Create a Development Plan
for a New Reservoir

Fig. 3. Shoreline Image This image is of an area along the western side of the reclaimed reservoir.

GRADE LEVEL: 9-12

INTRODUCTION

Sand and gravel are construction materials that are essential to providing shelter, transportation, and many other things we depend on daily. When sand and gravel production ends, the mine sites/quarries can be reclaimed into reservoirs for important potable water for communities. The goal in this activity is to redevelop the site into a multi-use park and recreational area while preserving the pristine water in the lake for public water supply. Through this process, reclamation and redevelopment of the sand and gravel production site provides valuable assets to the public.

LEARNING OUTCOMES

Students will learn what features and attractions to build in a newly developed recreational area around a body of water, and how these features, attractions and activity sites should be placed.

Students will learn how to use the scale of an image or map to compute areas and lengths/distances on the image or on a map. (Note: The double arrow scale marker on Figs. 1 and 2 represents 0.5 miles or 2,640 feet on the land surface.)

Students will learn to interpret and use aerial and ground-based imagery for land use planning.

Students will learn how to plan for the use of these features, attractions and activity sites of a park development for recreational uses around a body of water.

MATERIALS NEEDED

Access to a color printer where the imagery files for the study site and this file can be printed, including the "menu page" at the end of this file.

Computer access to research local city and county planning and building and zoning requirements as they might apply to this kind of park development and information for meeting these local requirements as well as meeting The Americans with Disabilities Act requirements for such an area/project.

PROCEDURE

1-Print this file or use it on electronic device(s) to allow for copying and pasting the icons for the various development features onto Figure 2.

2-Study Figure 1 and the accompanying descriptive information.

Students will develop a land use plan for a recreational area or park using a reclaimed sand and gravel production site with a lake and its surrounding land. Students will study about the facilities needed for such a park and how the various features and attractions may be placed around a body of pristine fresh water.

The project area is located on a flood plain along a stream that flows through the actual park development area, as shown inside the yellow borders on both Figure 1 and Figure 2. This park area land is relatively flat-lying except for the land on the east side along the small stream in the timber-covered area that has a low relief (rise in elevation) of five to ten feet. The whole park area is underlain by layers of sand and gravel which contain groundwater to fill the reservoir. This reservoir was created by mining of sand and gravel. The sand and gravel were used for the construction of nearby facilities and structures such as roads, highways, bridges, sidewalks, foundations, basements, etc. Figure 3, "Shoreline Image," provides a better idea of the lay of the land along the west and northwest sides of the water body. The proposed park area has a very low probability of flooding, and the layers of gravel and sand are sufficiently strong to provide foundation support for the kinds of structures and improvements needed for a park/recreational area. The area is zoned for recreational or agricultural use.
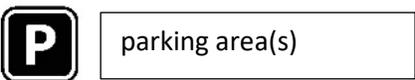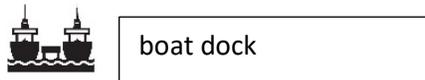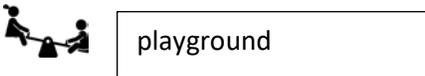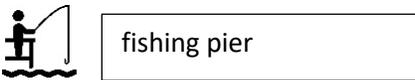
3-Students: contact and/or interview a local community planner, a local planning consultant, or parks and recreation manager. In these interviews, ask and learn what a park with lake recreational development should have as available services. Options include a tent camping area, playground areas, fishing pier, boat dock, boat launch ramp, swimming beach, toilets, picnic area(s), trails and more. Roadways and parking must be added. Bike and hiking trails may be included.

4-Students: decide what services to include inside the boundary lines of the area. Then, decide the importance of each based upon the conversations with the local planner or other sources of information. Once this list of services is agreed to, copy the icons from the next page and paste them on the large image in Figure 2. Draw roads, trails/bike paths, and utility line locations on Figure 2 as well.

Fig. 1. Project Area and Surroundings
Image source: Google Earth
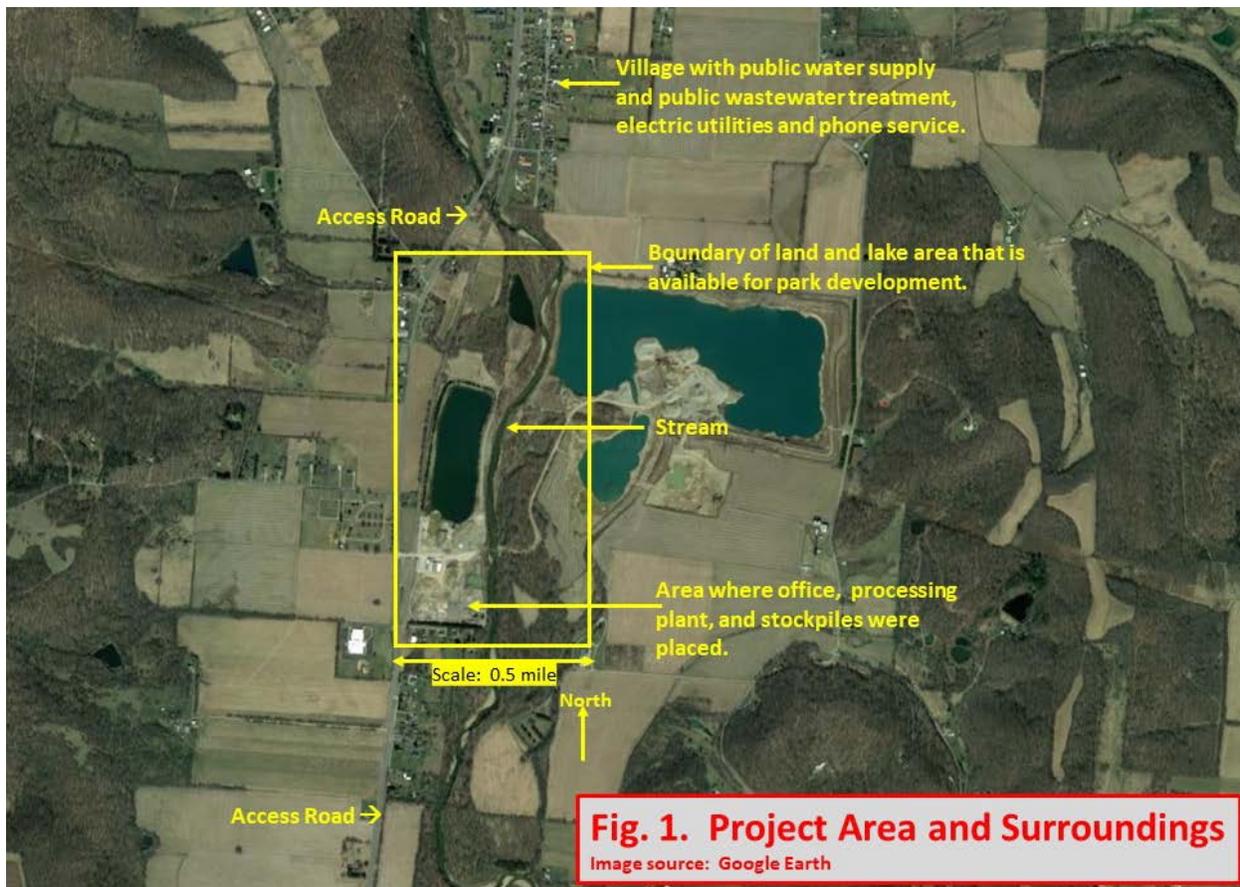
Menu of Possible Services to be Constructed in the Park

This list is not to be seen as a limiting list. Students may elect not to use all of these and/or decide to place services that are not in this list.

	camping area(s)
	bike/hiking trails
	picnic tables
	boat launch ramp
	restrooms
	fishing pier
	swimming area
	playground
	road
	boat dock
	shelter structure
	parking area(s)

Fig. 2. Project Area Enlarged
Image Source: Google Earth

Access Road →

Boundary of land and lake area that is available for park development.

Area where office, processing plant, and stockpiles were placed.

Scale: 0.5 mile North

A written report should be created that explains the student team's goals in their development of this park, their reasoning for selecting the services and features that they have planned for the park and why these services are placed where they have been shown on Fig. 2. These topics should be covered, described, or explained in this brief report:

- Name of the park – be creative!
- The area of the new park in square feet and acres.
- Reason(s) for development of the park – be creative!
- The anticipated recreational uses of the new park.
- The facilities and attractions that are planned for the park.
- The reason/objective for the inclusion of each of these facilities.
- The methods that will be used to protect the pristine quality of the water in the lake.
- Summary of benefits to the public of this new park, i.e., Why the public should support this development project.
- Summary of steps to protect the environment. Summary of benefits to the community, e.g., health, recreation, social, economic.

Extension ideas:

Investigate the freshwater needs of local communities (i.e. How many gallons of freshwater does the "City of Springfield" use on a daily basis, on a weekly basis, yearly?).

Estimate the freshwater storage capacity of your reservoir. You can calculate this volume assuming a 30 foot depth, a 40 foot depth, etc.