



# Pend Oreille River Temperature TMDL Allocations

**J. Todd Kennedy**  
**Tetra Tech**

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Pend Oreille River TMDL  
Watershed Advisory Group

# Presentation Overview

- Temperature TMDL Defined
- TMDL Allocation Process
- Critical Conditions & Compliance Points
- Loading Capacity and Existing Loads
- Load and Wasteload Allocations
- Other Considerations



# Temperature TMDL Defined

- Temperature TMDL: allowable heat load that meets instream standards
- TMDL or loading capacity  
= LA + WLA (+ MOS + NB)
- Heat load = flow X temperature = kcal/day

$$HeatLoad = Q \times \frac{28.3169L}{ft^3} \times \frac{1kg}{1L} \times \frac{86,400\text{sec}}{day} \times \frac{1kcal}{kg / 1^\circ C} \times T = \frac{kcal}{day}$$

# Allocation Process

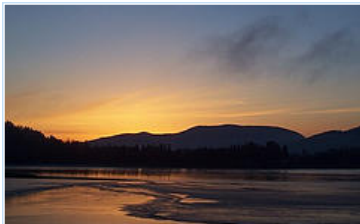
- Based on output from 3 calibrated water quality models developed for the Pend Oreille River by PSU and Batelle
- Model results postprocessed and compliance with water quality targets evaluated by WDOE and IDEQ
- Tetra Tech translated this information into the necessary TMDL components

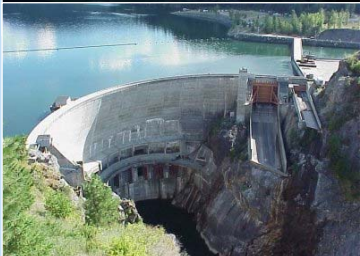




# Critical Conditions and Compliance Points

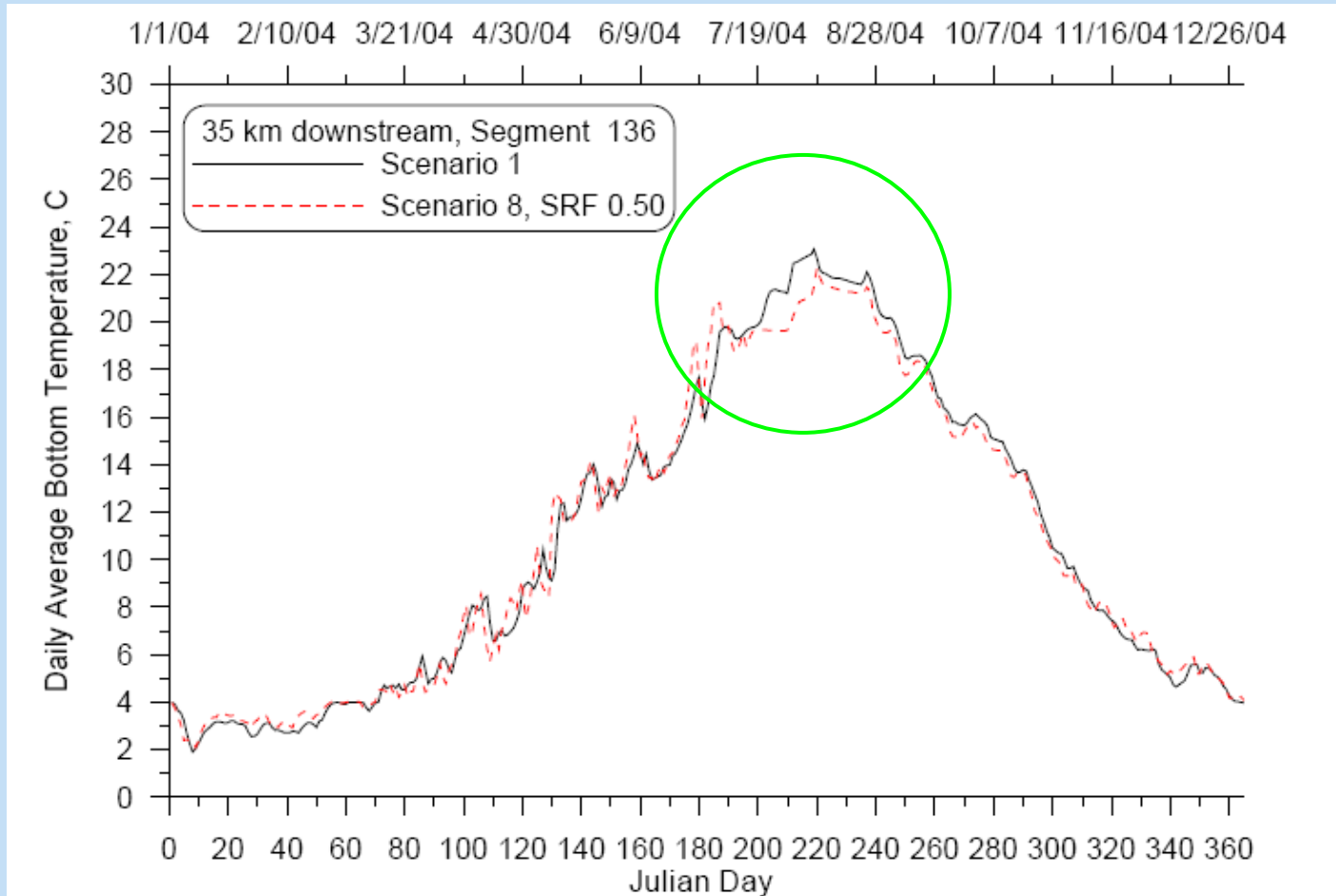
- Determined by analyzing two years (2004-05) of daily maximums over the length of the river
- May through September
- Focus on period (day) of maximum impairment
- 2004 a critical year
- Compliance points selected by the States and Tribe



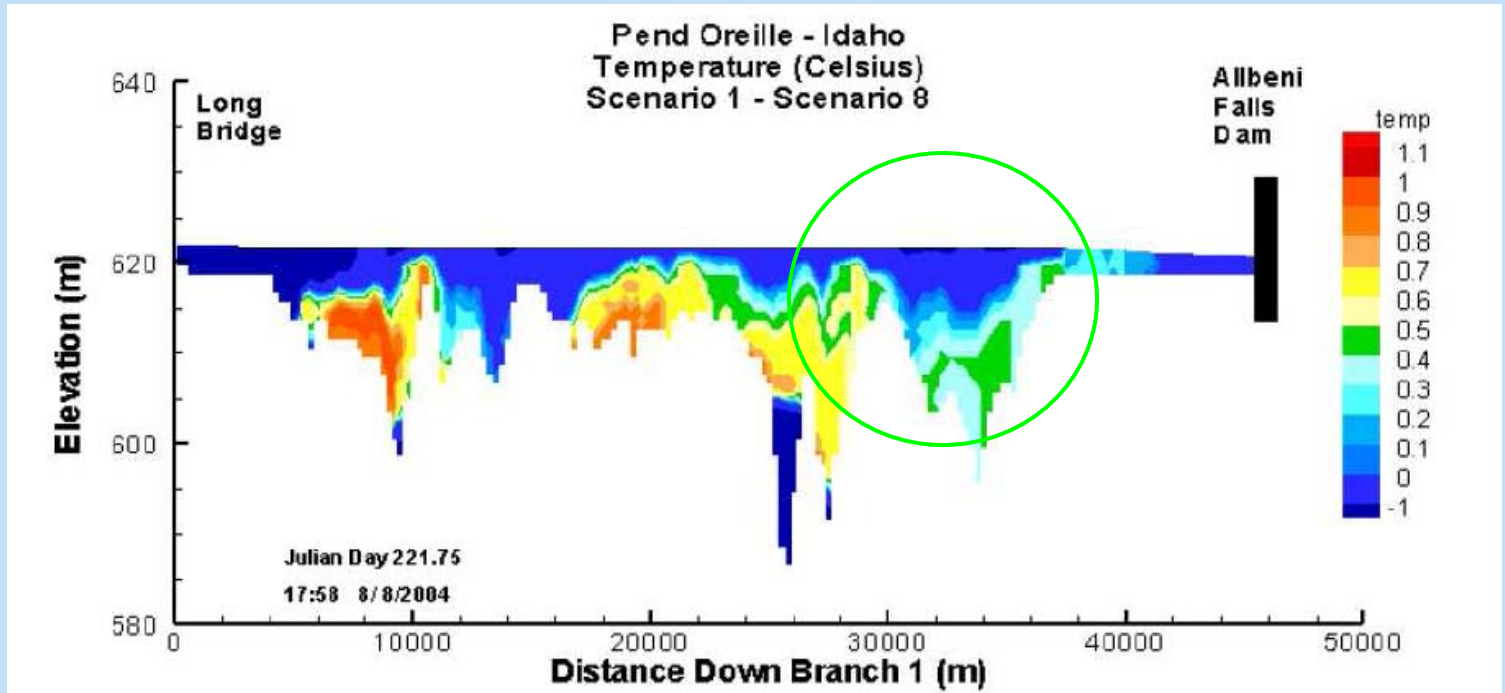


# Idaho Compliance Areas

- Pend Oreille River Longitudinal Cross-section (1<sup>st</sup> priority)
- Pend Oreille River Bottom Water at 35 km below Railroad Bridge
- WA/ID State Line



**Daily average bottom temperature at 35 km downstream from Lake Pend Oreille for the Natural (8) and Existing Conditions (1) Scenarios**  
(Figure from Draft Report of Annear *et al.*, 2007)



**Longitudinal temperature profile differences for Existing Conditions  
minus Natural Conditions on Aug 8, 2004**  
(Figure from Annear *et al.*, 2007)



# Existing Loads - Idaho

Target	Implementation Priority	Date of Maximum Impairment	Existing Temperature (°C)	Existing Heat Load (kcal/day)
Idaho Cross Section	1	August 8, 2004	23.4	6.641E+11
Idaho Bottom 35 km	2	August 1, 2004	22.5	6.694E+11
WA/ID State Line	3	May 1, 2004	13.09	6.410E+11



# Load Allocation - Idaho

- Since model simulations suggested an insignificant effect from bank shade, a load allocation is given for the Albeni Falls Dam only
- Allocation for Idaho Cross Section

Compliance Area	Date of Maximum Temperature Impairment	Existing Temperature (°C)	Existing Heat Load (kcal/day)	Allowable Temperature (°C)	Allowable Heat Load (kcal/day)	Reduction Required
Idaho Cross Section	8/08/2004	23.4	6.641E+11	22.3	6.329E+11	4.7%

# Wasteload Allocations - Idaho

- Allocations to City of Sandpoint, City of Dover, and City of Priest River
- Based on current average temperatures and permitted flows
- Reserve allocation for future growth
- No reductions required



# Wasteload Allocations - Idaho

Facility	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
City of Sandpoint WWTP	102	91	102	114	159	182	216	227	204	182	148	114
City of Dover WWTP	19	19	19	23	27	32	38	38	34	30	27	23
City of Priest River WWTP	9	10	10	11	14	16	19	19	18	15	13	11
Reserve for Future Growth	9	8	9	10	14	16	19	20	18	16	13	10

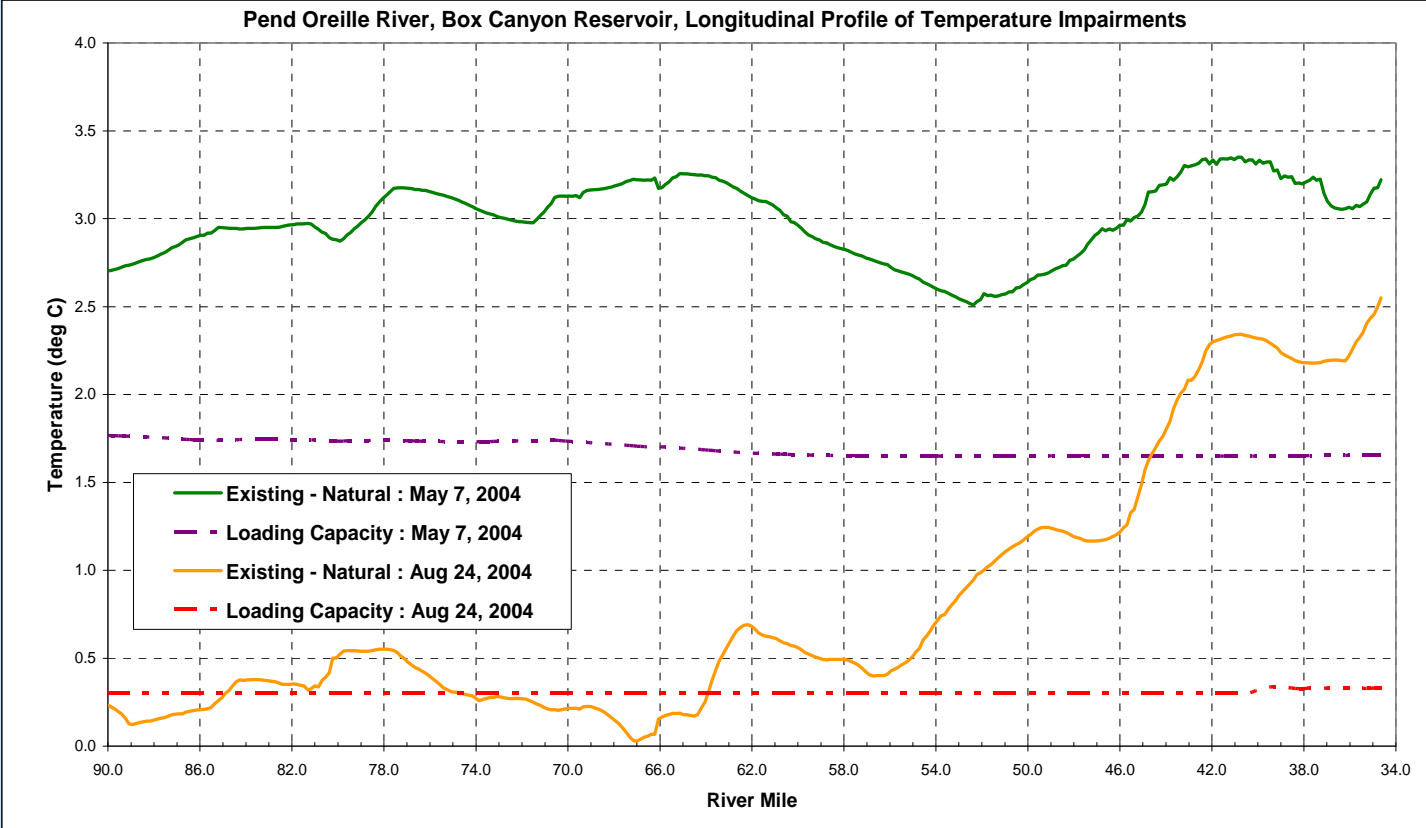
**Heat load allocations for each NPDES permitted source by month (million kcal/day).**

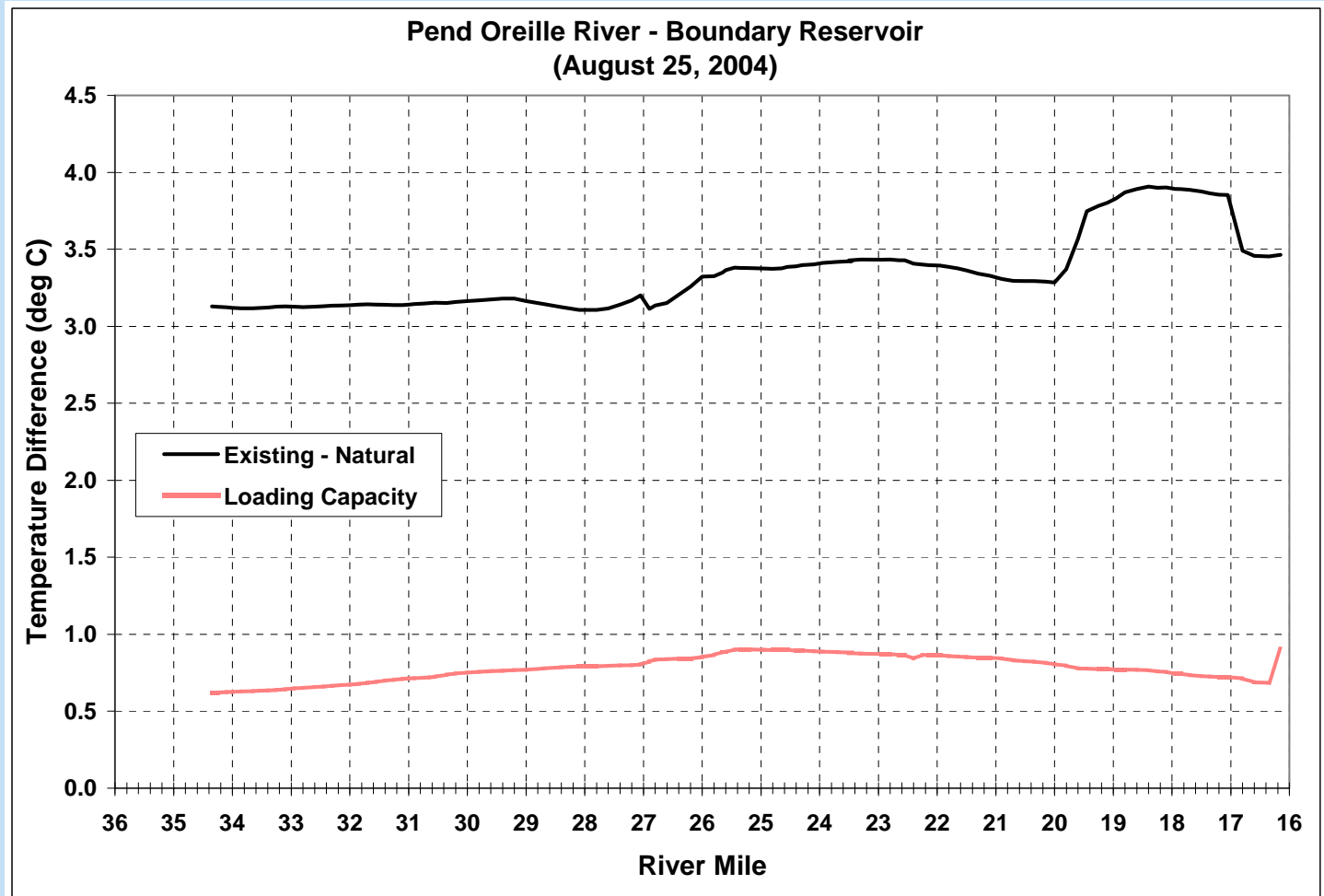


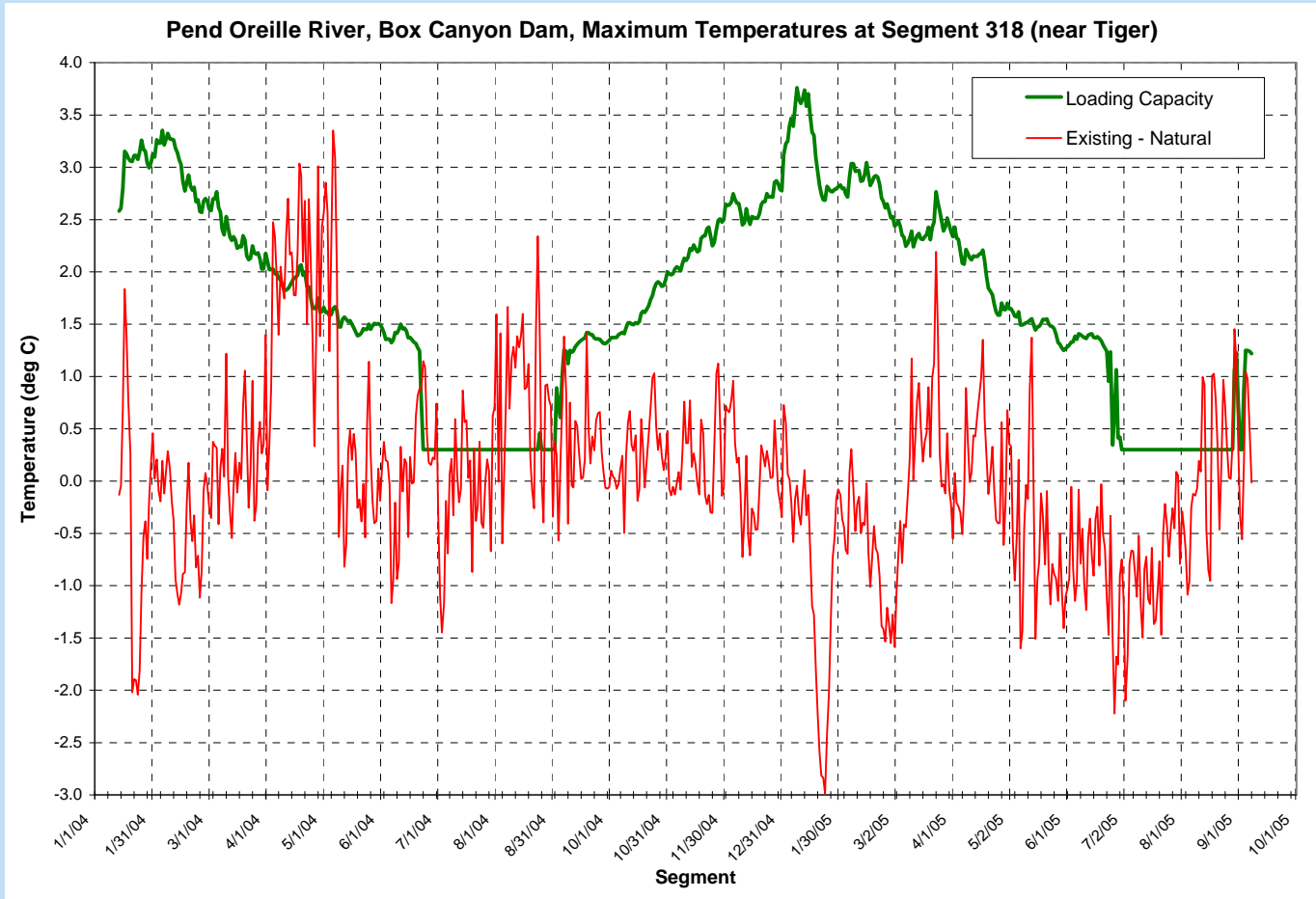
# WA/Kalispel Compliance Areas

- Box Canyon Reservoir – Waters of Washington State from ID to Kalispel, and downstream from Kalispel to Box Canyon Dam
- Kalispel Reservation – Shared Tribal and State waters described by RM 72.1 to 63.7
- Boundary Reservoir – Below Box Canyon dam to Boundary Reservoir dam
- Below Boundary Dam – Boundary dam to International border







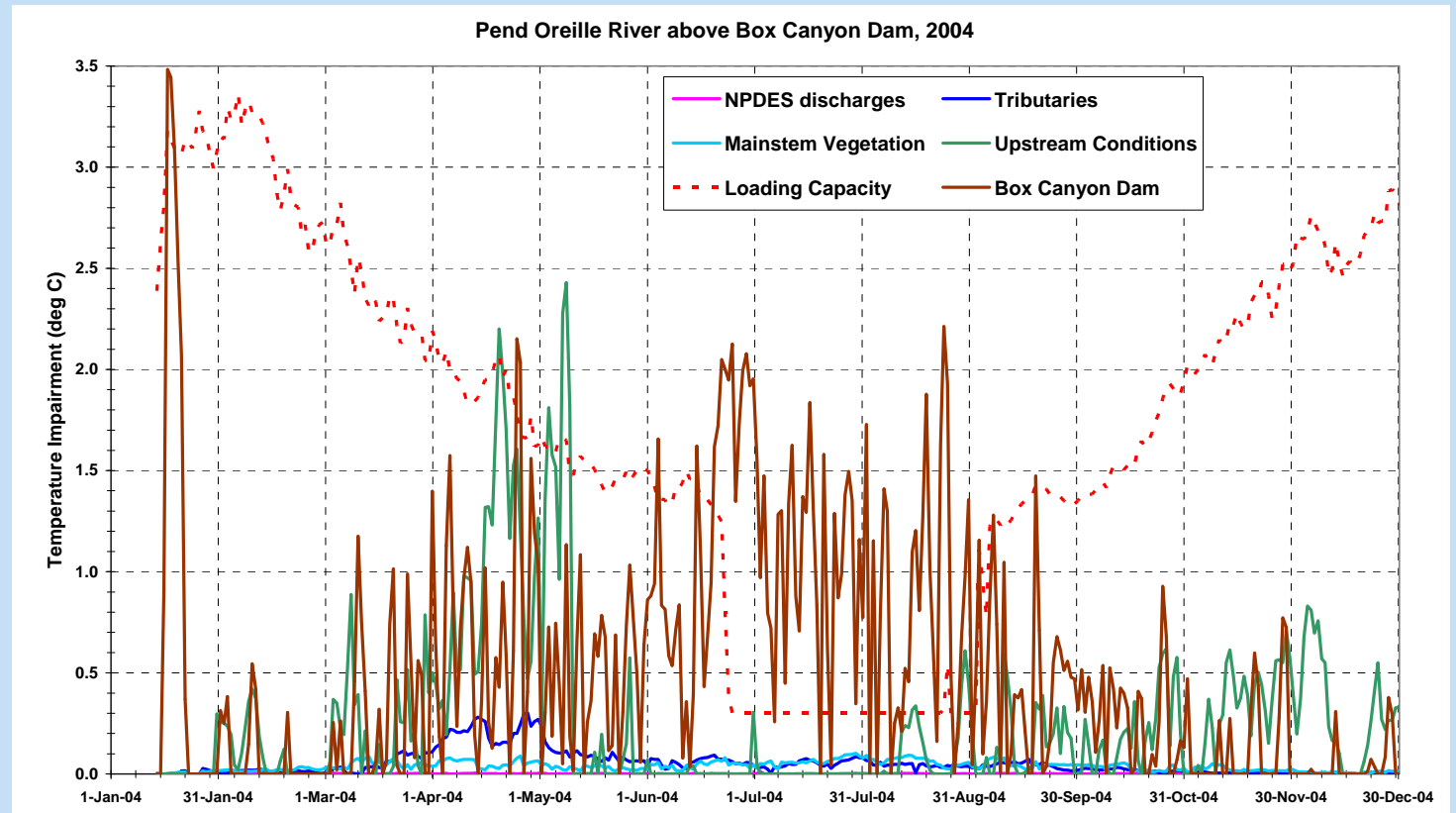




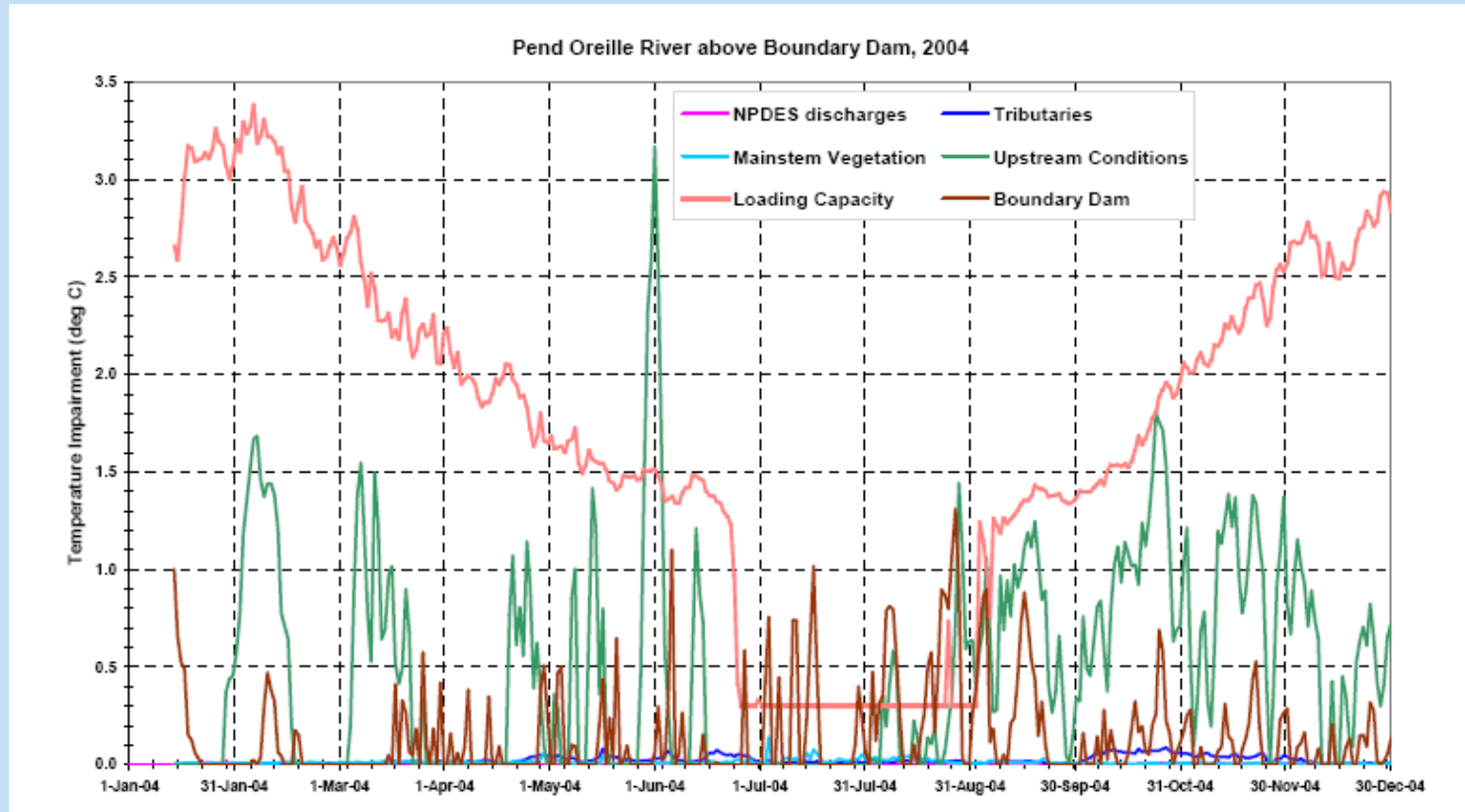
# Existing and Allowable Loads – WA and Kalispel

Compliance Area	Date of Maximum Impairment	Existing Temperature (°C)	Existing Heat Load (kcal/day)	Allowable Temperature (°C)	Allowable Heat Load (kcal/day)	Reduction Needed
Box Canyon Reservoir	8/24/2004	22.22	6.651E+11	20.00	5.986E+11	10.0%
Kalispel Reservation	5/7/2004	14.41	1.100E+12	12.85	9.809E+11	10.8%
Boundary Reservoir	8/25/2004	23.15	1.065E+12	19.97	9.191E+11	13.7%
Below Boundary Dam	8/25/2004	22.78	1.048E+12	19.99	9.200E+11	12.2%

# Load Allocations – WA and Kalispel



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	<b>Box Canyon Reservoir</b>	<b>Kalispel Reservation</b>	<b>Boundary Reservoir</b>	<b>Below Boundary Dam</b>
Date of Maximum Existing:	8/24/04	5/7/04	8/25/04	8/25/04
River Mile Location of Maximum (Model Segment)	34.6 (358)	64.2 (168)	17.7 (106)	16.8 (113)
NPDES	0%	0%	0%	0%
Tributaries	1%	17%	2%	1%
Mainstem Vegetation	1%	1%	1%	1%
Dam	97%	65%	77%	20%
Upstream Sources	0%	17%	20%	78%





# Wasteload Allocations – WA and Kalispel

- Allocations based on current temperatures and current flows
- Reserve allocations for future growth
- No reduction required





# Other Considerations

- Seasonality
- Margin of Safety
- Background
- Reserve Capacity
- Reasonable Assurance



# Additional Questions?

## Contact Information:

- [jessica.koenig@tetrattech.com](mailto:jessica.koenig@tetrattech.com)  
703.385.6000 x107
- [todd.kennedy@tetrattech.com](mailto:todd.kennedy@tetrattech.com)  
919.485.8278 x111





