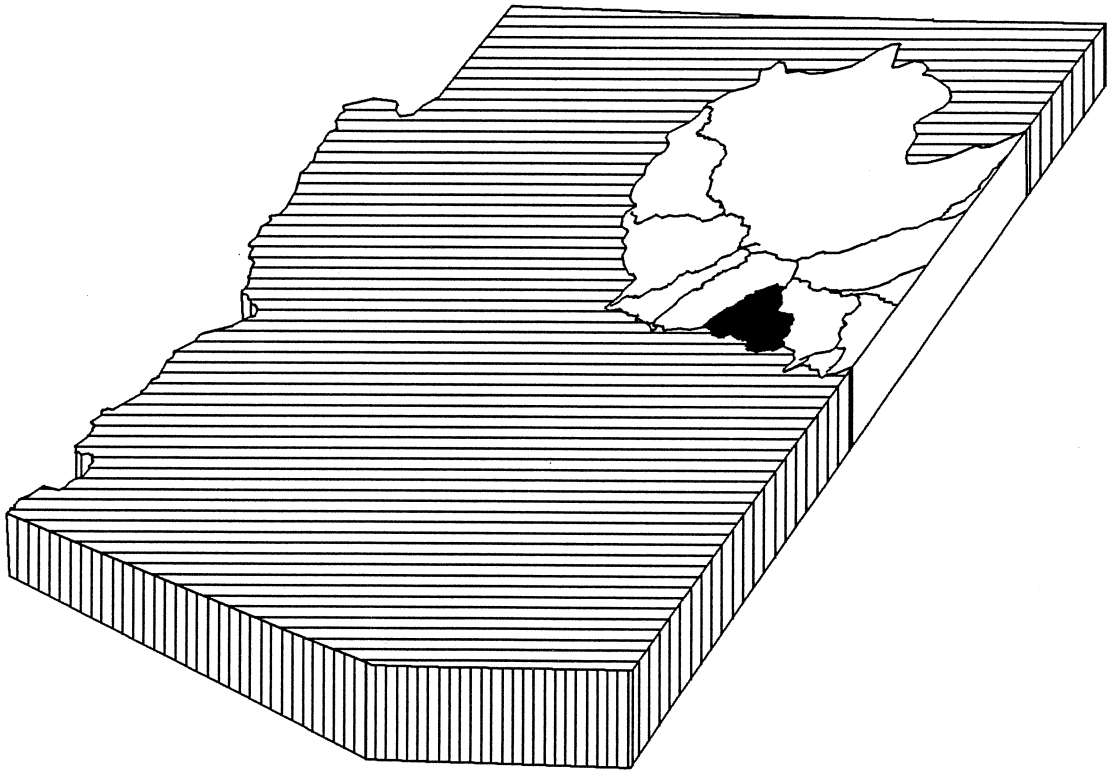
TECHNICAL REPORT ON DE MINIMIS ADJUDICATION OF STOCKPOND AND STOCKWATERING USES IN THE SILVER CREEK WATERSHED

In Re: The General Adjudication Of The Little Colorado River System And Source



Arizona Department of Water Resources

September 1, 1993

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CHAPTER 1: INTRODUCTION

The concept of *de minimis* water rights in the general stream adjudications of Arizona is a concept of unprecedented importance. It is perhaps the most promising way to streamline the lengthy court proceedings and create a decree which is both fair and enforceable. Yet, the concept is not without problems. Senior users are concerned that *de minimis* rights will unjustly interfere with their appropriations. Others are concerned that the proliferation or expansion of *de minimis* rights will threaten already fragile riparian ecosystems. This report, prepared at the request of the Special Master in the Little Colorado River adjudication,[1] addresses the technical aspects of *de minimis* stockpond and stockwatering rights within the Silver Creek watershed. Particular attention is paid to the problems encountered in attempting to quantify each of the many small rights which exist in the watershed; to the different ways by which a court may define these *de minimis* rights; and to the hydrologic effect of these rights upon the water supply in the river system and source.

The Latin words *de minimis* are a shorthand reference to the ancient legal maxim *de minimis lex non curat*, which meant that the law would not entertain claims for trivial amounts of damage. Today, the reference is used to distinguish claims, objections, or arguments which are so small or trivial that they are unimportant to the end result of a particular legal proceeding. Thus, the attorneys and parties involved in the general stream adjudications have adopted the *de minimis* label to describe small water rights which are believed to be inconsequential to the large, and typically senior, rights within a river system.

This does not mean, however, that *de minimis* water rights are unimportant. Stockponds and stockwatering rights are of vital importance to the ranching industry; domestic wells near the rivers, even if their effects are barely noticeable in the stream, are essential to the inhabitants. At the same time, the widespread use of domestic wells and stockponds have an undeniable cumulative effect on the available water in the river system. Despite the translation of the words *de minimis* to "small" or "trivial,"

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[1] *In re the General Adjudication of All Rights to Use Water in the Little Colorado River System and Source*, Apache County Superior Court Civil Cause No. 6417-033-9005 (consolidated).

the multitude of these water rights have become a driving force in the ever expanding litigation occurring in the adjudications. A systematic approach is needed to validate, quantify, and prioritize these rights without having to litigate each claim.

There are two basic sides to the *de minimis* issue. First, parties who are using small quantities of water to support, for example, their stockponds, believe that they have a valid water right under state law which should be protected in the adjudication process. On the other hand, parties who have senior downstream rights seriously question the validity, quantity, and priority of many of these small use claims. They believe that small users should be required to come before the court and prove their right before they are granted a license to continue their use. This disagreement has resulted in the hundreds of statements of claimant for small water rights filed in the various adjudications, and the hundreds of objections to those claims. The Hydrographic Survey Report (HSR) for the Silver Creek Watershed identifies 3,147 potential water rights (PWRs), of which 882 are stockwatering, stockpond or wildlife PWRs. Domestic uses constitute an additional 1,071 PWRs. Together these four categories of small uses comprise almost two-thirds of all PWRs in the Silver Creek watershed; but according to the water budget in the HSR, these uses only account for less than 5% of the total cultural diversions.

To ease the burden of litigation placed on the small user, and to speed the adjudication process toward completion of a decree, several observers have suggested the use of a *de minimis* category of rights which would be adjudicated in some streamlined fashion. Other parties have objected to this approach. Notably, attorneys for the United States argued before the Arizona Supreme Court that the exclusion of small rights from the adjudication process under a *de minimis* standard would violate the intent of the McCarran Amendment, 43 U.S.C. § 666(a), thus destroying the value of the adjudication by making it invalid as to federal rights. The Arizona Supreme Court addressed this issue in its recent opinion on the Interlocutory Review of Issue No. 2, where the court stated:

> We believe that the trial court may adopt a rationally based exclusion for wells having a de minimis effect on the river system. Such a de minimis exclusion effectively allocates to those well owners whatever amount of water is determined to be de minimis. It is, in effect,

> a summary adjudication of their rights. A properly crafted de minimis exclusion will not cause piecemeal adjudication of water rights or in any other way run afoul of the McCarran Amendment. Rather, it could simplify and accelerate the adjudication by reducing the work involved in preparing the hydrographic survey reports and by reducing the number of contested cases before the special master.[2]

With this directive in mind, the Arizona Department of Water Resources (DWR) has prepared this report to answer three fundamental questions regarding the *de minimis* standard: 1) should a uniform approach to quantification for stockwatering and stockpond uses be adopted and, if so, what standard should be employed; 2) what maximum levels should be established for the quantification of rights assigned a *de minimis* classification; and 3) what effect, if any, will there be on the hydrology of the river system if these rights are summarily adjudicated by the courts? While many more questions will undoubtedly arise before the *de minimis* category is finally crafted, answers to these three questions are the necessary foundation for the resolution of this issue.

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[2]*In re the General Adjudication of All Rights to Use Water in the Gila River System and Source*, WC-90-0001-IR (Filed July 27, 1993), slip op. at 27.

CHAPTER 2: HYDROLOGIC IMPACTS OF STOCKWATERING AND STOCKPOND USES

This chapter will analyze the impact of stockwatering and stockpond uses on the water resources of the Silver Creek watershed. The sources of water for these uses will be outlined, and the cumulative impacts of stockponds and stockwatering uses are quantified using a water budget and undepleted flow analysis.

2.1 SOURCES OF SUPPLY FOR STOCKWATERING AND STOCKPOND USES

The stockpond and stockwatering uses in the Silver Creek watershed are supplied from two distinct sources: 1) direct runoff from snowmelt and precipitation events, and 2) discharges from the groundwater system to springs and seeps. The average annual surface water outflow for the period 1951 to 1989 from the Silver Creek watershed is 13,350 acre-feet (United States Geological Survey gage #3935). Figure 2-1 shows the location of the stockponds in relation to the perennial streams in the watershed. The map shows that all stockponds are located on minor ephemeral tributary streams or washes. There are no stockponds located on perennial or intermittent streams in the watershed. The stockponds capture surface water from spring snowmelt and may capture runoff from direct precipitation during the summer monsoon.

There are three closed drainages in the watershed: The Sinks, Long Lake, and White Lakes (Figure 2-1). The streams and washes in these drainages are not hydrologically connected to Silver Creek. There are 59 stockponds and 15 stockwatering uses in these closed drainages. Stockpond and stockwatering uses in these drainages do not impact surface flow in Silver Creek.

Stockwatering uses occur from two water sources: instream stockwatering from streams and washes, and stockwatering from springs. Instream stockwatering uses occur across the watershed for all classes of streams including: perennial, intermittent, and ephemeral. Stockwatering from springs is supplied from groundwater discharges. Typically, these groundwater discharges occur from the Pinetop-Lakeside aquifer.

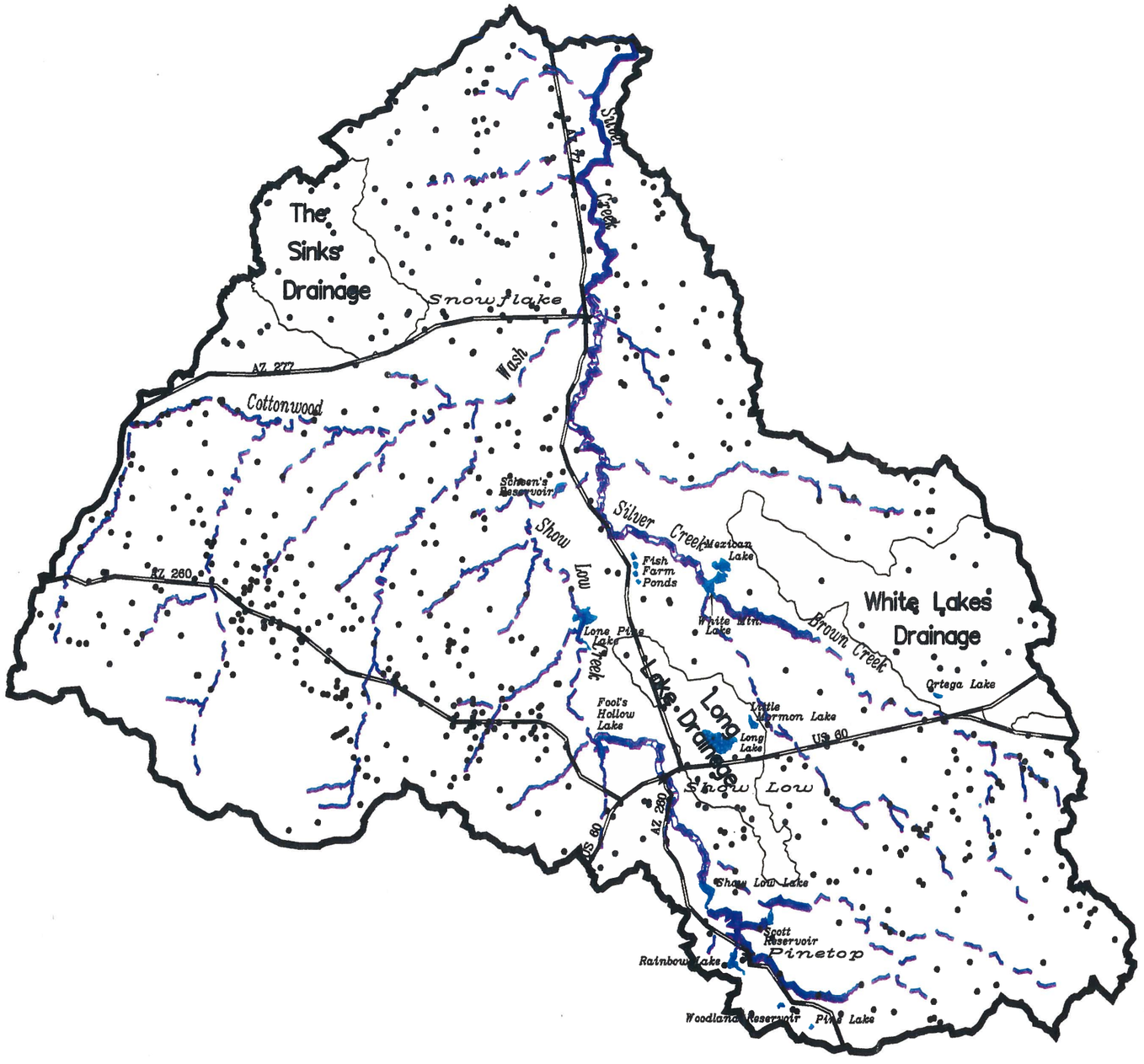

Figure 2-1

Location of Stockponds, closed drainages, and perennial streams in the Silver Creek Watershed

- Stockponds
- Perennial stream, flow unregulated
- Perennial stream, flow regulated
- Ephemeral stream
- Watershed boundary
- Closed basin boundary
- Road
- Towns

N

0 2 4 Miles

2.2 CUMULATIVE IMPACT OF STOCKPONDS

There are 762 stockponds in the Silver Creek watershed. DWR conducted investigations on all stockponds in the watershed. The area and capacity data are for all stockponds are shown in Table 2-1. The methodology used to investigate and survey stockponds is outlined in the Hydrographic Survey Report for the Silver Creek Watershed (ADWR, 1990). The table shows that the total capacity of all ponds in the watershed is 2,551.6 acre-feet, and the total area is 594.9 acres. To examine the impact of stockponds on the outflow of the watershed, a water budget approach is utilized. Table 2-2 shows the water budget for the watershed.

TABLE 2-1

SILVER CREEK WATERSHED
STOCKPOND ANALYSIS

STOCKPOND CATEGORY	NUMBER	AREA (ACRES)	CAPACITY (ACRE-FEET)	EXCLUDING CLOSED DRAINAGES		
				NUMBER	AREA	CAPACITY
Surveyed >=2 acres	36	196.5	570.2	34	188.0	542.6
Surveyed <2 acres	43	56.9	181.7	43	56.9	181.7
Unsurveyed <2 acres	683	341.5	1,799.7	626	313.0	1,649.5
TOTAL	762	594.9	2,551.6	703	557.9	2,373.8

TABLE 2-2

SILVER CREEK WATERSHED[1]
WATER BUDGET

SUPPLY	GROUNDWATER	SURFACE WATER	TOTAL
Groundwater Sources			
Natural groundwater recharge	48,390		48,390
Recharge from Cultural uses			
Irrigation - groundwater	6,010		6,010
Irrigation - surface water	3,470		3,470
Domestic	150		150
Municipal	800		800
Stockponds	1,910		1,910
Reservoirs	8,090		8,090
Industrial	160		160
Total Recharge from Cultural uses	20,590		20,590
Total Groundwater	68,980		68,980
Surface Water Sources			
Pinetop-Lakeside aquifer springs		10,560	10,560
Return flows from irrigation-groundwater		2,360	2,360
Return flows from irrigation-surface water		1,280	1,280
Net Surface Water		33,800	33,800
Total Surface Water		48,000	48,000
Total Water Supply	68,980	48,000	116,980
WATER USE			
Cultural Diversions			
Irrigation	17,900	13,770	31,670
Domestic	750	0	750
Municipal	3,990	0	3,990
Stockponds	0	2,550	2,550
Reservoirs	0	10,710	10,710
Industrial	800	0	800
Water Exports	16,000	3,600	19,600
Total Cultural Diversions	39,440	30,630	70,070
Natural Diversions			
Channel evaporation	0	220	220
Phreatophyte	0	3,500	3,500
Alluvial soil evaporation	0	300	300
Total Natural Diversions	0	4,020	4,020
TOTAL DIVERSIONS	39,440	34,650	74,090
OUTFLOW			
Groundwater Outflow			
Underflow watershed boundary	27,130		27,130
To surface water system	10,560		10,560
Vertical leakage from Coconino to Supai	15,460		15,460
Surface Water Outflow		13,350	13,350
TOTAL OUTFLOW	53,150	13,350	66,500

Change in groundwater storage (23,610).

[1]All values rounded to nearest ten acre-feet.

The analysis is based on an assumption that the average annual surface water diversions for stockponds in the watershed can be predicted from the annual fill of the total capacity of all stockponds, or 2,550 acre-feet per year.

Actual stockpond water use by direct evaporation, livestock and wildlife use, and seepage is known to be highly variable from pond to pond and from year to year, and involves the integration of many dynamic hydrologic variables. Establishing values for these variables would require extensive and expensive data collection for each stockpond. DWR has participated in detailed cooperative studies with Northern Arizona University and the University of Arizona in the past to study the factors which affect stockpond water use. Simulation models were developed and calibrated using data from several experimental watersheds in the state. The results demonstrated a high variability in the magnitude that streams are depleted by stockponds. Primary influencing factors include: 1) the size of the watershed compared to the size and geometry of the pond; 2) whether there are ponds in series on the same wash or stream when the drainage area is small; 3) the distribution and type of precipitation (rain or snow), whether it occurred in several events or was more evenly distributed during the year; 4) the yearly weather pattern (daily mean temperatures) during the winter and spring and its effect on whether precipitation was rain or snow and how it governs the onset and rate of spring snowmelt; 5) the yearly weather variability as it effects pond water surface evaporation; and 6) an often overpowering variable of stockpond vertical seepage rates. The results of these analyses further indicated that for some stockponds in some years the use is less than the stockpond capacity, while in other instances several times the stockpond capacity may be infiltrated and evaporated during a year.

In trying to extrapolate the most significant conclusions from these site specific determinations to a watershed wide assessment of stockpond impacts, DWR found that perhaps the most important data element and the most feasible to collect is a reliable determination of the number of stockponds that exist in the watershed and an estimate of their total combined capacity. That is why DWR expended considerable resources in its HSR investigations for the Silver Creek watershed to locate and measure capacities of these numerous facilities. On the basis of its experience in stockpond simulation studies, and other hydrologic experience and expertise, DWR believes that equating

stockpond use to stockpond capacity is a reasonable assumption and provides an assessment that is of the correct order of magnitude.

Of the 2,550 acre-feet diverted for stockpond use, 1,910 acre-feet is estimated to be returned to the hydrologic system by infiltration to the groundwater system, and 640 acre-feet is lost to direct evaporation and consumption by livestock and wildlife. However, this amount includes 59 stockponds that are found within in the three closed drainage basins. The stockponds in these closed drainage basins have a total surface area of 37 acres and a total capacity 177.8 acre-feet. Subtracting the diversions from these stockponds from the water budget reduces the total stockpond diversion to 2,370 acre-feet per year. The overall effect is to reduce the stockpond depletion to 590 acre-feet per year from direct evaporation. For stockponds less than 2 surface acres, the annual diversion is estimated to be 1,830 acre-feet. The depletion from these ponds is 460 acre-feet per year.

It must be noted, however, that the stockponds in the watershed are not impounding surface water from perennial or intermittent streams, but from ephemeral tributary washes and streams. To determine the impact of stockponds on ephemeral tributary streams and washes on surface water outflow from the watershed, an undepleted flow analysis for stockponds was conducted. The undepleted flow analysis estimates the fate of the water impounded by the stockponds if the stockponds were removed and the water allowed to flow downstream under natural conditions. This analysis answers the question "How much of the water impounded would flow out of the watershed?"

The undepleted flow analysis used the maximum annual diversion for stockponds of 2,370 acre-feet as potential additional flow in the ephemeral streams. First, the volume of stream flow lost to the groundwater system through infiltration was calculated. DWR determined that of the 2,370 acre-feet of impounded water, 60% or 1,422 acre-feet would be lost to the groundwater system under natural flow conditions. Second, the effects of riparian vegetation and channel evaporation processes were considered. The analysis showed that of the remaining 948 acre-feet available for surface flow, riparian and channel evaporation processes would remove another 60% or 569 acre-feet of the flow. The remaining 379 acre-feet would reach the surface water outflow of the watershed.

The total impact of stockponds in the Silver Creek watershed is shown in Table 2-3. The impact is calculated by subtracting the reduction in surface flow from the volume impounded by the stockponds. The table shows that under undepleted flow conditions for the stockponds, less than 15% (380 acre-feet) of the total volume impounded by the stockponds would reach the surface water outflow from the Silver Creek watershed. This potential additional outflow is less than 2.8% of the annual average surface water outflow from the watershed. The calculations and assumptions are shown in APPENDIX A.

TABLE 2-3

SILVER CREEK WATERSHED
UNDEPLETED FLOW ANALYSIS FOR STOCKPONDS

COMPONENT	VOLUME (ACRE-FEET)[1]
Stockpond Volume	2,370
Infiltration	-1,420
	950
Riparian and Channel Processes	-570
INCREASE IN SURFACE OUTFLOW	380

[1]All values rounded to the nearest 10 acre-feet.

If a *de minimis* category is established by the Court or Special Master for stockponds below a certain size threshold, then the impact that *de minimis* stockponds have on the watershed outflow would be less than 380 acre-feet per year. For example, if a threshold of 2 surface acres was adopted, then the impact of all stockponds less than 2 surface acres in size would be a reduction in the watershed outflow of 290 acre-feet per year or 2.2%, as shown in Table 2-4.

TABLE 2-4

SILVER CREEK WATERSHED
UNDEPLETED FLOW ANALYSIS FOR STOCKPONDS LESS THAN 2 SURFACE ACRES

COMPONENT	VOLUME (ACRE-FEET)[1]
Stockpond Volume (less than 2 acres)	1,830
Infiltration	-1,100
	730
Riparian and Channel Processes	-440
INCREASE IN SURFACE OUTFLOW	290

[1] All values rounded to the nearest 10 acre-feet.

2.3 CUMULATIVE IMPACT OF STOCKWATERING USES

DWR identified 110 stockwatering uses in the Silver Creek watershed, of which 15 are located in the three closed drainage basins. Of the 95 stockwatering uses occurring along Silver Creek or its tributaries, 77 are instream uses and 18 are from springs. DWR has determined that 39 instream stockwatering uses are found along perennial or intermittent streams, while remaining 38 are along ephemeral streams. Because the consumptive use for livestock is small, typically 0.011 acre-feet per year per cow/calf pair (an animal unit), and stockraising is a low density use in the Silver Creek watershed, DWR believes that instream stockwatering constitutes a minimal impact to surface water outflow from the watershed. For example, to consume 1% of available surface water outflow (133.5 acre-feet), 12,136 animal units would have to use a perennial stream as the sole source of water for an entire year. It should be noted that stockraising in the watershed is subject to seasonal variations in the location and number of animals due to variable range conditions, public land management constraints, economics, and water availability.

DWR identified 18 stockwatering uses from springs. Twelve of these uses are along ephemeral streams. As shown in the previous section, a very small amount of flow in ephemeral streams reaches the outflow of the watershed. The remaining 6 stockwatering uses from springs occurs in the headwaters of Billy Creek and Show Low Creek, predominantly on public lands. DWR believes that stockwatering from these springs constitutes a minimal impact on the outflow of the surface water system. For example, a spring with an annual flow of 1 gallon per minute (1.6 acre-feet) can support 145 animal units. However, in many cases, removing cattle from springs can allow riparian vegetation to increase in area and density, consuming as much or more of the spring flow than the livestock. As mentioned earlier, stockraising in this watershed is a low density and highly variable water use. Therefore, stockwatering from springs is believed to have no measurable impact on the surface water outflow from the watershed.

DWR has also identified 10 wildlife water uses within the Silver Creek watershed. DWR believes the impact of these wildlife uses are negligible and has not included them in this analysis.

2.4 TOTAL IMPACT ON WATER RESOURCES

Stockpond and stockwatering uses in the Silver Creek watershed do not constitute a significant impact on the surface water resources of the watershed. The undepleted flow analysis for stockponds shows that less than 15% (380 acre-feet) of impounded surface water flow could occur as outflow from the watershed. This constitutes an increase of less than 3% of the average annual surface water outflow. Using a potential threshold of less than two surface acres, undepleted flow from these stockponds would constitute only a potential increase of 2.2% in surface water outflow. Stockwatering from surface water streams and springs are a low density and highly variable water uses. These water uses commonly occur along ephemeral washes, and as such have a minimal impact the surface water system.

CHAPTER 3: STOCKWATERING USES AND STOCKPONDS

This chapter describes current methods utilized in Arizona and other western states in categorizing stockwatering uses and stockponds uses as *de minimis* and the standards used for their quantification. Several alternative schemes are presented and the attributes that could be assigned to the *de minimis* uses are shown utilizing a representative watershed file report (WFR).

3.1 CURRENT PROCEDURES USED IN ARIZONA

This section will describe the procedures (either by statute or by court decree) utilized in Arizona for stockwatering uses and stockponds.

STOCKWATERING USES

Currently, there is no statutory *de minimis* criteria for stockwatering uses within Arizona. There are five water right decrees that describe a use of water for stock purposes that could be construed as a *de minimis* use. These five decrees are listed as follows.

1. In The Matter Of The Determination Of The Relative Rights To The Waters Of The Little Colorado River And Its Tributaries, Tributary To The Little Colorado River, Apache County, Arizona (1921);
2. In The Matter Of The Determination Of The Relative Rights To The Waters Of Cave Creek And Tributaries, Cochise County, Arizona (1921);

These two decrees described stockwatering use in the following manner:

> That all claimants herein to water for irrigation shall be entitled to the use of the water for stock and domestic purposes; that such right is hereby confirmed and entitles the owner of such water right to divert and use such a quantity of water as reasonably necessary for his household

and stock use, such right of diversion shall be limited to an equal amount to and not exceeding one miners inch constant flow for each one thousand head of stock for stock purposes and such an amount as may be reasonably necessary for domestic uses.

(Emphasis added)

3. In The Matter Of The Determination Of The Relative Rights To The Use Of The Waters Of The Gila River And Tributaries, Greenlee County, Arizona (1927);

4. In The Matter Of The Determination Of The Relative Rights To The Use Of Water Of Concho Springs And Concho Creek, Apache County, Arizona (1930); and

5. In The Matter Of The Determination Of The Relative Rights To The Use Of The Water Of Mineral Creek And Its Tributaries, Apache County, Arizona (1932)

These three decrees described stockwatering uses in the following manner:

That all claimants to the right to use of water for irrigation purposes, whose rights are determined herein, shall be entitled to the use for stock and domestic purposes; that the right to use such water is hereby confirmed and entitles the owner of such right to divert and use such quantity of water as is reasonably necessary for his household and stock use ....

(Emphasis added)

In its HSRs, DWR reports a legal location (¼, ¼ or ¼, ¼, ¼ section) and an apparent date of first use for most stockwatering uses, depending on the type of stockwatering PWR and the presence or absence of water right filings. DWR does not report a quantity of use for stockwatering and wildlife PWR types because of the difficulty in accurately quantifying these uses and due to their relative insignificance of water usage. However, DWR has reported in its HSRs some typical stock and wildlife requirements which are shown in Table 3-1.

TABLE 3-1

TYPICAL STOCK AND WILDLIFE WATER REQUIREMENTS

ANIMAL TYPE	WATER REQUIREMENTS	
	GALLONS PER HEAD PER DAY[1]	ACRE-FEET PER YEAR
LIVESTOCK		
Cows	10 - 15	0.011 - 0.017
Horses	10 - 12	0.011 - 0.013
Sheep	1.0 - 1.5	0.0011 - 0.0017
Goats	1.0 - 1.5	0.0011 - 0.0017
WILDLIFE		
Elk	2 - 3	0.0022 - 0.0034
Antelope	0.5 - 1.0	0.0005 - 0.0011
Deer	0.5 - 1.0	0.0005 - 0.0011

[1]Source: National Range Handbook, 1976.

STOCKPONDS

The current statutory procedure for stockponds in Arizona is described by the Stockpond Registration Act of 1977 (A.R.S. § 45-271). A stockpond is defined by this act as ". . . a pond having a capacity of not more than fifteen acre-feet that is used solely for watering of livestock and wildlife. 'Stockpond' shall not include a pond of any capacity used primarily for fishing or the culturing of fish." If a stockpond was constructed between June 12, 1919 and August 27, 1977, the priority date of the pond is the date of construction. If a claim for a stockpond was filed after the deadline of June 30, 1979, the priority date is the date of the filing of the claim.

There are no court decrees in Arizona that specifically list stockponds as water rights or treat them as *de minimis* water uses.

In its HSRs, DWR classifies a stockpond as an impoundment which stores surface water for the primary purpose of watering livestock and/or wildlife. A typical stockpond located in the Silver Creek watershed usually consists of a small, earthen dam pushed up along an ephemeral intermittent watercourse. Stockponds are normally constructed without any outlet controls other than a spillway (which is generally a natural low point in the topography). DWR classified 762 impoundments within the Silver Creek watershed as stockponds including those that exceed fifteen acre-feet in capacity (the statutory limit as stated in A.R.S. § 45-271).

For stockponds, DWR reports a legal description (¼, ¼, ¼ section) and an apparent date of first use based on previous water rights filings or historical aerial photography. DWR also reports the measured area and capacity at spillway crest elevation for stockponds that exceed two acres at maximum controlled surface area. For unmeasured stockponds, DWR reports in the WFRs that a stockpond is less than two surface acres ("LT 2.0") and less than or equal to fifteen acre-feet in capacity ("LTE 15.0"). If a stockpond was measured by DWR, but it was found to be less than two surface acres, the measured area and capacity information are reported in the WFR.

3.2 OTHER WESTERN STATES PROCEDURES FOR STOCKWATERING USES AND STOCKPONDS

This section discusses the methods utilized by other western states for categorizing stockwatering uses and stockponds as *de minimis* uses. Information for this section is based on a review of other states adjudication decrees and a survey of other western states *de minimis* procedures.

STOCKWATERING USES

California

In the Scott River Stream System Adjudication, the decree states that for stockwatering the use is limited to water required by commercial livestock.

Idaho

In the Proposed Finding Of Water Rights In The Basin Creek Drainage Basin, it was determined that stockwatering use for range cattle and horses was 25 gallons per head per day. For dairy cattle, 35 gallons per head per day was determined. For sheep, 2 gallons per head per day was stated.

In the General Adjudication of Rights To The Use Of Surface Water And Groundwater From The Cougar Creek Water System, Kootenai County, Idaho (1990), stockwatering uses were described in the findings of fact section as follows:

1. The amount of water reasonably required for stock watering use was determined to be 12 gallons per head per day of range cattle and horses; 35 gallons per day per head for dairy cattle; and 2 gallons per day per head for sheep; and

2. Stockwatering and domestic uses were considered to be consumptive, but the consumptive use is so small that it is deemed *de minimis*. Stockwatering and domestic use were therefore treated as nonconsumptive and no consumptive use was stated in the Listing of Water Rights.

In the Idaho Department of Water Resources (IDWR) Director's Report (Part 1) For Basin 34 (Big Lost River Basin), Volume 1, Snake River Basin Adjudication (Civil Case No. 39576, In The District Court of the Fifth Judicial District of the State of Idaho, In And For Twin Falls County), 1992, it is stated in the General Provisions Section that stockwatering uses are limited to 13,000 gallons per day. Stockwatering rights may also be considered "deferrable rights." These rights are not required to be claimed in the Snake River Adjudication or not required to be claimed at the present time. This deferral is based on a court order dated January 17, 1989, entitled Findings of Fact, Conclusions of Law, and Order Establishing Procedures for Adjudication of Domestic and Stock Water Uses. The order further provides that a claimant of a deferred right must have the right adjudicated prior to seeking authorization from IDWR for a change in use or before water may be distributed by the director (Idaho Code §42-222).

Montana

In The Matter Of The Adjudication Of The Existing Rights To The Use Of All The Water, Both Surface And Underground, Within The Musselshell Drainage Area Below Roundup, Including All Tributaries Below Roundup In Fergus, Petroleum, Rosebud, Musselshell, and Greenfield Counties, Montana (1990), it is stated in the Findings Of Fact section that where stock drink directly from a surface water source, no specific volume is decreed. The limit of the right is based on a consumptive use of 30 gallons per day per animal unit (a cow and calf pair). The number of animal units was limited to the reasonable carrying capacity of the area historically serviced by the water source. These rights were limited to their historical beneficial use. It was also stated in this section that rights involving stock drinking directly from surface water sources were not decreed a specific flow rate.

New Mexico

In the Red River Adjudication (No. Civ-9780 SC - 1988), it was stipulated on a joint motion filed by the plaintiffs in this case and ordered by the court that several water uses are *de minimis*, are not necessary for a comprehensive adjudication, and should be excluded from the subject matter jurisdiction of the suit. These uses

included livestock watering from a metal storage tank supplied by a well diverting a maximum of 0.25 acre-feet per year and causing a maximum consumptive use of 0.25 acre-feet per year.

Oregon

Oregon has recently passed legislation (House Bill 2344) that authorizes the Oregon Water Resources Commission (OWRC) to issue a water right for *de minimis* human or livestock uses above or within a scenic waterway. The statute states that the OWRC may issue a water right for ". . . livestock consumption uses not to exceed one-tenth of one cubic feet per second per 1,000 head of livestock . . . within or above a scenic waterway . . . ." The OWRC also find that the *de minimis* livestock right is necessary to prevent the livestock from watering in or along the stream bed; that the applicant cannot reasonably water from any other source; and the applicant has excluded livestock from the stream and its adjacent riparian zone.

Texas

By statute, Texas allows that anyone can use water for the open range watering of livestock. This is considered to be a *de minimis* use and no permit to appropriate is required.

Utah

In the Proposed Determination In The San Rafael Drainage Area, Utah, an equivalent livestock unit is used for stockwatering quantification. This unit is equivalent to "one horse or cow, five sheep, goats, or swine; or twenty-five chickens, turkeys or fowl, or small animals. An equivalent livestock unit is allowed twenty-five gallons per day."

Washington

As part of the adjudication of water rights in the Yakima River Basin (Ecology v. Acquavella), nondiversionary stockwatering and wildlife uses have been recognized as *de minimis* uses by stipulation. The limit of usage is 0.25 cubic feet per second from

waters in natural watercourses, and a sufficient amount to provide drinking water for animals from naturally occurring ponds and springs.

STOCKPONDS

California

California has by statute a *de minimis* classification for stockponds. The upper limit is 10 acre-feet in capacity. The use is considered as a water right with a priority date based on the claimed date. The stockpond *de minimis* use is quantified and is based on the amount claimed up to statutory limit of 10 acre-feet. The legal location of a stockpond is described to the ¼, ¼ section.

Kansas

Although not specifically addressing stockponds, by statute, Kansas does not require a permit to appropriate water from any source for an annual diversion and beneficial use of not more than 15 acre-feet of surface water impounded in any reservoir having a total water volume of less than 15 acre-feet.

Nebraska

Nebraska has a similar statutory provision to that of Kansas regarding reservoirs of less than 15 acre-feet in capacity. The Nebraska statute states that storage of less than 15 acre-feet with a dam having a height of less than 25 feet is exempt from filing for a water right as long as there is no diversion of water.

New Mexico

In New Mexico, the state's appropriation statutes do not apply to landowners who may build or construct tanks or ponds for livestock watering which do not exceed 10 acre-feet in capacity.

Texas

In Texas, by statute anyone can build a reservoir up to 200 acre-feet in capacity on a non-navigable stream segment and on their own property for domestic and

livestock purposes only. This type of reservoir is considered *de minimis* and does not require a permit to appropriate public water. If a reservoir of this type is used for any commercial purposes (such as a fee for fishing operation), a permit is then required.

Wyoming

In Wyoming, all stockponds are considered *de minimis* uses by statute. Stockponds are given a water right with a priority date and are quantified based on the permit application amount as approved by the Wyoming State Engineer. The stockponds are described to the ¼, ¼ section.

3.3 ALTERNATIVE METHODS

As the previous section indicates, other states and jurisdictions have employed wide ranging approaches and standards in addressing stockwatering and stockpond water rights. Although some general stream adjudications have established stockpond rights on the basis of claimed but usually unverified capacities and priorities, most past adjudications have either excluded them from the case or use a uniform approach to their quantification and sometimes prioritization. DWR believes that these approaches are reflective of the physical realities associated with these water uses. First, as shown in Chapter 2, the effect of stockpond water use in the Silver Creek watershed on the average annual discharge of Silver Creek at the watershed outlet is minimal, and is expected to be of the same order of magnitude in the other watersheds of the Little Colorado River system.

Second, these approaches are also reflective of typical livestock range conditions: the number of livestock that use a particular facility is constantly changing; the water supply that is available to a particular facility is constantly changing; and the condition of these normally rudimentary facilities and their ability to store, divert, or develop a water supply is constantly changing. Therefore, in simplifying the standards used to adjudicate these rights, many previous jurisdictions have apparently found it unrealistic to gather the facts necessary to establish accurate attributes for each individual right or unrealistic to expect most stockwatering and stockpond rights to be maintained, exercised, or administered according to detailed decreed specifications.

If it is determined that a comprehensive adjudication of the Silver Creek watershed also does not require detailed, verified elements to be established for all stockwatering and stockpond rights, then what alternatives might be considered in quantifying, prioritizing, and specifying other attributes of these rights? First, can a uniform approach to quantification be adopted and if so what standard should be used? Second, can stockwatering and stockpond uses that have a small effect on the total water supply and consequently on any senior downstream appropriators be classified and prioritized as a *de minimis* user, and if so at what size threshold? Third, if a uniform quantification is adopted for certain stockwatering and stockpond uses, and certain stockwatering and stockpond are prioritized according to a *de minimis* standard, then which remaining attributes need to be specified for these rights in the decree?

From a technical perspective, several alternatives that might be employed in answering these questions are described below.

STOCKWATERING USES

Alternative 1. Stockwatering rights could be quantified and prioritized according to claimed information. No *de minimis* category would be established.

Advantages: A stockwatering right would have a unique extent and priority specified.

Disadvantages: Since the claimed information could be erroneous or inaccurate, the decreed attributes could also be inaccurate. It would also be infeasible to actively administer or enforce the extent or priority of these rights (how are you are to keep livestock from drinking out of a particular stream or watering facility).

Alternative 2. Stockwatering rights would not be individually prioritized and they would be quantified according to a uniform reasonable use standard. All stockwatering rights would be included in a *de minimis* classification.

Advantages: This alternative would be very simple to apply. Erroneous or inaccurate attributes would be avoided. The rights would be feasible to administer.

Disadvantages: This alternative would not quantify the extent nor the priority of stockwatering rights.

Alternative 3. Stockwatering rights could be quantified according to the number of livestock that can be supplied under each right, or in gallons per head per day, or be entitled to a certain maximum annual volume such as 0.25 acre-feet per year. The priority date could be assigned from claimed information. All such rights or none of these rights could be classified as *de minimis*, but individual priority assignment would be meaningless under this alternative if the rights were classified as *de minimis*.

Advantages: This alternative would be simple to apply and would avoid having erroneous or inaccurate individual quantification attributes decreed.

Disadvantages: Even these uniform quantification limits would be essentially

meaningless for stockwatering rights since they could not be feasibly administered. The claimed priority dates may be erroneous and would also not be feasible to administer if not they are not included in a *de minimis* category.

STOCKPONDS

Alternative 1. Stockpond rights could be quantified and prioritized according to claimed information. There would be no *de minimis* classification.

Advantages: Every stockpond would have an extent and a priority date assigned to it.

Disadvantages: Individual extent and priority would be frequently in error unless these attributes were verified in all instances by DWR or they are litigated. Currently, DWR verifies only a small minority of stockpond capacities and probably would not find it fiscally feasible or an appropriate use of resources to expand its verification to all stockponds.

Alternative 2. Stockpond rights could be quantified and prioritized by DWR verified information above a certain area or capacity threshold. Below the threshold, stockpond rights would be uniformly quantified and prioritized as a *de minimis* classification. Some possible capacity thresholds could be 15 acre-feet maximum controlled capacity (possible statutory basis) or lower capacities such as 3, 5, or 10 acre-feet. Some possible surface area limits might be 1 acre or 2 acres at maximum capacity.

Advantages: Currently, the HSR contains DWR verified information upon which to base an extent and priority based upon a 1 or 2 surface acre area standard, or based upon a 15 acre-feet capacity standard. There is a possible statutory basis and precedence in other states for a capacity threshold. A surface area threshold, on the other hand, provides a more modern parameter that can be feasibly enforced for exceedence through remote sensing or aerial photography. Classifying stockponds below the threshold as *de minimis* enhances the feasibility of actively administering the remaining stockponds above the threshold.

Disadvantages: In this alternative, a unique extent and priority date for each stockpond right below the threshold would not be specified. A threshold based upon capacity

utilizes a parameter that is subject to more change than one based on surface area due to periodic silting and desilting of a stockpond. It would probably be more difficult for an owner of a stockpond to maintain a decreed capacity than it would be to maintain a decreed surface area.

Alternative 3. Classify all stockponds as *de minimis* right. The extent could be derived from claimed information or not specified, even those with large capacities and a relatively large water use.

Advantages: DWR's HSR investigation requirements would be reduced. This alternative would be easy to implement in a decree and it would reduce future administration requirements.

Disadvantages: Individual attributes of stockpond rights would not be decreed.

EXAMPLE DECREE SPECIFICATION

To aid in understanding the alternatives discussed above, several example decree specification tables are presented utilizing a representative watershed file report (WFR), which is WFR No. 033-41-12 (the WFR is shown on the following pages). This WFR contains five stockponds and two instream stockwatering uses. Stockponds SP1 (Number 7 Tank), SP4 (Sugarloaf Tank), and SP5 (Upper Tank #3) were found to be less than 2 surface acres in size and less than 15 acre-feet in total capacity through aerial photograph analysis and field investigations. SP2 (Number 6 Tank) was surveyed by DWR and determined to be 1.1 acres in maximum surface area (at spillway crest) and 3.8 acre-feet at maximum capacity. SP6 (Lower Tank #3) was also surveyed and found to be 2.2 acres in surface area and 5.1 acre-feet maximum capacity. Instream stockwatering use SW1 is located on a portion Tenmile Draw, while instream stockwatering use SW3 is found on a portion of Sevenmile Draw.

The following decree specification tables only illustrate Alternative 1, 2 and 3 for <u>both</u> stockwatering uses and stockponds for sake of brevity (there are nine possible combinations of the alternatives). The tables display the water right attributes that DWR believes are necessary to describe stockwatering and stockpond rights in a

decree, including those which may classified as *de minimis*. These attributes are: water right number, facility name, priority date, entitlement, legal location, and water source. DWR realizes that other water uses such as irrigation will require additional attributes not listed in these tables (i.e., water duty or acreage). For the legal location attribute, DWR proposes that stockwatering uses and stockponds be described to a ¼, ¼ section (40 acres). If there are several uses within the same ¼, ¼ section, then these uses should be described to the ¼, ¼, ¼ section (10 acres).

LAND OWNER	WATERSHED FILE NO.	LESSEE/ALLOTTEE	LEASE-PERMIT ID
SLD	033-41-012	FLAKE, VINCENT M.	05-431

A P P L I C A B L E F I L I N G S A N D D E C R E E S

CLEARLY STATED INFORMATION FROM FILINGS AND DECREES

FILING NUMBER	FILING STATUS	USES	QUANTITY IN AFA	USE LOCATION SECTION	TWNP	RNGE	CLAIM DATE	DIVERSION LOCATION SECTION	TWNP	RNGE
3R-0002057	CERTIF.	STOCKWATERING	.61	NESE10	140N	200E	1960	NESE10	140N	200E
3R-0002058	CERTIF.	STOCKWATERING	.61	SWNW24	140N	200E	1960	SWNW24	140N	200E
36-0000349		STOCKWATERING REC/FISH/WLDLF	.71	NESW12	140N	200E	1920	NWSE12	140N	200E
36-0000350		STOCKWATERING REC/FISH/WLDLF	1.12	SENE10	140N	200E	1877	SENE10	140N	200E
36-0000351		STOCKWATERING REC/FISH/WLDLF	1.12	SENE10	140N	200E	1977	SENE10	140N	200E
36-0000378		STOCKWATERING REC/FISH/WLDLF	6.30	NWSW24	140N	200E	1919	NWSW24	140N	200E
36-0000379		STOCKWATERING REC/FISH/WLDLF	3.70	SESE02	140N	200E	1886	SESE02	140N	200E
36-0000380		STOCKWATERING REC/FISH/WLDLF	6.80	SESE10	140N	200E	1920	SESE10	140N	200E
36-0000382		STOCKWATERING REC/FISH/WLDLF	1.12	SENE24	140N	200E	1877	SENE24	140N	200E
36-0034933		DOMESTIC STOCKWATERING	.40				1886	SESE02	140N	200E
38-0059100		STOCKPOND	5.00	SESE02	140N	200E	1948	SESE02	140N	200E
38-0090788		STOCKPOND REC/FISH/WLDLF	.71	NESW12	140N	200E	1920	NESW12	140N	200E
38-0091149		STOCKPOND REC/FISH/WLDLF	3.37	SESE02	140N	200E	1948	SESE02	140N	200E
38-0091151		STOCKPOND REC/FISH/WLDLF	6.18	SESE10	140N	200E	1920	SESE10	140N	200E
38-0091154		STOCKPOND REC/FISH/WLDLF	5.70	NWSW24	140N	200E	1920	NWSW24	140N	200E
39-0081274		STOCKPOND	.80				1886	SENESE10	140N	200E
39-0081275		STOCKPOND	2.00				1886	SESWNW24	140N	200E
39-0081280		STOCKPOND	5.00				1886	NESESE02	140N	200E
39-0086087		STOCKPOND	3.37				1884	NESESE02	140N	200E
39-0086089		OTHER	.38	10	140N	200E	1884			
39-0086090	AMENDED	STOCKPOND	3.80				1884	NESESE10	140N	200E
39-0086091	AMENDED	STOCKPOND	.77				1884	SWNESW12	140N	200E
39-0086095	AMENDED	OTHER	.37	10	140N	200E	1884			
39-0086096	AMENDED	STOCKPOND	6.52				1884	NENWSW24	140N	200E

D W R A N A L Y S I S O F F I L I N G S A N D D E C R E E S

FILING NUMBER	USES CLAIMED OR REFERENCED	USES FOUND BY DWR	APPLIES TO DIVERSIONS	APPLIES TO PWR NUMBERS
3R-0002057	STOCKPOND	STOCKPOND		SP002
	REC/FISH/WLDLF	INCIDENTAL		
3R-0002058	STOCKPOND	STOCKPOND		SP005,SP006
36-0000349	STOCKPOND	STOCKPOND		SP004
	REC/FISH/WLDLF	INCIDENTAL		
36-0000350	STOCKWATERING	STOCKWATERING		SW001
	REC/FISH/WLDLF	INCIDENTAL		
36-0000351	STOCKWATERING	STOCKWATERING		SW001
	REC/FISH/WLDLF	INCIDENTAL		
36-0000378	STOCKPOND	STOCKPOND		SP005,SP006
	REC/FISH/WLDLF	INCIDENTAL		
36-0000379	STOCKPOND	STOCKPOND		SP001
	REC/FISH/WLDLF	INCIDENTAL		
36-0000380	STOCKPOND	STOCKPOND		SP002
	REC/FISH/WLDLF	INCIDENTAL		
36-0000382	STOCKWATERING	STOCKWATERING		SW003
	REC/FISH/WLDLF	INCIDENTAL		
36-0034933	DOMESTIC	NONE		SP001
	STOCKPOND	STOCKPOND		
38-0059100	STOCKPOND	STOCKPOND		SP001
38-0090788	STOCKPOND	STOCKPOND		SP004
	REC/FISH/WLDLF	INCIDENTAL		
38-0091149	STOCKPOND	STOCKPOND		SP001
	REC/FISH/WLDLF	INCIDENTAL		

FILE 033-41-012 (CONTINUED)

D W R A N A L Y S I S O F F I L I N G S A N D D E C R E E S (CONTINUED)

FILING NUMBER	USES CLAIMED OR REFERENCED	USES FOUND BY DWR	APPLIES TO DIVERSIONS	APPLIES TO PWR NUMBERS
38-0091151	STOCKPOND	STOCKPOND		SP002
	REC/FISH/WLDLF	INCIDENTAL		
38-0091154	STOCKPOND	STOCKPOND		SP005,SP006
	REC/FISH/WLDLF	INCIDENTAL		
39-0081274	STOCKPOND	STOCKPOND		SP002
39-0081275	STOCKPOND	STOCKPOND		SP005,SP006
39-0081280	STOCKPOND	STOCKPOND		SP001
39-0086087	STOCKPOND	STOCKPOND		SP001
	REC/FISH/WLDLF	INCIDENTAL		
39-0086089	STOCKWATERING	STOCKWATERING		SW001
	REC/FISH/WLDLF	INCIDENTAL		
39-0086090	STOCKPOND	STOCKPOND		SP002
	REC/FISH/WLDLF	INCIDENTAL		
39-0086091	STOCKPOND	STOCKPOND		SP004
	REC/FISH/WLDLF	INCIDENTAL		
39-0086095	STOCKWATERING	STOCKWATERING		SW003
	REC/FISH/WLDLF	INCIDENTAL		
39-0086096	STOCKPOND	STOCKPOND		SP005,SP006
	REC/FISH/WLDLF	INCIDENTAL		

U S E S

PWR #	LOCATION SECTION	TWNP	RNGE	SUPPLIED BY DIVERSIONS	WATER SOURCE	PHOTO DATE	SOURCE CHANGE	FACILITY NAME
SW001	SWNWSW10	14ON	20OE		SURFACE		NO	INSTREAM USE
SW003	NWSWSW24	14ON	20OE		SURFACE		NO	INSTREAM USE

R E S E R V O I R S

PWR #	LOCATION SECTION	TWNP	RNGE	SUPPLIED BY DIVERSIONS	WATER SOURCE	PHOTO DATE	RESERVOIR NAME	STORAGE PURPOSE
SP001	NESESE02	14ON	20OE		SURFACE	1986	NUMBER 7 TANK	STOCKWATERING WILDLIFE
SP002	NESESE10	14ON	20OE		SURFACE	1986	NUMBER 6 TANK	STOCKWATERING WILDLIFE
SP004	SWNESW12	14ON	20OE		SURFACE	1986	SUGARLOAF TANK	STOCKWATERING WILDLIFE
SP005	NENWSW24	14ON	20OE		SURFACE	1986	TANK #3	STOCKWATERING WILDLIFE
SP006	NENWSW24	14ON	20OE		SURFACE	1986	TANK #3	STOCKWATERING WILDLIFE

P W R S U M M A R Y

PWR #	APPLICABLE ADJ FILINGS	APPLICABLE PRE FILINGS	** APPARENT FIRST USE ** DATE	DATA SOURCE	DRAINAGE AREA/ WATER SOURCE NAME
SP001	39-0081280	36-0000379	1886	36-34933	SILVER CREEK
	39-0086087	36-0034933			
		38-0059100			
		38-0091149			
SP002	39-0081274	3R-0002057	1920	36-00380 & 38-91151	SILVER CREEK
	39-0086090	36-0000380			
		38-0091151			
SP004	39-0086091	36-0000349	1920	38-90788 & 36-00349	SILVER CREEK
		38-0090788			
SP005	39-0081275	3R-0002058	1919	36-00378	SILVER CREEK
	39-0086096	36-0000378			
		38-0091154			
SP006	39-0081275	3R-0002058	1919	36-00378	SILVER CREEK
	39-0086096	36-0000378			
		38-0091154			
SW001	39-0086089	36-0000350	1877	36-00350	SILVER CREEK
		36-0000351			
SW003	39-0086095	36-0000382	1877	36-00382	SILVER CREEK

FILE 033-41-012 (CONTINUED)
Q U A N T I T I E S O F U S E

PWR #	QUANTIFICATION TYPE	APPLICABLE ACREAGE/SURFACE AREA (ACRES)	WATER DUTY	ESTIMATED VOLUME	REMARKS
SP001	MAX. AREA/CAP	< 2.0		< OR = 15.0 AF	
SP002	MAX. AREA/CAP	1.1		3.8 AF	
SP004	MAX. AREA/CAP	< 2.0		< OR = 15.0 AF	
SP005	MAX. AREA/CAP	< 2.0		< OR = 15.0 AF	
SP006	MAX. AREA/CAP	2.2		5.1 AF	
SW001					SEE VOLUME 1
SW003					SEE VOLUME 1

E X P L A N A T I O N

CLAIMED LOCATION.

USES AND RESERVOIRS
SP1 - STOCKPOND LOCATED ON TENMILE DRAW.
SP2 & SP4 - STOCKPONDS LOCATED ON AN UNNAMED TRIBUTARY TO TENMILE DRAW.
SP5 & SP6 - STOCKPONDS LOCATED ON AN UNNAMED TRIBUTARY TO SEVENMILE DRAW.
TANK NO. 3 IS ACTUALLY TWO SEPARATE IMPOUNDMENTS (SP5 & SP6).
SW1 - INSTREAM STOCKWATERING USE FROM TENMILE DRAW.
SW3 - INSTREAM STOCKWATERING USE FROM SEVENMILE DRAW.
TENMILE DRAW AND SEVENMILE DRAW ARE LOCATED WITHIN THE SILVER CREEK DRAINAGE AREA.

TABLE 3-2

ALTERNATIVE 1 DECREE SPECIFICATION TABLE
WATER RIGHT ATTRIBUTES BASED ON CLAIMED INFORMATION

LANDOWNER NAME: SLD **WATERSHED FILE REPORT NUMBER:** 033-41-012

WATER RIGHT NUMBER	FACILITY NAME	PRIORITY DATE[1]	ENTITLEMENT[2]	LEGAL LOCATION[3]	WATER SOURCE
SP001	NUMBER 7 TANK	1884	5.00 ACRE-FEET	SE¼, SE¼, SECTION 2, T.14N., R.20E.	TENMILE DRAW
SP002	NUMBER 6 TANK	1884	3.80 ACRE-FEET	SE¼, SE¼, SECTION 10, T.14N., R.20E.	UNNAMED TRIBUTARY TO TENMILE DRAW
SP004	SUGARLOAF TANK	1884	0.77 ACRE-FEET	NE¼, SW¼, SECTION 12, T.14N., R.20E.	UNNAMED TRIBUTARY TO TENMILE DRAW
SP005	UPPER TANK #3	1884	6.52 ACRE-FEET	NW¼, SW¼, SECTION 24, T.14N., R.20E.	UNNAMED TRIBUTARY TO SEVENMILE DRAW
SP006	LOWER TANK #3	1884	6.52 ACRE-FEET	NE¼, NW¼, SW¼, SECTION 24, T.14N., R.20E.	UNNAMED TRIBUTARY TO SEVENMILE DRAW
SW001	INSTREAM USE	1877	1.12 ACRE-FEET PER YEAR	NE¼, NW¼, SW¼, SECTION 10, T.14N., R.20E.	TENMILE DRAW
SW003	INSTREAM USE	1884	0.32 ACRE-FEET PER YEAR	SW¼, SW¼, SECTION 24, T.14N., R.20E	SEVENMILE DRAW

[1]Based on earliest claimed date from previous water rights filings and their amendments.

[2]Based on greatest claimed capacity or quantity from previous water rights filings and their amendments. Entitlement refers to "extent" as described in A.R.S § 45-251.

[3]Based on DWR verified information.

TABLE 3-3

ALTERNATIVE 2 DECREE SPECIFICATION TABLE
DE MINIMIS THRESHOLD: REASONABLE USE FOR STOCKWATERING AND LESS THAN 2 SURFACE ACRES FOR STOCKPONDS

LANDOWNER NAME: SLD **WATERSHED FILE REPORT NUMBER:** 033-41-012

WATER RIGHT NUMBER	FACILITY NAME	PRIORITY DATE[1]	ENTITLEMENT[2]	LEGAL LOCATION[3]	WATER SOURCE
SP001	NUMBER 7 TANK	DE MINIMIS	<2 ACRES	SE¼, SE¼, SECTION 2, T.14N., R.20E.	TENMILE DRAW
SP002	NUMBER 6 TANK	DE MINIMIS	<2 ACRES	SE¼, SE¼, SECTION 10, T.14N., R.20E.	UNNAMED TRIBUTARY TO TENMILE DRAW
SP004	SUGARLOAF TANK	DE MINIMIS	<2 ACRES	NE¼, SW¼, SECTION 12, T.14N., R.20E.	UNNAMED TRIBUTARY TO TENMILE DRAW
SP005	UPPER TANK #3	DE MINIMIS	<2 ACRES	NW¼, SW¼, SECTION 24, T.14N., R.20E.	UNNAMED TRIBUTARY TO SEVENMILE DRAW
SP006	LOWER TANK #3	1884	2.2 ACRES, 5.1 ACRE-FEET	NE¼, NW¼, SW¼, SECTION 24, T.14N., R.20E.	UNNAMED TRIBUTARY TO SEVENMILE DRAW
SW001	INSTREAM USE	DE MINIMIS	REASONABLE USE	NE¼, NW¼, SW¼, SECTION 10, T.14N., R.20E.	TENMILE DRAW
SW003	INSTREAM USE	DE MINIMIS	REASONABLE USE	SW¼, SW¼, SECTION 24, T.14N., R.20E	SEVENMILE DRAW

[1]Based on *de minimis* classification or Special Master's determinations.

[2]Entitlement refers to "extent" as described in A.R.S § 45-251.

[3]Based on DWR verified information.

TABLE 3-4

ALTERNATIVE 3 DECREE SPECIFICATION TABLE
STOCKWATERING AND STOCKPONDS CONSIDERED DE MINIMIS USES

LANDOWNER NAME: SLD **WATERSHED FILE REPORT NUMBER:** 033-41-012

WATER RIGHT NUMBER	FACILITY NAME	PRIORITY DATE	ENTITLEMENT[1]	LEGAL LOCATION[2]	WATER SOURCE
SP001	NUMBER 7 TANK	DE MINIMIS	5.00 ACRE-FEET	SE¼, SE¼, SECTION 2, T.14N., R.20E.	TENMILE DRAW
SP002	NUMBER 6 TANK	DE MINIMIS	3.80 ACRE-FEET	SE¼, SE¼, SECTION 10, T.14N., R.20E.	UNNAMED TRIBUTARY TO TENMILE DRAW
SP004	SUGARLOAF TANK	DE MINIMIS	0.77 ACRE-FEET	NE¼, SW¼, SECTION 12, T.14N., R.20E.	UNNAMED TRIBUTARY TO TENMILE DRAW
SP005	UPPER TANK #3	DE MINIMIS	6.52 ACRE-FEET	NW¼, SW¼, SECTION 24, T.14N., R.20E.	UNNAMED TRIBUTARY TO SEVENMILE DRAW
SP006	LOWER TANK #3	DE MINIMIS	6.52 ACRE-FEET	NE¼, NW¼, SW¼, SECTION 24, T.14N., R.20E.	UNNAMED TRIBUTARY TO SEVENMILE DRAW
SW001	INSTREAM USE	DE MINIMIS	0.25 ACRE-FEET	NE¼, NW¼, SW¼, SECTION 10, T.14N., R.20E.	TENMILE DRAW
SW003	INSTREAM USE	DE MINIMIS	0.25 ACRE-FEET	SW¼, SW¼, SECTION 24, T.14N., R.20E	SEVENMILE DRAW

[1]For stockponds, entitlement is based on the greatest claimed capacity or quantity from previous water rights filings and their amendments. For stockwatering, a uniform standard is used. Entitlement refers to "extent" as described in A.R.S § 45-251.

[2]Based on DWR verified information.

CHAPTER 4: SUMMARY AND CONCLUSIONS

This report posed three fundamental questions concerning the use of a streamlined adjudication procedure for a *de minimis* category of stockwatering and stockpond rights: 1) should a uniform approach to quantification be adopted and, if so, what standard should be used; 2) what maximum levels should be created for the quantification and prioritization of stockpond and stockwater rights under a *de minimis* classification; and 3) what effect, if any, will there be on the hydrology of the river system if these rights are summarily adjudicated by the courts. The answers to these questions, supported by the analysis in Chapters 2 and 3, are summarized here.

The quantification of each individual stockpond and stockwatering right by verifiable measurement is an enormous task. DWR has not attempted to measure each of these constantly changing rights in preparation of the hydrographic survey reports (HSRs). Furthermore, DWR cannot conduct such a survey at current staffing levels and does not recommend that public monies be expended for such a task. Likewise, DWR believes that litigation over each right to establish an individual quantity is a waste of resources. In litigation, at least two parties will attempt to quantify each individual right, then present their differing findings to the Special Master who must decide the quantity without benefit of an independent viewpoint. While such an approach may produce a fairly accurate survey for a particular moment in time, it amounts to the trial of 762 stockponds in the Silver Creek watershed alone. More importantly, decreed quantities would be systematically unenforceable unless state funding were provided for a field survey team to constantly measure the uses to prevent unlawful expansions. Enforcement would be left to competing right holders, resulting in potentially endless legal disputes.

To expeditiously reach an enforceable decree, DWR recommends a uniform quantification method for all rights within the *de minimis* category. The assigned quantity would be the threshold limit itself, regardless of whether the actual magnitude of the use is less than the limit. For stockponds, one possible uniform standard to base the *de minimis* classification on is a maximum capacity, such as the 15 acre-foot limit found in the Stockpond Registration Act (A.R.S. § 45-271 *et seq.*) However, the HSR

investigations have found that 15 acre-feet is a much larger than typical capacity for stockponds. Stockponds of that size have a much greater than typical potential to impact downstream senior rights. Out of a total of 762 stockponds identified in the Silver Creek watershed, only 10 were found to exceed 15 acre-feet in capacity.

Another uniform standard that can be used is to base the *de minimis* threshold on a maximum controlled surface area of the stockpond. DWR believes that a surface area standard provides a more feasible method for administering compliance with the *de minimis* threshold than does stockpond capacity because it allows the use of modern technology with satellite remote sensing to periodically monitor stockpond sizes. With a feasible method of administration, DWR can provide greater assurance that it will be able to actively administer and enforce exceedence of whatever *de minimis* thresholds may be adopted by the Court, as well as to administer the decreed quantities assigned to stockponds that are larger than the *de minimis* amounts. Therefore, as the future administrator of the decree, DWR urges the adoption of a maximum surface area standard to establish *de minimis* stockpond rights.

If a surface area standard is adopted by the Court, then DWR recommends a *de minimis* threshold of two surface acres at the maximum controlled capacity of the stockpond. DWR has found from its surveys of stockponds in the Silver Creek watershed that there are no stockponds at or below this threshold that exceed 15 acre-feet in capacity--the limit specified in the Stockpond Registration Act. While the legal significance of the Act's 15 acre-feet limit may be arguable, DWR suggests that a *de minimis* classification should probably not be extended to stockponds that exceed 15 acre-feet. A two surface acre threshold provides the means to ensure that 15 acre-foot and greater capacity stockponds would not be classified as *de minimis* rights. In fact, the average two surface acre stockpond in the Silver Creek watershed has a statistically predicted capacity of 6.6 acre-feet. This capacity is smaller than the 10 acre-feet capacity *de minimis* stockpond classifications provided in California and New Mexico, less than the 15 acre-feet limit in Kansas and Nebraska, substantially less than the 200 acre-feet limit in Texas, and less than the unlimited *de minimis* classification of all stockponds in Wyoming. Of the 762 stockponds identified in the Silver Creek watershed, 10 have surface areas that exceed 2 acres and capacities that exceed 15 acre-feet, and another 26 have surface areas greater than two acres, but capacities of

less than 15 acre-feet. That then leaves only these 36 stockponds in the Silver Creek watershed that would exceed the recommended *de minimis* threshold of two surface acres, and two of these are located in closed drainages. For these 36 stockponds, DWR recommends that individual extent and priorities be established and actively administered along with other non *de minimis* rights following entry of the adjudication decree (except for perhaps the two stockponds located closed drainages, depending upon the Court's disposition of surface water uses from these sources).

For stockwatering, DWR recommends the uniform standard of reasonable use. This effectively places all stockwatering uses within the *de minimis* category. Balancing the initial quantification of the individual rights and the enforcement difficulty of such a decree against the amount of water gained or lost to the watershed under slight variations in ranching practices, stockwatering rights do not justify individual quantification. Stockwatering impacts on the hydrology of the stream system are so small that artificial and arbitrary limits such as a per head quantification limit are not necessary. DWR's recommendation for the necessary attributes and standards to adjudicate *de minimis* stockpond and stockwatering uses is illustrated by example shown under Alternative 2, Table 3-3 in the previous chapter.

Assuming that these simple, yet practical methods of quantification are employed, the important question becomes what impact, if any, will be suffered by the senior downstream users? Chapter 2 of this report shows that the total volume of water prevented from contributing to the surface water supply of Silver Creek at the watershed outlet by all existing stock uses is an unmeasurably small amount. The total volume of surface water reduction due to all stockponds is estimated to average 380 acre-feet per year or 2.8% of the total existing surface water supply, and only 2.2% for stockponds of less than two surface acres in size. DWR suggests that these impacts meet the definition of *de minimis* use within the context of the adjudication proceedings.

Nevertheless, there is concern that simplistic quantification and prioritization standards will permit stock uses to be expanded to the increasing injury of the senior users. While perhaps a realistic concern, DWR urges that several points be considered before drawing any conclusions. By streamlining administration requirements for the large number of small uses, the *de minimis* concept in general adjudications provides

the means to actively administer the larger rights. Without such thresholds it becomes a question for the decree's administrator to either not actively administer any rights, or to create administrative thresholds which essentially mimic the *de minimis* concept itself. As all parties are aware, state governments throughout the nation are faced with increasing demands on their financial reserves. In the near term, it is unlikely that large new funding will be appropriated for an adjudication enforcement effort capable of measuring, and policing, the thousands of small uses within this state. In fact, the trend may be exactly in the opposite direction.[3] Without uniform quantification and *de minimis* thresholds, small uses, even if ranked precisely by quantity and priority, would go largely unmonitored simply by virtue of their numbers. The burden would fall on individual parties to enforce the decree against their neighboring users or against numerous junior users, probably by resort to the courts.

Secondly, some parties might argue that streamlined *de minimis* adjudication is a license to increase *de minimis* use up to the maximum quantity (i.e., a one surface acre stockpond would be increased to two surface acres). DWR believes that this would not occur for stockwatering and stockpond uses. Field experience shows that the construction of stockponds and the practices of stockwatering are controlled by topographic opportunities, carrying capacities of the range, water supply development opportunities, the need to retain a water supply during the dry seasons of the year, public land management policies, and economic considerations, not by arbitrary limits specified in law. For example, the great bulk of stockponds in the Silver Creek watershed are less than two surface acres, but as of today, there is no legal reason why they must be this small. DWR's conclusion is that their size is directly dependent on stockwatering needs and costs, rather than artificial limits. In fact, one could argue that the incentive may be greater to reduce a larger pond to the two acre maximum, rather than increase a working pond's size just to take advantage of the legal limit when there is no clear need.

It is much more practical to enforce the limits of a class of rights than to enforce each individual right against each other. *De minimis* standards such as those suggested

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[3]It is anticipated that a bill will be introduced this year in the Arizona Legislature to amend the Groundwater Code and cease regulation of all grandfathered irrigation rights of 10 acres or less, as opposed to the two acre irrigation threshold currently in effect.

in this report could be administered by DWR through remote sensing techniques. Proliferation of new rights and expansion of existing rights could be administered according to the decree's provisions without private litigation, ensuring that the *de minimis* category of existing small uses remains *de minimis* throughout the life of the decree.

Finally, DWR believes that employing the *de minimis* concept in Arizona's general stream adjudication provides a benefit beyond reduced litigation costs to all claimants both large and small. In DWR's view, a *de minimis* assignment for water uses does not mean that those uses are dismissed from the adjudication or are ignored in terms of any administration. Rather DWR believes that these rights need to be located, individually decreed, and administered appropriately to ensure that the threshold limits are not violated. This provides the opportunity to enforce a finding by the Adjudication Court that certain watersheds are fully appropriated and that no additional rights should be granted. Large senior users would then be protected from further degradation of their water supply from unconstrained increases in the numbers of *de minimis* category surface water users. Small users would be granted a valuable right in a watershed with a then fixed number of water rights. There are, of course, a number of different scenarios that could occur through litigation or stipulation that will affect the way in which rights will eventually be decreed in the Little Colorado River Adjudication. But as the Court's technical assistant and administrator of the state's water resources, DWR strongly believes that a general adjudication decree which encompasses a *de minimis* category for stockwatering and stockpond uses will be in the interest of the claimants and in the general interest of the state as a whole.

In summary, DWR answers the three fundamental questions posed at the outset of this report as follows:

1. A uniform standard of quantification for small water uses is an appropriate method of quantification in a general stream adjudication. For stockponds, DWR recommends that the use be measured by the maximum controlled surface area

of the pond; for stockwatering, DWR recommends that the use be measured by a reasonable use standard.

2. From a technical perspective, DWR recommends that all stockwatering uses and all stockponds with less than two acres of maximum controlled surface area be prioritized as a *de minimis* category of rights.

3. All existing stockwatering and stockpond uses in the Silver Creek watershed that would be classified as *de minimis* according to the standards set forth above have a cumulative impact on reducing the surface water discharge from the Silver Creek watershed by 2.2%. DWR considers this relative magnitude to coincide with the definition of *de minimis* uses. Further, considering the large number of individual uses involved in effecting that reduction in discharge, DWR believes that enforcing relative priorities against these uses (even if that could be accomplished considering the nature of the facilities involved) would constitute a futile call.

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APPENDIX A: UNDEPLETED FLOW ANALYSIS FOR STOCKPONDS IN THE SILVER CREEK WATERSHED

This Appendix describes the procedures and assumptions used to examine the impact of stockponds in the Silver Creek watershed by an undepleted flow analysis. The analysis attempts to determine the fate of surface water impounded by stockponds if the ponds were removed and surface water allowed to flow under natural conditions. The undepleted flow analysis used to evaluate the impact of stockponds on the watershed has three major components: initial stockpond volume, surface flow reduction due to infiltration, and surface flow reduction due to riparian and channel processes. The initial stockpond volume was calculated from the combined capacity of all stockponds in the watershed, excluding those located in closed basins (Table A-1). There are 703 stockponds tributary to the surface water outflow of the watershed, with a combined surface area of 560 acres and capacity of 2,370 acre-feet (rounded to the nearest 10). The potential volume of additional surface flow is 2,370 acre-feet.

TABLE A-1

SILVER CREEK WATERSHED STOCKPOND ANALYSIS

STOCKPOND CATEGORY	NUMBER	AREA (ACRES)	CAPACITY (ACRE-FEET)	EXCLUDING CLOSED DRAINAGES		
				NUMBER	AREA	CAPACITY
Surveyed >=2 acres	36	196.5	570.2	34	188.0	542.6
Surveyed <2 acres	43	56.9	181.7	43	56.9	181.7
Unsurveyed <2 acres	683	341.5	1,799.7	626	313.0	1,649.5
TOTAL	762	594.9	2,551.6	703	557.9	2,373.8

The assumption used in the undepleted flow analysis is that a portion of the potential surface flow is reduced from infiltration to the groundwater system. It should

be noted that all stockponds in the watershed are along ephemeral second and third order streams. Mann (1976) has shown that infiltration from the surface water system to the groundwater system is a major factor in the watershed. The distance that the unstored water would travel varies with each stockpond location but the combined infiltration rate would be substantial. The second and third order ephemeral streams would therefore absorb a large amount of the available surface flow due to infiltration. This is a well documented processes particularly in ephemeral streams, as the surface flow moves across the dry channel water fills the available pores in the alluvial soils, thereby reducing flow. The initial rate of infiltration is high and decreases rapidly as the spaces are filled.

In this analysis infiltration to the groundwater system from undepleted flow from stockponds was assumed to occur at the same ratio as in the entire watershed. The ratio was derived from the water budget shown in Table A-2 (ADWR 1990). The budget shows that Natural Groundwater Recharge (infiltration) in the watershed equals 48,390 acre-feet per year and Net Surface Runoff (runoff) equals 33,800 acre-feet per year. The sum of infiltration and runoff is the natural surface water supply and yields 82,190 acre-feet. Of the natural surface water supply, 60% is lost to groundwater infiltration (43,390 acre-feet) and 40% (33,800 acre-feet) is available for cultural and natural uses. Applying this ratio to the undepleted flow volume yields a total of 1,420 acre-feet lost to infiltration and 950 acre-feet available for riparian and channel processes. This value includes additional infiltration in the intermittent and perennial streams due to increased surface water flow.

TABLE A-2

SILVER CREEK WATERSHED[1]
WATER BUDGET

SUPPLY	GROUNDWATER	SURFACE WATER	TOTAL
Groundwater Sources			
Natural groundwater recharge	**48,390**		**48,390**
Recharge from Cultural uses			
Irrigation - groundwater	6,010		6,010
Irrigation - surface water	3,470		3,470
Domestic	150		150
Municipal	800		800
Stockponds	1,910		1,910
Reservoirs	8,090		8,090
Industrial	160		160
Total Recharge from Cultural uses	20,590		20,590
Total Groundwater	68,980		68,980
Surface Water Sources			
Pinetop-Lakeside aquifer springs		10,560	10,560
Return flows from irrigation-groundwater		2,360	2,360
Return flows from irrigation-surface water		1,280	1,280
Net Surface Water		**33,800**	**33,800**
Total Surface Water		48,000	48,000
Total Water Supply	68,980	48,000	116,980
WATER USE			
Cultural Diversions			
Irrigation	17,900	13,770	31,670
Domestic	750	0	750
Municipal	3,990	0	3,990
Stockponds	0	2,550	2,550
Reservoirs	0	10,710	10,710
Industrial	800	0	800
Water Exports	16,000	3,600	19,600
Total Cultural Diversions	39,440	30,630	70,070
Natural Diversions			
Channel evaporation	0	220	220
Phreatophyte	0	3,500	3,500
Alluvial soil evaporation	0	300	300
Total Natural Diversions	0	4,020	4,020
TOTAL DIVERSIONS	39,440	34,650	74,090
OUTFLOW			
Groundwater Outflow			
Underflow watershed boundary	27,130		27,130
To surface water system	10,560		10,560
Vertical leakage from Coconino to Supia	15,460		15,460
Surface Water Outflow		13,350	13,350
TOTAL OUTFLOW	53,150	13,350	66,500

Change in groundwater storage (23,610).

[1]All values rounded to nearest ten acre-feet.

Riparian and channel processes include consumptive water use from evapotranspiration of riparian vegetation and direct evaporation from surface water in the channel and direct evaporation from alluvial soils. These channel processes can have a significant impact on surface water resources. It is assumed that 60% of the remaining flow after infiltration is lost to riparian and channel processes. This yields a loss of 570 acre-feet. The volume was derived from the ratio of average annual outflow (13,350 acre-feet) to net surface water runoff (33,800 acre-feet). The water budget shows that outflow is 40% of runoff, so that channel processes deplete 60% of the available runoff. This volume represents water consumed by additional phreatophyte areas and densities supplied by additional surface water. The value also represents additional direct evaporation losses due to increased surface area from additional surface water flows. The value includes losses from riparian and channel processes along the intermittent and perennial streams as well as from the ephemeral streams. The increase represents an additional 150 acres of dense riparian area supported by the increased flows.

The remaining surface water after infiltration, and riparian and channel losses represents increased outflow from the watershed as shown in Table A-3. The increased outflow is equal to 380 acre-feet per year. This is the volume of water that could potential reach the surface water outflow of the watershed if the stockponds were removed. This is 2.8% of the annual average surface water outflow from the watershed (13,350 acre-feet). It should be noted that the values used here are averages and that the climate of the watershed is highly variable.

TABLE A-3

SILVER CREEK WATERSHED
UNDEPLETED FLOW ANALYSIS FOR STOCKPONDS

COMPONENT	VOLUME (ACRE-FEET)[1]
Stockpond Volume	2,370
Infiltration	-1,420
	950
Riparian and Channel Processes	-570
INCREASE IN SURFACE OUTFLOW	380

[1]All values rounded to the nearest 10 acre-feet.

Using a possible standard of two surface acres and the same assumptions as in the previous analysis, a potential increase of 290 acre-feet could occur as shown in Table A-4.

TABLE A-4

SILVER CREEK WATERSHED
UNDEPLETED FLOW ANALYSIS FOR STOCKPONDS LESS THAN 2 SURFACE ACRES

COMPONENT	VOLUME (ACRE-FEET)[1]
Stockpond Volume (less than 2 acres)	1,830
Infiltration	-1,100
	730
Riparian and Channel Processes	-440
INCREASE IN SURFACE OUTFLOW	290

[1]All values rounded to the nearest 10 acre-feet.

CERTIFICATE OF MAILING

On September 1, 1993, the original of this report was mailed to the Clerk of the Superior Court of Apache County; copies were also mailed to all persons on the Court Approved Mailing List this same date.