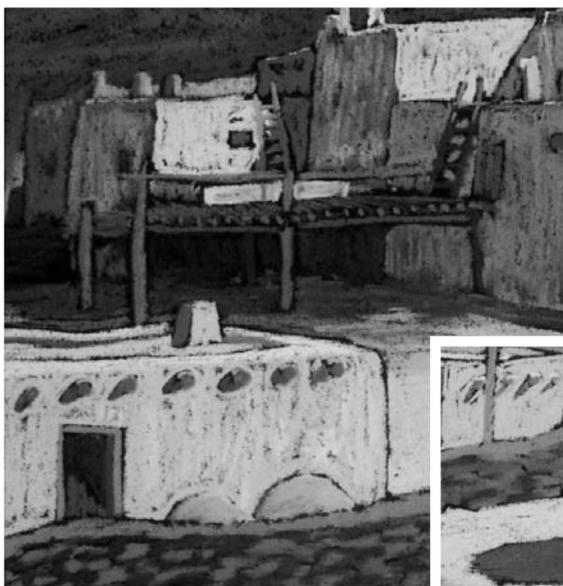


## Lesson Plan Three: Be An Ancestral Pueblo Architect



Students gain greater understanding of the archeological sites in Frijoles Canyon by drawing and/or building models of structures similar to those used by the Ancestral Pueblo people in the 1300s-1500s.



“These buildings in Frijoles Canyon were not just buildings, they were homes. Our ancestors raised families here, they shared joys and experienced losses and struggles. Our ancestors are not of the past, they are a part of us each day.”  
~*Affiliated Pueblo Consultation Committee*

**Location:** classroom

**Suggested group size:** whole class, divided into small groups

**Subject(s):** history, art, language arts, math

**Concepts covered:** architectural components, scale, designing living spaces, mapmaking

**Written by:** Chris Judson, Bandelier National Monument

**Last updated:** 2/2007

**Student outcomes:** At the end of this activity, students will have greater insight into the methods used by Ancestral Pueblo people for designing and building their homes and other structures, and into the purposes for the different kinds of buildings.



## EDUCATIONAL STANDARDS

### New Mexico Standards

#### **Art**

Content Standard 6: Show increased awareness of diverse peoples and cultures through visual and performing arts.

#### **Visual arts: Grade K-4**

2. Create art that reflects New Mexico cultural and historical influences.

Content Standard 8: Contribute to communities by sharing expertise in dance, music, theatre/drama, and visual arts by participating in the activities of cultural institutions.

#### **Visual arts: Grade K-4**

C. Contribute to community culture by exhibiting art work.

1. Participate in school or community sponsored opportunities for art display.

#### **Language Arts**

K-4 Benchmark III-B: Identify and use the types of literature according to their purpose and function

Grade 4

4. Compose fiction, non-fiction, poetry, and drama using self-selected and/or assigned topics and forms.

K-4 Benchmark III-E: Describe how economic, political, cultural, and social processes interact to shape patterns of human populations, and their interdependence, cooperation, and conflict.

Grade 4

1. Describe how cultures change.

3. Describe types and patterns of settlements

4. Identify the causes of human migration.

K-4 Benchmark III-E: Describe how economic, political, cultural, and social processes interact to shape patterns of human populations, and their interdependence, cooperation, and conflict.

3. Describe types and patterns of settlements



Standard 2 Grades K-4: The history of students' own local community and how communities in North America varied long ago

2A: The student understands the history of his or her local community

Grade K-4: Examine local architecture and landscape to compare changes in function and appearance over time. (draw upon visual data)

Grade K-4: Draw upon data in paintings and artifacts to hypothesize about the culture of the early Hawaiians or native Americans who are known to have lived in the state or region, e.g., the Anasazi of the Southwest, the Makah of the Northwest coast, the Eskimos/Inupiat of Alaska, the Creeks of the Southeast, the Mississippians (Cahokia) or the Mound Builders (Formulate historical questions)

Grade 3-4: Compare and contrast how Native American or Hawaiian life today differs from the life of these same groups over 100 years ago (Compare and contrast differing sets of ideas)

## **NATIONAL STANDARDS**

### **I. Culture**

#### **Early Grades**

a. explore and describe similarities and differences in the ways groups, societies, and cultures address similar human needs and concerns

#### **Middle Grades**

a. compare similarities and differences in the ways groups, societies, and cultures meet human needs and concerns

c. explain and give examples of how language, literature, the arts, architecture, other artifacts, traditions, beliefs, values, and behaviors contribute to the development and transmission of culture

### **III. People, Places, and Environments**

#### **Middle Grades**

g. describe how people create places that reflect cultural values and ideals as they build neighborhoods, parks, shopping





### **English Language Arts**

7. Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and nonprint texts, artifacts, and people) to communicate their discoveries in ways that suit their purpose and audience.

### **BACKGROUND**

When thinking of the Ancestral Pueblo people, what often comes to mind are the beautiful archeological sites, such as Bandelier and Mesa Verde, which used to be the peoples' homes. It is hard, but important, to use the mind's eye to picture them as functioning buildings. Picture them with walls, roofs, contents, and inhabitants, rather than as the piles of rocks that may be what is seen today. Structures in different locations show how creative and adaptable the people were in making use of the different materials available, and dealing with weather and other requirements, and also how styles changed over time and distance. When trying to relate to groups of people from other times or places, sometimes the strongest connections can be made by seeing how they filled needs that we still have today - in this case, secure, warm, comfortable homes.

### **MATERIALS**

#### **Activity 1**

Brochure packets from parks with Ancestral Pueblo structures (borrow from Bandelier)

Drawings of buildings and floor plans

#### **Activity 2A, B, C**

Bandelier brochure

Some combination of stones, clay, mud, sugar cubes, frosting, twigs

Dowels for building model structures

Paper and crayons/markers/pencils for drawing

Rulers for planning scale

Rawhide dog chew (unused)

Newspapers or butcher paper

Space for models to dry

#### **Extension Activity 2**

Chalk or masking tape, String

### **VOCABULARY**

**Archeological site:** a place showing evidence that people have used it; often the remains of buildings





**Archeologist:** a scientist who studies people, usually from the past, by looking at things and places that they used

**Architecture:** making buildings in a particular style

**Artist conception:** a drawing made to show a scene that cannot be shown by a photo or painting made at the time. The artist works with archeologists, etc, to make the drawing as accurate as possible using available evidence

**Lintel:** the beam placed at the top of a door or window opening to support the wall above the opening

**Mortar:** clay, adobe, etc used to hold bricks or stones together when building

**Reconstruction:** to rebuild a building, usually to look as it had originally

**Tuff:** compacted volcanic ash stone, which is soft and crumbly

**Viga:** Spanish word for a roof beam

## PRE AND POST-EVALUATION

### Pre-Evaluation:

Ask the students individually to make a drawing of the kinds of buildings the Ancestral Pueblo people in Bandelier would have built. Ask them to add labels of what materials were included and what the building(s) were used for. Collect the drawings and save for later.

### Post-Evaluation:

When the structures are dry, have each group present their project to the class and explain why they made it the way they did and how the inhabitants would use it. Afterward, if possible, display them in a public space in the school (or elsewhere). Have the class design a title and caption for the overall project, and have the different groups write captions for their own structures.

The captions and display could also be done if the students made drawings rather than models.

Hand out the pre-evaluation drawings and ask the students to decide if there is anything about their drawing that they would change; you may or may not want to ask them to make the changes and share them with the class.

## PROCEDURES: ACTIVITIES TO CHOOSE FROM

1. Using materials from Bandelier, brochures from other Ancestral Pueblo sites, xeroxes of drawings from books, or other resources, have the students collect images of buildings in archeological sites and artists' conceptions of what structures in those days probably looked like. See sources under "Resources" and the packet of park brochures available from Bandelier. Post them on the



board, or use an opaque projector to project the images for the class. Discuss how the various ones are alike or different. Are all the rooms used for the same things? Are all the buildings made out of the same materials? Do you see anything (flat roofs? squarish rooms? small rooms? houses joined together? use of ladders? low doorways? no chimneys until the Spanish came?) that are the same among all or most? Are there things that are different?

2A. Using the Bandelier brochure and the article, “Building Homes in Frijoles Canyon” in the newspaper in this guide, focus on the Ancestral Pueblo structures that were made in Frijoles Canyon in Bandelier in the 1400s.

Discuss:

- what materials they used for the walls, and roofs. (found in the article) (Walls: stone bricks, mud mortar, mud plaster. Roofs: pine beams, branches for latillas, mud over all. Addition: floors were made of mud plaster, polished to be smooth)
- where most room entrances were located, and what the people used to get in and out from roof entrances (found in the article and drawings) (Most room entrances were in the roof, and people came and went on ladders)
- how rooms along the cliffs were the same as those in Tyuonyi in the canyon bottom, and how they were different (found in the article—the way the homes along the cliffs are shown in the Bandelier color brochure isn’t quite right) (They had the same walls and roofs, but rooms along the cliffs had the cliff as a back wall, and often had cavates for back rooms)
- how kivas were the same as other rooms, and how they were different (found in the article) (The roof was made the same as other rooms, and they used a fire for heat and light. They were used for special activities rather than living, and were often round and under the ground.)
- where you think these functions would be done: sleeping, storing food, telling stories, teaching boys, teaching girls, weaving, grinding corn, eating meals, cooking (found in the article) (Sleeping, storing food, grinding corn, eating meals, teaching girls, and cooking would be in the house or sometimes outdoors. Teaching boys, weaving, and telling stories would often be in a kiva )
- what other activities can you think of that would have happened in the buildings? (think of what we do in our homes today)(Examples could include talking to people in your family, storing your possessions, sewing clothes, babysitting, doing chores like mending, etc)

2B. Divide the class into groups. Have individual students in one group draw each of the types of buildings found in Bandelier (a village with a plaza,





homes along the cliff, and homes along the cliff that are in a group like Long House) as they would have looked when in use. Omit the kivas, however, since Pueblo representatives have asked us to request that students not build or draw kivas. Have those in another group draw the floor plan for each of the three (see resource sheet at the end of this lesson, and the drawing on the cover of Unit 2). Have those in another group draw cutaways showing the room interiors. Or have each student do all three (a drawing of the outside, a floor plan, and a cutaway of one type) or the one(s) they prefer. Consider having the class determine ways to make all the drawings to the same scale. (see first section of list in 2C below) For a sample of a cutaway of a pueblo (this example is in the early 1900s), look in the Bandelier museum collection photos at [www.nps.gov/band](http://www.nps.gov/band), click on the collections icon, find drawing 672 by Pablita Velarde; consider printing it out. In the newspaper in this guide, notice the drawing of the woman in a cavate.

2C. Divide the class into groups, and have each group build a miniature model of one of the kinds of structures used by the Ancestral Pueblo people in Frijoles Canyon. If it is feasible, have them make all the models to the same scale. Consider having some of the groups do each type as a cutaway, showing walls, floor, and roof, but with one or two walls left off so the interior is visible, while others make the entire building, showing only the exterior. Handy hints:

- When planning building models, consider a reasonable size for an actual room to be about six feet high by six feet wide by eight feet long (1.8 m x 1.8 m x 2.4m) ; some were bigger or smaller. To make the different models at the same scale, consider making them around 1" per foot (2.5 cm per 30 cm).
- Buildings at Bandelier were made of stones rather than adobe bricks. Home improvement centers or garden supply centers often carry bags of small volcanic stones in various colors at a reasonable cost if there isn't a local source of pebbles.
- If using stones, try local clay, commercial clay, or homemade clay for mortar. You may need popsicle sticks to spread it between layers of stones.  
Two recipes for self-hardening clay:
  - 1) 1 cup flour, 1 cup water, 1/2 cup salt, 2 tsp cream of tartar, 1 tb salad oil. Add water gradually to dry ingredients, mix well. Cook over low heat 3 minutes; store in airtight container in the fridge until ready to use
  - 2) 4 cups flour, 1 1/2 cups salt, 1 1/2 cups water. Add water gradually to dry ingredients, mix well. Store in sealed plastic bag in the fridge until ready to use; allow to return to air temperature before using. When



object is complete, allow to dry at air temperature at least two days (not in direct sunlight)

- If you decide to use sugar cubes for bricks, you may find that using glue to fasten them together can be tricky because the glue melts the sugar. Frosting might be an alternative.
- Twigs or thin dowels can be used for the major roof beams, and smaller ones for the cross beams. If you decide to have doors or windows in side walls of buildings, you will need to use sticks, dowels, or other small pieces of wood as lintels over the openings to support the stones above.
- If you want to make tiny ladders that are tied with rawhide the way some real ones were, get a rawhide dog chew, soak it in water until it is soft, untie the knot, and cut long thin strips from it. Rawhide is very soft and pliable when wet, then shrinks and becomes rigid when dry, so it works well for wrapping things tightly. Usually it becomes rigid enough that it will stay in place without having to tie it in knots or glue the ends in place. Just wrap a thin strip a couple of times around the place where the rungs cross the uprights, and let it dry in place.
- Build each structure on a scrap of plywood or other base, so it can be moved without the damage that would be caused if it stuck to the table.
- You may want to check with the janitor before allowing clay or sand to go into sink drains while washing hands
- If you are planning a field trip to Bandelier or another Ancestral Pueblo site, consider doing this as a post-visit activity.

## EXTENSION IDEAS

1. If you are going on a field trip to Bandelier, or have gone on one, make a map of the homes in Frijoles Canyon. If the students made models in 2C above, put a long piece of newsprint or chart paper, or a couple of sheets of flipchart paper, on a long table or on the floor. If they made drawings, the long paper could be on a wall. Use the map in this lesson plan or in a Main Loop Trail guide to sketch a very simple layout of the canyon between the Visitor Center and the end of Long House. Be sure to show the canyon walls and creek. Determine the size of your map based on the size of the models or drawings the students have made in 2B and/or 2C above.

Review with the students the kinds of structures they made - the village with a plaza, talus houses, and talus houses in a group. If they have been to Bandelier already, explain what the map represents and ask them where they saw each kind of structure when they were walking in the canyon. If they have not gone



yet, point out the locations they will find these buildings. Place the drawings or models in their place on the map, representing the homes of the community of people who lived in Frijoles Canyon. If they have not already discussed this in another lesson, ask the students which type and location of home they would choose to live in, and why.

2. Have each student draw a picture of what they think their house would look like if no one lived in it for 500 years. If you were an archeologist at that time, how could you figure out what these buildings looked like when they were in use? How is that different from what archeologists have available for learning about the Ancestral Pueblo people? (consider newspapers, photos, books, etc. that show homes today) Would there be anything in your house that you think would confuse or fool those archeologists?(things like pizza cutters, colanders, electronic games, hula hoops, pagers, gummy bears, etc) Is there anything about the Ancestral Pueblo people's homes that we might not understand? (why the doors are so small, why they made the houses so close together, why they made pictographs and petroglyphs, why some people lived along the cliffs and some lived in the canyon bottom, etc) Try the same approach with modern buildings other than homes, such as stores, schools, antique shops, or restaurants. (Would archeologists get confused if they found a building like an antique shop with things from all different dates and all over the world? Would they know that people had to pay for things from the supermarket? Would they recognize money or credit cards? Would they know what a movie theater was for? Would they understand a basketball court? etc)
3. Using chalk or masking tape, measure out a square on the classroom floor or the playground the size of a typical room in Ancestral Pueblo times. At Bandelier, the size would be around 6' x 7' (1.8m x 2.2 m). Have students pretend to do a typical activity, such as a family sharing a meal or an elder telling stories to a group of children, in the space. Remember that a typical adult of the time was just a little over 5' (1.5m) tall, and slender. Consider having other members of the class stand on opposite sides of the "room", stretching pieces of string between them to indicate the height of the ceiling, which in Bandelier was often only about 5' 8" (1.7 m) high. Can the students think of any reasons why they would choose to make their rooms that size? Archeologists don't know either, but possibilities might include no need for space for furniture, ease of heating in winter, a small fire being the only source of light, and other factors you may come up with.
4. Many people tend to think of the Native Americans at the time they met Europeans as being less advanced than the Europeans. However, many anthropologists feel that the quality of life of the inhabitants of the Americas at that time was at least as good, and probably better, than that of commoners in Europe. Have small groups of students research the types of housing being



used in various communities in Europe (such as Rome, London, or Paris - remember, we' re talking about common people, not rich ones) at the time the Ancestral Pueblo people were living in Frijoles Canyon. After they present their findings to the class, make a list of what the students perceive to be pluses and minuses of life on each side of the Atlantic, and decide which they would prefer. Besides housing, you may want to have them consider clothing, nutrition, education, and lifestyle, especially in regard to who made decisions and how much say people had over their own lives.

## RESOURCES

Available for free loan from Bandelier: Packet of brochures from various parks showing Ancestral Pueblo structures and artists' conceptions

### Books:

Gustafson, Sarah, *Exploring Bandelier National Monument*, 1997

(ISBN 1-87785-653-4) \*\*\* has drawings of structures and interiors

Swentzell, Rina, *Children of Clay, A Family of Pueblo Potters*, Lerner Publications, Minneapolis MN, 1992. (ISBN 0-8225-9627-X)\*\*\*

Joan K. O'Donnell, ed, *Here, Now, and Always—Voices of the First Peoples of the Southwest*, Museum of New Mexico Press, Santa Fe, NM, 2001 (ISBN 0-89013-387-5)\*\*\*

Keegan, Marcia, *Pueblo Boy Growing Up in Two Worlds*, Cobblehill Books, Dutton, NY 1991 (ISBN 0-525-65060-1)\*\*\*\*

Keegan, Marcia, *Pueblo Girls Growing Up in Two Worlds*, Clear Light Publishers, Santa Fe, NM, 1999 (ISBN 1-57416-020-6)\*\*\*

Noble, David Grant, *101 Questions About Ancient Indians of the Southwest*, Western National Parks Association, Tucson, AZ 1998 (ISBN 1-877856-87-8) \*\*\*

\*\*\* Materials available on free loan from Bandelier National Monument, 505-672-3861 x 517

\*\*\*\* Out of print at this writing; limited number available for loan from Bandelier, or may be available through interlibrary loan

### Web Resources:

Bandelier website: [www.nps.gov/band](http://www.nps.gov/band)

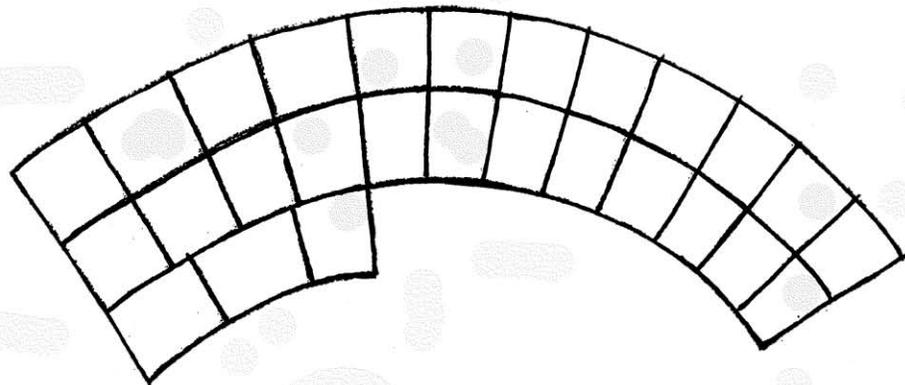
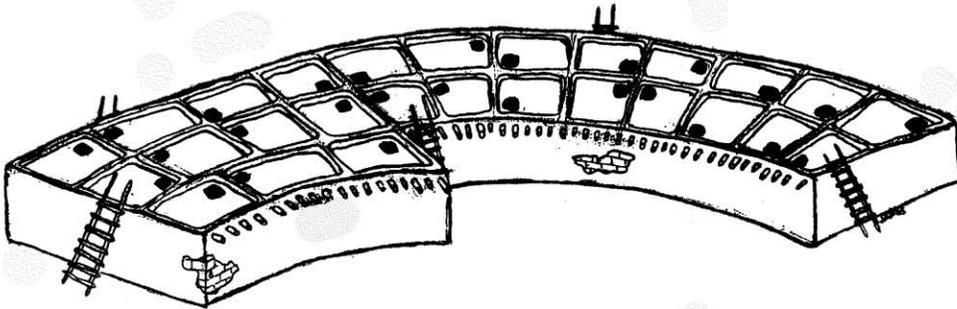
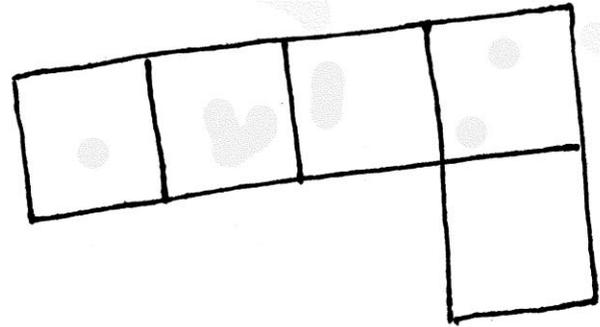
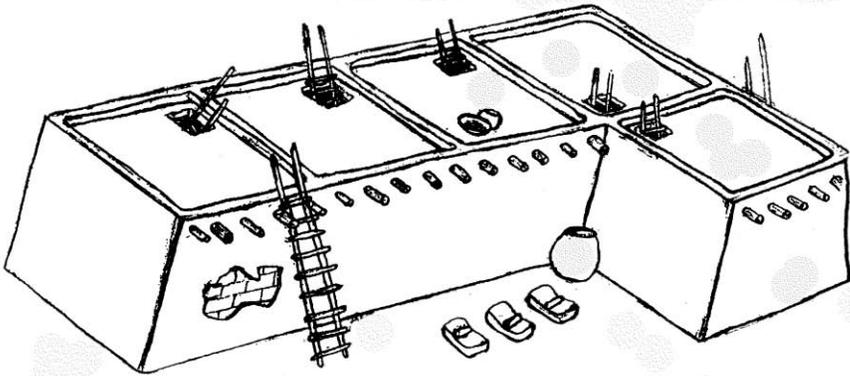
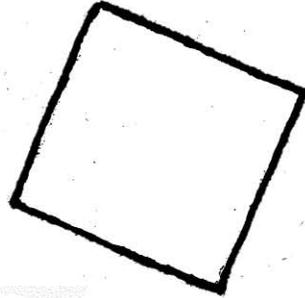
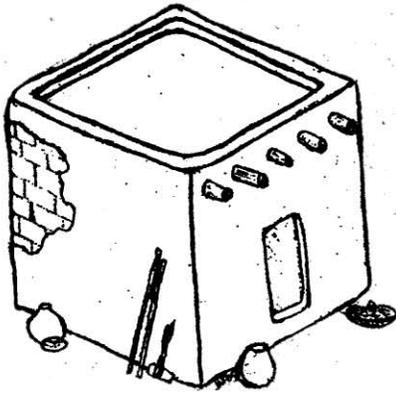
Bandelier museum collections: at the Bandelier website, click on the collections icon

There are also general scenery photos of Bandelier at the park website: [www.nps.gov/band](http://www.nps.gov/band)



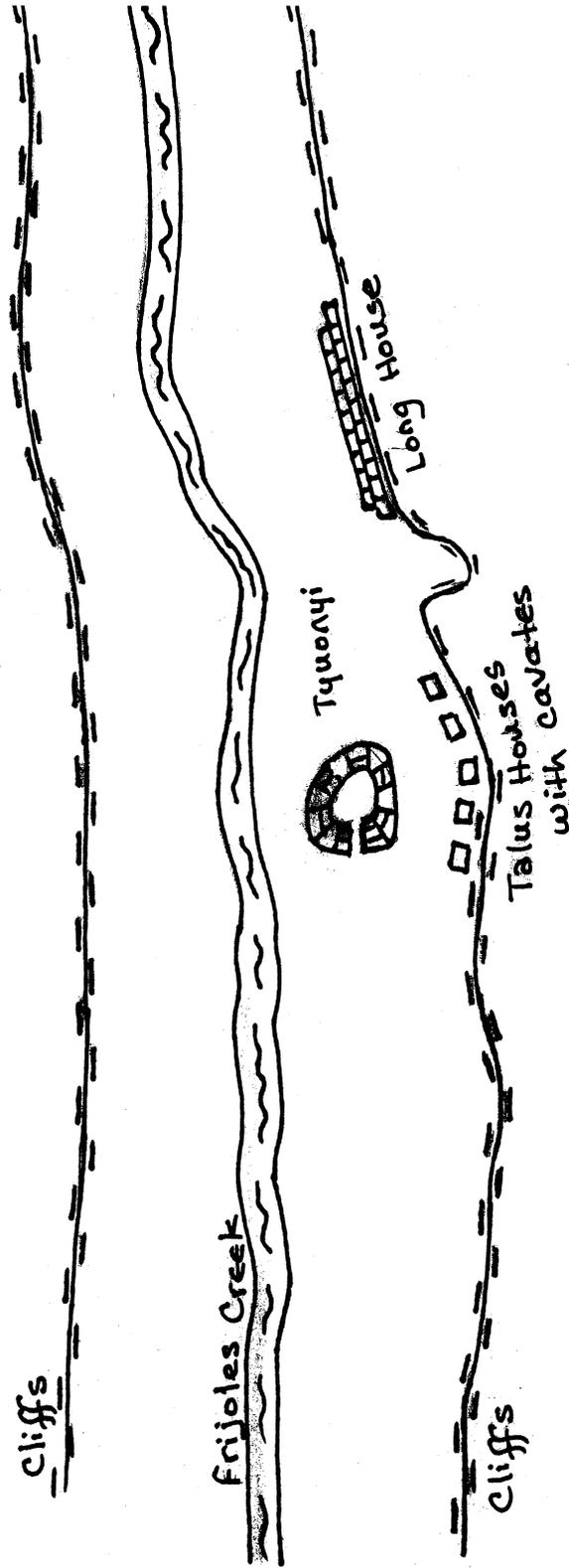


# Ancestral Pueblo Structures and Floor Plans





# ARCHITECT ACTIVITIES—Student Resource Sheet



Map of Frijoles Canyon