

Appendix A – Hydrology

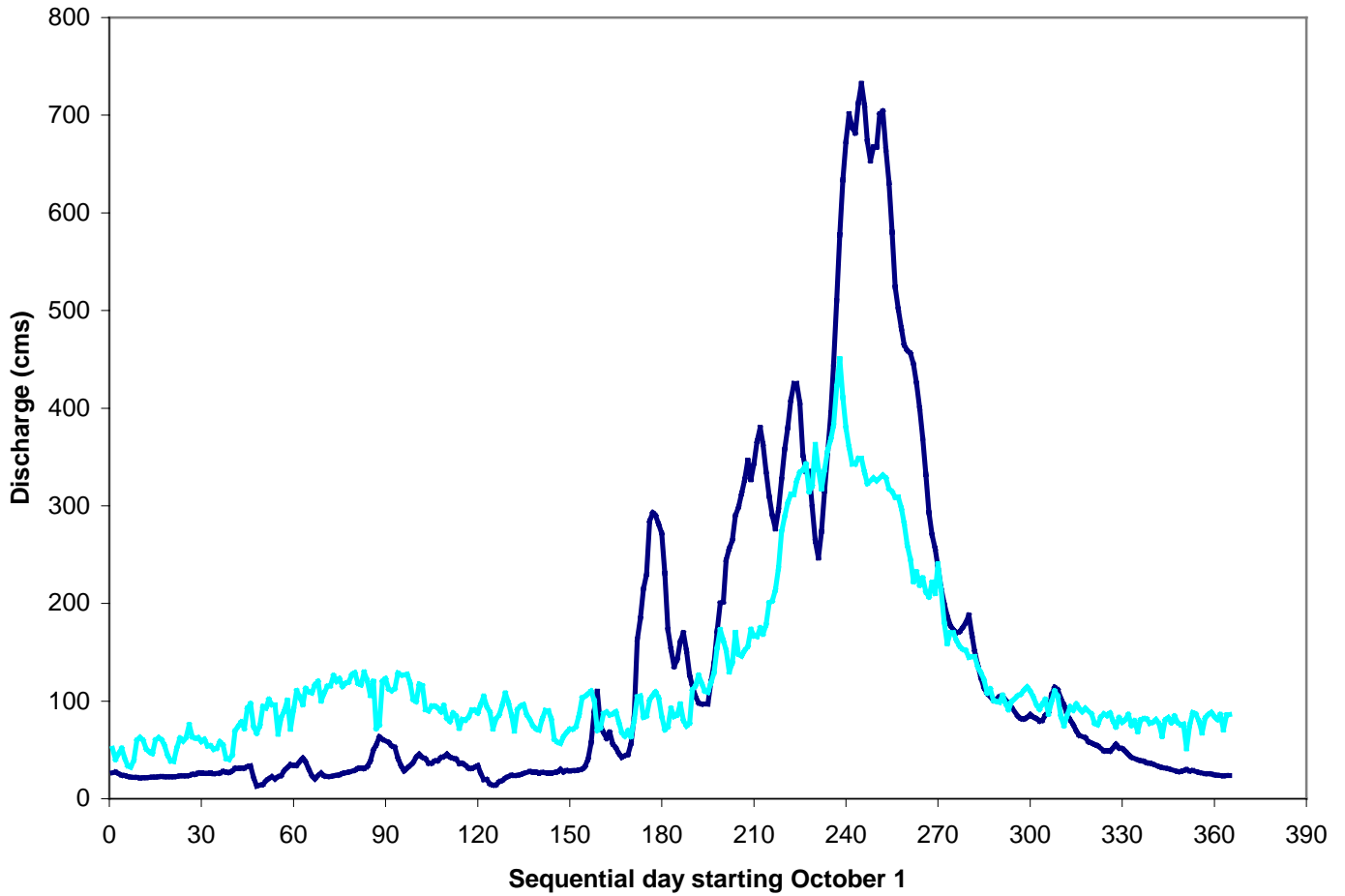


Figure A1. Daily flow hydrographs for representative normal water years in the Green River at Jensen Utah, under pre- (dark bold line) and post-Flaming Gorge (light bold line) conditions.

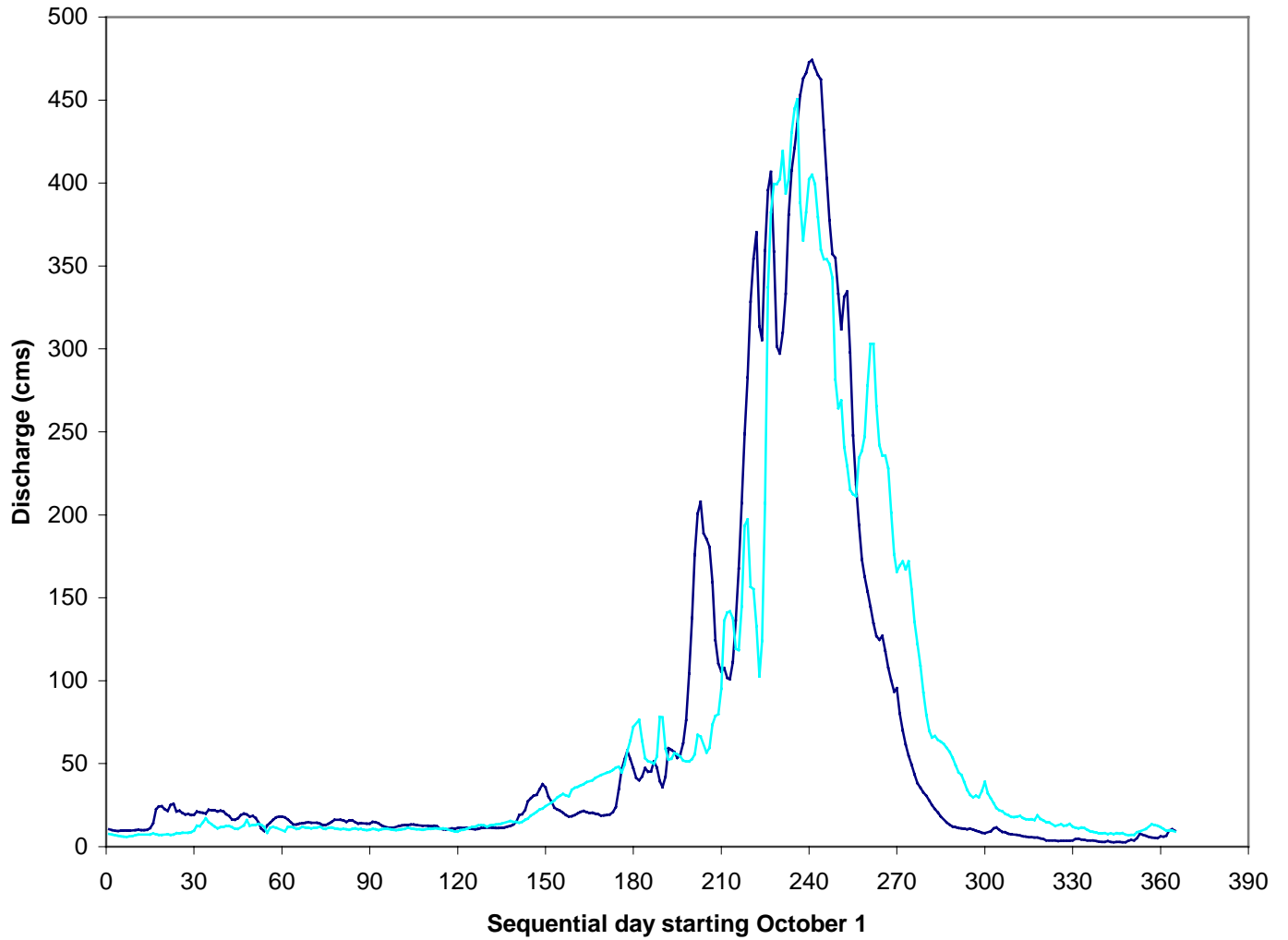


Figure A2. Daily flow hydrographs for representative normal water years in the Yampa River near the Green River confluence, under pre- (dark thin line) and post-Flaming Gorge (light thin line) conditions.

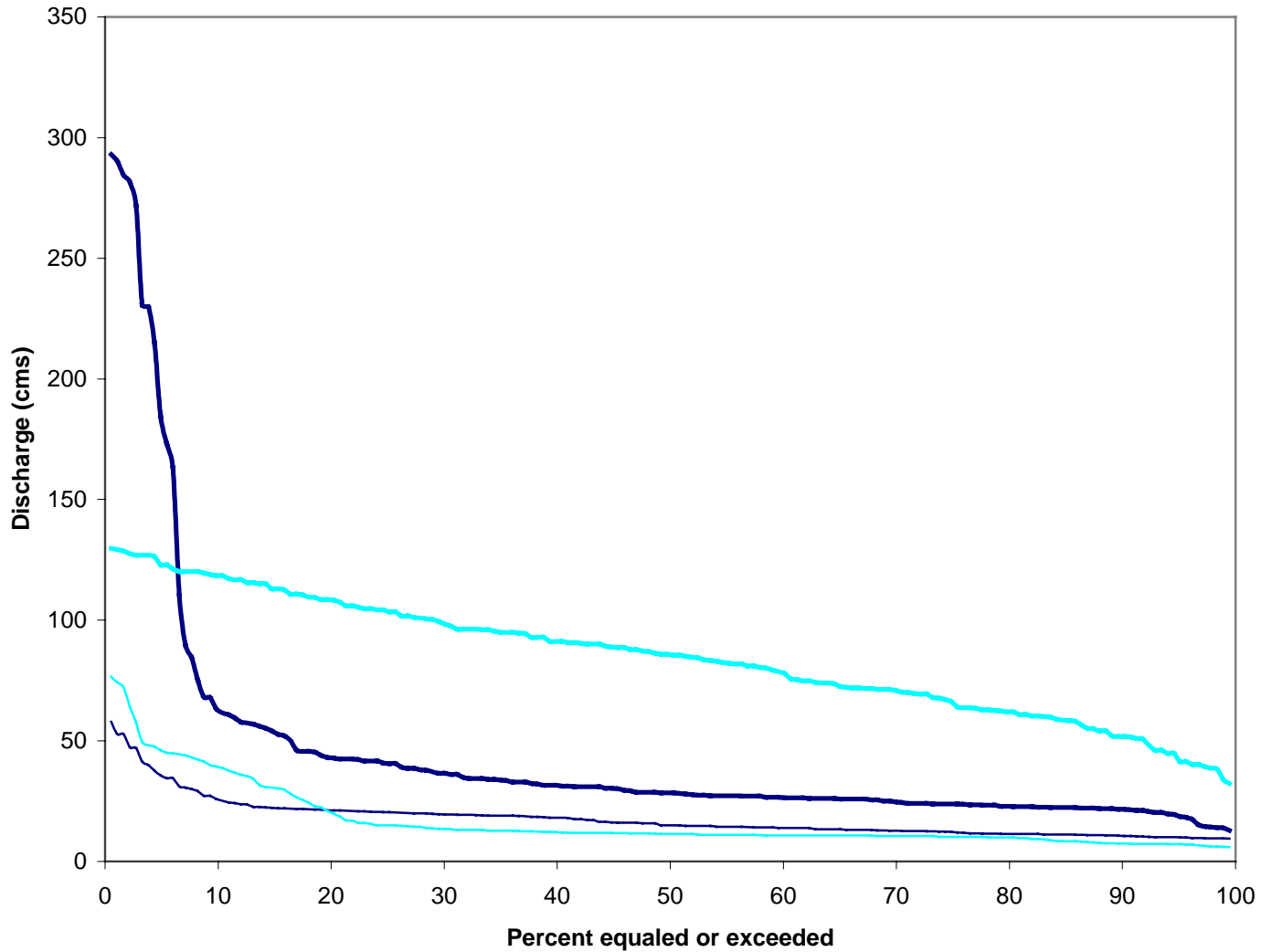


Figure A3. Duration curves for base flow hydro-period for representative normal water years in the Green River and Yampa Rivers; Jensen, Utah, before (dark bold line), after (light bold line), Yampa River near the Green confluence before (dark thin line) and after (light thin line) closure of Flaming Gorge.

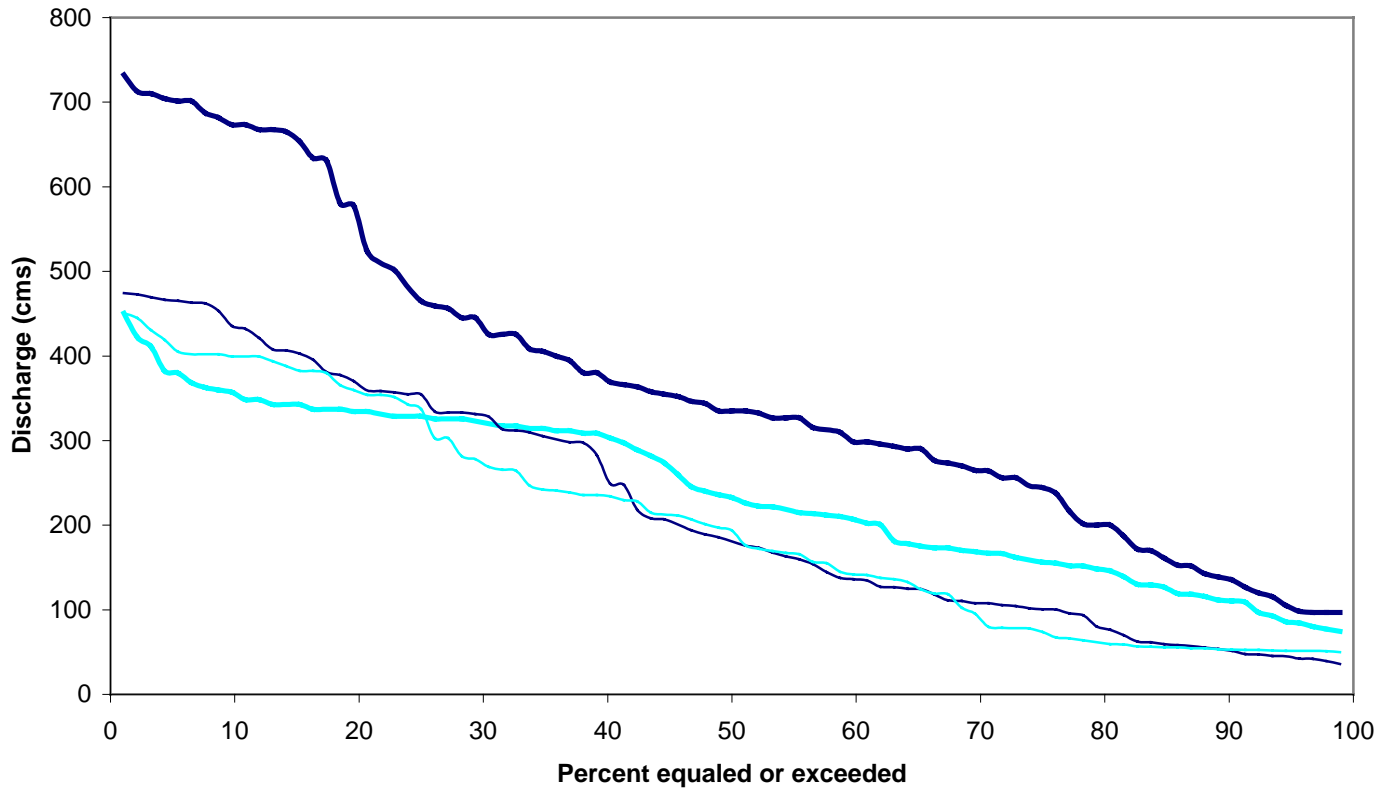


Figure A4. Duration curves for runoff hydro-period for representative normal water years in the Green River and Yampa Rivers; Jensen, Utah, before (dark bold line), after (light bold line), Yampa River near the Green confluence before (dark thin line) and after (light thin line) closure of Flaming Gorge.

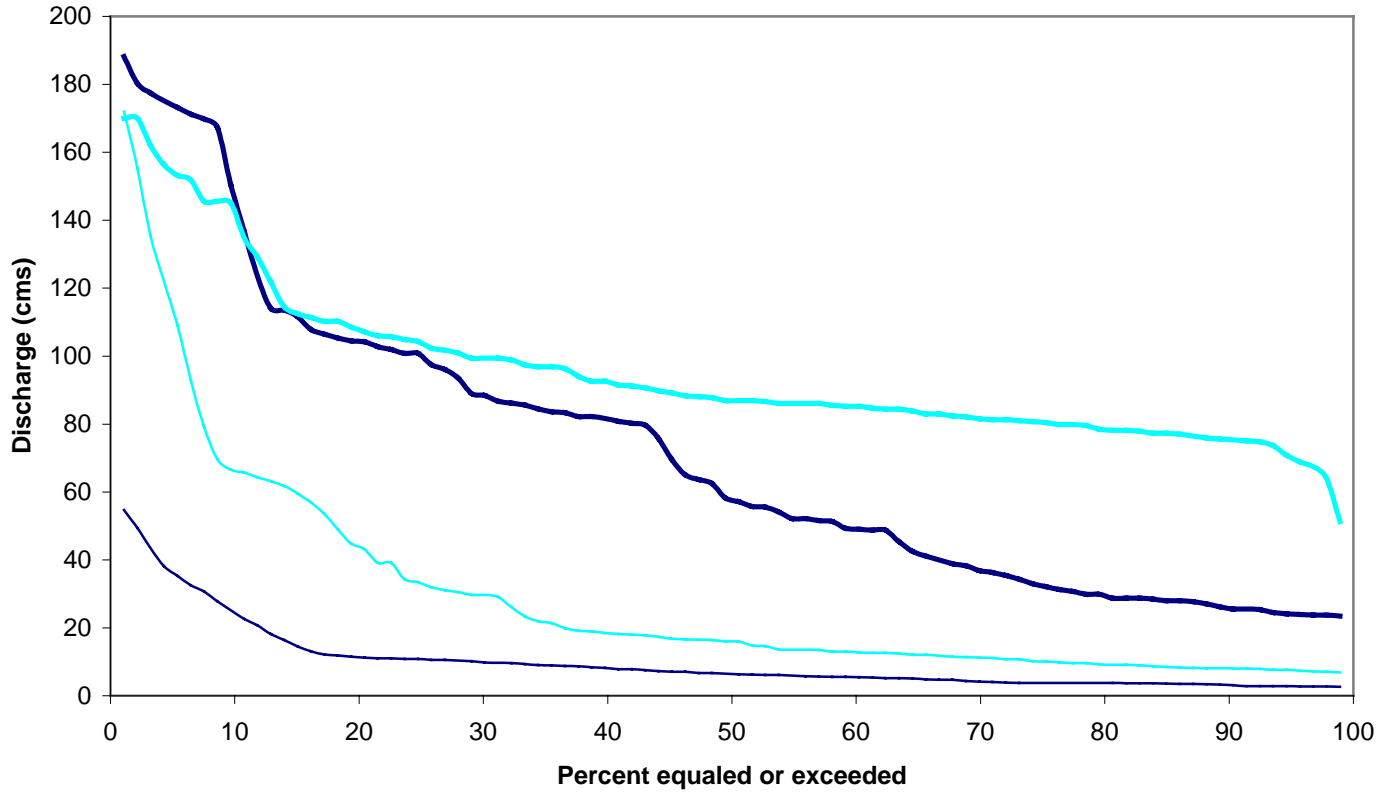


Figure A5. Duration curves for recession hydro-period for representative normal water years in the Green River and Yampa Rivers; Jensen, Utah, before (dark bold line), after (light bold line), Yampa River near the Green confluence before (dark thin line) and after (light thin line) closure of Flaming Gorge.

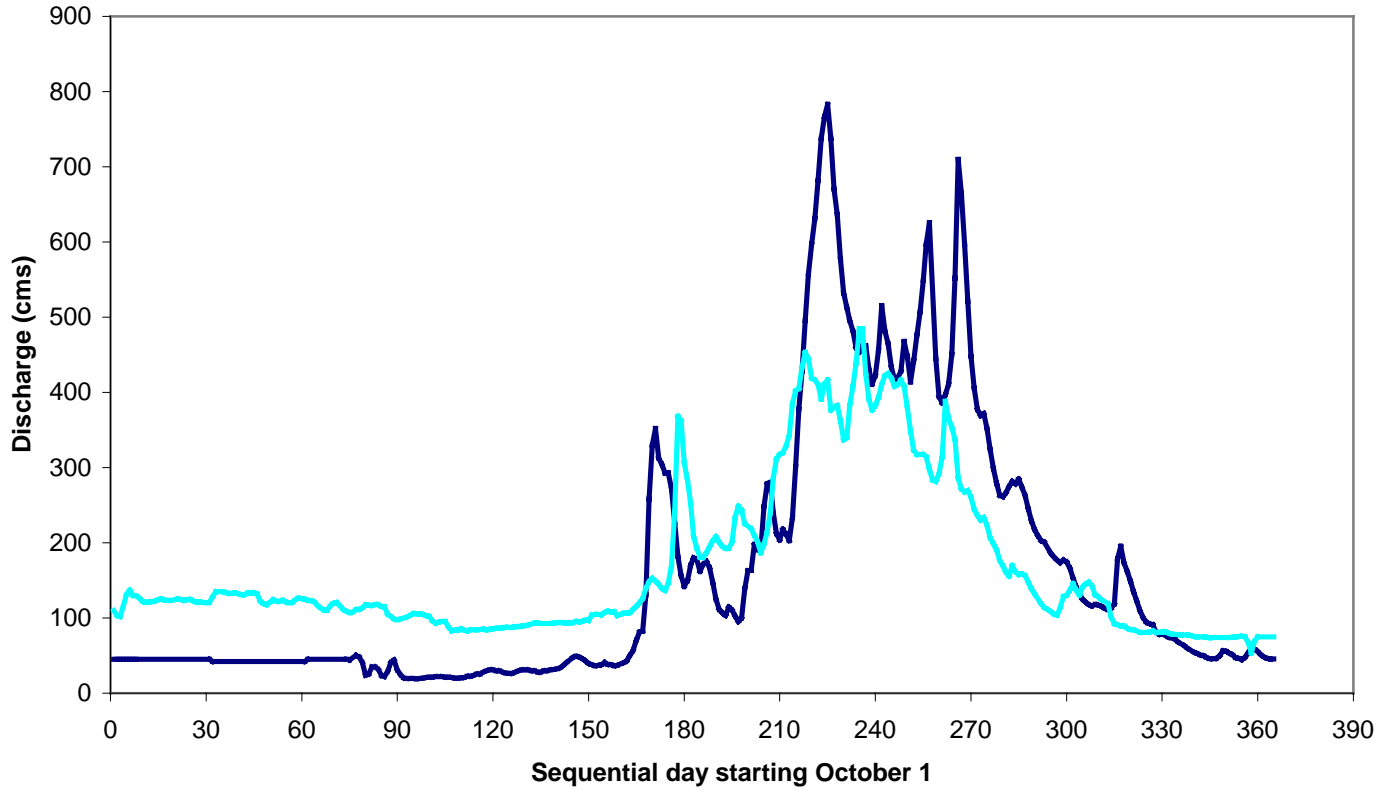


Figure A6. Daily flow hydrographs for representative wet water years in the Green River at Jensen Utah, under pre- (dark bold line) and post-Flaming Gorge (light bold line) conditions.

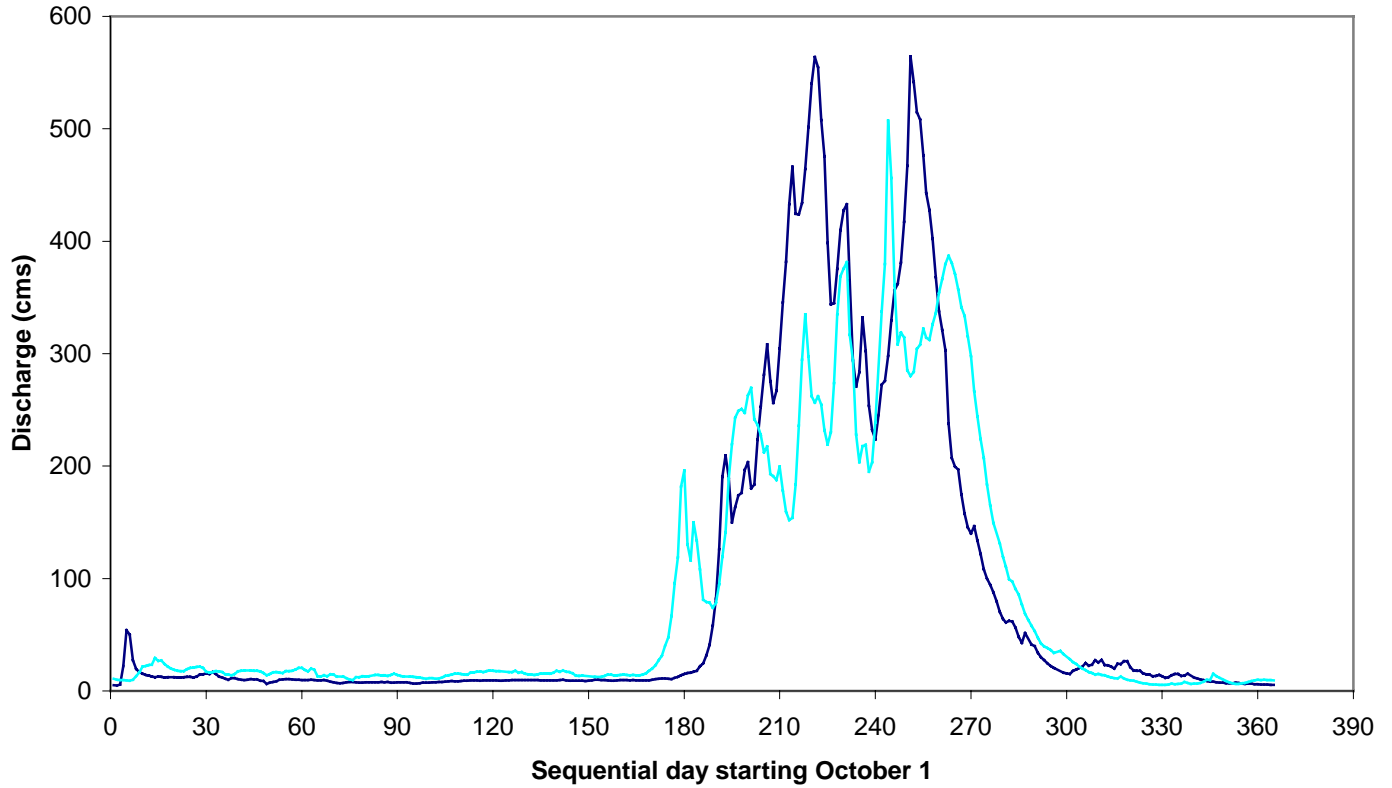


Figure A7. Daily flow hydrographs for representative wet water years in the Yampa River near the Green River confluence, under pre- (dark thin line) and post-Flaming Gorge (light thin line) conditions.

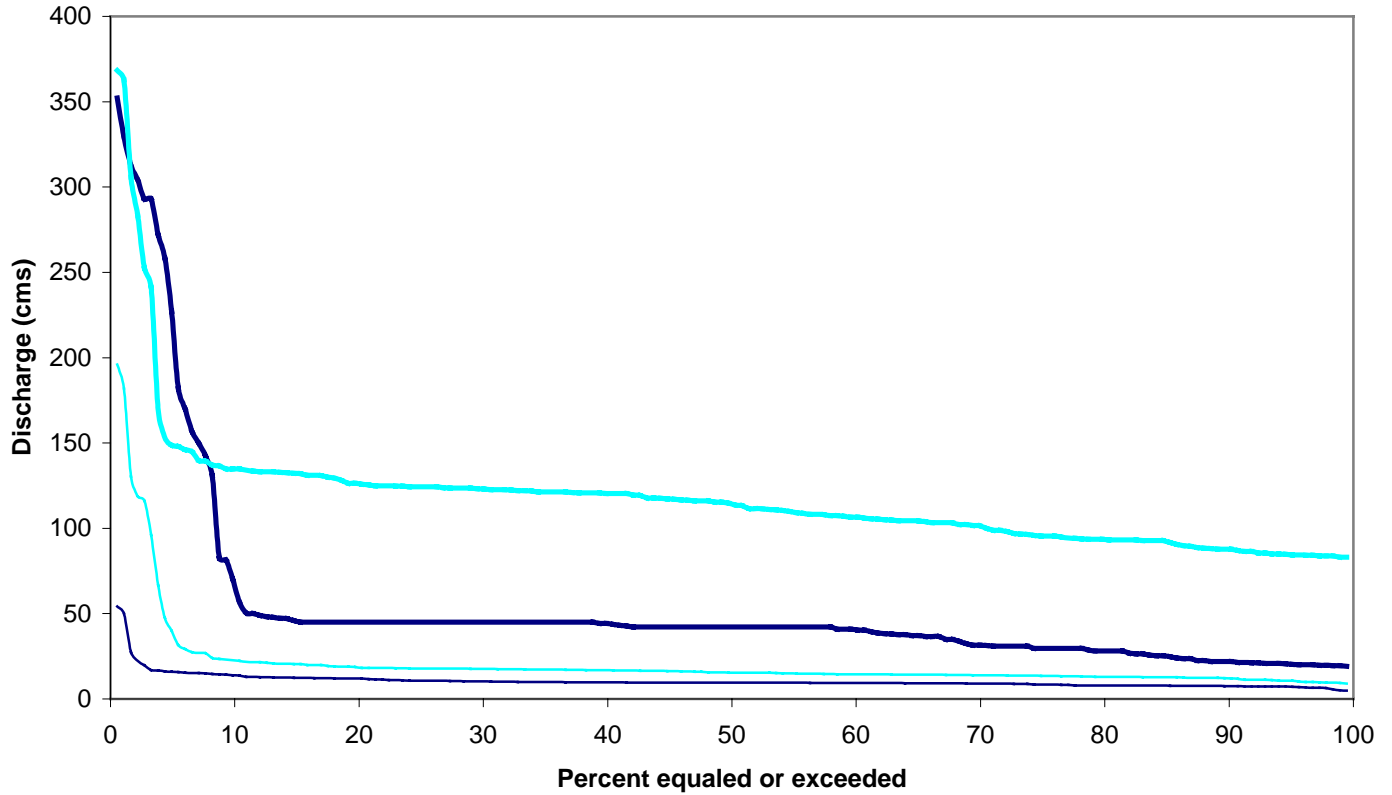


Figure A8. Duration curves for base flow hydro-period for representative wet water years in the Green River and Yampa Rivers; Jensen, Utah, before (dark bold line), after (light bold line), Yampa River near the Green confluence before (dark thin line) and after (light thin line) closure of Flaming Gorge.

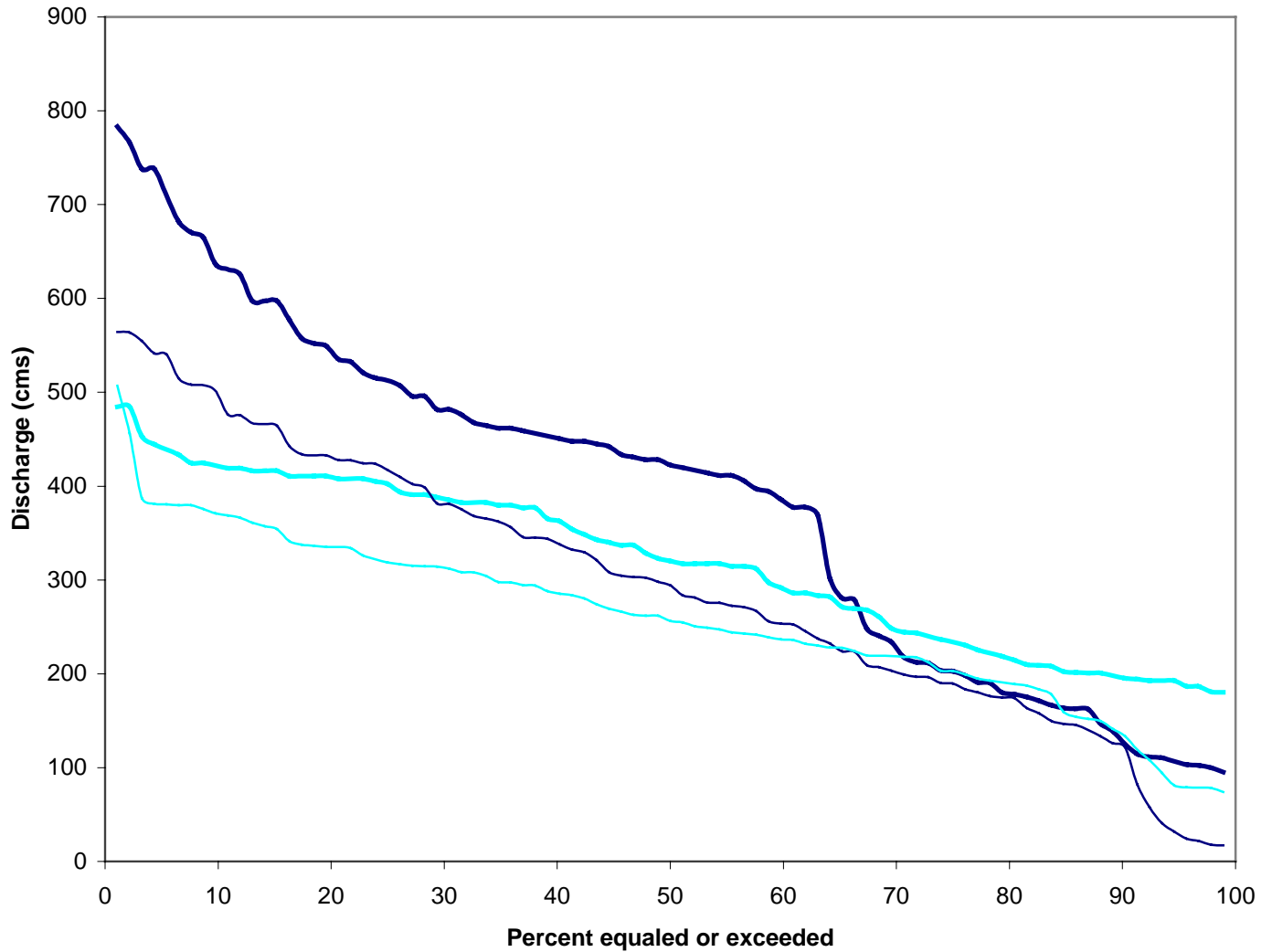


Figure A9. Duration curves for runoff hydro-period for representative wet water years in the Green River and Yampa Rivers; Jensen, Utah, before (dark bold line), after (light bold line), Yampa River near the Green confluence before (dark thin line) and after (light thin line) closure of Flaming Gorge.

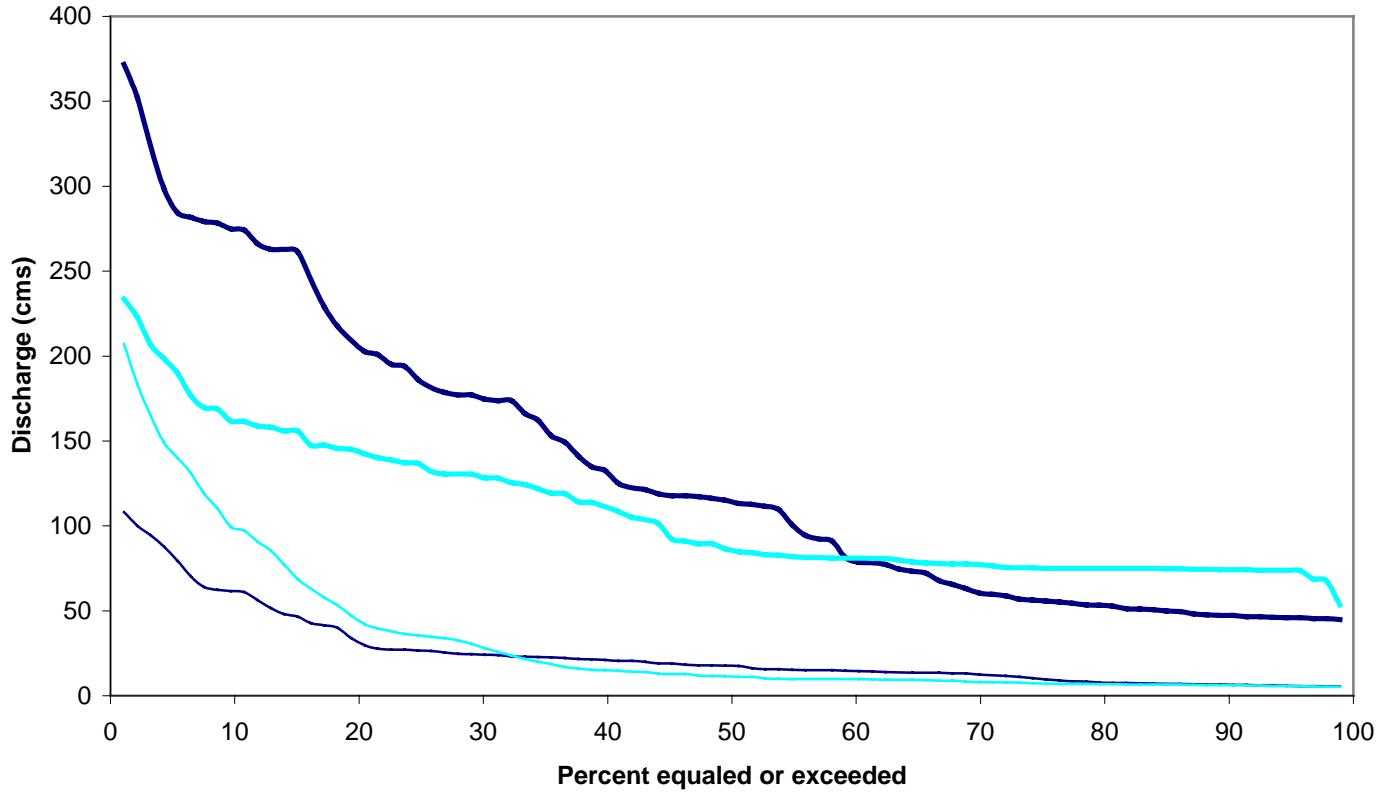


Figure A10. Duration curves for recession hydro-period for representative wet water years in the Green River and Yampa Rivers; Jensen, Utah, before (dark bold line), after (light bold line), Yampa River near the Green confluence before (dark thin line) and after (light thin line) closure of Flaming Gorge.

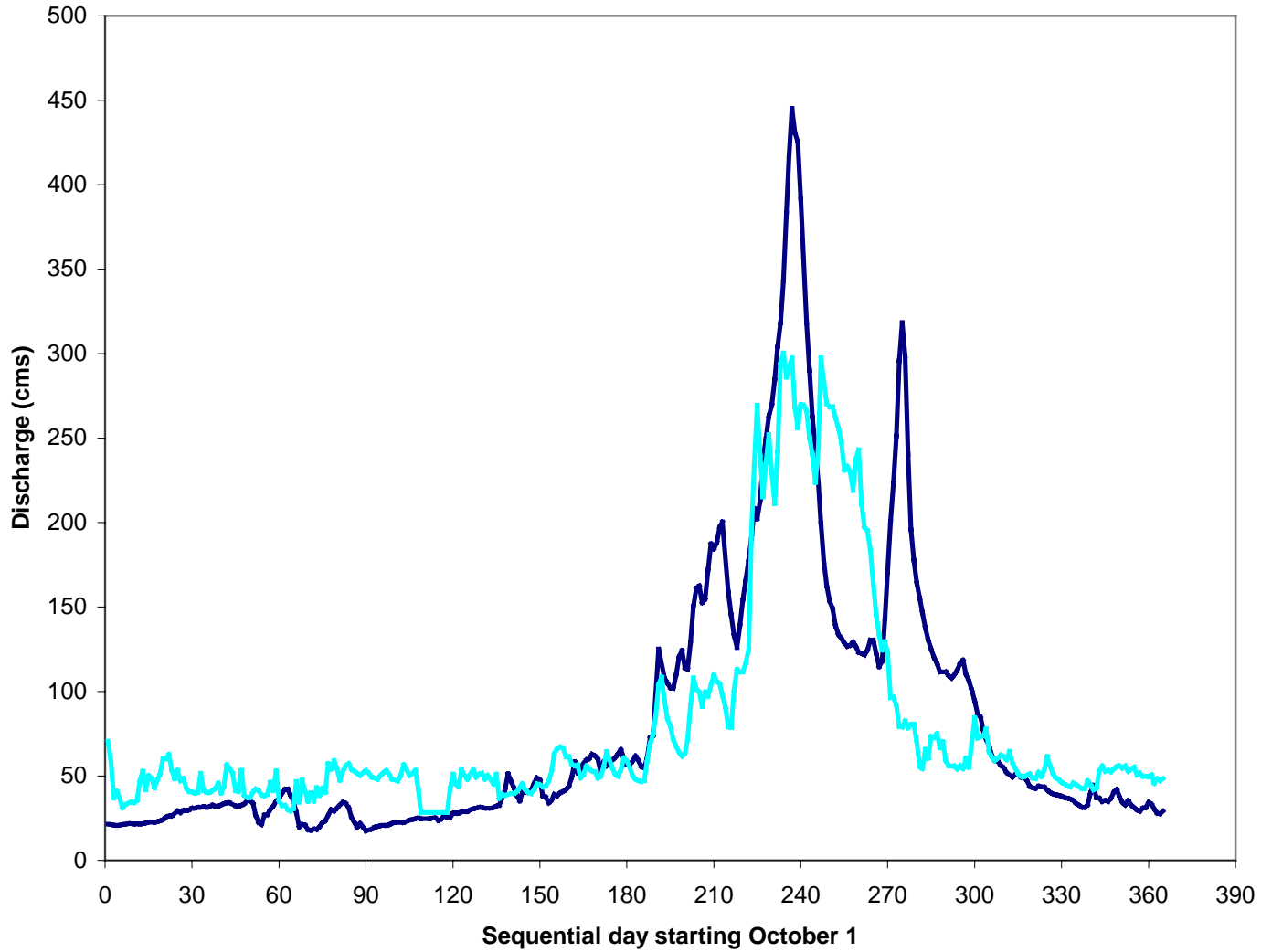


Figure A11. Daily flow hydrographs for representative dry water years in the Green River at Jensen Utah, under pre- (dark bold line) and post-Flaming Gorge (light bold line) conditions.

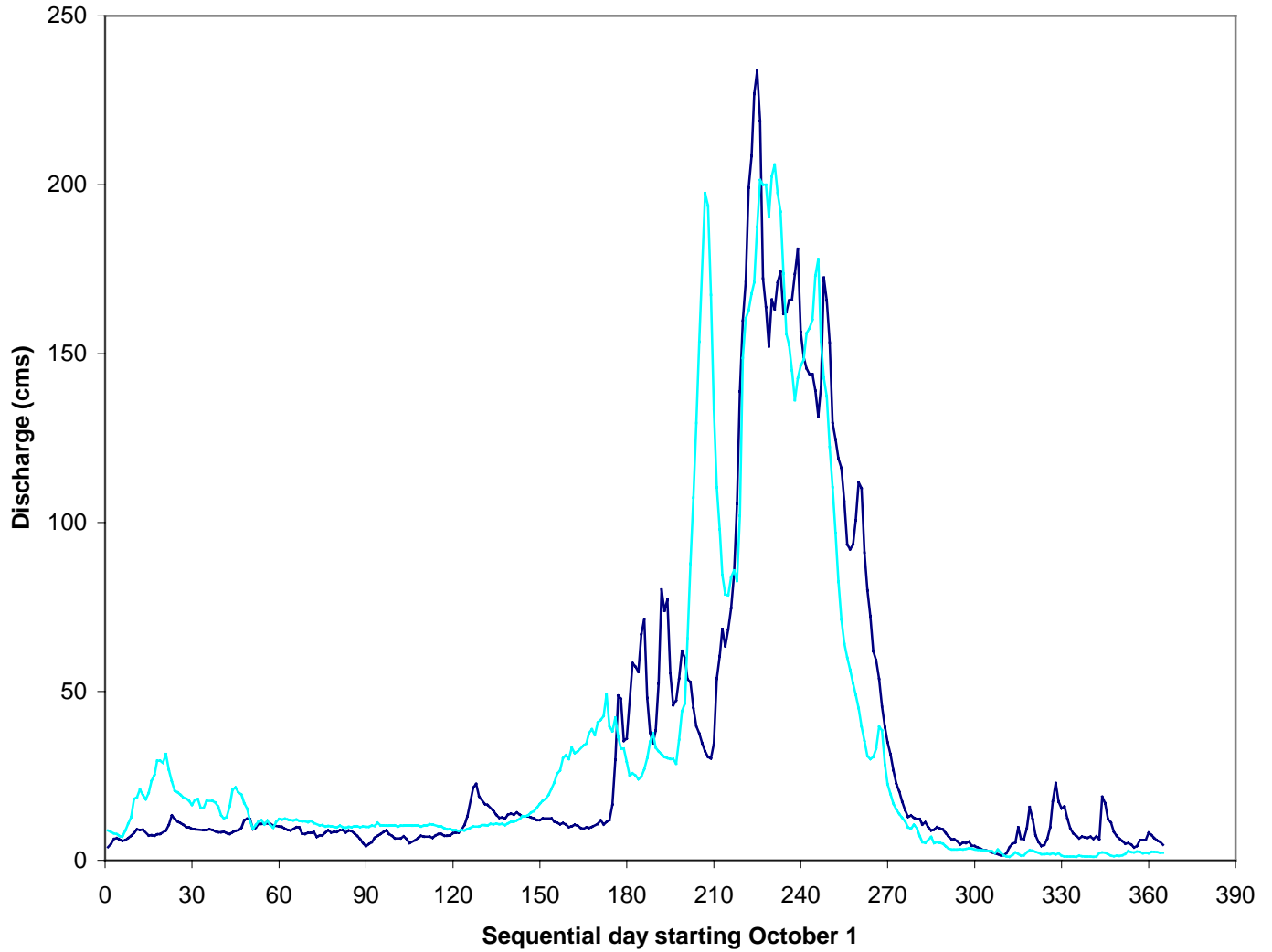


Figure A12. Daily flow hydrographs for representative dry water years in the Yampa River near the Green River confluence, under pre- (dark thin line) and post-Flaming Gorge (light thin line) conditions.

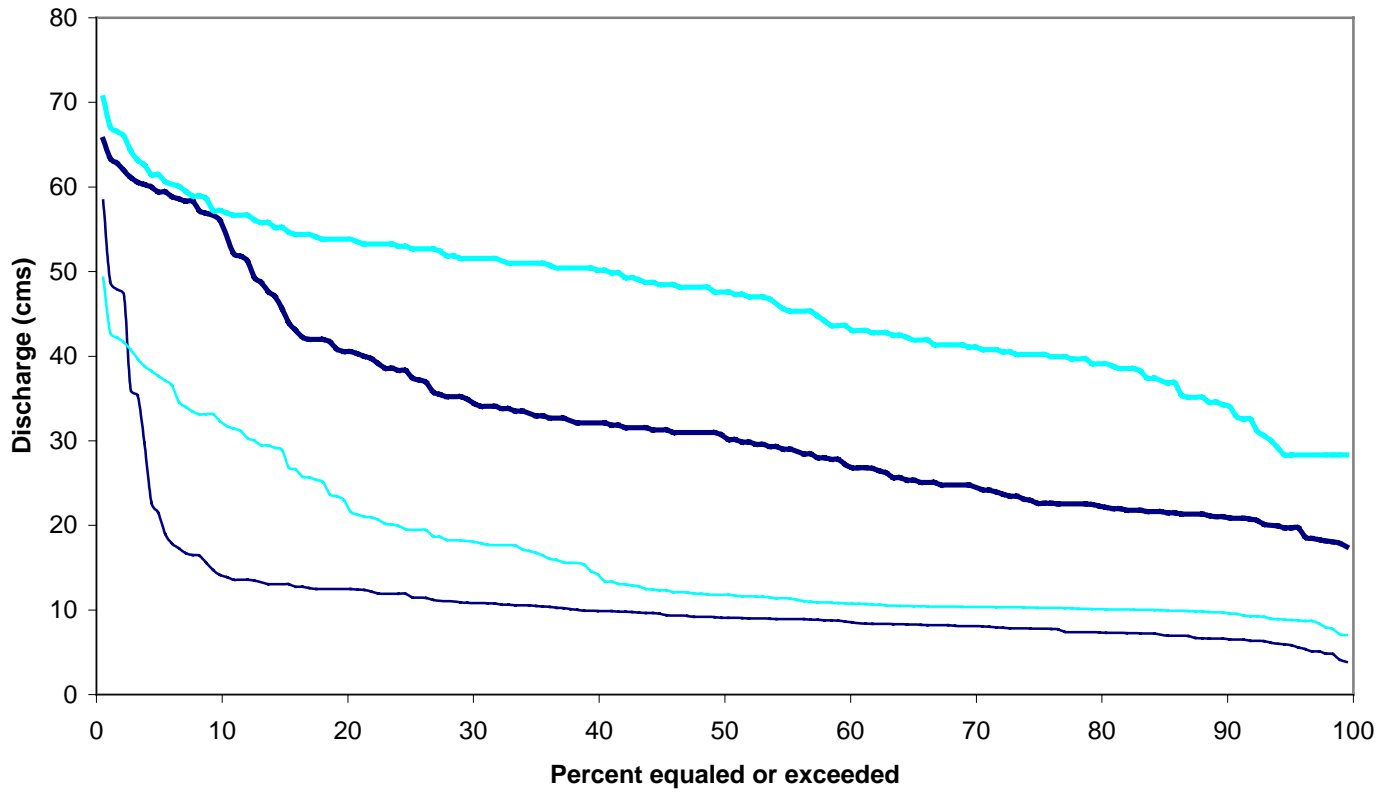


Figure A13. Duration curves for base flow hydro-period for representative dry water years in the Green River and Yampa Rivers; Jensen, Utah, before (dark bold line), after (light bold line), Yampa River near the Green confluence before (dark thin line) and after (light thin line) closure of Flaming Gorge.

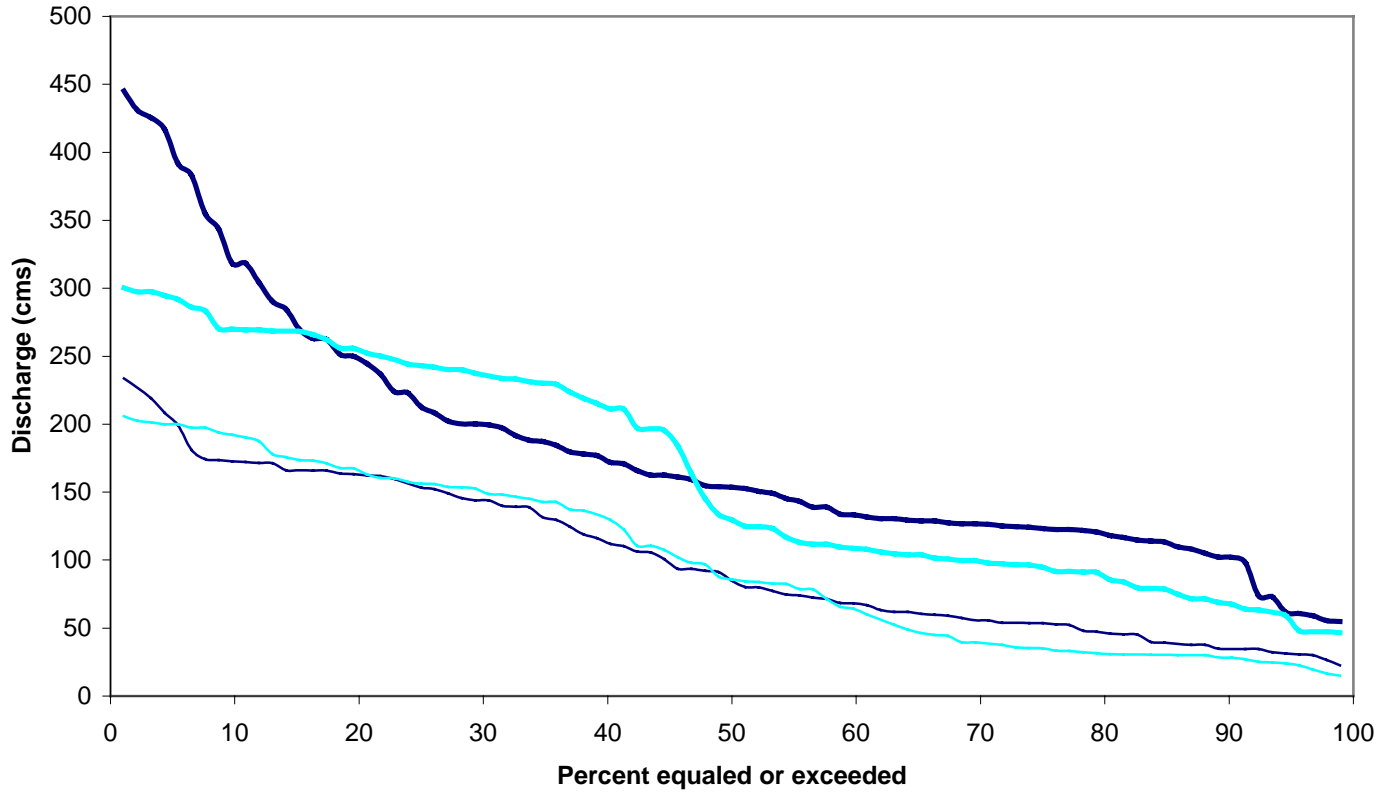


Figure A14. Duration curves for runoff hydro-period for representative dry water years in the Green River and Yampa Rivers; Jensen, Utah, before (dark bold line), after (light bold line), Yampa River near the Green confluence before (dark thin line) and after (light thin line) closure of Flaming Gorge.

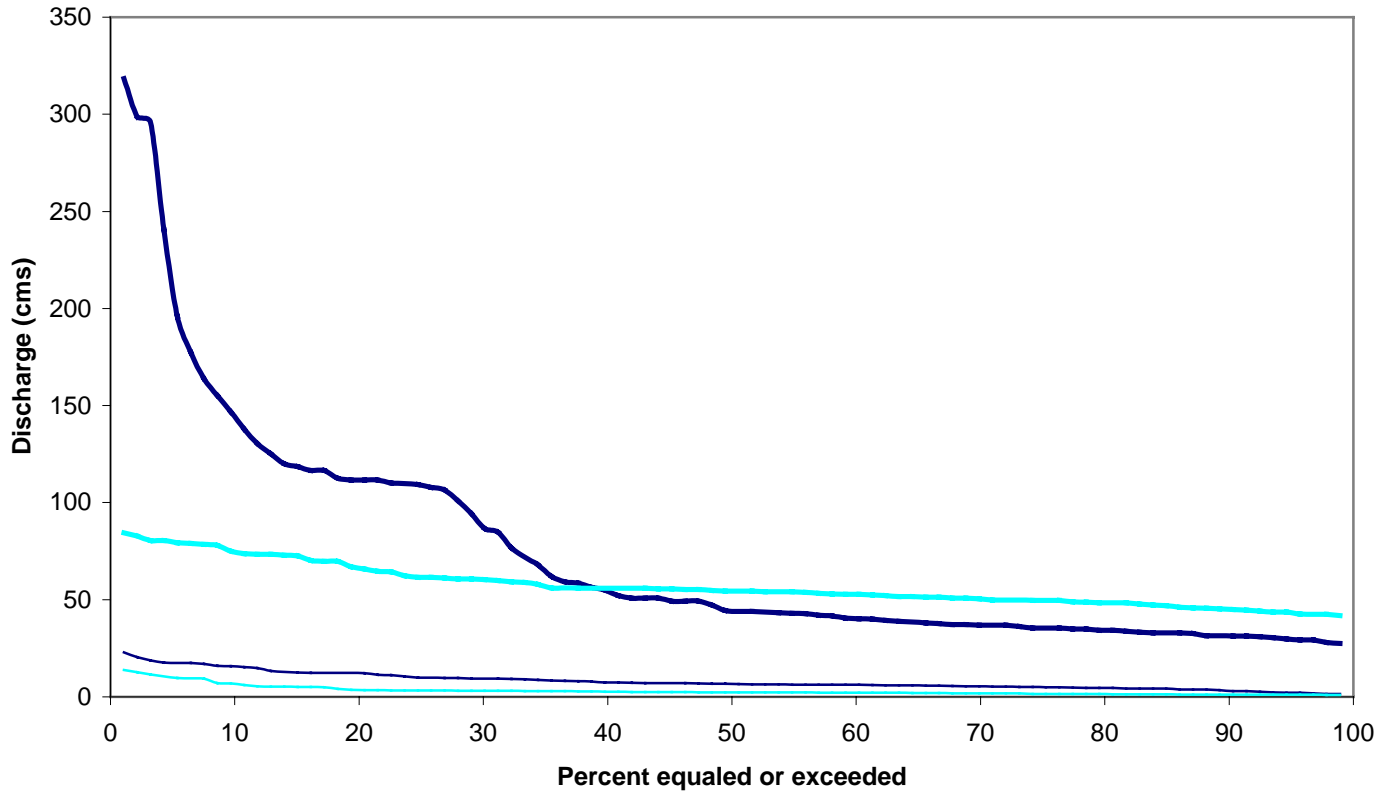


Figure A15. Duration curves for recession hydro-period for representative dry water years in the Green River and Yampa Rivers; Jensen, Utah, before (dark bold line), after (light bold line), Yampa River near the Green confluence before (dark thin line) and after (light thin line) closure of Flaming Gorge.

Appendix B – Channel change

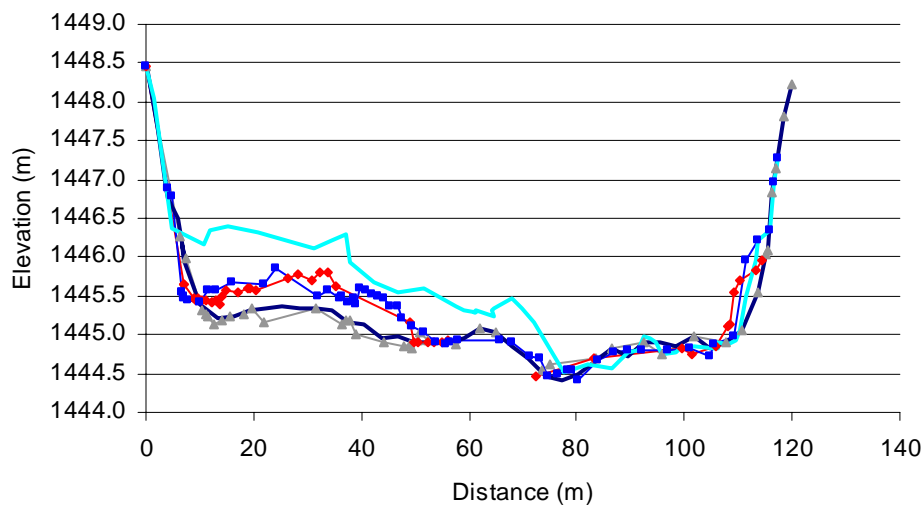
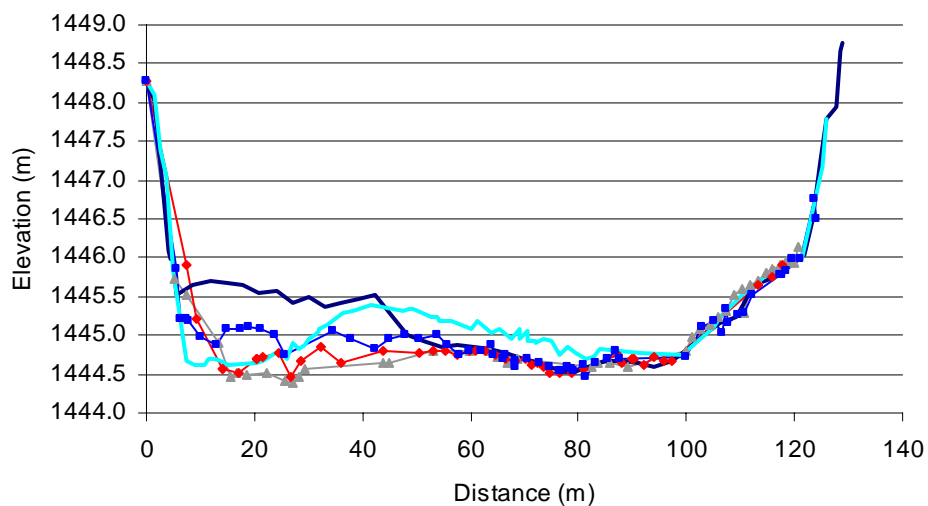


Figure B1. Cross-sectional profiles for Green River transects 1 (top) and 2 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff (November 1999, 73 m³/s) and light bold line represents post-runoff (August 2000, 38 m³/s) measurements. Intermediate measurements are rising limb (April 2000, 200-207 m³/s, triangles), second rising limb measurement (mid-May 2000, 204-238 m³/s, diamonds), and near peak flow (late May 2000, 405-441 m³/s, squares).

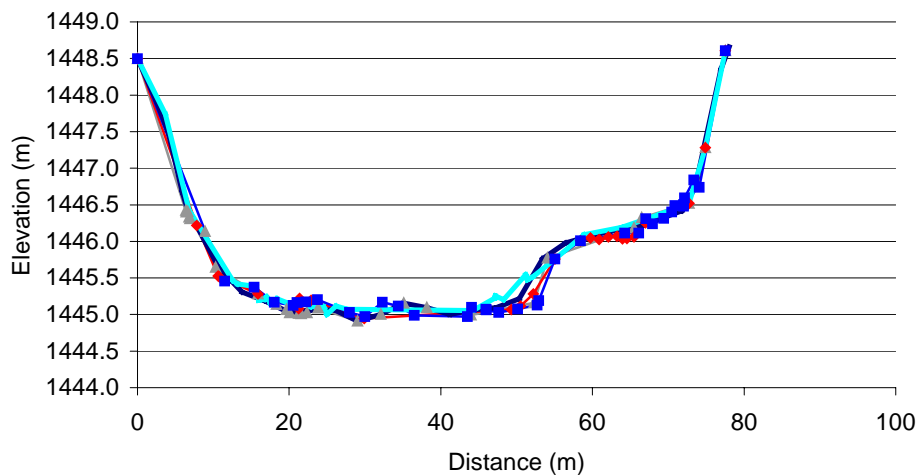
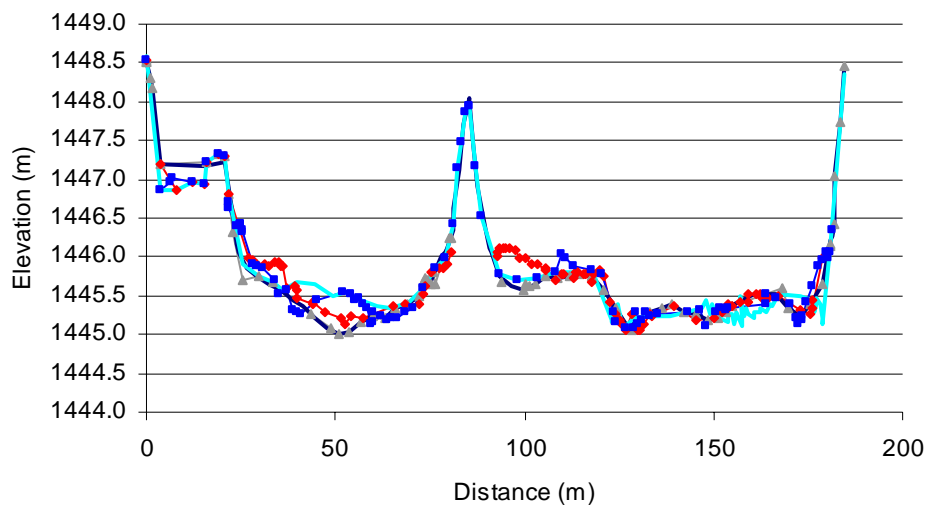


Figure B2. Cross-sectional profiles for Green River transects 3 (top) and 4 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff (November 1999, 73 m³/s) and light bold line represents post-runoff (August 2000, 38 m³/s) measurements. Intermediate measurements are rising limb (April 2000, 200-207 m³/s, triangles), second rising limb measurement (mid-May 2000, 204-238 m³/s, diamonds), and near peak flow (late May 2000, 405-441 m³/s, squares).

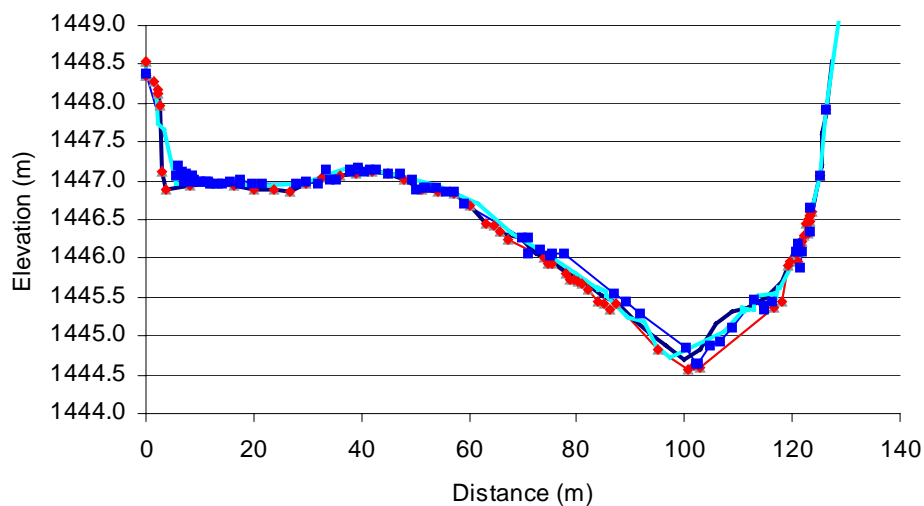
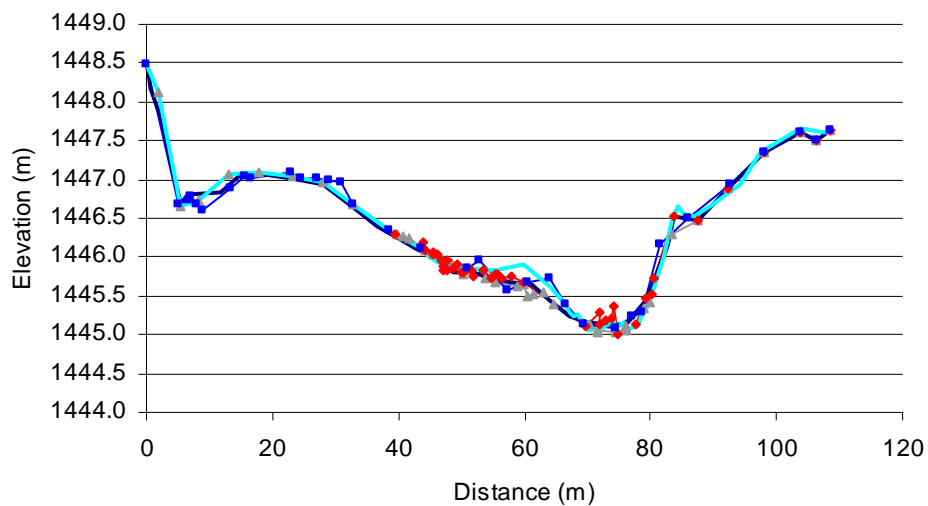


Figure B3. Cross-sectional profiles for Green River transects 5 (top) and 6 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff (November 1999, $73 \text{ m}^3/\text{s}$) and light bold line represents post-runoff (August 2000, $38 \text{ m}^3/\text{s}$) measurements. Intermediate measurements are rising limb (April 2000, $200\text{-}207 \text{ m}^3/\text{s}$, triangles), second rising limb measurement (mid-May 2000, $204\text{-}238 \text{ m}^3/\text{s}$, diamonds), and near peak flow (late May 2000, $405\text{-}441 \text{ m}^3/\text{s}$, squares).

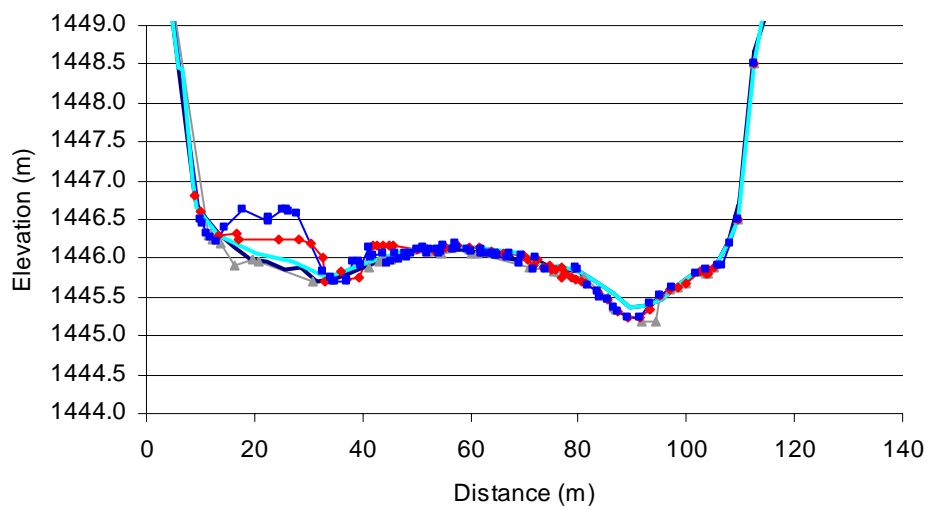
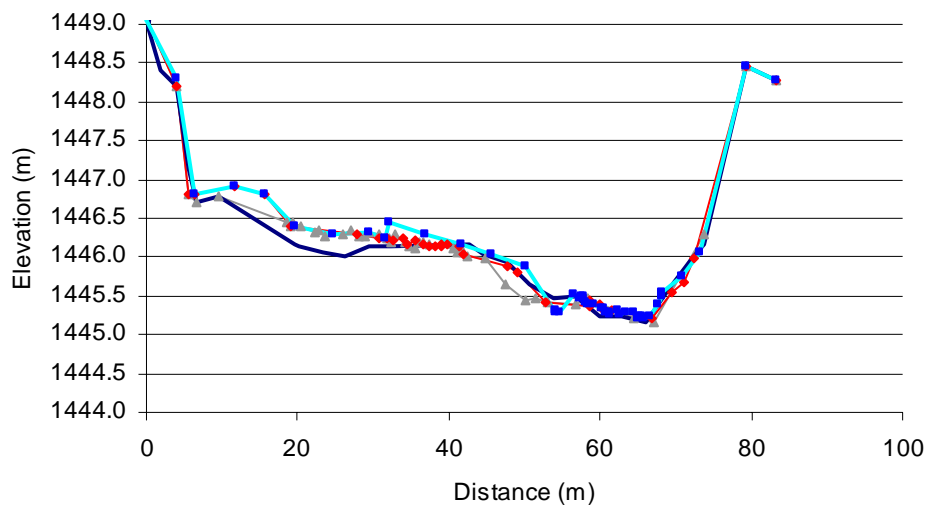


Figure B4. Cross-sectional profiles for Green River transects 7 (top) and 8 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff (November 1999, 73 m³/s) and light bold line represents post-runoff (August 2000, 38 m³/s) measurements. Intermediate measurements are rising limb (April 2000, 200-207 m³/s, triangles), second rising limb measurement (mid-May 2000, 204-238 m³/s, diamonds), and near peak flow (late May 2000, 405-441 m³/s, squares).

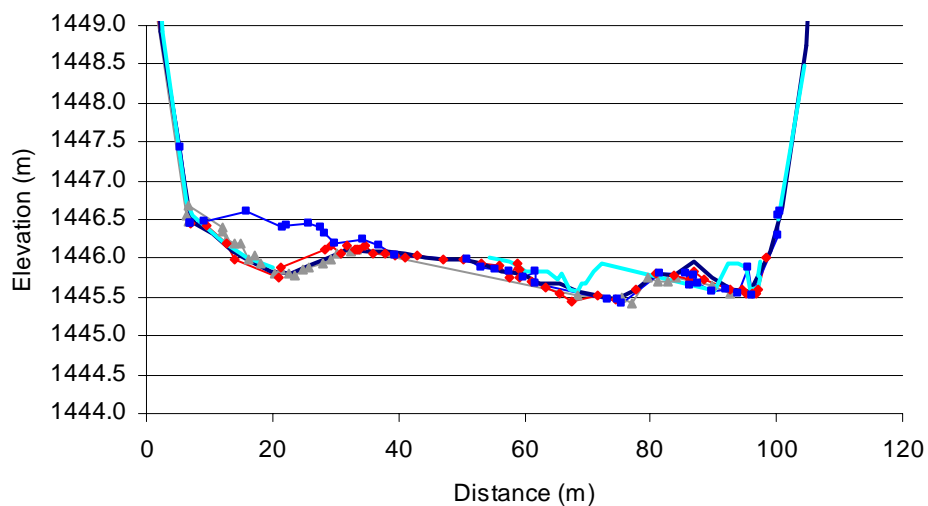
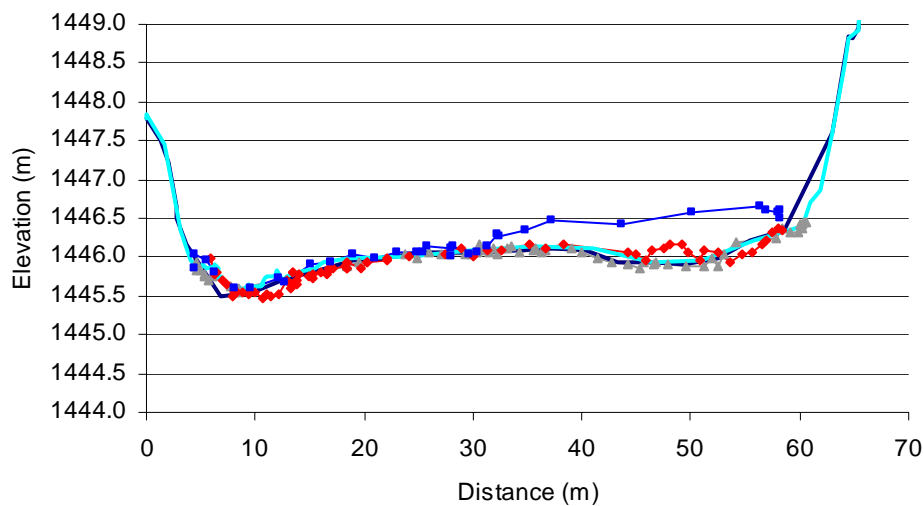


Figure B5. Cross-sectional profiles for Green River transects 9 (top) and 10 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff (November 1999, $73 \text{ m}^3/\text{s}$) and light bold line represents post-runoff (August 2000, $38 \text{ m}^3/\text{s}$) measurements. Intermediate measurements are rising limb (April 2000, $200\text{-}207 \text{ m}^3/\text{s}$, triangles), second rising limb measurement (mid-May 2000, $204\text{-}238 \text{ m}^3/\text{s}$, diamonds), and near peak flow (late May 2000, $405\text{-}441 \text{ m}^3/\text{s}$, squares).

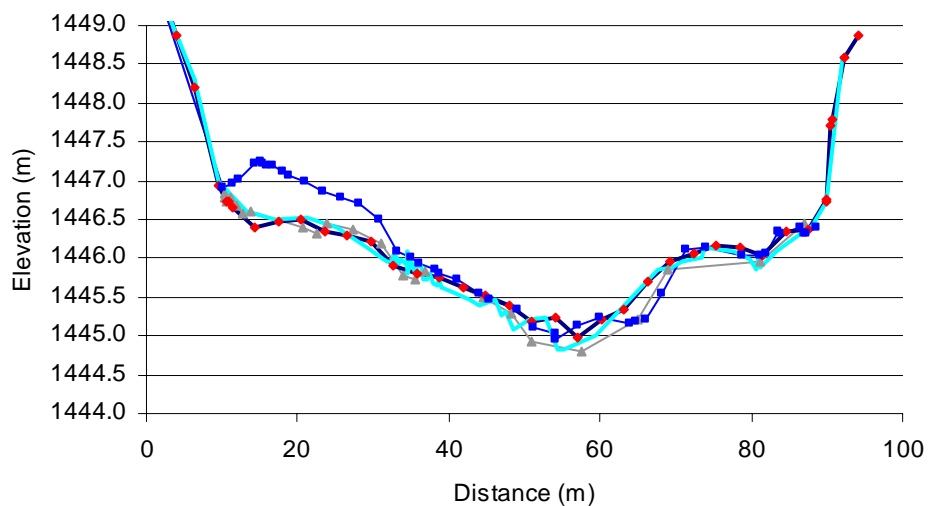
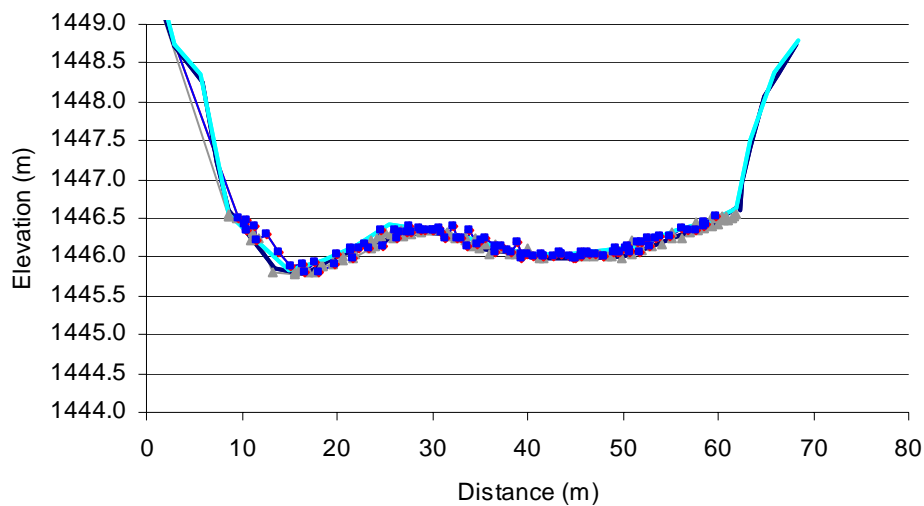


Figure B6. Cross-sectional profiles for Green River transects 11 (top) and 12 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff (November 1999, 73 m³/s) and light bold line represents post-runoff (August 2000, 38 m³/s) measurements. Intermediate measurements are rising limb (April 2000, 200-207 m³/s, triangles), second rising limb measurement (mid-May 2000, 204-238 m³/s, diamonds), and near peak flow (late May 2000, 405-441 m³/s, squares).

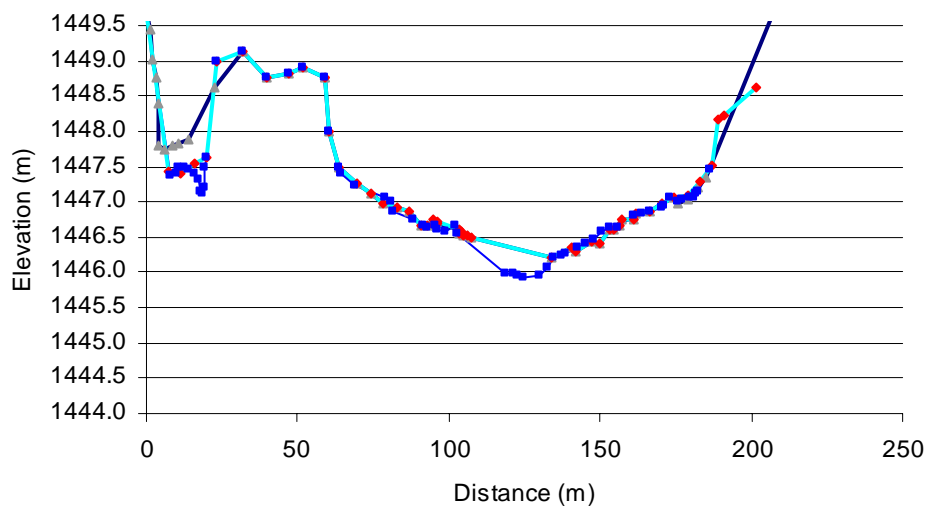
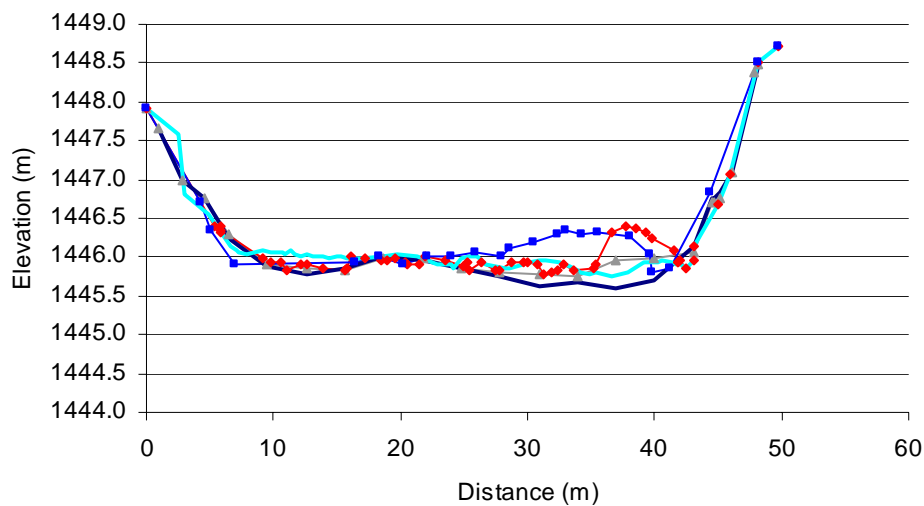


Figure B7. Cross-sectional profiles for Green River transects 13 (top) and 14 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff (November 1999, 73 m³/s) and light bold line represents post-runoff (August 2000, 38 m³/s) measurements. Intermediate measurements are rising limb (April 2000, 200-207 m³/s, triangles), second rising limb measurement (mid-May 2000, 204-238 m³/s, diamonds), and near peak flow (late May 2000, 405-441 m³/s, squares).

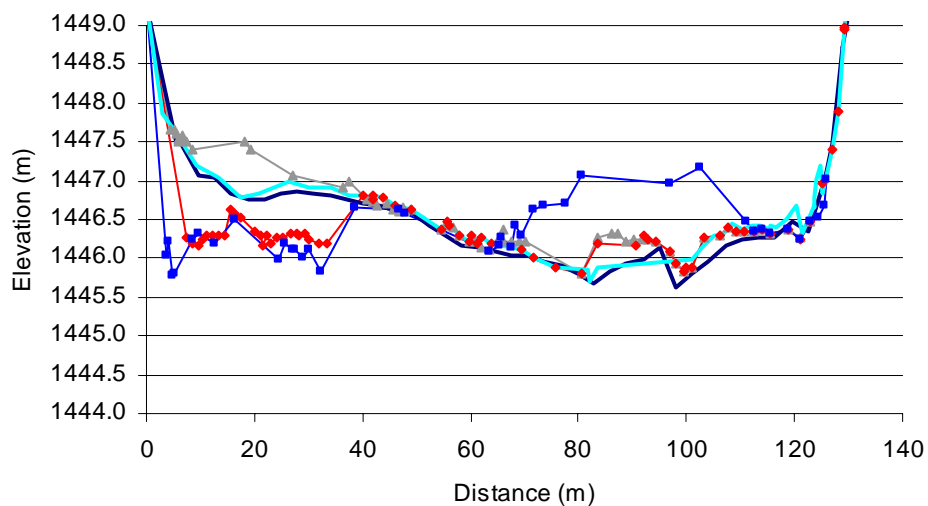
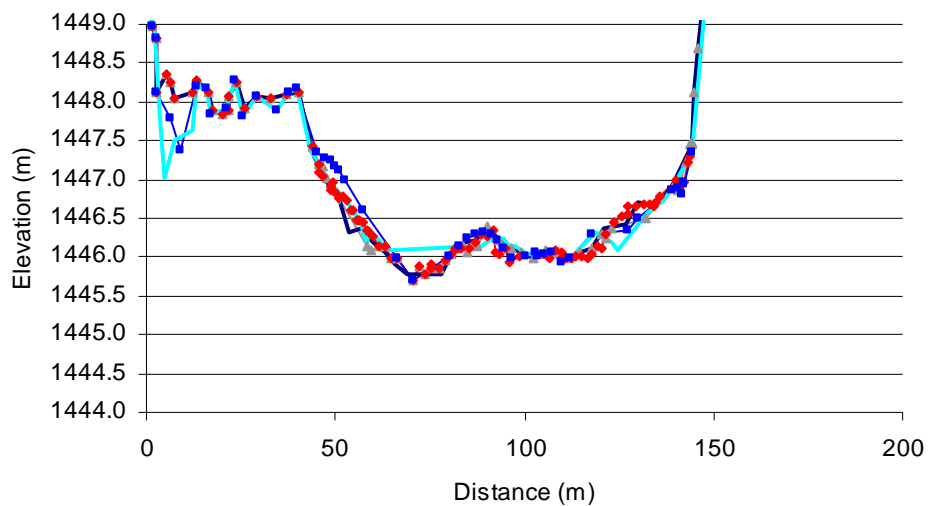


Figure B8. Cross-sectional profiles for Green River transects 15 (top) and 16 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff (November 1999, $73 \text{ m}^3/\text{s}$) and light bold line represents post-runoff (August 2000, $38 \text{ m}^3/\text{s}$) measurements. Intermediate measurements are rising limb (April 2000, $200\text{-}207 \text{ m}^3/\text{s}$, triangles), second rising limb measurement (mid-May 2000, $204\text{-}238 \text{ m}^3/\text{s}$, diamonds), and near peak flow (late May 2000, $405\text{-}441 \text{ m}^3/\text{s}$, squares).

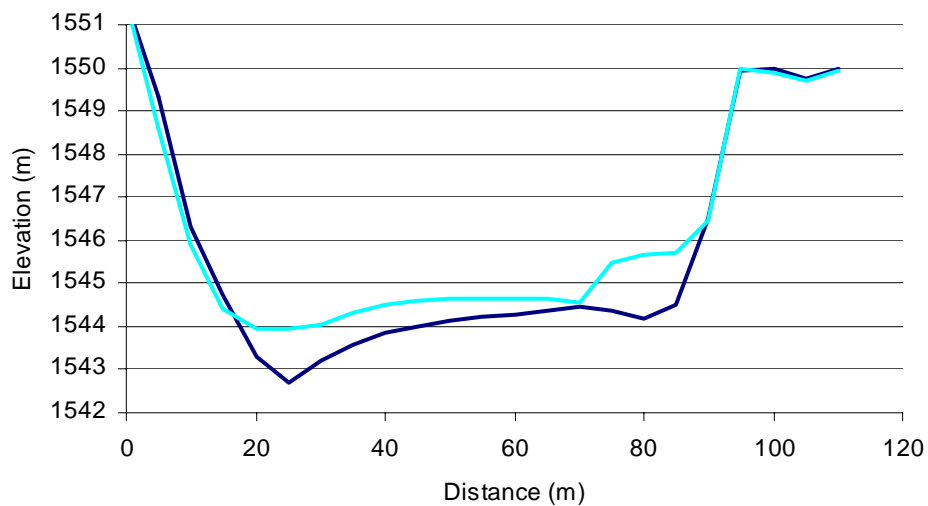
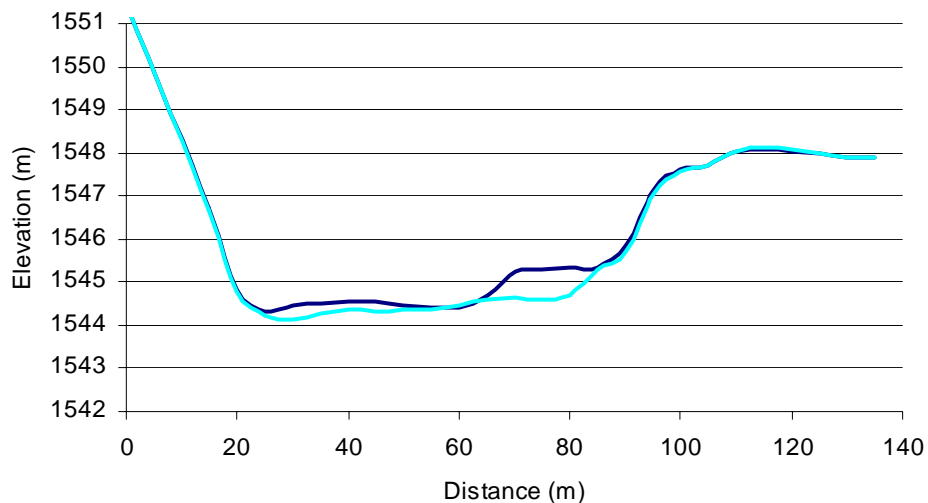


Figure B9. Cross-sectional profiles for Yampa River transects 1 (top) and 2 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff rising limb (April 2000, 137-142 m^3/s) and light bold line represents post-runoff (July 2000, 7 m^3/s) measurements.

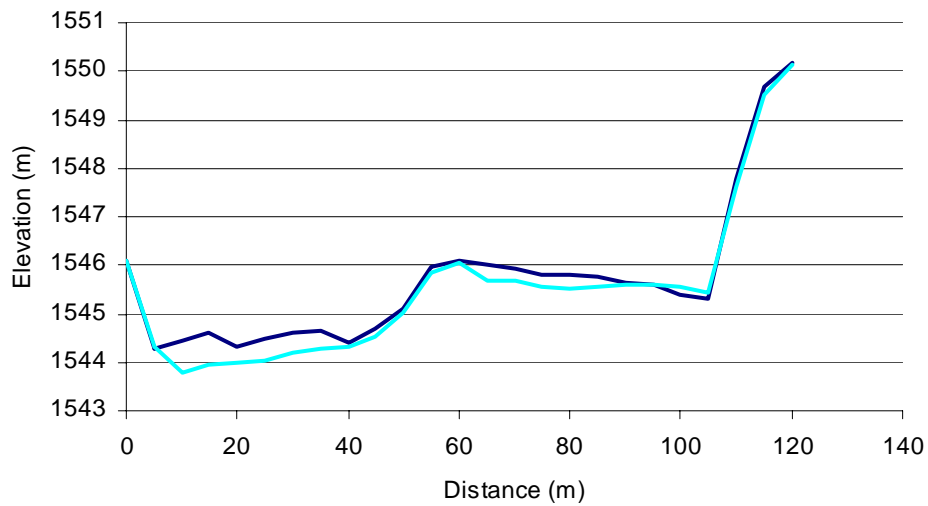
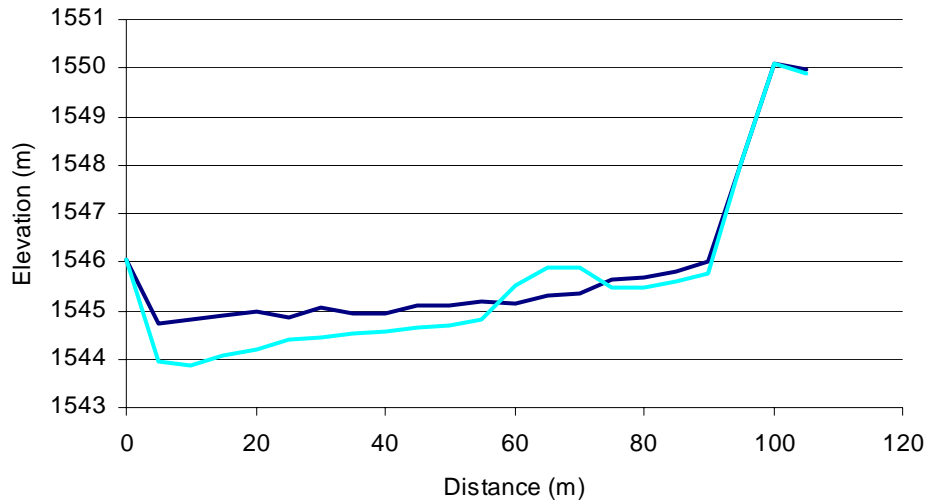


Figure B10. Cross-sectional profiles for Yampa River transects 3 (top) and 4 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff rising limb (April 2000, 137-142 m³/s) and light bold line represents post-runoff (July 2000, 7 m³/s) measurements.

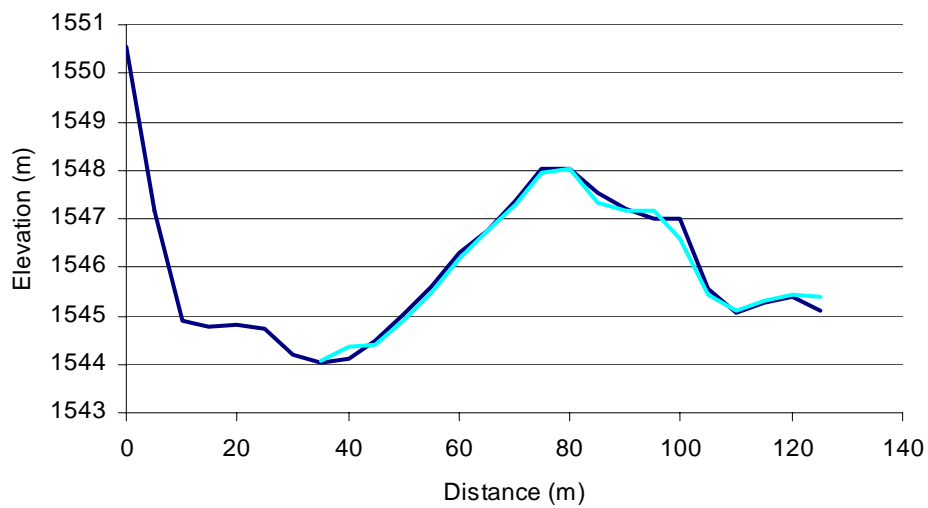
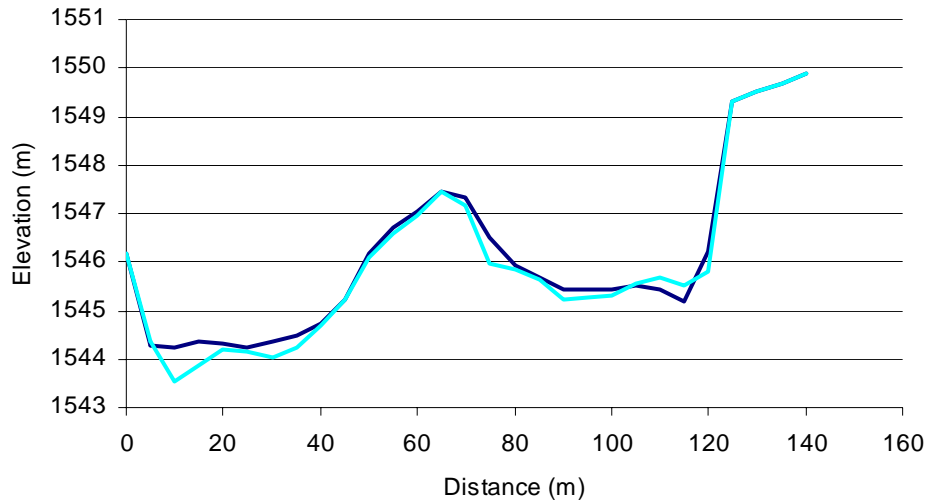


Figure B11. Cross-sectional profiles for Yampa River transects 5 (top) and 6 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff rising limb (April 2000, 137-142 m^3/s) and light bold line represents post-runoff (July 2000, 7 m^3/s) measurements.

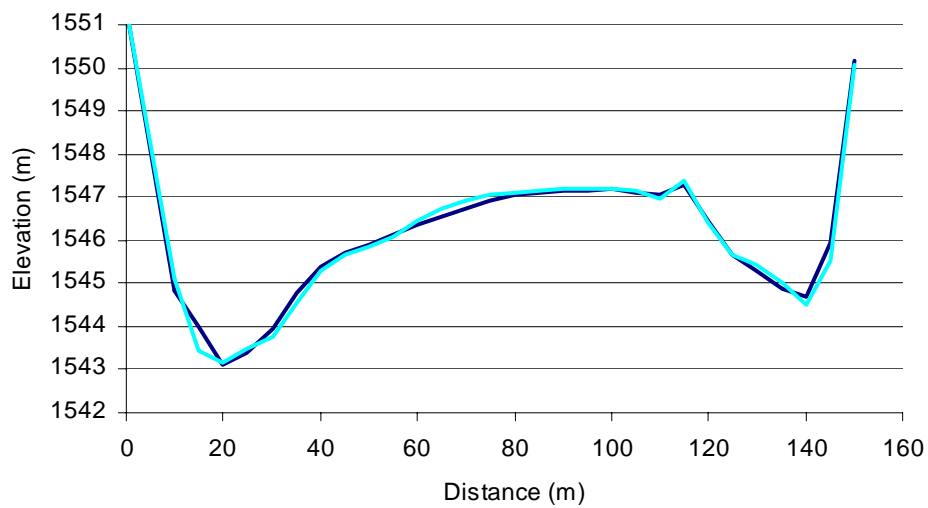
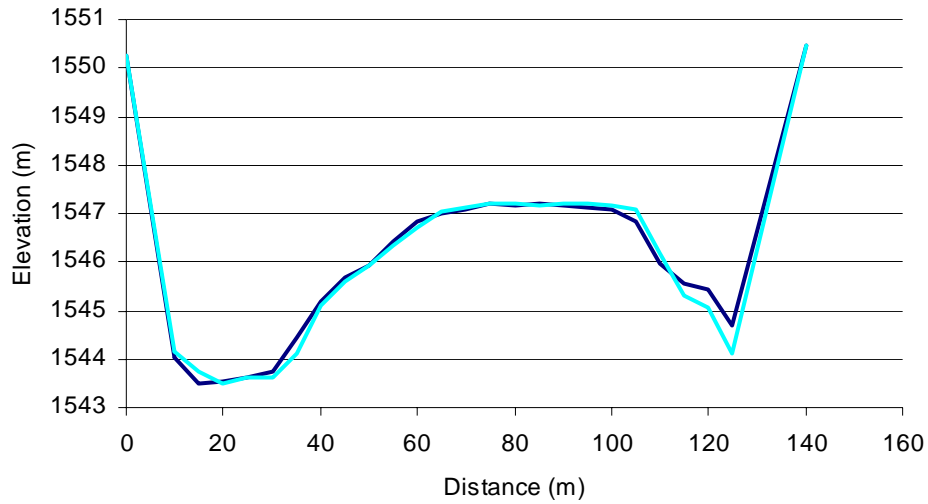


Figure B12. Cross-sectional profiles for Yampa River transects 7 (top) and 8 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff rising limb (April 2000, 137-142 m^3/s) and light bold line represents post-runoff (July 2000, 7 m^3/s) measurements.

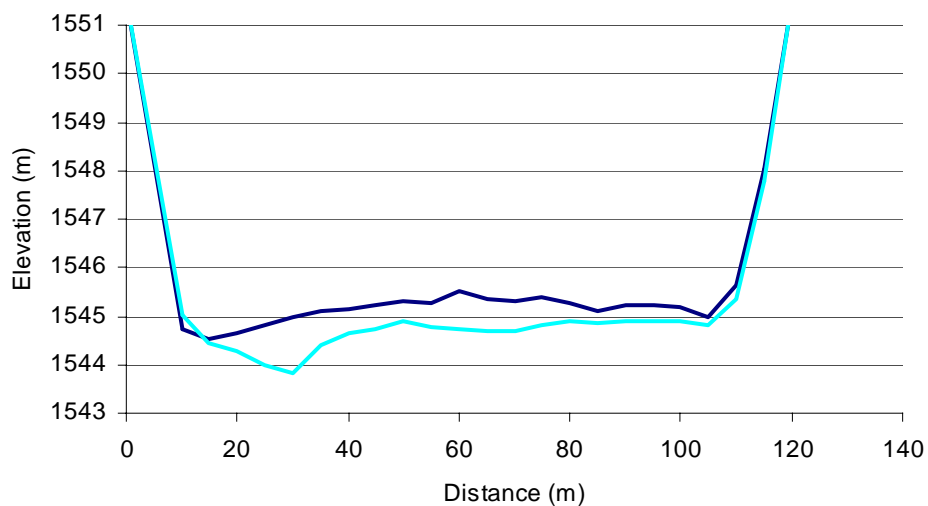
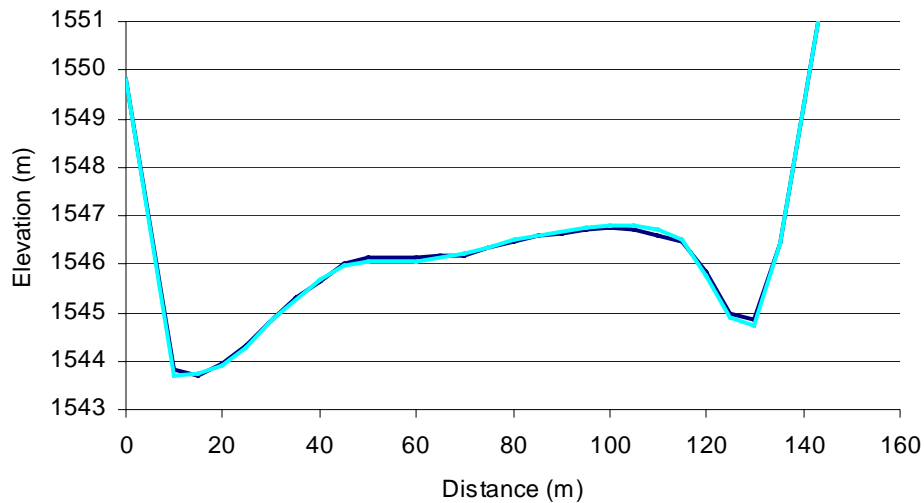


Figure B13. Cross-sectional profiles for Yampa River transects 9 (top) and 10 (bottom) measured from the left bank facing upstream. Dark bold line represents pre-runoff rising limb (April 2000, 137-142 m^3/s) and light bold line represents post-runoff (July 2000, 7 m^3/s) measurements.

Appendix C – Stream power distributions



Figure C1. Stream power distribution in the Green River at $50 \text{ m}^3/\text{s}$.

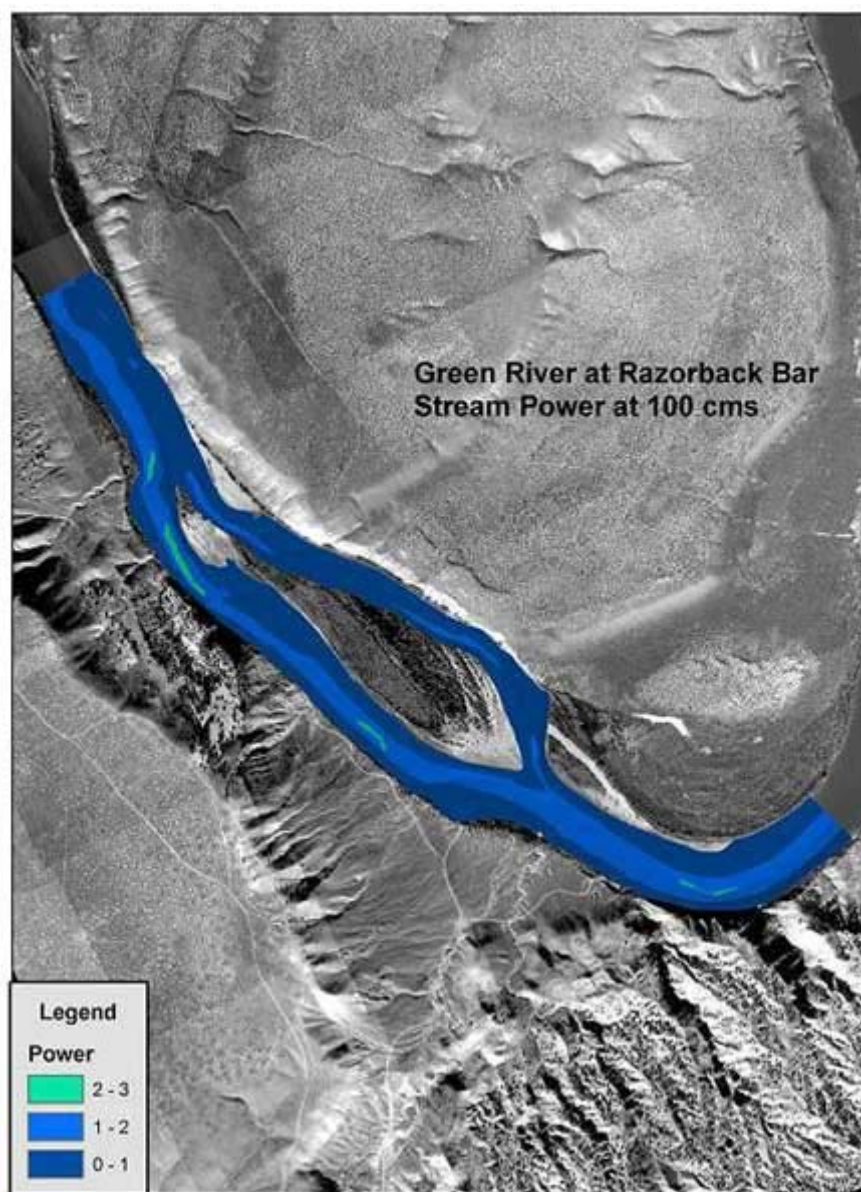


Figure C2. Stream power distribution in the Green River at $100 \text{ m}^3/\text{s}$.



Figure C3. Stream power distribution in the Green River at 150 m³/s.



Figure C4. Stream power distribution in the Green River at 200 m³/s.

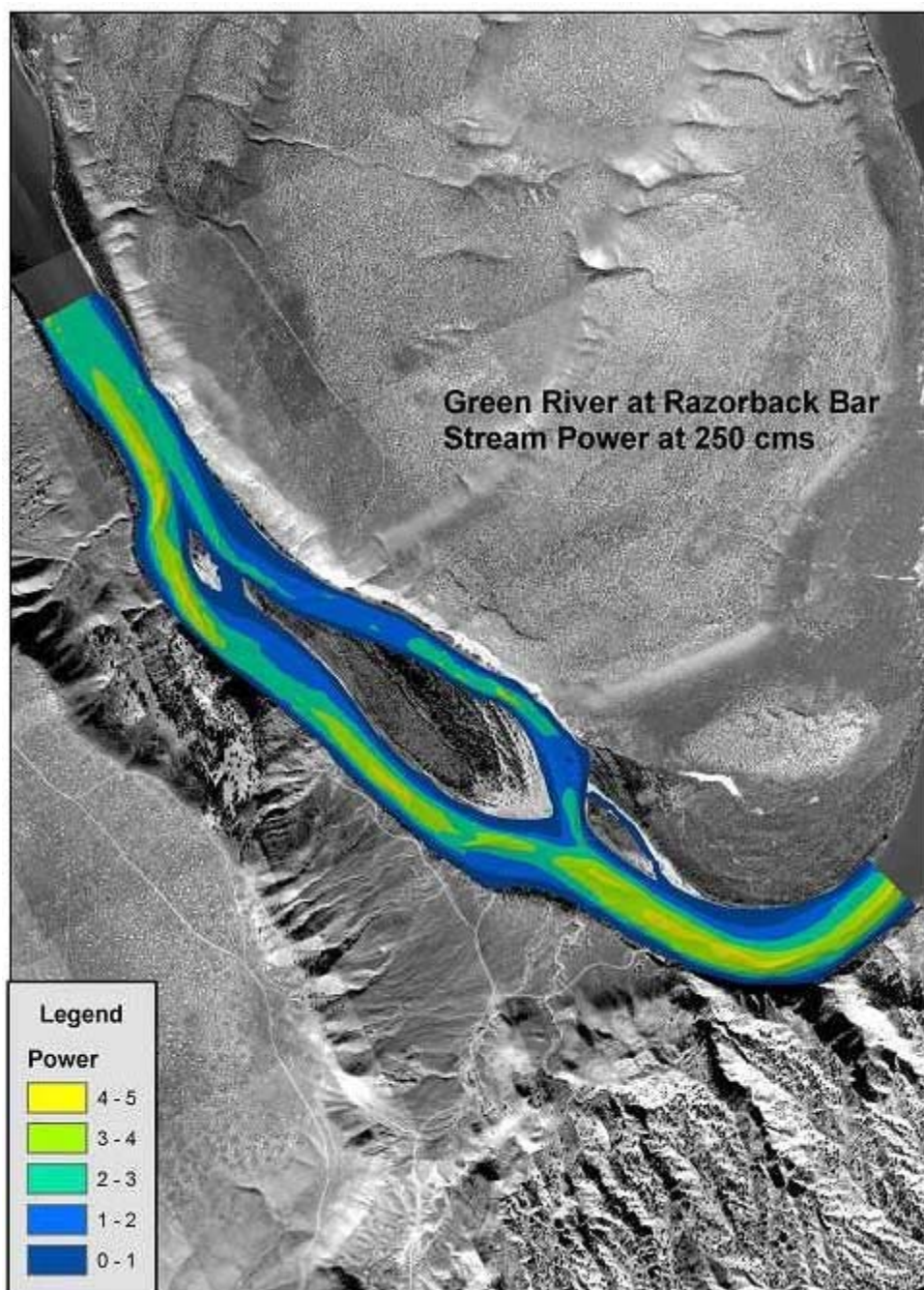


Figure C5. Stream power distribution in the Green River at 250 m³/s.



Figure C6. Stream power distribution in the Green River at 300 m³/s.

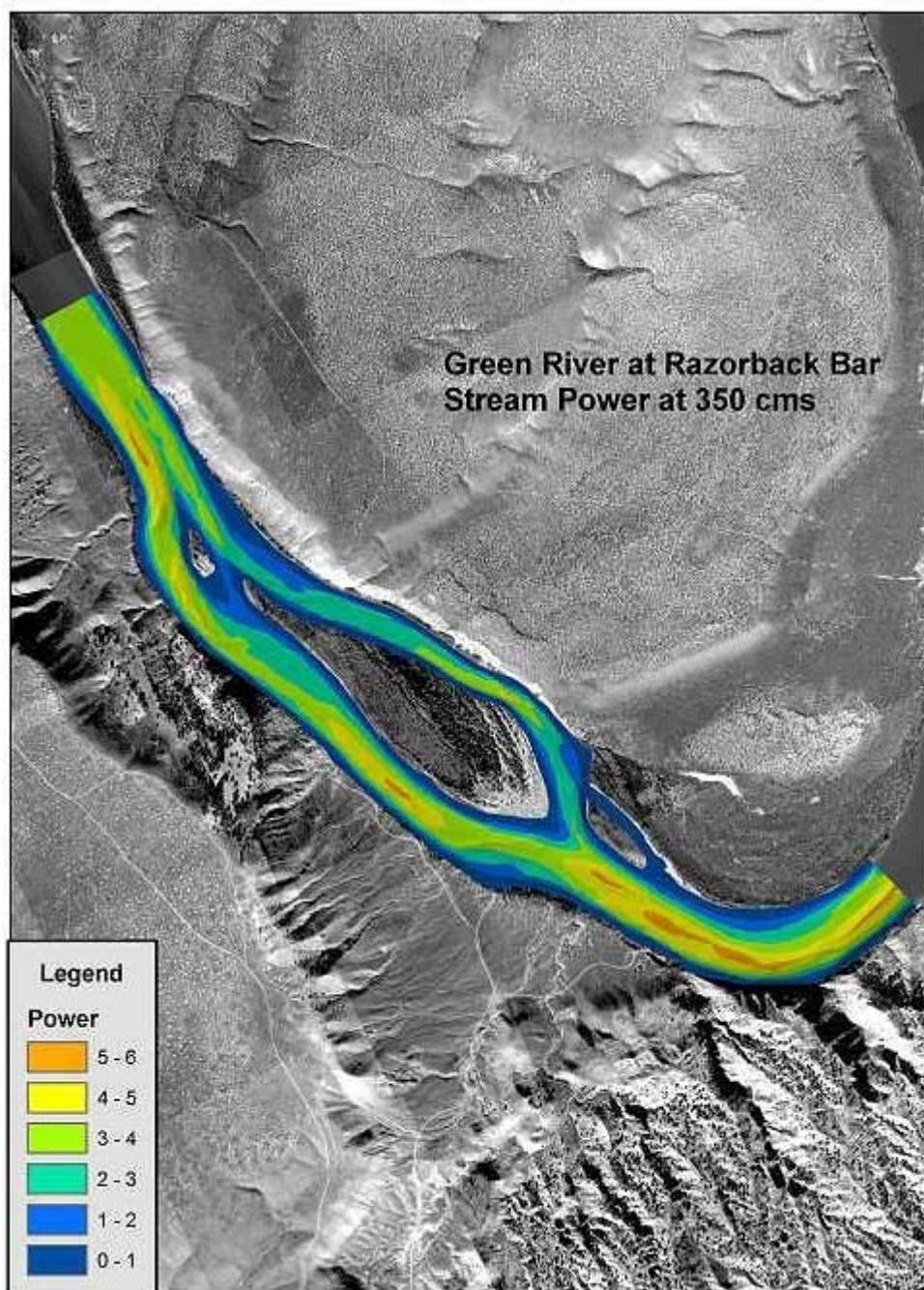


Figure C7. Stream power distribution in the Green River at 350 m³/s.

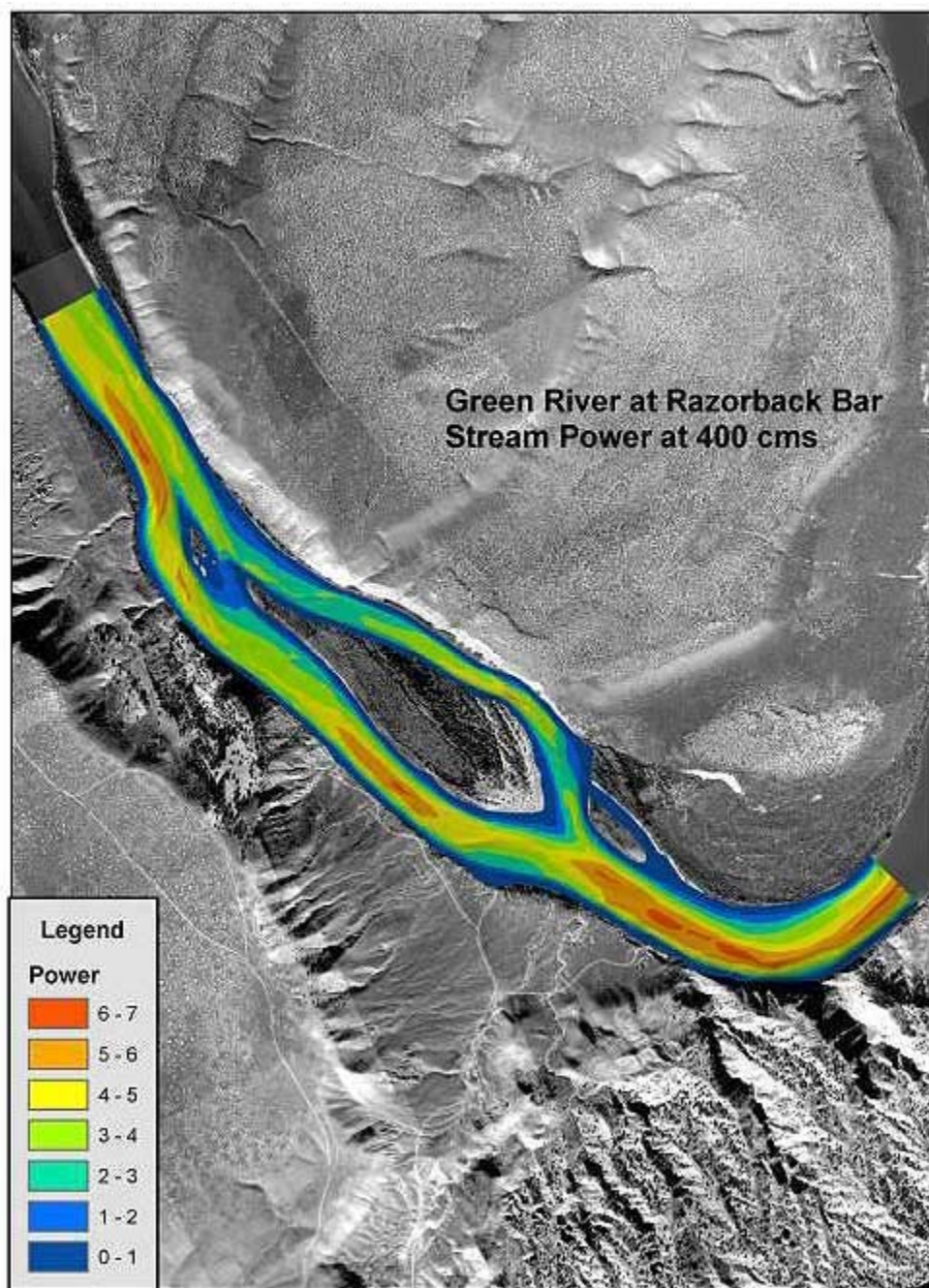


Figure C8. Stream power distribution in the Green River at $400 \text{ m}^3/\text{s}$.

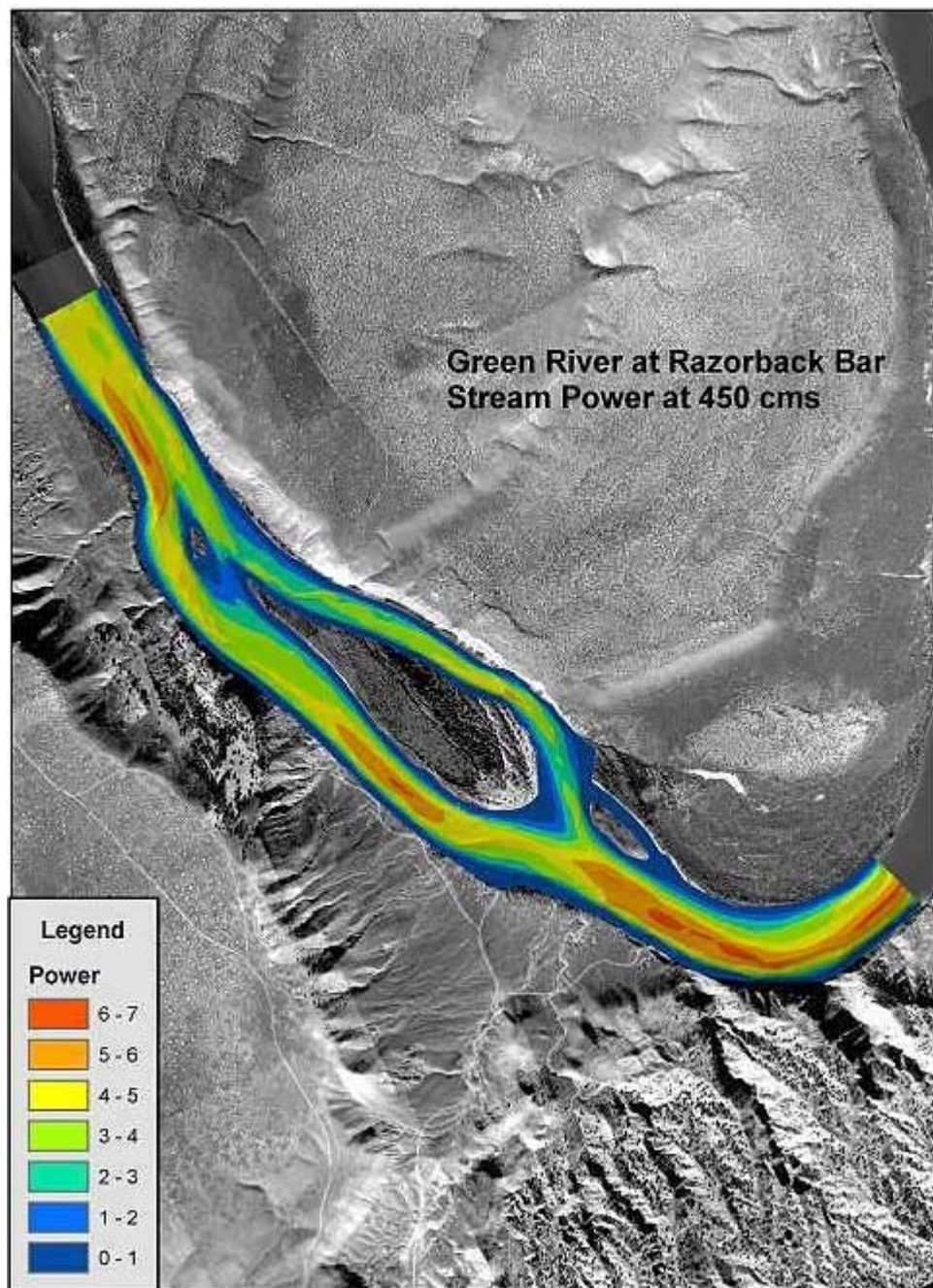


Figure C9. Stream power distribution in the Green River at 450 m³/s.

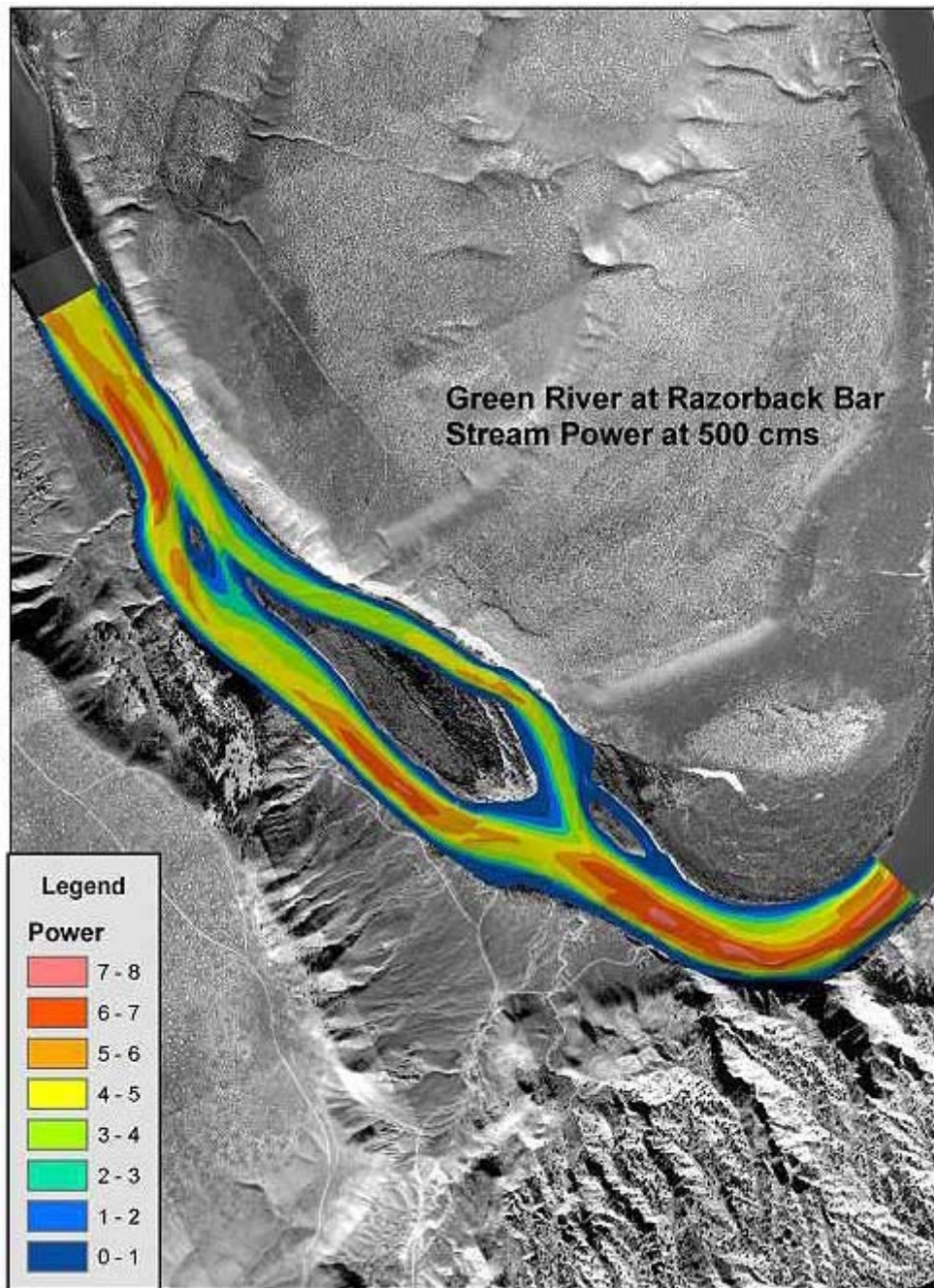


Figure C10. Stream power distribution in the Green River at 500 m³/s.

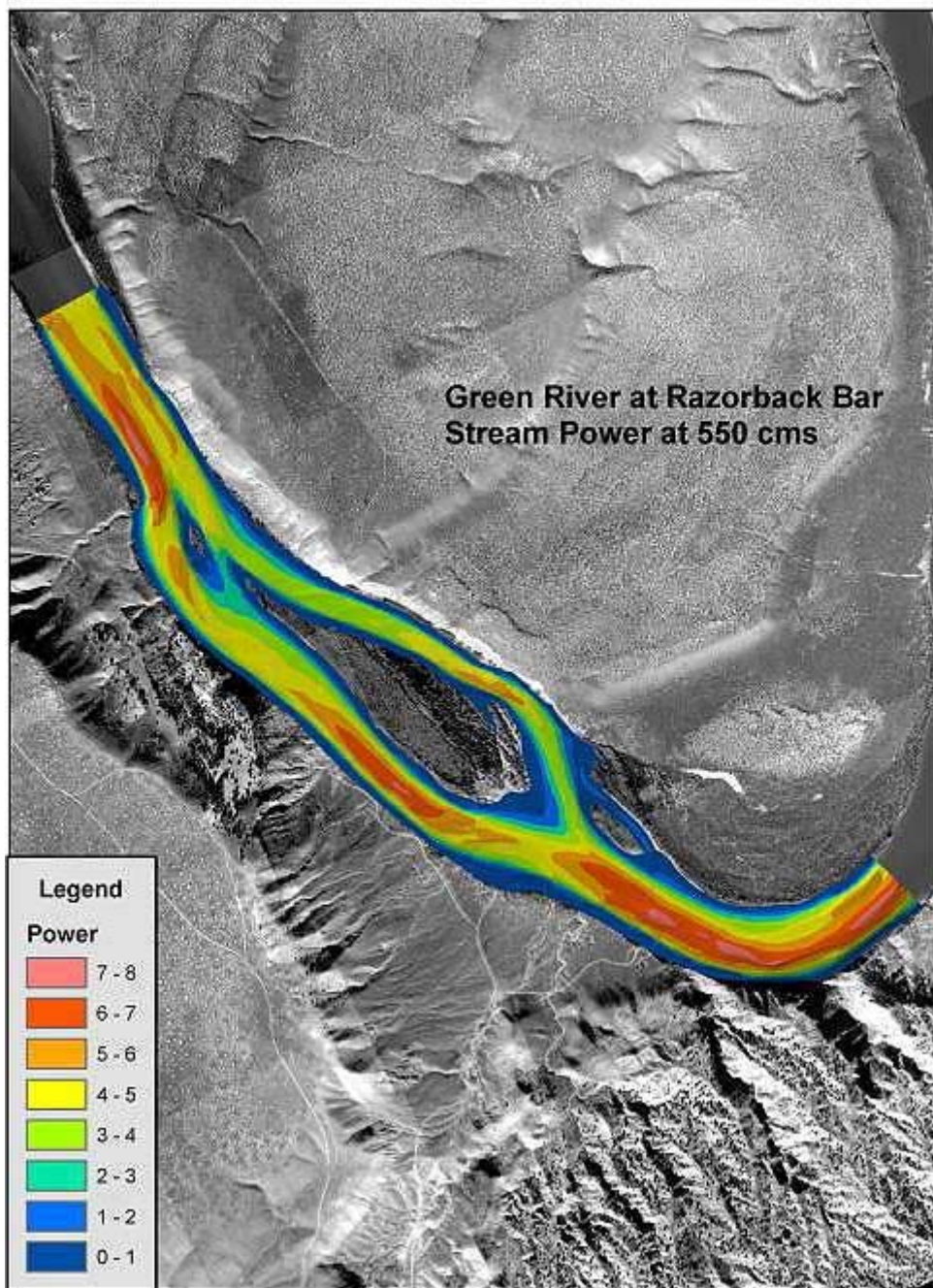


Figure C11. Stream power distribution in the Green River at 550 m³/s.

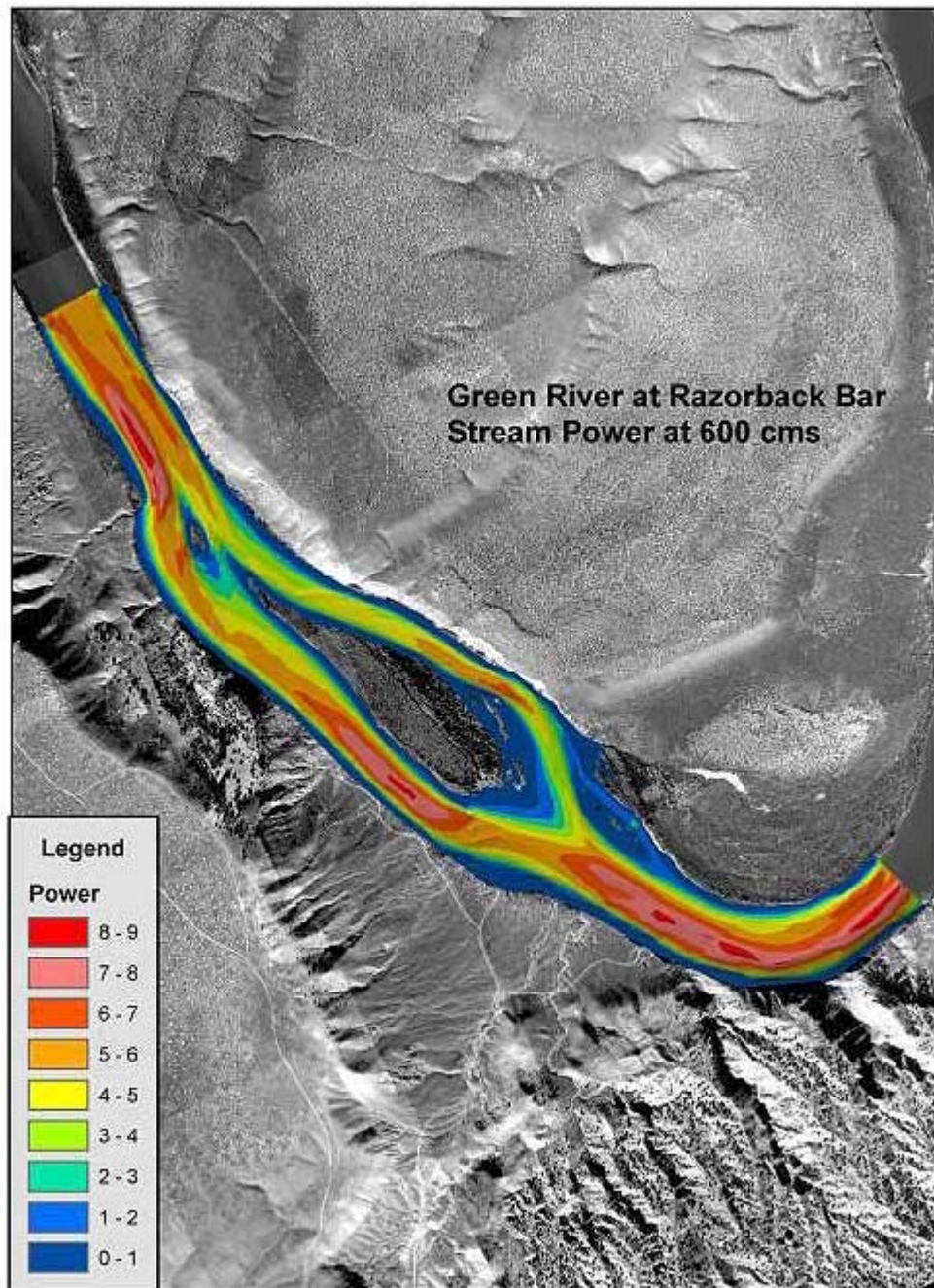


Figure C12. Stream power distribution in the Green River at 600 m³/s.

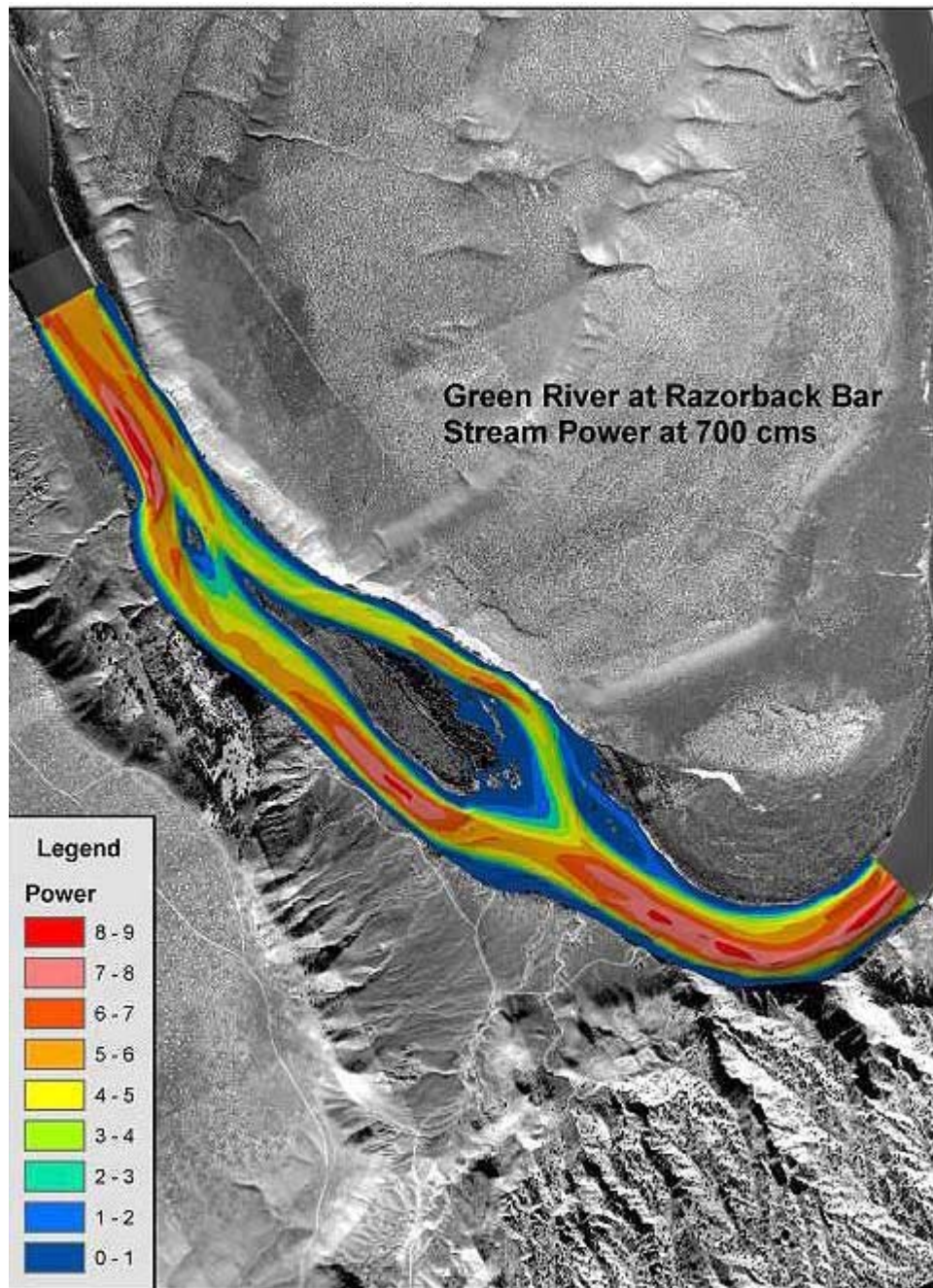


Figure C13. Stream power distribution in the Green River at 700 m³/s.

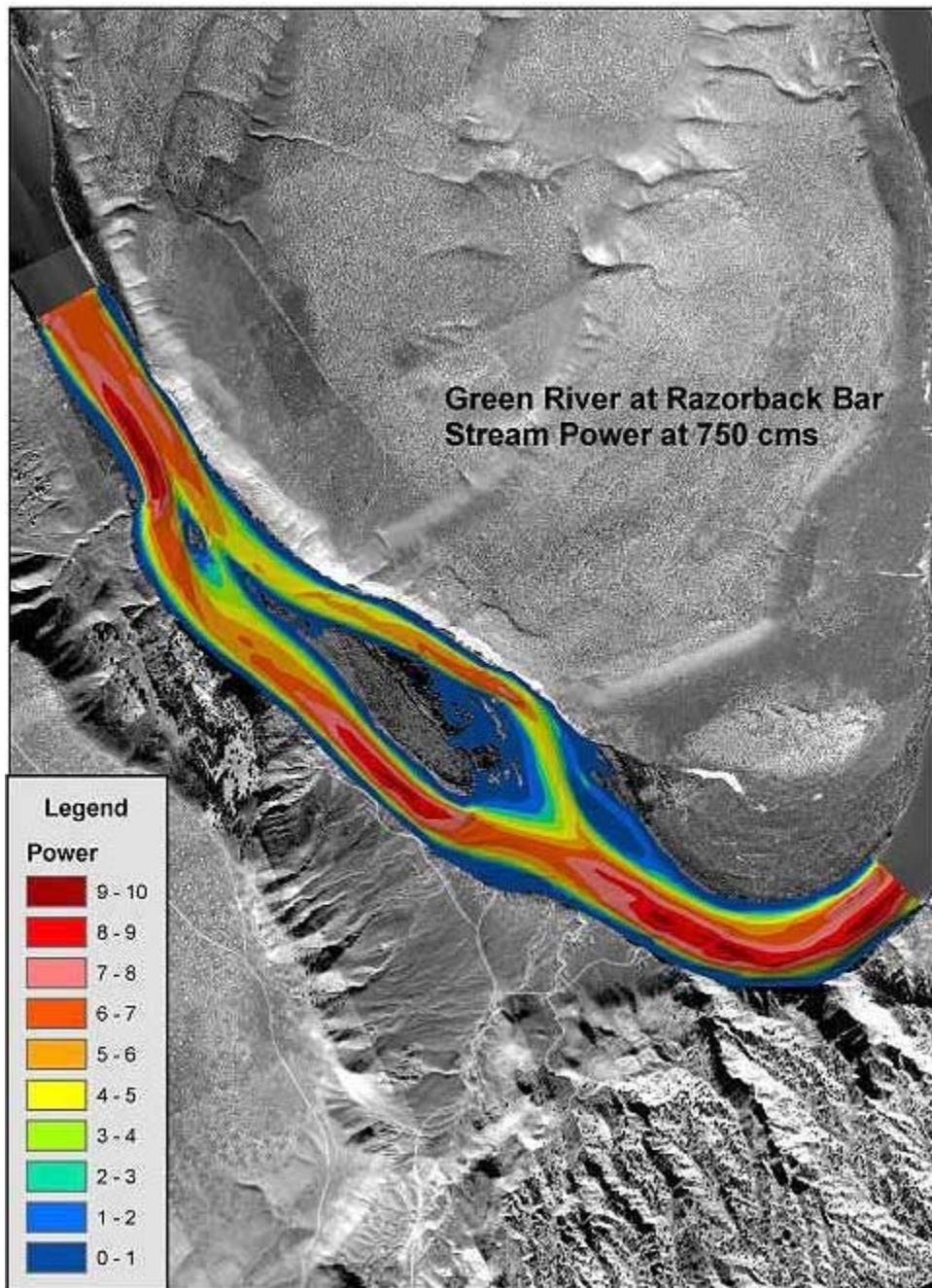


Figure C14. Stream power distribution in the Green River at 750 m³/s.

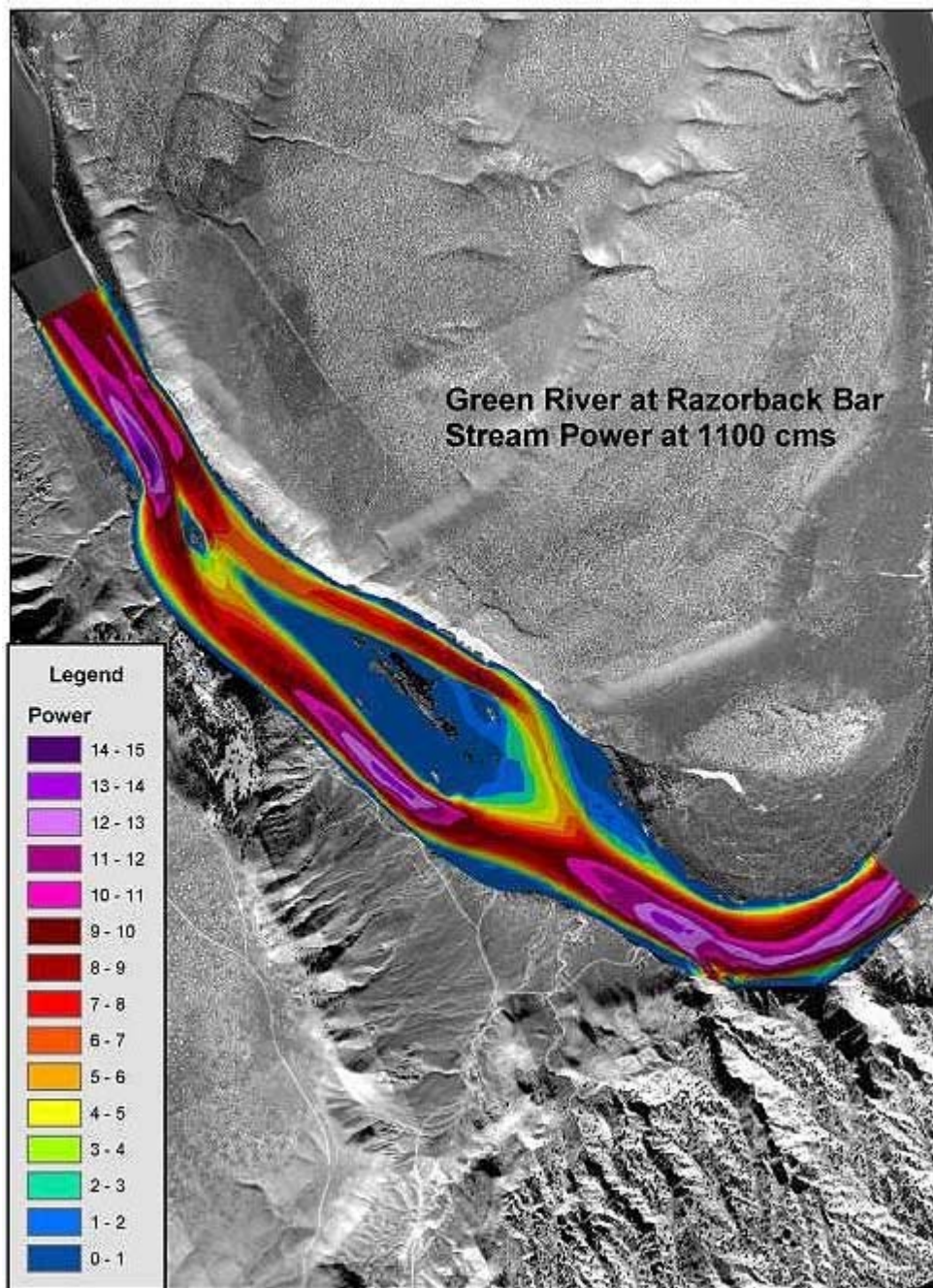


Figure C15. Stream power distribution in the Green River at 1100 m³/s.

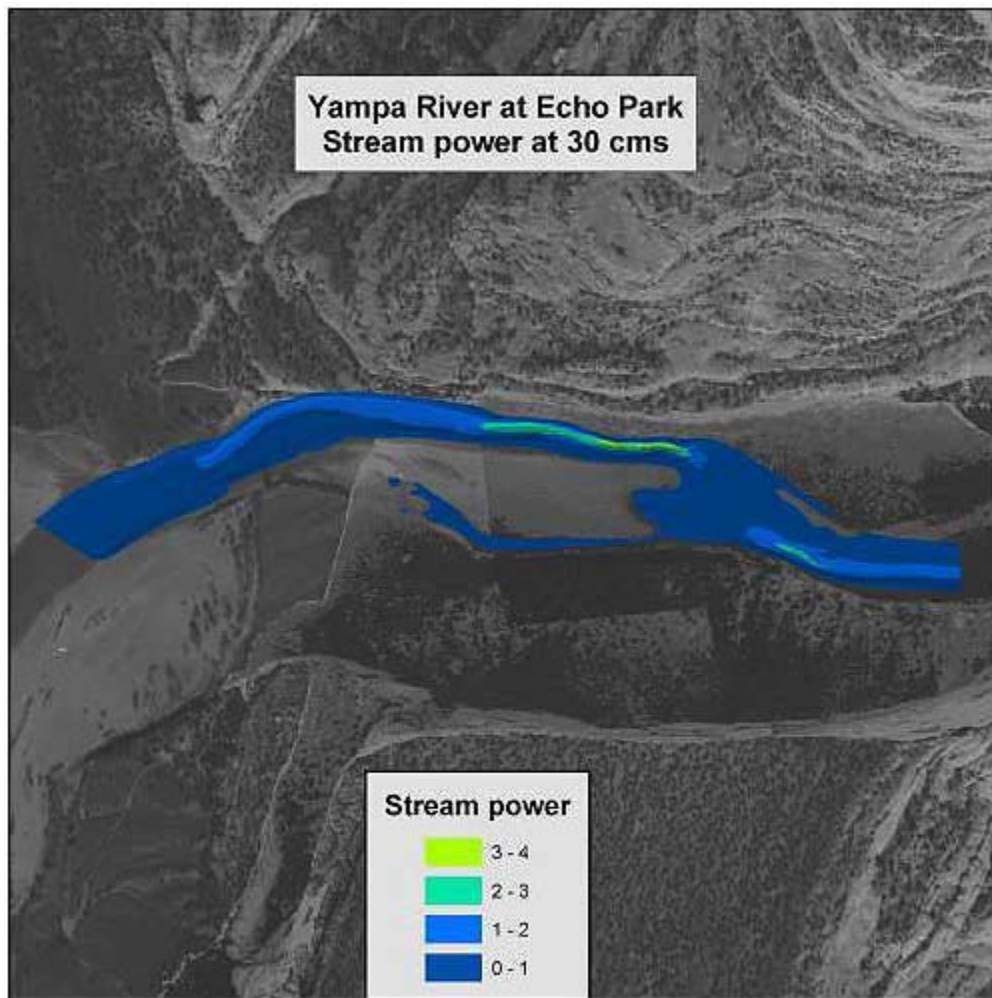


Figure C16. Stream power distribution in the Yampa River at $30 \text{ m}^3/\text{s}$.

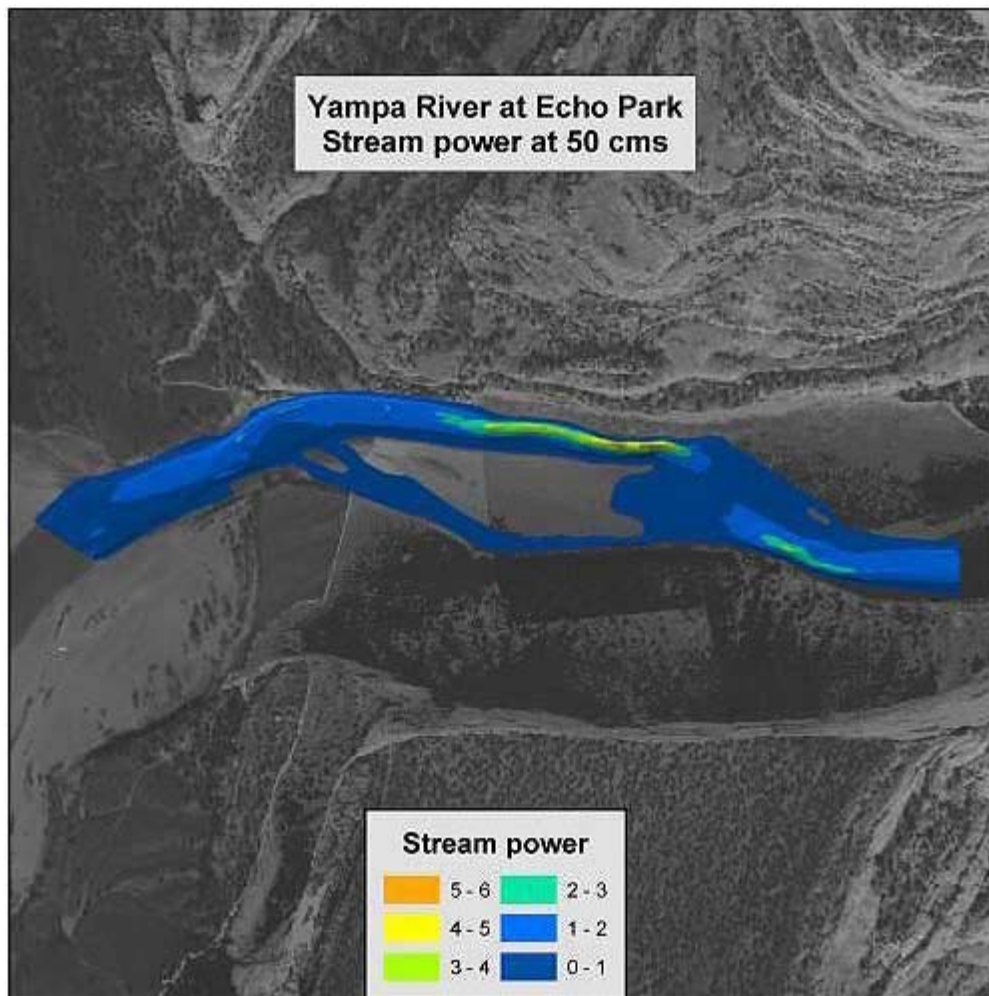


Figure C17. Stream power distribution in the Yampa River at 50 m³/s.

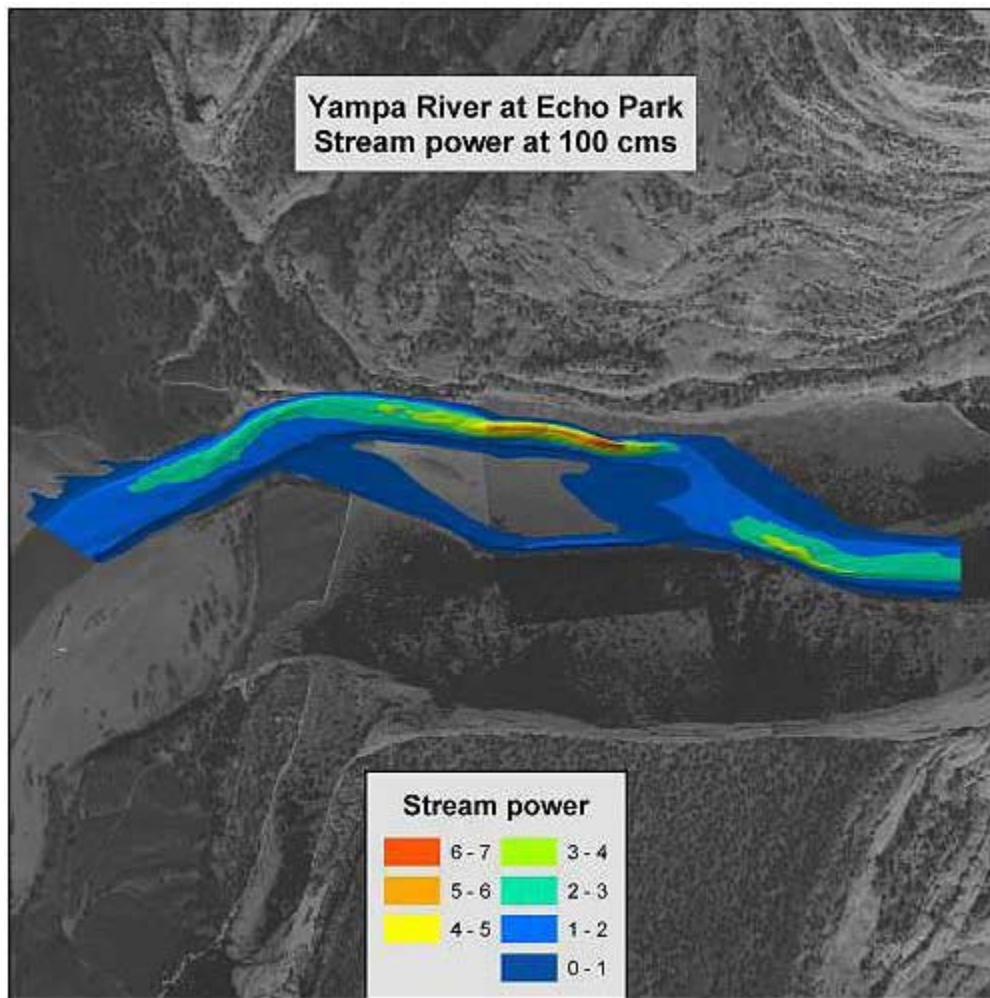


Figure C18. Stream power distribution in the Yampa River at 100 m³/s.

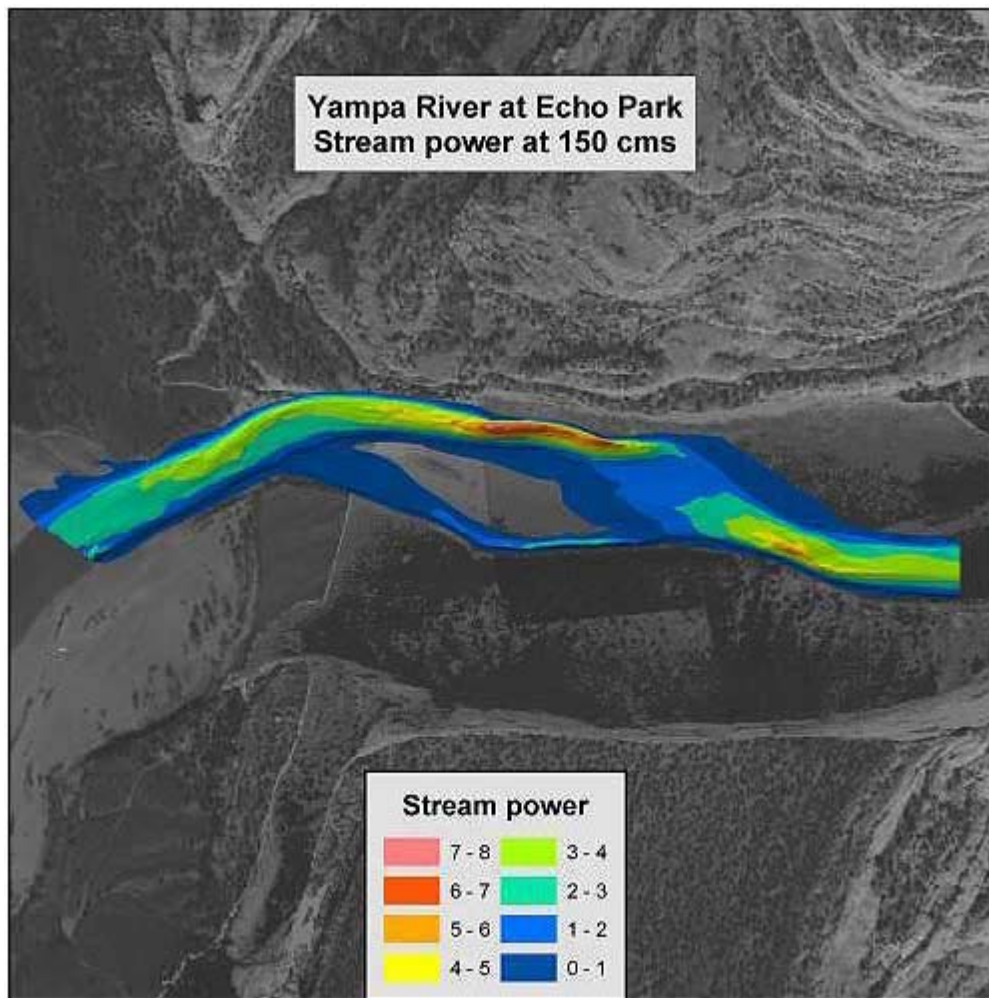


Figure C19. Stream power distribution in the Yampa River at 150 m³/s.

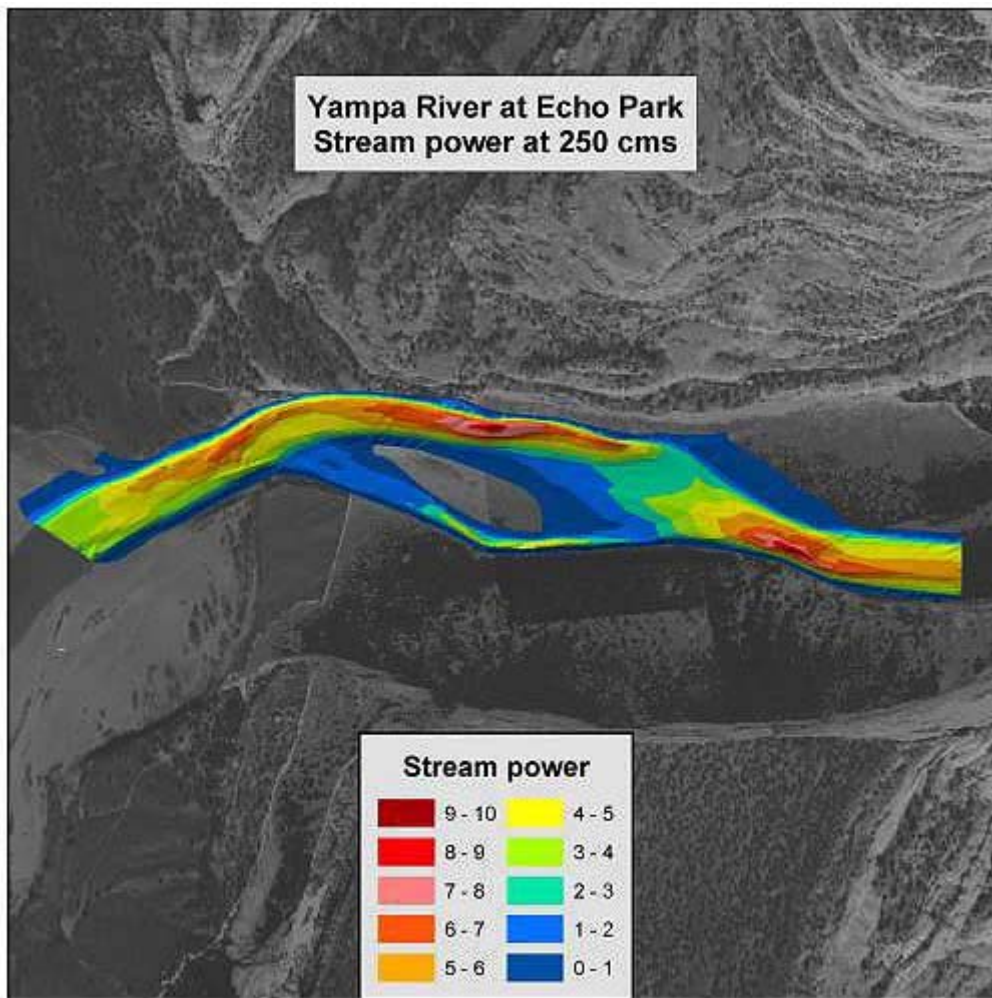


Figure C20. Stream power distribution in the Yampa River at 250 m³/s.

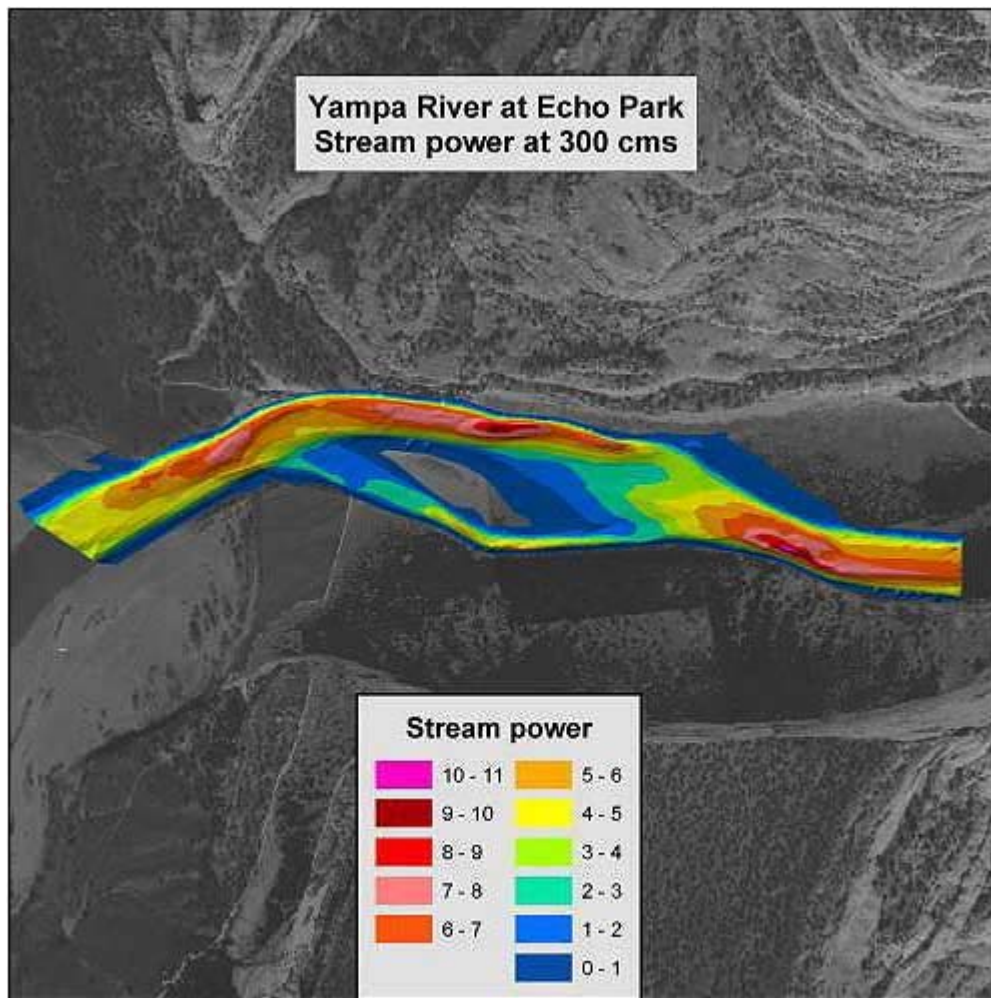


Figure C21. Stream power distribution in the Yampa River at 300 m³/s.

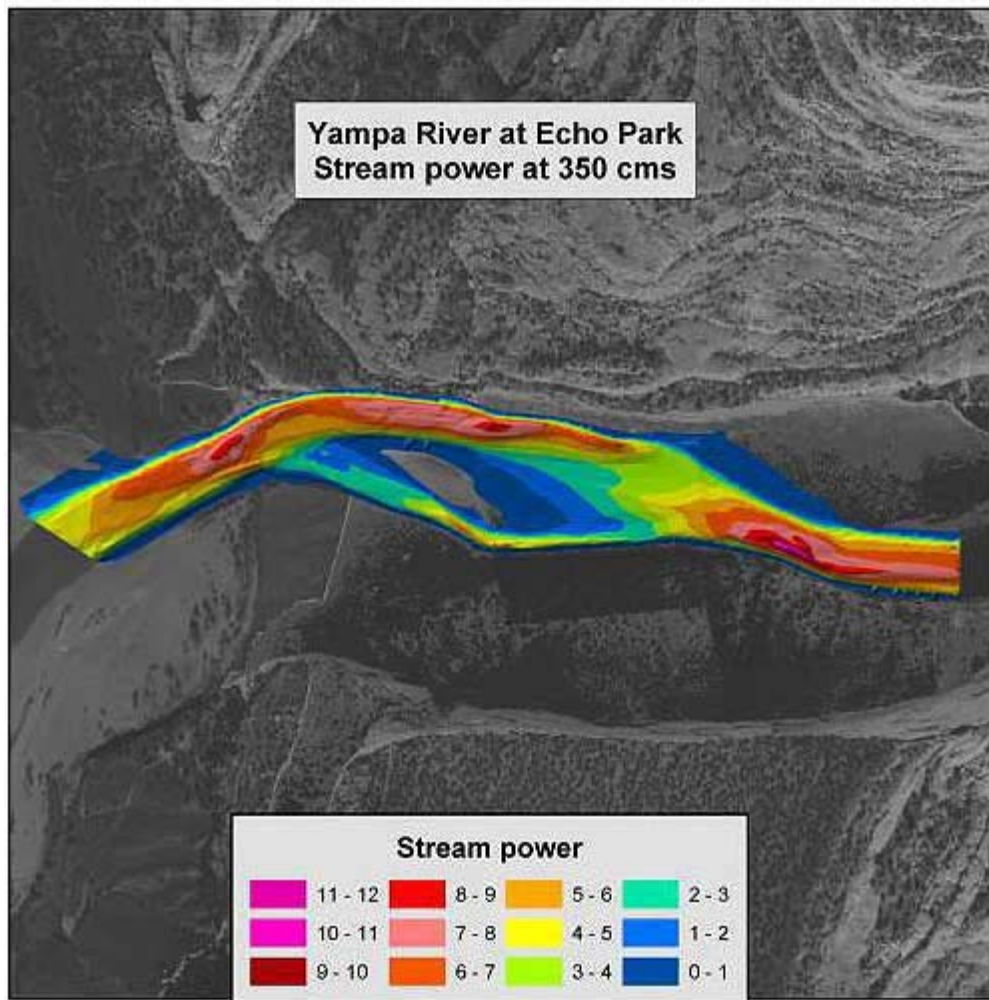


Figure C22. Stream power distribution in the Yampa River at 350 m³/s.

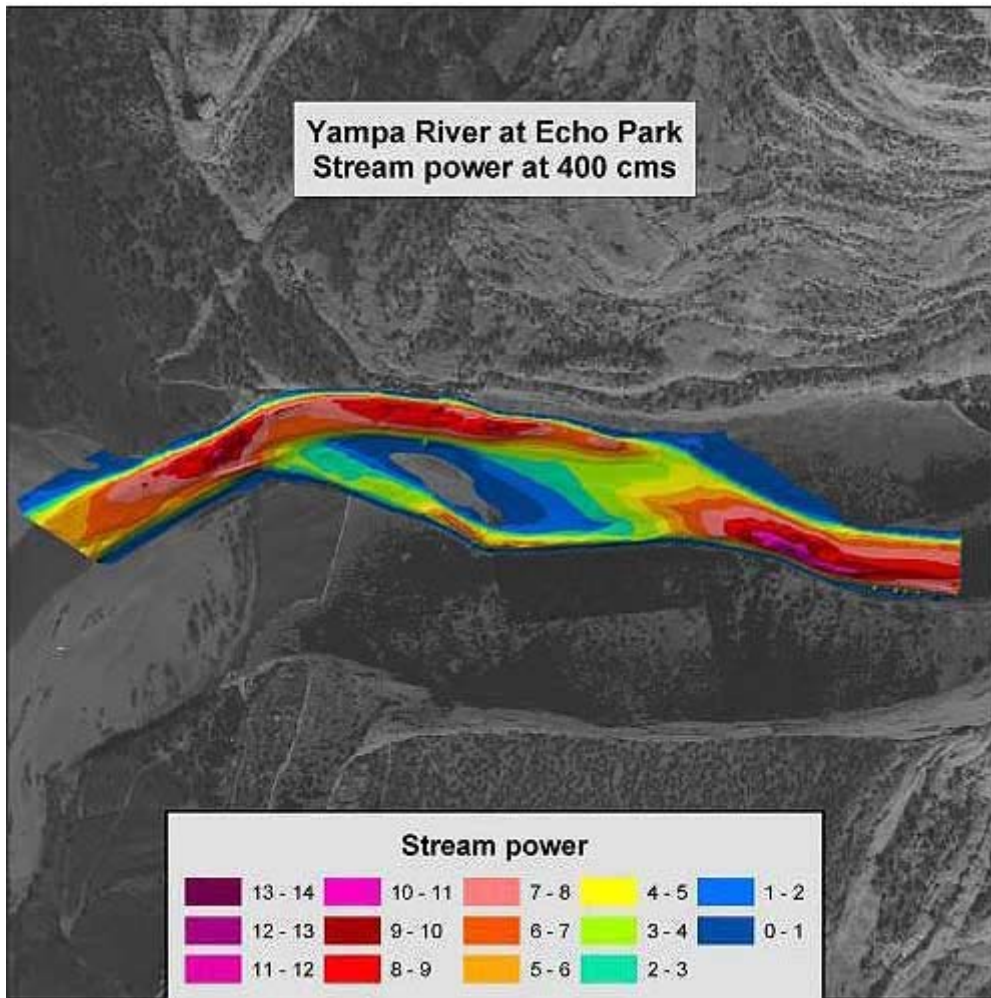


Figure C23. Stream power distribution in the Yampa River at 400 m³/s.

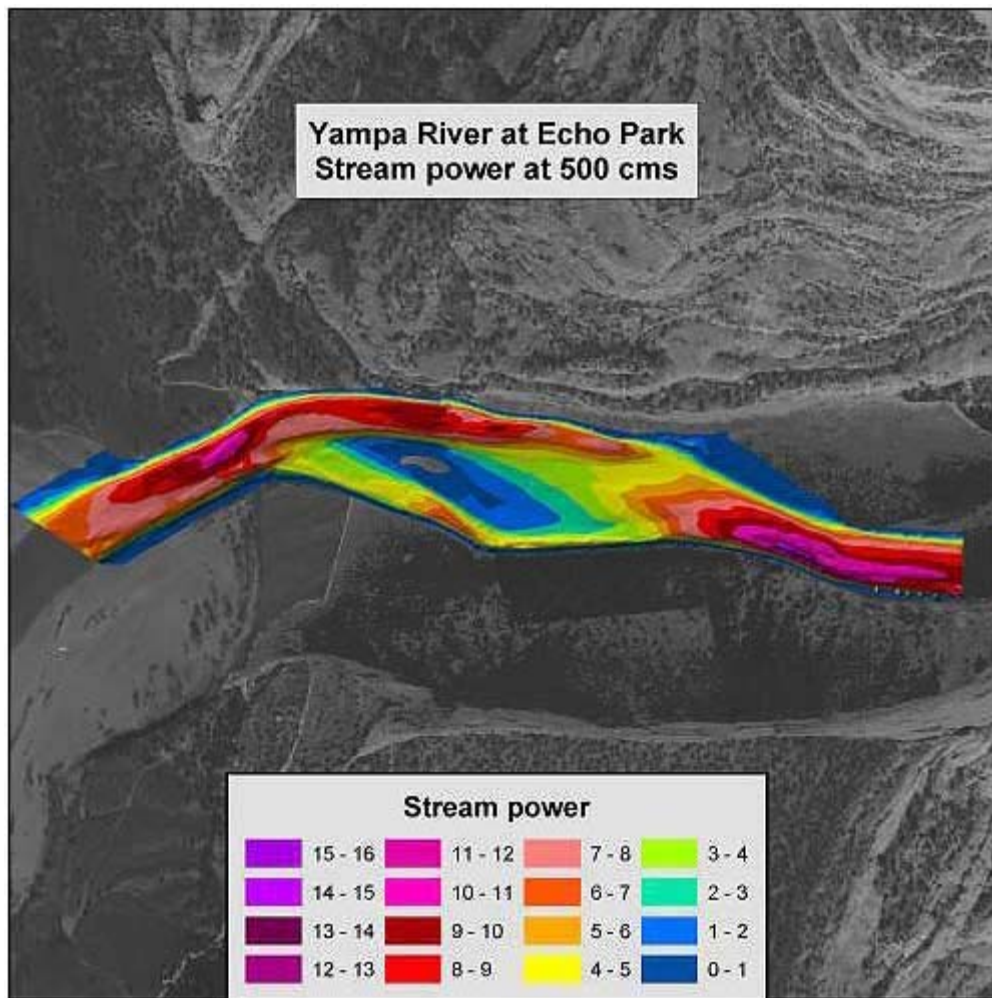


Figure C24. Stream power distribution in the Yampa River at 500 m³/s.

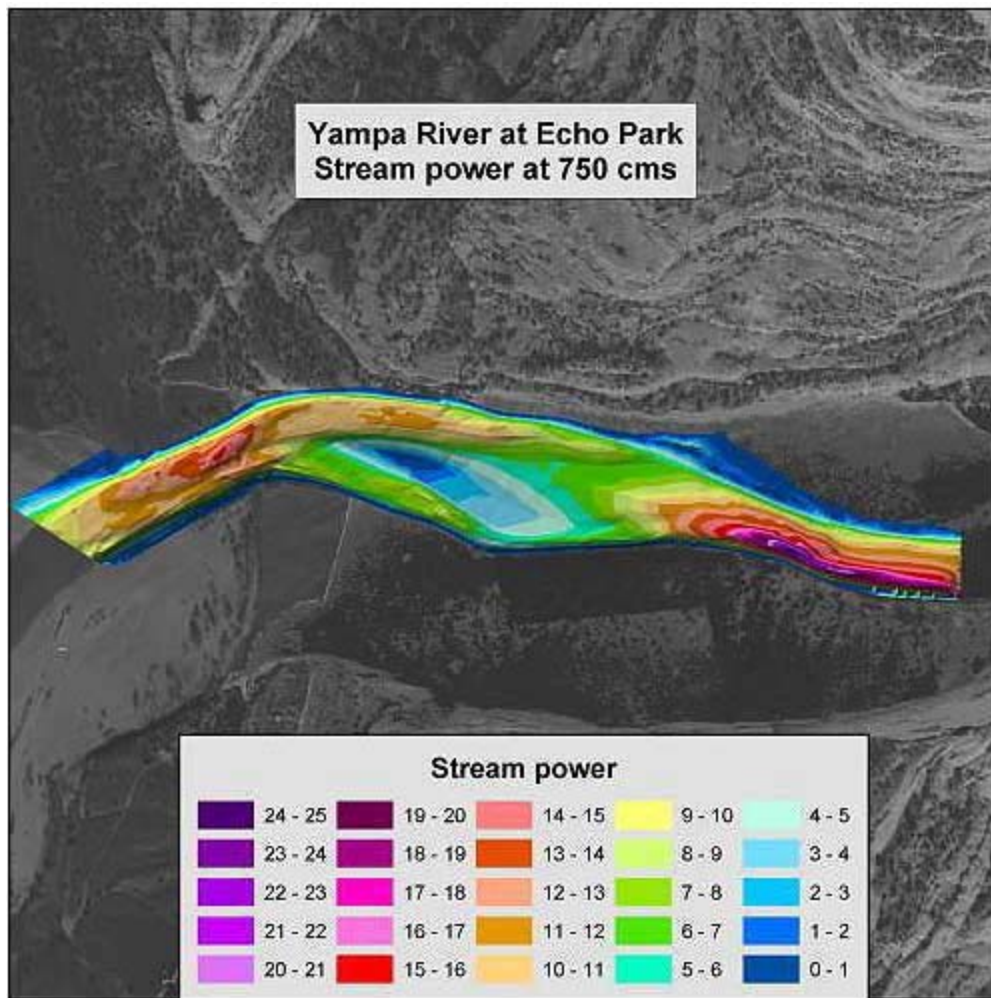


Figure C25. Stream power distribution in the Yampa River at 750 m³/s.

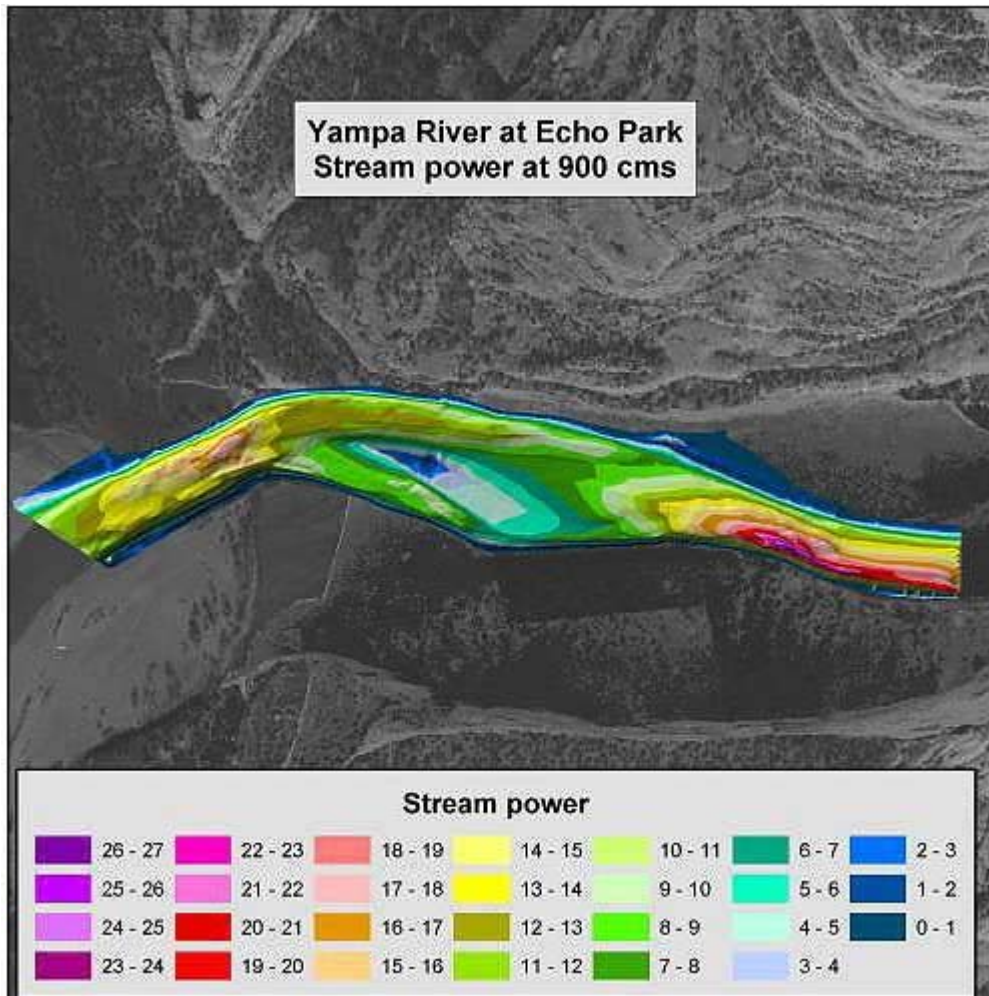


Figure C26. Stream power distribution in the Yampa River at 900 m³/s.

Appendix D – Habitat class area maps and duration curves

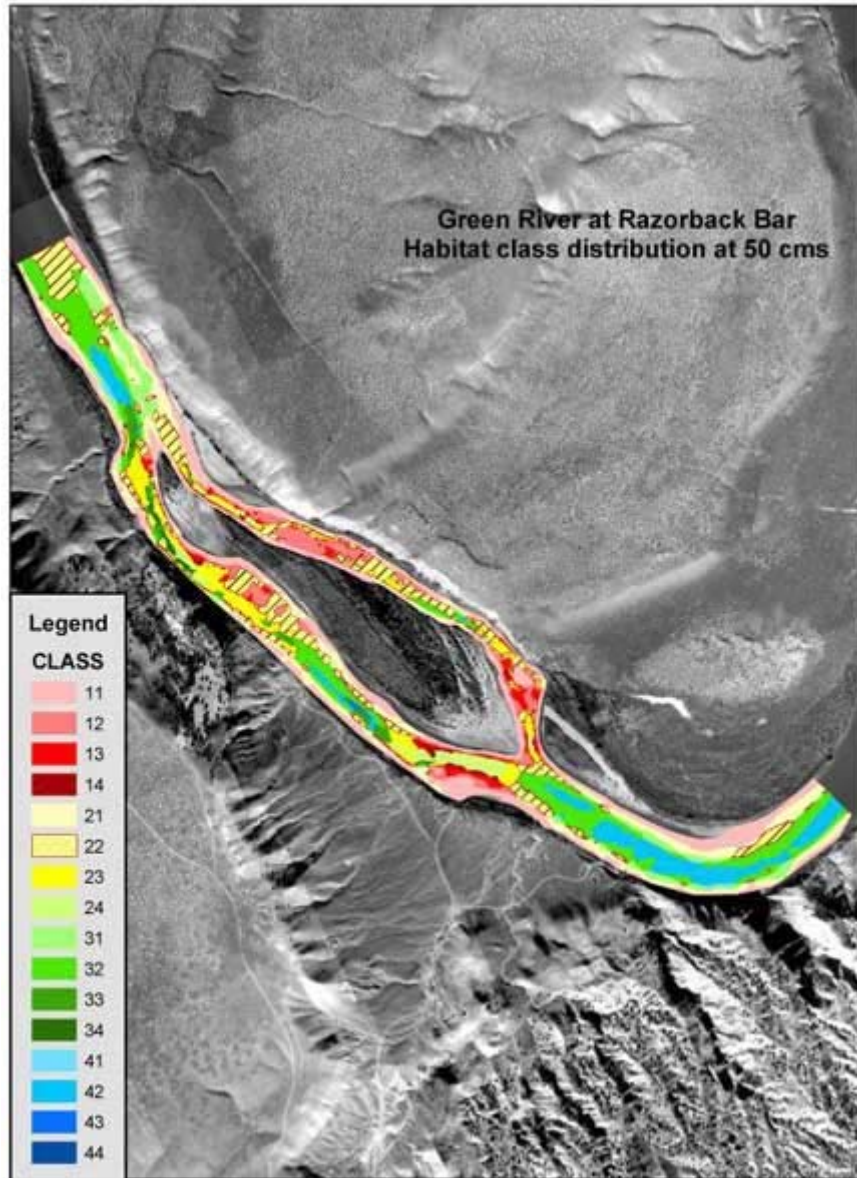


Figure D1. Green River habitat class distributions at 50 m³/s.

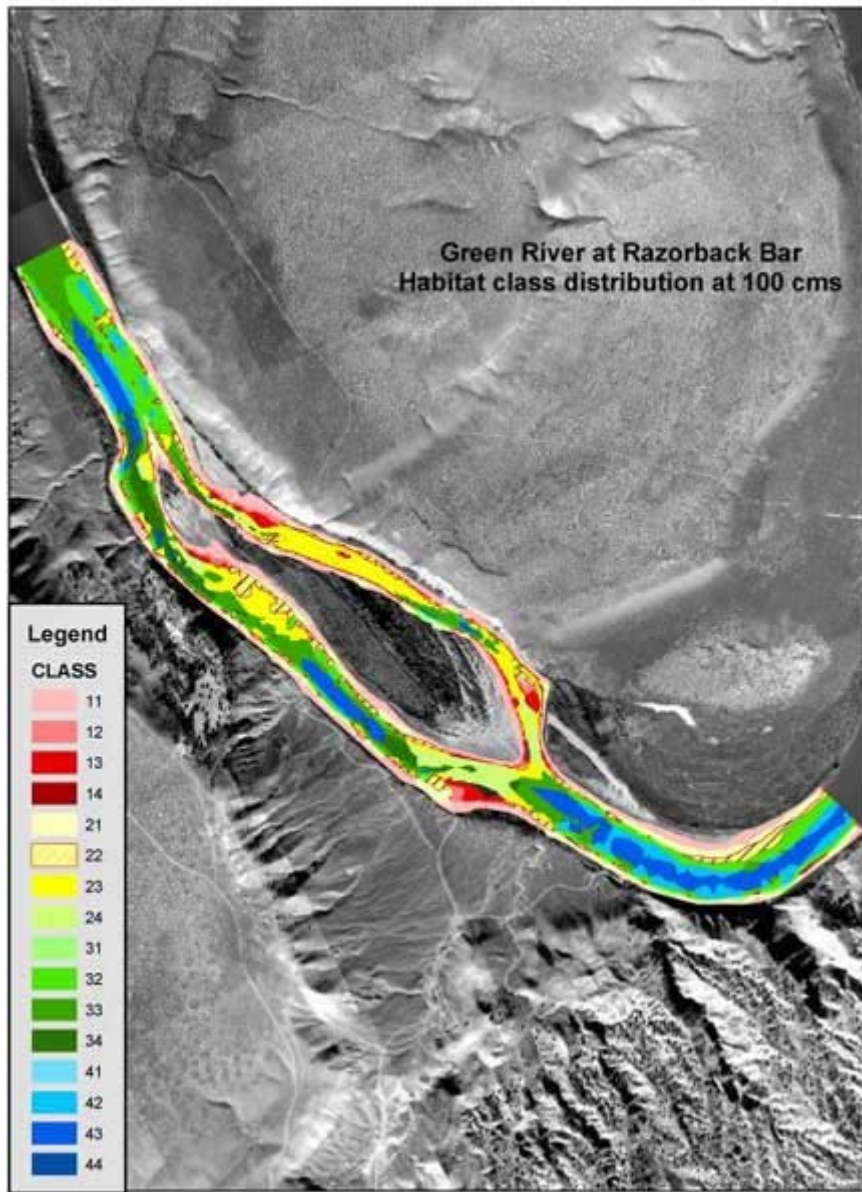


Figure D2. Green River habitat class distributions at 100 m³/s.

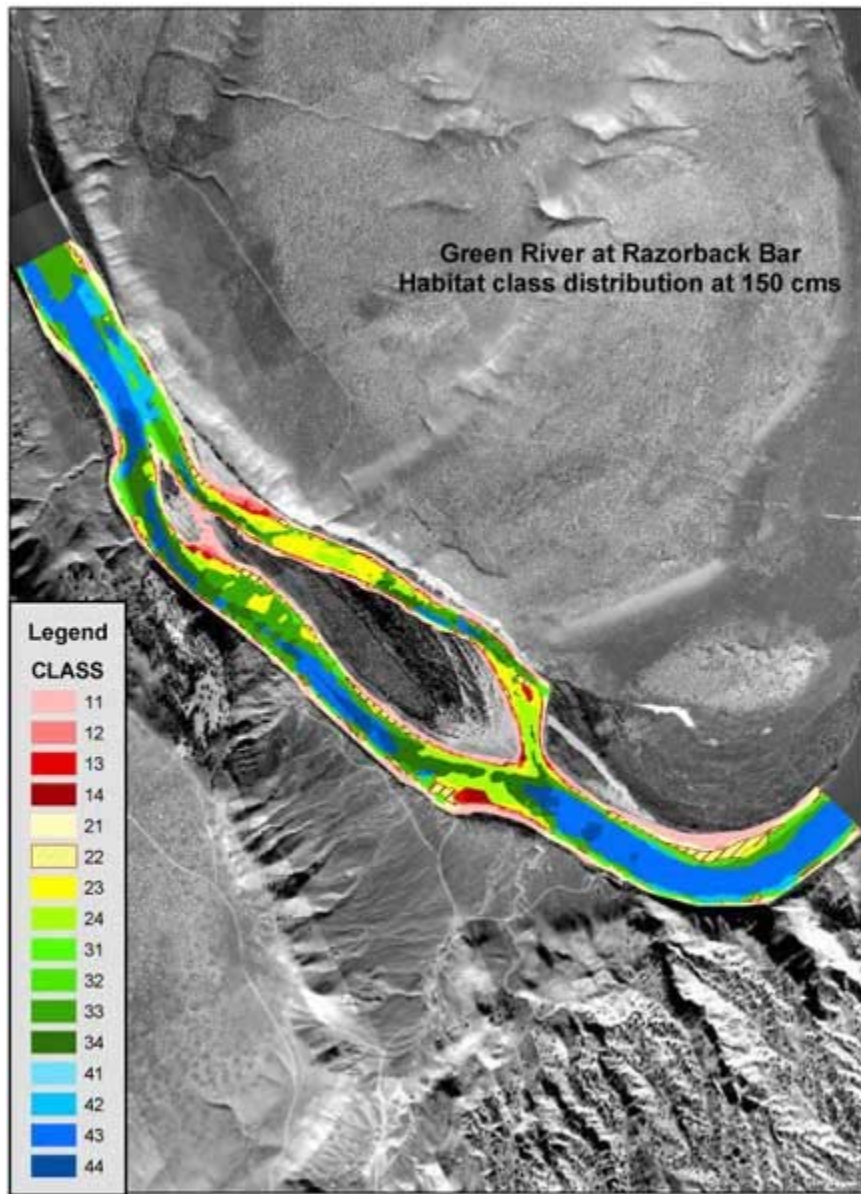


Figure D3. Green River habitat class distributions at 150 m³/s.

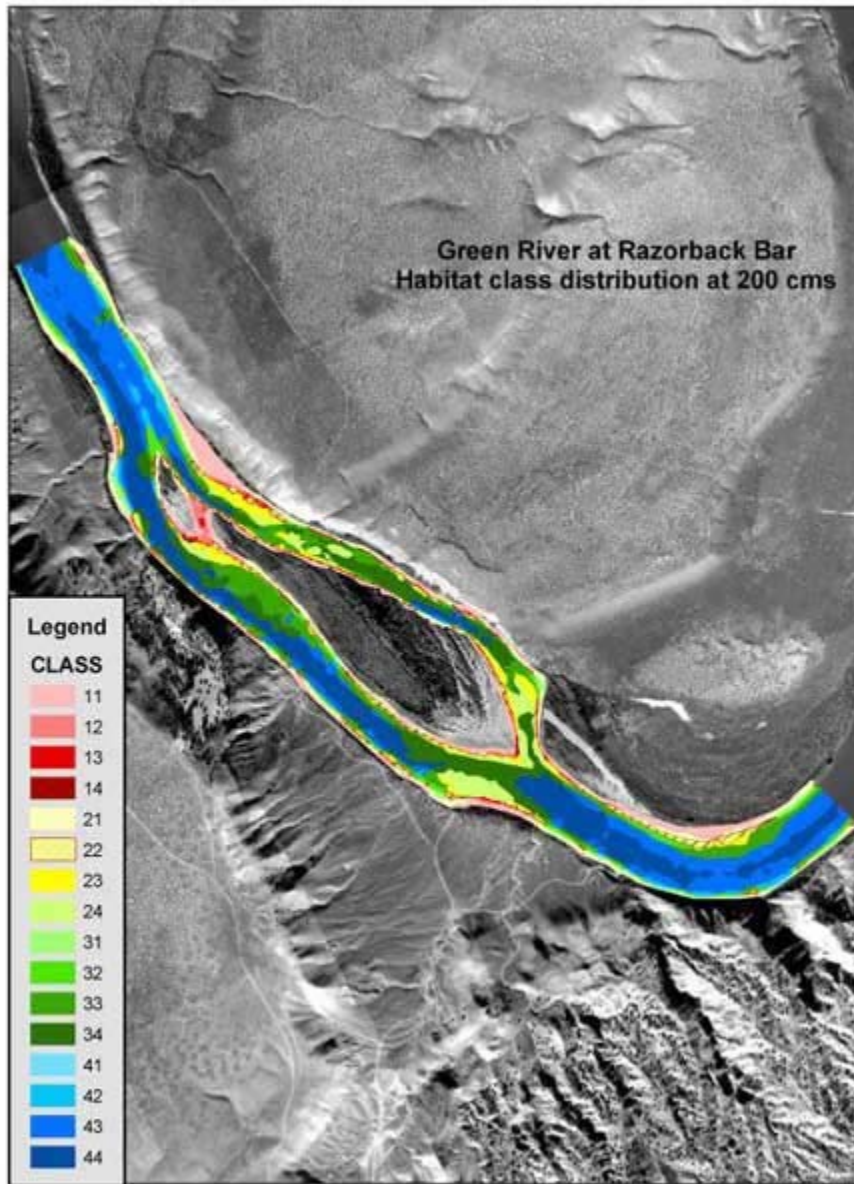


Figure D4. Green River habitat class distributions at 200 m³/s.

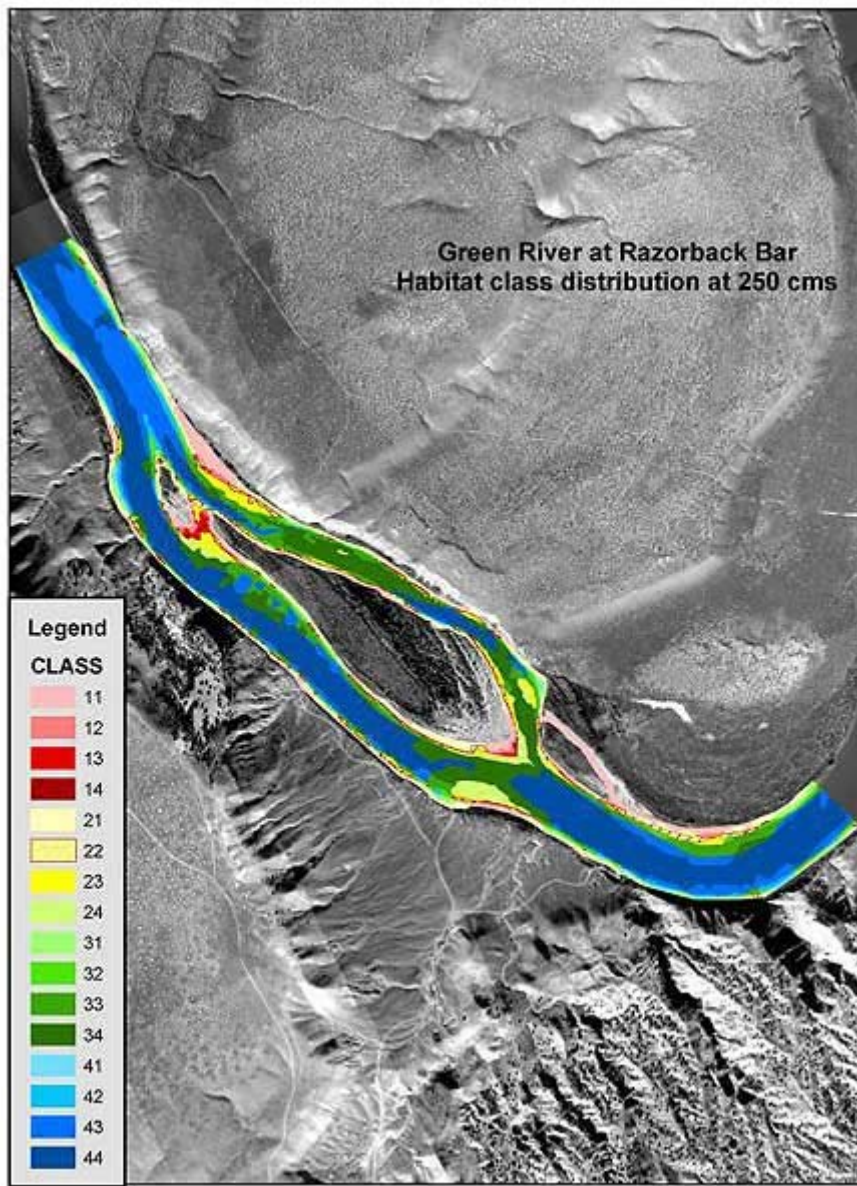


Figure D5. Green River habitat class distributions at 250 m³/s.

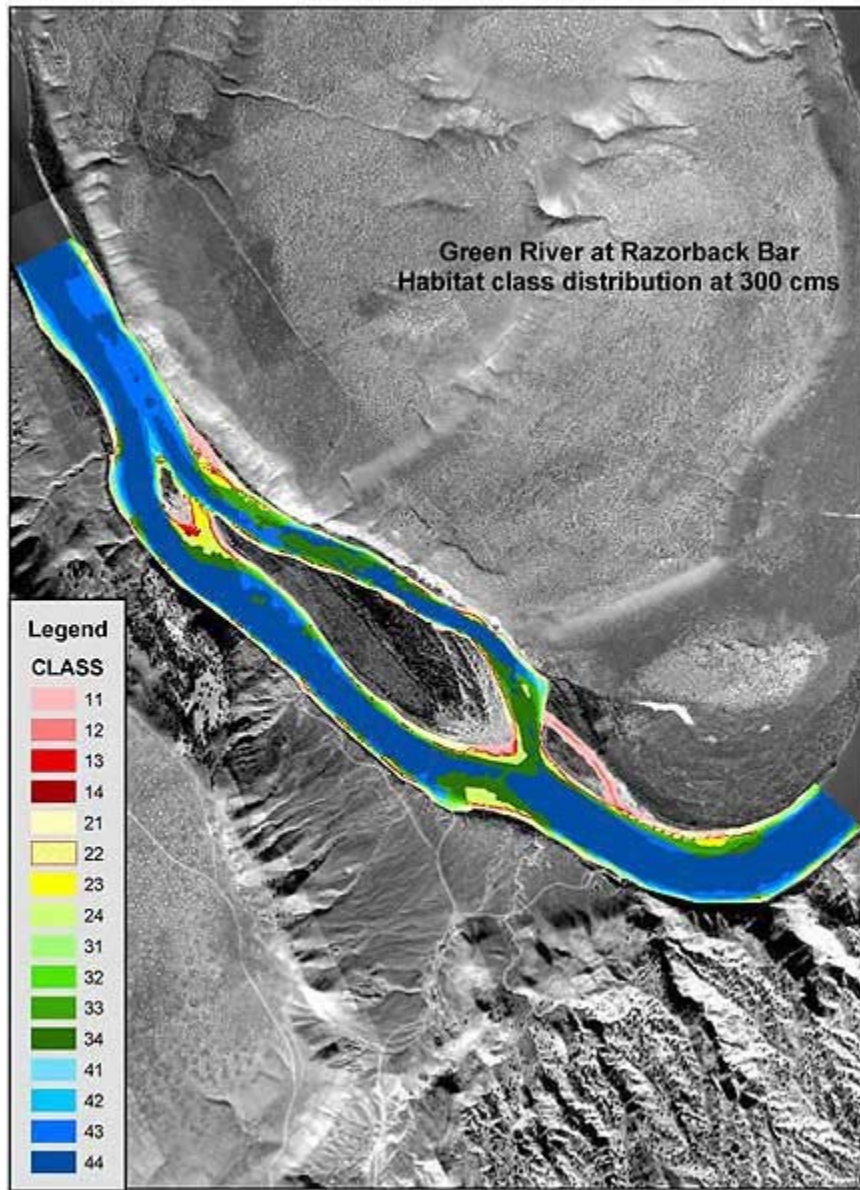


Figure D6. Green River habitat class distributions at 300 m³/s.

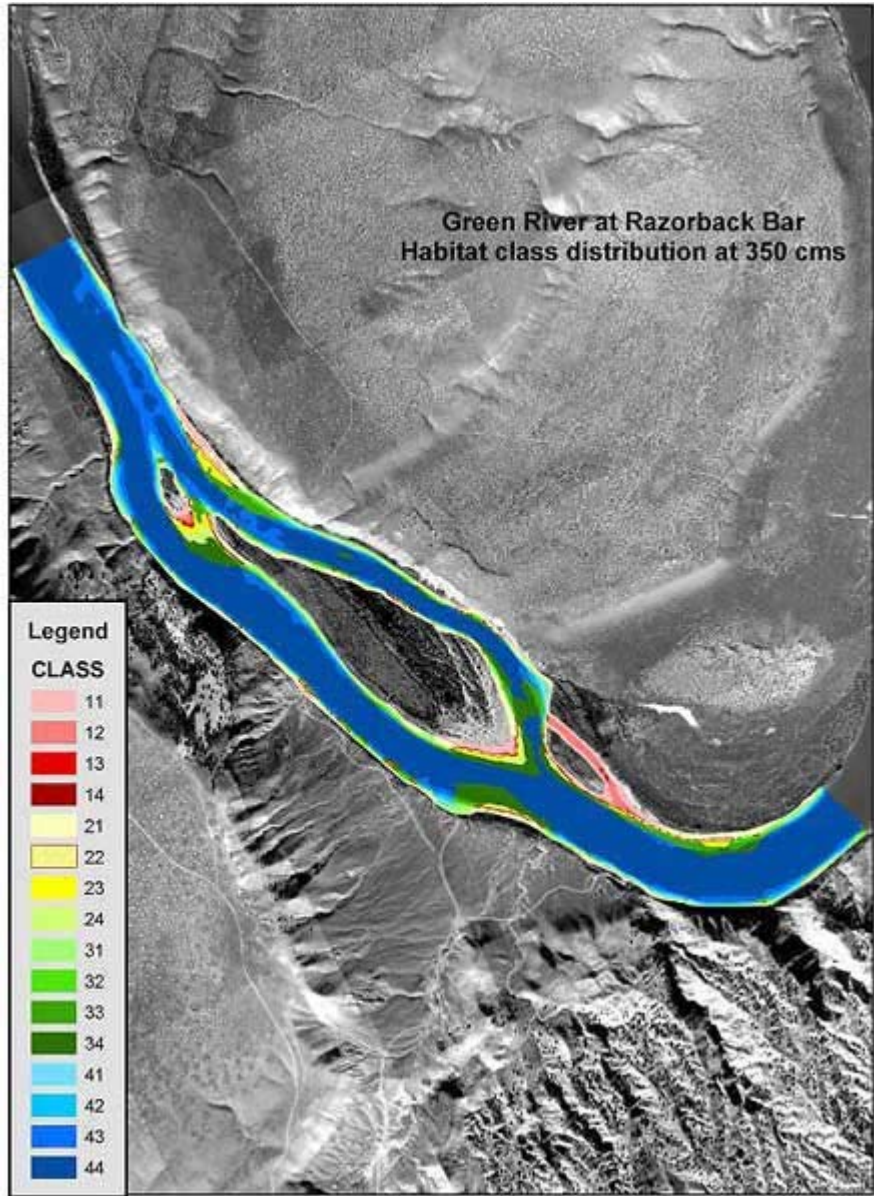


Figure D7. Green River habitat class distributions at 350 m³/s.



Figure D8. Green River habitat class distributions at 400 m³/s.

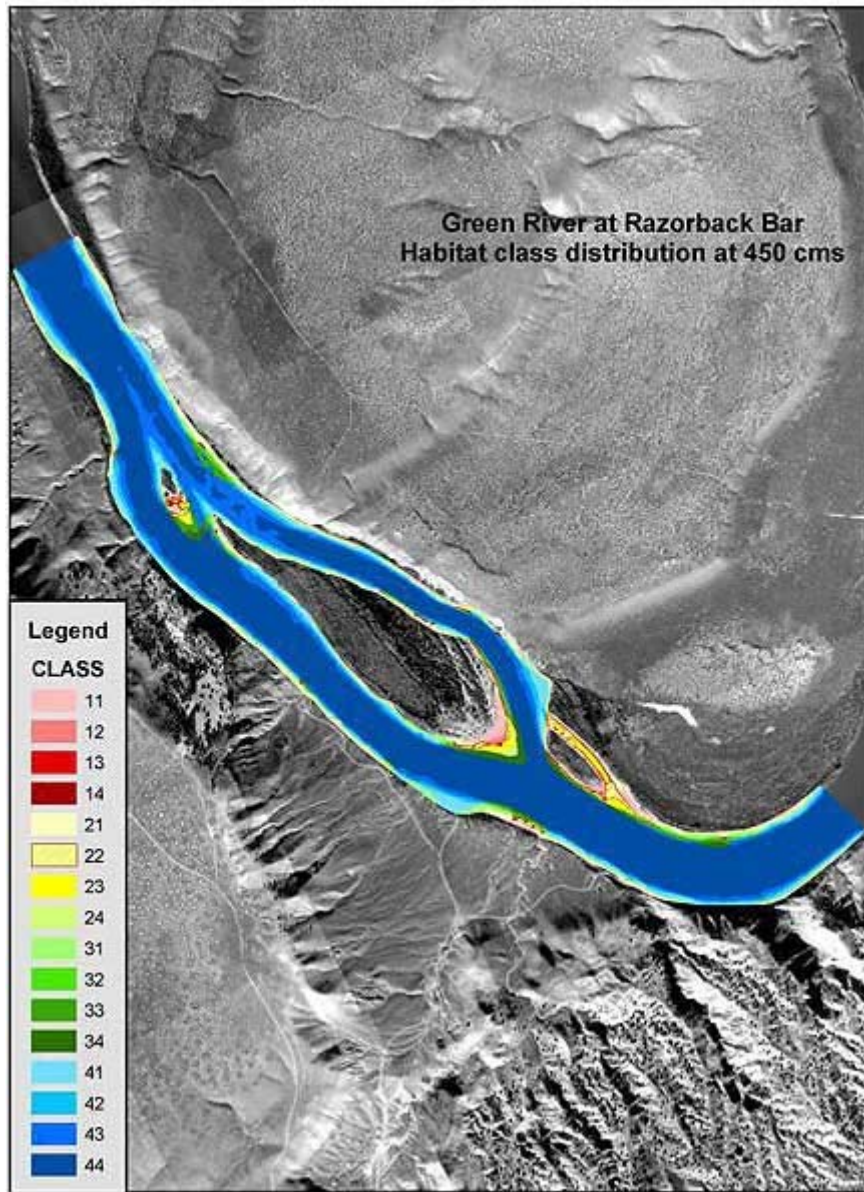


Figure D9. Green River habitat class distributions at 450 m³/s.

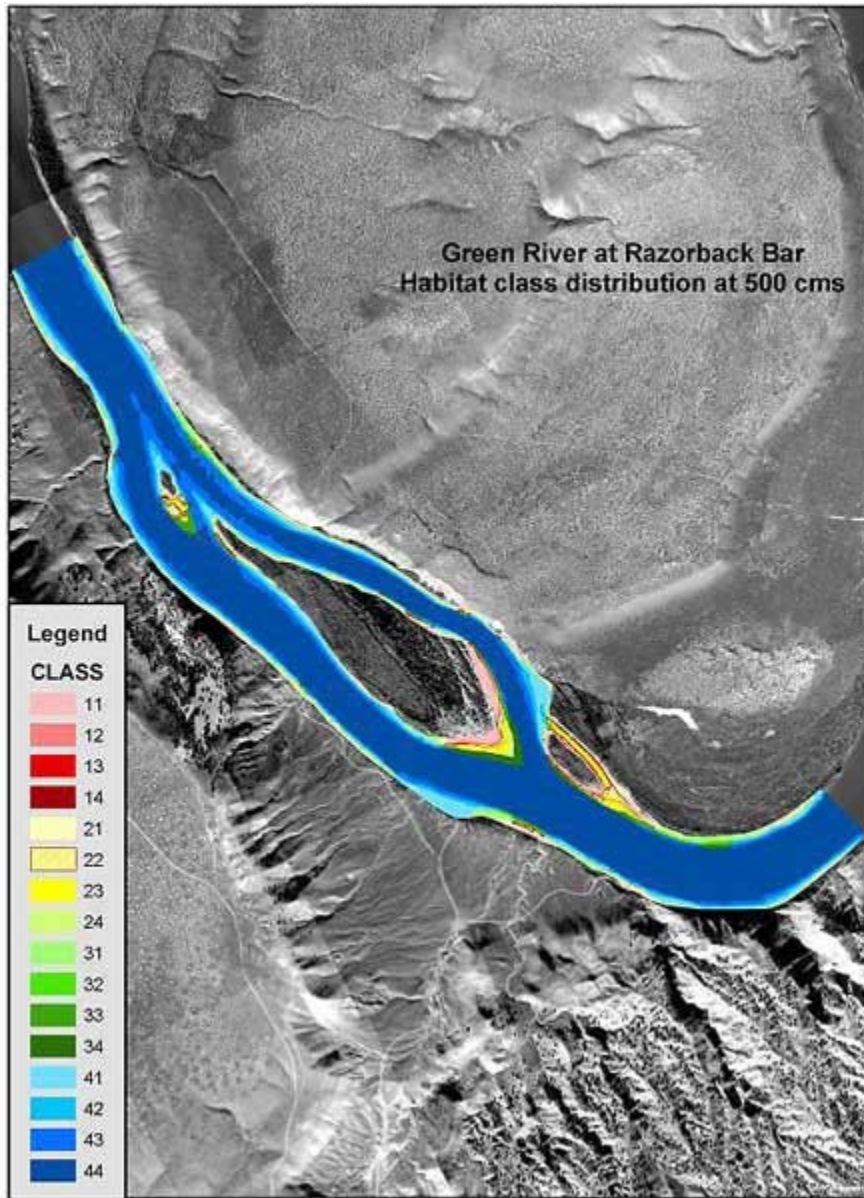


Figure D10. Green River habitat class distributions at 500 m³/s.

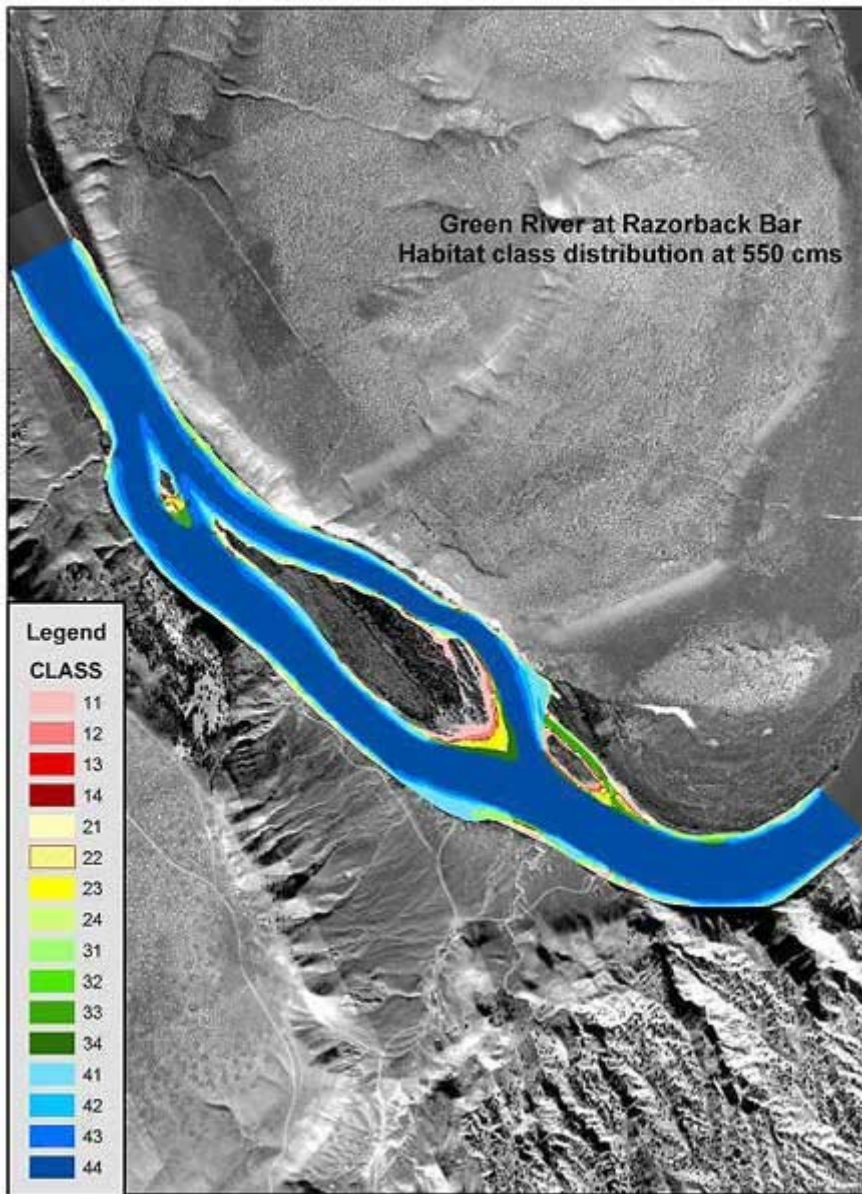


Figure D11. Green River habitat class distributions at 550 m³/s.



Figure D12. Green River habitat class distributions at 600 m³/s.

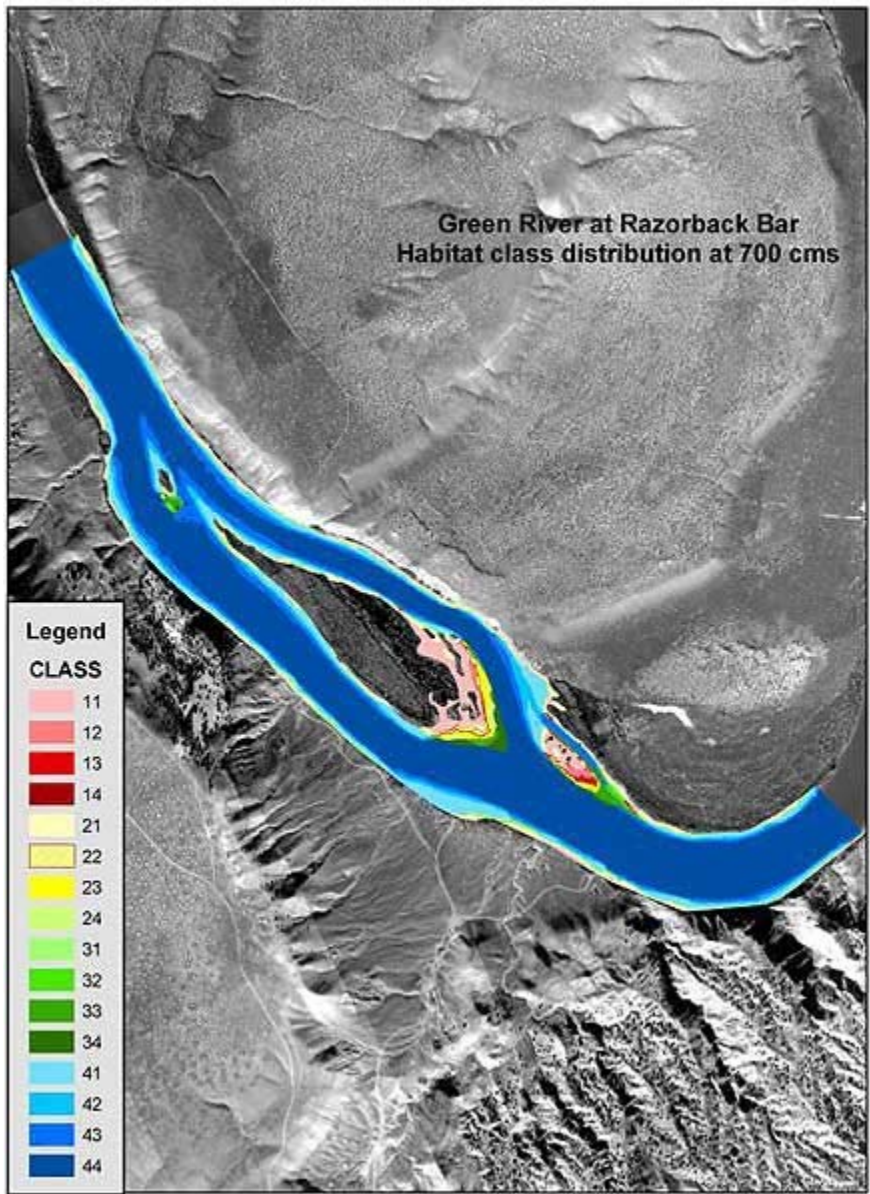


Figure D13. Green River habitat class distributions at 700 m³/s.



Figure D14. Green River habitat class distributions at 750 m³/s.

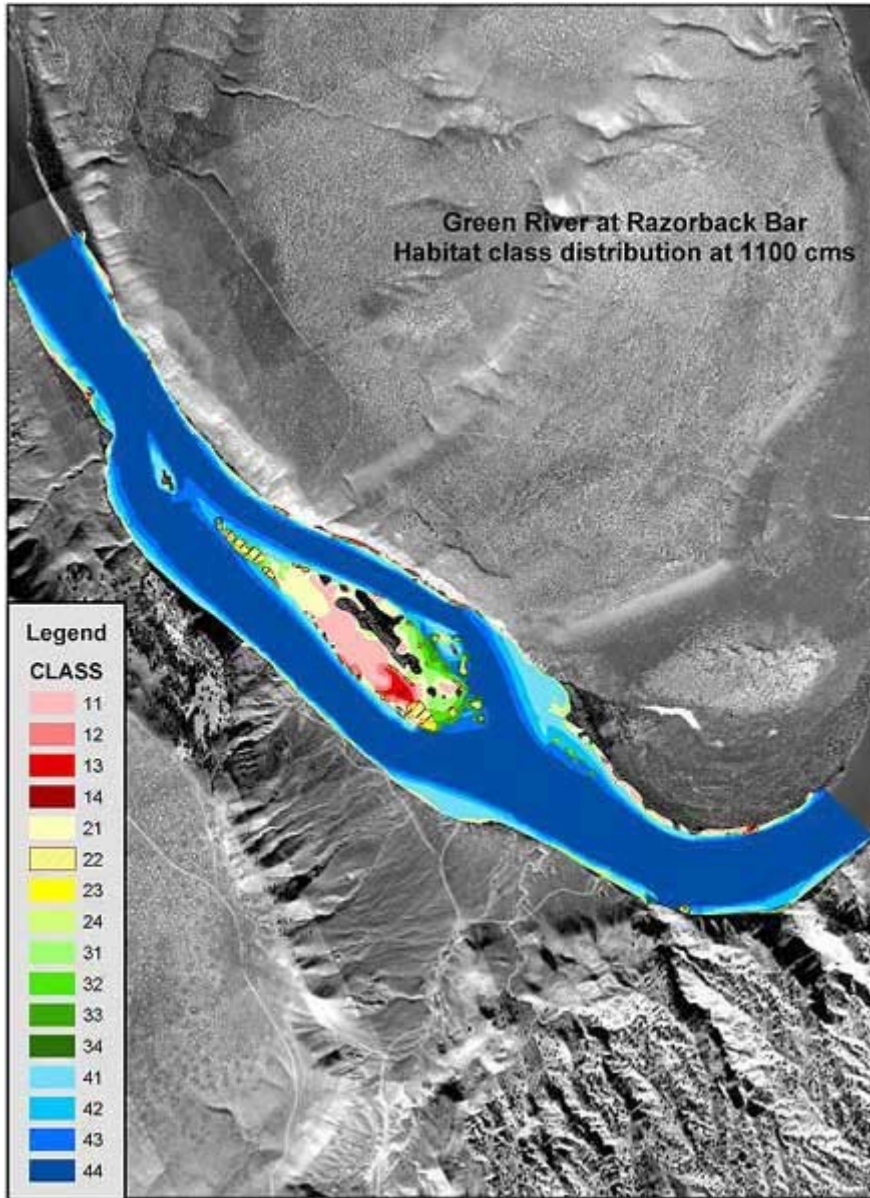


Figure D15. Green River habitat class distributions at 1100 m³/s.

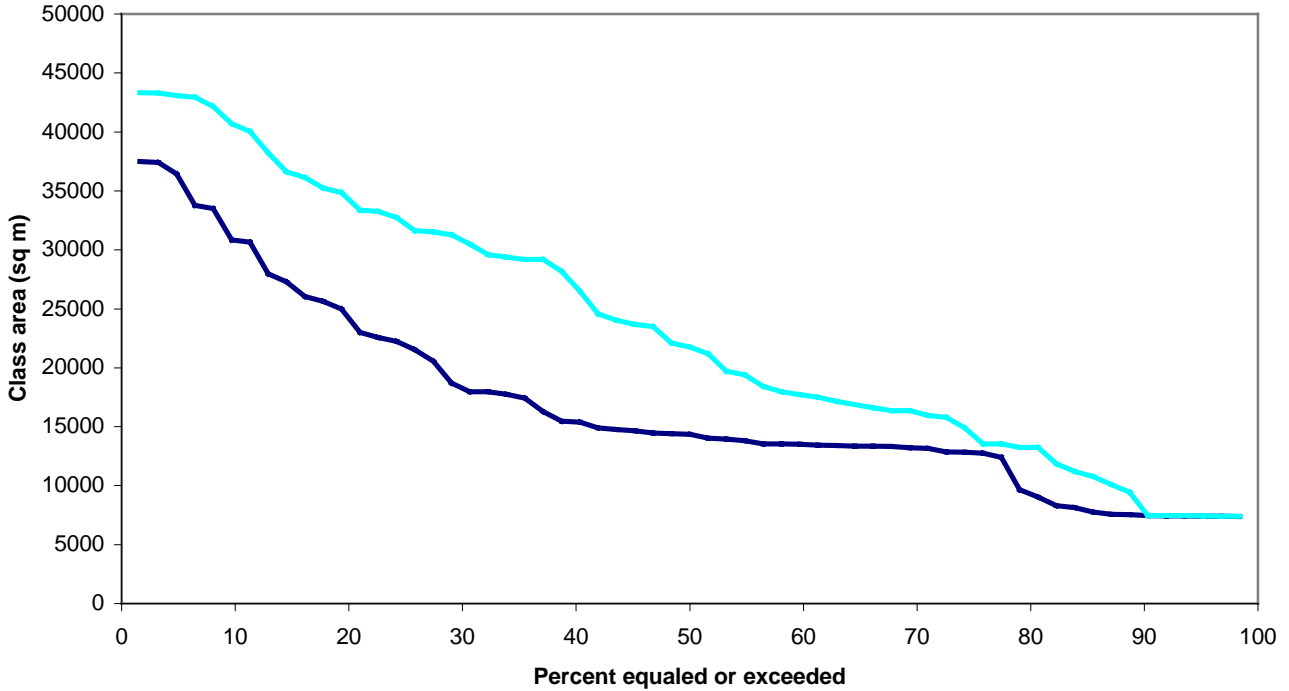


Figure D16. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 11. Dark bold line is for water year 1984, light bold line for water year 2000.

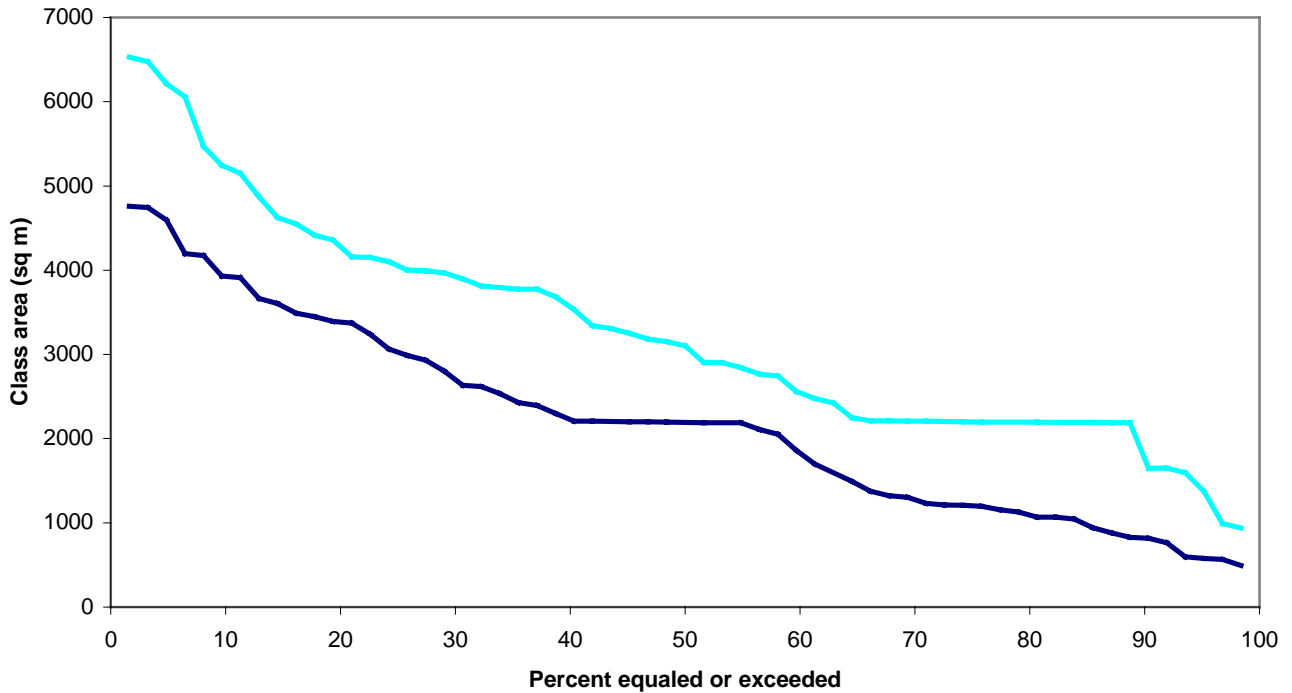


Figure D17. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 12. Dark bold line is for water year 1984, light bold line for water year 2000.

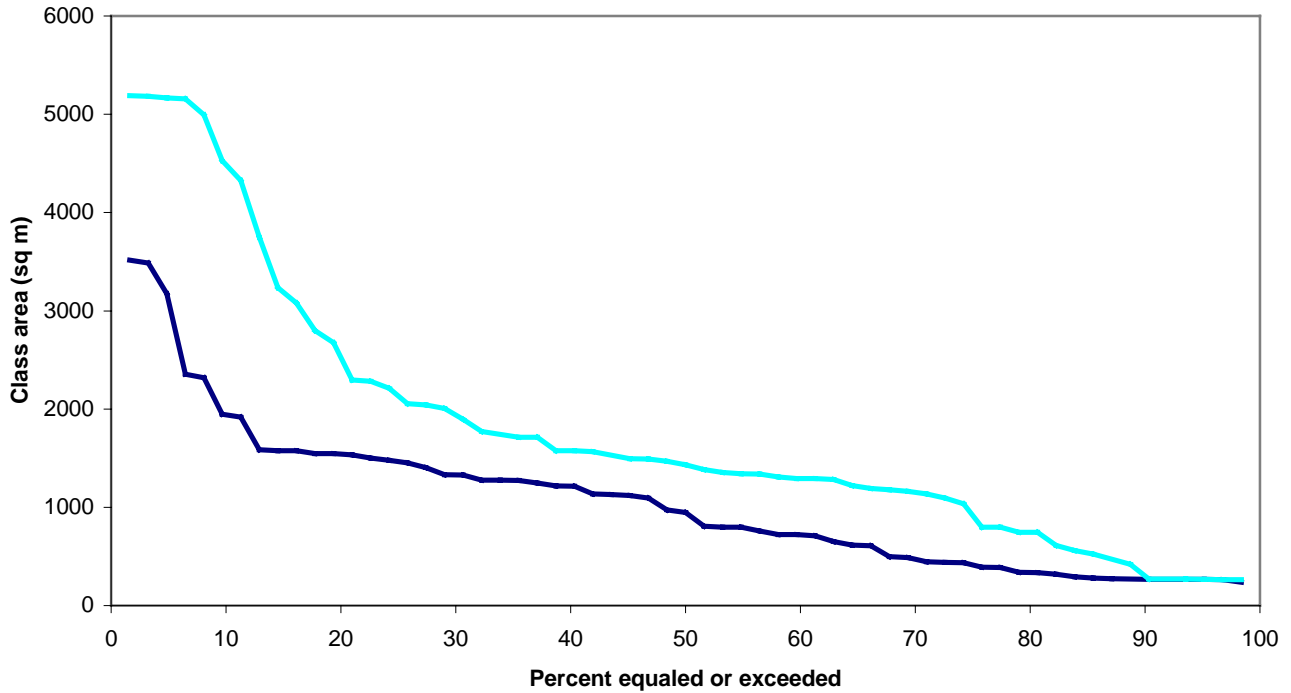


Figure D18. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 13. Dark bold line is for water year 1984, light bold line for water year 2000.

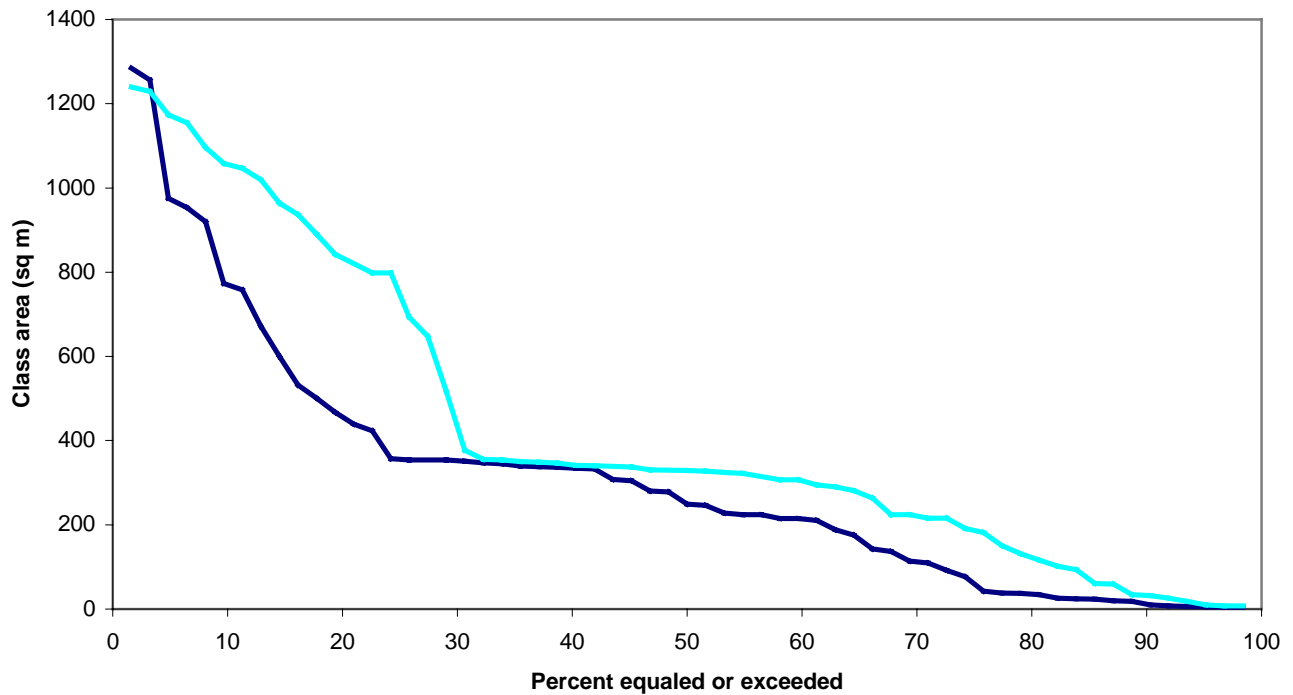


Figure D19. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 14. Dark bold line is for water year 1984, light bold line for water year 2000.

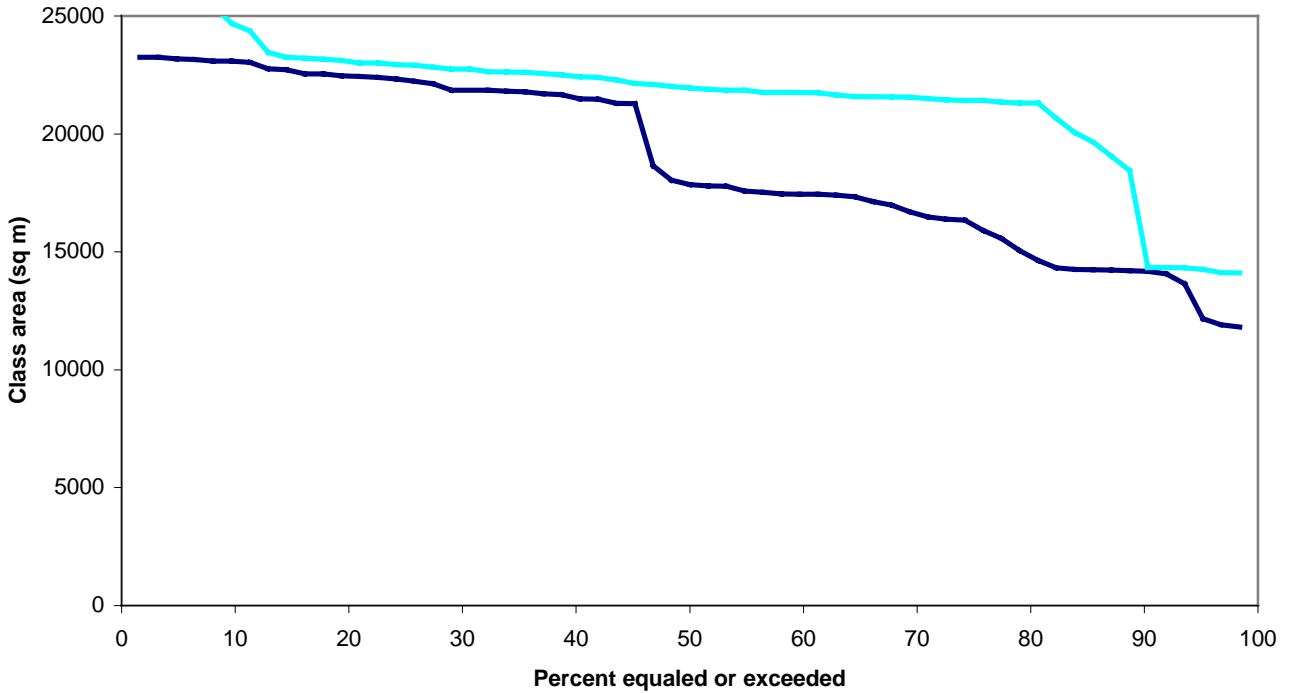


Figure D20. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 21. Dark bold line is for water year 1984, light bold line for water year 2000.

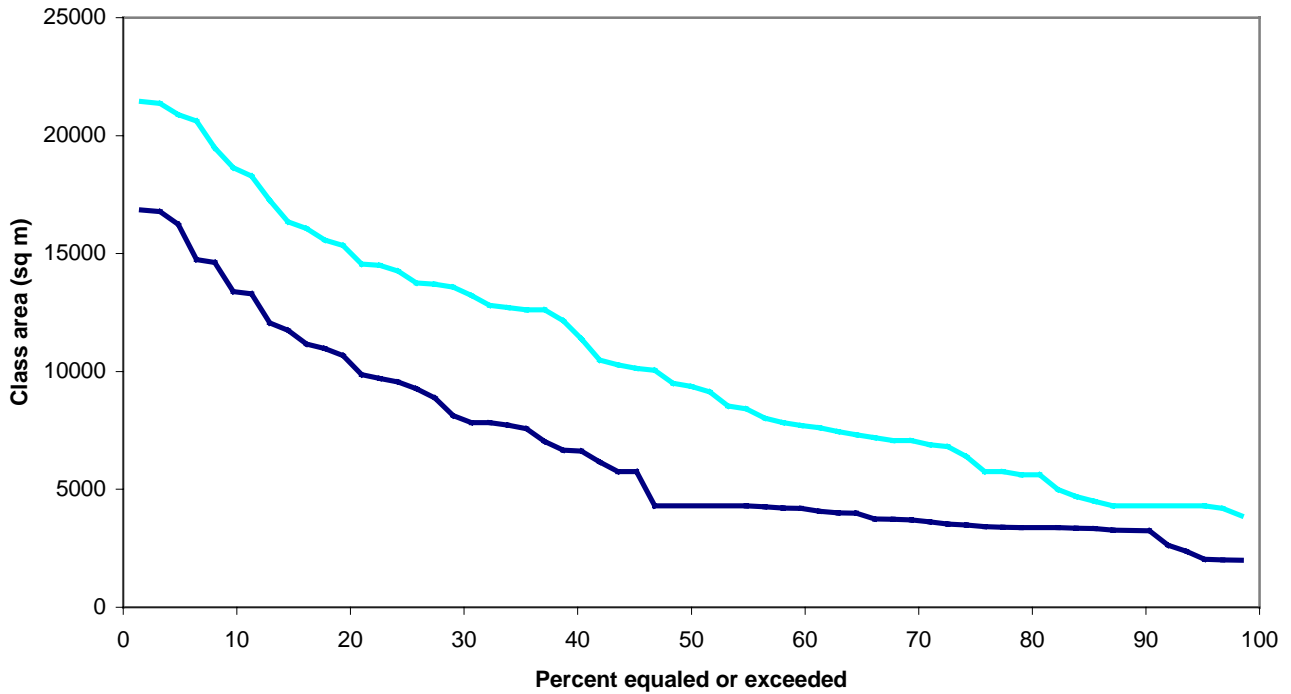


Figure D21. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 22. Dark bold line is for water year 1984, light bold line for water year 2000.

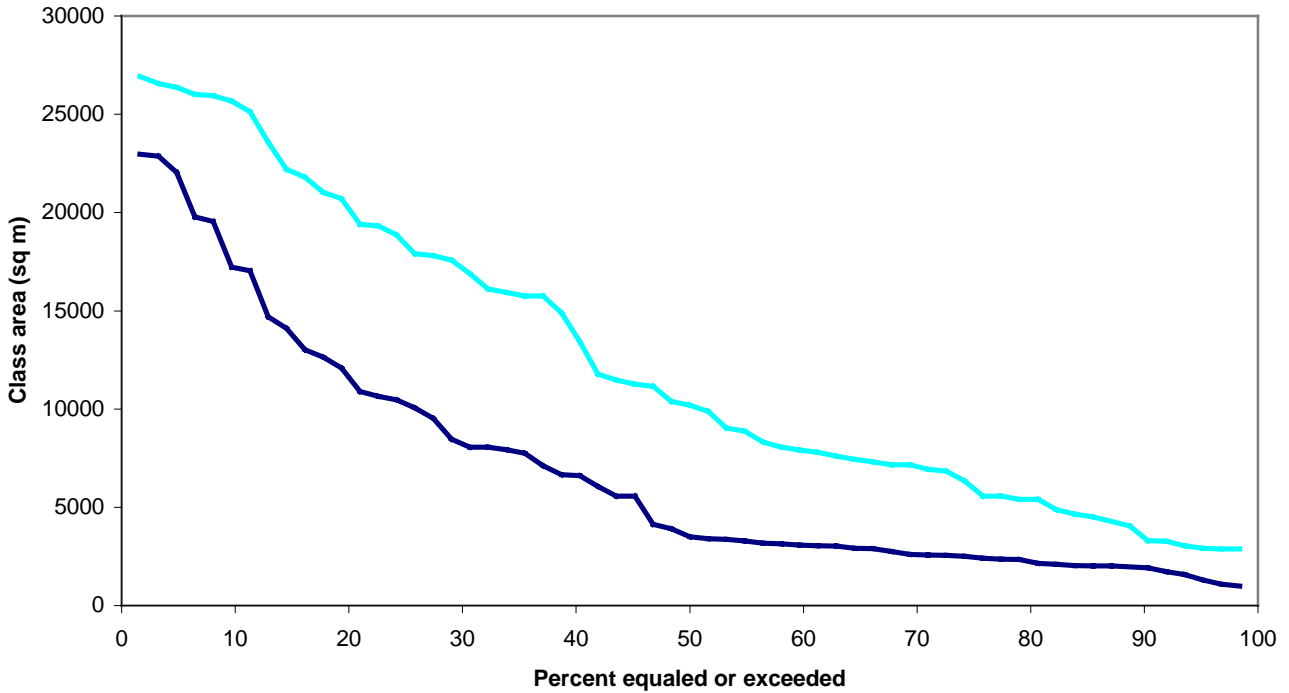


Figure D22. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 23. Dark bold line is for water year 1984, light bold line for water year 2000.

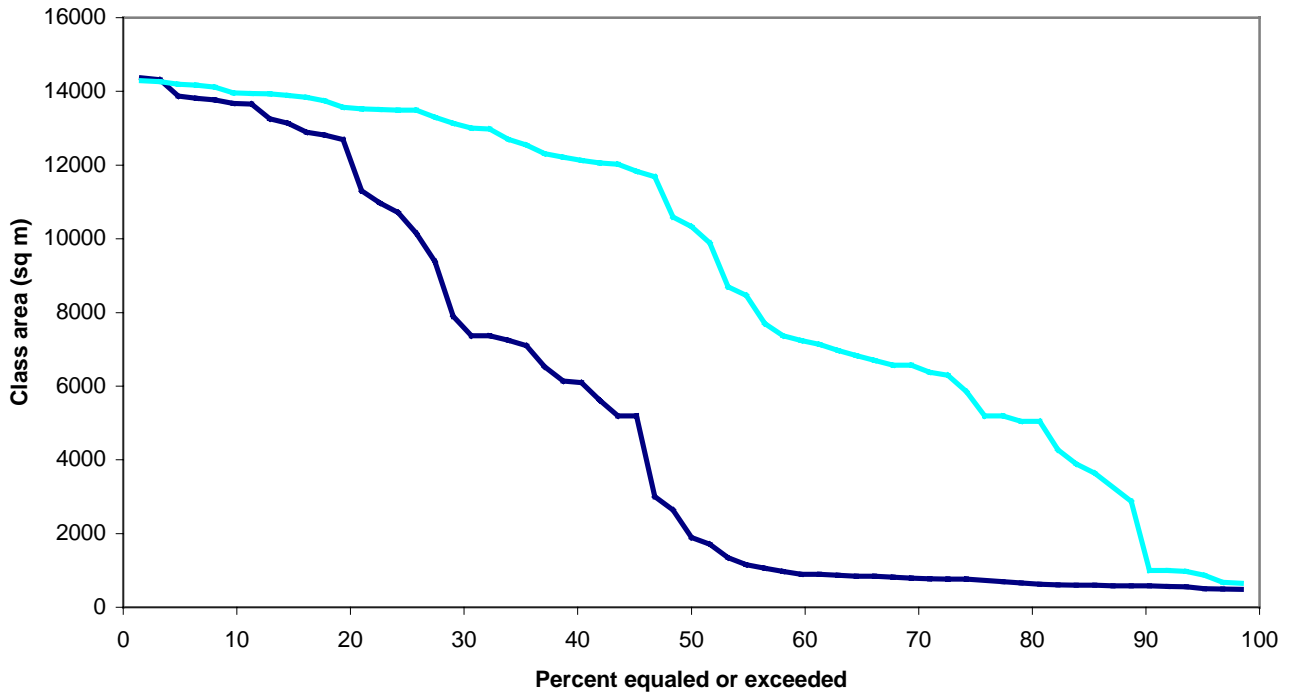


Figure D23. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 24. Dark bold line is for water year 1984, light bold line for water year 2000.

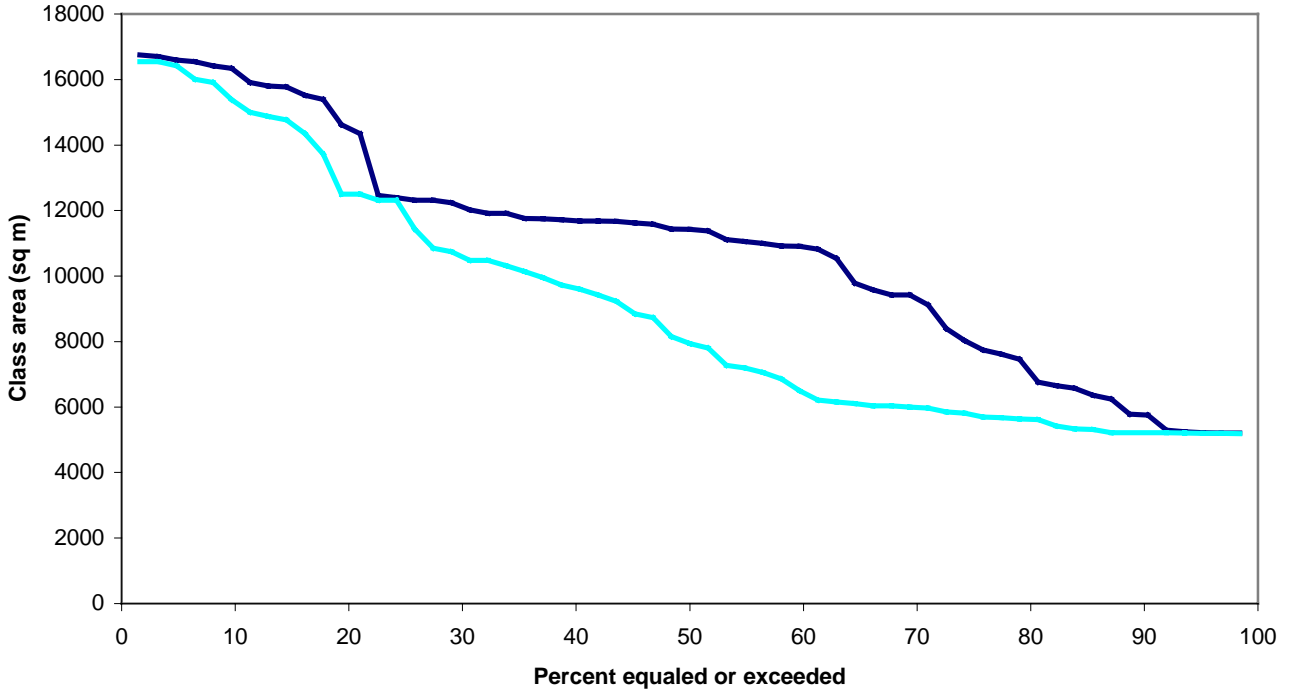


Figure D24. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 31. Dark bold line is for water year 1984, light bold line for water year 2000.

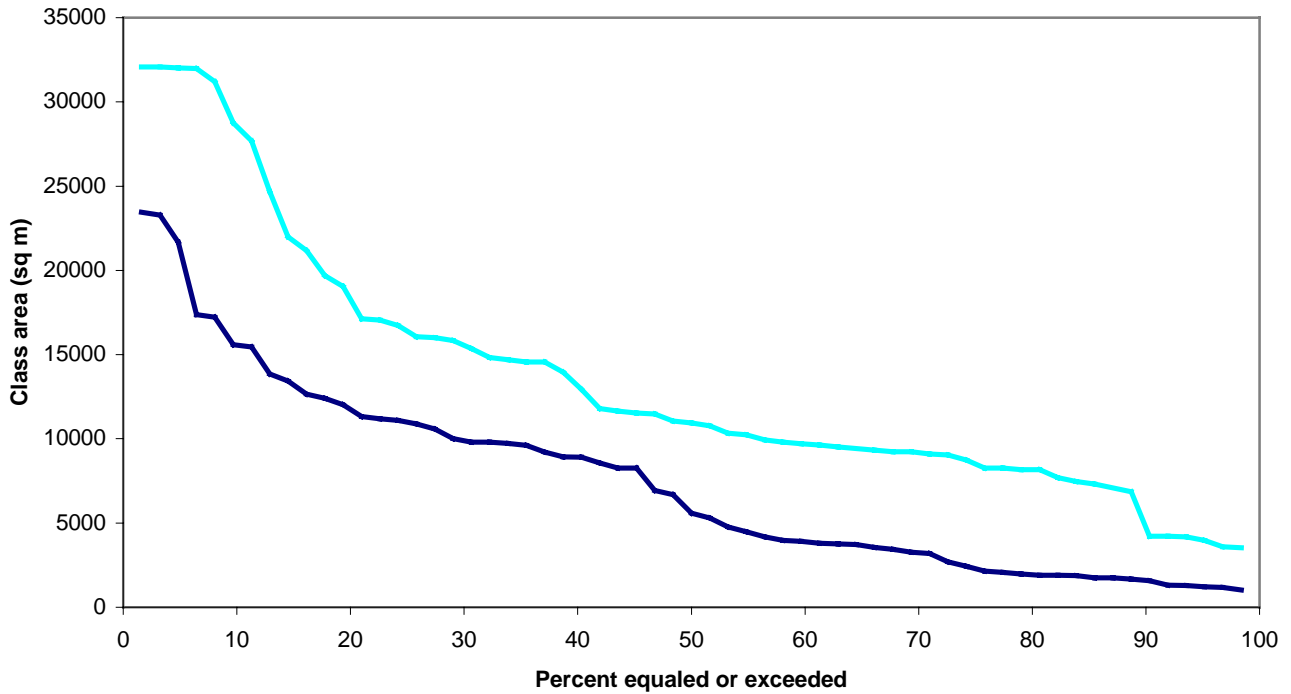


Figure D25. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 32. Dark bold line is for water year 1984, light bold line for water year 2000.

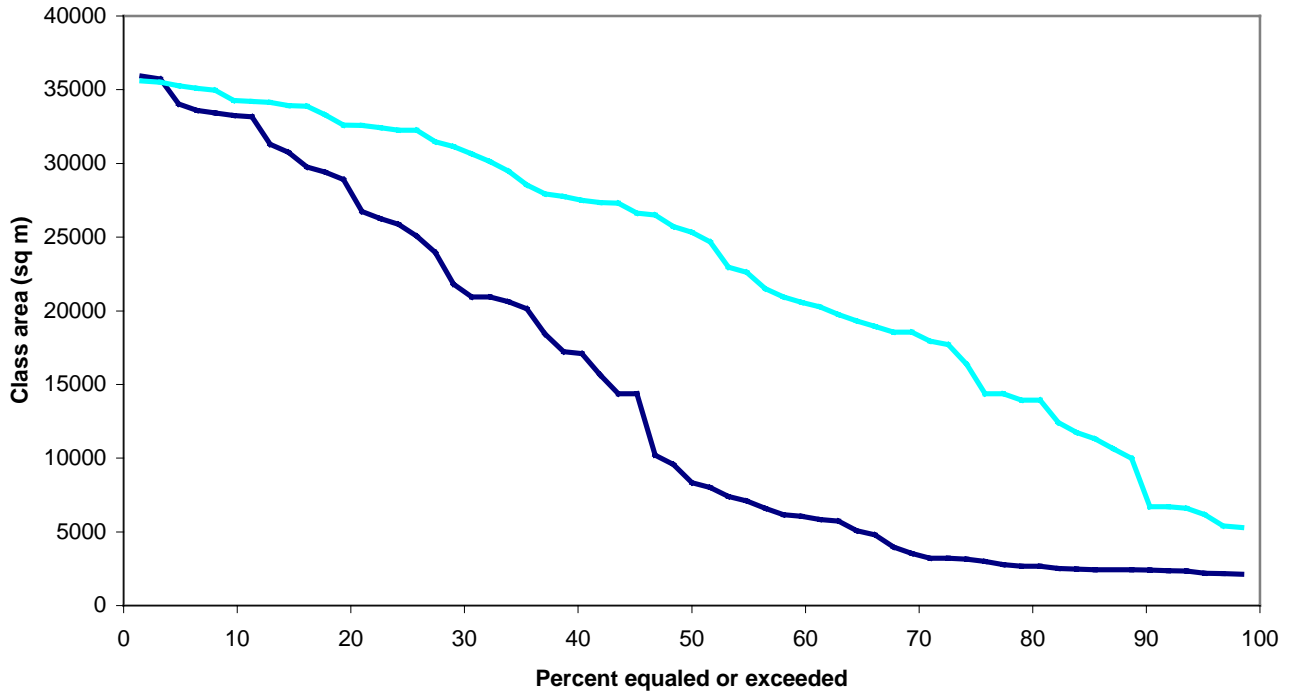


Figure D26. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 33. Dark bold line is for water year 1984, light bold line for water year 2000.

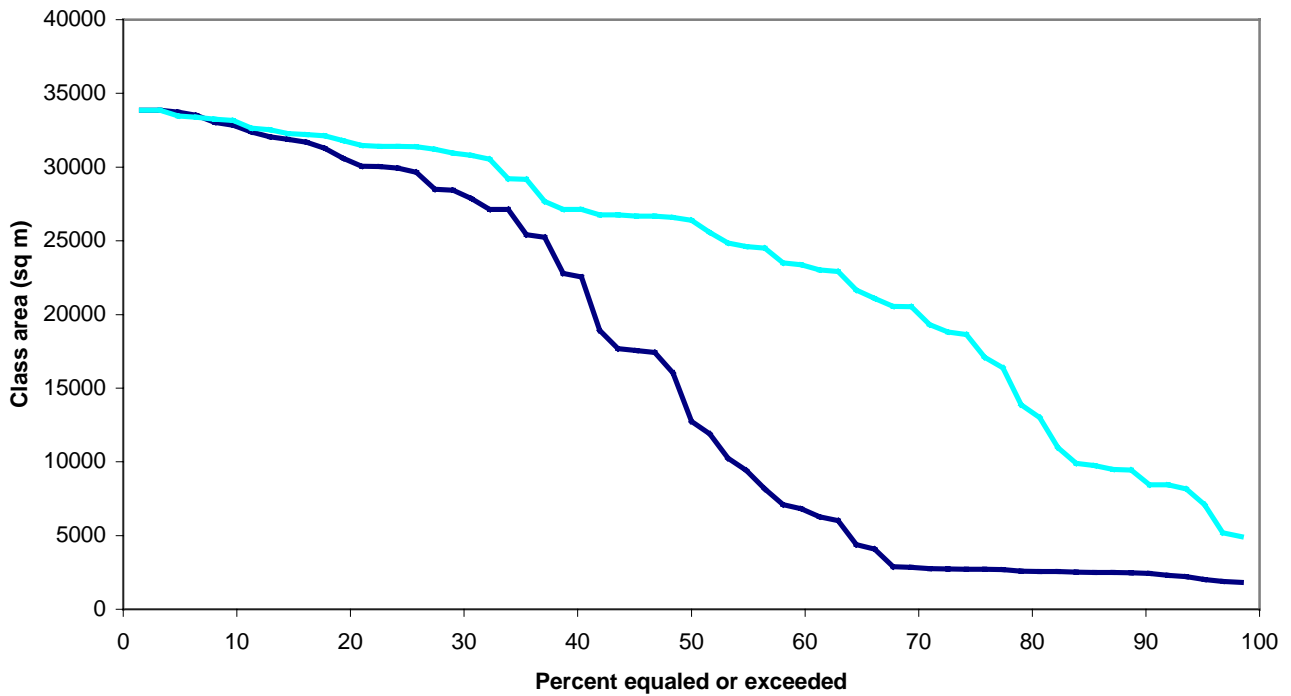


Figure D27. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 34. Dark bold line is for water year 1984, light bold line for water year 2000.

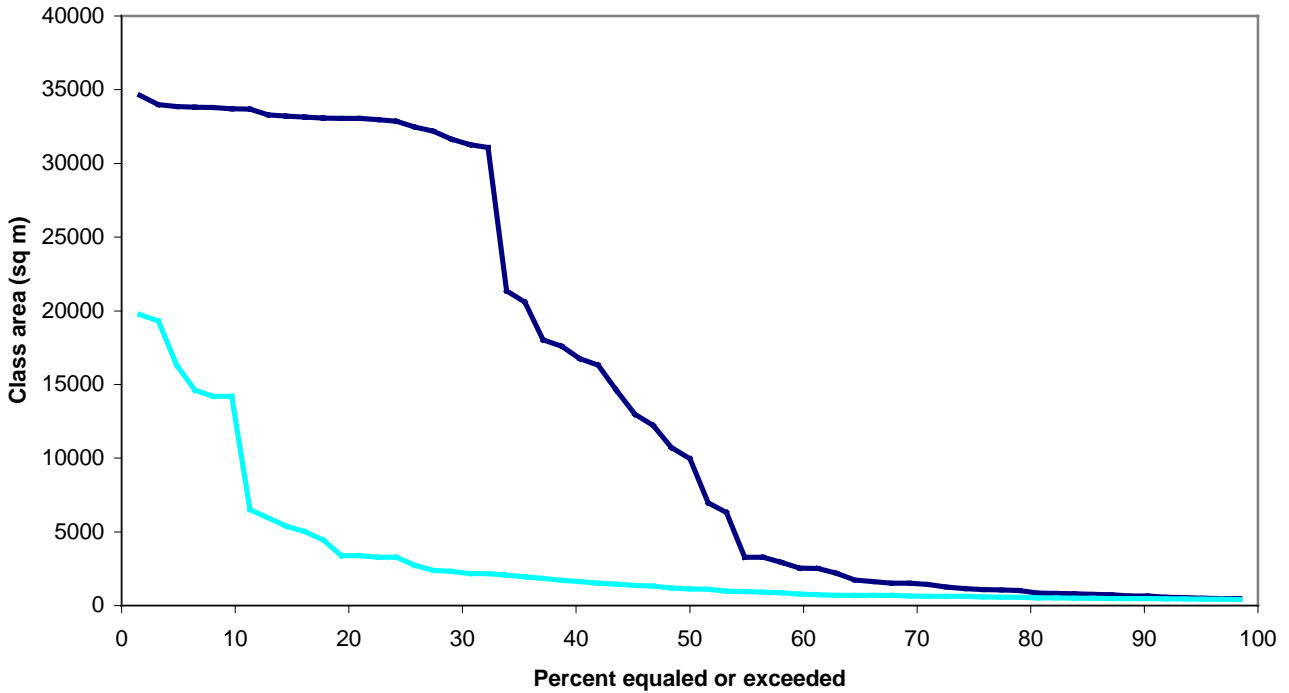


Figure D28. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 41. Dark bold line is for water year 1984, light bold line for water year 2000.

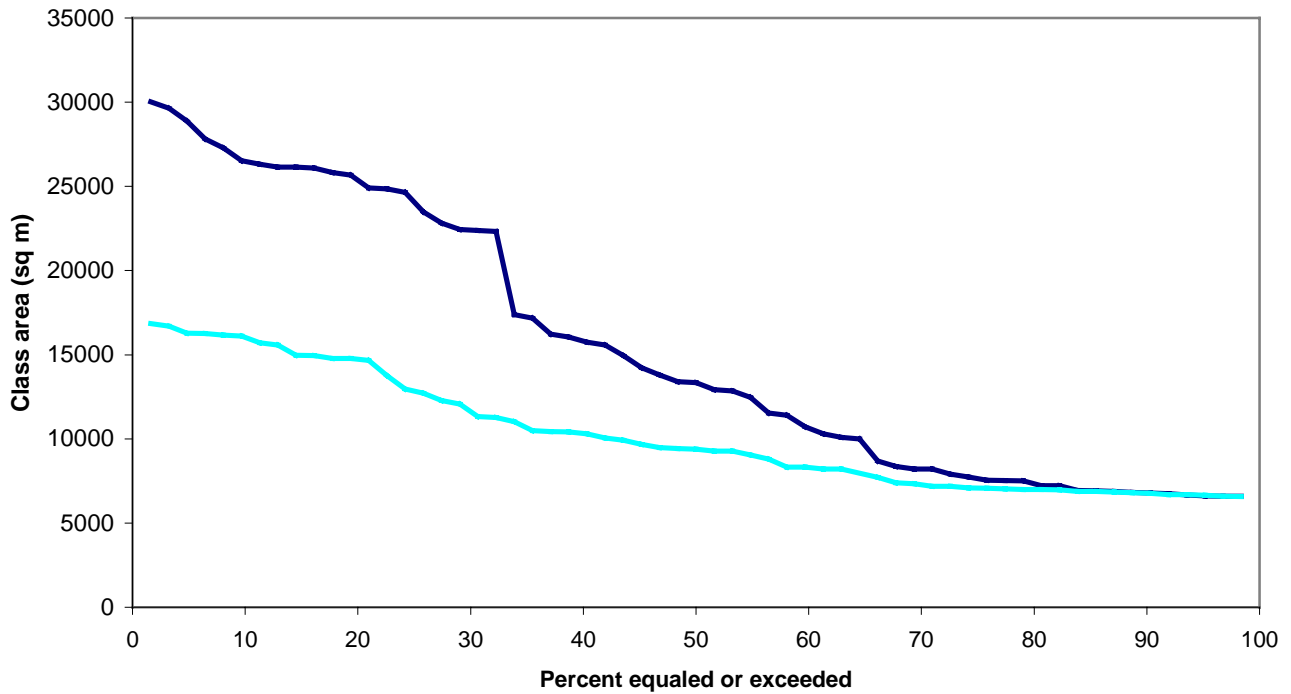


Figure D29. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 42. Dark bold line is for water year 1984, light bold line for water year 2000.

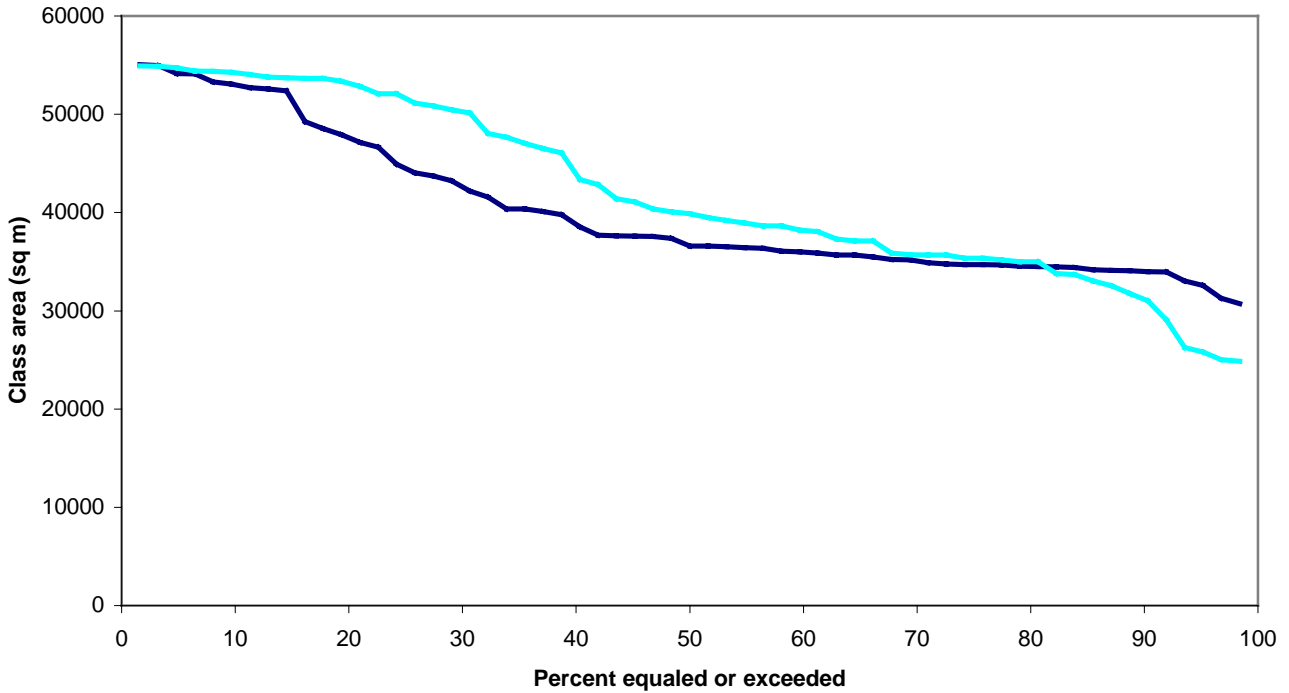


Figure D30. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 43. Dark bold line is for water year 1984, light bold line for water year 2000.

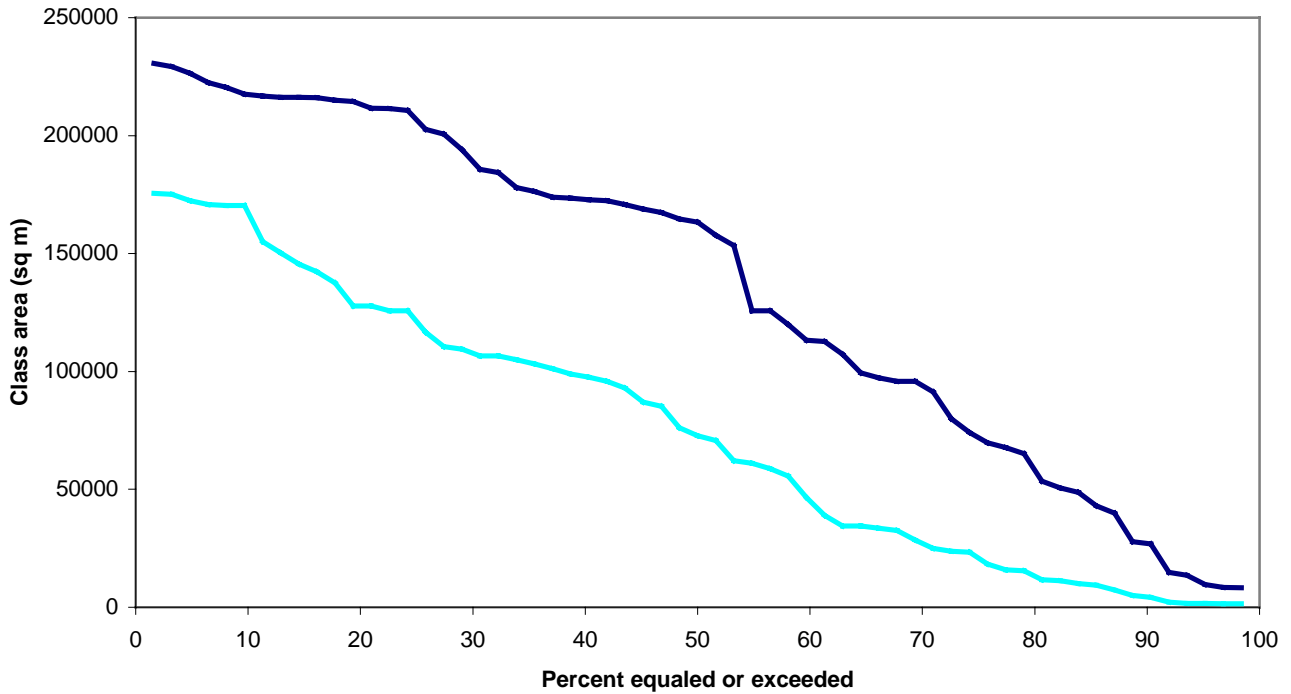


Figure D31. Habitat duration curves for spawning period, April 1 – May 31, Green River: Habitat class type 44. Dark bold line is for water year 1984, light bold line for water year 2000.

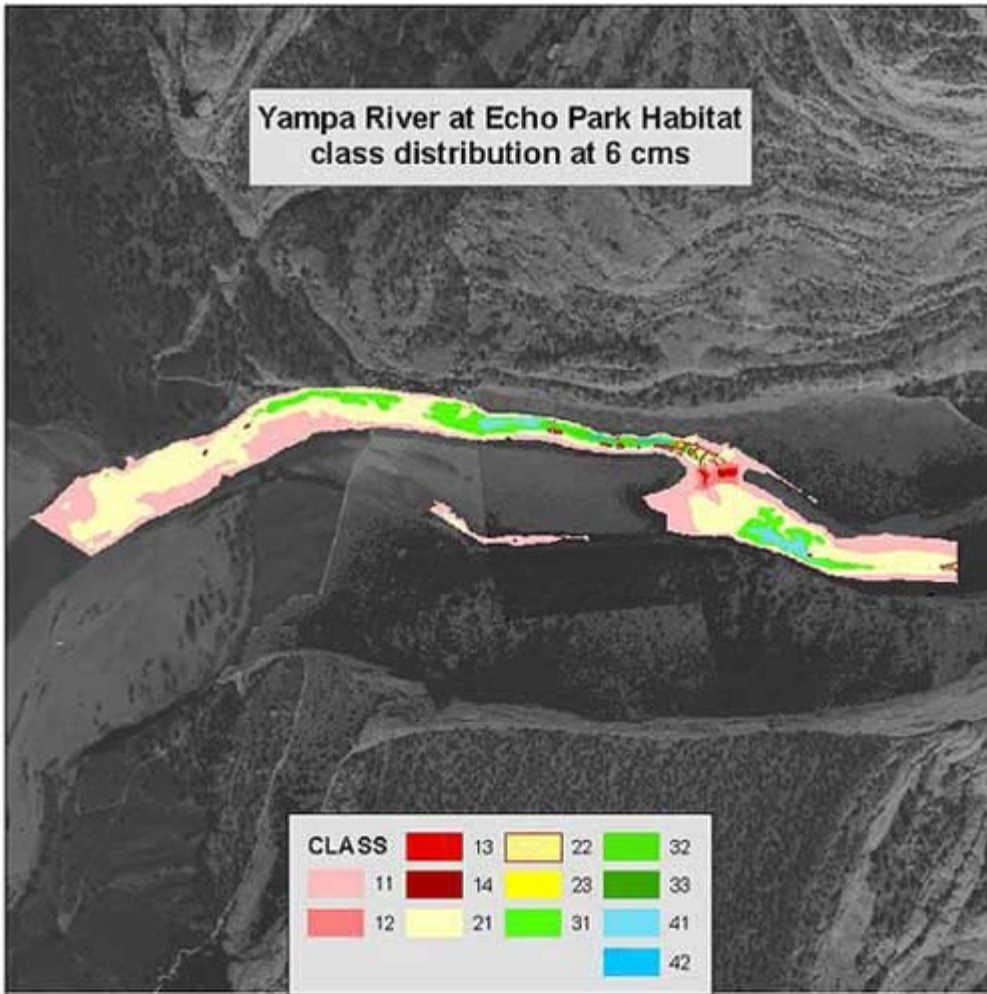


Figure D32. Yampa River habitat class distributions at 6 m³/s.

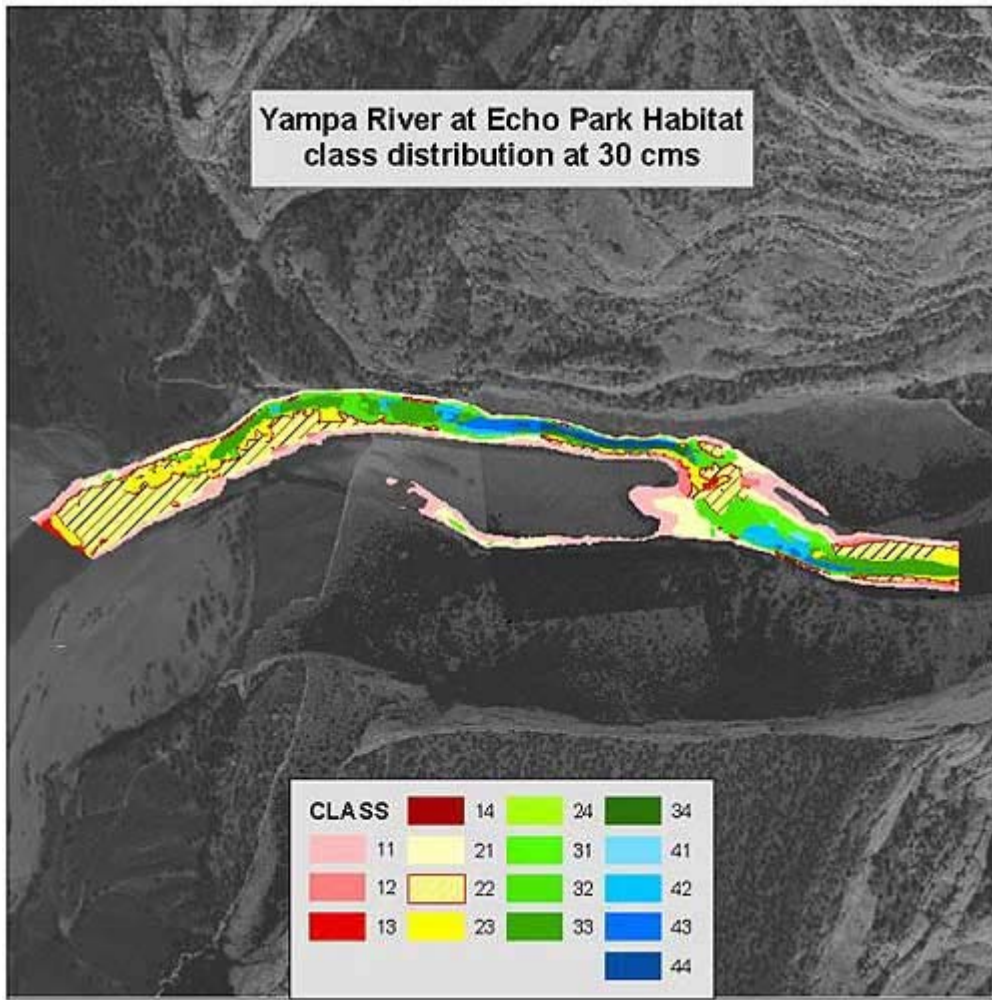


Figure D33. Yampa River habitat class distributions at 30 m³/s.

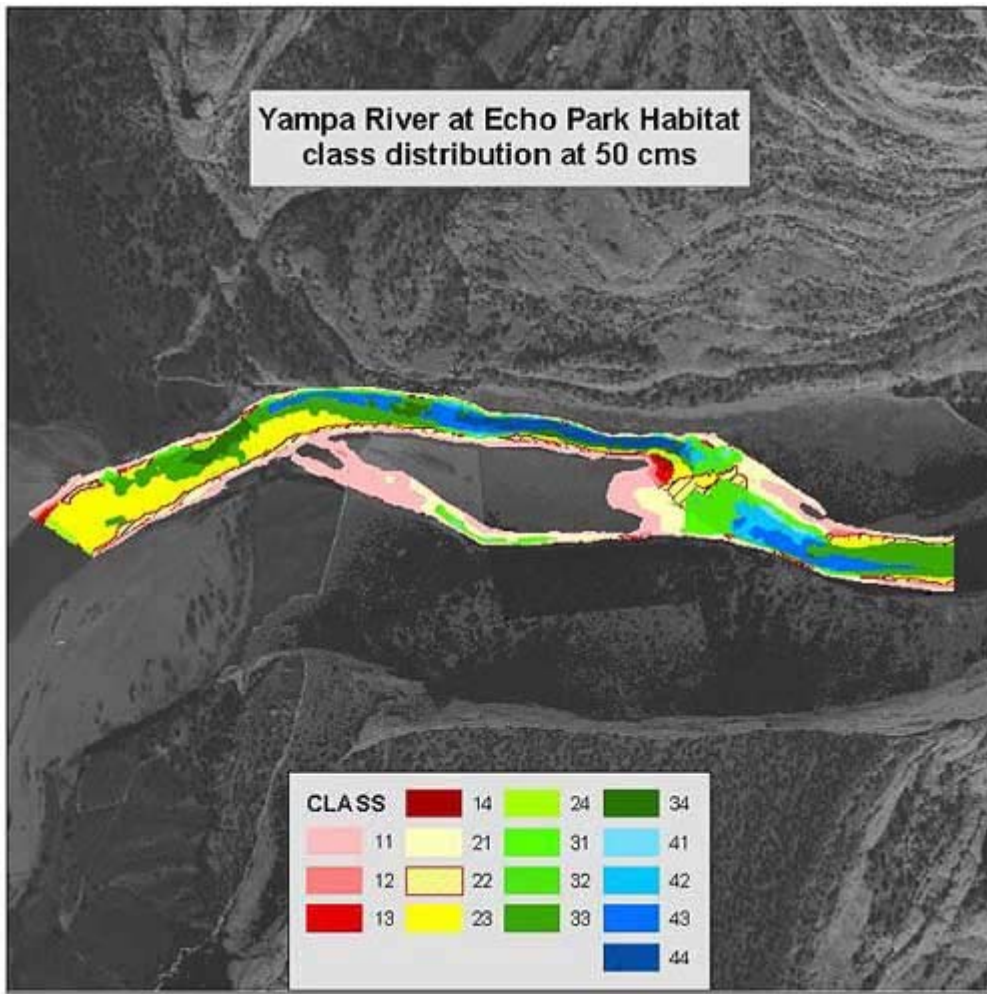


Figure D34. Yampa River habitat class distributions at 50 m³/s.

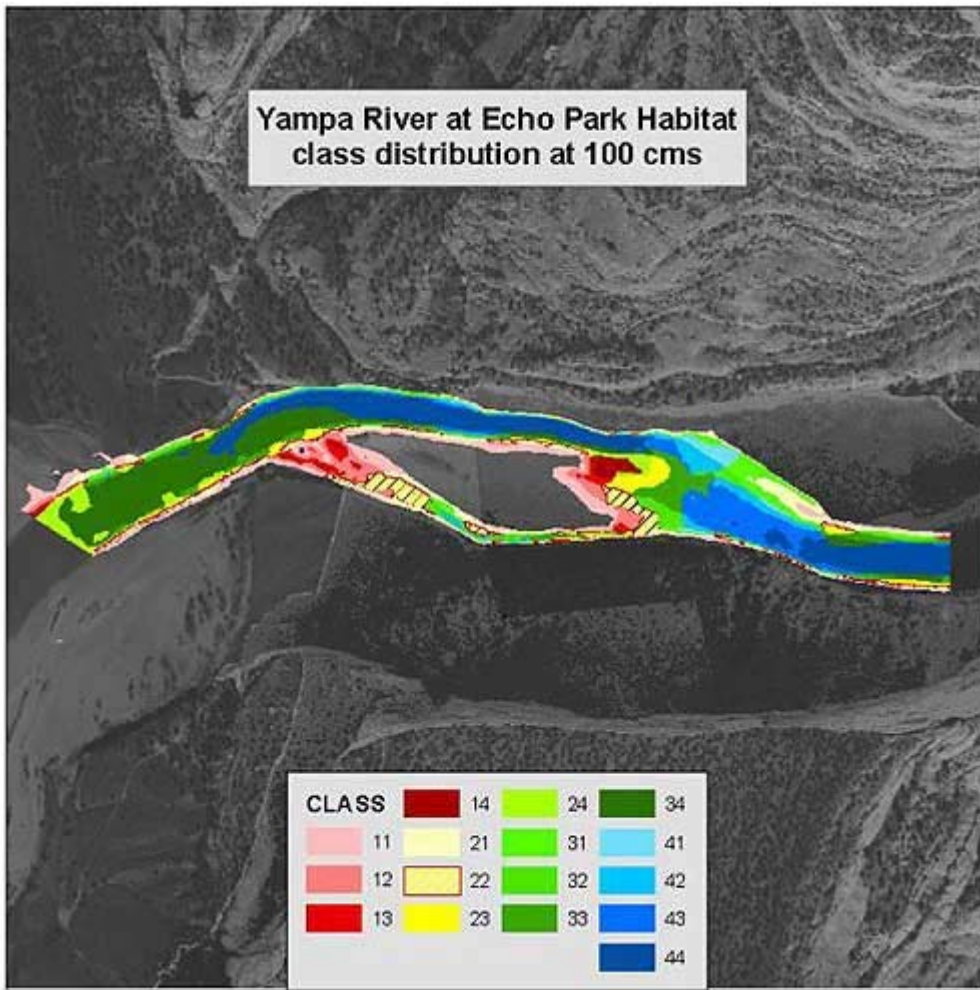


Figure D35. Yampa River habitat class distributions at 100 m³/s.

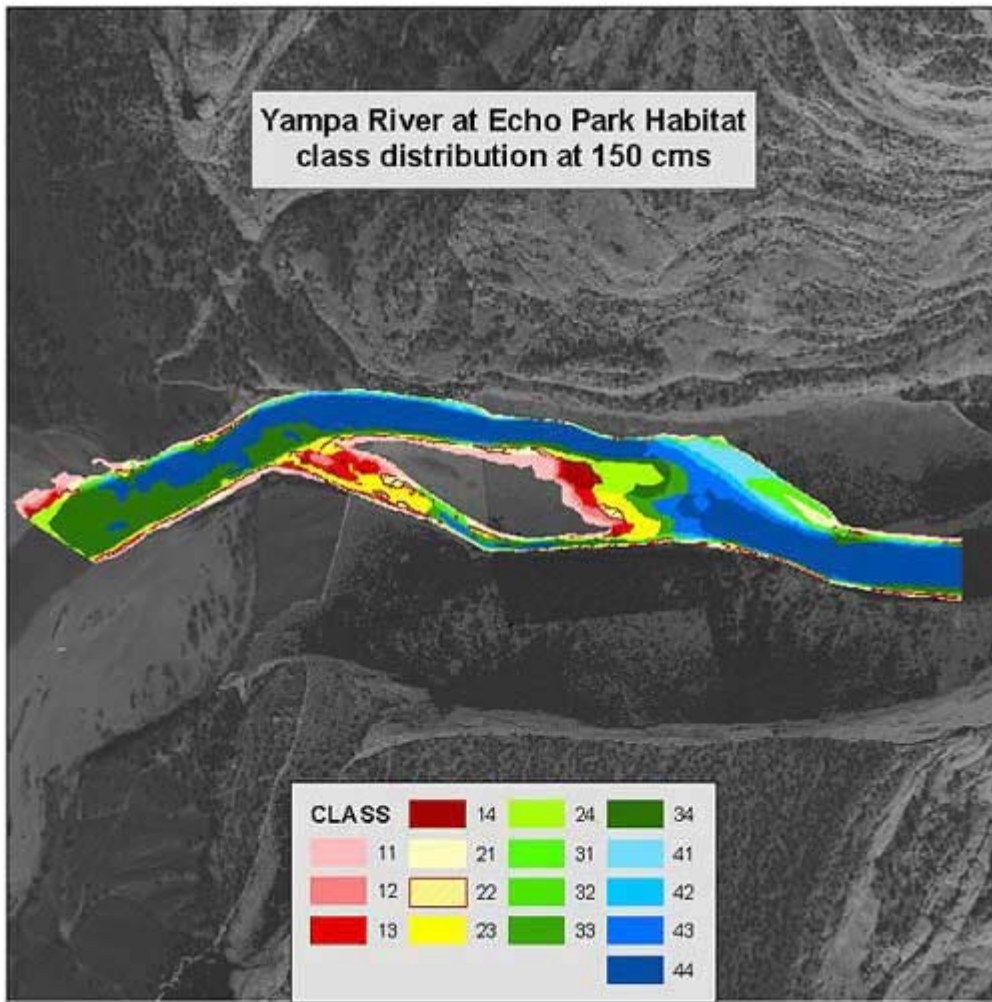


Figure D36. Yampa River habitat class distributions at 150 m³/s.

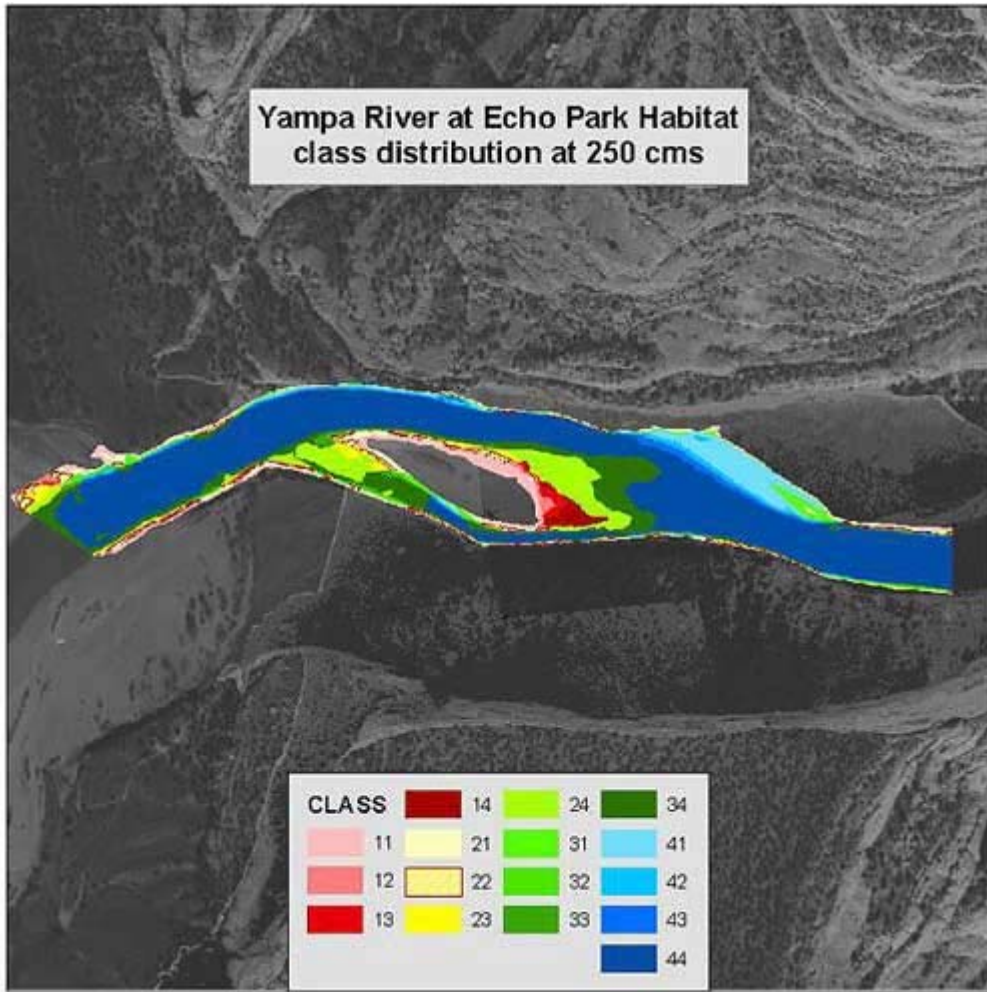


Figure D37. Yampa River habitat class distributions at 250 m³/s.

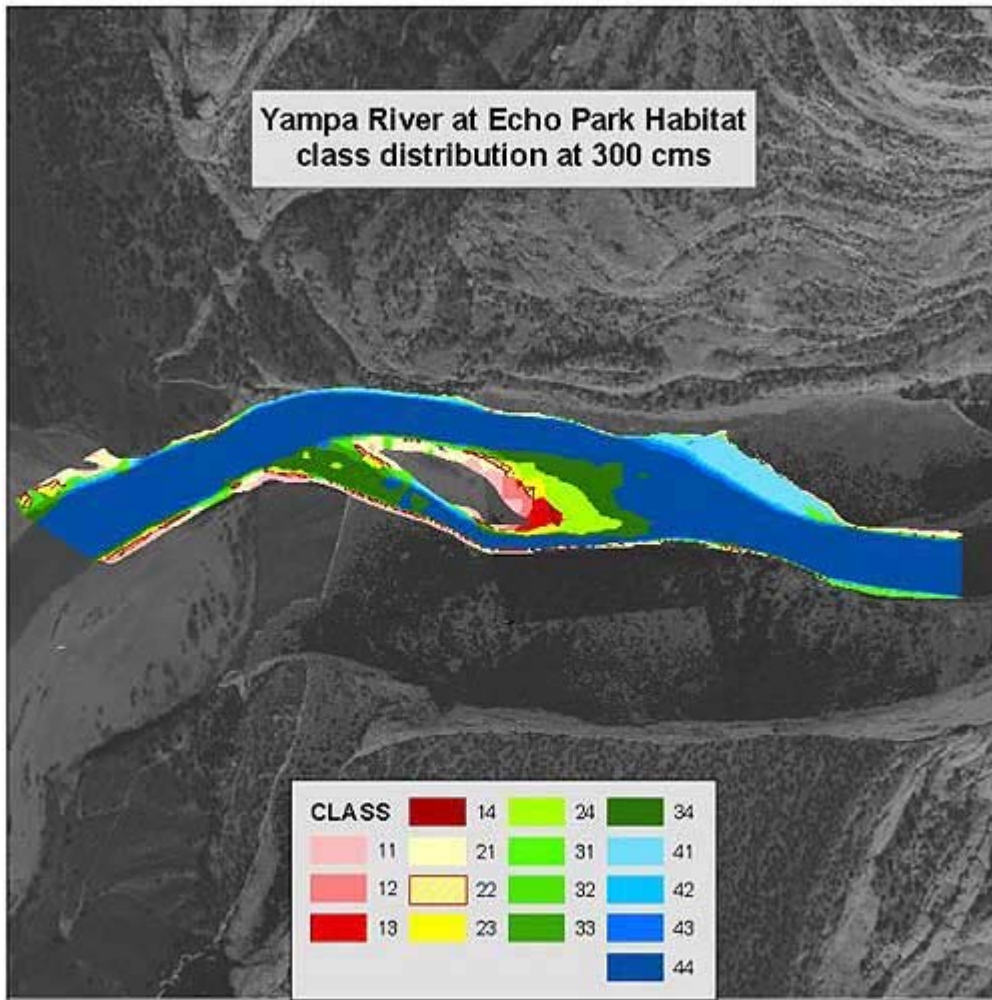


Figure D38. Yampa River habitat class distributions at 300 m³/s.

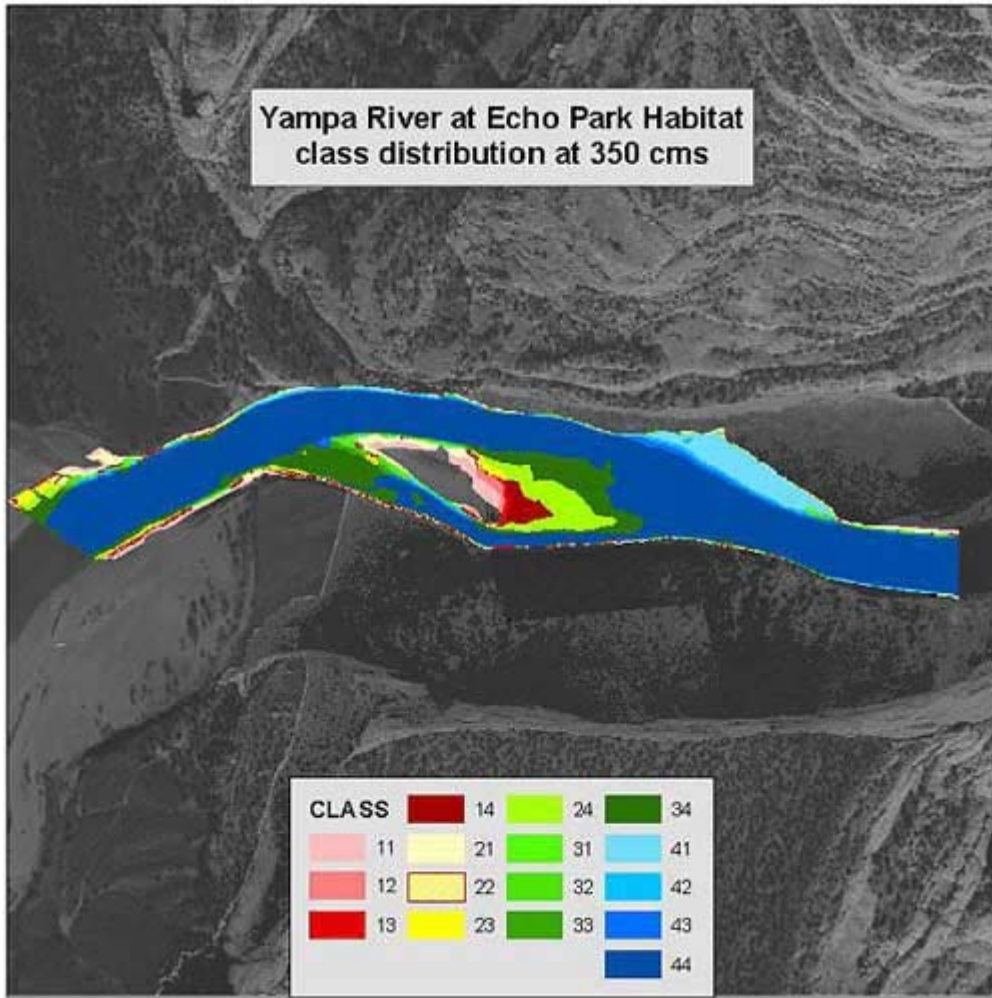


Figure D39. Yampa River habitat class distributions at 350 m³/s.

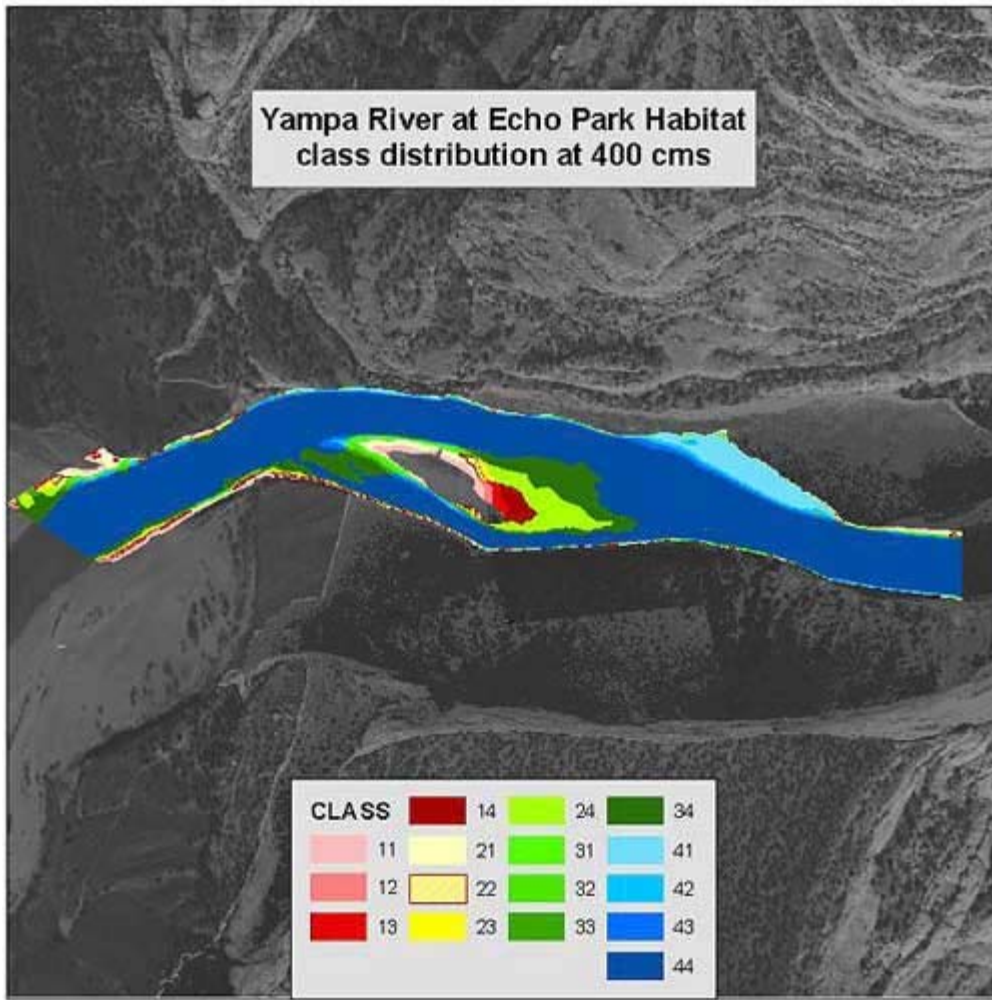


Figure D40. Yampa River habitat class distributions at 400 m³/s.

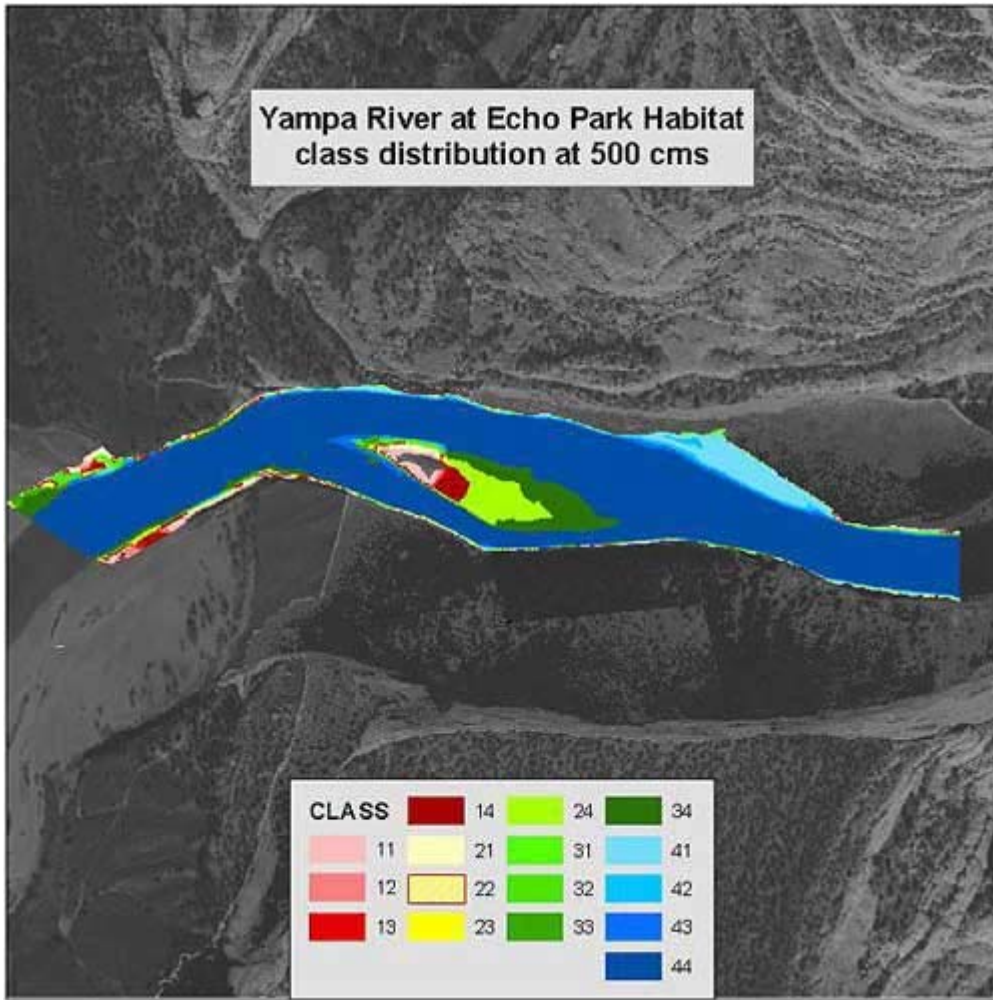


Figure D41. Yampa River habitat class distributions at 500 m³/s.

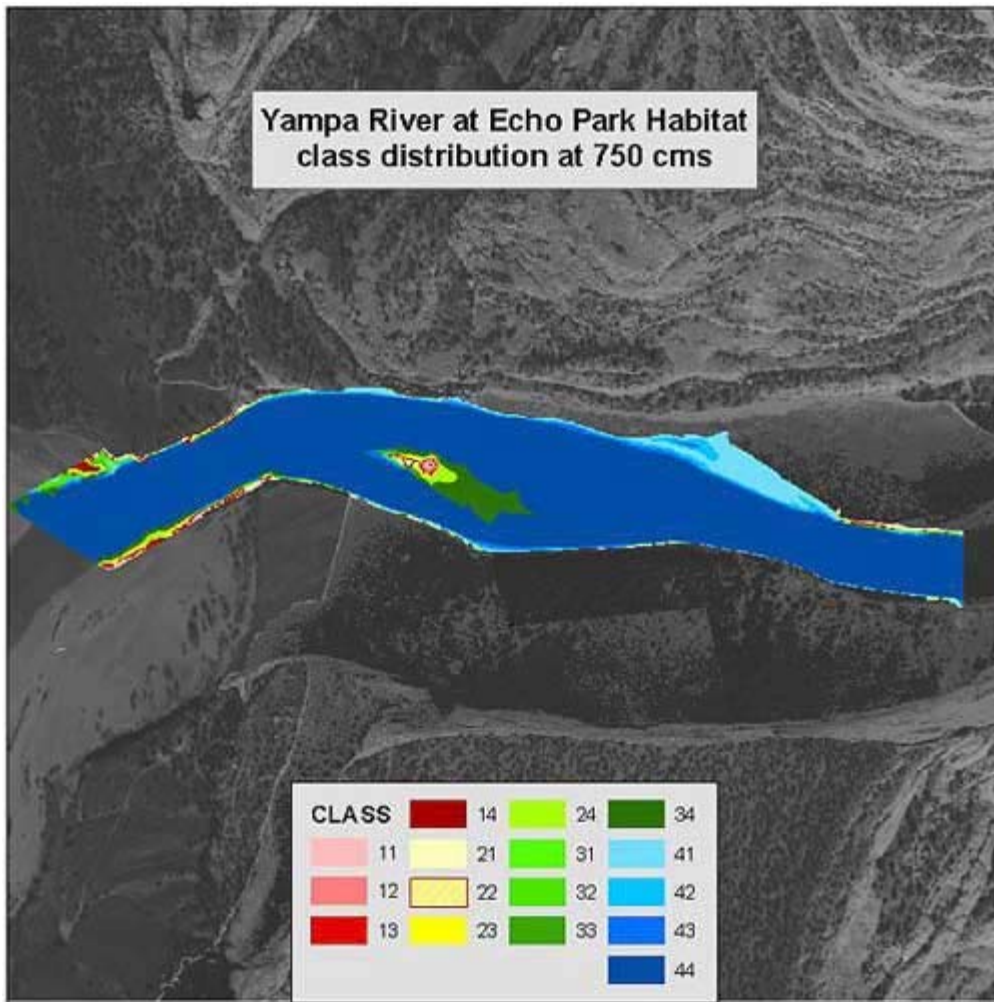


Figure D42. Yampa River habitat class distributions at 750 m³/s.

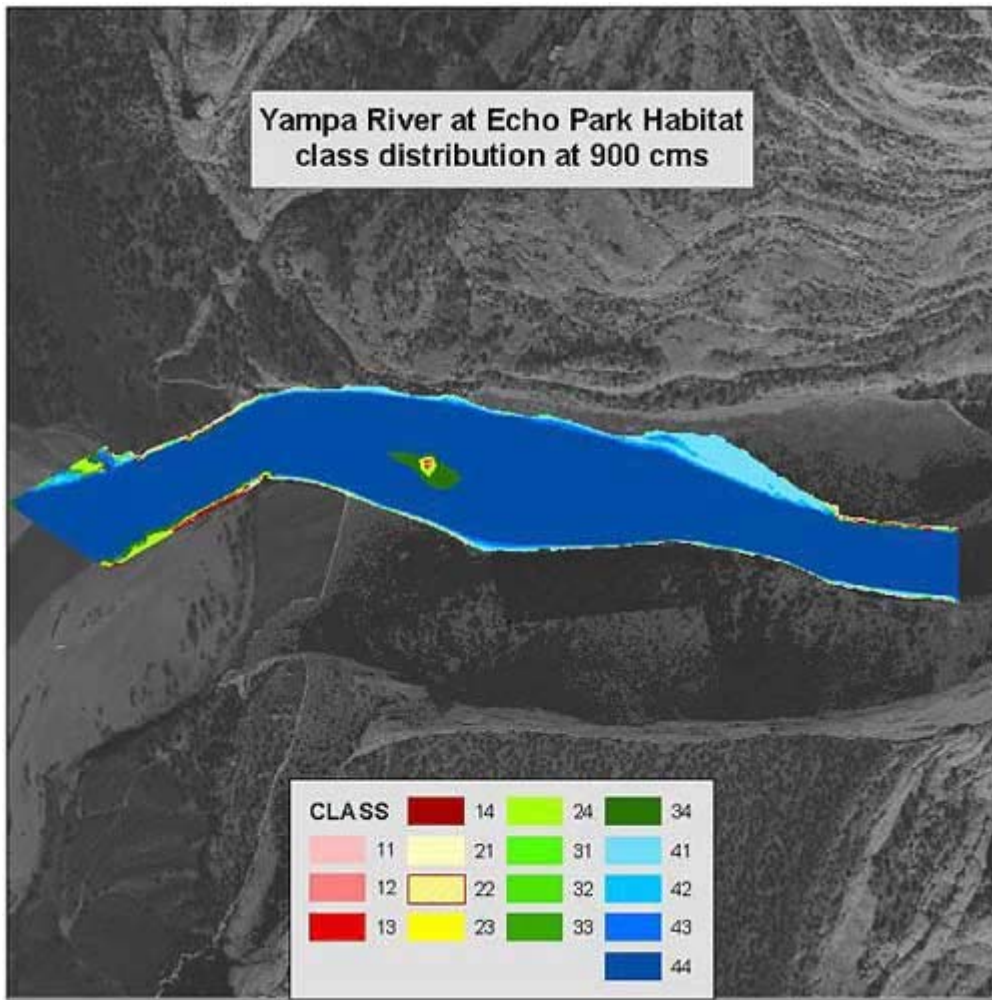


Figure D43. Yampa River habitat class distributions at 900 m³/s.

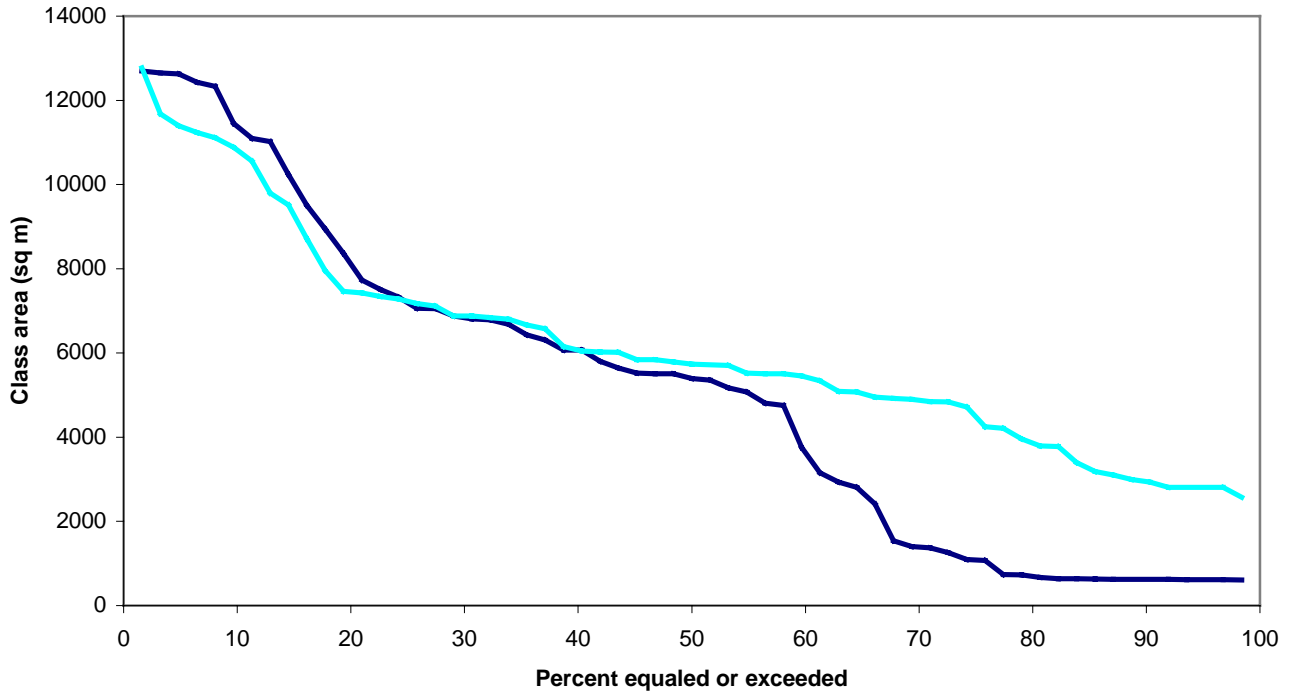


Figure D44. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 11. Dark bold line is for water year 1984, light bold line for water year 2000.

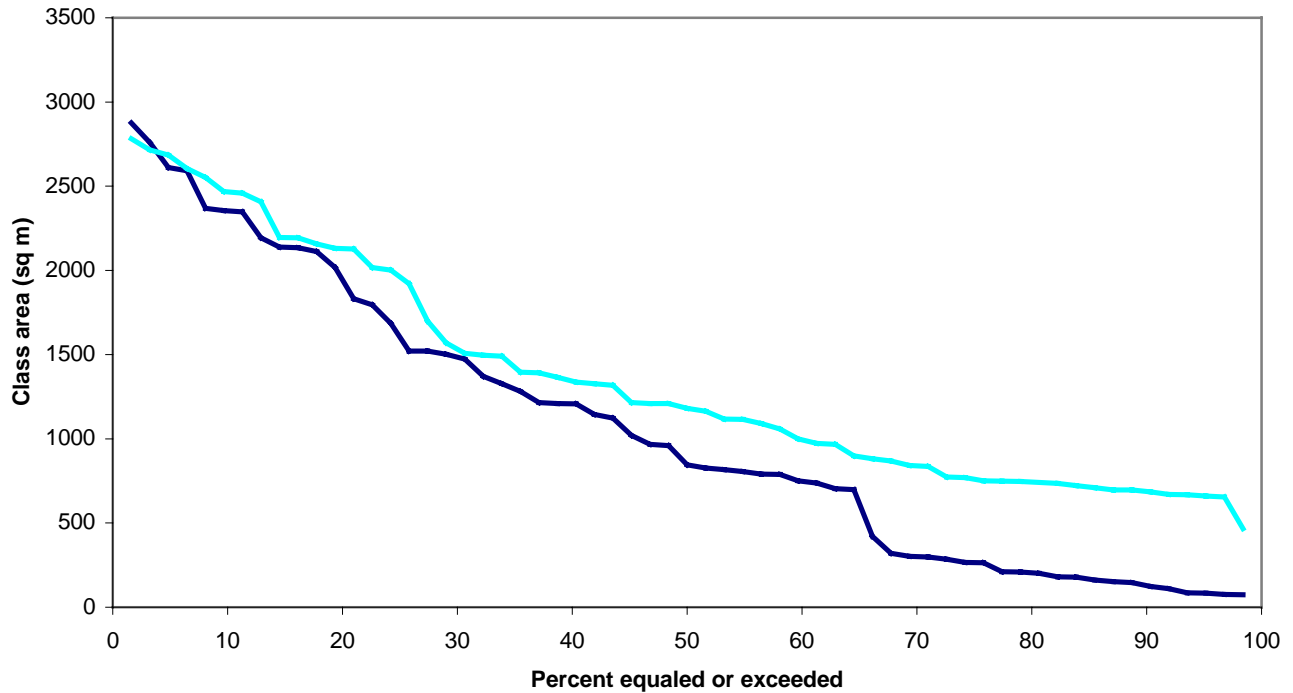


Figure D45. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 12. Dark bold line is for water year 1984, light bold line for water year 2000.

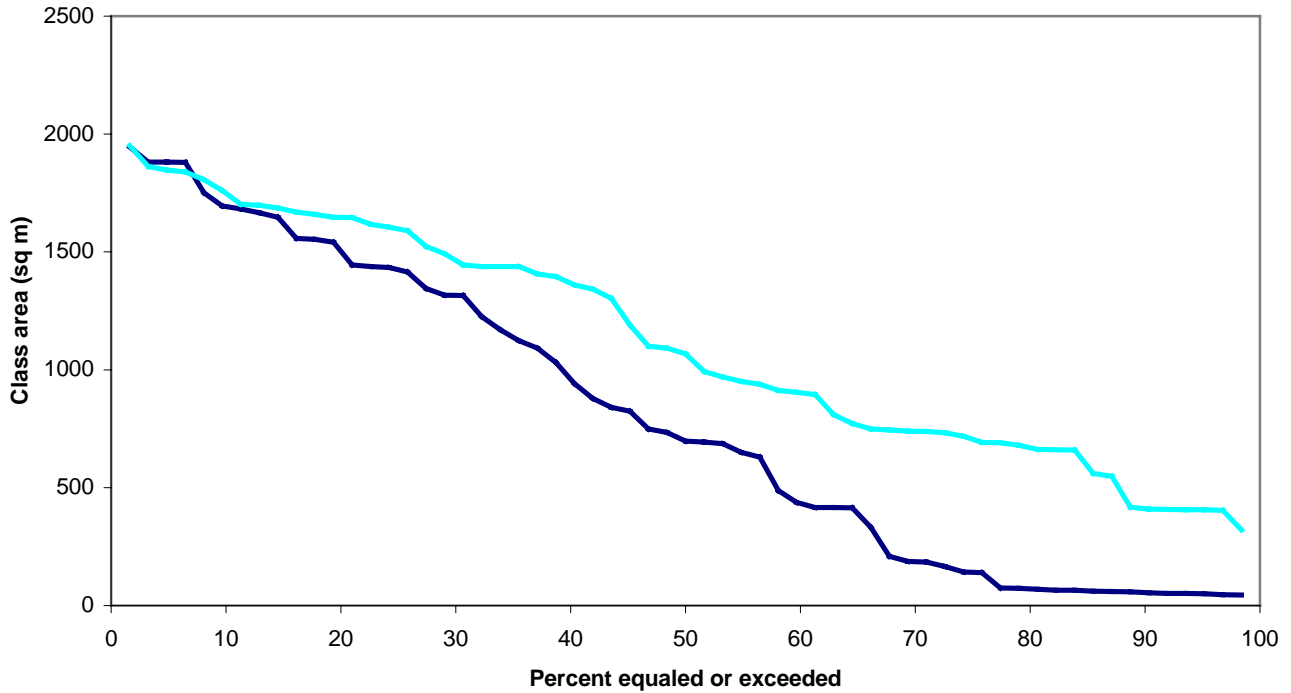


Figure D46. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 13. Dark bold line is for water year 1984, light bold line for water year 2000.

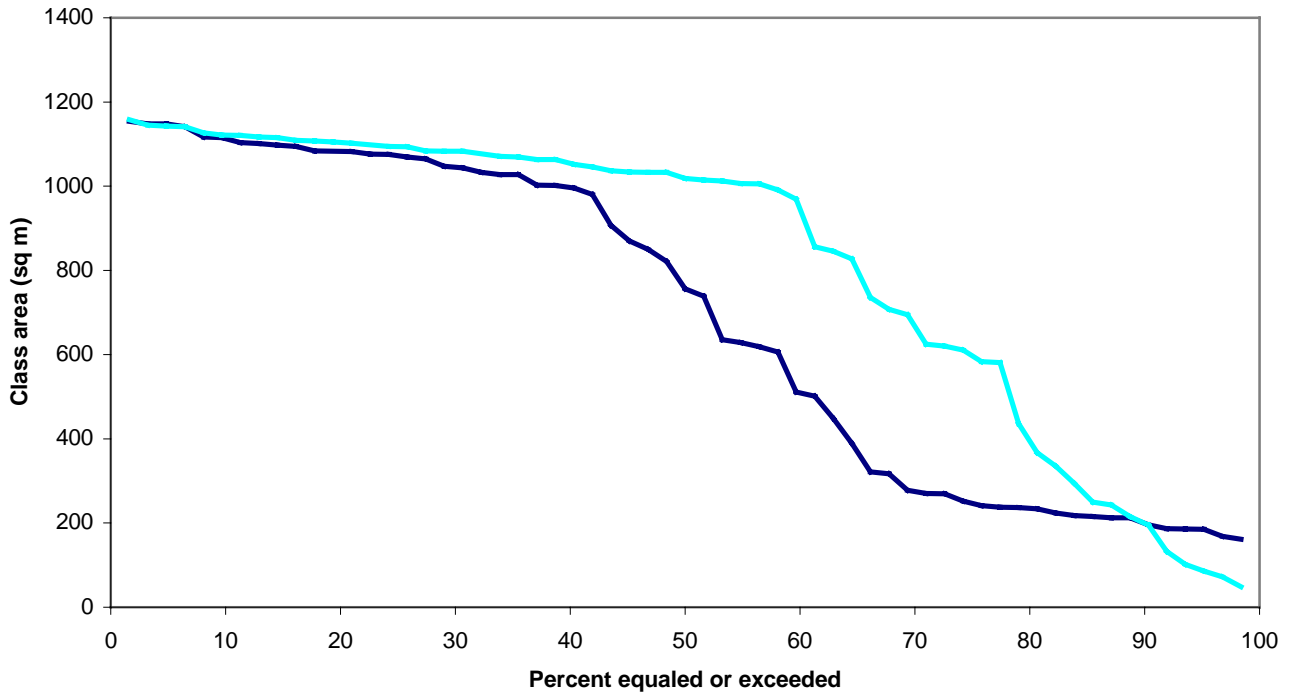


Figure D47. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 14. Dark bold line is for water year 1984, light bold line for water year 2000.

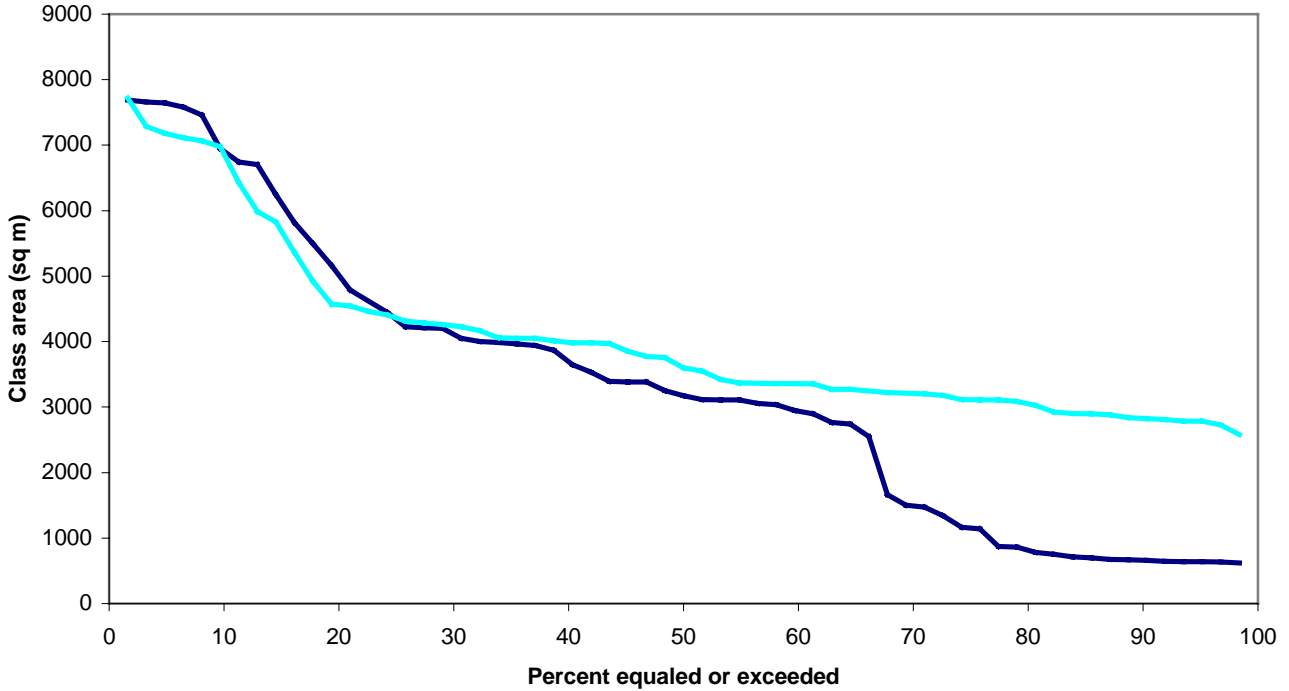


Figure D48. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 21. Dark bold line is for water year 1984, light bold line for water year 2000.

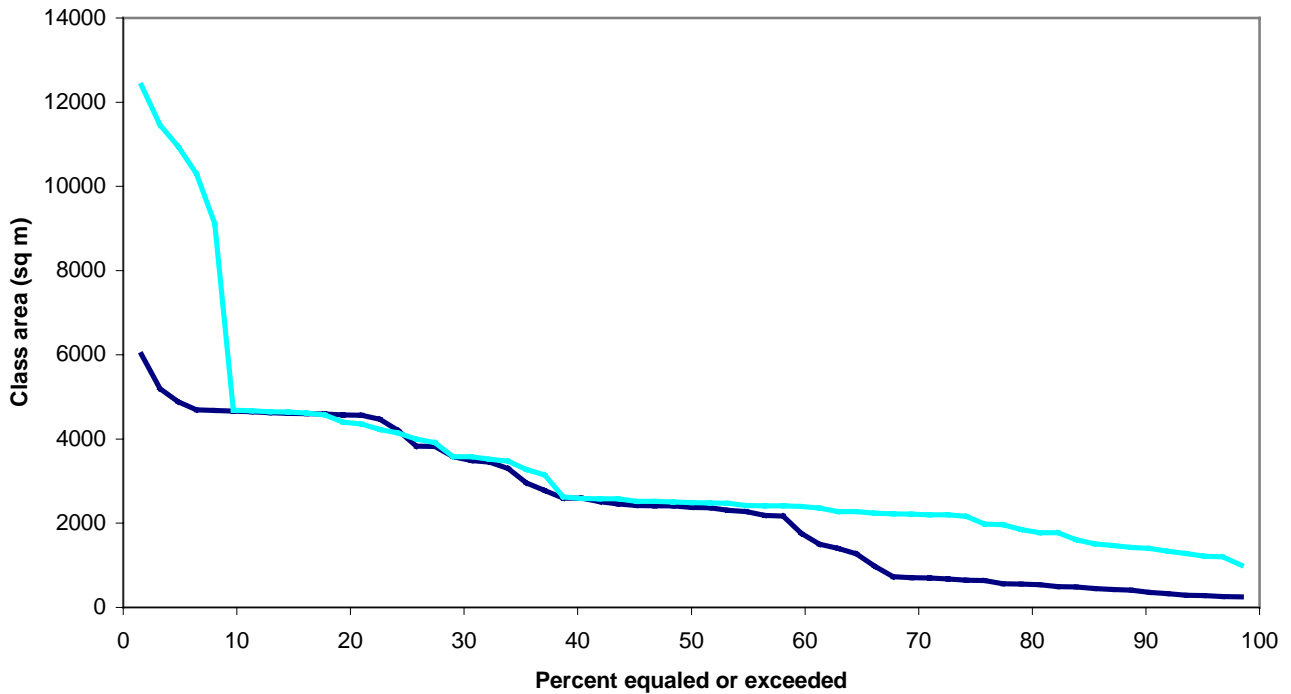


Figure D49. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 22. Dark bold line is for water year 1984, light bold line for water year 2000.

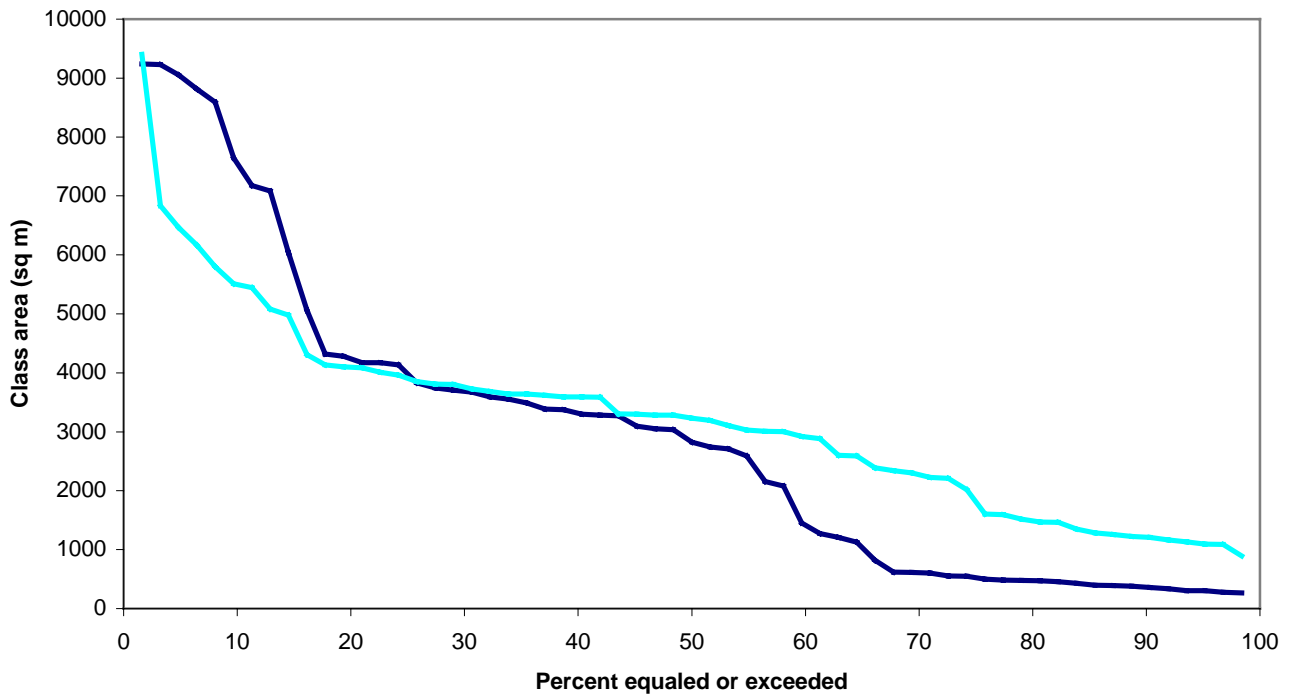


Figure D50. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 23. Dark bold line is for water year 1984, light bold line for water year 2000.

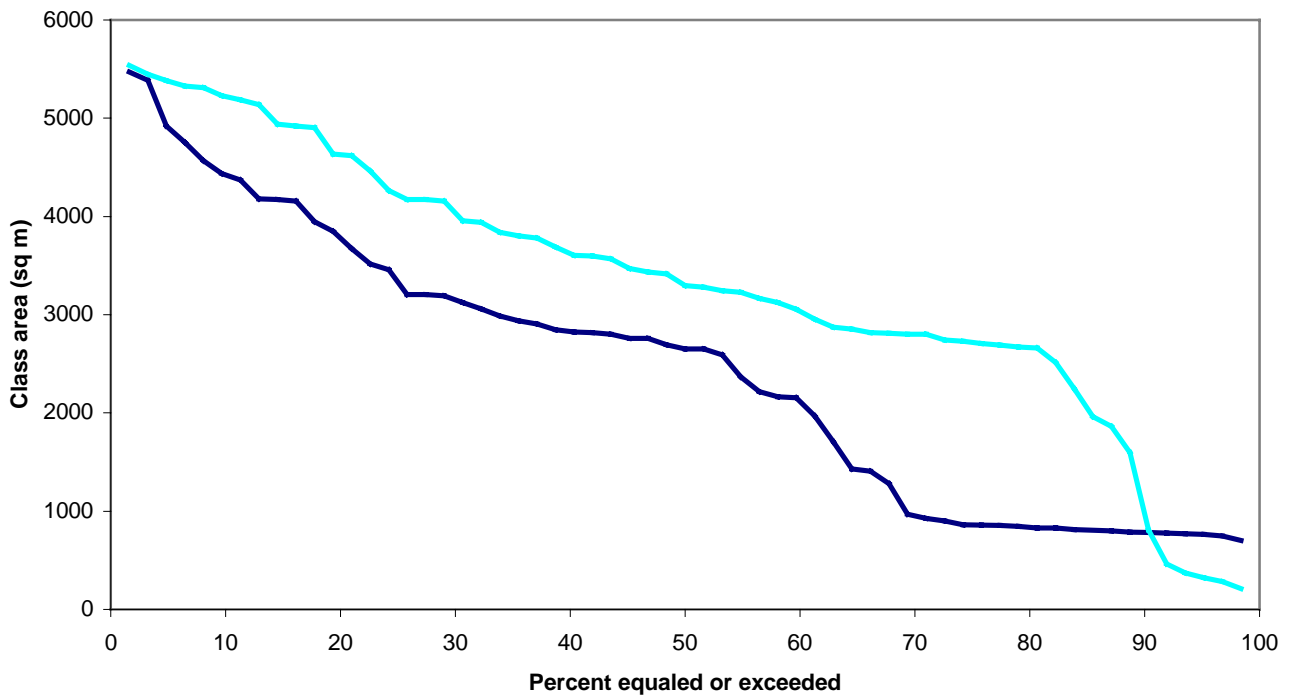


Figure D51. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 24. Dark bold line is for water year 1984, light bold line for water year 2000.

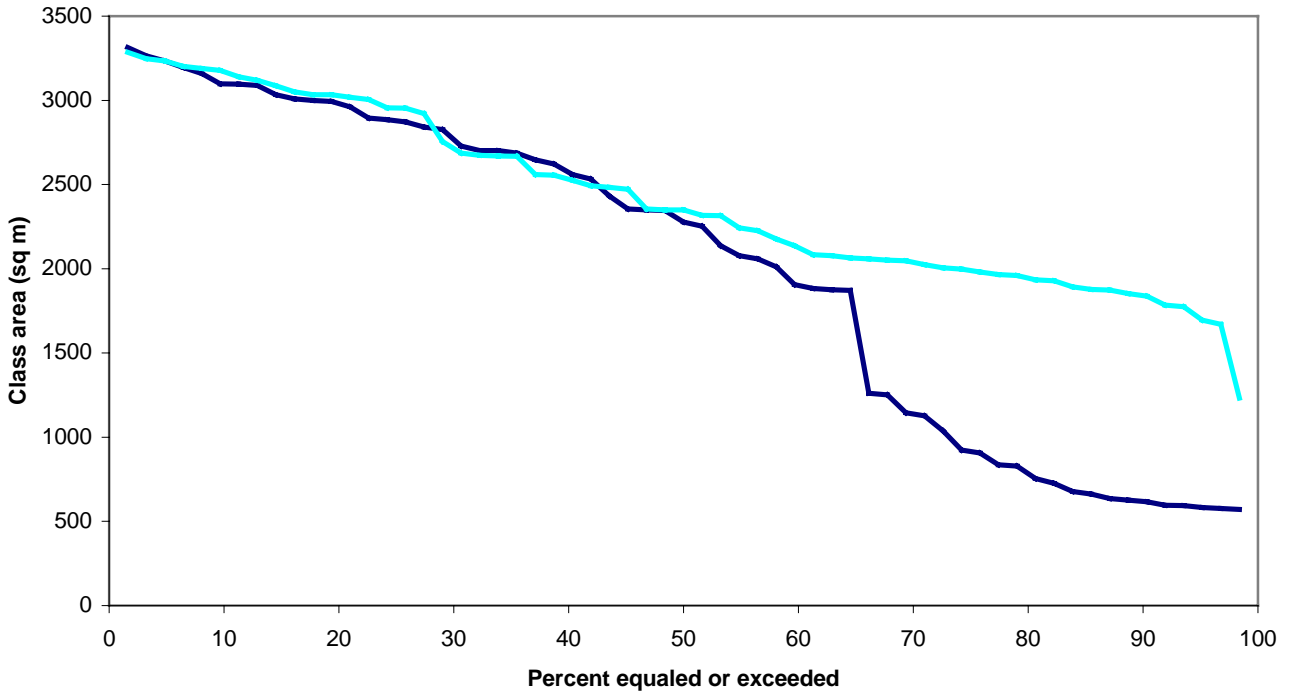


Figure D52. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 31. Dark bold line is for water year 1984, light bold line for water year 2000.

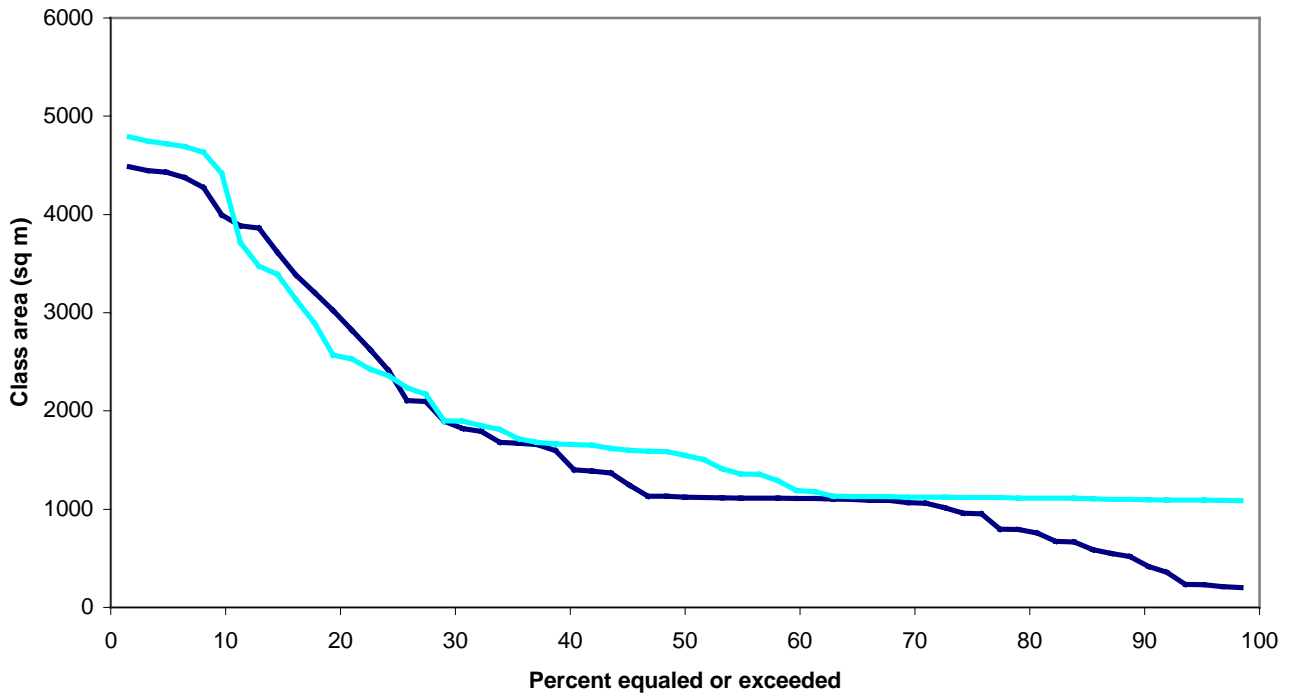


Figure D53. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 32. Dark bold line is for water year 1984, light bold line for water year 2000.

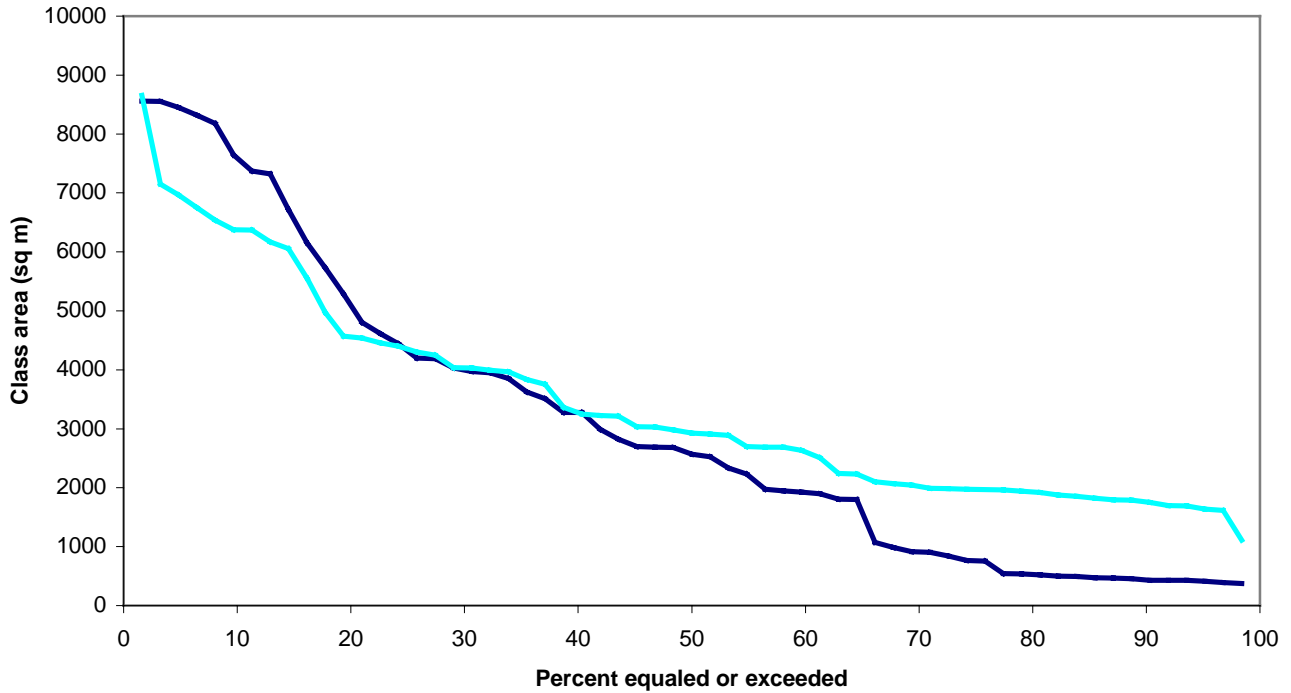


Figure D54. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 33. Dark bold line is for water year 1984, light bold line for water year 2000.

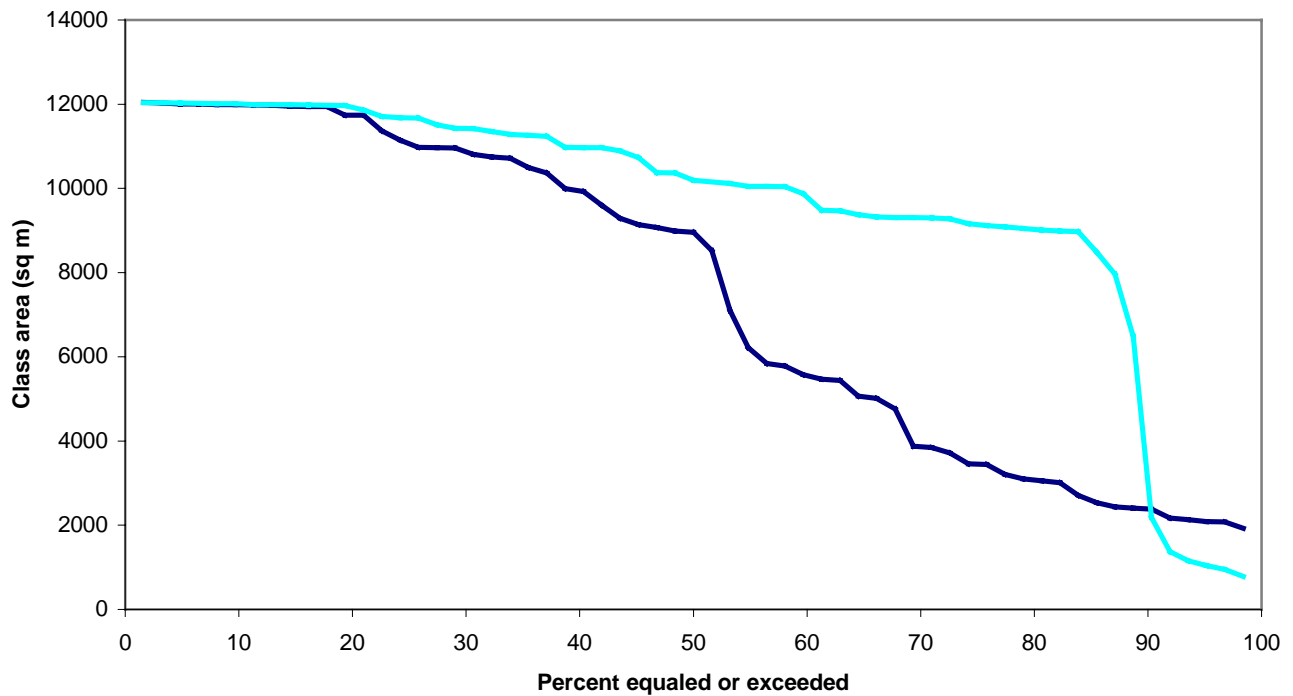


Figure D55. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 34. Dark bold line is for water year 1984, light bold line for water year 2000.

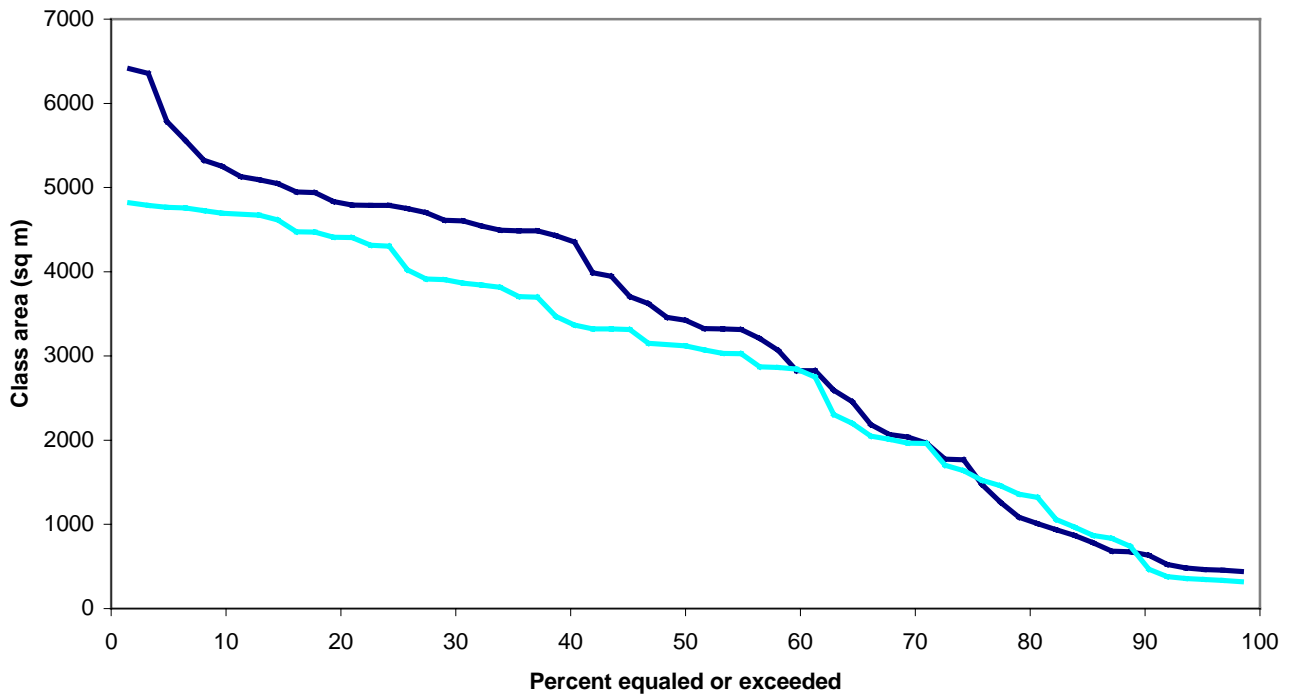


Figure D56. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 41. Dark bold line is for water year 1984, light bold line for water year 2000.

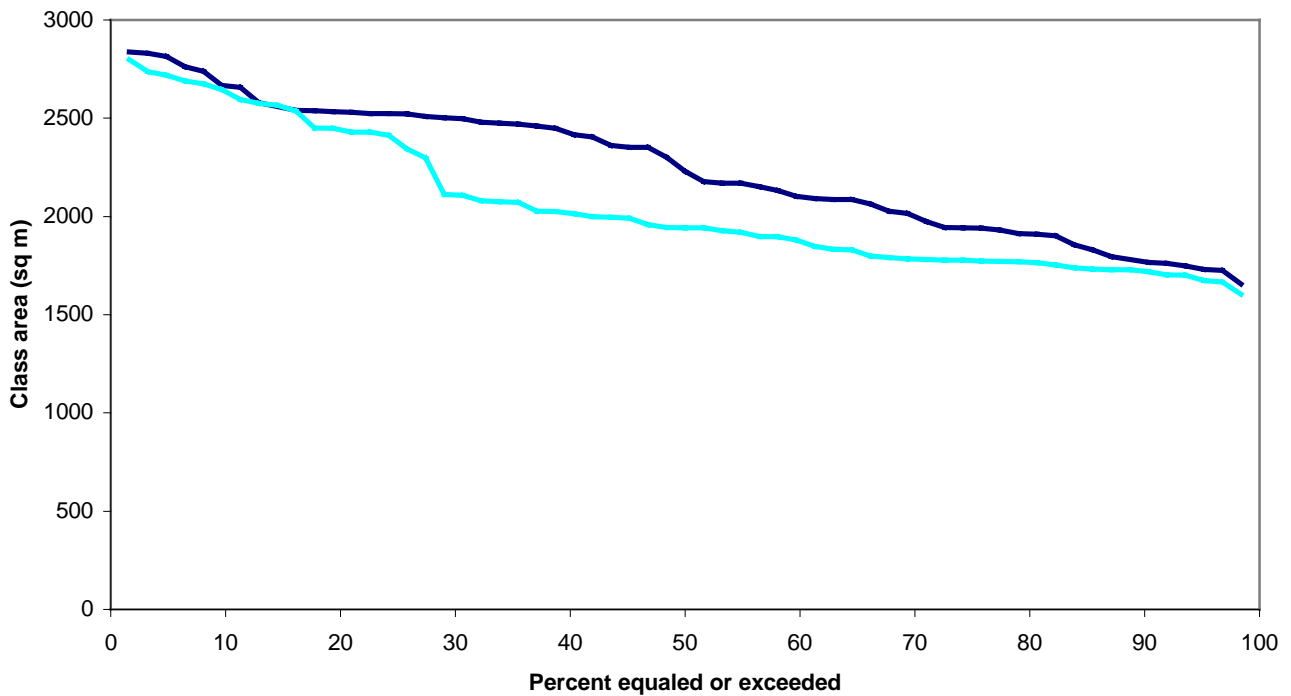


Figure D57. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 42. Dark bold line is for water year 1984, light bold line for water year 2000.

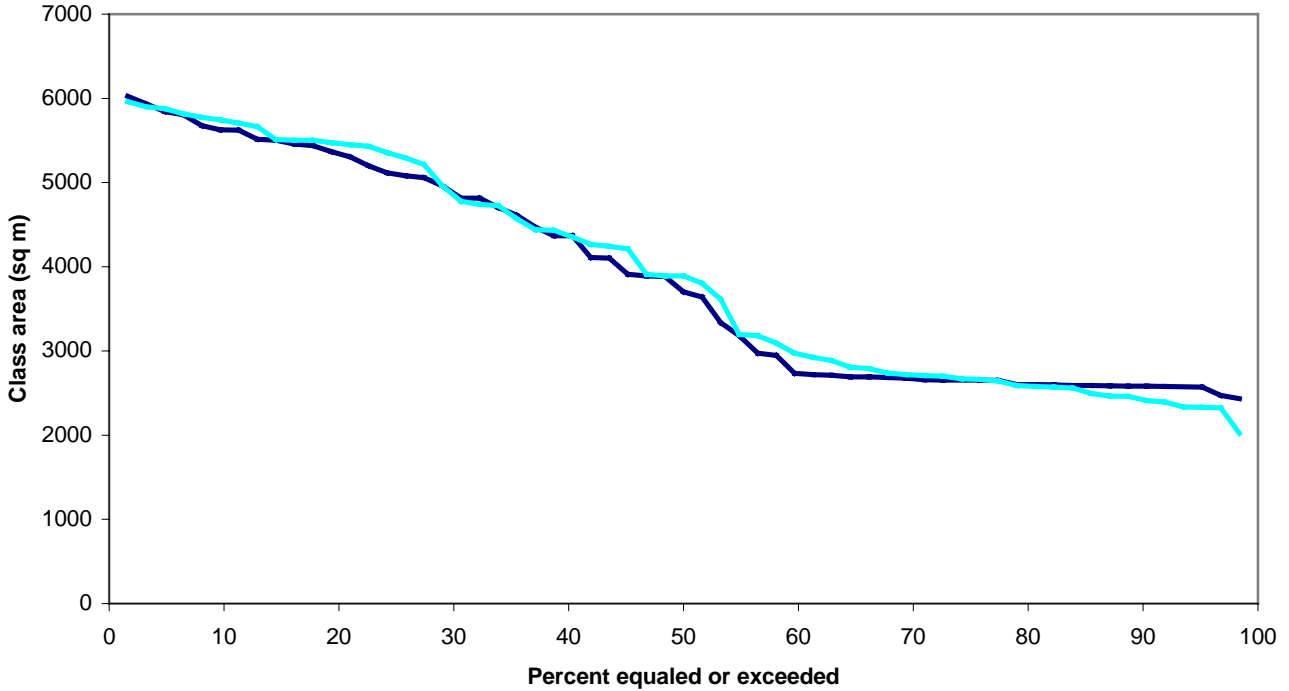


Figure D58. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 43. Dark bold line is for water year 1984, light bold line for water year 2000.

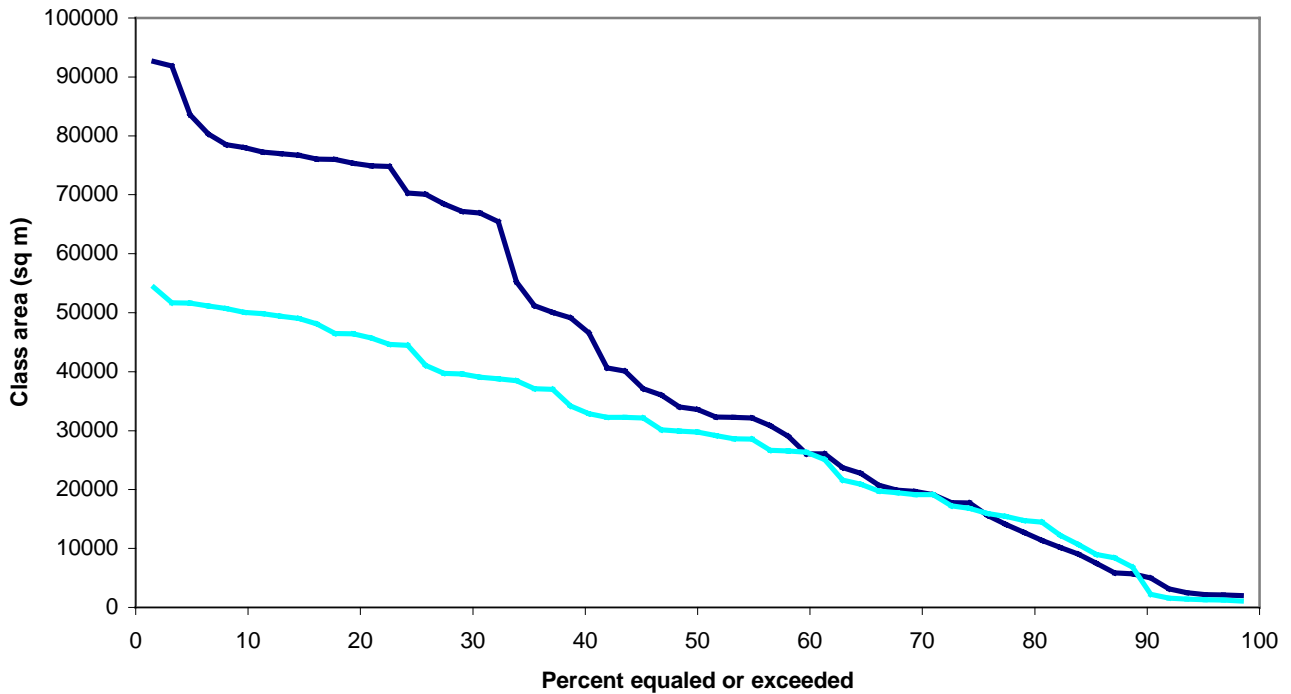


Figure D59. Habitat duration curves for spawning period, April 1 – May 31, Yampa River: Habitat class type 44. Dark bold line is for water year 1984, light bold line for water year 2000.

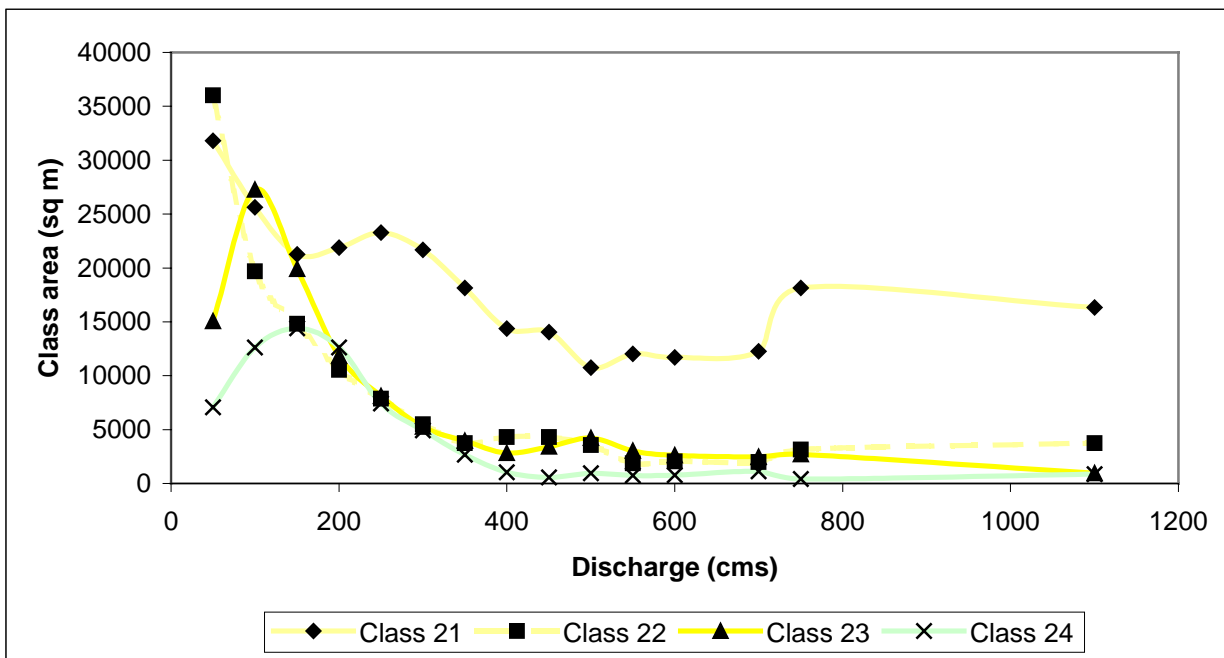
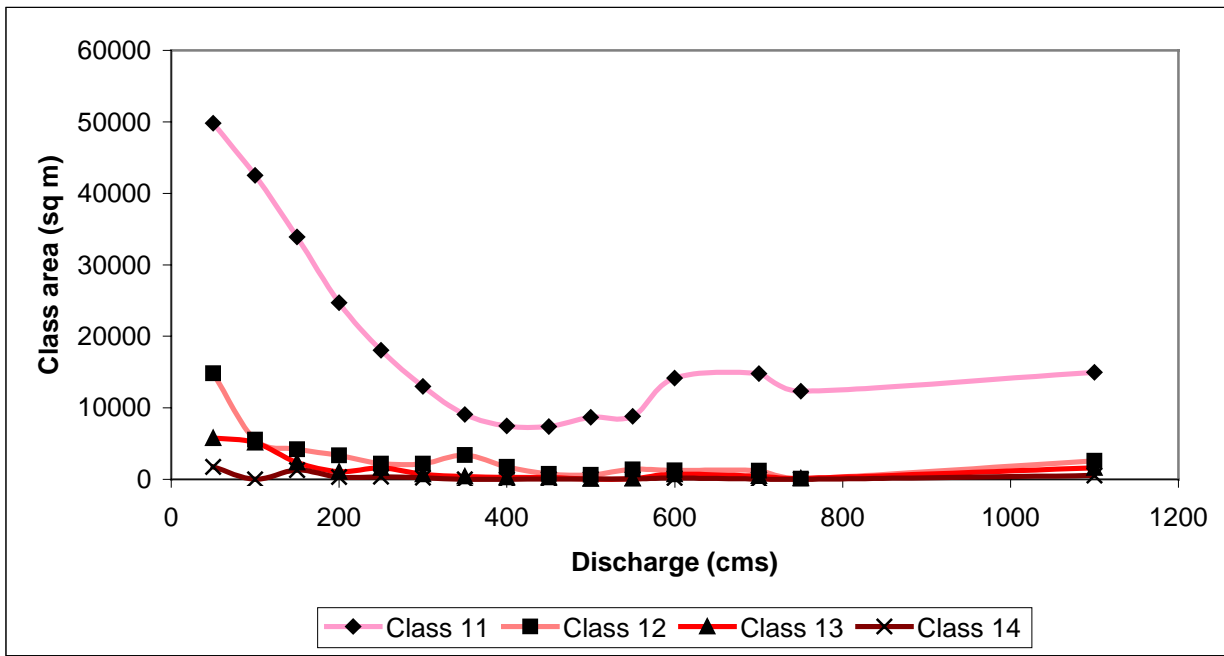


Figure D60. Green River habitat class area versus flow relations for very shallow (0.0-0.5 m, top) and shallow (0.5-1.0 m, bottom) habitat classes.

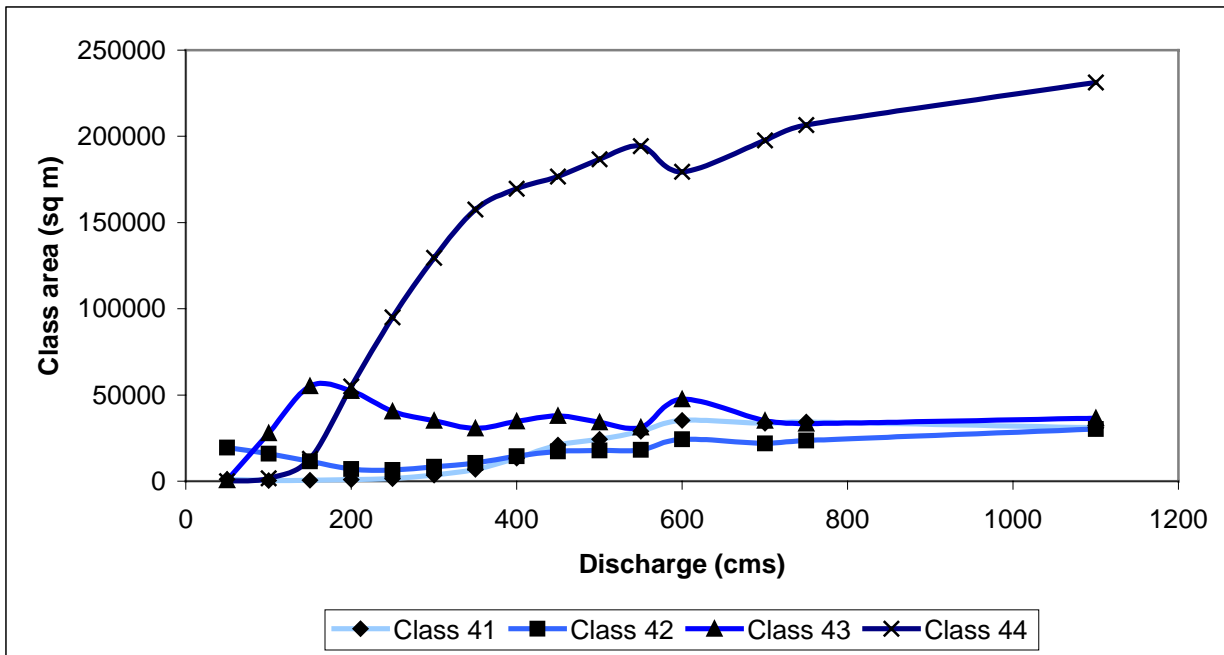
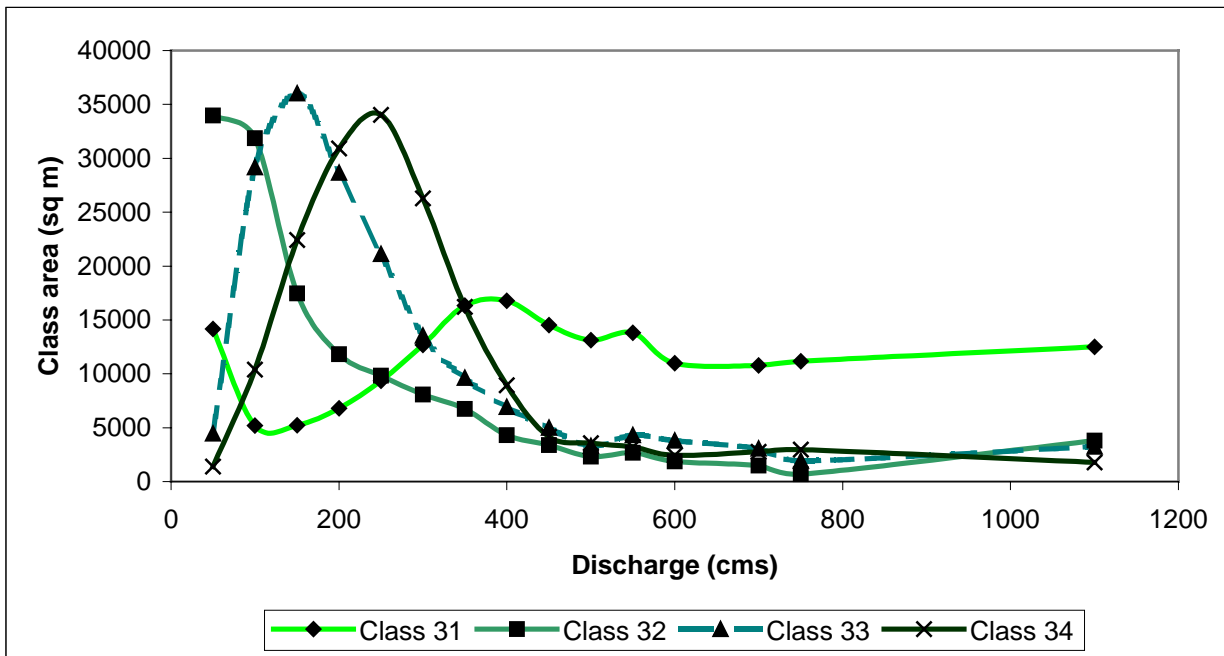


Figure D61. Green River habitat class area versus flow relations for moderately deep (1.0-1.5 m, top) and deep (> 1.5 m, bottom) habitat classes.

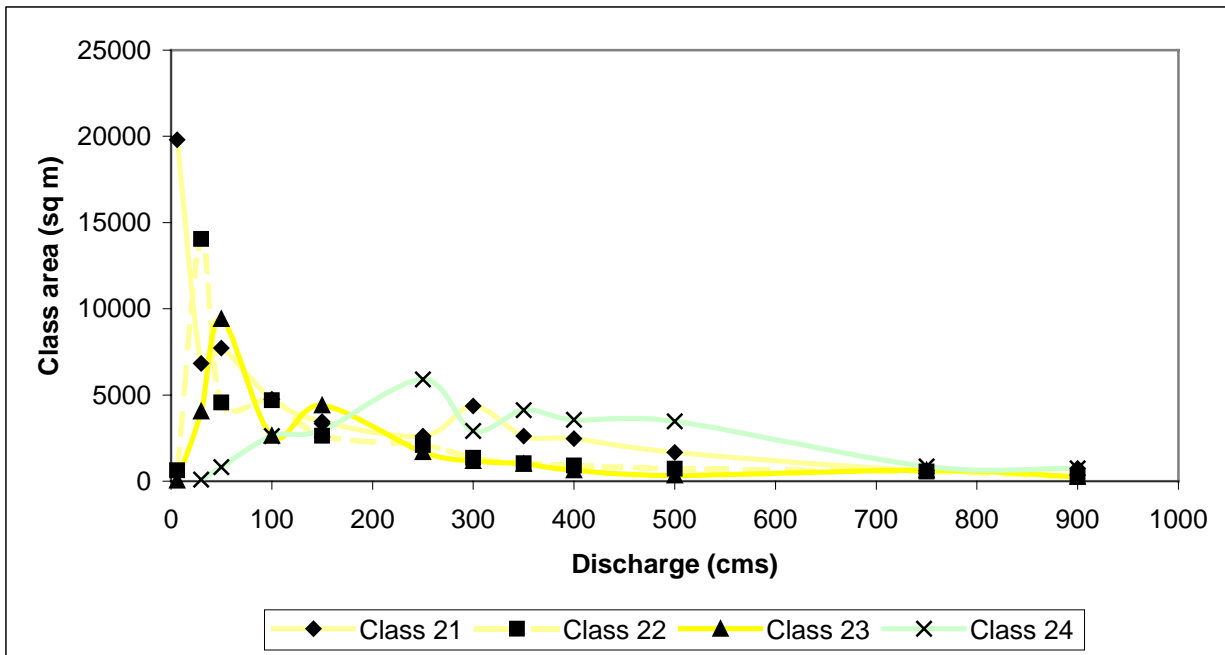
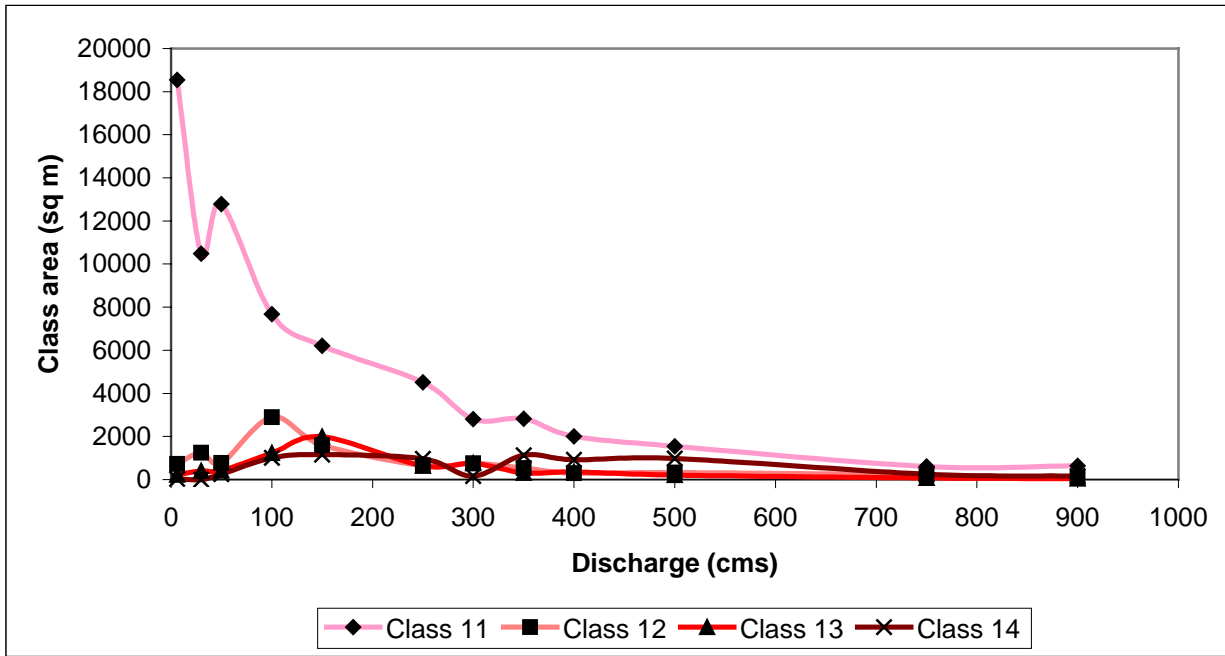


Figure D62. Yampa River habitat class area versus flow relations for very shallow (0.0-0.5 m, top) and shallow (0.5-1.0 m, bottom) habitat classes.

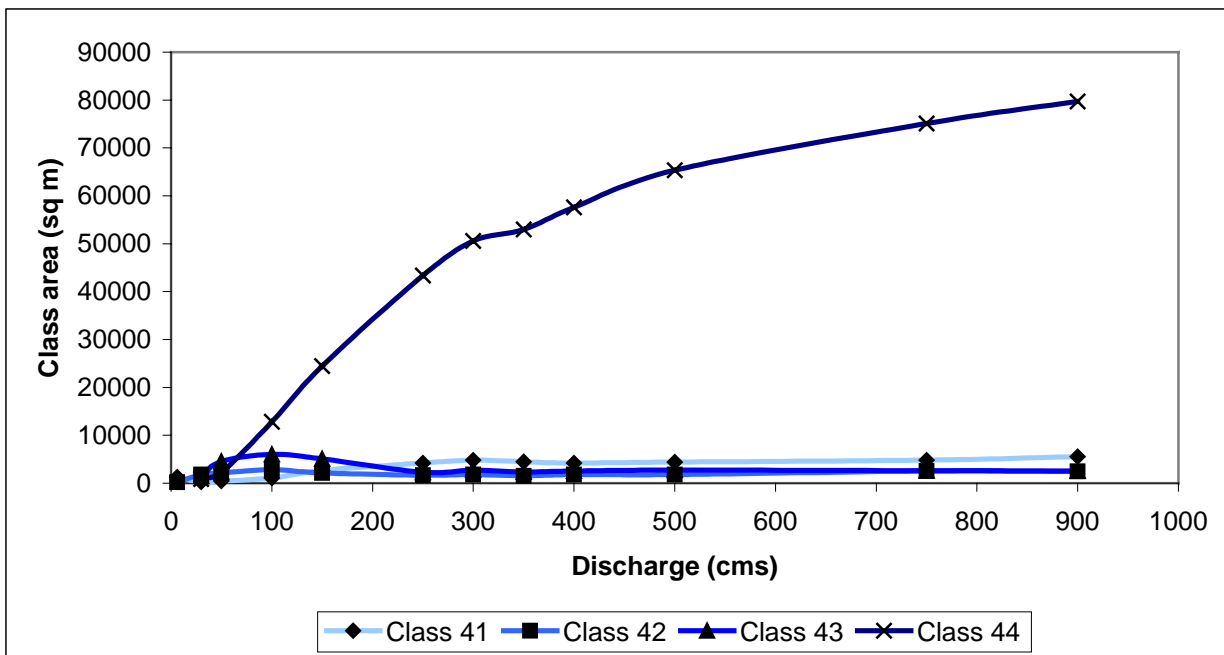
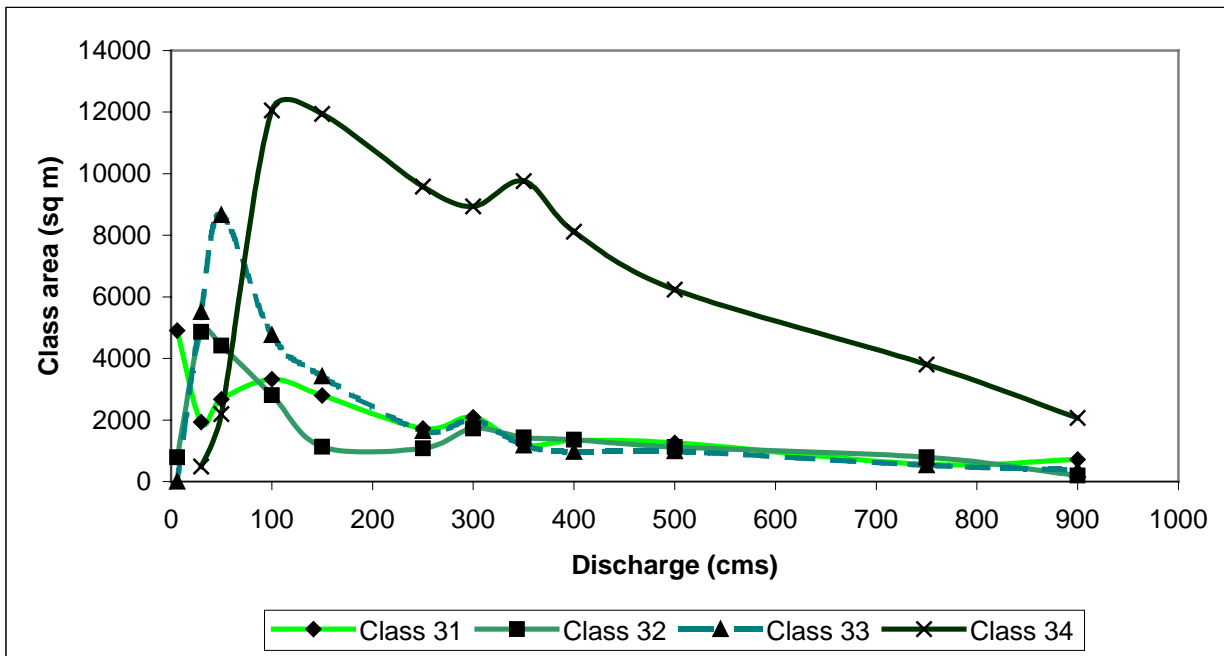


Figure D63. Yampa River habitat class area versus flow relations for moderately deep (1.0-1.5 m, top) and deep (> 1.5 m, bottom) habitat classes.

