National Hydro Association Conference

South Canal Hydro Project

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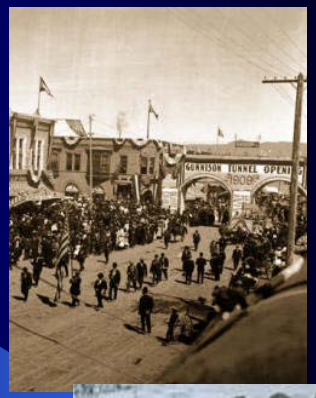
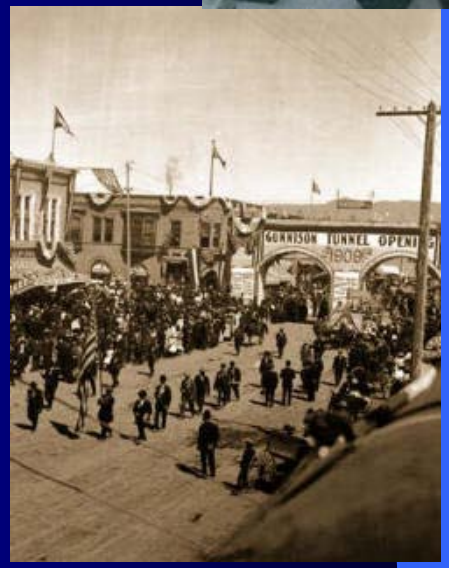
Uncompahgre Project Details

- **Gunnison Tunnel Completed 1909**
  - **1 of 4 Original Bureau of Reclamation Projects**
  - **Irrigation water for agriculture**
- **Uncompahgre Project**
  - **Irrigates approximately 80,000 acres**
- **Hydroelectric Generation**
  - **Potential recognized from Project onset**





Hydro Project Milestones

- **DMEA & UVWUA Agree to Partner**
- ***01 Feb 2010* - LOPP Application to USBR**
  - **DMEA & UVWUA only applicants**
- ***August 2010* - LOPP negotiations begin**
  - **DMEA/UVWUA Agreement finalized**
- ***March 2011* - NEPA scoping meeting**
- ***December 2011* – Draft EA**
  - **Comment period through Jan 2012**
- ***Feb 2012* - Final EA & FONSI**
  - **Preconstruction requirements**
- ***March 2012* – Notice to Proceed**

Hydro Project Details

Final Design

- **Site 1 = 4 MW**
  - **1000 cfs maximum**
  - **54 feet of head**
- **Site 3 = 3.5 MW**
  - **1000 cfs maximum**
  - **48 feet of head**
- **Project Budget**
  - **$22 million**
- **Project Timeline**
  - **Construction March 2012 – July 2013**

Hydro Project Challenges

Managing Entity Challenge

- **USBR's Federal Register notice - applicant must demonstrate Project works in harmony with the operations of the USBR facility**
  - **Managing Entity must concur that Project is in harmony**

Initial Solution

- **DMEA & UVWUA agree to partner on the Project**

Hydro Project Challenges

New Challenge

- **UVWUA = maximize revenue**
- **DMEA = minimize cost of electricity**

Final Solution

- **3 years to reach agreement**
- **Use DMEA's avoided cost of purchased power as revenue to the Project**
  - **This agreement in effect for 20 years**

Hydro Project Challenges

LOPP Challenges

- 30 Sections in the Lease document
  - Financial obligations
    - The cost of the lease was the "biggest" item to negotiate
  - Operational requirements
  - Preconstruction requirements

Solutions

- Financial - 3 mils to start; annual escalation within budget
- Operational – Generation March – October
  - No new diversions of water
- Preconstruction – Contract for spoils located on private land

Hydro Project Challenges

LOPP Challenges

- **NEPA**
  - **Threatened plant species**
  - **Fish mitigation – Gold medal trout fishery in Gunnison River (source of irrigation water)**

Solutions

- **T&E plant surveys**
  - **No occurrence in Project impact area**
- **Electric Fish Deterrent System**
  - **Keep fish in the Gunnison River**
  - **No screen cleaning required**
- **Purchase 1-1/4 mile of Uncompahgre River property**
  - **Mitigate for loss of fishing in S. Canal**

Hydro Project Challenges

Capital Cost Challenge

- **Seasonal flow reduces total annual electricity generation**
- **Relatively high capital cost = $3000/kW(low head sites)**
  - **27,000 MWH per season**

Solution

- **CREB's – Clean Renewable Energy Bonds financed 100 %**
  - **1.234 % for 21 years**
  - **Semi-annual payments**
  - **DMEA must be sole owner to qualify for 100% financing**
    - **Challenge for DMEA-UVWUA agreement**
- **Low Cost T&G**
  - **All of short listed RFP respondents – Chinese T&G**

Uncompahgre Project

East Portal – Gunnison Tunnel Intake

West Portal – Gunnison Tunnel Exit

Uncompahgre Project

South Canal – Site 1

Hydro Project Construction

Site 1 Intake

Hydro Project Construction

Site 1 Intake

Hydro Project Construction

Site 1 Intake

Hydro Project Construction

Site 1 Penstock

Hydro Project Construction

Site 1 Penstock

Hydro Project Construction

South Canal – Site 1 Powerhouse

Hydro Project Construction

South Canal – Site 1 Powerhouse

Hydro Project Construction

South Canal – Site 1 Powerhouse

Hydro Project Construction

South Canal – Site 1 Powerhouse

Hydro Project Construction

Site 1– Tailrace

Uncompahgre Project

South Canal – Site 3

Hydro Project Construction

South Canal – Site 3

Hydro Project Construction

Intake Site 3

Hydro Project Construction

Intake Site 3

Hydro Project Construction

Penstock Site 3

Hydro Project Construction

Power House Site 3

Hydro Project Construction

Tail Race Site 3

Electric Fish Barrier

Electric Fish Barrier

Electric Fish Barrier

Electric Fish Barrier

Fish Barrier

- Operate during irrigation season.

- Emits an electrical field = 2.0 – 4.0 volts per inch.

- Deters fish; doesn’t shock them.

Electric Fish Barrier

Thank You

Additional Q & A