




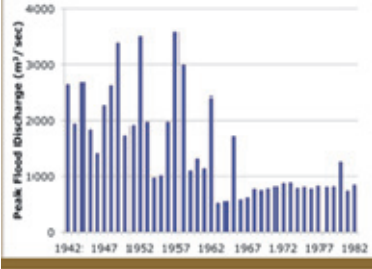


TABLE 1. Summary of Storyline, Concepts, and Example Tasks for AR Field Trip Modules

	GCX Geologic Time	GCX Geologic Structures	GCX Hydrologic Structures
Storyline	Grand Canyon raft trip with players eddy out at amazing places with features that help us decipher Earth's vast history. Some field trip stops involve short hikes up side canyons.	Players are rafting down the Colorado River through Grand Canyon with extensive hikes up and down side canyons, camping at amazing places that have been deformed by tectonic activity.	Raft trip through Grand Canyon with a USGS water monitoring crew, along the way taking measurements and conducting surveys of changes in water flow rates, pathways and usage.
Curriculum content	Stratigraphic principles -Original horizontality -Superposition -Lateral continuity -Cross cutting relations Unconformities -Disconformity -Nonconformity -Angular unconformity Relative dating Numeric dating Human vs. geologic time	Tectonic forces -Stress, strain, deformation Folds -Syncline -Monocline Faults -Normal -Reverse -Strike slip Measuring structures -Strike and dip -Geologic maps	Hydrologic cycle -Discharge Fluvial hydrology -Channel types Sediment transport -Entrainment -Types of load -Transport capacity Groundwater -Springs Human influence -Dams
Example field trip stop	 <p>BLACKTAIL CANYON</p> <p>Rivermile 120.5. Let's eddy out here at Blacktail Canyon and see the most famous exposure of the "Great Unconformity", which represents about</p> <ul style="list-style-type: none"> A Disconformity B Nonconformity C Angular unconformity D Fault contact 	 <p>EMINENCE FAULT</p> <p>Rivermile 44.5, Day 3. Eminence Fault is clearly visible from Point Hansbrough, and is evidence of the tectonic stress that the region has experienced.</p> <ul style="list-style-type: none"> A We can see cracks cutting across the rock layers. B The rock layers are folded. C There is visible offset of the rock layers. D The rock layers are tilted. 	 <p>VASEY'S PARADISE</p> <p>Rivermile 32, Day 5. Vasey's Paradise is an oasis in this desert with two cascading waterfalls emerging from the canyon walls and sustaining the lush vegetation below. These springs flow out of limestone beds within the Grand Canyon strata. The water feeding these springs comes</p> <ul style="list-style-type: none"> A An aquiclude B Fall of caves C An aquifer D A capillary zone
Example iSpy activity	 <p>iSPY</p> <p>Identify and tap on the Great Unconformity in this scene.</p>	 <p>iSPY</p> <p>Swipe the direction of movement of the hanging wall in this image.</p>	 <p>iSPY</p> <p>Swipe to draw a line illustrating when the Glen Canyon Dam was completed.</p>

AR—augmented reality.