



Climate Change Impacts: Implications for Water

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Some projected changes that are important to water quantity, water quality and natural heritage features . . .

- increase in air temperature (greatest in winter & spring)
- warmer water temperature
- reduction in duration & thickness of lake & river ice
- changes in amount, timing, intensity & type of precipitation
- reduction in depth, distribution, & duration of snowcover
- changes in amount & timing of streamflow
- changes in ground water recharge & base flow
- changes in plant & animal phenology related to temperature
- shifts in range of species



Managers will have to deal with new realities ...

- Past climate is not a reliable guide for future planning
- Changes in distribution, amount, timing & quality of water supply
- More extreme conditions
- Challenge of “mainstreaming” climate change information & implementing “no regrets” adaptation



New flooding risks and potential increase in damages ...

- More intense precipitation & winter rain
 - flooding in winter and summer?
- Infrastructure must accommodate higher flows
 - safety & performance issues; green infrastructure
- Re-evaluate floodplain management & emergency preparedness
 - more structures & people exposed



Increased risk of low flow (drought)...

- **Summer and fall low flows may be lower & last longer**
 - pollutant concentration could increase
 - challenges in assimilating pollutants from point sources
- **Mismatch between supply & demand**
 - potential conflict between in-stream ecological needs & economic uses of water



More difficult to meet water quality goals...

- Extreme precipitation events
 - combined sewer overflows
 - non-point source pollution - sediment and nutrient input from erosion
- Low flow in streams
 - assimilating pollutants from sewage treatment plants and industry
- Warmer water temperatures
 - dissolved oxygen issues
 - algae blooms - taste and odour problems



Start to “mainstream” climate change into decision-making ...

- Climate change exacerbates current management concerns
- Plan proactively & hedge against potential impacts & build resilience
 - understand current climate sensitivity in key sectors & regions
 - explore implications of climate change scenarios to show risks & vulnerability
- Build upon existing adaptation efforts that also address climate change
 - water conservation, stormwater detention ponds, source water protection, green infrastructure
- What are upcoming opportunities?
 - changes/renewal in regulations, agreements, standards, codes
 - updating of tools