

RESIDENTIAL PROGRAM – LEVEL II
Grades 7 & 8

CURRICULUM OVERVIEW

RATIONALE & PURPOSE

The burning of the Cuyahoga River in 1969 became a symbol of polluted America that helped galvanize the modern environmental movement. The watershed's history demonstrates how citizens working together can heal damaged ecosystems. It also reveals the complex environmental challenges we still face: challenges resulting from human activities within a rural to suburban to urban watershed. These include ecosystem quality in general and specific concerns such as poor water quality and flooding that affect the quality of life for both human and non-human life forms. Broader understandings of ecological, meteorological and geological concepts coupled with strengthened personal attachments to local watersheds and their local national park will lead to responsible human actions that foster sustainable systems on Earth.

GOALS

1. Students will develop an understanding of important ecological, geological, meteorological and geographical concepts relative to the environmental challenges impacting a watershed. Concepts include biogeochemical cycles, biodiversity, change, ecosystems, energy transfer, weather, watersheds, sustainability, mapping and time lines.
2. Students will use inquiry and problem solving processes to develop and present approaches to address environmental challenges related to habitat degradation, poor water quality and flooding.
3. Students will develop a personal attachment to, and be instilled with, a sense of wonder and place for the Earth and its life as they are immersed in the natural and cultural dimensions of the Cuyahoga Valley and its watershed. This will foster a personal stewardship ethic that inspires local actions to build a more sustainable world.
4. Experiencing the cultural and natural history of Cuyahoga Valley National Park, students will come to value this citizen owned park, as well as all national parks, as places preserved for personal understanding of America's heritage.

Learner Objectives for Level II Curriculum

Opening Commission Meeting

- ✓ Using an official looking planning commission meeting, students will capture the feelings of importance and concerns for land development adjacent to the Cuyahoga Valley National Park.
- ✓ With National Park Rangers as hosts, students will be welcomed to the Cuyahoga Valley Environmental Education Center and introduced to the staff.
- ✓ Having heard and participated in the planning commission meetings, students will be able to lay out the basic concerns identified with development adjacent to the national park.
- ✓ Presented with real area maps with tributary named watershed Consultant Company, students draw upon existing knowledge and current typical zoning to draw out a 200 person housing development which will be photographed for future comparison.

Orientation to the Center

- ✓ Upon presentation of the student's own *Watershed Development Portfolios*, students will distinguish their book as an important training manual as they explore watershed diversity and quality, conservation and low impact development strategies, and plan their own neighborhood development.
- ✓ Given a definition of sustainability, students will be able to relate the definition to living an earth-friendly life to meet our needs today as well as the needs of life in the future.
- ✓ Given a review of "Student Expectations", students will be able to explain their purpose as part of living a sustainable life within the watershed.
- ✓ Given the description of the constructed wetlands, students will summarize what happens to the human wastewater that is flushed down drains & toilets of the Center.

Dining Hall Orientation

- ✓ Using a demonstration of dining hall procedures before, during and after a meal, students will be able to follow those procedures during a meal.
- ✓ Using a disguise-removing item on the menu, students will connect their foods to their sources.
- ✓ Given "waste watchers" procedures, students will explain why food should not be wasted.
- ✓ Given a description of composting, students will summarize what happens to food wastes from the dining hall and anticipate a visit to the compost bins during their apprenticeship.
- ✓ Students will sing a song to feel excitement for the adventure they are undertaking.

Headwaters Stream Hike

- ✓ Given a definition and images of a watershed and tributary stream, students will describe in their own words the make-up of a watershed including understanding of a tributary stream.
- ✓ Given a definition and images of biodiversity, students will describe in their own words their understanding of biodiversity
- ✓ Using an exploratory hike of a headwaters tributary stream to the Cuyahoga River, students will analyze the stream and its surrounding habitat to determine its characteristics and infer the health of the stream.
- ✓ Using the experiences of the afternoon, students will take solo time to write and draw their own personal image of what makes a healthy stream habitat.

The Shape of Things

- ✓ Using a pervious/impervious testing set-up, students will be able to describe the meaning of perviousness as it relates to different types of soils.
- ✓ Using a wet-sand land form model that they create, students will be able to demonstrate how a topographic map illustrates in two dimensions the three dimensions of a land form and hypothesize the effect of slope of water flow.
- ✓ During an exploratory hike, students will test a variety of surfaces around the campus and calculate the water perviousness of these surfaces and then be able to explain how different surfaces affect habitat quality and water run-off and quality issues.
- ✓ After traversing a ravine, students will have a better understanding of topography and where building is appropriate when considering the topographic features of the land.
- ✓ From the knowledge gained about permeability, topography and their relationship to habitat quality and water resource issues, students will do a descriptive written piece about the nature of their company's development site.

Furnace Run Exploration

- ✓ Given a bus trip through the Cuyahoga River valley, students will make and record observations of how the landscapes changes on the way to Furnace Run noting vegetation changes, wildlife sightings, development infringement, etc.
- ✓ Using a variety of exploration and evaluation techniques, students will be able to determine the water quality characteristics of Furnace Run.
- ✓ Using a variety of soil and water conservation maps relative to permeability around Furnace Run and recorded observations, students will be able to infer the quality of this tributary to the Cuyahoga River in comparison to the headwater tributary evaluation.
- ✓ Using an aerial photo map of pre and post development on a site adjacent to the park, students will use topographic and grid overlays to calculate the pervious vs. impervious surfaces and compare the two.

LID Toolbox Trek

- ✓ Using the five principles of LID as the five compartments of a LID toolbox, students will experience the five compartments as stations and be able to determine the environmental benefit and economic impact of each LID tool.
- ✓ With a total environmental benefit and cost impact point total available, student companies will select the low-impact development tools they will use in their development site.

Creative Hike

- ✓ Given the extensive trails and habitats of the Cuyahoga Valley Environmental Education Center, students will explore and discover the natural wonders of this part of the Cuyahoga River Valley.
- ✓ Using a variety of activities, students will have their experience focused on recreational and/or team building, and/or the arts, and/or writing.

LID Prep

- ✓ Using the low impact development toolbox of tools, students will work together to choose at least one tool from each LID area to use in their development.
- ✓ Using their site maps with marked areas to preserve and protect, students will determine the lot size, type of housing units, and placement on the development map to reflect sustainable development.
- ✓ Using the chosen LID tools and diverse creative materials, students will work in teams to create display panels for each of the tools to be used in the development.

- ✓ Using the completed map and display, students will practice presenting the benefits of their sustainably designed development over conventional development.
- ✓ Students will compare their completed development map with their original plan from first day and be able to explain the differences.

Planning Commission Presentations

- ✓ Given individual company site design map and display, students will tour to see the variety of design plans and the incorporation of low impact development tools.
- ✓ Given individual company site design maps and displays, students will present their design and display for the planning commission member and other company consultants.

Closing Ceremony

- ✓ Using a pageant-like format, students gather around a nice campfire for reminiscing.
- ✓ Using the campfire setting, a planning commission member reviews the new knowledge about low impact development that the student companies have provided, thanks students for their input, and presents them with appropriate awards based on their site development plan.
- ✓ Using the visit with the planning commission member, students' "Dear Self" letters are presented.
- ✓ Facilitated by CVEEC staff, the students are encouraged to express gratitude to all who made the week possible: teachers, parents, kitchen staff, cleaning staff, etc.
- ✓ Uniformed NPS rangers congratulate students for completing their learning and experiences in the Cuyahoga Valley National Park and thank them for their efforts to improve all the downstream lands of the Cuyahoga River Watershed by presenting each student with a National Park Service Junior Ranger badge.

Tentative Level II Program Schedule

Day 1

9:30 a.m. Move in/Opening
10:00 a.m. Planning Commission Meeting
11:00 a.m. Map Work
12:00 p.m. Lunch
12:45 p.m. Student and Adult Orientation
1:30 p.m. **Headwaters Creek Hike or The Shape of Things**
4:15 p.m. Free Time - teachers supervise
5:30 p.m. Dinner
6:30 p.m. **Arts in the Park or Evening Hike in the Watershed**
8:30 p.m. Return to Dorms - teachers supervise overnight

Day 2

7:45 a.m. Chores, table setting for breakfast
8:00 a.m. Breakfast
9:00 a.m. **Furnace Run Exploration or Creative Hike**
12:00 p.m. Lunch
12:45 p.m. Free time/FROG Time
1:30 p.m. **The Shape of Things or Headwaters Creek Hike**
4:15 p.m. Free Time - teachers supervise
5:30 p.m. Dinner
6:30 p.m. **Evening Hike in the Watershed or Arts in the Park**
8:30 p.m. Return to Dorms - teachers supervise overnight

Day 3

7:45 a.m. Chores, table setting for breakfast
8:00 a.m. Breakfast
9:00 a.m. **LID Trek or Furnace Run Exploration**
12:00 p.m. Lunch
12:45 p.m. Free time/FROG Time
1:30 p.m. **Creative Hike or LID Trek**
4:15 p.m. Free Time - teachers supervise
5:30 p.m. Dinner
6:30 p.m. **LID Preparation**
8:30 p.m. Return to Dorms - teachers supervise overnight

Day 4

7:45 a.m. Chores, table setting for breakfast, pack luggage
8:00 a.m. Breakfast
9:00 a.m. **Planning Commission Presentations & Closing**
12:00 p.m. Lunch
1:00 p.m. Depart