

| Scenario Worksheet | | | | | | | | | |
|---|---|---|---|-------|-----------------|----------|-------------|---|--|
| Practice and Scenario Description: | | | | | | | | | |
| Information Type | | Data | | | | | | | |
| Region | Appalachian | | | | | | | | |
| State | North Carolina | | | | | | | | |
| Discipline Group | Water Management Engineering | | | | | | | | |
| Practice Code/Name | 441 - Irrigation System, Microirrigation | | | | | | | | |
| Scenario ID | 3 | | | | | | | | |
| Scenario Name | Microjet | | | | | | | | |
| Scenario Description | A micro-irrigation system, utilizing micro-jets to provide irrigation and/or frost protection for an orchard or other specialty crops grown in a grid pattern. The system is installed with all fittings, control valves, pressure reducing/regulating valves, air/vacuum release, sand media/screen/disc filters, pressure gauges, submains, lateral lines, and microjet sprayers to deliver water to the trees. This practice applies to systems designed to discharge < 60 gal/hr at each individual lateral discharge point. Does not include Pump, Power source, Water source (well or reservoir). The typical installation is a permanent, microjet irrigation system installed on a 60 acre orchard. Typical tree spacing is 20 x 20 feet. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 533 - Pumping Plant, 44b - Irrigation Water Management, 430 - Irrigation Pipeline, 433 - Irrigation Flow Measurement, 610 - Salinity & Sodic Soil Management, 434 - Soil Moisture Measurement, 328-Conservation Crop Rotation, and 590 Nutrient Management. | | | | | | | | |
| Before Practice Situation | An orchard has an inefficient irrigation system causing irrigation water loss that impacts water quality and water quantity. | | | | | | | | |
| After Practice Situation | A micro-spray microirrigation system is utilized to provide highly efficient irrigation to an orchard. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced. | | | | | | | | |
| Scenario Feature Measure | Acres in System | | | | | | | | |
| Scenario Unit | Acre | | | | | | | | |
| Scenario Typical Size | 60 | | | | | | | | |
| Cost Summary: | | | | | | | | | |
| Cost Category | Scenario Cost | Scenario Cost/Unit | | | | | | | |
| Materials | \$47,311.21 | \$788.52 | | | | | | | |
| Equipment/Installation | \$1,750.00 | \$29.17 | | | | | | | |
| Labor | \$0.00 | \$0.00 | | | | | | | |
| Mobilization | \$0.00 | \$0.00 | | | | | | | |
| Acquisition of Technical Knowledge | \$0.00 | \$0.00 | | | | | | | |
| Foregone Income | \$0.00 | \$0.00 | | | | | | | |
| Total | \$49,061.21 | \$817.69 | | | | | | | |
| Cost Details: | | | | | | | | | |
| Select Components | | | | | | | | | |
| Cost Category | Component ID | Component Name | Component Description | Unit | Price (\$/unit) | Quantity | Cost | Component Justification | Quantity Justification |
| Materials | 1485 | Micro irrigation, control valves and timers | Automatic controller and timer, to turn on and off the sets for micro irrigation, installation and valves. Based on control unit, not number of valves controlled. | Each | \$2,537.00 | 1 | \$2,537.00 | | |
| Materials | 1489 | Micro irrigation, emitters or sprays and tubing | Emitters or sprays that are installed above ground for micro or drip irrigation. Includes installation and connections to the supply and flushing laterals. Tubing for the emitters is included in this item. | Foot | \$0.14 | 143748 | \$20,124.72 | | lateral spacing is 20 feet 60 acres times 43,560 sq-ft per acre divided by lateral spacing plus 10% |
| Materials | 1482 | Micro irrigation, media filter | Sand or media filter for Micro irrigation system. Includes filters, plumbing, connections and automatic controller. Unit is complete and installed. | Each | \$5,280.33 | 3 | \$15,867.99 | | Size and number of media tanks based on 8 gpm per acre. |
| Materials | 1484 | Micro irrigation, screen filter, ≥ 100 gpm | Screen filter for Micro irrigation system with 100 gpm or greater capacity. Includes filters, plumbing, connections and automatic controller. Unit is complete and installed. | Each | \$722.00 | 1 | \$722.00 | Downstream of media filter | |
| Materials | 1323 | Pipe, PVC, dia. < 18", weight priced | Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only. | Pound | \$1.39 | 4800 | \$6,672.00 | Pipe downstream of the filter e.g. mainline, sub main, manifold, flush manifold. Pipe upstream of the filter should use payment schedule for irrigation pipeline (Code 430) | 40 Ft 1 inch PVC PIPE 200# 1,480 FT 1 1/2 inch PVC PIPE 160# 1,680 FT 2 inch PVC PIPE 160# 80 FT 2 1/2 inch PVC PIPE 160# 1,080 FT 3 inch PVC PIPE 100# 1,160 FT 4 inch PVC PIPE 100# 1,280 FT 6 inch PVC 50# GASKET |
| Materials | 1452 | Flow Meter, with Electronic Index | 10 inch Turbine irrigation flow meter, with Electronic Index, Rate and Volume, permanently installed. Materials only. | Each | \$1,387.50 | 1 | \$1,387.50 | You manage what you measure | |
| Equipment/Installation | 1987 | Micro irrigation, chemical injection equipment | Chemical Injector Pump, plus chemigation check valve, injector ports, and appurtenances. Installation included. | Each | \$1,750.00 | 1 | \$1,750.00 | A chemical injection system will nearly always be required to provide for periodic chemical injection to maintain the system. | |

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| Region | Appalachian | | | | | | | | |
| State | North Carolina | | | | | | | | |
| Discipline Group | Water Management Engineering | | | | | | | | |
| Practice Code/Name | 441 - Irrigation System, Microirrigation | | | | | | | | |
| Scenario ID | 2 | | | | | | | | |
| Scenario Name | Surface polytubing with emitters | | | | | | | | |
| Scenario Description | A micro-irrigation system, utilizing surface PE tubing (can be placed on trellis or above ground) with emitters to provide irrigation for an orchard, vineyard, or other specialty crop grown in a grid pattern. The typical system is a permanent system, installed on a 60 acre vineyard on the ground surface or trellis. The vineyard has a plant spacing of 8 feet x 9 feet. Laterals are spaced 9 feet apart. This system utilizes emitters at each tree or plant as the water application device. This system typically includes a filter system, PE tubing laterals, PVC manifolds, and submain, valves, fittings, emitters, etc. This practice applies to systems designed to discharge < 60 gphr at each individual lateral discharge point. Does not include Pump, Power source, Water source (well or reservoir), Resource Concerns: Inefficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 533-Pumping Plant, 449-Irrigation Water Management, 430 - Irrigation Pipeline, 433 - Irrigation Flow Measurement, 610 - Salinity & Sodic Soil Management, 434 - Soil Moisture Measurement, 328-Conservation Crop Rotation, and 500 Nutrient Management. | | | | | | | | |
| Before Practice Situation | A vineyard has an inefficient surface flood irrigation system causing irrigation water loss that impacts water quality and water quantity. | | | | | | | | |
| After Practice Situation | A surface placed microirrigation system is utilized to provide highly efficient irrigation to a vineyard. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced. | | | | | | | | |
| Scenario Feature Measure | Acres in System | | | | | | | | |
| Scenario Unit | Acres | | | | | | | | |
| Scenario Typical Size | 60 | | | | | | | | |
| Cost Summary: | | | | | | | | | |
| Cost Category | Scenario Cost | Scenario Cost/Unit | | | | | | | |
| Materials | \$107,046.49 | \$1,784.11 | | | | | | | |
| Equipment/Installation | \$1,750.00 | \$29.17 | | | | | | | |
| Labor | \$0.00 | \$0.00 | | | | | | | |
| Mobilization | \$0.00 | \$0.00 | | | | | | | |
| Acquisition of Technical Knowledge | \$0.00 | \$0.00 | | | | | | | |
| Foregone Income | \$0.00 | \$0.00 | | | | | | | |
| Total | \$108,796.49 | \$1,813.27 | | | | | | | |
| Cost Details: | | | | | | | | | |
| Select Components | | | | | | | | | |
| Cost Category | Component ID | Component Name | Component Description | Unit | Price (\$/unit) | Quantity | Cost | Component Justification | Quantity Justification |
| Materials | 1485 | Micro irrigation, control valves and timers | Automatic controller and timer, to turn on and off the sets for micro irrigation, installation and valves. Based on control unit, not number of valves controlled. | Each | \$2,537.00 | 1 | \$2,537.00 | | |
| Materials | 1482 | Micro Irrigation, media filter | Sand or media filter for Micro irrigation system. Includes filters, plumbing, connections and automatic controller. Unit is complete and installed. | Each | \$5,289.33 | 3 | \$15,867.99 | | |
| Materials | 1484 | Micro Irrigation, screen filter, ≥ 100 gpm | Screen filter for Micro irrigation system with 100 gpm or greater capacity. Includes filters, plumbing, connections and automatic controller. Unit is complete and installed. | Each | \$722.00 | 1 | \$722.00 | | Downstream of media filter |
| Materials | 1323 | Pipe, PVC, dia. < 18", weight priced | Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only. | Pound | \$1.39 | 4800 | \$6,672.00 | Pipe downstream of the filter e.g. mainline, sub main, manifold, flush manifold. Pipe upstream of the filter should use a payment schedule for irrigation pipeline (Code 430) | 40 Ft 1 inch PVC PIPE 200# 1,480 FT 1 1/2 inch PVC PIPE 160# 1,680 FT 2 inch PVC PIPE 160# 80 FT 2 1/2 inch PVC PIPE 160# 1,080 FT 3 inch PVC PIPE 100# 1,160 FT 4 inch PVC PIPE 100# 1,280 FT 6 inch PVC 50# GASKET |
| Materials | 1488 | Micro Irrigation, surface drip tubing or tape | Tubing or Tape is installed above ground for surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in. | Foot | \$0.25 | 319440 | \$79,860.00 | | Lateral spacing is 9 feet 60 acres times 43,560 sq-ft per acre divided by lateral spacing plus 10% |
| Materials | 1452 | Flow Meter, with Electronic Index | 10 inch Turbine Irrigation flow meter, with Electronic Index, Rate and Volume, permanently installed. Materials only. | Each | \$1,387.50 | 1 | \$1,387.50 | | You manage what you measure |
| Equipment/Installation | 1987 | Micro irrigation, chemical injection equipment | Chemical Injector Pump, plus chemigation check valve, injector ports, and appurtenances, Installation included. | Each | \$1,750.00 | 1 | \$1,750.00 | | A chemical injection system will require at always be required to provide for periodic chemical injection to maintain the system. |

