

**Practice: 441 - Irrigation System, Microirrigation**

**Scenario: #4 - Surface Tape <5 acres**

**Scenario Description:**

A micro-irrigation system using drip tape or similar type micro-irrigation material placed on the soil surface for vegetables or field crops. Spacing of drip tape or similar type micro irrigation material is based on soil type or row alignment but will typically vary from 18" to 36". This system typically includes a filter system, PE manifolds fittings, drip tape, etc. This practice applies to systems designed to discharge < 60 gal/hr at each individual discharge point. Does not include Pump, power source, water source. Surface placed drip tape will not meet the 441 practice life and will normally need replacement every year. After first installation drip tape will be replaced as operation and maintenance issue as required for proper operation of the system. Water source is typically groundwater well or public water source.

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, 449-Irrigation Water Management, 430 - Irrigation Pipeline, 610 - Salinity & Sodic Soil Management, 328-Conservation Crop Rotation, 590 Nutrient Management, and 595-Integrated Pest Management.

**Before Situation:**

A typical before irrigation situation would normally be an existing inefficient sprinkler or surface irrigation system for vegetable or other crop production system. The existing irrigation system would experience poor, nonuniform irrigation applications and significant water losses affecting both water quantity and water quality.

**After Situation:**

A surface placed microirrigation system is utilized to provide highly efficient irrigation to a field. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced. Drip tape will be replaced as operation and maintenance issue as required for proper operation of the system. A typical scenario consists of a 1/2 acre irrigated field with lateral spacing of 2 feet.

**Scenario Feature Measure:** Acres in System

**Scenario Unit:** Acre

**Scenario Typical Size:** 0

**Scenario Cost:** \$1,238.60

**Scenario Cost/Unit:** #Div/0!

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.79	2	\$37.58
<b>Materials</b>						
Pipe, HDPE, smooth wall, weight priced	1379	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	\$2.37	49	\$116.13
Pressure Regulator	2468	Materials for pressure regulator less than or equal to 2" diameter.	Each	\$13.23	1	\$13.23
Micro Irrigation, surface drip tape	2522	Tape is installed above ground for surface drip irrigation on annual crops, includes installation, and connections to the supply and flushing laterals. Tape is a minimum of 10 mil thick and has emitters built in.	Foot	\$0.06	11979	\$718.74
Micro Irrigation, screen filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	\$144.82	1	\$144.82
Valve, Air Vacuum Release, Manual	1041	Materials for <2" Manual Air/Vacuum Relief Valve	Each	\$32.42	1	\$32.42
<b>Mobilization</b>						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$175.68	1	\$175.68

**Practice: 441 - Irrigation System, Microirrigation**

**Scenario: #5 - Surface Tape > 5 acres**

**Scenario Description:**

A micro-irrigation system using drip tape or similar type micro-irrigation material placed on the soil surface for vegetables or other field crops. Spacing of drip tape similar type micro irrigation material is based on soil type or row alignment but will typically vary from 18" to 36". This system typically includes a filter system, PE manifolds fittings, drip tape, etc. Does not include Pump, power source, water source. Surface placed drip tape will not meet the 441 practice life and will normally need replacement every year. After first installation drip tape will be replaced as a part of regular operation and maintenance as required for proper operation of the system.

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, 449-Irrigation Water Management, 430 - Irrigation Pipeline, 610 - Salinity & Sodic Soil Management, 328-Conservation Crop Rotation, 590 Nutrient Management, and 595-Integrated Pest Management.

**Before Situation:**

A typical before irrigation situation would include an existing inefficient sprinkler or surface irrigation system used to irrigate vegetables or other crops. The existing irrigation system would supply excessive or inadequate non-uniform irrigation applications with significant water losses affecting both water quantity and water quality.

**After Situation:**

A surface placed microirrigation system is utilized to provide highly efficient irrigation to a field. Crop water requirements are met. Water applications are normally reduced and runoff eliminated. Offsite water quality is improved, and on site water use reduced. Drip tape will be replaced as operation and maintenance issue as required for proper operation of the system. A typical scenario consists of a 20 acre irrigated field with lateral spacing of 2 feet.

**Scenario Feature Measure:** Acres in System

**Scenario Unit:** Acre

**Scenario Typical Size:** 20

**Scenario Cost:** \$48,619.95

**Scenario Cost/Unit:** \$2,431.00

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Micro Irrigation, chemical injection equipment	1987	Chemical Injector Pump, plus chemigation check valve, injector ports, and appurtenances, Installation included.	Each	\$1,419.30	1	\$1,419.30
Trenching, Earth, 12" x 48"	53	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.11	1320	\$1,465.20
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.79	32	\$601.28
<b>Materials</b>						
Water Meter, Microirrigation, ≤ 2", with Volume Totalizer	2437	Microirrigation water meter less than or equal to 2 inch diameter, with volume totalizer. Includes materials only.	Each	\$276.10	1	\$276.10
Pipe, PVC, 3", SCH 40	977	Materials: - 3" - PVC - SCH 40 - ASTM D1785	Foot	\$2.78	1320	\$3,669.60
Valve, Air Vacuum Release, Manual	1041	Materials for <2" Manual Air/Vacuum Relief Valve	Each	\$32.42	2	\$64.84
Micro Irrigation, control valves and timers	1485	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	\$1,277.01	2	\$2,554.02
Ball Valve, 4"	1726	4" ball valve, metal body. Materials only.	Each	\$317.69	6	\$1,906.14
Micro Irrigation, Media Filter, 12" to 24" Dia. tank, Equipped for Auto Flush	2466	Sand or media filter for Micro irrigation system. Includes filter, plumbing, connections and automatic controller. Unit is complete and installed. Unit is each Filter in a filter station that normally includes 2 or more filters.	Each	\$1,888.36	4	\$7,553.44

**Materials**

Pressure Regulator	2468	Materials for pressure regulator less than or equal to 2" diameter.	Each	\$13.23	4	\$52.92
Micro Irrigation, surface drip tape	2522	Tape is installed above ground for surface drip irrigation on annual crops, includes installation, and connections to the supply and flushing laterals. Tape is a minimum of 10 mil thick and has emitters built in.	Foot	\$0.06	479160	\$28,749.60
Micro Irrigation, screen filter, < 100 gpm	1617	Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed.	Each	\$46.31	1	\$46.31

**Mobilization**

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$261.20	1	\$261.20
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**Practice: 441 - Irrigation System, Microirrigation**

**Scenario: #6 - Hoop House Surface Microirrigation**

**Scenario Description:**

Surface Microirrigation system for 30' x 96' seasonal high tunnel, 24" rows with emitters on a 12" spacing.

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, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 433 - Irrigation Flow Measurement, 328-Conservation Crop Rotation, and 590 Nutrient Management.

**Before Situation:**

A field has an inefficient garden-hose based sprinkler irrigation system causing irrigation water loss that impacts water quality and water quantity.

**After Situation:**

A surface placed microirrigation system is utilized to provide highly efficient irrigation to an area. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced.

**Scenario Feature Measure:** Microirrigation area

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 2,880

**Scenario Cost:** \$536.78

**Scenario Cost/Unit:** \$0.19

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.79	4	\$75.16
<b>Materials</b>						
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	\$0.11	2880	\$316.80
Micro Irrigation, screen filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	\$144.82	1	\$144.82