Water Resource Associates

A network of consultants in hydraulics, hydrology, groundwater & environmental issues

Project title: **Internal Russian Waterways and River-Sea Transport**

Summary: A mathematical model of two reservoirs on the River Volga was developed to improve water management for navigation.

Client: ROSRECHFLOT	**Financed by:** European Union (TACIS)
Period of assignment: 1999	**Location**: Russia
Project Value: €4 500 000	**WRA services**: Short term specialised consultancy
In co-operation with: Scott Wilson Kirkpatrick, UK	**Background** In a series of major engineering projects from the 1940's to the 1970's, the Volga and the Don river systems were joined by a canal and locks and developed for navigation by sea-going vessels. The EU set up a study to examine access to these rivers from the European sea-river transport system. During the study it became apparent the weak link in the chain was the stretch of the river from Nizhny Novgorod to the Gorodetz lock where, unlike the rest of the river, water levels were not artificially controlled. For environmental reasons it was impossible to raise the downstream dam and construction of a new intermediate lock was unlikely to be economically justified.
 River port at Nizhny Novgorod	
 The Volga River Basin	**Scope of work by Water Resource Associates Ltd** As part of the overall project the Nizhny Novgorod State Academy of Water Transort was commissioned to examine the possibility of using existing upstream reservoirs (which are also used for hydro-power) to improve water management and increase the flow available at the times of year when the river is ice-free and navigation is possible. WRA provided a senior hydrologist to review their work. As that study used sensitive data, which was not made available for the review, he also undertook a parallel study using independently derived data. This took the form of a mathematical model of the principal reservoirs, their inflows and operating constraints.
Results Within the limits imposed, the review concluded that the study by the Academy of Water Transport had correctly concluded that improved management could increase the flow available for navigation. What the parallel model study showed, which the other one did not, was the way such management could work to the detriment of hydro-power generation and that further studies would needed to optimise the operation for both navigation and hydro-power.	

Project Number 000048

Directors
Frank A K Farquharson
Paul A C Holmes
Dr A Nick Mandeville
Ronald E Manley
Dr Andrew J Wade
Professor Paul G Whitehead

Head Office:
PO Box 838
Wallingford
Oxon OX10 9XA
Tel: +44 (0) 1491 838190
E-mail: info@watres.com

Company Registered in England Number 2979072 Registered Office: 25 Hart Street, Henley-on-Thames, Oxon. RG9 2AR
VAT Registration No 630 813170