Scenario Worksheet

Practice and Scenario Description:	
Information Type	**Data**
Region	Mid Atlantic
State	New Jersey
Discipline Group	Wildlife Wetland
Practice Code/Name	396 - Aquatic Organism Passage
Scenario ID	1
Scenario Name	Concrete Dam Removal
Scenario Description	Full or partial removal of a concrete or earthen dam to restore aquatic organism passage, improve water quality, and promote functional river ecology and geomorphology. The extent of removal (full or partial) is determined through consultations with the dam owner in consideration of prevailing regulations and site historical status. Adjacent floodplain surfaces above and below the target dam are considered in the planning process to account for shifts in streamflow and geomorphic regime. Resulting channel dimensions and profile are determined on a site-specific basis to reflect--to the fullest extent possible--pre-dam conditions. Pre-removal sediment assays are completed to determine the toxicity of sediment stored behind the dam. Planning for the reclamation and management of stored sediments is completed according to geomorphic conditions, prevailing regulations, and the results of sediment toxicity investigations. Removal is done with an assortment of equipment, including tracked excavators outfitted with hydraulic chisels, hammers and/or buckets with "thumbs", bull dozers, skid steers, cranes, front-end loaders, and dump trucks. Alternative demolition techniques may include the use of high explosives, diamond-chain, or similar circular saws to remove the dam in a piecewise manner. Removed materials are trucked away and disposed or recycled off-site. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed in the active channel and floodplain to account for post-removal changes to stream plan, pattern, or profile, or reclamation of any former impounded areas. Additional structural measures may be necessary to address constructed features associated with the removed dam including canals, raceways, adjacent spillways, navigation locks, access and maintenance roads, or similar civil works. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation; EXCESS WATER – Ponding, flooding, seasonal high water table, seeps, and drifted snow; WATER QUALITY DEGRADATION – Elevated water temperature. Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (326) Clearing and Snagging, (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection, (587) Structure for Water Control
Before Practice Situation	A channel-spanning concrete dam no longer has functional use, may be failing, or creates a hazard to downstream capital infrastructure or communities. The dam blocks upstream aquatic organism migration, and downstream migrants may be diverted into hydraulic structures that increase mortality or result in migration delays or dead-ends. The dam disrupts the downstream cycling and transport of sediment, woody material and nutrients. The pool created by the dam may impair water quality by increasing temperatures, capturing fine sediment--sometimes laden with heavy metals or other pollutants--later mobilized by high flow events, and creating slackwater habitat for invasive aquatic vegetation. Non-native or exotic fish species inhabit the pool and predate upon and/or displace native fish.
After Practice Situation	The existing dam is removed and reach geometry and slope are restored to pre-dam conditions to the fullest extent practicable. Aquatic organism passage and river ecology and geomorphic conditions are restored to pre-dam conditions to the fullest extent practicable. Resource Concerns are addressed within the context of the site.
Scenario Feature Measure	Cubic Yards of concrete in dam and abutments (if present)
Scenario Unit	Cubic Yard
Scenario Typical Size	250 assume 8' high by 4' wide by 200' crest length plus abutments

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$0.00	$0.00
Equipment/Installation	$20,837.80	$83.35
Labor	$14,813.00	$59.25
Mobilization	$2,079.65	$8.32
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$37,730.45	$150.92

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost	Component Justification	Quantity Justification
Equipment/Installation	1215	Truck, dump, 12 CY	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hour	$72.47	80	$5,797.60	Truck to haul material away	Based on estimate derived from typical scenario
Equipment/Installation	40	Clearing and Grubbing	Clearing and Grubbing, includes materials, equipment and labor	Acre	$291.73	1.5	$437.60	Necessary to clear areas adjacent to dam to facilitate removal	Based on estimate derived from typical scenario
Equipment/Installation	927	Dozer, 140 HP	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	$101.33	20	$2,026.60	May be needed for demolition	Based on estimate derived from typical scenario
Equipment/Installation	932	Hydraulic Excavator, 2 CY	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	$155.28	60	$9,316.80	Excavator used to demolish dam. May require hydraulic chisel or jackhammer attachment	Based on estimate derived from typical scenario
Equipment/Installation	969	Water management, Flooding & dewatering	Includes equipment, power unit and labor costs.	Acre Foot	$194.60	6	$1,167.60	Dewatering needed to isolate area for regulatory purposes, safe working conditions, and site preparation for construction activities.	Quantity is site-specific and dictated by vertical foot of cofferdam depth required to isolate worksite from adjacent water.
Equipment/Installation	933	Skidsteer, 80 HP	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$34.86	60	$2,091.60	Skidsteer to remove blockage and/or ferry materials to/from larger equipment	Based on estimate derived from typical scenario
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	$44.00	40	$1,760.00	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$42.23	80	$3,378.40	Surveyors (PLS) needed to determine design elements and confirm post-construction elevations	Based on estimate derived from typical scenario
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	$22.79	60	$1,367.40	Labor for demolition, construction and site revegetation activities	Based on estimate derived from typical scenario
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$37.76	220	$8,307.20	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$22.77	5	$113.85	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	$43.59	2	$87.18	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$37.41	2	$74.82	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$40.62	4	$162.48	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$534.76	2	$1,069.52	Equipment, operators, labor, management, and consultant services necessary for project completion	Clearing & grubbing, hydraulic excavator
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$285.90	2	$571.80	Equipment, operators, labor, management, and consultant services necessary for project completion	skidsteer and dozer

Scenario Worksheet

Practice and Scenario Description:	
Information Type	**Data**
Region	Mid Atlantic
State	New Jersey
Discipline Group	Wildlife Wetland
Practice Code/Name	396 - Aquatic Organism Passage
Scenario ID	2
Scenario Name	Earthen Dam Removal
Scenario Description	Full removal of an earthen dam to restore aquatic organism passage, improve water quality, and promote functional river ecology and geomorphology. The removal extent is determined through consultations with the dam owner in consideration of prevailing regulations and site historical status. Adjacent floodplain surfaces above and below the target dam are considered in the planning process to account for shifts in streamflow and geomorphic regime. Resulting channel dimensions and profile are determined on a site-specific basis to reflect, to the fullest extent possible, pre-dam conditions. Pre-removal sediment assays are be completed as necessary to determine the toxicity of sediment stored behind the dam. Planning for the reclamation and management of stored sediments is completed according to geomorphic conditions, prevailing regulations, and the results of sediment toxicity investigations. Removal is done with an assortment of equipment, including tracked excavators outfitted with hydraulic chisels, hammers and/or buckets with "thumbs", bull dozers, skid steers, cranes, front-end loaders, and dump trucks. Removed materials are trucked away and disposed or recycled off-site, unless native streambed material found in the embankment can be used in site reclamation. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed in the active channel and floodplain to account for post-removal changes to stream plan, pattern, or profile, or reclamation of any former impounded areas. Additional structural measures may be necessary to address constructed features associated with the removed dam including head gates, canals, raceways, access and maintenance roads, or similar civil works. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation; EXCESS WATER – Ponding, flooding, seasonal high water table, seeps, and drifted snow; WATER QUALITY DEGRADATION – Elevated water temperature. Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (326) Clearing and Snagging, (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection, (587) Structure for Water Control
Before Practice Situation	A channel-spanning earthen dam no longer has functional use, may be failing, or creates a hazard to downstream capital infrastructure or communities. The dam blocks upstream aquatic organism migration, and downstream migrants may be diverted into hydraulic structures that increase mortality or result in migration delays or dead-ends. The dam disrupts the downstream cycling and transport of sediment, woody material and nutrients. The pool created by the dam may impair water quality by increasing temperatures, capturing fine sediment--sometimes laden with heavy metals or other pollutants--later mobilized by high flow events, and creating slackwater habitat for invasive aquatic vegetation. Non-native or exotic fish species inhabit the pool and predate upon and/or displace native fish.
After Practice Situation	The existing dam is removed and reach geometry and slope are restored to pre-dam conditions to the fullest extent practicable. Aquatic organism passage and river ecology and geomorphic conditions are restored to pre-dam conditions to the fullest extent practicable. Resource Concerns are addressed within the context of the site.
Scenario Feature Measure	Cubic Yards of earthen embankment
Scenario Unit	Cubic Yard
Scenario Typical Size	500 trapezoidal fill 8' top, 6' high, 16' base, 150 feet long

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$0.00	$0.00
Equipment/Installation	$19,760.99	$39.52
Labor	$10,858.20	$21.72
Mobilization	$2,697.92	$5.40
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$33,317.11	$66.63

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost	Component Justification	Quantity Justification
Equipment/Installation	927	Dozer, 140 HP	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	$101.33	40	$4,053.20	May be needed for demolition	Based on estimate derived from typical scenario
Equipment/Installation	932	Hydraulic Excavator, 2 CY	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	$155.28	60	$9,316.80	Excavator used to demolish dam	Based on estimate derived from typical scenario
Equipment/Installation	969	Water management, Flooding & dewatering	Includes equipment, power unit and labor costs.	Acre Foot	$194.60	6	$1,167.60	Dewatering needed to isolate area for regulatory purposes, safe working conditions, and site preparation for construction activities.	Quantity is site-specific and dictated by vertical foot of cofferdam depth required to isolate worksite from adjacent water.
Equipment/Installation	1215	Truck, dump, 12 CY	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hour	$72.47	60	$4,348.20	Truck to haul material away	Based on estimate derived from typical scenario
Equipment/Installation	40	Clearing and Grubbing	Clearing and Grubbing, includes materials, equipment and labor	Acre	$291.73	3	$875.19	Necessary to clear areas adjacent to dam to facilitate removal	Based on estimate derived from typical scenario
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	$44.00	40	$1,760.00	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
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	$22.79	60	$1,367.40	Labor for demolition, construction and site revegetation activities	Based on estimate derived from typical scenario
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$37.76	160	$6,041.60	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$42.23	40	$1,689.20	Surveyors (PLS) needed to determine design elements and confirm post-construction elevations	Based on estimate derived from typical scenario
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$534.76	2	$1,069.52	Equipment, operators, labor, management, and consultant services necessary for project completion	clearing & grubbing, and hydraulic excavator
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$285.90	1	$285.90	Equipment, operators, labor, management, and consultant services necessary for project completion	140Hp dozer
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$22.77	8	$182.16	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$37.41	20	$748.20	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$40.62	8	$324.96	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	$43.59	2	$87.18	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario

Scenario Worksheet

Practice and Scenario Description:	
Information Type	**Data**
Region	Mid Atlantic
State	New Jersey
Discipline Group	Wildlife Wetland
Practice Code/Name	396 - Aquatic Organism Passage
Scenario ID	3
Scenario Name	Blockage Removal
Scenario Description	Removal of passage barriers, including small relict earthen diversions (e.g., splash dams), failing or undersized culverts, and sediment or large woody material (>10cm diameter and 2m length) from mass wasting or major flood events. Instream material associated with the previously mentioned circumstances or structures prevents aquatic organism passage by the creation of channel-spanning blockages, or areas of shallow depth, high velocities, or extensive changes in water surface elevation. In addition, these features may encourage abrupt channel changes that endanger adjacent capital infrastructure or transportation corridors. Excessive streambank erosion by flows deflected around or impounded behind these features may impair water quality by introducing fine sediment out of phase with the natural hydrograph and the life history requirements of native aquatic species. Removal is done with an assortment of equipment, including tracked excavators outfitted with buckets with "thumbs", bull dozers, skid steers, front-end
Before Practice Situation	An instream feature spanning the active channel creates hydraulic conditions that exceed the swimming or crawling abilities of native aquatic organisms. Event-driven mass wasting or instream deposits of coarse sediment create channel blockages or areas of shallow, fast-moving water. An instream plug of material transported to the site by flood flows or delivered to the channel from a hillslope failure not only blocks passage, but may deflect the stream toward a new course than endangers adjacent capital infrastructure or transportation corridors. Elevated risks associated with eventual over-topping or failure of the blockage to downstream features or communities are imminent in the event of a blockage that forms a temporary dam. Accelerated instream or lateral channel erosion may introduce fine sediment that impairs water quality.
After Practice Situation	The instream barrier is removed by a combination of methods and equipment and the channel and affected floodplain are restored to pre-blockage conditions to the fullest extent practicable. Resource Concerns are addressed within the context of the site.
Scenario Feature Measure	Cubic Yards of mineral sediment, fill or large woody material
Scenario Unit	Cubic Yard
Scenario Typical Size	200

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$154.00	$0.77
Equipment/Installation	$10,921.40	$54.61
Labor	$7,922.60	$39.61
Mobilization	$2,809.45	$14.05
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$21,807.45	$109.04

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost	Component Justification	Quantity Justification
Materials	43	Silt Fence	Silt Fence with support post, includes materials, equipment and labor	Foot	$0.77	200	$154.00	Sediment and erosion BMP used to control water quality and runoff around construction area.	Based on estimate derived from typical scenario
Equipment/Installation	1215	Truck, dump, 12 CY	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hour	$72.47	40	$2,898.80	Truck to haul material away	Based on estimate derived from typical scenario
Equipment/Installation	926	Backhoe, 80 HP	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$45.10	40	$1,804.00	Backhoe used to remove blockage.	Based on estimate derived from typical scenario
Equipment/Installation	927	Dozer, 140 HP	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	$101.33	20	$2,026.60	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Equipment/Installation	932	Hydraulic Excavator, 2 CY	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	$155.28	20	$3,105.60	Excavator used to remove blockage.	Based on estimate derived from typical scenario
Equipment/Installation	969	Water management, Flooding & dewatering	Includes equipment, power unit and labor costs.	Acre Foot	$194.60	2	$389.20	Dewatering needed to isolate area for regulatory purposes, safe working conditions, and site preparation for construction activities.	Quantity is site-specific and dictated by vertical foot of cofferdam depth required to isolate worksite from adjacent water.
Equipment/Installation	933	Skidsteer, 80 HP	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$34.86	20	$697.20	Skidsteer to remove blockage and/or ferry materials to/from larger equipment	Based on estimate derived from typical scenario
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	$44.00	20	$880.00	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$42.23	20	$844.60	Surveyors (PLS) needed to determine design elements and confirm post-construction elevations	Based on estimate derived from typical scenario
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	$22.79	40	$911.60	Labor for demolition, construction and site revegetation activities	Based on estimate derived from typical scenario
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$37.76	140	$5,286.40	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$22.77	8	$182.16		
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	$43.59	8	$348.72	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$37.41	15	$561.15	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$40.62	8	$324.96	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$534.76	1	$534.76	Equipment, operators, labor, management, and consultant services necessary for project completion	hydraulic excavator
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$285.90	3	$857.70	Equipment, operators, labor, management, and consultant services necessary for project completion	Skid steer, dozer.and backhoe

Scenario Worksheet

Practice and Scenario Description:	
Information Type	**Data**
Region	Mid Atlantic
State	New Jersey
Discipline Group	Wildlife Wetland
Practice Code/Name	396 - Aquatic Organism Passage
Scenario ID	4
Scenario Name	Nature-Like Fishway
Scenario Description	Nature-like fishways, also known as roughened channels, rock ramps, or bypass channels, are constructed features that provide passage around an instream barrier or in place of a removed barrier. Fishway design is based on simulating or mimicking adjacent stream characteristics, using natural materials, and providing suitable passage conditions over a range of flows for a wide variety of fish species and other aquatic organisms. Nature-like fishways provide enhanced passage conditions compared to concrete or aluminum (Alaskan Steeppass) ladders, and are not as susceptible to debris related operational issues. When used to bypass an instream barrier, they require a larger footprint than instream structures, and may also require control structures to regulate flow through the fishway or address tailwater fluctuations affecting the fishway entrance (downstream end). Fishway design includes an assessment of adjacent stream characteristics, including channel geometry, slope, sediment texture and composition, and major geomorphic units that govern channel plan, pattern and profile. In the case of a fishway that bypasses an instream barrier, the design is tailored to these elements, the elevation required to ascend the barrier, and the known range of flow variation or operations. For fishways constructed in the place of a removed barrier, the design may be a hybrid approach that meets the same criteria, although in a smaller instream footprint. Nature-like fishways are constructed with an assortment of equipment used for excavation, placing material, and delivering and removing material. Construction elements generally include an assortment of rock used to create riffles, cascades, or riffle-pool sequences with between 6 to 12 inches
Before Practice Situation	An instream barrier prevents upstream migration of native aquatic organisms and no support exists for removal. Similarly, an instream barrier is removed, and interested parties require maintenance of an upstream pool or pond. The subject stream contains a number of migrating aquatic organisms ranging in size from small to large with a range of propulsion abilities--weak to strong swimmers and animals that crawl along the bottom. In either case--barrier removal or bypassing an existing barrier--local sentiment to preserve existing or natural conditions and the desire to provide passage for a range of aquatic organisms indicate the use of a nature-like fishway. Adequate space for a bypass channel is available, and adjacent landowners approve.
After Practice Situation	A nature-like fishway is constructed in place of a removed barrier or around an existing barrier. The fishway is designed to mimic the adjacent natural stream, and is constructed of rock and/or large woody material that provides quality passage conditions for a number of species and geomorphic stability over a range of flows. Resource Concerns are addressed within the context of the site.
Scenario Feature Measure	Acres of constructed fishway (bankfull width X total length/43,650)
Scenario Unit	Acre
Scenario Typical Size	1 (assume 20ft wide by 2000 feet long)

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$3,177.50	$3,177.50
Equipment/Installation	$57,547.79	$57,547.79
Labor	$41,736.60	$41,736.60
Mobilization	$4,307.17	$4,307.17
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$106,769.06	$106,769.06

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost	Component Justification	Quantity Justification
Materials	1834	Aggregate, river rock	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$32.75	50	$1,637.50	Backfill to mimic adjacent streambed texture and composition.	Based on estimate derived from typical scenario
Materials	43	Silt Fence	Silt Fence with support post, includes materials, equipment and labor	Foot	$0.77	2000	$1,540.00	Sediment and erosion BMP used to control water quality and runoff around construction area.	Based on estimate derived from typical scenario
Equipment/Installation	926	Backhoe, 80 HP	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$45.10	80	$3,608.00	Excavate fishway area and place rock	Based on estimate derived from typical scenario
Equipment/Installation	932	Hydraulic Excavator, 2 CY	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	$155.28	80	$12,422.40	Excavate fishway area and place rock	Based on estimate derived from typical scenario
Equipment/Installation	933	Skidsteer, 80 HP	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$34.86	100	$3,486.00	Excavate fishway area and place rock	Based on estimate derived from typical scenario
Equipment/Installation	969	Water management, Flooding & dewatering	Includes equipment, power unit and labor costs.	Acre Foot	$194.60	2	$389.20	Dewatering needed to isolate area for regulatory purposes, safe working conditions, and site preparation for construction activities.	Quantity is site-specific and dictated by vertical foot of cofferdam depth required to isolate worksite from adjacent water.
Equipment/Installation	42	Geotextile, woven	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$2.46	12000	$29,520.00	Component of subgrade preparation to control seepage	Based on estimate derived from typical scenario
Equipment/Installation	1215	Truck, dump, 12 CY	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hour	$72.47	100	$7,247.00	Deliver rock and remove excavated material	Based on estimate derived from typical scenario
Equipment/Installation	40	Clearing and Grubbing	Clearing and Grubbing, includes materials, equipment and labor	Acre	$291.73	3	$875.19	Necessary to clear construction area for project completion	Based on estimate derived from typical scenario
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	$44.00	60	$2,640.00	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
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	$22.79	100	$2,279.00	Labor for demolition, construction and site revegetation activities	Based on estimate derived from typical scenario
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$37.76	360	$13,593.60	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Labor	235	Specialist Labor	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$82.69	240	$19,845.60	Design Assistance may be needed on some projects, especially if new to an area or complex	Based on estimate derived from typical scenario
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$42.23	80	$3,378.40	Surveyors (PLS) needed to determine design elements and confirm post-construction elevations	Based on estimate derived from typical scenario
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$534.76	2	$1,069.52	Equipment, operators, labor, management, and consultant services necessary for project completion	Hydraulic excavator & clearing and grubbing
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$285.90	2	$571.80	Equipment, operators, labor, management, and consultant services necessary for project completion	Backhoe, skidsteer
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$22.77	5	$113.85	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario

Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$37.41	32	$1,197.12	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$40.62	8	$324.96	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	$43.59	8	$348.72	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1146	Mobilization, Specialist Labor	Mobilization of Specialist Labor. Includes Agronomists, Foresters, Biologists, etc.	Hour	$85.15	8	$681.20	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario

Scenario Worksheet

Practice and Scenario Description:	
Information Type	**Data**
Region	Mid Atlantic
State	New Jersey
Discipline Group	Wildlife Wetland
Practice Code/Name	396 - Aquatic Organism Passage
Scenario ID	9
Scenario Name	Concrete Ladder
Scenario Description	Formed, reinforced, poured-in-place concrete structures outfitted with baffles (Denil), vertical slots, pools and weirs, submerged orifices, chutes or some combination thereof to provide upstream passage for aquatic organisms over dams and other hydraulic structures. Although fish ladder designs vary according to target species and site conditions, they can generally be described as a three-sided concrete channel with integrated hydraulic features that provide a gradual elevation increase across some distance that allows aquatic organism to swim over a barrier--they convert the total barrier head elevation into passable increments. Concrete ladders are often constructed with resting pools and may have switchbacks. The primary water source for a concrete ladder comes from streamflow diverted into the ladder exit (upstream end) and since it is passed through the ladder to the river below, it is not a consumptive use. These ladders often require flow control and regulating devices (sometimes automated), gates, and may need auxiliary pumps to provide attraction flows at the ladder entrance (downstream end) or augment flow in the ladder. Gages above and below the dam are required to inform ladder operation. Trash racks are used at the upstream end to block debris from entering the ladder. Concrete ladders also require frequent maintenance, and flow through unautomated ladders may need to be adjusted manually when adjacent river conditions or dam operations change. Concrete ladder designs can be complex and require interactions between engineering and ecological sciences for successful implementation. For
Before Practice Situation	An operational, low hazard class fixed crest concrete dam becomes the target of parties interested in providing fish passage. The dam presently blocks the upstream migration of a number of native aquatic organisms, and suitable spawning and rearing habitats for targeted fish species exists in upstream river reaches. Assessment of site conditions, dam operation, and target species swimming abilities indicate that a concrete ladder will provide suitable passage conditions during the migration season and pass the expected run volume without excessive delays.
After Practice Situation	A concrete pool and chute ladder outfitted with aluminum internal features and 2 turn/resting pool is installed. The ladder is attached to the face and abutment of the dam, and the entrance is located along the streambank where migrating aquatic organisms are likely to encounter it. The ladder passes the estimated run volume with minimal delays, and native aquatic animals are able to reach upstream spawning and rearing areas and successfully produce offspring that become part of the population. The ladder has an operating plan that stipulates actions and responsible parties for every month of the year. The ladder is fenced to control access and signage indicating its function and relevant warnings is provided at numerous locations. Resource Concerns are addressed within the context of the site.
Scenario Feature Measure	Barrier height (feet)
Scenario Unit	Vertical Feet
Scenario Typical Size	20

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	$154.00	$7.70
Equipment/Installation	$292,016.59	$14,600.83
Labor	$37,173.80	$1,858.69
Mobilization	$4,307.17	$215.36
Acquisition of Technical Knowledge	$0.00	$0.00
Foregone Income	$0.00	$0.00
Total	$333,651.56	$16,682.58

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price ($/unit)	Quantity	Cost	Component Justification	Quantity Justification
Materials	43	Silt Fence	Silt Fence with support post, includes materials, equipment and labor	Foot	$0.77	200	$154.00	Sediment and erosion BMP used to control water quality and runoff around construction area.	Based on estimate derived from typical scenario
Equipment/Installation	1215	Truck, dump, 12 CY	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hour	$72.47	60	$4,348.20	Deliver rock and remove excavated material	Based on estimate derived from typical scenario
Equipment/Installation	1211	Truck, Concrete Pump	Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator.	Hour	$191.39	60	$11,483.40	Truck to deliver and pump concrete to screen	Based on estimate derived from typical scenario
Equipment/Installation	38	Concrete, CIP, formed reinforced	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	$512.45	500	$256,225.00	Used for walls, floor and internal elements of ladder including entrance and exit galleries	Based on estimate derived from typical scenario
Equipment/Installation	40	Clearing and Grubbing	Clearing and Grubbing, includes materials, equipment and labor	Acre	$291.73	3	$875.19	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Equipment/Installation	926	Backhoe, 80 HP	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$45.10	60	$2,706.00	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Equipment/Installation	932	Hydraulic Excavator, 2 CY	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	$155.28	80	$12,422.40	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Equipment/Installation	969	Water management, Flooding & dewatering	Includes equipment, power unit and labor costs.	Acre Foot	$194.60	6	$1,167.60	Dewatering needed to isolate area for regulatory purposes, safe working conditions, and site preparation for construction activities.	Quantity is site-specific and dictated by vertical foot of cofferdam depth required to isolate worksite from adjacent water.
Equipment/Installation	933	Skidsteer, 80 HP	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$34.86	80	$2,788.80	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	$44.00	80	$3,520.00	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Labor	230	Skilled Labor	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$42.23	80	$3,378.40	Skilled labor (carpenter, electrical, concrete, PLS, etc.) necessary for project completion	Based on estimate derived from typical scenario
Labor	235	Specialist Labor	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$82.69	240	$19,845.60	Design Assistance may be needed on some projects, especially if new to an area or complex	Based on estimate derived from typical scenario
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	$22.79	60	$1,367.40	Labor for demolition, construction and site revegetation activities	Based on estimate derived from typical scenario
Labor	233	Equipment Operators, Heavy	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$37.76	240	$9,062.40	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1142	Mobilization, General labor	Mobilization of general labor: Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$22.77	5	$113.85	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario

Mobilization	1146	Mobilization, Specialist Labor	Mobilization of Specialist Labor. Includes Agronomists, Foresters, Biologists, etc.	Hour	$85.15	8	$681.20	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1145	Mobilization, Supervisor or Manager	Mobilization of supervisors or management. Includes crew supervisors, foremen and farm/ranch managers, etc.	Hour	$43.59	8	$348.72	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1144	Mobilization, Heavy Equipment Operator	Mobilization of heavy equipment operators: Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	$37.41	32	$1,197.12	Equipment and operators necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1141	Mobilization, Skilled labor	Mobilization of skilled labor: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	$40.62	8	$324.96	Equipment, operators, labor, management, and consultant services necessary for project completion	Based on estimate derived from typical scenario
Mobilization	1140	Mobilization, large equipment	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$534.76	2	$1,069.52	Equipment and operators necessary for project completion	Hydraulic excavator and clearing & grubbing
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$285.90	2	$571.80	Equipment and operators necessary for project completion	Backhoe, skidsteer