



# Flatwater Resources

The Flatwater Group, Inc.

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## Spring Rise on Missouri River — Results Being Studied

The first “spring rise” on the Missouri River was implemented from May 13 through May 22, signaling a new stage in water management for the “Mighty Mo”, as the river is also known. Water officials for the U.S. Army Corps of Engineers, which operates the six dams on the Missouri River Mainstem Reservoir System, increased flows during this period to encourage the spawning of pallid sturgeon, an endangered fish native to the Missouri River.

The spring rise is a water management strategy designed to restore some of the hydrologic variability and higher flows that existed prior to the construction of the mainstream dams. Before the dams were built, snows on the plains and mountains upstream would melt and flow, sometimes rapidly, into the Missouri River during the spring. Fisheries biologists believe these high flow events may have

historically created habitat and triggered spawning for fish such as the pallid sturgeon, and are concerned that reservoir operations blocking these pulses may be impacting fish populations as a result. Two pulses were considered for the 2006 spring rise, one in the last part of March and another in May, but only the second was carried out due to drought conditions and inadequate system storage earlier in the year.

The spring rise has been a controversial subject for several years, and has been the focus of many lawsuits involving environmental organizations, state representatives, agency officials, agricultural interests, and other groups. Proponents argue that the rise is needed to protect the pallid sturgeon, and to establish more natural river flows. Opponents are concerned that the releases might result in downstream flooding, and argue



**Pallid Sturgeon**  
(Photo Courtesy NGPC)

that the water released through the spring rise could be better used for other purposes, including downstream navigation and recreation in the upstream reservoirs. Recent court decisions have supported the use of the spring rise, which enabled the May releases to take place.

In order to assess the effectiveness of the spring rise, a number of state and

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## LB 1226 Passes and Changes State Water Law

Storm water management, municipal water use in water scarce areas, and property tax levies for certain Natural Resources Districts (NRDs) were among the issues addressed in LB 1226, the major water-oriented piece of legislation to become law during the 2006 session. A conglomeration of several different bills that covered a wide range of water and natural

resources issues, LB 1226 was passed by a vote of 45 to 2 on April 12, 2006, and signed by Governor Heineman on April 13.

Under LB 1226, a new grant program was created to help Nebraska communities meet storm water requirements under the National Pollution Discharge Elimination System

(NPDES) – a component of the federal Clean Water Act. The Nebraska Department of Environmental Quality will consider grant applications from cities and counties, and will award funding to help comply with the federal regulations. The appropriations bill associated with LB 1226, known as LB 1226A, appropri-

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## Legal Update—in Brief

### **Spear T. vs. Knaub (Case No. S-03-789, Opinion 269 Neb. 177)**

Surface water user Spear T. Ranch sued ground water users for depleting Pumpkin Creek. Supreme Court ruled that Morrill County District Court should hear case, and use Restatement (Second) of Torts to determine if ground water users unreasonably harming surface water users. Trial dates for District Court not yet set.

Central Nebraska Public Power and Irrigation District (CNPPID) attempted to intervene (S-05-759), but Supreme Court ruled (Opinion 271 Neb. 578) that CNPPID didn't have direct and legal interest in case, but could pursue separate legal action.

### **Spear T. vs. DNR (Case No. S-04-639, Opinion 270 Neb. 130)**

Spear T. Ranch also sued DNR for not protecting Spear T's surface water appropriations and not determining priorities between surface water appropriators and ground water users. Supreme Court ruled DNR has no duty to regulate ground water use to protect surface water appropriations, and dismissed Spear T's claims.

### **CNPPID vs. DNR (Case No. S-04-836, Opinion 270 Neb. 108)**

CNPPID sued DNR for not regulating upstream ground water users' Platte River diversions. CNPPID asked for injunction against irrigators to stop alleged 100,000 acre feet in annual depletions. Supreme Court ruled DNR had no authority to regulate ground water users or administer ground water rights for surface water appropriators, and dismissed CNPPID's amended complaint.

### **Waterclaim vs. URNRD (District Court of Chase County Case No. CI 05-14) and URNRD vs. District Court of Chase County (Supreme Court Case No. S-06-0549)**

Waterclaim filed suit against Upper Republican NRD (URNRD) for not discussing details of Integrated Management Plan (IMP) in open public format. URNRD in turn sued in District Court to prevent disclosure of privileged information. Supreme Court ruled certain information should remain confidential as District Court case moves forward.

### **UBBNRD vs. DNR et al (District Court of Lancaster County Case no. CI 06-1668 and CI 06-1937)**

Two nearly identical suits filed by Upper Big Blue Natural Resources District (UBBNRD) against DNR for allegedly overstepping statutory authority in determining areas within Big Blue River surface water basin as fully appropriated. DNR determined ground water aquifers within portion of UBBNRD hydrologically connected to fully appropriated Platte River. UBBNRD claims DNR can't determine areas outside surface water basins fully appropriated. Hearing scheduled for Aug. 4.

### **Crouse vs. Pioneer Irrigation District (Supreme Court Case No. S-05-0402)**

Steve and Jo Dean Crouse sued Pioneer Irrigation District for assessing taxes on land no longer serviced by the District. Water rights cancelled earlier by DNR from nonuse, and Crouses requested to either receive water or have land removed from District. Oral arguments heard in Supreme Court May 4, 2006, and opinion expected soon.

### **Koch vs. Aupperle (Appeals Court Case No. A-06-264)**

Loren Koch sued Ron and Mary Ann Aupperle and Lower Platte South NRD (LPSNRD) for injunction to prevent construction of small dam upstream of Koch's existing dam and lake. During proceedings, discovered that Koch's dam operated without State permit for 17 years. Cass County District Court ruled in Koch's favor, but case was appealed to Court of Appeals.

## Storage Permits

The first in a series of articles providing information on permits, with input on what they're for, how to get them, and how to maintain them into the future.

Storage permits are water rights obtained from the Department of Natural Resources (DNR) that allow an applicant to divert surface water for storage in an above-ground reservoir or for intentional underground water storage and recovery. Storage permits do not, however, give an applicant the right to use the stored water in any way other than storage itself – a separate storage use permit is required to put the stored water to use. All on-channel reservoirs require a storage permit, with the exception of small reservoirs that hold less than 15 acre-feet and from which there is no diversion except for range livestock. All off-channel reservoirs, regardless of size and purpose, require a storage permit if diversions are made from a natural waterway into the reservoir. Off-channel reservoirs that receive runoff from sources other than a natural waterway (i.e. from a nearby swale) are normally exempt from the permit requirement.

The definition of the term "on-channel" is complex and not directly defined, but is related to the term "natural waterway". Generally, a natural waterway must have at least 2 foot bed and bank dimensions. Channels that have been straightened or otherwise modified by human intervention may still be defined as natural waterways if it can be shown that the waterbody met the natural waterway qualifications prior to the modifications.

Storage permits require several basic pieces of information from the applicant. This includes the purpose of the water storage, the name of the waterbody from which diversions are made, the estimated quantity of impounded water, the legal location of the reservoir, the estimated dates for completion of construction and first impoundment, the location of any supply canal headgate or pipeline pump site used to create reservoir inflows, and information on any federal funding or planning assistance related to the reservoir. DNR assesses fees on all applications which include \$25 for the first 5,000 acre feet in storage capacity and \$10 for each addi-

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## Spring Rise (Continued from Page 1)

federal agencies are using a variety of scientific techniques. For many of these methods, the more commonly found shovelnose sturgeon is used as a surrogate fish, providing researchers with a larger population pool from which to derive conclusions. About 100 shovelnose sturgeon and around a dozen pallid sturgeon have been fitted with telemetry devices, allowing scientists to locate and track their location. Captured female sturgeon are examined to determine if spawning has occurred, and if not, to estimate egg development. Methods to estimate the stage of egg maturation include the Polarization Index (PI), which measures the distance of the egg's nucleus to its outer edge, and fish progesterone levels, determined through blood sampling. Egg mats, deployed in areas of suspected sturgeon spawning, have also been used to sample for sturgeon eggs, and devices called Ichthyoplankton nets are routinely deployed below these suspected spawning locations and above and

below tributaries to collect larval sturgeon during their passive drifting stage. These and other methods can be used to help estimate the reproductive success of sturgeon, and potentially the impact that the spring rise has on those conditions.

While biological impacts are still being analyzed, other aspects of the spring rise are now known. About 85,000 acre-feet was released to maintain the spring rise, compared to approximately 345,000 acre-feet released during the same period for downstream purposes that included water supply and navigation, resulting in peak flows of about 25,000 cfs. No flooding was observed at any point from Gavins Point, the most downstream of the six mainstream dams, to the confluence of the Missouri and Mississippi Rivers, with water elevations rising about 2 feet in the Omaha area and about half a foot near Kansas City. The May pulse was originally designed to continue for a few

more days, but was shortened when dry conditions on the tributaries toward the end of the planned spring rise period forced reservoir operators to dedicate higher releases toward meeting minimum navigation flows instead of spring rise purposes. Prior to the increased releases, U.S. Army Corps of Engineers officials consulted weather forecasts to minimize flooding potential, and waited until the temperature of water released from Gavins Point Dam reached 61 degrees F to encourage spawning.

No date has been set for consideration of the next spring rise, but river managers will consult annual operating policies established in the Army Corps' Master Manual, and will consider reservoir levels, weather conditions, and other factors. Adaptive management is also expected to play a large role in future spring rise activities, as researchers obtain more data which can be used to improve the effectiveness of future releases.

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## LB 1226 (Continued from Page 1)

ated \$2.5 million per year for fiscal years (FY) 2006-07 and 2007-08 to be used for this new grant program.

Much of the language in the final version of LB 1226 was derived from a separate bill, LB 933, which included several recommended changes from the Water Policy Task Force. One of the more notable changes involved how municipalities in fully or overappropriated areas manage increasing water demands resulting from urban growth. Members of the Task Force recommended that municipalities in fully and overappropriated areas be allowed, under most situations, to increase water demands up to certain thresholds through 2026. Any resulting increase in consumptive use for these areas will be offset by reducing the consumptive use of water in other

portions of the NRD, as specified in the Integrated Management Plans developed for the particular NRD. The municipal protection language in LB 1226 is complex, and is described more fully in the text of the legislation, as well as in DNR's June 2006 newsletter.

Another portion of LB 1226 authorizes NRDs in fully and overappropriated areas to increase property tax levies by 3 cents for fiscal year 2006-07 and 2 cents for FY 2007-08 and FY 2008-09. This additional funding capacity is designed to help water-short areas fund efforts to assist ground water management and the integrated management of surface and ground water. LB 1226 also created a new Integrated Water Management Plan Program, which will function as a grant

program for funding NRD duties related to the Ground Water Management and Protection Act. NRDs will be required to provide a twenty percent local match for any grants, and the appropriations bill LB 1226A set aside \$2.5 million per year for the Program for FY '06-'07 and '07-'08.

Other portions of LB 1226 deal with issues such as the control of noxious weeds, water transfer requirements, and the review of instream flow rights. The new law will also allow the Department of Natural Resources (DNR) – at the request of an NRD – to impose a stay on new appropriations for a management area designated by that NRD, and require that the conclusions and results in the annual fully appropriated basin report developed by DNR be replicable by others.

## TFG Project **Spotlight** — Schilling WMA Backwater Habitat



**Backwater Channel**

The Flatwater Group was contracted by the Nebraska Game and Parks Commission (NGPC) for design and construction oversight services of a backwater habitat channel at Schilling Wildlife Management Area (WMA), just east of Plattsmouth, Nebraska. The objective of the Schilling WMA Backwater Habitat Project is to create new habitat for fish and other aquatic life to offset anticipated adverse impacts resulting from the Metropolitan Utilities District (MUD) Platte West Project – a 100 million gallon per day wellfield currently under construction west of Omaha near the Platte River.

Because the new wellfield will result in streamflow depletions along the Platte River, the U.S. Fish & Wildlife Service (USFWS) determined that the resulting loss of habitat for pallid sturgeon, a federally and state-listed endangered species, should be mitigated by improving the riverine habitat for the fish. Use of the Platte River by the pallid sturgeon is well documented, and USFWS has indicated that any further, unmitigated depletion of flow in the Platte River is likely to jeopardize the continued existence of the species. As mitigation for the Platte River depletions, MUD agreed to assist the NGPC with the creation of a backwater habitat project within the 1,500 acre Schilling WMA, near the confluence of the Platte and Missouri Rivers.

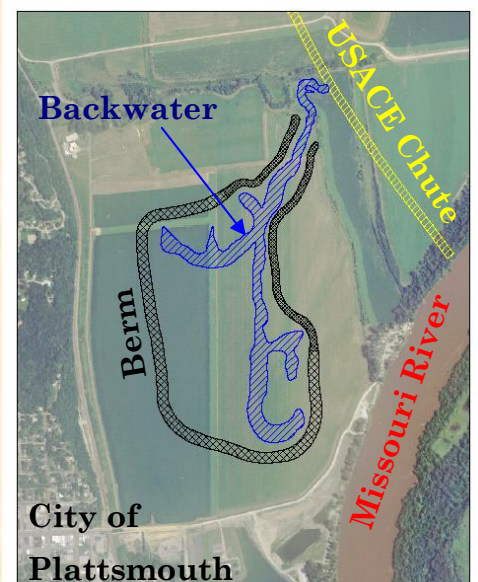
The Schilling WMA Backwater Habitat Project includes the construction of an approximately 9,300-foot long, 150-foot wide and 18-foot deep backwater channel. This backwater channel will be connected to the already completed U.S. Army Corps of Engineers (USACE) Plattsmouth Chute Restoration Project channel – an approximately 12,000-foot long, 100-foot wide chute which exits and re-enters the west bank of the Missouri River within the Schilling WMA. The USACE chute was also designed to create new habitat, in its case to restore a portion of shallow water habitat that was historically linked (according to surveys of the area from the 1890's to 1940's) to the Missouri River. As flows in the USACE chute fluctuate with the ebb and flow of the Missouri River, the new backwater channel will be intermittently connected to the river during high flows and disconnected during low flow periods. This will mimic the way in which backwater regions historically were linked to the river channel depending on flow rates and water elevations of the river.

Relative to the current riparian plants and wildlife that reside along the Missouri River, the new backwater habitat area is expected to have high biological productivity. Many fish species are expected to benefit from this new habitat, including bottom dwelling species such as common carp, buffalo, carp suckers and suckers – all of which serve as a food source for pallid sturgeon. Although pallid sturgeon are not expected to frequently venture into the backwater, they will benefit from the additional prey provided by the new habitat. Juvenile fish of these prey species will at times move out of the backwater into the Missouri River, where they will become available to the pallid sturgeon.

Specific components of the backwater

habitat project include a variety of bank slope regimes to provide ecosystem diversity for aquatic vegetation, and a few deeper regions in the excavated channel for fish and other aquatic animals. The excavated material from the channel will be placed in spoil piles adjacent to the backwater channel, which will provide additional wildlife habitat. Spoil material will also be used to construct a berm that will enclose the backwater channel. The berm will be constructed to a similar elevation of an existing dike that the backwater channel cuts through. The footprint for the spoil piles and the protective berm will cover approximately 65 acres, with an average height of 5 feet.

Construction of the backwater channel began in April 2006, and as of July 2006 was about 33% complete. It is anticipated that the project will be completed by the summer of 2007.





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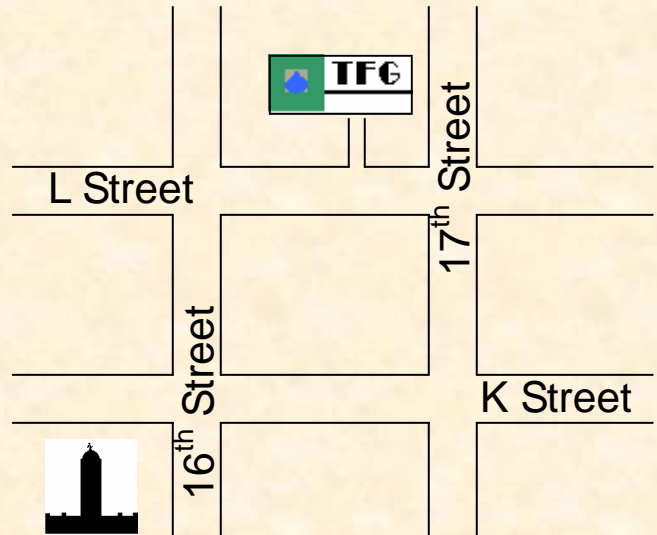
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**The Flatwater Group, Inc. (TFG) is a Lincoln, Nebraska based consulting firm specializing in environmental engineering, water resources engineering, restoration planning and design, and information and database management services. TFG is organized to serve the need for high quality, cost effective engineering consulting services. We are founded on the principles of client services coupled with creative solutions, and we look to produce successful products for our clients as well as with our clients.**

## Storage Permits (Continued from Page 2)

tional 5,000 acre-feet or fraction thereof, and \$10 for examination of drawings associated with the proposed dam. Plans, drawings, and specifications must be submitted for the dam when applying for a storage permit, and must conform to DNR Rules Title 457.

**It may be in the interest of reservoir owners to apply for storage permits, regardless of whether or not they are required to by law**

Depending on the size and type of the proposed reservoir and dam, and on other factors, processing of the applications have in the past taken from about

30 to 90 days, barring any objections. Applicants are notified as to whether the permit was awarded, why the permit was not awarded (if applicable),

and what additional steps must be taken to perfect the permit.

While certain types of reservoirs (certain livestock and off-channel reservoirs) may be exempt from the requirement to obtain a storage permit, it is possible to apply for a permit in other situations as well. Storage permits

could potentially strengthen the legal standing of reservoirs – even for those that do not require a permit – and it may be in the interest of reservoir owners to apply for storage permits regardless of whether or not they are required to by law.



**Gavins Point Dam**