

# Arrow Creek Water System Upgrades

*A Brief History*

# Where the heck is Arrow Creek?



# Somewhere in the Kootenays





# Arrow Creek WTP





# Diversion on Arrow Creek



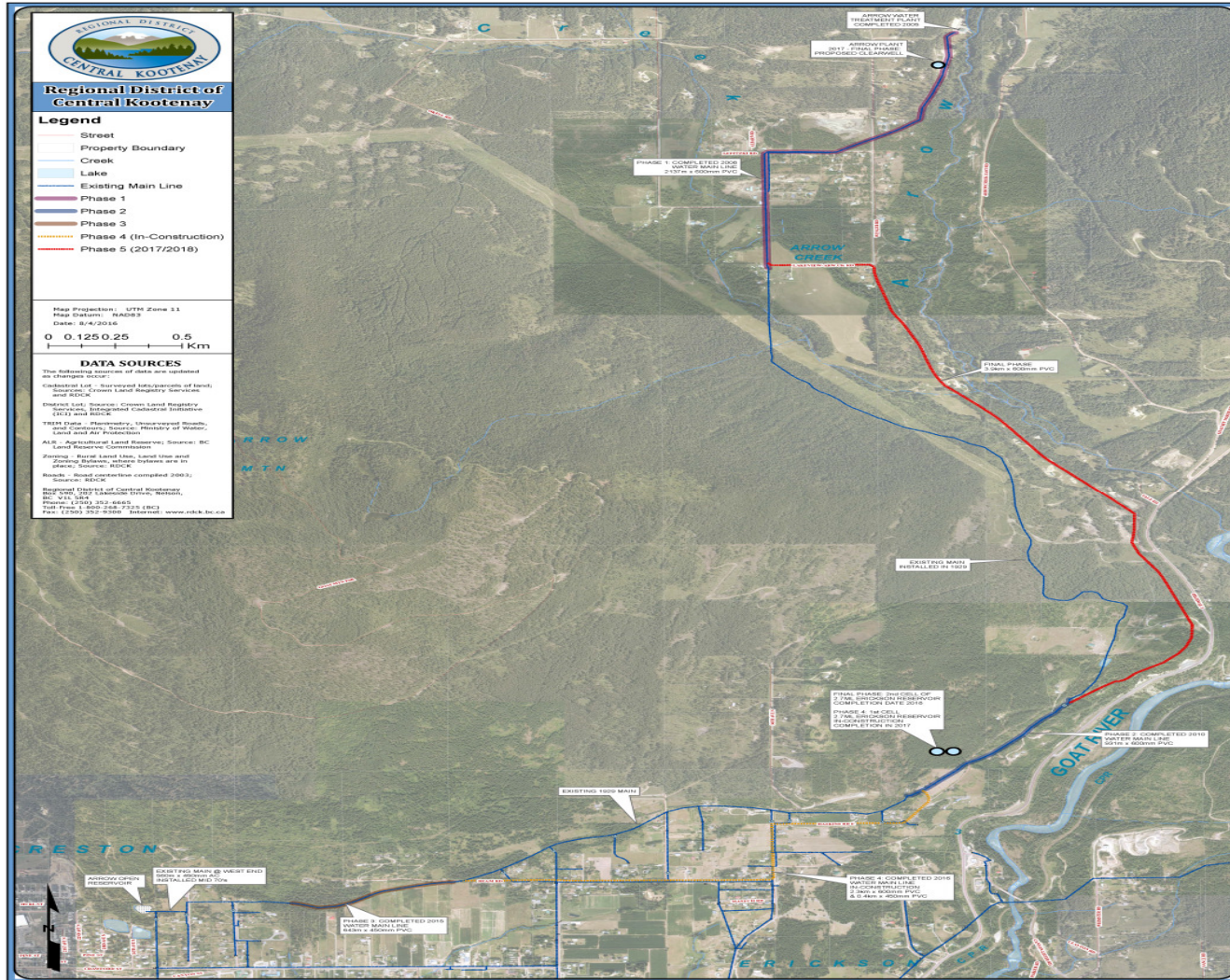


# WTP Building





# Arrow Creek Main Phasing Map







# Keys to Successful Grant Applications

- RDCK strongly suggests that applicants meet with grant funding agencies well in advance to ascertain elements to include in application
- Some local governments are commissioning studies to have on the shelf ready for grant opportunities
- RDCK was advised to phase our transmission main replacement
- Grant funders want to see that applicants are committed to reducing their water demands





# Phase 1 Funding

- Phase 1 of our transmission main replacement was completed in-house (engineering, planning, construction) in 2007
- Funded internally by RDCK and Town of Creston
- Replaced 2.1 km of main with 600mm C905 PVC
- Budget = \$1.2M
- Actual Cost = \$900,000
- Treated water saved = 200,000 m<sup>3</sup>/month!

# Phase 1 Arrow Transmission Main



2008 Main Line Construction



# 1929 Concrete pipe replaced







# Phase 2 Funding

- Phase 2 - 5 Design was contracted to MMM Group of Kelowna
- Phase 2 Construction contract awarded to Hayter Construction of Kelowna
- Replaced 1 km of main with 600 mm C905 PVC
- Funding was a combination of RDCK and Town of Creston and Community Works Funds (\$330,000)
- Budget = \$1.8M



# Phase 2 Arrow Transmission Main





# Winter Construction







# Phase 3 Funding

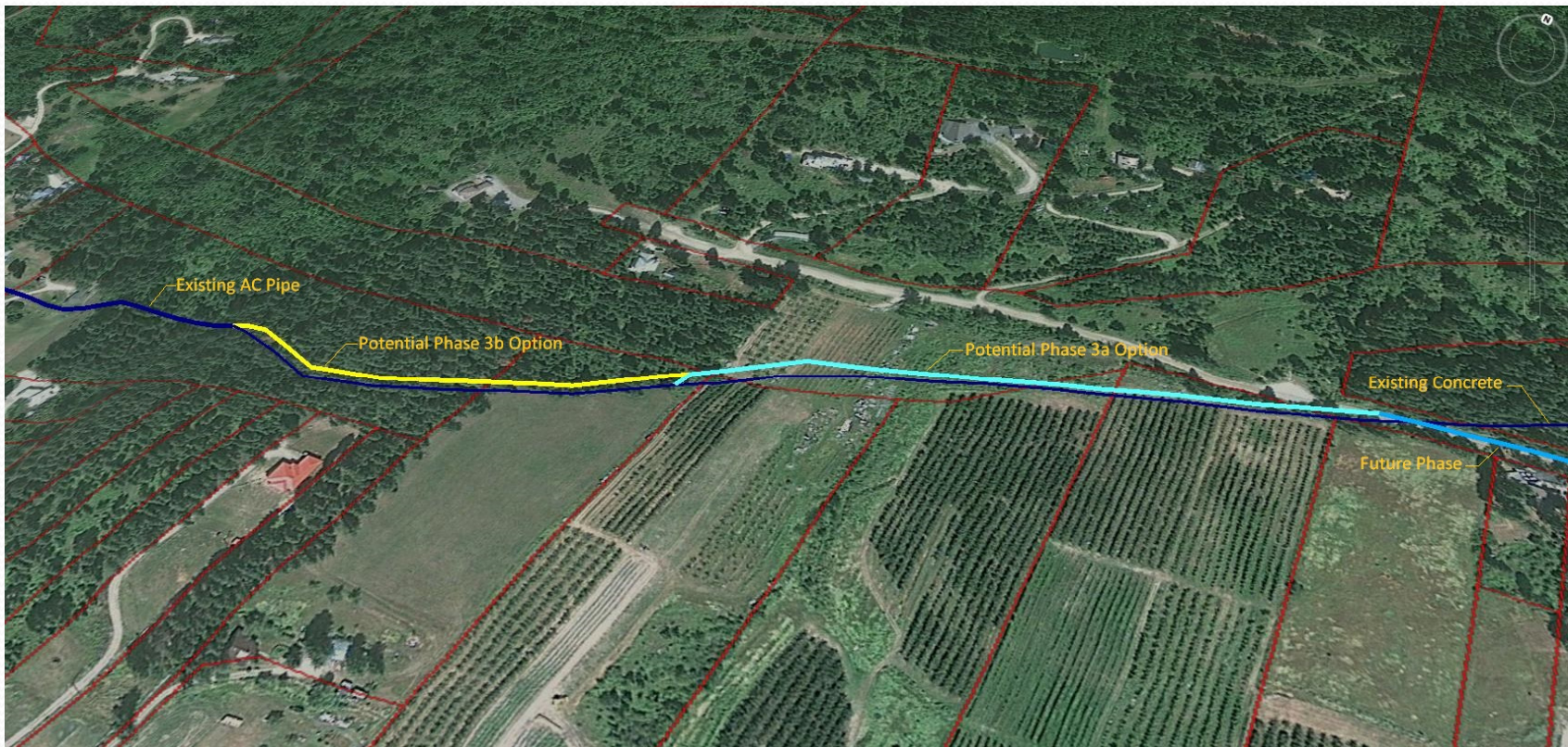
- Construction was completed in 2015 in-house by RDCK staff with hired equipment
- Funding was a combination of RDCK and Town of Creston
- Replaced 650 meters of main with 450 mm C905 PVC
- Budget = \$300,000

# Phase 3 Arrow Transmission Main





# Phase 3 – Old concrete and new PVC







# Phase 4 Funding

- Watermain construction and reservoir site earthworks contract awarded to Jakes Construction Ltd of Chilliwack
- Funding was a combination of RDCK and Town of Creston and grant funding from Build Canada Fund.
- Replaced 2.4 km of main with 600 mm and 450 mm
- First reservoir (2.7M liters storage) and site piping awarded to Maple Reinders
- PRV's installed by local contractor supplied by Mearle's Machinery from Kelowna.
- Budget = \$4.4M
- Build Canada Grant Funding = \$2.9M



# Phase 4 Arrow Transmission Main





# Phase 4 main construction under old water main and gas main





# Phase 4 – East end tie-in







# Phase 5 Funding

- Watermain construction contract awarded to Marwest Industries Ltd of Castlegar
- Funding was a combination of RDCK and Town of Creston and grant funding from the Clean Water and Wastewater Fund (CWWF)
- Replaced 4.1 km of main with 600 mm C905 PVC
- Construction of second bolted steel reservoirs capacity – 2.7M liters (awarded to Maple Reinders)
- Budget = \$6.1M
- Clean Water & Wastewater Fund grant = \$4.2M



# Phase 5 Arrow Main and Reservoirs







# Phase 5 Pipe install on steep hill





# Phase 5 Problems and solutions





# Questions?

