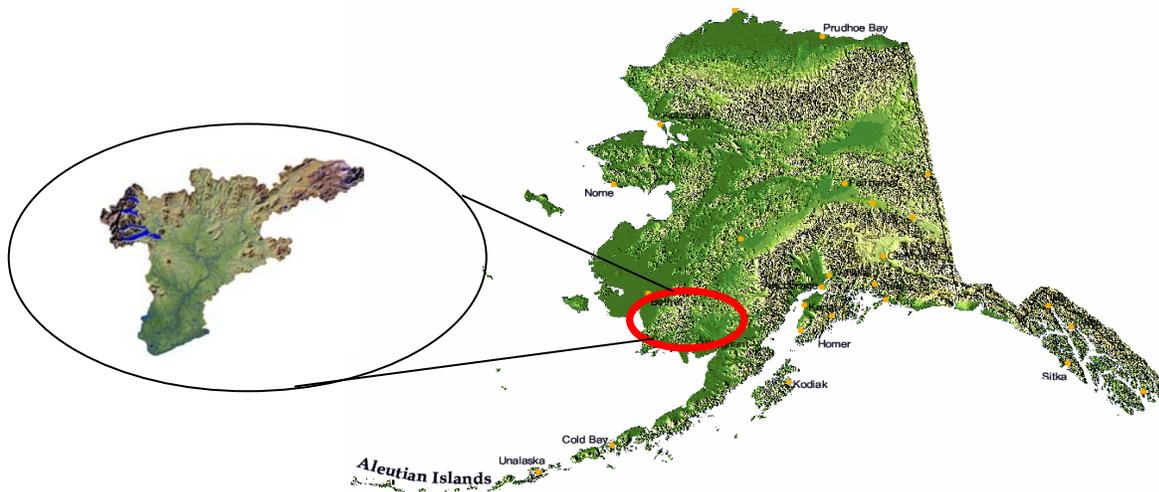


Nushagak - Mulchatna  
Watershed Council



**SOIL SURVEY**  
**Nushagak-Mulchatna Watershed Area**  
**Information for potential cooperators**



This information packet is designed to answer questions about soil survey work in general, and about the proposed Nushagak-Mulchatna Soil Survey in particular.

## What is a Soil Survey?

- A soil survey is a resource inventory where field scientists collect, organize, and interpret information about the natural resources in an area. Although the main focus is on soils, data is also collected on vegetation, landforms, and surface hydrology.
- Field scientists conduct the survey by walking across the landscape and observing differences in soil types, as well as the vegetation, landform, and hydrology associated with each soil type. Field scientists use hand tools to dig hundreds of holes during the course of a soil survey to observe and record the properties of the different soils. Data on various resources is described at each site.



- The holes are usually about 6 feet deep and about 2 feet wide. Whenever they can, soil scientists make use of cutbanks, gravel pits, and other exposures to see the soil from the side.
- When done with the hole, the Field scientist fills it in and replaces the vegetation. It is usually difficult to tell where the holes were dug.
- The results of a soil survey are maps showing the location and arrangement of the different soil types. Tables and databases show the properties of the soils, their potential uses, and their limitations. The vegetation and hydrology associated with each soil type is described.

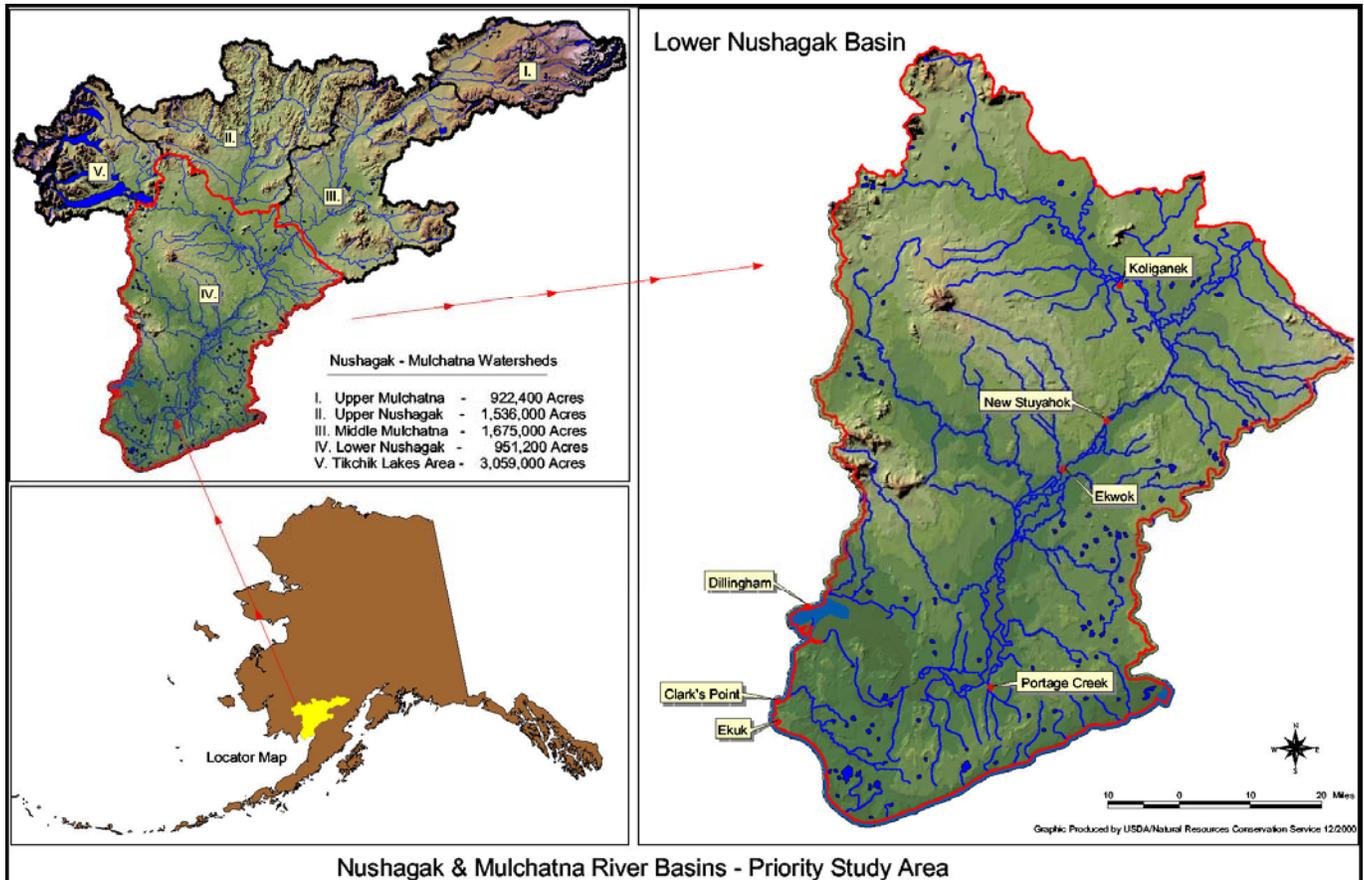
## Soil Survey is a Cooperative Venture

- A Soil Survey is sponsored by cooperative agreement between land owners and managers, community organizations, and the NRCS.
- A Memorandum of Understanding (**MOU**) formalizes this agreement and outlines the specifications, timeframes, and products for the survey.
- The NRCS will provide a basic survey crew and technical expertise. NRCS will release interim products; and once the survey is done, electronic datasets, maps, and publications.
- Cooperators are asked to provide whatever assistance they can, such as access to their lands, publicity about the survey, room and board for the survey crew, resource data, and knowledge about the trails, roads, and rivers in their area. Any financial assistance provided by cooperators will be used to increase the number of survey crews and accelerate the completion of the project.
- Cooperators can be any organization with responsibility for land and resource use and management, or interest in resource data products.



# This Project

The initial proposed boundaries of the project are those of the Nushagak-Mulchatna Watershed Area. The boundaries may be enlarged or reduced depending on the final decision of the project's cooperators.



**Note: Survey area includes both the Nushagak and the Mulchatna Watersheds (upper left)**

Within the project area, data will be collected at various levels of detail. Villages, transportation corridors, and other selected lands will be mapped in detail at a scale of 1:24,000. Remote areas will be mapped at broader scales.

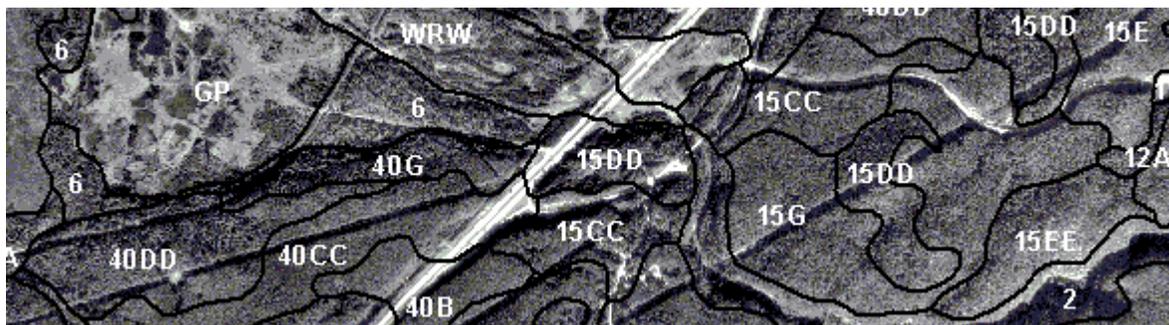
**No lands will be accessed or surveyed unless the land owner grants permission. Cooperators may identify certain lands, such as cultural sites, that will have restricted or no access for survey work.**

## Where are we in the process?

- **A) Cooperators request a soil survey.** The Nushagak-Mulchatna Watershed Council has taken the lead to request this soil survey.
- **B) NRCS determines if the survey can be done in a timely and efficient manner.** NRCS is committed to providing a basic staff and expertise to this soil survey, and a basic staff has been scheduled and assigned to the work.
- **C) The NRCS and the cooperators meet and determine together the lands to be surveyed and the level of detail needed for each area of the survey.** The Nushagak-Mulchatna Watershed Council has provided valuable initial input, along with the BLM and USFWS. Input is needed from other potential cooperators who own or manage land in the area.
- **D) The Memorandum of Understanding (MOU) needs to be developed, spelling out who is to provide what and how.** It is not a financial contract that obligates funds; it is just an agreement. A draft MOU has been circulated to current cooperators. It can be amended as necessary as additional cooperators become involved.
- **E) The survey crew prepares for the survey by collecting information about the area, planning work patterns, and lining up supplies.** NRCS began limited fieldwork in 2006 and will provide a dedicated field crew starting in 2007.

## What sort of information will a soil survey provide?

- **A)** Maps which show the location and arrangement of the soils. On the example below, taken from the Eklutna area of the Anchorage Soil Survey, black lines drawn on an aerial photograph represent boundaries between soil types. The symbols refer to particular types of soil that are identified in the survey.



- **B)** Tables that show the different soil properties. This information can be used by land managers, engineers, planners, and others to make land use decisions and to design and locate projects. All terms used in the various reports are explained in the glossary that appears at the end of the survey manuscript.

ST. PAUL ISLAND: PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

Map symbol and soil name (% of map unit)	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Soil reaction	Shrink-swell potential	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
									K	Kf	T		
	In	Pct	g/cc	um/sec	In/in	pH	Pct	Pct					
1: Aquic Dystricrypts 85%	0-2	0-0	0.05-0.10	42.00-141.0	0.05-0.35	6.1-6.5	---	85-95	.05	.05	1	2	134
	2-4	0-3	1.20-1.40	14.00-42.00	0.16-0.17	5.6-6.5	---	1.0-5.0	.28	.28			
	4-24	0-0	1.25-1.45	42.00-141.0	0.05-0.08	5.6-6.5	---	1.0-3.0	.10	.10			
	24-28	0-0	1.20-1.50	14.00-42.00	0.15-0.18	5.6-6.5	---	0.0-3.0	.15	.15			
	28-55	0-5	1.20-1.50	14.00-42.00	0.08-0.15	5.6-6.5	---	0.0-3.0	.15	.15			

A sample from the table of Physical and Chemical properties included in soil surveys.

- C) Tables that provide ratings on the suitability of limitations of each soil type for various purposes. An example is shown below. This soil would not be an appropriate location for septic tank absorption fields or sewage lagoons.

Sanitary Facilities: Sewage Treatment

Map symbol and soil name	Pct of map unit	Septic tank absorption fields (Alaska criteria)		Sewage lagoons (Alaska criteria)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1: Aquic Dystrocryepts-	85	Very limited Depth to bedrock	1.00	Very limited Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Depth to hard bedrock	0.08

**A sample from the table showing potential use of the soil for septic tank absorption fields and sewage lagoons and the limitations associated with the soil.**

- Some of the data normally presented in a completed soil survey report include:
  - Building Site Development (suitability for constructing buildings)
  - Construction Source Materials (sources of sand, gravel, topsoil)
  - Engineering Properties & Classification
  - Physical and Chemical Properties of the Soil
  - Physical Analysis of Selected Soils
  - Chemical Analysis of Selected Soils
  - Sanitary Facilities (suitability of soil for sewage or landfill waste disposal)
  - Soil and Water Features
  - Vegetation types (Ecological Sites)
  - Off-road Vehicle and Foot Trails
  - Hydric Soils (wetland soils) information
  - Forest Management
- Soil Surveys also provide a lot of useful information about the general nature of an area including geology, vegetation, and climate.

## **What are the Uses of a Soil Survey?**

As a planner or resource manager you already have good knowledge about the lands your community depends on. A Soil survey is a unique opportunity to get basic information about those lands and also their current condition. A soil survey will provide information that will help you locate septic systems or sewage lagoons, roads, buildings, airstrips, playgrounds, or landfills. A soil survey will identify soils that are subject to erosion and compaction so that logging operations with skid trails and landings can be made less costly. A soil survey will identify the depth to water tables, potential gravel and sand sources, as well as topsoil and roadfill sources. A soil survey will help identify the best lands for various wildlife habitats, or for subsistence plants; or for forestry, grazing, and agriculture. These are just some of the uses of a soil survey. A soil survey is a valuable resource and can make your planning easier and potentially better adapted to local conditions. It can provide you with information on the current condition of the land so that you can measure changes that may occur from new land uses.

## **How to get Involved**

- If you are not sure whether the type of information you need will be obtained through a soil survey, contact the NRCS.
- Consider becoming a cooperator in the survey project and helping to develop the Memorandum of Understanding that will guide the project.

### **USDA-NRCS**

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