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Real-World Applications of Renewable Energy Technologies at Hatcheries

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Quinsam River Hatchery
Total Head = 75 ft
Net Head:
• 59 ft @ 24 cfs
• 66 ft @ 15 cfs
Headtank
Headtank
Existing Headtank Piping
Proposed Microhydro System
Proposed Microhydro System

SECTION

12" RETURN TO HEADTANK
16" RETURN TO HEADTANK
16" RETURN TO HEADTANK

16" SUPPLY TO TURBINE
CONC SLAB
FUTURE CONC SLAB AND SHELF FOR FUTURE TURBINE AND GENERATOR

SECTION

EXISTING HEADTANK
EXISTING CONCRETE BEAM

NEW 12", 90° ELBOW, SUPPLY TO TURBINE, (2) PLACES, SEE PLAN
EXISTING BUTTERFLY VALVE
EXISTING SUPPLY HEADER

OPEN SIDE SHELF
TURBINE AND GENERATOR
18" RETURN TO HEADTANK
CONC SLAB
18" LG RADIUS 90° ELBOW

16" TURBINE OUTLET
16" XTR-LG RADIUS 90° ELBOW
PIPE SUPPORT
Turbine and Induction Generator
Estimated Benefit

- Facility currently uses around 480,000 kWh per year
- Proposed system will produce about 268,000 kWh per year
- At $0.05/kWh, system reduces power bill by $13,400 per year
- Payback approximately equal to expected life of the equipment
Silver Creek Hatchery

863 Acres
Silver Creek Hatchery
Photovoltaic System Loads:
- Drum Filter Motor
- Drum Filter Backwash Pump
- Backwash Lift Pump
- Control System
- Minimal Lighting
Design Considerations

- Client preference for mounting PV panels on roof to discourage tampering/theft
- Optimizing PV panel performance requires southern orientation
- Electrical load will be seasonally variable due to the nature of the rearing program
- Client willing to use portable generator as backup for poor weather during peak load period
Questions?