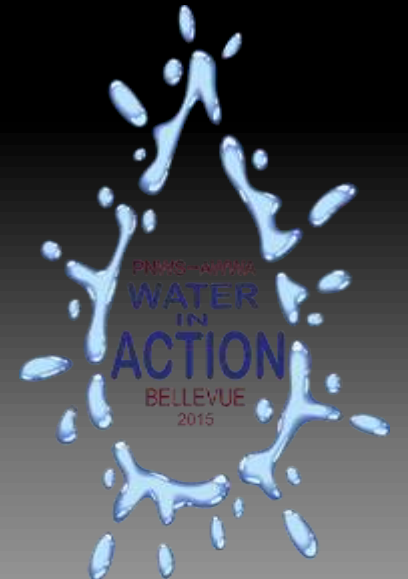


The Challenges a CM/GC Must Face with a Changing Project

Tom Paul – General Manger – Environmental Group

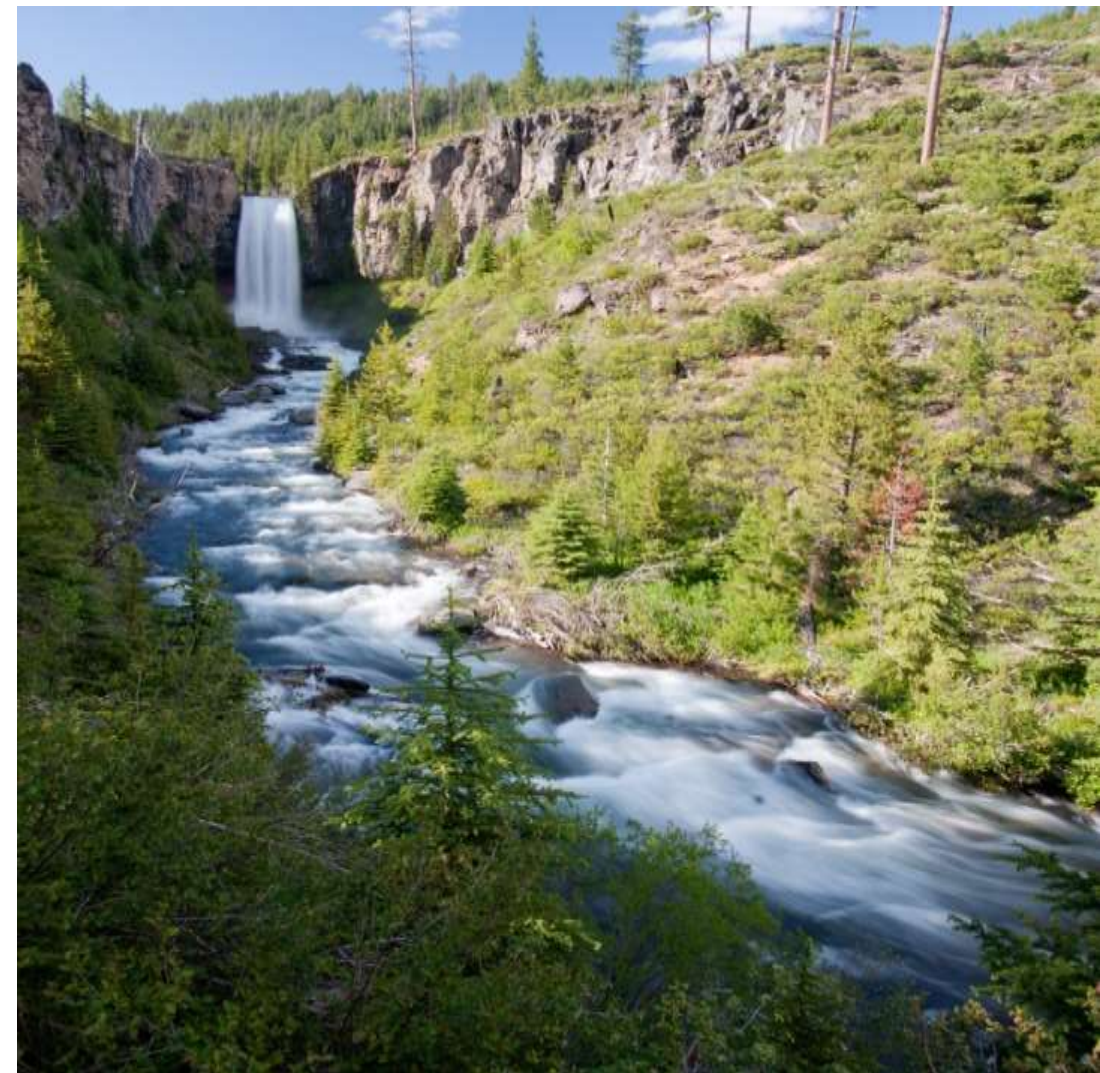


Introduction

- Review Project Scope
- Address Project Timeline
- Share Events that Created Significant Challenges
- Constraints – Defined, Undefined, and Ever-Changing
- Lesson Learned
- Path Forward

Project Scope

- The project is located west of the city of Bend Oregon.
- The project is located over a ten mile route starting at 5000 feet above sea level and dropping to 4000 feet above sea level.
- The project is located in the Deschutes National Forest
- The City is building this project to meet LT₂ Compliance requirements
- City depends on surface water for the majority of their water needs and supplements with well water during peak demand periods.



Project Scope

- The project is spread over a ten mile area including:
 - Intake Facility
 - USFS 4603
 - USFS 4601
 - USFS 4606
 - City of Bend Outback Water Treatment Plant



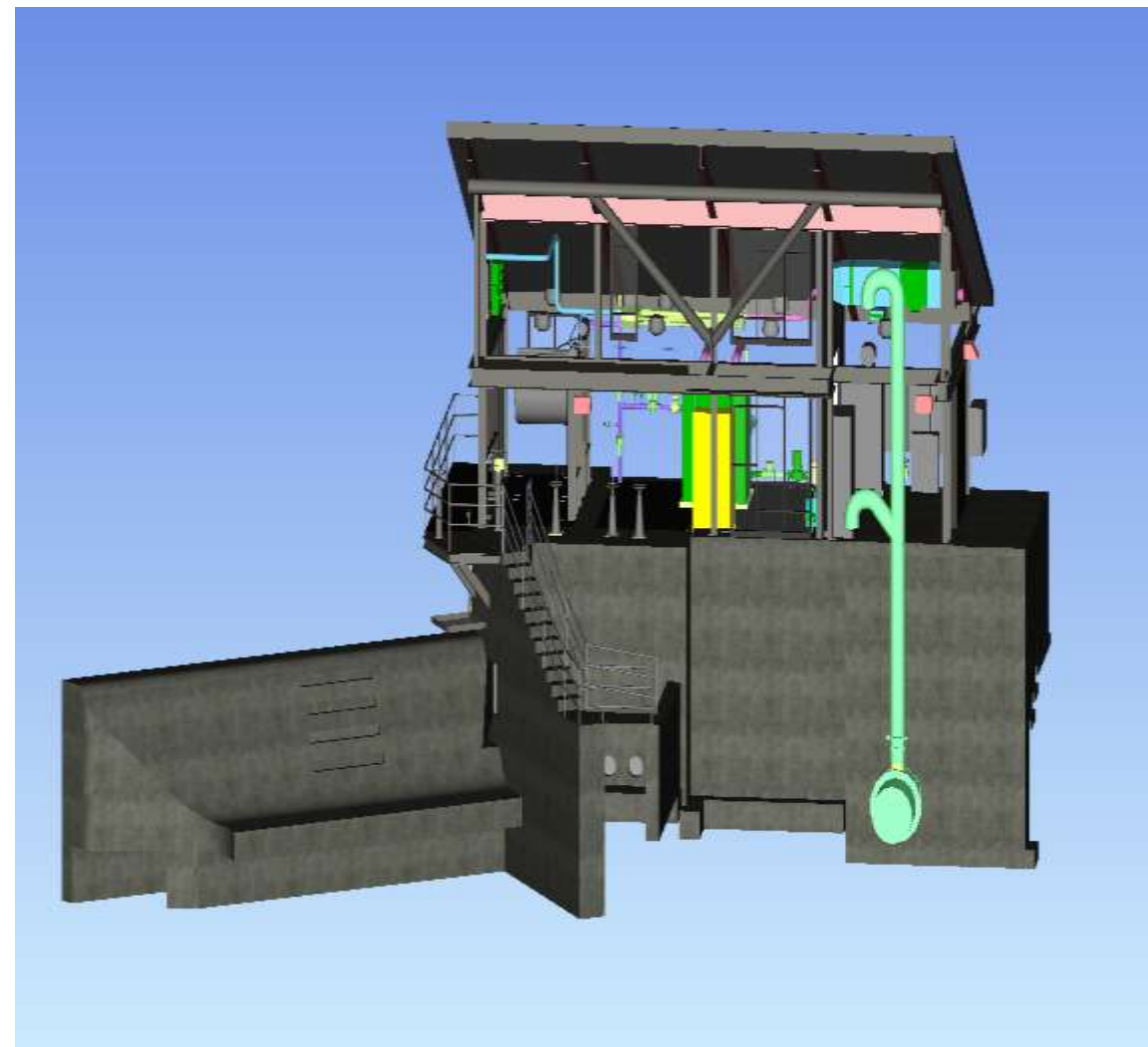
Intake Structure

- The Intake Structure was originally built in 1926 to create a diversion for the City's water supply
- The facility included a caretakers residence as well as a basic debris screen system
- The dam creates a pool which allows for surface water to be captured and directed into the City's two existing pipelines



Intake Structure

- The Intake will go under an extensive renovation including the installation of drum screens, frazzle ice system, electrical and SCADA upgrades
- The Intake facility feeds to existing pipeline installed in 1926 and in 1950's
- These pipeline currently convey water to the City's Outback Water Plan



New Pipeline

- This project will replace the two existing pipelines which have reached their service life
- Thru an early procurement strategy the project was able to purchase steel coil materials to be used for the construction of the 30" welded steel pipeline
- Using this same strategy we were able to early procure portions of the HDPE pipeline.



Upper Crossing

- One of the first challenges is to replace the 1950's line which is an aerial crossing just below the water falls
- This replacement has to fall within the City's low demand period for surface water.
- The Upper Crossing is located on the only roadway to the parking lot for the water falls viewing area.



HDPE Pipeline on USFS 4603

- The pipeline progresses from the Intake Facility approximately 15000 lineal feet.
- There are three material types in this 15000 lf
 - Welded Steel (Upper Crossing)
 - Ductile Iron (Slide Area)
 - HDPE (balance of footage)



HDPE Pipeline on USFS 4603

- Besides three types of materials there are multiple classes of
 - Welded Steel (Upper Crossing)
 - .5" wall thickness
 - Ductile Iron Pipe
 - Class 54
 - HDPE Pipe
 - SDR 21
 - SDR 19
 - SDR 17
 - SDR 13.5



Lower Pipeline Crossing

- Because this stretch of Tumalo Creek is designated by the Forest Service under the Scenic River Act we have to install the pipeline below the scour depth of the creek.
- This creek is feed by the City's water diversion in their water shed, but experiences significant flow increase during the snow melt.
- Creek diversion plans are underway and we anticipate pipeline installation at early as the In-Water Work window dedicated by the Department of State Lands will allow.



Skyliner's Road Pipeline

- The next portion of the pipeline wanders thru the national forest for 37000 lineal feet.
- The pipeline material for this section is spiral welded, bell & spigot, cement lined and coated 30" diameter pipe
- Each stick of pipe is approximately 41 feet in length.
- Only four sections of pipe can be shipped per truckload



Skyliner's Road Pipeline

- This equate to:
 - 902 pieces of pipe
 - 225 semi loads of piping
- The project required that the pipe be welding inside and out.
- Permit required that we provide continuous archeological monitoring
- The pipeline was hydrostatically tested to 563 psi



Bend Water Treatment Plant

- The treatment plant portion of the project is comprised of two major structures.
 - Raw Water Control Structure were the pressure is reduced from 430 psi to 16 psi and floods the membrane feed pump suction cans
 - Treatment plant will be capable to treating up to 18 CFS of surface water



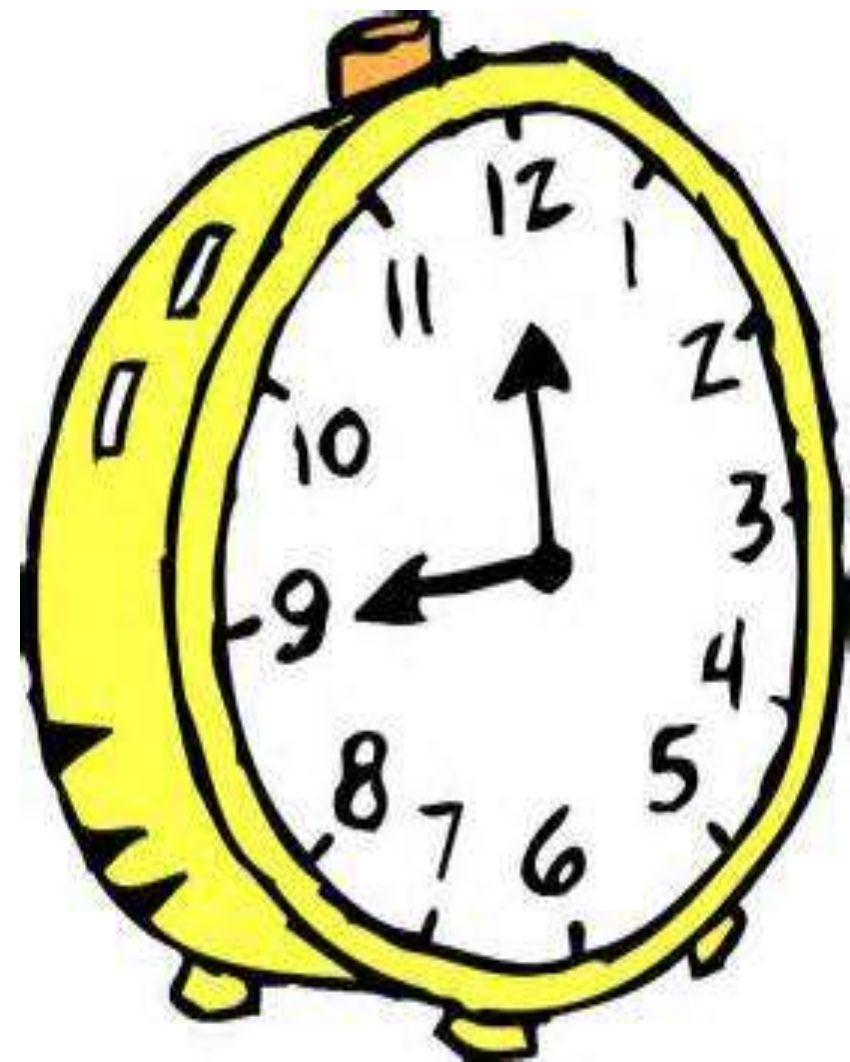
Bend Water Treatment Plant

- The City procured the membrane system outside of the CM/GC contract
- The membrane suppliers contract was then assigned to the CM/GC
- Anticipated being operational in Oct/Nov 2015



Timeline

- RFP Issued – Nov 9, 2010
- Interviews - Jan 12, 2011
- NTP for Preconstruction Services
- CM/GC Original Construction Dates
 - Pipelines: Jul 2012 – Jan 2014
 - Water Treatment Plant: Apr 2012 – Apr 2014
- CM/GC Actual Construction Dates
 - Pipelines: Mar 2014 – Aug 2015
 - Water Treatment Plant: Apr 2014 – Oct 2015



Events

- Lawsuit
 - Bend based land conservation group filed a lawsuit against the U.S. Forest Service with the US District Court
 - Conservation group is challenging the Forest Service approval of a special-use permit for the treatment plant and pipeline.



Events

- Lawsuit
 - The lawsuit caused the pipeline project to be stopped twice.
 - The lawsuit caused the plant project to be stopped once.
 - Currently the land conservation group



Events

- Two Bulls Forest Fires
 - The project is boarder by the Two Bulls portion of the Deschutes National Forest
 - In July of 2012 the pipeline portion of the project was required to shut down due the proximity of a forest fire
 - In September of 2012 the pipeline portion of the project was required to shut down when the IFPL (Industrial Fire Protection Level) reached stage four.
 - So now you have been through a forest fire. What is the chance that could happen again?



Events

- Two Bulls Forest Fires
 - June 8, 2014 the forest erupted in fire once again.
 - U.S. Forest requested that pipeline crews demobilize their heavy equipment.
 - U.S. Forest Service representative escorted workers into the forest so they could drive/track their equipment out of the path of the fire.



Constraints

- City's Surface Water Pipeline Shut Down Requirements – Periods were defined when both or one pipeline must remain in service
- Permits required constant Archeological Monitoring
- City's procurement of Membrane System Supplier outside of project
- EA Requirements
 - Noxious Weeds
 - Equipment Fueling
 - Wildlife



Constraints

- Deschutes County Noise and Work Hour Times
- City of Bend
- DEQ –
- Department of Agriculture
- United States Forest Service
 - Working within National Forest
 - FPL – Fire Protection Levels 1-4
 - Temporary Rail Car Bridge Protection



Constraints

- Lawsuit
- FHWA – Deschutes County, Skyliner’s Road Paving Project
- Permits, Permits, Permits
- Welding of interior pipe joints
- Grouting and inspection of 30” diameter welded steel pipeline
- Pipe Materials
 - Ductile Iron Pipe
 - Welded Steel Pipe
 - HDPE Pipe



Constraints

- Hazardous materials mitigation at existing Intake
- Traffic on Skyliner's Road and USFS 4603
- Department of State Lands
 - Wetlands
 - In-Water Work Windows
- Oregon Department of Fish and Wildlife
 - Fish, birds
 - In-Water Work Window



Lessons Learned

- Build a relationship of mutual trust and respect with your customer.
- Be honest with your message; good or bad.
- Don't lose touch even during the down times.
- Never give up!



Path Forward

- Use our previous experiences to guide new decisions and challenges
- Keep all stakeholder involved and communicate clearly
- Keep the faith. We will get done.
- Focus on the end and don't let anything outside of your circle of influence effect you
- Be professional



Closing

- Review Project Scope
- Address Project Timeline
- Share Events that Created Significant Challenges
- Constraints – Defined, Undefined, and Ever Changing
- Lesson Learned
- Path Forward

Questions?

Thank you for your attention.

Thank you

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