

## TEMPLATE FOR CMap PROJECT

Each participant who participated in the CMap workshop signed an agreement to conduct a CMap project and write up. This template is provided to you as a guide for the CMap project you agreed to conduct with your students.

Please complete a detailed write-up of your CMap project using this template. Use the kind of language and detail so other teachers can take your project to conduct in their classrooms. An archive of CMap projects will be made available for Utah educators.

Send to: Jared Covili, Utah Education Network, 1705 E. Campus Center Dr, MBH 205, Salt Lake City, Utah 84112. [jared@uen.org](mailto:jared@uen.org).

**Project Title: Mapping the vegetation along the Jordan River**

**Created by: Kathy Barnard**

**Class: CMap**

Project Description	The Jordan River Parkway is a 45 mile trail along the Jordan River. It is an ecological gem with access within a half mile of the Salt Lake Center for Science education. Students regularly use the parkway for biology, PE, and other studies. "This area provides critical habitat for a variety of wildlife including deer, fox, and many species of migratory birds and waterfowl. The area has been heavily infested with invasive Russian olive, tamarisk, thistle, hoary cress, and other invasive vegetation. These non-native plants provide very little habitat for wildlife and aggressively crowd out native plant species." (1) Students will create an interactive map of vegetation including bushes, trees, and invasive plants by using GPS mapping technology. This technology can then be used to aid in the removal of invasive plants.
Community Issue or Problem Selected	The Salt Lake Center for Science Education, Newman Elementary and neighborhood scout troops take regular field trips along the Jordan River. Thousands of others use the trail each month. This map will help students and teachers to identify the vegetation along the river and will help to identify invasive weeds for their removal. It will also help other groups including the Jordan River Parkway Commission who organize Parkway clean-up.
-How project evolved?	The project evolved from an idea of simply mapping trees to being active participants in cleaning and improving the Parkway.

Community Partner(s)	Salt Lake Center for Science Education <b>Jordan River Commission</b> Local cub scout leaders
Project Objectives	The objective is to familiarize students with the different vegetation along the Jordan river by categorizing them and mapping them using GPS units and ARCGIS mapping software. They may then have the option to participate in a service project to help remove the invasive weeds.
Utah Core Standards/Objectives	<p><b>Standard 2</b> Students will understand the human and physical characteristics of places and regions.</p> <p><b>Objective 1</b> Interpret place by its human and physical characteristics b. Investigate physical characteristics such as landforms, climates, water cycle, vegetation, and animal life. c. Recognize that places change over time</p> <p><b>Standard 6</b> Students will use geographic knowledge to connect to today's world</p> <p><b>Objective 2</b> Apply geographic concepts to interpret the present and plan for the future. b. Investigate career opportunities available through the application of geography skills and concepts c. Participate in community activities respecting the environment and personal property.</p>
Essential Question(s) -Spatial Issue	Can GIS mapping technology be used to improve the ecosystem of the Jordan River?
Assessments (rubrics, scoring guides)	See below
Project Products	Students will create a map of plant species along the Jordan River that can be used to identify native and invasive plant species by Jordan River Commission Facebook users and <a href="http://jordanrivercommission.com">jordanrivercommission.com</a>
Project Timeline (include a step by step Procedures)	<p>Speak with representative from Jordan River Commission</p> <p><b>Pre-Teach</b> --Re-teach concepts of latitude and longitude and how they are represented on the GPS device</p>

- Teach students how to mark waypoints on GPS.
- Introduce students to career opportunities using GIS technology. Geo-spatial careers are in the top three careers for growth.
- Prepare visual guide in advance showing different species of vegetation usually found along river.
- Re-teach concepts of landforms, climates, water cycle, vegetation and animal life in relation to the Jordan River ecosystem.

### **Guest Speaker**

- Have representative from Jordan River Commission speak to students about the river including conservation efforts including the effect of invasive weeds on the river, the paid and volunteer removal efforts of invasive weeds, replanting projects currently underway, parkway improvements and restoration (including graffiti removal), and the ecosystem of the Jordan River.

### **Pre-Visit**

- Divide parkway into ¼ mile segments between 1000 N and the trailhead on Redwood road by Northwest Middle School (the segments are labeled on stones along the Parkway.)
- Divide students into groups and walk to parkway through entrance on Sunset Drive.. Give each group a numbered map listing which students are assigned to which segment of the Parkway

### **At the Parkway**

- Have each group go to their assigned ¼ mile segment of the Parkway
- Have students mark waypoints and photograph ten plants including two invasive weeds that can be marked for removal

### **In the Computer Lab**

- Return to classroom and identify plants, mark which are native and non-native
- Teach students how to upload latitude and longitude waypoints into Garmin Basecamp, turn file into a CRV file, delete irrelevant data, and import photos into document
- Teach students to upload file into ARCGIS and visually show them how to create a map.
- Show students how to create new column listing whether plant is native or invasive
- Show students how to turn in information

	<p><b>Evaluation</b></p> <ul style="list-style-type: none"> <li>--Evaluate information</li> <li>--Combine student data and publish map to Jordan River Parkway Facebook page for everyone to use.</li> <li>--Extra credit could be given for attending the annual Jordan River Clean-up project</li> </ul>
Resources Needed	<ul style="list-style-type: none"> <li>GPS unit for each group</li> <li>Clip board</li> <li>Pen</li> <li>map of Jordan River</li> <li>Camera for each group</li> <li>google account for each student</li> <li>computer for each student</li> </ul>
Skills Required	<ul style="list-style-type: none"> <li>Ability to create waypoints on GPS, import photos and information to ARCGIS software</li> <li>Basic knowledge of google drive, documents</li> </ul>
Project Team Member Roles	<p><b>Teacher(s): Kathy Barnard</b></p> <p><b>Students: 9th grade geography students at SLCSE</b></p> <p><b>Partner(s): Jordan River Commission</b></p>
Celebration/Presentation	<p>Show students the final project, present to visiting member of Jordan River Commission.</p>
Project Evaluation	<ul style="list-style-type: none"> <li>Students will present what they learned.</li> <li>Students will discuss their role in protecting their environment.</li> <li>Students will discuss what improvements, or expansions could be made to the activity.</li> </ul>
Project Bibliography	<p>(1) <a href="http://jordanrivercomission.com">jordanrivercomission.com</a></p>
Plans for Future CMAP Activities	<p>In the following years, the students can compare whether the invasive weed species are growing or shrinking and the effect on native plants.</p>

	Students could create a story map of their project.
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Rubric

Criteria	1 Below	2 Approaching	3 Meeting
Photos of ten plants uploaded to ARCGIS spreadsheet	One to four photos taken.	5-10 photos taken but not uploaded.	Photos of ten plants uploaded to ARCGIS spreadsheet
Identification of ten plants listed on spreadsheet	One to four plants identified	5-10 plants identified but not uploaded to spreadsheet	Identification of ten plants listed on ARCGIS spreadsheet
Ten waypoints listed on ARCGIS spreadsheet	No waypoints	5-10 waypoints on spreadsheet	Ten waypoints listed on ARCGIS spreadsheet
Extra Credit			Location of one invasive weed species listed on spreadsheet.
Extra Credit			Student will attend community clean-up day along the river

Optional:

- Lesson Plans
- Student Artifacts

-Publicity