Hired Natalie Hadley to conduct the surveys
- Collected data from 30 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Buckland Survey (continued)

- Only responses to the non-residential survey were from the City of Buckland and the IRA.
- City of Buckland Diesel fuel use for power generation (112,719 gal/year) was derived from the 2005 Power Cost Equalization (PCE) report and was assumed to be used uniformly throughout the year.
- Buckland Airport (BVK) emissions were derived from WRAP 2002 Alaska Aviation Emission Inventory.

Issues To Be Considered

- Questionnaires were often only partially completed, as a result:
 - When questions were left unanswered, activity and fuel use was assumed to be zero
 - Emission and fuel use estimates may understate community totals
 - Fuel use in electricity generation was assumed to be uniform throughout the year (50% summer and 50% winter)
- Responses to the non-residential surveys were only received from the City of Buckland and the IRA.
- The surveys indicated camp fuel use during the winter – is this reasonable?

Summary

- Wood burning and gasoline are responsible for most of the air pollution in Buckland
- Wood burning is of particular concern as it is the dominant source of Particulates
- Particulates are known to be a toxic air pollutant
- People should be educated to avoid wood smoke when possible
- Gasoline emissions can be minimized by keeping vehicles and equipment in good repair

Dillingham Survey

- Contracted with BBNC (Cathy Reamey) to conduct the surveys
- Collected data from 30-35 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Dillingham Survey (continued)

- Responses to non-residential surveys were only received from the following facilities:
 - City Operations
 - Landfill
 - Wastewater Treatment Facility
- The responses for these facilities only addressed summer operation. Estimates of winter activity were derived from seasonal trends in Port Graham.
- Dillingham Airport, Nushagak Airport and Shannon's Pond Seaplane Base emissions were derived from WRAP 2002 Alaska Aviation Emission Inventory.

Dillingham Survey (continued)

- Nushagak Electric Cooperative Diesel fuel use was derived from the 2005 Power Cost Equalization (PCE) report.
- Commercial marine vessel emissions were estimated from Kodiak after adjusting community population, local fishing vessel registration data, and local seasonal activity.
- Dillingham City Schools and Kanakanak Hospital emissions and fuel use were estimated from similar facilities in Port Graham after adjusting population differences.

Summary

- Wood burning and gasoline are responsible for most of the air pollution in Dillingham
- Information on options to improve wood stove efficiency and reduce smoke are available and should be presented to the public
- Particulates are known to be a toxic air pollutant
- Gasoline emissions can be minimized by keeping vehicles and equipment in good repair

Huslia Survey

- Contracted with TCC to manage data collection; Sheila Esmailka was hired to conduct the surveys
- Collected data from 26-30 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Huslia Survey (continued)

- Responses to the non-residential surveys were received for the following facilities:
 - Jimmy Huntington School
 - Huslia Health Clinic
 - Wastewater Treatment Facility
 - Huslia City Operations
 - Landfill
- Responses provided information on both summer and winter activities.
- Huslia Airport (HLA) emissions derived from WRAP 2002 Alaska Aviation Emission Inventory.

Huslia Survey (continued)

- Electric Utility (Alaska Village Electric Cooperative) fuel use estimates derived from 2005 Power Cost Equalization (PCE) data.
- Commercial operations in the river are limited to the twice a year barge service and only during the summer months.
- According to the Alaska Commercial Fisheries Entry Commission (CFEC), no commercial fishing vessels are registered in Huslia in 2005.

Summary

- Wood burning and gasoline are responsible for most of the air pollution in Huslia
- Information on options to improve wood stove efficiency and reduce smoke are available and should be presented to the public
- Particulates are known to be a toxic air pollutant
- Gasoline emissions can be minimized by keeping vehicles and equipment in good repair

Klawock Survey

- Contracted with Ann Wyatt of Klawock Cooperative Association to manage data collection; James Rowan was hired to conduct the surveys.
- Collected data from 50-51 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Klawock Survey (continued)

- Nonresidential activity and fuel use data collected from the following facilities
 - Klawock Island Fuels
 - Klawock Heenya Corporation
 - Alicia Roberts Medical Center
 - Klawock City School
 - Boat Harbor
 - City Landfill
 - Wastewater Treatment Facility
 - Village Council Operations
 - Viking Lumber Company
 - Klawock Electric

Klawock Survey (continued)

- Boat harbor survey did not include enough information for estimating fuel use or emissions.
- Harbor commercial marine vessel emissions were estimated from Kodiak port after adjusting community population, local fishing vessel registration data, and local seasonal activity.
- Klawock Airport (AKW) emissions derived from WRAP 2002 Alaska Aviation Emission Inventory.
- Emissions from Klawock Seaplane Base (AQC) are assumed to be negligible based on discussions with Ann Wyatt.

Kongiganak Survey

- Betty Phillip was hired to conduct the surveys.
- Collected data from 29 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Kongiganak Survey (continued)

- Responses to the non-residential surveys did not provide facility specific data. Therefore, information from Port Graham was used after adjusting for population.
- Non-residential emissions and fuel use were derived as follows:
 - Kongiganak Airport emissions were derived from WRAP 2002 Alaska Aviation Emission Inventory.

Kongiganak Survey (continued)

- Puvurnaq Power Company Diesel fuel use (81,967 gal/year) was derived from the 2005 Power Cost Equalization (PCE) report.
- Harbor commercial marine vessel emissions were estimated from Kodiak tug and fishing vessel emissions in 2004 after adjusting local barge schedule, fishing vessel registration data, and local seasonal activity.

Kongiganak Survey (continued)

- Emissions and fuel use for the following facilities were estimated using facility-specific seasonal data from Port Graham adjusted for local population:
 - ❖ Landfill
 - ❖ Dick R. Kiunya Memorial School and Library
 - ❖ Wastewater Treatment Facility
 - ❖ Village Operations
 - ❖ Lillian E. Jimmy Memorial Health Clinic
 - ❖ Qemirtalek Coast Corporation

Minto Survey

- Contracted with TCC to manage data collection; Jordan Baker was hired to conduct the surveys
- Collected data from 27-29 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Minto Survey (continued)

- Partially completed responses to non-residential surveys were only received for the following facilities:
 - Minto Health Clinic
 - Minto School
- Responses provided information on summer and winter activities.
- Because data from the non-residential surveys were limited, activity and fuel use for other facilities were estimated using survey data from Huslia and other sources.

Minto Survey (continued)

- Non-residential emissions and fuel use were derived as follows:
 - Minto Airport emissions were derived from WRAP 2002 Alaska Aviation Emission Inventory.
 - Alaska Village Electric Cooperative Diesel fuel use for power generation was derived from the 2005 Power Cost Equalization (PCE) report.

Minto Survey (continued)

- Emissions and fuel use for the following facilities were estimated from Huslia after adjusting for population differences.
 - ❖ Washeteria and Water Treatment Plant
 - ❖ City Operations
 - ❖ Landfill

Northway Village Survey

- Contracted with TCC to manage data collection; Glen Marunde was hired to conduct the surveys
- Collected data from 30 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Northway Village Survey (continued)

- Non-residential surveys were sent for all significant facilities with fuel and motorized equipment use.
- Only one response, a partially completed survey for the Northway Airport was received.
- Survey data from Huslia and other sources were used to fill in data gaps in non-residential fuel use and emissions.

Northway Village Survey (continued)

- Non-residential emissions and fuel use were derived as follows:
 - Northway Airport emissions were derived from WRAP 2002 Alaska Aviation Emission Inventory.
 - Alaska Power Company Diesel fuel use for power generation was derived from the 2005 Power Cost Equalization (PCE) report.

Northway Village Survey (continued)

- Emissions and fuel use for the following facilities were estimated after adjusting Huslia population data:
 - Walter Northway School
 - Northway Village Clinic
 - Washeteria and Water Treatment Plant
 - City Operations
 - Northway Landfill

Port Graham Survey

- Contacted with Port Graham Village Council to manage data collection; Wes Breedlove was hired to conduct the surveys.
- Collected data from 29-32 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Port Graham Survey (continued)

- Responses for the non-residential surveys were received for the following facilities:
 - Homer Electric Association
 - Village Operations
 - Port Graham School
 - Fuel Supplier Survey
 - Port Graham Clinic
 - City Landfill
 - Marine Operations
 - Port Graham Airport
 - Wastewater Treatment Facility
 - Port Graham Development Corporation
- Responses provided information on summer and winter activities.

Port Graham Survey (continued)

- Port Graham aircraft and ground support emissions were derived from WRAP 2002 Alaska Aviation Emission Inventory. Survey of airport was used as supplement.
- Commercial marine vessel emissions were estimated from Kodiak after adjusting for community population, local fishing vessel registration data, and local seasonal activity (summer port only).

Sand Point Survey

- Contracted with APIA (Connie Fredenbert) to manage data collection; John Cochran was hired to conduct the surveys.
- Collected data from 18 homes on summer and winter activities, including:
 - heating
 - transportation
 - equipment
 - outdoor burning
- Data was also collected for the following fuels:
 - wood (cords)
 - fuel oil (gallons)
 - propane (gallons)
 - other (please specify)

Sand Point Survey (continued)

- Non-residential surveys were sent to significant facilities with fuel and motorized equipment use. Responses were received for the following facilities (some only partially completed):
 - TDX Power Corporation
 - Fuel Supplier
 - City Landfill
 - City Operations
 - Russian Town Sewer Plant
 - Kelly Avenue Sewer Plant
 - Peter Pan Seafood

Sand Point Survey (continued)

- The surveys showed that fuel use and activities at the non-residential facilities did not vary by season.
- Sand Point Airport emissions were derived from the WRAP 2002 Alaska Aviation Emission Inventory.
- Total annual emissions for Trident Seafood's point sources were derived from DEC Major Point Source data.

Sand Point Survey (continued)

- Commercial marine vessel emissions were estimated from Kodiak after adjusting community population, local fishing vessel registration data, and local seasonal activity (80% in summer and 20% in winter).