

Harvesting Trees Lesson Plan

Keywords: forester, tree, timber, harvest, logging, logger

Lesson Plan Grade Level: 6th- 8th

Total Time Required For Lesson: 50 minutes as one continuous time block

Setting: Classroom

Subjects Covered: Science, Forestry

Topics: Science, Tree Harvesting, Forest Management

Goals For The Lesson:

Students will gain an understanding of the benefits and process of harvesting trees.

Students will analyze computerized generated depictions of three different types of tree harvests.

Materials Needed:

Harvesting Trees fliers (From The Woods Series)

Harvesting Trees Pretest (one for each student)

Harvesting Trees Posttest (one for each student)

Paper

Pencils

Appendix 1

Appendices 2a, 2b

Appendices 3a, 3b, 3c, 3d

Appendices 4a, 4b

State Standards Addressed: *E&E Standards:* 4.2.7, 4.8.7

Teaching Model: Experiential Learning Model (Experience, Share, Process, Generalize, Apply)

Methods:

Preparation:

Read through the entire lesson and study the appendices to ensure your understanding of the content and activity. Ensure you have the correct number of copies for the lesson.

Doing The Activity:

Introduction to the lesson: Explain to the students that they will be learning about harvesting trees today. They will have the opportunity to work in pairs while reading and completing an activity. But first, the students will be completing a pretest.

Steps:

(Experience and Share Stages 25 minutes)

1. Administer the pretest to the students; explain that the purpose of the pretest is to test knowledge the students already have acquired on harvesting trees. (allow approximately 7 minutes for the test then collect)
2. Ask the students if they have any comments concerning the pretest.
3. Divide the class into four groups; explain that they will be working in pairs to read the flier and then they will complete the harvesting activity as a member of one of the four groups. The students may determine how they will read the flier with their partner (taking turns, reading silently, designated readers, etc.) Hand out the *Harvesting Trees* flier.
4. Allow time for the pairs to complete the reading; monitor to ensure that each student participates.
5. Ask the students if they have questions concerning the reading. Complete the discussion questions with the class (Appendix 1).
6. Explain to the students that they will be completing a tree harvesting activity.
 - Display Appendix 2a to the class. Tell the students that this picture was generated by a “Stand Visualization System” (SVS) computer program. It depicts an actual stand of trees in Pennsylvania. A forest stand is an area of forest that is similar in species composition, past history, and other biological characteristics.
 - Explain to the students that each group will receive three sets of pictures: Appendices 2, 3, and 4. The Appendices depict three different forest stands (the first being 2a, 2b & 2c, the second: 3a, 3b, 3c, 3d, and the third: 4a & 4b.).
 - Each appendix contains a picture of the original forest stand (the “a” picture), and the other pictures in the sets depict tree harvests, or stages of a harvest, for that stand.
 - Explain the three harvesting methods (described below) to the class. You may want to write the descriptions on the board, **but do not tell them which pictures represent which type of harvest:**

1) **Thinning Harvest** – This type of harvest significantly increases the annual growth of residual (remaining) trees (Appendix 2b), removes a modest percentage of the total timber volume in the forest.

2) **Shelterwood Harvest** – This harvest requires 2 stages of harvesting:

1st cut or initial stage of a Shelterwood (Appendix 3b) is a harvest done to control the microclimate of the forest floor. This cut allows you to choose where shade will be and aides in the establishment or removal of a certain species. The period in time varies between Stage 1 and 2 of a shelterwood harvest. It usually takes about 7-10 years until sufficient regeneration (young trees) to become established on the forest floor. (Appendix 3c)

2nd cut or final stage of a Shelterwood harvest (Appendix 3d) allows young trees to grow faster on the site, removes older (“over-story”) trees.

3) **Clear-cut Harvest** (Appendix 4b) This harvest regenerates shade intolerant trees (trees, which thrive in full sunshine). Contrary to its popular negative image, this is an important forest harvesting practice in Pennsylvania for regenerating many highly valuable tree species, such as black cherry, white ash, red oak, tulip poplar.

- Hand out the appendices to the groups. Allow the students 5- 7 minutes to work in their groups.
- Each group will compare the original stand picture in each set (the “a” picture in the set) with the other pictures in the set. The groups will then try and identify the type of harvest depicted by each set. Tell the students to ignore any dates that are on the pictures.
- Each group will write down their interpretations of the types of tree harvesting. They should include what they feel is represented in each picture in the sets.
- Allow time for each group to share their impressions and results with the class. While some students see a particular type of harvest, or any type of tree harvesting, as “destruction” of the forest, it’s important not to let this misconception go undiscussed. When timber harvests are conducted properly, harvested areas regenerate into new forests. This is why forests are called a renewable resource, they can be managed to produce wood in a sustainable fashion. We harvest trees to meet people’s needs for wood products, such as lumber, paper, and wood chemicals. Destruction of a forest occurs when a forest is converted into other uses such as housing developments, roadways, agricultural fields, etc.

(Share and Process Stages 25 minutes)

7. After the groups have completed their presentations, reiterate the significance of each of the Appendices:

* 2a – Original Stand

* 2b – Thinning Harvest

* 3a – Original Stand

* 3b – 1st stage of Shelterwood Harvest

* 3c – projected regeneration

* 3d – 2nd stage of Shelterwood Harvest

* 4a – Original Stand

* 4b – Clearcut Harvest

8. Discuss the similarities and differences between the harvesting methods.

(Generalize and Apply Stages 12 minutes)

9. After the educator has reviewed all the information concerning the flier and activities (prepare the students for the posttest, complete any discussion questions remaining), again ask the students if there are any questions.
10. Administer the posttest. Allow the students' time to complete then collect.

Assessment: The students will be evaluated through participation and upon completion of the posttest.

Conclusion To The Lesson: “This completes today’s lesson I hope that you have gained a more thorough understanding of Harvesting Trees. Does anyone have any further comments concerning the lesson?”

References and Resources:

Harvesting Trees flier (From The Woods Series)
The Pennsylvania State University
112 Agricultural Administration Building
University Park, PA 16802

This lesson was prepared by Katie Roth, Middle School Teacher and Sanford Smith, Extension Specialist Penn State School of Forest Resources.

Appendix 1- Discussion Questions- Harvesting Trees

1. Explain five reasons why Pennsylvania forests are an important resource. (*Wood products, wildlife, clean air, water, recreation, etc.*)
2. What type of resource are forests? (*Renewable*)
3. Explain two reasons landowners may harvest their forests. (*make a better living place for wildlife, more light on the forest floor, provide more room for trees to grow, need money*)
4. Explain two other ways harvesting trees can benefit a forest. (*reduce competition for soil nutrients and sunlight, prevent the spread of tree diseases, reduce the possibility of a forest fire, etc.*)
5. What is the role of foresters when preparing a harvest? (*write a forest management plan, measure trees for volume, quality, and growth rate, mark trees to be harvested, layout roads and trails,*)
6. What should a well – planned harvest focus on? (*trees that are to remain rather than just those to be cut, protecting the environment*)
7. Name 3 safety garments a logger should wear while cutting trees. (*safety goggles/ eye protection, hardhat, ear protection, gloves, safety chaps, safety shoes, safety jacket*)
8. Ask the students to define the following terms:
 - a. delimb- (*cut branches off a cut tree*)
 - b. felled tree- (*a cut tree*)
 - c. skid- (*trees pulled through the harvest area*)
 - d. buck- (*cut trees into smaller pieces*)

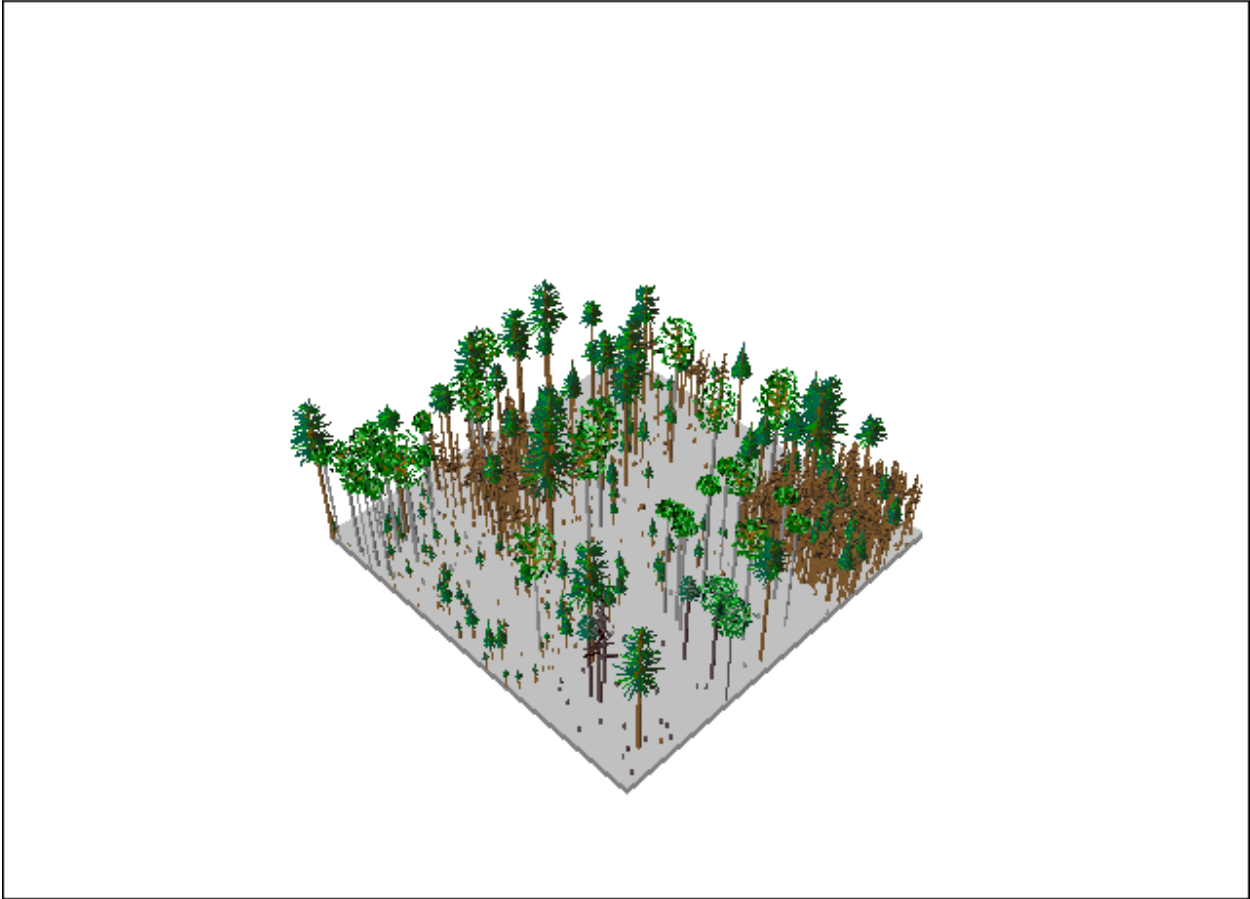
Appendix 2a

Stand=260719012 Year=1995 Inventory conditions

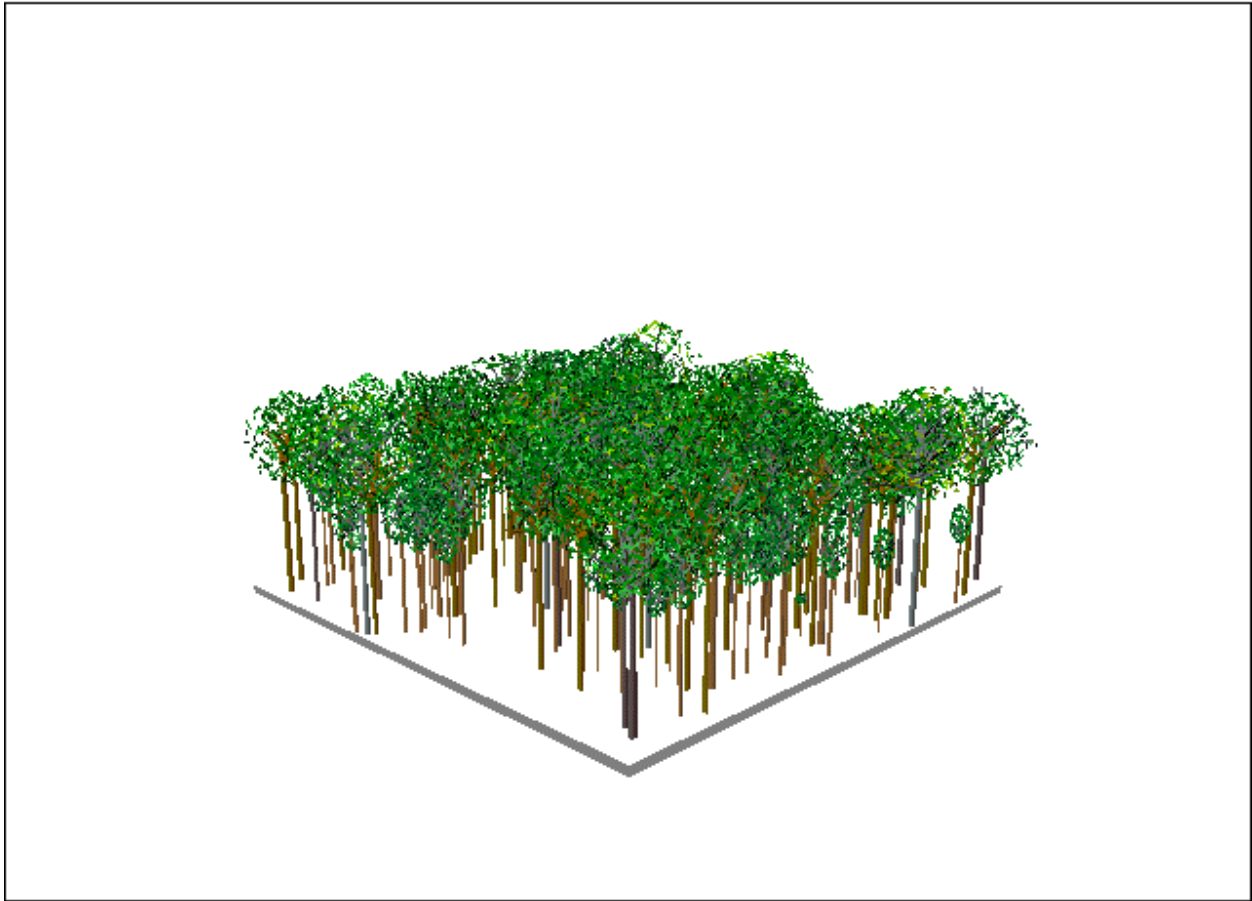


Appendix 2b

Stand=260719012 Year=1995 Inventory conditions

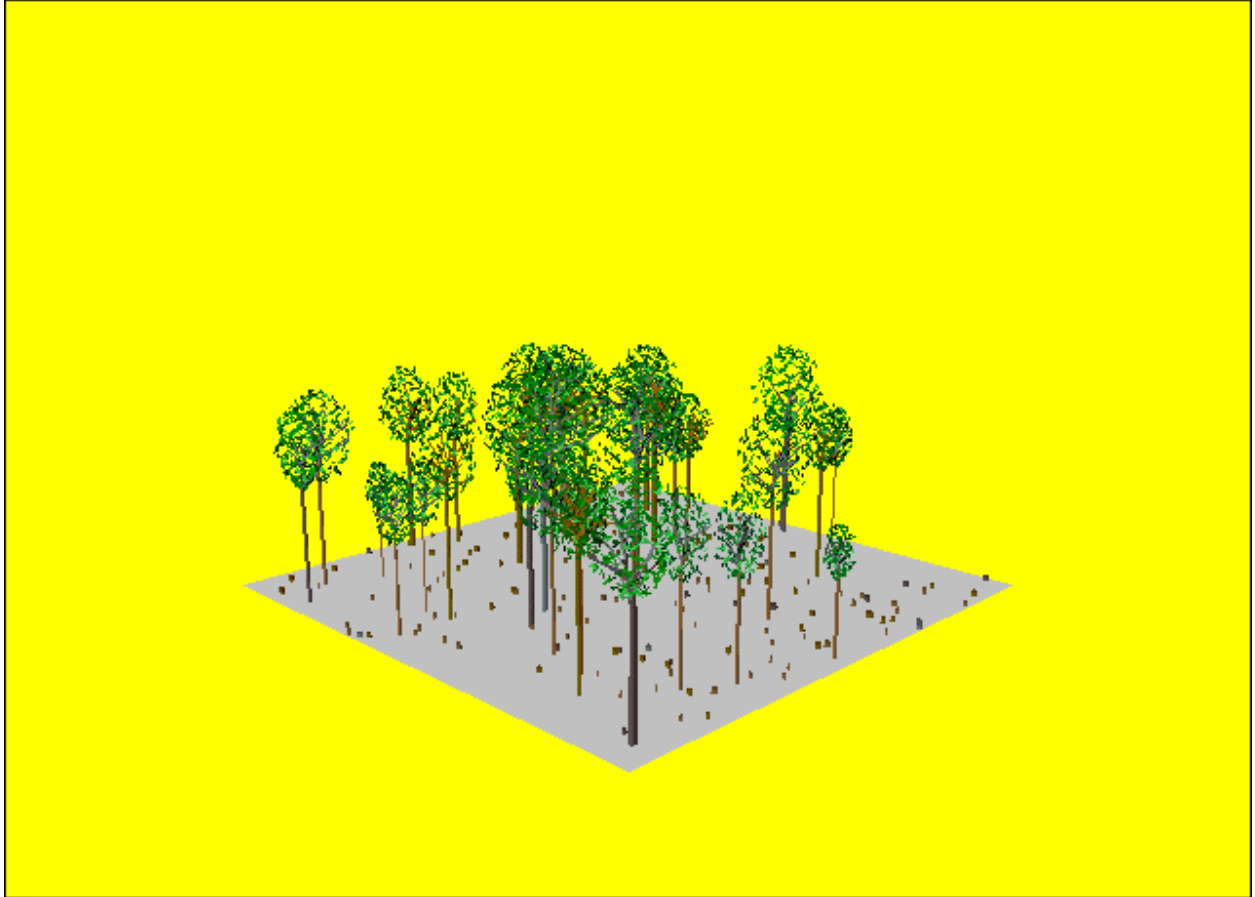


Appendix 3a
Stand=Rocksprings Year=2002 Inventory conditions



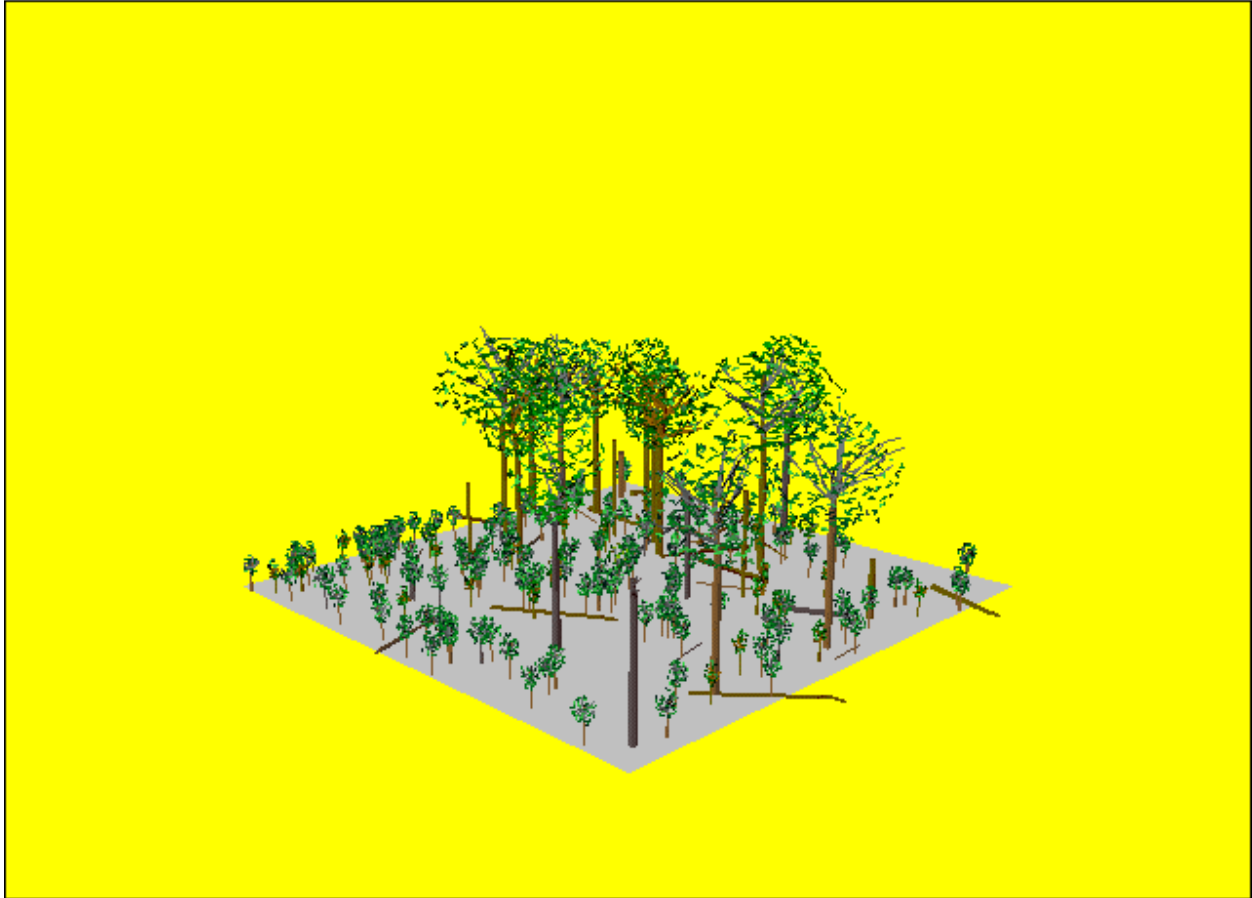
Appendix 3b

Stand=Rocksprings Year=2002 Inventory conditions



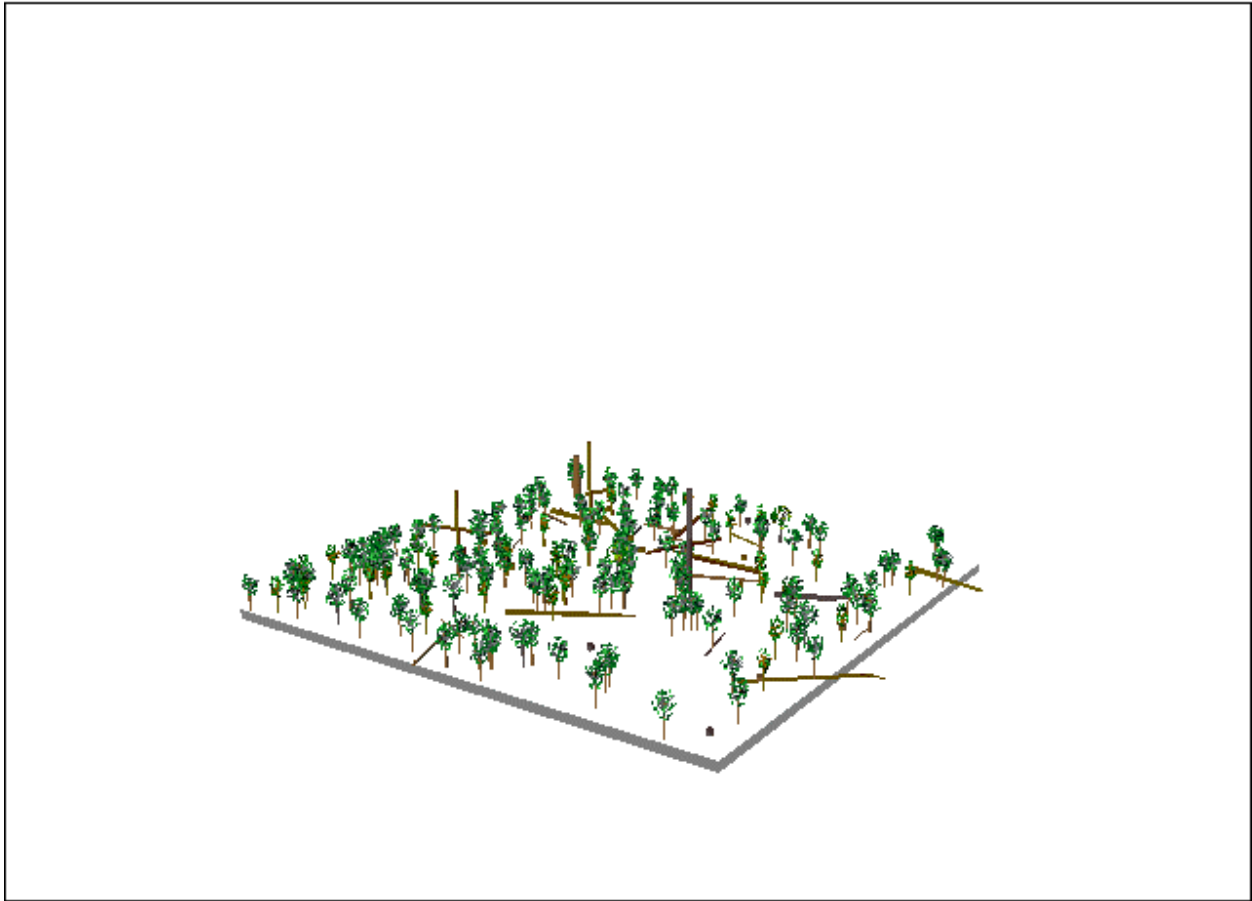
Appendix 3c

Stand=Rocksprings Year=2042 Beginning of cycle



Appendix 3d

Stand=Rocksprings Year=2042 Beginning of cycle



Appendix 4a
Stand=Rocksprings Year=2002 Inventory conditions



Appendix 4a

Stand=Rocksprings Year=2002 Inventory conditions

