

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	1
Scenario Name	0.75 to 1.25in, plastic, normal trenching
Scenario Description	Description: Below ground installation of HDPE or PVC pipeline. Typical practice sizes range from 0.75-inch to 4-inch; and typical scenario size is 1-inch. Construct one mile (5,280 feet) of 1-inch, SCH 40 PVC Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover into material that includes sand, silt and/or clay. Gravel and occasional cobbles or rock may also be encountered during installation. The scenario unit is Length of Pipe. 5,280 feet of 1-inch, SCH 40 PVC pipe weighs 0.320lb/ft, or a total of 1,690 pounds. Appurtenances include: fittings, anchors, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of Pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5,280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,732.73	\$0.52
Equipment/Installation	\$5,860.80	\$1.11
Labor	\$572.16	\$0.11
Mobilization	\$127.32	\$0.02
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$9,293.01	\$1.76

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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	\$1.47	1859	\$2,732.73
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.11	5280	\$5,860.80
Labor	231	General Labor	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	\$17.88	32	\$572.16
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$127.32	1	\$127.32

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	2
Scenario Name	0.75 to 1.25in, plastic, 5% rock trenching
Scenario Description	Description: Below ground installation of HDPE or PVC pipeline that requires at least 5% rock excavation, to the extent that specialized installation equipment is required. Typical practice sizes range from 0.75-inch to 4-inch; and typical scenario size is 1-inch. Construct one mile (5,280 feet) of 1-inch, SCH 40 PVC Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover. The scenario unit is Length of Pipe. 5,280 feet of 1-inch, SCH 40 PVC pipe weighs 0.320 lb/ft, or a total of 1,690 pounds. Appurtenances include: fittings, anchors, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,732.73	\$0.52
Equipment/Installation	\$10,726.32	\$2.03
Labor	\$715.20	\$0.14
Mobilization	\$254.64	\$0.05
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$14,428.89	\$2.73

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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	\$1.47	1859	\$2,732.73
Equipment/Installation	1097	Trenching, Rock	Includes equipment and labor for cutting trench in rock 6" x 36"	Foot	\$19.54	264	\$5,158.56
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.11	5016	\$5,567.76
Labor	231	General Labor	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	\$17.88	40	\$715.20
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$127.32	2	\$254.64

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	3
Scenario Name	Plastic, 1.5 to 2in, normal trenching
Scenario Description	Description: Below ground installation of PVC or HDPE pipeline. PVC and HDPE are manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from .75-inch to 4-inch; and typical scenario size is 1½-inch. Construct one mile (5,280 feet) of 1½-inch, Schedule 40, PVC Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover into material that includes sand, silt and/or clay. Gravel and occasional cobbles or rock may also be encountered during installation. 5,280 feet of 1½-inch, Schedule 40, PVC pipe weighs 0.501 lb/ft, or a total of 2,645 pounds. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of Pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5,280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$4,277.70	\$0.81
Equipment/Installation	\$5,860.80	\$1.11
Labor	\$572.16	\$0.11
Mobilization	\$127.32	\$0.02
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$10,837.98	\$2.05

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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	\$1.47	2910	\$4,277.70
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.11	5280	\$5,860.80
Labor	231	General Labor	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	\$17.88	32	\$572.16
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$127.32	1	\$127.32

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	4
Scenario Name	PVC, 2in or smaller, 5% rock excavation
Scenario Description	Description: Below ground installation of PVC or HDPE pipeline requiring at least 5% rock excavation, to the extent that specialized installation equipment is required. PVC and HDPE are manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 1½-inch. Construct one mile (5,280 feet) of 1½-inch, Schedule 40, PVC Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover. 5,280 feet of 1½-inch, Schedule 40, PVC pipe weighs 0.501 lb/ft, or a total of 2,645 pounds. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$4,277.70	\$0.81
Equipment/Installation	\$10,726.32	\$2.03
Labor	\$715.20	\$0.14
Mobilization	\$254.64	\$0.05
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$15,973.86	\$3.03

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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	\$1.47	2910	\$4,277.70
Equipment/Installation	1097	Trenching, Rock	Includes equipment and labor for cutting trench in rock 6" x 36"	Foot	\$19.54	264	\$5,158.56
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.11	5016	\$5,567.76
Labor	231	General Labor	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	\$17.88	40	\$715.20
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$127.32	2	\$254.64

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	5
Scenario Name	Plastic greater than 2in diameter, normal trenching
Scenario Description	Description: Below ground installation of PVC or HDPE pipeline. PVC and HDPE are manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 3-inch. Construct one mile (5,280 feet) of 3-inch, Schedule 40, PVC Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover into material that includes sand, silt and/or clay. Gravel and occasional cobbles or rock may also be encountered during installation. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material. Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$11,193.60	\$2.12
Equipment/Installation	\$5,860.80	\$1.11
Labor	\$572.16	\$0.11
Mobilization	\$127.32	\$0.02
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$17,753.88	\$3.36

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	977	Pipe, PVC, 3", SCH 40	Materials: - 3" - PVC - SCH 40 - ASTM D1785	Foot	\$2.12	5280	\$11,193.60
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.11	5280	\$5,860.80
Labor	231	General Labor	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	\$17.88	32	\$572.16
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$127.32	1	\$127.32

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	6
Scenario Name	Plastic, greater than 2in diameter, 5% rock excavation
Scenario Description	Description: Below ground installation of PVC or HDPE pipeline requiring at least 5% rock excavation, to the extent that specialized installation equipment is required. PVC and HDPE are manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 3-inch. Construct one mile (5,280 feet) of 3-inch, Schedule 40, PVC Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover. The scenario unit is length of pipe material. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material. Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of Pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5,280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$11,193.60	\$2.12
Equipment/Installation	\$10,726.32	\$2.03
Labor	\$715.20	\$0.14
Mobilization	\$254.64	\$0.05
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$22,889.76	\$4.34

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	977	Pipe, PVC, 3", SCH 40	Materials: - 3" - PVC - SCH 40 - ASTM D1785	Foot	\$2.12	5280	\$11,193.60
Equipment/Installation	1097	Trenching, Rock	Includes equipment and labor for cutting trench in rock 6" x 36"	Foot	\$19.54	264	\$5,158.56
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.11	5016	\$5,567.76
Labor	231	General Labor	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	\$17.88	40	\$715.20
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$127.32	2	\$254.64

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	8
Scenario Name	HDPE, greater than 2in diameter, Surface installation
Scenario Description	Description: on-ground surface installation of HDPE (Iron Pipe Size & Tubing) pipeline. HDPE (IPS & Tubing) is manufactured in sizes (nominal diameter) from ½-inch to 24-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 3-inch. Construct one mile (5,280 feet) of 3-inch, Class 200 (SDR-9.0, PE4708), HDPE Pipeline with appurtenances, installed on the ground surface. Typical size range of pipe installed: 1-inch to 4-inch. The scenario unit is length of pipe material. 5,280 feet of 3-inch, Class 200 (SDR-9.0, PE4708), HDPE pipe weighs 1.615 lb/ft, or a total of 8,527 pounds. Appurtenances include: couplings, fittings, anchors, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 15% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$25,201.42	\$4.77
Equipment/Installation	\$178.72	\$0.03
Labor	\$429.12	\$0.08
Mobilization	\$127.32	\$0.02
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$25,936.58	\$4.91

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1379	Pipe, HDPE, smooth wall, weight priced	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	\$2.57	9806	\$25,201.42
Equipment/Installation	1383	Fuser for HDPE Pipe	Fusing machine for 1" to 12" diameter HDPE pipe joints	Hour	\$22.34	8	\$178.72
Labor	231	General Labor	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	\$17.88	24	\$429.12
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$127.32	1	\$127.32

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	7
Scenario Name	HDPE, less than or equal to 2in, Surface installation
Scenario Description	Description: on-ground surface installation of HDPE (Iron Pipe Size & Tubing) pipeline. HDPE (IPS & Tubing) is manufactured in sizes (nominal diameter) from ½-inch to 24-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 2-inch. Construct one mile (5,280 feet) of 2-inch, Class 200 (SDR-9.0, PE4708), HDPE Pipeline with appurtenances, installed on the ground surface. Typical size range of pipe installed: 1-inch to 4-inch. The scenario unit is length of pipe material. 5,280 feet of 2-inch, Class 200 (SDR-9.0, PE4708), HDPE pipe weighs 0.744 lb/ft, or a total of 3,928 pounds. Appurtenances include: couplings, fittings, anchors, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 15% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of Pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5,280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$11,611.26	\$2.20
Equipment/Installation	\$178.72	\$0.03
Labor	\$286.08	\$0.05
Mobilization	\$35.25	\$0.01
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$12,111.31	\$2.29

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1379	Pipe, HDPE, smooth wall, weight priced	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	\$2.57	4518	\$11,611.26
Equipment/Installation	1383	Fuser for HDPE Pipe	Fusing machine for 1" to 12" diameter HDPE pipe joints	Hour	\$22.34	8	\$178.72
Labor	231	General Labor	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	\$17.88	16	\$286.08
Mobilization	1137	Mobilization, very small equipment	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	\$35.25	1	\$35.25

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	9
Scenario Name	Steel (Iron Pipe Size), less than 2in diameter, 5% rock excavation
Scenario Description	Description: Below ground installation of Steel (Iron Pipe Size) pipeline requiring 5% rock excavation. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 1½-inch. Construct one mile (5,280 feet) of 1½-inch, Schedule 40, Galvanized Steel Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover. Typical size range of pipe installed: 1-inch to 4-inch. The scenario unit is length of pipe material. 5,280 feet of 1½-inch, Schedule 40, Galvanized Steel Pipe weighs 2.718 lb/ft, or a total of 14,351 pounds. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of Pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5,280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$23,836.86	\$4.51
Equipment/Installation	\$10,726.32	\$2.03
Labor	\$1,287.36	\$0.24
Mobilization	\$254.64	\$0.05
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$36,105.18	\$6.84

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1381	Pipe, steel, smooth wall, galvanized, weight priced	Steel manufactured into galvanized smooth wall pipe	Pound	\$1.51	15786	\$23,836.86
Equipment/Installation	1097	Trenching, Rock	Includes equipment and labor for cutting trench in rock 6" x 36"	Foot	\$19.54	264	\$5,158.56
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.11	5016	\$5,567.76
Labor	231	General Labor	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	\$17.88	72	\$1,287.36
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$127.32	2	\$254.64

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	10
Scenario Name	Steel pipe, 2in diameter or larger, buried
Scenario Description	Description: Below ground installation of Steel (Iron Pipe Size) pipeline requiring 5% rock excavation. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 2-inch. Construct one mile (5,280 feet) of 2-inch, Schedule 40, Galvanized Steel Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover. Typical size range of pipe installed: 1-inch to 4-inch. The scenario unit is length of pipe material. 5,280 feet of 2-inch, Schedule 40, Galvanized Steel Pipe weighs 3.653 lb/ft, or a total of 19,288 pounds. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of Pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$32,037.67	\$6.07
Equipment/Installation	\$10,726.32	\$2.03
Labor	\$1,430.40	\$0.27
Mobilization	\$254.64	\$0.05
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$44,449.03	\$8.42

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1381	Pipe, steel, smooth wall, galvanized, weight priced	Steel manufactured into galvanized smooth wall pipe	Pound	\$1.51	21217	\$32,037.67
Equipment/Installation	1097	Trenching, Rock	Includes equipment and labor for cutting trench in rock 6" x 36"	Foot	\$19.54	264	\$5,158.56
Equipment/Installation	53	Trenching, Earth, 12" x 48"	Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling	Foot	\$1.11	5016	\$5,567.76
Labor	231	General Labor	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	\$17.88	80	\$1,430.40
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$127.32	2	\$254.64

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	11
Scenario Name	Steel pipe, less than 2in diameter, Surface installation
Scenario Description	Description: Installation of Steel (Iron Pipe Size) pipeline on the ground surface. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 1½-inch. Construct one mile (5,280 feet) of 1½-inch, Schedule 40, Galvanized Steel Pipeline with appurtenances, installed on the ground surface. Typical size range of pipe installed: 1-inch to 4-inch. The scenario unit is length of pipe material. 5,280 feet of 1½-inch, Schedule 40, Galvanized Steel Pipe weighs 2.718 lb/ft, or a total of 14,351 pounds. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of Pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$23,836.86	\$4.51
Equipment/Installation	\$0.00	\$0.00
Labor	\$2,288.64	\$0.43
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$26,125.50	\$4.95

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1381	Pipe, steel, smooth wall, galvanized, weight priced	Steel manufactured into galvanized smooth wall pipe	Pound	\$1.51	15786	\$23,836.86
Labor	231	General Labor	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	\$17.88	128	\$2,288.64

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Southern Plains
State	Oklahoma
Discipline Group	Water Management Engineering
Practice Code/Name	516 - Pipeline
Scenario ID	12
Scenario Name	Steel pipe, 2in diameter or larger, Surface installation
Scenario Description	Description: Installation of Steel (Iron Pipe Size) pipeline on the ground surface. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 2-inch. Construct one mile (5,280 feet) of 2-inch, Schedule 40, Galvanized Steel Pipeline with appurtenances, installed on the ground surface. Typical size range of pipe installed: 1-inch to 4-inch. The scenario unit is length of pipe material. 5,280 feet of 2-inch, Schedule 40, Galvanized Steel Pipe weighs 3.653 lb/ft, or a total of 19,288 pounds. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).
Before Practice Situation	Water supplies need to be conveyed through pipelines for use by livestock or wildlife.
After Practice Situation	Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.
Scenario Feature Measure	Length of Pipe
Scenario Unit	Linear Foot
Scenario Typical Size	5280

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$32,037.67	\$6.07
Equipment/Installation	\$0.00	\$0.00
Labor	\$2,574.72	\$0.49
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$34,612.39	\$6.56

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1381	Pipe, steel, smooth wall, galvanized, weight priced	Steel manufactured into galvanized smooth wall pipe	Pound	\$1.51	21217	\$32,037.67
Labor	231	General Labor	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	\$17.88	144	\$2,574.72