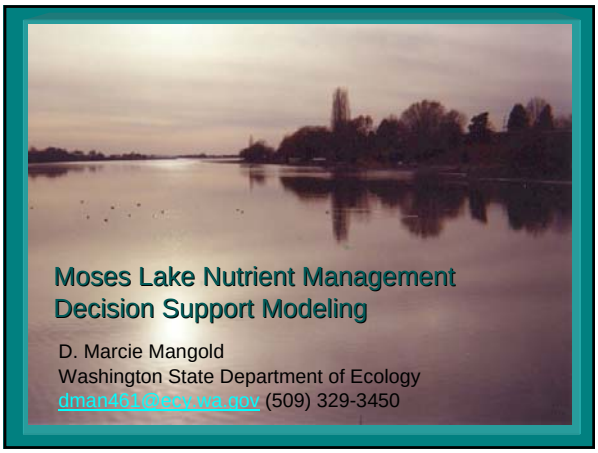
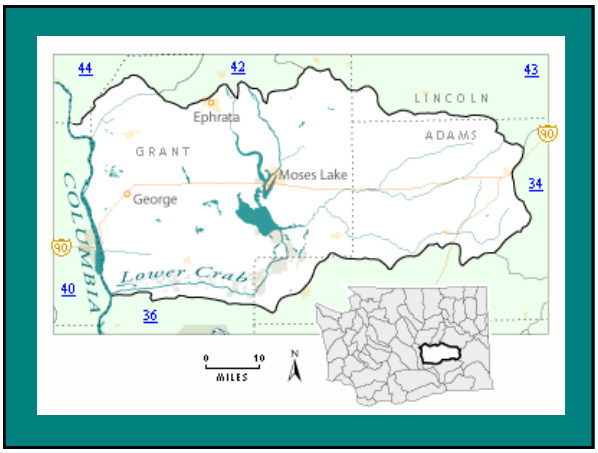
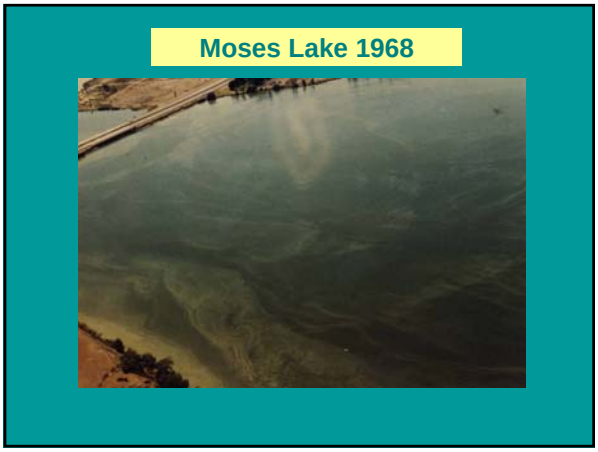
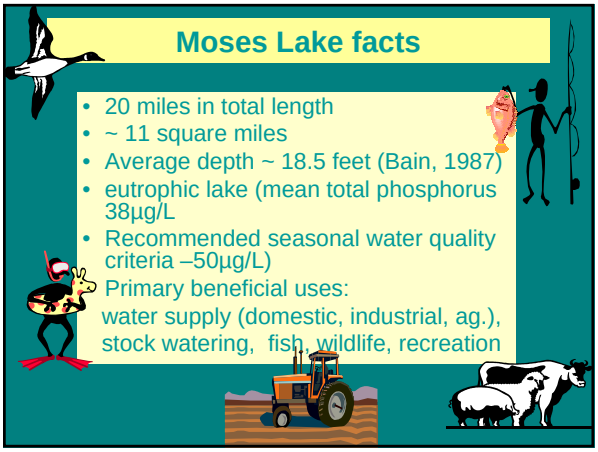
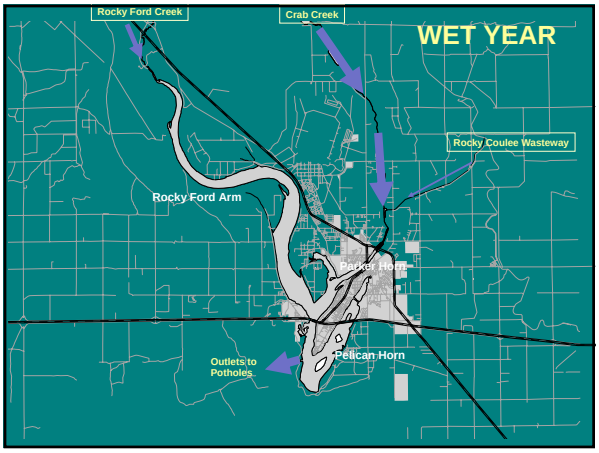
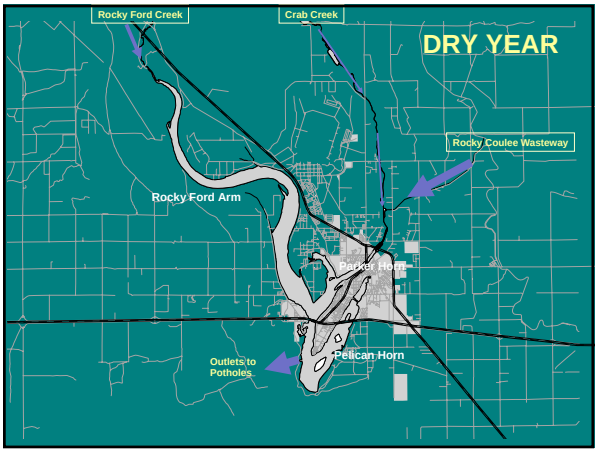

Moses Lake Nutrient Management
Decision Support Modeling
D. Marcie Mangold
Washington State Department of Ecology
dman461@ecy.wa.gov (509) 329-3450


44
42
43
LINCOLN
Ephrata
ADAMS
GRANT
90
Moses Lake
George
34
COLUMBIA
90
Lower Crab
40
36
0
10
MILES
N


Moses Lake 1968


Moses Lake facts
20 miles in total length
~ 11 square miles
Average depth ~ 18.5 feet (Bain, 1987)
eutrophic lake (mean total phosphorus 38µg/L
Recommended seasonal water quality criteria –50µg/L)
Primary beneficial uses:
water supply (domestic, industrial, ag.),
stock watering, fish, wildlife, recreation


Rocky Ford Creek
Crab Creek
WET YEAR
Rocky Coulee Wasteway
Rocky Ford Arm
Rocky Horn
Pelican Horn
Outlets to Potholes

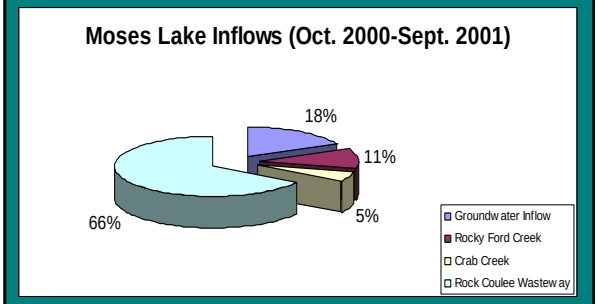

Rocky Ford Creek
Crab Creek
DRY YEAR
Rocky Coulee Wasteway
Rocky Ford Arm
Rocky Horn
Pelican Horn
Outlets to Potholes

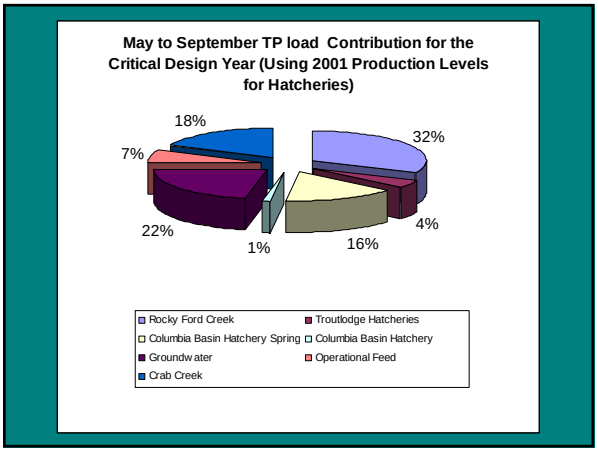
Model

- Hydrodynamic, unsteady-state
- Calibrated to 2001water quality data
- Used to estimate capacity of lake to assimilate TP loads from point and nonpoint sources

Summary of error statistics for the calibration of TP. Spatial, temporal ,and overall error expressed as RMSE (mg/L)

	ML5	ML4	ML3	ML1	ML2	ML6	*Total*
March	0.003	0.001	0.007	0.005	0.005	0.011	0.007
April	0.005	0.006	0.005	0.008	0.006	0.006	0.006
May	0.007	0.005	0.042	0.005	0.015	0.005	0.023
June	0.004	0.010	0.007	0.007	0.009	0.008	0.008
July	0.014	0.004	0.012	0.016	0.014	0.006	0.012
Aug	0.005	0.013	0.029	0.016	0.015	0.007	0.019
Sept	0.012	0.014	0.011	0.015	0.013	0.005	0.012
Mar - Sept	0.007	0.009	0.021	0.012	0.012	0.007	0.014





Recommendations

- Dilution Strategies for Moses Lake
- Nonpoint Control of Winter/Spring Runoff from Crab Creek
- Reduction of Phosphorus from Diffuse Nonpoint Sources Supplying Baseflow to Moses Lake from May through September
- Reduction of Phosphorus from Point Sources

Questions

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