

Hydrological Analysis of Adair Creek

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Water Quality & Quantity

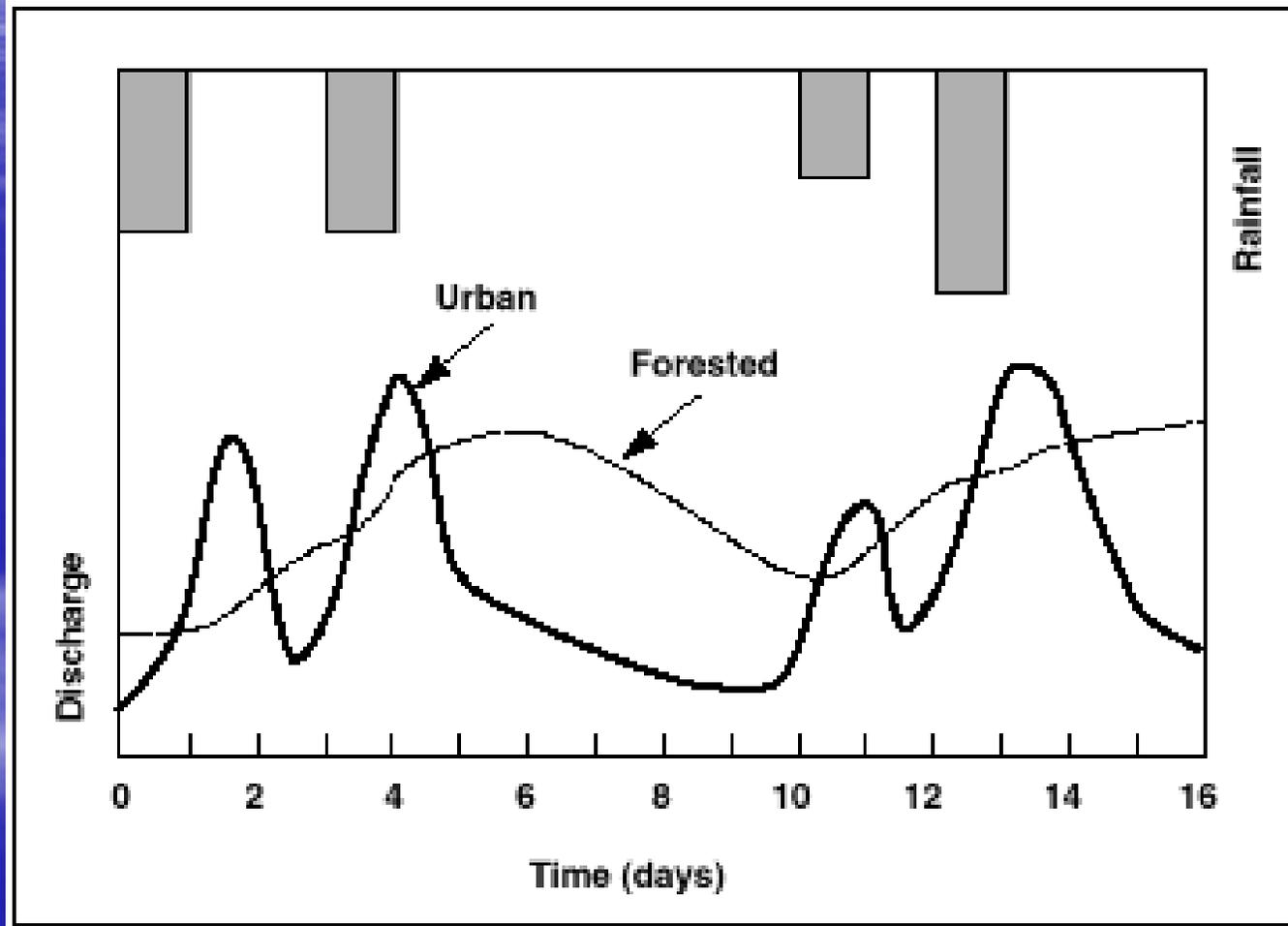
DNRP Science Seminar

11/7/06

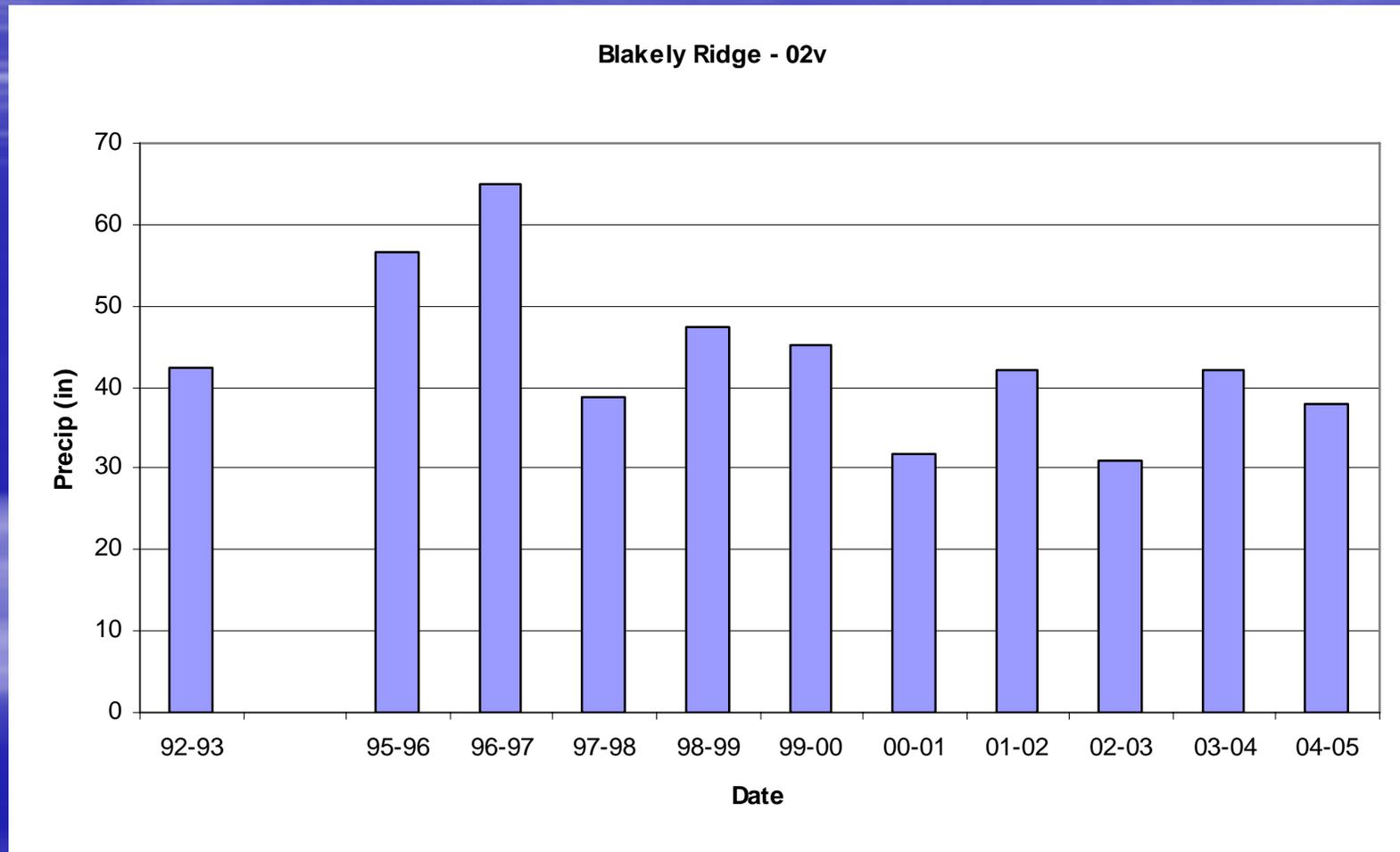
Outline

- Assessing Impacts on Adair Creek
- Urbanization and Hydrology
- Before / After Impact
- Flood Frequency and Storm Water
 $\frac{1}{2}$ of 2yr - 50yr (KCSWDM Level 2)
- Trend Analysis
- Indicators of Hydrologic Alteration

Urbanization and the Hydrologic Cycle

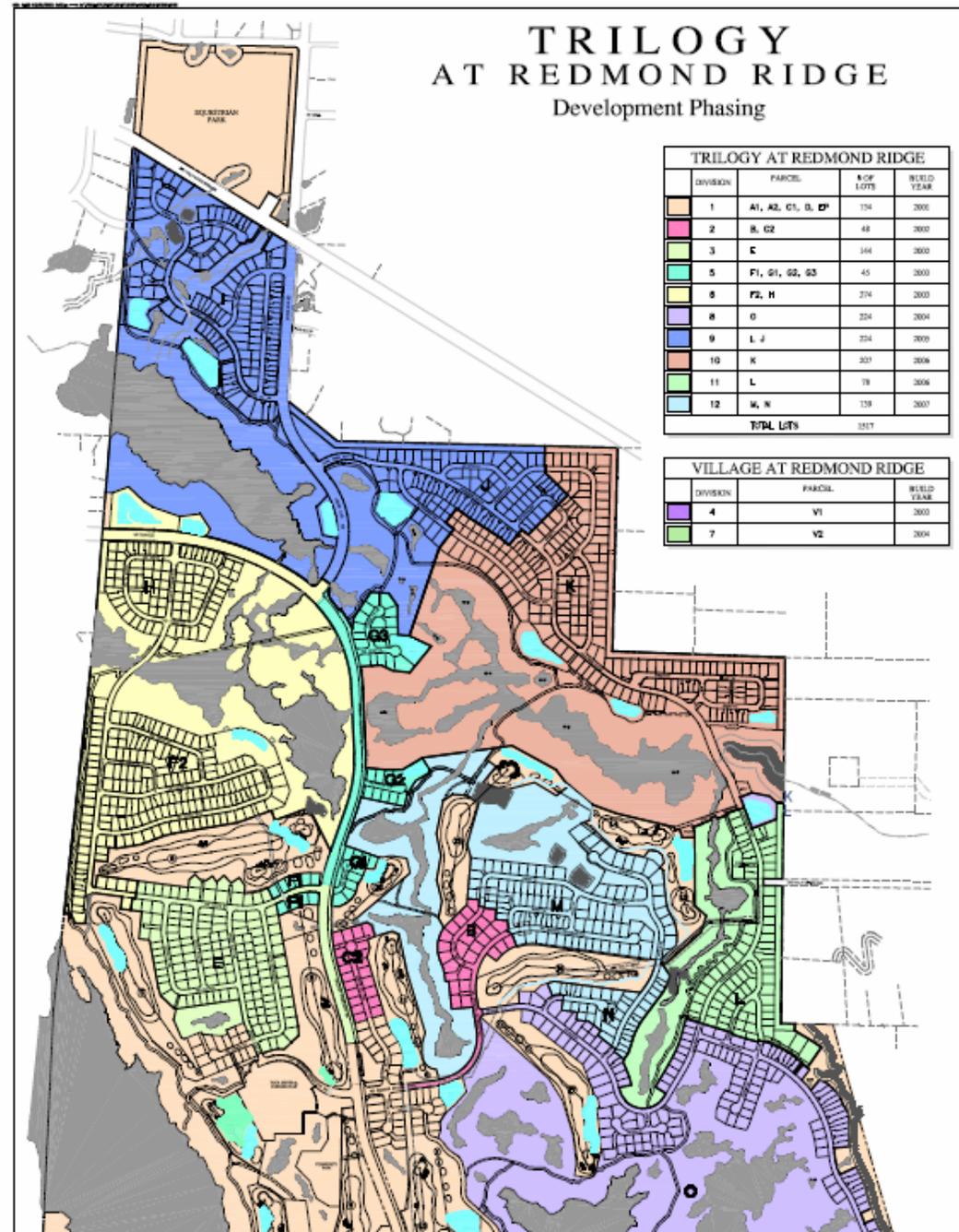


Annual Precipitation



Construction Phasing

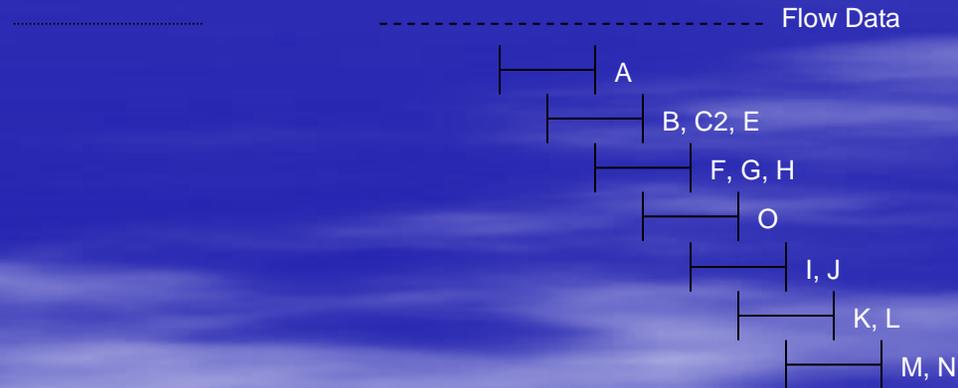
- Six of seven begun.
- More recent, closer to gauge



Impact / “After” construction phasing



Adair Ck – 53A



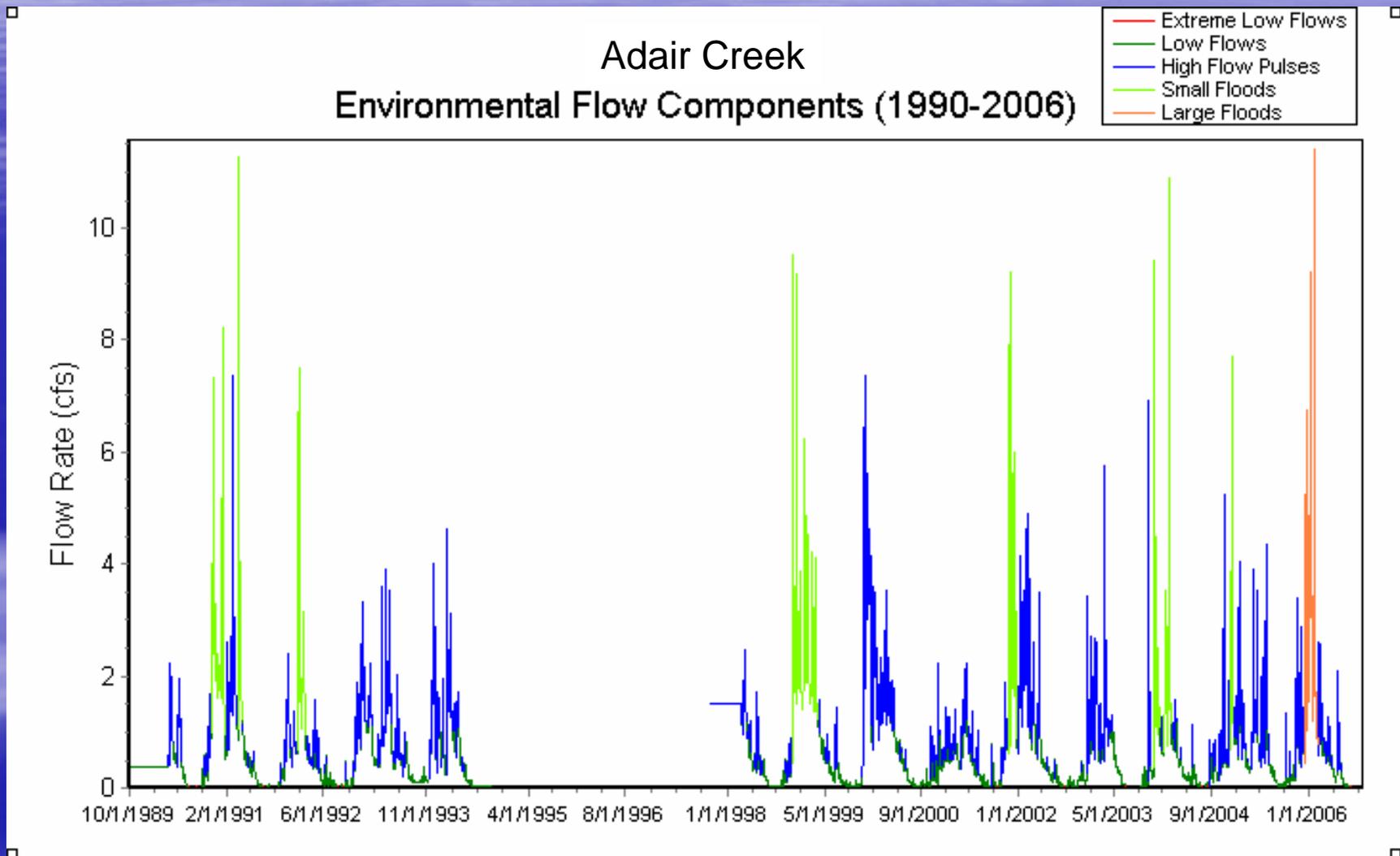
IHA - Indicators of Hydrologic Alteration

- The Nature Conservancy June 2005
 - ecologically relevant hydrologic parameters.
 - Frequency and duration of high and low pulses (within year metrics)
 - Nutrient and organic matter exchanges between river and floodplain
 - Influences bedload transport, channel sediment textures, and duration of substrate disturbance (high pulses)

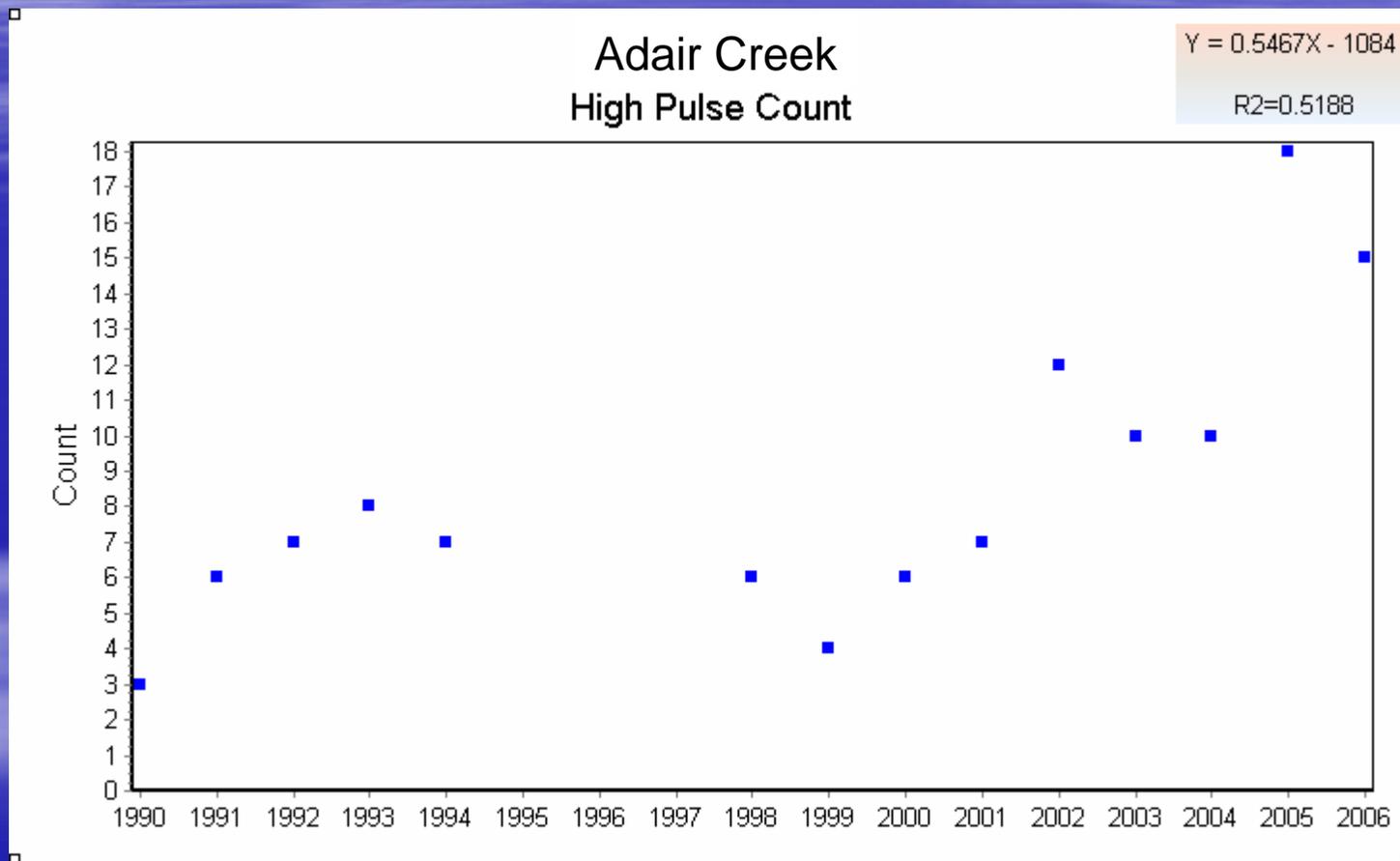
IHA - Indicators of Hydrologic Alteration

- Non-parametric flow classification
- Every day/hour/15minute data interval assigned to a class
- Flow history considered in assigning class (i.e. same flow rate not same class when rising or falling)

IHA- Results pt 1



IHA- Results pt 2



Summary and Conclusions

- Non-parametric pulse threshold calculations
– robust, data intensive
- Trend approach used over entire record –
urbanization as a phased series of impacts
- Potential to assess impacts to within year
hydrologic alteration