

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Mid Atlantic
State	New Jersey
Discipline Group	Water Management Engineering
Practice Code/Name	436 - Irrigation Reservoir
Scenario ID	4
Scenario Name	Excavated Tailwater Pit

Scenario Description

This is an excavated pit with a control structure. It is designed to accumulate, store, deliver or regulate water for a surface irrigation system. It will have a bottom width of 20 ft and length of 1,250 feet. The side slopes will be no steeper than 1.5 H to 1 V inside and out. It will be built with approximately 20,000 cubic yards of on-site material. It will have a maximum water depth of 10 feet with 1 foot of freeboard. Volume is approximately 12 ac-ft (3,950,303 gallons).
 Resource concern: Insufficient Water - Inefficient use of irrigation water.
 Associated Practices: 521 - Pond Sealing or Lining (various); 320 - Irrigation Canal or Lateral; 430 - Irrigation Pipeline; 428 - Irrigation Ditch Lining; 533 - Pumping Plant; 440 series - Irrigation Systems; 447 - Irrigation System, Tailwater Recovery; 378 - Pond; 484 - Mulching; and 342 - Critical Area Planting.

Before Practice Situation

Current system relies on an intermittent or low-flow rate water source. This results in untimely and/or inefficient water application.

After Practice Situation

An excavated regulating reservoir will be built on a relatively flat site and be used to accumulate and store water for timely application through an irrigation system. The water source could be a stream or an irrigation district canal.

Scenario Feature Measure	Volume of Earth Excavated
Scenario Unit	Cubic Yards
Scenario Typical Size	19,600

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$0.00	\$0.00
Equipment/Installation	\$42,532.00	\$2.17
Labor	\$0.00	\$0.00
Mobilization	\$1,355.42	\$0.07
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$43,887.42	\$2.24

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Scenario ID	6				
Scenario Name	Plastic Tank				
Scenario Description	<p>A 3,000 Gallon, above-ground, High Density Polyethylene plastic enclosed tank, is installed on 6" of well-compacted drain rock or a 4" thick reinforced concrete support pad, to store water from a reliable source for irrigation of an area less than one acre. The scenario assumes the typical dimensions of the tank are 102" in diameter and 93" tall. The scenario also assumes a 126" diameter gravel base or concrete pad to extend a minimum of 12" past the base of tank for adequate foundation support. This cost estimate scenario is for cost of the tank and pad only and does not include estimate for pumps, pipe, or connecting fittings.</p> <p>Resource Concern: Insufficient Water - Inefficient use of irrigation water.</p> <p>Associated Practices: 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 533 - Pumping Plant; 447 - Irrigation System, Tailwater Recovery.</p>				
Before Practice Situation	Insufficient volume of water to complete an irrigation cycle at the required flow rate.				
After Practice Situation	An above-ground plastic tank, constructed to withstand the elements, is used to accumulate and store water between irrigation cycles for a very small irrigation system. This allows for an improved flow rate and timing of water application. Sources of water could be a well, a domestic water system, a large roof area, a water ram , or a pump drawing water from a stream.				
Scenario Feature Measure	Volume of Tank Storage				
Scenario Unit	Gallons				
Scenario Typical Size	3,000				

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,320.32	\$0.77
Equipment/Installation	\$226.68	\$0.08
Labor	\$1,659.84	\$0.55
Mobilization	\$730.12	\$0.24
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$4,936.96	\$1.65

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Practice Code/Name	436 - Irrigation Reservoir

Scenario ID	7				
Scenario Name	Fiberglass Tank				
Scenario Description	<p>A 10,000 Gallon above ground, enclosed, fiberglass tank, is installed on 6" of well compacted drain rock support pad. The tank is used to store water from a reliable source for irrigation of areas less than 3 acres. The scenario assumes the typical dimensions of the tank are 15 feet in diameter and 8 feet tall. The scenario also assumes a 19 feet diameter gravel base pad to extend a minimum of 2 feet past the base of tank for adequate foundation support. This cost estimate scenario is for cost of the tank and pad only and does not include estimate for pumps, pipe, fittings for the pipeline, or catchment area.</p> <p>Resource Concern: Insufficient Water - Inefficient use of irrigation water. Associated Practices: 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 533 - Pumping Plant; 447 - Irrigation System, Tailwater Recovery.</p>				
Before Practice Situation	Insufficient volume of water to complete an irrigation cycle at the required flow rate.				
After Practice Situation	A large fiberglass enclosed tank, capable of withstanding the elements, is used to accumulate and store water between irrigation cycles for a very small irrigation system. This allows for an improved flow rate and timing of water application and better efficiency. Sources of water could be a well, a domestic water system, a very large roof area, a water ram , or a pump drawing water from a stream.				
Scenario Feature Measure	Volume of Tank Storage				
Scenario Unit	Gallons				
Scenario Typical Size	10,000				

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$7,296.01	\$0.73
Equipment/Installation	\$296.40	\$0.03
Labor	\$2,269.68	\$0.23
Mobilization	\$730.12	\$0.07
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$10,592.21	\$1.06

