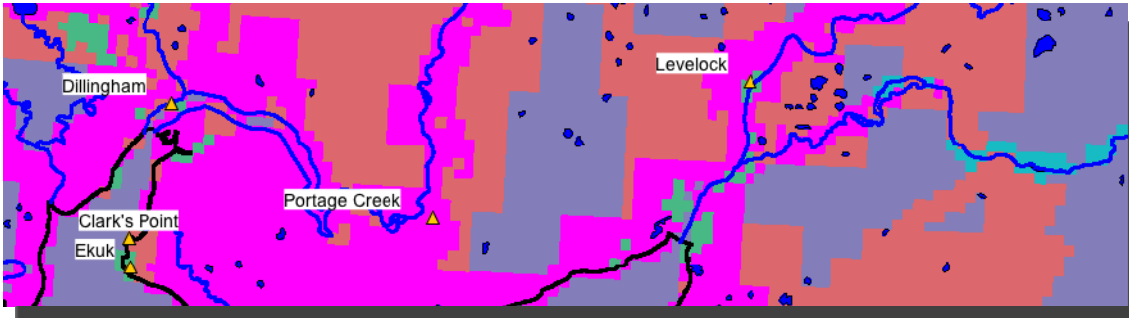


GIS Lesson 9 COMMUNITY GIS: LAND MANAGEMENT TEACHER INFORMATION



Lesson Summary: Who decides what is done with land in Alaska? This lesson provides students with a way to see some of the perspectives different stakeholders use to manage the land. Using GIS tools and information, the students are able to investigate the distribution of resources both regionally and locally by starting from their project community or game management units and moving outward. The maps students make can help them explore current and potential resource use by their project communities.

Objectives: Students will explore a variety of GIS data sets that can be helpful for community planning, and answer questions relevant to their Project Communities. They will also learn to use more GIS tools to analyze data.

Estimated Time: 1 hour

Correlation to Alaska Standards:

Geography A-4 Use graphic tools and technologies to depict and interpret the world's human and physical systems.

Geography F-6 Utilize geographic knowledge and skills to support interdisciplinary learning and build competencies required of citizens.

BACKGROUND FOR THE TEACHER

The relative abundance of land in Alaska relative to the number of residents only makes individual understanding and participation in land management more essential and influential. At the same time, huge tracts of land are already spoken for; often controlled by governmental, non-governmental and private

entities that are geographically and culturally distant from local communities. The better students understand the status of land and the many stakeholders who have roles in making decisions about the land, the better they can participate as citizens.

This lesson is just one way for students to begin to understand what is going on from a mapping perspective. For broader and deeper perspectives that can inform other curricular activities, resources available through the Planning and Land Management Section of the state Division of Community and Regional Affairs provide information for Alaska communities at:

<http://www.commerce.state.ak.us/dca/planning/planning.htm>

Some Important Concepts and Tips for Success:

- Community planners promote the best use of a community's land and resources for local residents, businesses, government organizations and native corporations. They address environmental, economic, and social health issues of a community as it grows and changes.
- If time and the curriculum allow, bringing in a local expert or other active stakeholder to talk with students about the maps they are making is an excellent supplementary activity.

MATERIALS

- Computers - one for each student is best or two students can share. The computers must meet the following specifications to run AEJEE:
 - Macintosh: MacOS 10.3 or above, 100 MB hard drive space, Internet connection; recommend G4 or faster processor and more than 64 MB RAM.
 - We recommend: Mac OS 10.4 or above, 500 MB hard drive space (400 MB for data).
- AEJEE software and MapTEACH GIS data can be downloaded from the MapTEACH website at <http://www.mapteach.org>, or provided by MapTEACH on a DVD by contacting:
De Anne Stevens - MapTEACH
Alaska Division of Geological & Geophysical Surveys
3354 College Road
Fairbanks, AK 99709-3707
Tel: 907-451-5014
E-mail: deanne.stevens@alaska.gov
- Copies of student instructions for the lesson.

INSTRUCTIONAL PROCEDURES

Getting Ready

This is an interesting lesson to try out ahead of time, since you as a teacher can learn some new things about how land is managed for and around the community where you teach, or any other place of interest to you in Alaska.

Gear-up

- Everyone spends time out on the land for many different reasons, so this is another lesson where students can describe personal observations and experiences that bring meaning to the lesson. The lesson can be introduced by asking students questions about how local land status has affected them, their families and friends - all stakeholders with valuable insights to share.
- The "buffer" concept may be worth introducing, to help ready the student for using a GIS buffer in this lesson. A buffer is an area of specified distance (radius) around a map feature or features.
- Check in on students' progress throughout the lesson to keep them on track to finish on time. Restrict or prevent student access to distracting activities like chat, email or social networking sites.
- Point out to students that this is another activity where they bring their GIS skills 'home'. Encourage them to think ahead to how maps can help their project communities make the best use of land and of stakeholder participation in community decisions.

TEACHER RESOURCES

The Alaska Economic Development Resource Guide is designed to bring together in one place an inventory of programs and services which can provide economic development assistance to Alaska communities and businesses.

http://www.dced.state.ak.us/dca/edrg/EDRG_Build_Browse_List.cfm

Get the word out about your students' Alaskan community projects by contacting staff at MapTEACH or by submitting projects to the ESRI Community Atlas program. <http://edcommunity.esri.com/commatlas/>

RESOURCES FOR STUDENTS OR TEACHERS

The Planning and Land Management Section for the state Division of Community and Regional Affairs provides assistance to Alaska communities on regional and local land issues. <http://www.commerce.state.ak.us/dca/planning/planning.htm>

High water lines from historic floods are one of the features included in Alaskan Community Profile Maps. These maps can be viewed over the internet after the installation of a Mr. SID format viewer. These maps cannot be viewed using AEJEE. <http://www.commerce.state.ak.us/dca/profiles/profile-maps.htm>

The Alaska Dept. of Commerce provides information and overviews for communities via the Community Database Online at http://www.commerce.state.ak.us/dca/commdb/CF_COMDB.htm

An extensive collection of community photos throughout Alaska recognize the uniqueness of life in Alaska, and offer a glimpse of communities, their environment, events and everyday life. Find photos of your community at http://www.commerce.state.ak.us/dca/photos/comm_list.cfm

Community plan documents can be found in the Plans Library and can provide students with background information, history and current plans for their project communities. http://www.commerce.state.ak.us/dca/commdb/CF_Plans.cfm

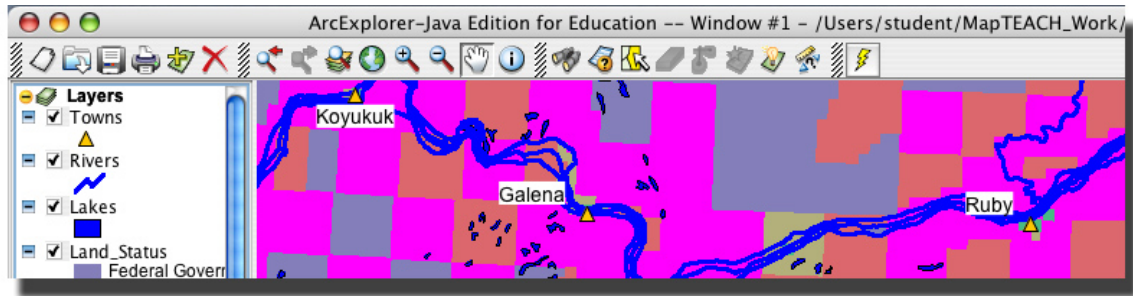
Name: _____

Project Community: _____

GIS Lesson 9

COMMUNITY GIS: LAND MANAGEMENT

STUDENT EXERCISE



Objectives: Students will explore a variety of GIS data sets that can be helpful for community planning, and answer questions relevant to their Project Communities. They will also learn to use more GIS tools to analyze data.

Estimated Time: 45 minutes

By the end of this lesson, you will be able to work with data layers of land ownership and management and use some new GIS tools to answer questions that are important for community planning projects.

Young people like you are among the many different kinds of *stakeholders* who want to influence how land is managed. Stakeholders are people who will be impacted by decisions made about the land, and may include individuals, communities, and governments. These stakeholders may be local residents, landowners, leaseholders, managers, or other people who have other relationships with community land. Planners need to be aware of who the stakeholders are in their area so they can work with everyone and make sure that important concerns and issues are addressed.

First, **start up ArcExplorer-Java Edition for Education (AEJEE)**

Make your window bigger by clicking on the green button in the top left of the window.

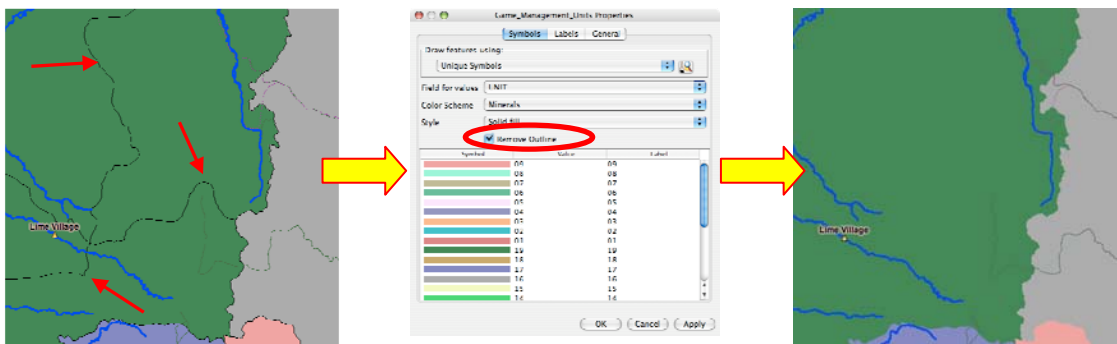
Open your project base map:

- Click on “File” in the Menu Bar
- Select “Open”
- Navigate to the **student/MapTEACH_Work** folder
- Click on the file name **firstname_lastname_projectbase.axl** and click “Open”
- Wait a few minutes while your map re-loads

The data layers we are going to be working with will be easier and faster to work with if we **turn off the shaded relief raster image**, so do so now.

Explore 1: Game Management Units

1. Add **Game_Management_Units** from the **Management** folder. This layer shows the Game Management Units from the Alaska hunting and fishing regulations. It tells a community what the seasons and bag limits are on fish and game in their area.
2. **Symbolize the Game_Management_Units** the way you like them, using “UNIT” as your **Field for values**.
 - Notice that there are some “extra” lines within the Game Management Units. This is because each unit in this data set is also broken into subunits.
 - You can make the map draw more neatly if you **check the “Remove Outline”** box in the Properties window.



Use the “Identify” tool to answer these questions:

What Game Management Unit is your Project Community in (UNIT)?

What Game Management Subunit is your Project Community in (SUB)?

When you have more time, you might be interested in looking up your Project Community's hunting and fishing regulations online at the Alaska Department of Fish and Game website: <http://www.adfg.state.ak.us/>

Save your map project:

- **Click** on "**File**" in the Menu Bar
- Select "**Save As**"
- **Navigate** to the **student/MapTEACH_Work** folder
- **Name the project** using your full name followed by "management":
firstname_lastname_management

Explore 2: Native Corporations

1. **Turn off *Game_Management_Units*.**
2. **Add *Native_Corporations*** from the ***Management*** folder. This layer shows the Native Corporation boundaries.
3. **Symbolize the *Native_Corporations*** the way you like them, using "**NAT_CORP**" as your **Field for values**.

What Native Corporation is your Project Community in (NAT_CORP)?
(Use the "**Identify**" tool)

Explore 3: Wildlife Refuges

1. **Turn off *Native_Corporations*.**
2. **Add *Wildlife_Refuges*** from the ***Management*** folder. This layer shows the boundaries of Alaska's *special use areas* including Parks, Preserves, Monuments, Wildlife Refuges, and Conservation Areas.
3. **Symbolize the *Wildlife_Refuges*** the way you like them, using "**NAME**" as your **Field for values**. If you want, you can also label the areas in this layer using "**NAME.**"

What special use area is your Project Community closest to (NAME)?
(Use the **"Identify"** tool, or the **"Select Features"** + **"Attributes"** tools)

How far away is the nearest special use area? _____ miles
(Use the **"Measure"** tool)

Explore 4: Using the Buffer Tool to Query Land Status

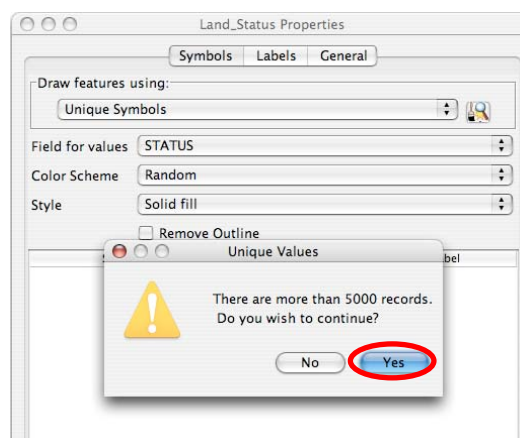
Up until now, we have used the **Info** tool to find out information about features in our AEJEE projects. Now we're going to do something a little more advanced to ask questions about, or *query*, our data.

We will do a special kind of query using the AEJEE **Buffer** tool to answer the question *"Who are the owner-stakeholders for the area within 25 miles of my Project Community?"*

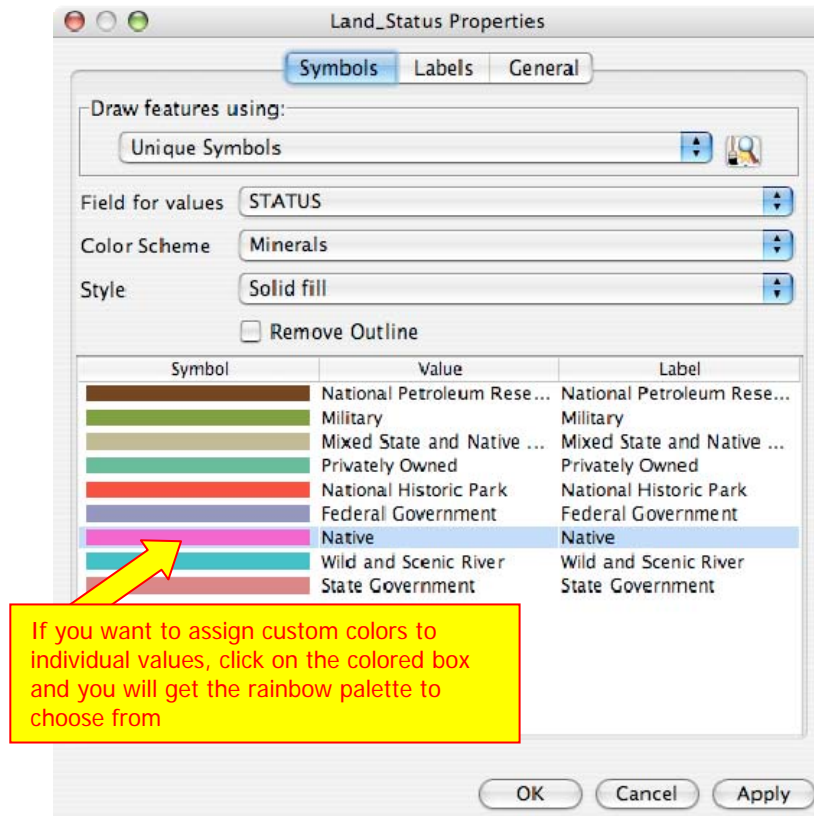
First, let's set up our map data:

1. Turn off **Wildlife_Refuges**.
2. Add **Land_Status** from the **Management** folder. This layer shows general land ownership for Alaska. This is a really large data set, so it will be somewhat slow to draw.
3. **Symbolize Land_Status** the way you like it, using **"STATUS"** as your **Field for values**.

A warning message will appear on the screen because this is a very big data set. **Click "Yes."**

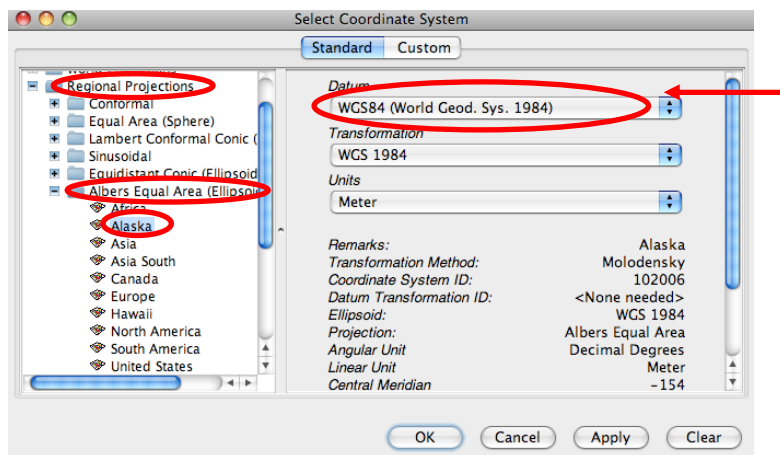


Change the colors until you like the way they look. Here is an example – **you don't have to do it exactly like this:**

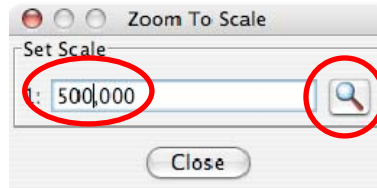


Let's get the map area set up a little better before we begin our query:

1. First, make sure you have the proper projection for your map. Use **Tools/Projection** to open the **Select Coordinate Systems** window to check that your projection is **Regional Projections/Albers Equal Area (Ellipsoid)/Alaska**, and "Datum" is "**WGS84 (World Geod. Sys. 1984).**"



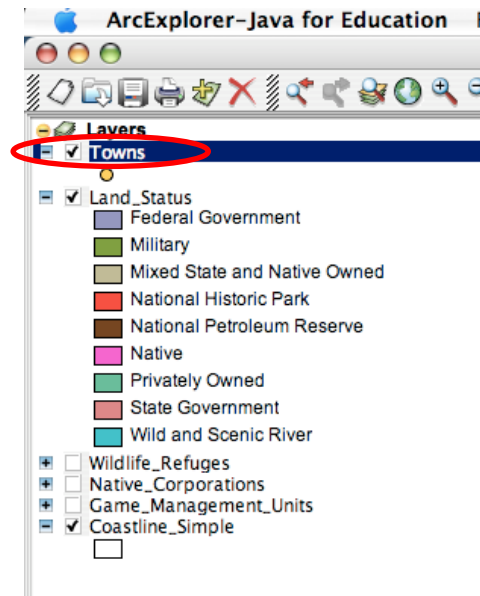
2. Click "OK" and wait patiently until the map redraws.
3. Zoom in to your Project Community at a scale of **1:500,000** using the **"Zoom To Scale"** tool in the **View** menu. Remember to click the magnifying glass button to apply the scale setting.



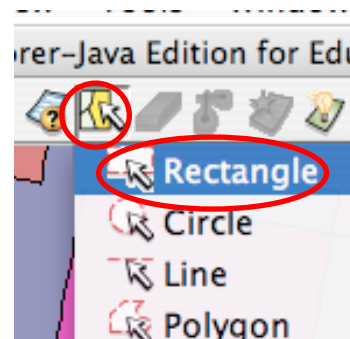
4. **Pan** so your **Project Community** is in the **center** of your screen.

It's time to begin the query process:

1. **Click on *Towns*** in the **Table of Contents** to highlight it blue (this means it has been selected as the layer we are going to be querying).



2. **Click** on the **"Select Features"** button on the menu bar and **select "Rectangle"** from the menu.



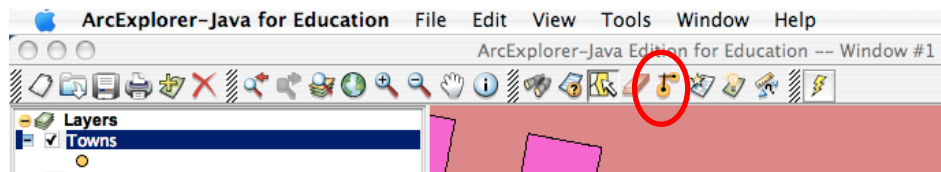
3. Click and drag a small box on your map just around the symbol for your Project Community. The symbol representing your Project Community should become highlighted on your map.

Have your teacher check your selection.

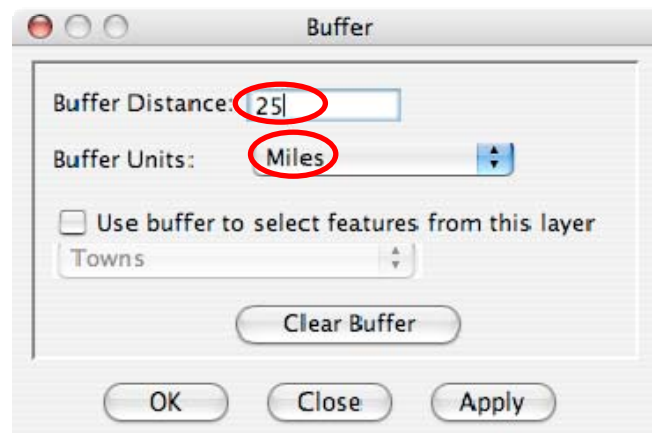
Teacher sign-off: _____
(Confirm that only the student's Project Community is highlighted)

Use the Buffer tool:

1. Now, click on the "Buffer" button on the menu bar.

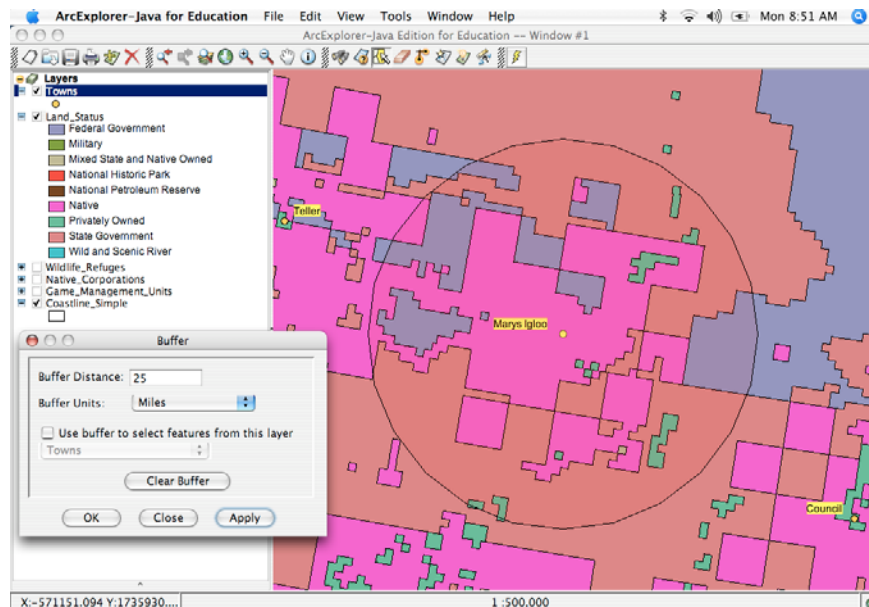


2. In the Buffer window, type in "25" for Buffer Distance and keep "Miles" for Buffer Units.



3. Click "Apply."

- Your screen should look something like this (but with **your** project community in the center):



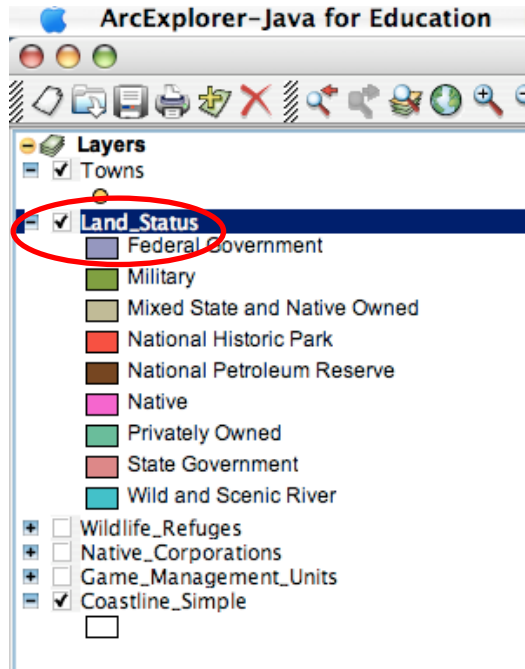
You could use this 25-mile radius circle to *visually* determine who the stakeholders are within 25 miles of your Project Community, but GIS has a better way:

- In the Buffer window, **click the box** for “Use buffer to select features from this layer” and **select “Land_Status”** from the drop-down menu.

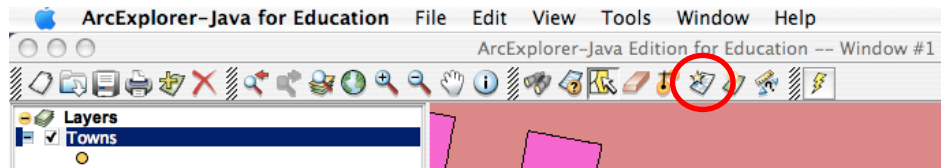


- Click “OK.”** All the **Land_Status** blocks within 25 miles of your Target Community should now be highlighted. You might need to wait a minute or two for it to find all the areas and highlight them.

7. Click on **Land_Status** in the **Table of Contents** to highlight it.



8. Now, click on the **“Attributes”** button on the menu bar.



The Attributes window will appear, listing all the *Land_Status* information for the blocks within 25 miles of your Project Community.



Have your teacher check your project.

Teacher sign-off: _____
(Confirm that the student has an appropriate Attributes window)

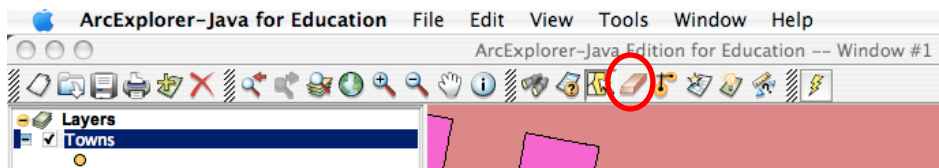
Scroll down the list of features in the Attributes window to see the land status of the area you selected with the buffer.

Based on the results in your Attributes window, list the stakeholders for the area within 25 miles of your Project Community (you probably won't need all the spaces below):

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Close the Attributes window by clicking the red button on the top left of the window.

Now, **click** on the **“Clear All Selections”** button on the menu bar. This will clear the highlights from your screen. This ‘eraser’ resets the selections to nothing selected.



Explore 5: Finishing the Land Status Map

The shaded relief base layer may not display well with all this polygon data. You can try it out, but will need to use patterns for your land status for the shaded relief to show through your data.

An alternative way to have a map with enough geographic features to make it informative is to **add *Lakes and Glaciers*** from the ***Landscape*** folder.

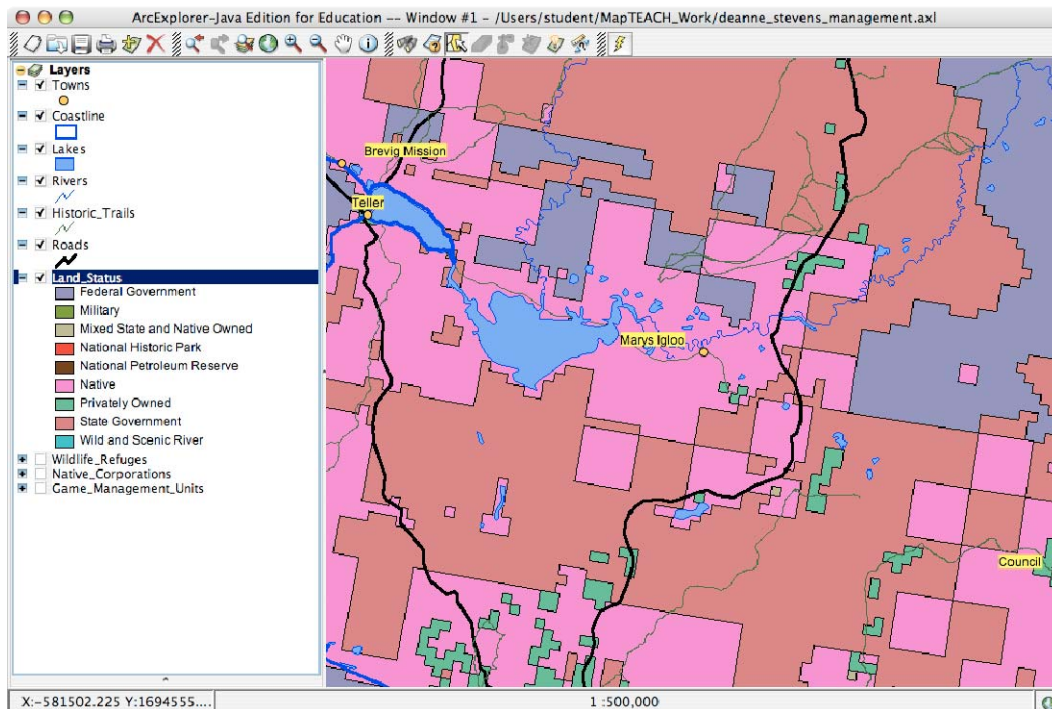
If your area does not have any lakes or glaciers, you can turn those layers off or remove them. You can also turn off any other layers that do not appear in your map view, since you won't see them in your map anyway.

Only if you are on the coast:

- **Add *Coastline*** from the ***Base_Data*** folder.
- **Move *Coastline*** to **just below *Towns*** in the **Table of Contents**.
- **Ctrl-Click** on the ***Coastline*** layer to open the Properties window, use the **Style** box and its pull-down menu to choose **"Transparent Fill"** and **click** on the **"OK"** button.

Symbolize the remaining visible layers to make them look the way you like them.

Your map might look something like this:



You now have a project that contains all the management layers.

If you decide you want to make a land management, land status, or stakeholders map of your Project Community for your final project, this is the GIS project file that you can use to start with.

Save your personalized "Community GIS: Land Management" map project.

Show your map to a teacher.

Teacher sign-off: _____

(REMEMBER TO SAVE YOUR PROJECT!!)