

SOME LEGAL PROBLEMS OF URBAN RUNOFF*

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We are entering an era where increasing pressure is being brought to bear on our national resources--air, earth and water. More and more mileage is being squeezed from existing resources, and heretofore "wasted" materials are being turned into valuable commodities. One of these is urban runoff.

Presently water resources for growing cities in the arid Southwest are developed at great cost involving deep wells or great aqueducts. It is not uncommon to see vast quantities of pumped water being used to irrigate and maintain park areas while storm runoff is drained past or even through the parks without being put to use. The University of Arizona has undertaken an interdisciplinary study of urban runoff to determine what type of water is where and when. My part of the study was to examine the legal questions involved in capturing urban runoff and putting it to a beneficial use--in particular for a park.

Preliminary findings show that urbanization of a watershed results in a three to five fold increase in the amount of water that will run off, especially during an intense summer storm.¹ Thus an arroyo that in a natural state would have carried ten acre-feet of water in an average year may be discharging

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forty or fifty acre-feet per year after the watershed has been urbanized.²

The legal questions which surround urban runoff and its uses are numerous. They include problems of tort liability from floods, water rights to the increased flows, land use restrictions along the banks and flood plains to prevent encroachment, possible condemnation of privately owned land for park development and flowage easements, financing problems, zoning applications to single-ownership tracts vs multi-ownership areas, and coordination of various governmental bodies responsible for management of parks, storm drainage systems and other related municipal services.

The legal questions applicable to a specific proposal are largely shaped by locations of the project, the ownership of the land in the project area, and the history of development within the project area. In the Urban Hydrology study, three basic types of watersheds are being investigated, with one type being further divided for legal purposes. These include completely urbanized watersheds such as the High School Wash and Railroad Wash areas. A partially urbanized watershed such as the Arcadia Wash area, and non-urbanized "control" watersheds such as two sub-catchments of the Atterbury Watershed. The Atterbury-type watershed can be further defined as non-urbanized wholly owned by one person or corporation, such as one finds in large ranches or in new town developments such as the proposed Empire City, or non-urbanized in multi-ownership such as is common in the eastern areas of the Tucson Basin.³

In the totally urbanized watersheds, the legal problems have largely been ones of tort liability for flood damage and injury. In such areas the opportunities for park development have been largely foreclosed by existing development, though possibilities appear to remain for some bicycle path construction

where the washes have not been totally placed underground. The Arcadia Watershed poses the most legal problems in that tort liability questions arise from grade crossings of streets, substantial tracts of undeveloped land are still available for parks and greenbelts, water rights questions must be answered to supply the parks, and zoning and condemnation could be employed to restrict subdivision of park sites. In the non-urbanized watersheds the questions are largely zoning matters, with water rights being the important issue to resolve. The best possibilities to develop an urban runoff management system with park development with the least legal problems are in a wholly-owned watershed, such as one finds in the "new town" type of development.

The most obvious legal problem of urban runoff, is in the tort liability area. In this area urban runoff is a nuisance, to be gotten rid of as quickly as possible with the least amount of property damage and injury to life. The problem was discussed at length in City of Tucson v Sanderson, a 1969 case decided by the Supreme Court of Arizona. In that case, involving a wrongful death action on behalf of a woman washed from her husband's car and drowned at the Arroyo Chico crossing of Tucson Boulevard, the court described the urban runoff problem:

Nearly every summer the Tucson area is subjected to "high intensity" storms--i.e. rainstorms in which the amount of rain received in a very short time is comparatively high. In these storms, water cannot be carried away fast enough to prevent it from flooding certain areas....

In any rainstorm, the amount of "runoff" is determined not only by the amount of rain that falls, but also by the nature of the ground on which it falls. Soft earth, covered with vegetation, will absorb and hold much of the rain that falls. Buildings, paved streets, parking lots, airplane runways, etc., reduce the area that would otherwise absorb water, and replace them with impervious materials. The more such improvements increase, the more runoff increases.

In the parts of Arizona where rainfall is sparse and infrequent--including some urban areas such as Tucson--it formerly was felt that the damage and inconvenience of some flooding was more acceptable than the expense of extensive sewer and drainage systems.

In this case, the court upheld the County's non-liability for the flood as found by the trial court. The City settled by paying plaintiff \$60,000 for dismissal of the appeal and a covenant not to sue. The non-liability of the County was based on the County having no duty to relieve the hazard of the flooding where the City had deliberately used the street as an open storm sewer to carry off flood waters during high-intensity storms.⁵

In a case involving property damage to several store buildings adjacent to Arroyo Chico at Park Avenue, the state Supreme Court defined flood waters and municipal liability:

Inherent in the view herein expressed are certain obvious limitations to the city's liability. We have heretofore defined flood waters as being those waters which escape from a watercourse in great volume and flow over adjoining lands in no regular channel, Southern Pacific Co. v Proebstel, 61 Ariz. 412. Since the city, by covering over the arroyo and providing culverts has only attempted to control the flow of waters within the arroyo, it has assumed no responsibility for water which naturally leaves the channel and, therefore, is not liable for damages caused by flood waters. The city's immunity from liability is absolute unless some other act or acts of the city caused or contributed to the overflow.⁶ City of Tucson v Koerber.

In that case the city had built a culvert for the arroyo under Park Avenue, with a capacity for 1,700 cubic feet per second (cfs) when the arroyo itself had a capacity of 2,500 cfs. The city's liability in that case was somewhat limited because it had originally sold one of the lots subject to a flood easement. Thus it was not liable for damages to any structure placed in the easement.⁷

In the Koerber case, the court made a statement basic to a city's lia-

bility for damages from urban runoff:

...even though a municipal corporation has no duty to keep a stream flowing in a safe condition and protect private property from overflow, if it assumes to act it must act without negligence....⁸

This language came to haunt the city in City of Tucson v Wondergem.⁹

In that case an elderly tourist was caught in rising water at Cherry Avenue and Arroyo Chico in his auto. He climbed to the top of the car and waited for rescue. While he was waiting, the water flipped his car and he was drowned. His widow sued for wrongful death and was awarded \$60,000. One of the findings was that the culvert was underdesigned and the city had reason to expect larger flows in the arroyo due to urbanization upstream. The court noted the city could have escaped liability had it placed warning barricades and lights at the crossing prior to Mr. Wondergem's happening on the scene. The city claimed Wondergem had assumed the risk by driving into the flooded crossing, but the court rejected that argument because Wondergem was from Wisconsin and had never seen a flooded arroyo and could not be expected to know of the danger.¹⁰

While city officials deny the Wondergem decision had any effect on their flood warning program, a vigorous effort to mark all grade crossings with warning signs and to place barricades at dangerous crossings where a high traffic volume and high water volume can be expected to coincide has been undertaken.¹¹ Construction of extremely large culverts at major street crossings of city arroyos has also been pursued virorously.¹²

The Urban Hydrology study involved diverting some of this storm runoff into park areas with some of it being retained for recreational lakes and the remainder released slowly into the natural drainage system. The effect of this

would be to flatten the peak of the flood and spread the flow out over several days. Present circumstances are that most of the water which falls on a watershed is quickly funneled into the washes by the street drainage system, and down the wash to the rivers. It is not uncommon for walls of water to be seen in these washes immediately after or during an intense summer storm. It is these walls of water which catch motorists unaware when they cross a wash during a storm. The net result of the study is that extremely large culverts to pass the flood would not be needed, and further that some runoff would be captured and used beneficially.

The major beneficial use of urban runoff proposed is the diversion of runoff into park areas and lakes. The runoff would be used to irrigate parts of the park and, following removal of sediment, would be stored in lakes such as now exist in El Encanto Park in Phoenix and Randolph Park in Tucson. The proposed size of the lakes for this plan does not exceed five surface acres. Runoff use has been proposed for parks near the intersection of Broadway and Swan in Tucson (on land owned until recently by Howard Hughes) and on vacant land north of the Tucson Medical Center near Glenn and Craycroft.¹³

Common to all watersheds where some park development is possible is the question of water rights. As the City of Tucson has previously learned, one cannot spend vast sums of money developing a new water resource without having a good grasp on the water rights issues involved. Under the Arizona law of appropriation for surface water it is not clear whether urban runoff is "salvaged" water subject to appropriation in a wash, or "diffused surface water" which can be captured and used at the discretion of the landowner. The statutes are silent on the matter of water generated by paving over a water-

shed with homes, shopping centers, streets and parking lots. Thus the question must be approached by analogies.

A valid appropriation can be made from arroyos similar to those found in urban areas. In England v Ally Ong Hing, 105 Ariz. 65, a 1969 case, the state Supreme Court said seasonal waters of a creek would be subject to appropriation even though the flow was intermittent.¹⁴ For a stream or wash to be subject to appropriation it generally must have a well defined channel with a bed and banks, and the water must be put to some beneficial use.¹⁵

There has been some dispute in Arizona over the size of a wash and the relation to appropriability, but for the purposes of the urban arroyos, it can be assumed they would require the City or County to follow ARS 45-141 et seq., the statutory formula for obtaining a valid appropriation of the water.¹⁶

The real question is the relation of the "new" water to prior downstream uses. It is assumed that flood rights have been obtained along the Rillito, Santa Cruz and Gila River systems. All of the urban washes in the Urban Hydrology project feed these systems ultimately, and any diversion of runoff would no doubt raise objections from downstream users with historic flood rights such as the Buckeye Irrigation District. In a case dealing with appropriation of flood waters from 1914, the state court said:

In determining the amount of water appropriated for irrigation, the court may determine the area of lands to which the water has been beneficially applied, the frequency with which floods occur, the waters from which reached the lands of the appropriator, and other facts bearing on the question of the quantity of water actually appropriated to a beneficial use. Santa Cruz Reservoir Co. v Ramirez.¹⁷

Applying that formula, one could assume that the increased runoff in areas long urbanized may serve as the source for downstream flood rights which could be proved. Many factual questions would have to be resolved, such as

whether the urban runoff has actually increased flood flows fifty or a hundred miles downstream from the city and whether such increased flows are regular enough to support use of the water beneficially for a lengthy period of time.

In an area such as the Arcadia Watershed, where some parts have been urbanized for many years, the problem of conflicting with downstream users could be avoided by relying only on newly created runoff for diversion into parks and lakes, allowing existing flows to continue albeit over longer periods of time. Thus an anticipated amount of increased runoff from the construction of a new subdivision on the upper end of Arcadia could be appropriated for use in one park, and the anticipated amount from parking lot and other construction between Broadway and Grant Road filed on for the park at the Tucson Medical Center.

The question of water rights is simpler in the non-urbanized areas, especially those in single ownership. Water that falls on vacant land, which is captured and put to use by the owner before reaching an appropriable water course, is generally conceded to belong to the person on whose land it falls and with whose efforts it was put to use.¹⁸ In Colorado, for example, all water in a watershed is considered part of the stream for the purpose of appropriation.¹⁹ There is no specific statute dealing with this "diffused surface water," but Professor Clark of the University of Arizona College of Law contends that the common law doctrine of the water rights belonging to the landowner who develops the water is in effect.²⁰ A Stanford law student writing in the Stanford Law Review contends that in the absence of statute or case authority, the issue is unsettled.²¹ Certainly if every drop of water, that would normally flow into a stream with a large number of appropriators on it,

was diverted into stock tanks or urban runoff parks and lakes under the diffused surface water doctrine, the matter would be resolved by either statute or court action.

In the case of a single-ownership watershed, such as is possible in a new town like Empire City, all of the increased runoff generated by urbanization could be captured and diverted before entering the washes and arroyos and thus put to use under the diffused surface water doctrine. Or a projection could be made of the amount of increase expected from the urbanization and the landowner could file an appropriation on the difference between the pre-urbanization historic flow and the post-urbanization average.

An interesting case which has some application here is Vantex Land & Development Co. v Schnepf, 82 Ariz. 308, a 1957 case involving respective water rights to waste water from irrigation.²² In that case tail water from A's land flowed across B's land into an old wash or arroyo where it was appropriated by C at the point where it left B's land. B later intercepted the water where it entered his land and used it for irrigation without applying for a permit to appropriate it. The court held that C could not enjoin B, who was privileged to capture and use the water since the upper owner had no right to drain his artificially introduced water onto his land, nor did the lower owner have any easement to conduct his appropriated water across B's land.²³ The court did not pass on the question of whether C had a right to appropriate the waste water. The dissent stated that "...all water found flowing in natural channels belongs to the public and may be appropriated. No distinction is made (in the statute) between natural and artificially produced water; the only condition is that it be found in a natural channel."²⁴

It would be possible for a landowner just downstream from a newly urbanizing area to appropriate the increased flow for his beneficial use if the urban development followed the present pattern of using streets to collect the runoff and directing it into the first natural watercourse that is handy.

Another case which may pose some legal problems to the use of urban runoff is Salt River Valley Water Users v Kavacovich, 3 Ariz App 28 (1966). In that case Kavacovich employed water saving techniques and used the water thus salvaged on additional acreage not included in his original appropriation. The court required him to cease using the waters on the newly opened land and to allow it to become return flow.²⁵ It has not been interpreted yet as to "new" water not previously in the appropriable supply, though it has been cited as a discouragement to water salvage practices among irrigators.²⁶

There are several ways to unravel the legal aspects of water rights to urban runoff. The first is to create by statute a new class of water for urban runoff and spell out priorities and uses for appropriation. Another would be for a city to develop a park and commence diverting runoff and file for an appropriative right. If, as would be expected, a downstream holder of flood rights challenged the city's use, the matter would be adjudicated and resolved. Another possibility, though remote, is for Arizona to adopt the Colorado view that all waters, regardless of their location, are subject to appropriation (and thus regulation and control by the state) eliminating the possibility of a new town capturing all runoff under the diffused surface water doctrine.

In conclusion it appears feasible to divert what amount to small quan-

tities of water from urban area washes and arroyos for park and recreational uses. Such diversions would provide similar flood control benefits and mitigation of tort liability as are now gained by culvert construction while providing beneficial uses of the runoff. The tort liability problems of street runoff would be shifted to problems of ownership water rights.

In the water rights area, under the existing laws of appropriation it appears that municipalities could appropriate the increased flows in arroyos caused by urbanization. Large-scale land developments could similarly divert increased flows caused by urbanization under either the appropriation doctrine, or that of use of diffused surface waters. The ultimate legal questions must be resolved either by legislative designation of urban runoff for appropriation by cities, by litigation between claimants of urban runoff water rights, or by the appropriative system being extended to include diffused surface waters.

NOTES

- ¹K. J. DeCook, WRRRC Project Data
- ²Ibid
- ³The eastern areas are owned in part by private persons, the State of Arizona, and the federal government.
- ⁴City of Tucson v Sanderson, 104 Ariz. 151 (1969)., at 152.
- ⁵104 Ariz 151, 156
- ⁶City of Tucson v Koerber, 82 Ariz. 347 (1957)
- ⁷82 Ariz 347
- ⁸82 Ariz 347
- ⁹City of Tucson v Wondergem, 105 Ariz 429, 6 Ariz App 570, 10 Ariz. App 267. (1957-69)
- ¹⁰105 Ariz 429, 6 Ariz App 570.
- ¹¹Interview with City of Tucson Public Works Director Verne Tregonis, 1972.
- ¹²Ibid.
- ¹³Extensive plans were drawn up by two landscape architecture students Wade and Sonberg for the Hughes' site.
- ¹⁴England v Ally Ong Hing, 105 Ariz 65 (1969)
- ¹⁵Fourzan v Curtis, 43 Ariz 140 (1934); City of Globe v Shute, 22 Ariz 280 (1921)
- ¹⁶Vantex Land & Development Co. v Schnepf, 82 Ariz 54 (1957) and Southern Pac Co v Proebstel, 61 Ariz 412 on the differences between Sonoqui Wash and Coyote Wash.
- ¹⁷Santa Cruz Reservoir Co v Ramirez, 16 Ariz 64 (1914).
- ¹⁸I Waters and Water Rights 52.1 (A), at 302 (R.E. Clark ed 1967) and 93CJS. Waters S 113 (1956).
- ¹⁹Dehaas v Benesch 116 Colo 344 (1946)
- ²⁰Clark, R. E. "Background and Trends in Water Salvage Law" 15 Rocky Mountain Mineral Law Institute 421. Note 64 at page 445.
- ²¹"Ownership of Diffused Surface Waters in the West." 20 Stanford Law Review 1205,1212.
- ²²Vantex Land & Development Co v Schnepf, 82 Ariz 54 (1957).
- ²³Summary taken from Trelease, Water Law, Cases and Materials 95 (1967), also cited in Clark, "Trends in Water Salvage Law" 15 RMLI 421
- ²⁴82 Ariz 54, 58.
- ²⁵Salt River Valley Water Users v Kavacovich, 3 Ariz App 18 (1966).
- ²⁶Clark, Ibid. 456.