Streamflow Summaries from Twelve Tributaries of Farmington Creek, Davis County Experimental Watershed, Northern Utah

Jan M. Pankey
Norbert V. Debyle

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Norbert V. DeByle

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THE AUTHORS

JAN M. PANKEY, while a graduate student at Utah State University, checked, summarized, and tabulated these streamflow data. She earned a Master of Forestry degree in 1980, partially fulfilling the requirements with a thesis entitled "Field estimates of the impervious areas of two partial area watersheds".

NORBERT V. DEBYLE, Principal Plant Ecologist at the Forest Sciences Laboratory in Logan, Utah, initiated the project, wrote most of the text accompanying the tables, and coordinated the review process. He has been responsible for activities on the Davis County Experimental Watershed since 1964, for many years as the leader of a water yield improvement research unit. He began working with the Intermountain Station in 1961 after completing requirements for a Ph.D. at the University of Michigan.

RESEARCH SUMMARY

The Farmington Creek watershed consists of 6,400 acres of forested and brush-covered lands ranging from 5,010 to 9,250 feet elevation on the west face of the Wasatch Mountains between Salt Lake City and Ogden, Utah. Streamflow data have been gathered from this stream as well as from most of its perennial tributaries for many years. Mean daily, monthly, and annual flows are tabulated for all years of record from the 12 gaged tributaries of Farmington Creek. These are:

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Acres</th>
<th>Aspect</th>
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<tbody>
<tr>
<td>Halfway</td>
<td>464</td>
<td>Southwest</td>
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<tr>
<td>Whipple</td>
<td>359</td>
<td>Southwest</td>
</tr>
<tr>
<td>Bigler</td>
<td>76</td>
<td>Southwest</td>
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<tr>
<td>Hollingsworth</td>
<td>114</td>
<td>Southwest</td>
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<tr>
<td>Morris</td>
<td>167</td>
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<td>Miller</td>
<td>252</td>
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<tr>
<td>Hellhole</td>
<td>96</td>
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<td>Rice</td>
<td>138</td>
<td>Northeast</td>
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<tr>
<td>Van Fleet</td>
<td>50</td>
<td>Northeast</td>
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<tr>
<td>Mud</td>
<td>79</td>
<td>Northeast</td>
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<tr>
<td>West Chicken</td>
<td>218</td>
<td>Northwest</td>
</tr>
<tr>
<td>East Chicken</td>
<td>137</td>
<td>Northwest</td>
</tr>
</tbody>
</table>

The tabulated streamflow data are accompanied with a topographic map and a narrative description of each watershed. The periods of record for these streams range from 5 years (Mud Creek) to 21 years (Halfway Creek). Over these years from 1937 to 1972, annual water yields ranged from 37.4 acre inches from Mud Creek in the wet year of 1941 to only 2.7 acre inches from Morris Creek in the drought year of 1961.

Monthly summaries of precipitation received at the Farmington-Rice climatic station, a mid-elevation site in the bottom of Farmington Canyon, also are tabulated for water years 1940–72. Annual precipitation values ranged from 28.4 inches in 1956 to 51.5 inches in 1969. Also, this report reviews pertinent research publications and published sources of auxiliary data on streamflow from Farmington Creek and nearby watersheds. The tabulated data on streamflow from Farmington Creek were precipitated at several points on the Davis County Experimental Watershed.
Streamflow Summaries from Twelve Tributaries of Farmington Creek, Davis County Experimental Watershed, Northern Utah

Jan M. Pankey
Norbert V. DeByle

INTRODUCTION

The area within and near the Davis County Experimental Watershed (DCEW), a portion of the Wasatch National Forest between Farmington and Beautiful, Utah, has served as an outdoor laboratory for the Intermountain Forest and Range Experiment Station since 1932. In the first third of this century, intense summer rainstorms, falling on denuded overgrazed watersheds, caused mud-rock floods in these narrow, steep canyons. Extensive damage from the floods, especially those that occurred in 1923 and 1930, forced a change in land use. Grazing by domestic livestock was stopped and rehabilitation and protection of these watersheds were begun.

Much research was done to test and monitor rehabilitation practices. As part of that research effort, gaging stations were established on most permanent streams on the DCEW. Streamflow records from these stations have been used for more than 10 research publications, some of which are cited in this report; the remainder appear in the DCEW bibliography (DeByle and Hossano 1972). However, most of these streamflow data have neither been utilized nor published. They have remained in the files, available only to those who knew of their existence and those who had access to them. With this report, all streamflow data that might have value more than one partial year of record from any drainage are made available. Mean daily, monthly, and annual flows are tabulated. Occasionally, due to gage malfunction, daily flows were estimated. These estimated values appear in italics.

THE WATERSHEDS

The Davis County Experimental Watershed consists of approximately 18,000 acres of mountainous terrain between 4,500 and 9,200 feet elevation. It is dissected by eight major west-facing drainages (Farmington, Rudd, Steed, Davis, Ricks, Barnard, Parrish, and Centerville Creeks), all flowing as independent streams into the Lake Bonneville basin (Salt Lake Valley) immediately west of the DCEW (fig. 1).

Four of these streams have been gaged and the flow records published by the U.S. Geological Survey for many years. These gaged drainages and their period of published record are: Farmington Creek (October 1949-September 1971, October 1975 to present), Ricks Creek, in Ford Canyon (April 1955-September 1968), Parrish Creek (October 1948-September 1968), and Centerville Creek (October 1949 to present). Through September 1949 these data are found in an annual series of water-supply papers entitled, “Surface Water Supply of the United States” (USGS 1932 - USGS 1961). Since 1961 they have been published as “Surface Water Records of Utah” (USGS 1961 - 1964) or “Water Resources Data for Utah—Part 1. Surface Water Records” (USGS 1965 to present). A brief description of these four drainages follows:

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Area</th>
<th>Elevation range (Feet)</th>
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<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Minimum</td>
</tr>
<tr>
<td>Farmington</td>
<td>6.400</td>
<td>5.010</td>
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<tr>
<td>Ricks (Ford)</td>
<td>1.504</td>
<td>4.640</td>
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<tr>
<td>Parrish</td>
<td>1.281</td>
<td>4.900</td>
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<tr>
<td>Centerville</td>
<td>2.016</td>
<td>4.675</td>
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</tbody>
</table>

The largest watershed, Farmington, is fed by many small, permanent tributaries (fig. 2). Streamflow data from 12 of these tributaries are tabulated in this report. Ten are in steep terrain draining into Farmington Creek in the bottom of Farmington Canyon. Of these, four are essentially southwest-facing and six are north- and northeast-facing catchments (table 1). The last two, the Chicken Creek watersheds, are at the headwaters of Farmington Creek on relatively gentle terrain (table 1; Johnston and Doty 1972). Some 2,150 acres of Farmington Creek watershed are in the 12 gaged tributaries. This represents 34 percent of the 6,000-acre total. These tributaries include elevations from 8,140 feet (top of Halfway) to 6,120 feet (mouth of Morris), thus covering most of the elevational range of the Farmington watershed.
There are 129 complete water years of record from the 12 tributaries table 1. These range from as little as 5 years from Mud Creek to 19, 20, and 21 years each for Morris, Miller, and Halfway Creeks, respectively. Over three years from 1937 through 1972, the yields ranged from 37.4 area inches from Mud Creek in the wet year of 1942 to as little as 2.7 area inches from Morris in the drought year of 1961 (tables 2 and 3). In addition, there are 85 partial water years of data, consisting of at least 3 months each, that are included in this report.

Table 2.—Total annual yields, in area inches, for 12 gaged catchments on the Davis County Experimental Watershed

<table>
<thead>
<tr>
<th>Water year</th>
<th>Halfway</th>
<th>Whipple</th>
<th>Biggar</th>
<th>Halls worth</th>
<th>Morris</th>
<th>Miller</th>
<th>Halfhooie</th>
<th>Rice</th>
<th>Van Yield</th>
<th>Mud</th>
<th>East Chicken</th>
<th>West Chicken</th>
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<td>1936</td>
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Total complete years 21 6 8 9 19 20 9 9 9 5 7 7

Mean yield 20.02 13.04 17.12 12.85 10.19 17.29 20.22 24.03 18.76 25.95 11.22 20.90

P = partial year of data, minimum of 3 months.
— = no data or less than 3 months data.

BEST COPY AVAILABLE
PRECIPITATION

The bulk of the annual precipitation falls during autumn, winter, and spring as gentle rain or snow that originates from large frontal storm systems that move in from the Pacific. Over much of the DCW, about three-fourths of the annual precipitation falls as snow (fig. 3). Snowpacks holding 30 inches or more of water commonly accumulate at the higher elevations. Snowmelt in spring and early summer releases from one-half to two inches of water per day.

Most summer precipitation is from local thunderstorms, these being more common at higher elevations. These thunderstorms can produce very intense rainfall; for example, one storm, a Utah record for many years, delivered 0.7 inch of rain in 5 minutes on the Halfway watershed in 1947.

In most years, the quarter of the annual precipitation that falls in the summer as rain contributes little to total water yields. Summer rains commonly wet only the surface layers of soil and are not usually used by the vegetation on site or evaporated. Streamflow from these rainstorms may result entirely from channel and near-channel interception (Hawkins 1970; Pankey and Hawkins 1981). Late autumn rains, however, may recharge the water deficit in the soil mantle, thereby allowing more of the following spring’s snowmelt to reach the stream channels.

Annual precipitation increases about 6 inches for each 1,000-foot increase in elevation on this watershed. Farmington, at the base of these mountains, receives about 20 inches; the highest elevations receive about 50 inches (fig. 8).

Perhaps most useful for a general comparison of precipitation to runoff from the Farmington Creek tributaries are the records from the storage gages at the Farmington-Rice station (table 3). It is at a mid-elevation (6,880 feet) site in the bottom of Farmington Canyon. Other published precipitation data, especially for the Farmington GS site at 7,700 feet elevation, are found in ‘Summary of Mountain Precipitation Measurements for Utah’ (Whealy and Lytton 1979). Some data for West Chickam Creek, for Farmington-Parrish Field Station, and Farmington RS (same as Farmington GS) are found in the U.S. Department of Commerce publication series entitled “Storage-Gage Precipitation Data for Western United States” (1960 et seq.). In addition, there are snow course data published by the Soil Conservation Service for Farmington Canyon (Upper) at 8,000 feet elevation, Farmington Canyon (Lower), which is the same location as the Farmington-Rice precipitation gage, and a discontinued snow course for 1936-1960 at the head of Barnard Creek (Whaley and Keil 1969 et seq.; Whaley 1971).

A network of recording precipitation gages was operated on the DCW during the summer season for many years. The chart tracings from these intensity gages were digitized, the data analyzed, and these data were the basis for several publications about the intensity, amounts, and return periods for summer storms along the Wasatch Mountains of Utah (Farmer and Fletcher 1971 et seq.).
FARMINGTON CREEK TRIBUTARIES—DESCRIPTION AND STREAMFLOW

Halfway

Halfway is a 464-acre watershed that faces southwest (fig. 4). Elevation ranges from 6,220 to 9,410 feet, resulting in an average stream gradient of 39 percent (Doty 1970). The catchment is marked by large ramparts that reveal the underlying metamorphic geology. Greenash and a basaltic-biotite granite with pegmatite dikes are the most common rock types. The soils tend to be stony and immature (Doty 1970). Average depth of surface material in the upper reaches of this watershed is 7 feet, and most of that is decomposed bedrock.

Vegetation on the upper half of the Halfway drainage is predominantly Gambel oak (Quercus gambelii) with mountain mahogany (Cercocarpus ledifolius) and mountain maples (Acer spp.) on the dry and moist sites, respectively. Upper Halfway is vegetated with shrubs, such as sagebrush (Artemisia spp.), snowbrush (Ceanothus velutinus), snowberry (Symphoricarpos sp.), serviceberry (Amelanchier sp.), and chokecherry (Prunus virginiana). Quaking aspen (Populus tremuloides) may be found on the moist sites along the channel and around the perennial springs.

Continuing in 1936, Halfway Creek was gaged with a venturi-trapezoidal flume. The station was maintained steadily until 1970, except for a brief hiatus after a debris-laden flood in 1947.

In 1935 and again in 1964, contour trenches were installed in the upper reaches of this basin. Trenching was done in a portion of the flood source area in 1935 to reduce the frequency and severity of mud-rock floods issuing from Farmington Canyon. The 1964 trenching in the upper 15 percent of the catchment replaced and expanded the original work and was used for an evaluation of the effects of this treatment on streamflow. No statistically significant change in streamflow due to trenching was determined (Doty 1970a and 1971), even though snow accumulation increased slightly (Doty 1970) and soil water was redistributed (Doty 1972) in the trench area. In 1960, the trenches constructed in 1964 were still very much in evidence, and well vegetated. They would still be effective in controlling overland flow.

HALFWAY CREEK STATION:

Figure 4—Topographic map of Halfway Creek watershed.

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| DAY    | OCT  | DEC | JAN | FEB | MAR | APR | MAY | JUN | JULY | AUG | JIFF | AUG |
|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1      | 0.062 | 0.012 |    |     |     |     |     |     |     |     |     |     |     |
| 2      | 0.070 | 0.011 |    |     |     |     |     |     |     |     |     |     |     |
| 3      | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 4      | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 5      | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 6      | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 7      | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 8      | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 9      | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 10     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 11     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 12     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 13     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 14     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 15     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 16     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 17     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 18     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 19     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 20     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 21     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
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| 26     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 27     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 28     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 29     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |
| 30     | 0.076 | 0.010 |    |     |     |     |     |     |     |     |     |     |     |

**Average rate, cfs:** 0.4051 0.0213 0.0037 1.7373 3.7033 1.7372 3.7037 0.8427 0.0499 0.7477

**Total yield, inches:** 0.7841 0.6721 0.0037 1.7373 3.7033 1.7372 3.7037 0.8427 0.0499 0.7477

**Average annual rate:**

---

**Rainfall totals, inches:** 0.2000 0.0400 0.0621 0.0037 1.7373 3.7033 1.7372 3.7037 0.8427 0.0499 0.7477

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| Date       | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
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| 4          | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 |
| 5          | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 |
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| 8          | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 |
| 9          | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 |
| 10         | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 |
| 11         | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 |
| 12         | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 |
| 13         | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 |
| 14         | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 |
| 15         | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 | 0.429 |

Average rate, cfs: 0.4234
Total annual yield: 12,115 cubic inches
Peak flow: 4,890 cfs, 1,800 hrs, 4 Apr
### SALMON CREEK CUMULUS, CUBIC FEET PER SECOND, OCTOBER 1950-SEPTEMBER 1959

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**Note:** This table represents the cubic feet per second (cfs) data for Salmon Creek Cumulus from October 1950 to September 1959. The data is organized by month and year, with each row indicating the average daily flow for that particular date. The table includes data for the entire 10-year period, with no specific year or month highlighted. The data is shown in a tabular format, with columns for each month from October to September, and rows for each year from 1950 to 1959. The values are likely to be numerical, representing the flow measurements in cfs.

**Source:** The data is sourced from a hydrological study or report, likely related to water management or environmental studies.
| DATE | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEP |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

Average rate, cfs: 8.074
Total annual rainfall: 8.020
Peak flow: 8.020

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Whipple Creek drains a 569-acre watershed of an unusual L-shape (fig. 5). The streams in the upper third of the drainage flow southeast, then turn sharply to drain the remainder of the basin while flowing southwest.

The road to Francis Peak traverses the southwest-facing slope across the entire upper end of this drainage. Much of the opposite, southeast-facing slope was considered to be a flood source area and was contour trenched in the 1930's. These trenches can still be seen from the road today, but they are essentially filled in and have negligible hydrologic impact. The east-facing slope above approximately 8,000 feet elevation collects prodigious amounts of snow that drifts over the ridge dividing this basin from Halfway. Snowbanks often remain here until late summer.

The Whipple Creek drainage is apparently underlain by the same Farmington Canyon Complex of metamorphic rocks that form the geologic skeleton for all the lower Farmington Canyon watersheds (fig. 2). This watershed, throughout its elevational range from 6,640 to 9,046 feet, is mostly covered by shrubs, sagebrush, grasses, and forbs. The zone below about 8,000 feet elevation is in the oakbrush type with a vegetation pattern much like that on lower Halfway.

Based upon measurements of precipitation in the 1943 water year at several points on the watershed, Croft (1944) reported that Whipple drainage yielded 31 percent of the 33 inches in annual precipitation, whereas the Miller catchment yielded 51 percent. Whipple Creek's peak snowmelt discharge for that year was approximately half that of Miller Creek's, and occurred 10 days earlier in the spring. Croft (1944) noted that the south-facing watersheds in Farmington Canyon, such as Whipple, have earlier hydrograph peaks than the north-facing drainages, such as Miller. This also may be discerned in the data summaries in this publication.
### WEPPLE CREEK DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1959-SEPTEMBER 1960

| DATE | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|------|
|      |     |     |     |     |     |     |     |     |      |      |     |     |      |

#### Average annual rates:
- Total yield: 2,960
- Peak flow: 7,500

### WEPPLE CREEK DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1958-SEPTEMBER 1959

| DATE | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|------|
|      |     |     |     |     |     |     |     |     |      |      |     |     |      |

#### Average annual rates:
- Total yield: 2,960
- Peak flow: 7,500

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The Bigler catchment is the second smallest (76 acres) on the Farmington Canyon system (Fig. 6). It has the steepest stream gradient (42 percent), falling 840 feet in less than 2,000 feet of length. This creek was gauged with a 6-inch flume and streamflow records were taken for at least portions of 16 years from 1940 through 1961.

The watershed is essentially brush covered (Gambel oak, maple, and others) with a few scattered conifers in the lower portion. In comparison to Halleyway and Whipple, less of this drainage is on the windswept southwest exposure above 8,000 feet elevation. Hence, there is less of the low brushy and herbaceous cover characteristic of these subalpine exposures.
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Average rate, cfs: 0.0350

Total yield, inches: 0.4000

Average annual rate: 0.0350

Total annual yield: 13.75 inches

Peak Flow: 0.0350 cfs

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## Table: Biker Creek Discharge, Cubic Feet per Second, October 1964-September 1964

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## Table: Biker Creek Discharge, Cubic Feet per Second, October 1964-September 1964

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Average rate, cfs: 0.5700
Average annual rate: 0.6530
Peak flow: 0.5700

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Average rate, cfs: 0.9465
Total yield, inches: 0.9465
Average annual rate:
Total annual yield:
Peak flow:
Hollingsworth

The Hollingsworth catchment is similar to its neighbor, higher, but slightly larger (114 acres and less steep (fig. 7). It, too, was gaged with a 6-inch stem. Streamflow records were taken for 14 years from 1940 through 1954.

Most of the vegetative cover consists of mountain brush tak, maple, snowbrush, and ocher and a noticeable component of scattered conifers. Like Halfway and especially Whipple, a high-elevation portion of Hollingsworth is covered with low brushy and herbaceous vegetation.

Figure 7—Topographic map of Hollingsworth Creek watershed.

<p>| Hollingsworth Creek discharge, cubic feet per second, October 1940-September 1954 |
|----------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|</p>
<table>
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Average rate, use Total yield, inches 4.728 0.594 0.201 0.175 0.170 0.186

Hollingsworth Creek discharge, cubic feet per second, October 1940-September 1954

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Average rate, use Total yield, inches 4.728 0.594 0.201 0.175 0.170 0.186

Average annual rate 0.392 in. Total annual yield 0.140 acre inches

Average annual rate 0.392 in. Total annual yield 0.140 acre inches

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**Average rate, cfs**

2.491 0.123 0.183 0.161

**Total yield, inches**

2.289 0.192 0.248 0.199 0.365 0.456 0.504

**Average annual rate:** 0.215 cfs

**Total annual yield:** 15,579 acre inches

**Peak flow:**

2.500 0.123 0.183 0.161

---

**Average rate, cfs**

0.020 0.020 0.010 0.040 0.020 0.010 0.010 0.010 0.010 0.010 0.010 0.010

**Total yield, inches**

0.300 0.140 0.170 0.160 0.360 0.200 0.240 0.300 0.200 0.200 0.200 0.200

**Average annual rate:** 0.0167 cfs

**Total annual yield:** 15,579 acre inches
Morris Creek forms the first prominent north-facing drainage encountered while proceeding up Farmington Canyon. The elevation ranges from 6,120 feet at the 90° V-notch weir to 8,307 feet at the crest of the drainage. This watershed has an unusual diamond shape, being almost as narrow at the top as at the bottom (Fig. 8). Streamflow data have been gathered for 31 years, from 1936 through 1966.

Morris Creek is entirely underlain by the Farmington Canyon Complex of metamorphosed gneisses and schists of Precambrian origin. This metamorphic complex has undergone many thousands of feet of uplift, most of which occurred during Escroa and Quaternary times. The watershed is largely on an upward thrust block with the fault across the lower boundary (Bell 1952). Typical of the lower Farmington Canyon drainages, the lower portion of the watershed is crosscut by outcrops of gneiss and green schist; the upper slopes are more gentle with few bare rock outcrops. The medium-textured soils largely have developed in place, varying in depth with slope position.

In sharp contrast to the south-facing watersheds, this and the other north-facing Farmington Canyon tributaries are largely forested. The predominant tree species are white fir (Abies concolor), subalpine fir (A. lasiocarpa), and aspen. The lower third of the watershed has a large component of Gambel oak, snowbrush, snowberry, and ninebark (Physocarpus malvaceus). At the uppermost portion of the drainage, grasses become more common (Drohosa and Stipa spp. and Agropyron pauciformis). Sagebrush is also found on these upper, more gentle slopes.

Morris Creek, because of its steep slopes and relative inaccessibility, was spared much of the abuse wrought upon the other watershed lands during the period of overgrazing and exploitation. Protection since 1937 has restored the limited damage done to the headwater areas through overgrazing. No contour trenches were used here. Surveys of vegetation and soil erosion characteristics in 1929 and again in 1953 (Peterson 1954) indicate that the remainder of the drainage was not heavily grazed, burned, or logged. The entire 187-acre drainage was set aside as a Research Natural Area in 1973. More than 40 years of protection have returned this relatively untrammeled watershed to near pristine conditions.
<table>
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Average yield: 5.67 lbs

Total yield: 56.7 lbs

Average annual yield: 5.67 lbs

Total annual yield: 67.6 lbs

Average annual rainfall: 34.5 lbs

Total annual rainfall: 45.6 lbs
### Monthly Creek Exchange, Cubic Feet Per Second, October 1951-September 1952

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### Average Rate, CFS

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- **November 1951**: 0.1299
- **December 1951**: 0.1299
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- **February 1952**: 0.1299
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- **June 1952**: 0.1299
- **July 1952**: 0.1299
- **August 1952**: 0.1299
- **September 1952**: 0.1299

### Total Annual Rate, CFS

- **1951**: 0.464
- **1952**: 0.464

### Peak Flow

- **October 1951**: 0.1299
- **November 1951**: 0.1299
- **December 1951**: 0.1299
- **January 1952**: 0.1299
- **February 1952**: 0.1299
- **March 1952**: 0.1299
- **April 1952**: 0.1299
- **May 1952**: 0.1299
- **June 1952**: 0.1299
- **July 1952**: 0.1299
- **August 1952**: 0.1299
- **September 1952**: 0.1299

**BEST COPY AVAILABLE**
| DATE | OCT | NOV | DEC | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | |---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 1   | 0.1139 | 0.1168 | 0.1195 | 0.1943 | 0.1963 | 0.1340 | 0.2239 | 0.2204 | 0.1508 | 0.1509 | 0.1509 | 0.1509 | 0.1509 |
| 2   | 0.1199 | 0.1246 | 0.1177 | 0.2062 | 0.2063 | 0.1330 | 0.2175 | 0.2207 | 0.1518 | 0.1526 | 0.1526 | 0.1526 | 0.1526 |
| 3   | 0.1246 | 0.1276 | 0.1238 | 0.2101 | 0.2103 | 0.1340 | 0.2190 | 0.2226 | 0.1529 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 4   | 0.1269 | 0.1285 | 0.1300 | 0.2195 | 0.2199 | 0.1340 | 0.2226 | 0.2252 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 5   | 0.1285 | 0.1300 | 0.1320 | 0.2300 | 0.2303 | 0.1340 | 0.2252 | 0.2280 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 6   | 0.1300 | 0.1298 | 0.1350 | 0.2300 | 0.2303 | 0.1340 | 0.2280 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 7   | 0.1300 | 0.1288 | 0.1320 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 8   | 0.1300 | 0.1300 | 0.1350 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 9   | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 10  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 11  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 12  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 13  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 14  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 15  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 16  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 17  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 18  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 19  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |
| 20  | 0.1300 | 0.1300 | 0.1300 | 0.2300 | 0.2303 | 0.1340 | 0.2300 | 0.2300 | 0.1535 | 0.1535 | 0.1535 | 0.1535 | 0.1535 |

Average rate, cfs: 0.1279
Total rainfall, inches: 0.125
Average annual rate: 0.125

Best Copy Available
Miller

Miller is the largest takeout of the north-facing watershed in Pinguisum Canyon trib. St. Miller Creek was gaged in 1926 with a 10-inch wooden suspended frame at the 6,260-foot elevation. Streamflow data were taken each year through 1960.

The same Precambrian metamorphic rocks underlying this drainage also underlie Miller watershed (Bed 1926). The soils developed over the predominant schists and gneisses are generally sandy loams. Depth of soil varies from thin to moderately deep (10 inches) over most of the catchment, but along streams channels and ditches have been found to be quite deep (10 feet). Surface horizons appear to be relatively wet (Glissmer 1930).

Miller watershed is well vegetated. Vegetation type surveys made in 1929 and again in 1953 (Winter 1949) indicate that 41 percent of the area is covered by trees, mostly pines. Douglas-fir (Pseudotsuga menziesii), white fir, and subalpine fir. Shrub species dominate another 34 percent of the watershed, predominantly shrub. Mountain maple, snowberry, chokecherry, and snowbrush. A small percentage of the area, primarily in the upper reaches, is covered, sometimes sparsely, with sheepbrush, grass, and forbs. Although no recent forest vegetation surveys have been made, field observations and 1923 aerial photographs show no detectable changes in cover type.

This watershed was paired with Whipple for a study of timing and amount of runoff by Croft (1944). It is also used as the control for Duty's contour trench study on Halfway (Duty 1979 et al.). Glissmer (1930) compared the long-term records of Halfway and Miller in his thesis.

Figure 6.—Topographic map of Miller Creek watershed.

| MILLER CREEK STREAMgages, CFS FEET PER INCH, OCTOBER 18-DECEMBER 18.
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Average rate, 7.674 | Total yield, 1,264.0 | Average daily rate, 16.075 | Total annual rate, 5,000.0 |
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**Average annual rate:** 1.924%  
*Total annual credit:** 0.232 acres  
*Year:** 1971-1972

---

**Monthly Average Low Water Level:**  
- **January:** 0.891  
- **February:** 0.879  
- **March:** 0.892  
- **April:** 0.885  
- **May:** 0.887  
- **June:** 0.889  
- **July:** 0.891  
- **August:** 0.893  
- **September:** 0.895  
- **October:** 0.897  
- **November:** 0.899  
- **December:** 0.901

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**Best Copy Available**
### WELL Creek STATIONS, CEME FEET PER SECOND, OCTOBER 1929-SEPTEMBER 1929

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**Average annual flow:**

- **Total river flow:** 2,586
- **Total flow in 1929:** 2,586

### WELL Creek STATIONS, CEME FEET PER SECOND, OCTOBER 1929-SEPTEMBER 1929

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**Average annual flow:**

- **Total river flow:** 2,586
- **Total flow in 1929:** 2,586
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Average rate, etc. 0.125
Total cubic content 2,125.00
Average annual rate 0.01187

TOTAL CUBIC CONTENT 2,125.00
AVERAGE ANNUAL RATE 0.01187
## Yellow Creek Irrigation, Cubic Feet per Second, October 1914-September 1915

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### Average Rates
- **Daily average rate:** 10,000 cfs
- **Total rainfall:** 0.12 inches
- **Average annual rate:** 0.05 cubic feet per second

### Notes
- Rainfall: 0.12 inches, 12 days, 10 years
- Average annual rate: 0.05 cfs
- Rainfall Range: 0.00 to 0.24 inches
- Average rainfall: 0.02 inches
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**Note:**
- The table shows water levels for various sites from January to December.
- Each row represents a different site, with columns for each month.
- Values indicate the water levels for each site in different months.
### Rice Creek

Rice Creek was gauged with a 10-inch floater at the 7,600-foot elevation, and streamflow records were obtained for 10 years from 1957 through 1967. It has a mean yield of 56 inches per year, recorded only by Rice Creek. More than half of the streamflow occurs in snowmelt runoff, and the upper reaches are prime areas for deep-seated moisture accumulation (Fig. 11).

This drainage is focused on springs and snowmelt, primarily on the north-facing slopes. Mountainous backwaters are common on the south-facing slopes, and in the upper portion of this catchment. As on Holland, there are prominent rocky outcrops near the lower reaches of the stream.

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### Table: Rice Creek Streamflow, Cubic Feet Per Second, October 1957-September 1967

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### Figure 11: Topographic Map of Rice Creek
| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1   | 0.0490 | 0.0487 | 0.0482 | 0.0700 | 0.0700 | 0.05864 | 0.05619 | 2.2598 | 0.3037 | 0.0700 | 0.0700 |
| 2   | 0.0700 | 0.0700 | 0.0607 | 0.0700 | 0.0700 | 0.0674 | 0.0673 | 1.9996 | 0.3799 | 0.0700 | 0.0700 |
| 3   | 0.0861 | 0.0900 | 0.0754 | 0.0700 | 0.0700 | 0.0775 | 0.0775 | 1.8949 | 0.3799 | 0.0700 | 0.0700 |
| 4   | 0.0900 | 0.0641 | 0.0721 | 0.0700 | 0.0700 | 0.0614 | 0.04207 | 0.7718 | 0.2058 | 0.2890 | 0.0700 | 0.0700 |
| 5   | 0.0700 | 0.0491 | 0.0787 | 0.0671 | 0.0600 | 0.0725 | 0.9339 | 2.0969 | 0.1780 | 0.0700 | 0.0700 |
| 6   | 0.0654 | 0.0569 | 0.0650 | 0.0691 | 0.0691 | 0.4290 | 0.9306 | 2.1256 | 0.2602 | 0.0700 | 0.0700 |
| 7   | 0.0861 | 0.0650 | 0.0600 | 0.0700 | 0.0700 | 0.3992 | 0.6045 | 1.7196 | 0.2602 | 0.0700 | 0.0700 |
| 8   | 0.0900 | 0.0526 | 0.0896 | 0.0700 | 0.0700 | 0.2644 | 1.6246 | 2.0913 | 0.1780 | 0.0700 | 0.0700 |
| 9   | 0.0642 | 0.0500 | 0.0700 | 0.0700 | 0.0700 | 0.3207 | 1.7503 | 2.0913 | 0.1600 | 0.0700 | 0.0700 |
| 10  | 0.0200 | 0.0264 | 0.0700 | 0.0700 | 0.0700 | 0.5709 | 1.1089 | 2.0011 | 0.1780 | 0.0700 | 0.0700 |
| 11  | 0.0500 | 0.0527 | 0.0700 | 0.0700 | 0.0700 | 0.3741 | 1.6686 | 1.7646 | 0.1600 | 0.0700 | 0.0700 |
| 12  | 0.0806 | 0.0300 | 0.0700 | 0.0700 | 0.0700 | 0.6268 | 1.2012 | 1.3379 | 0.1600 | 0.0700 | 0.0700 |
| 13  | 0.0700 | 0.0646 | 0.0800 | 0.0825 | 0.0699 | 1.7122 | 1.2971 | 1.4600 | 0.1600 | 0.0700 | 0.0700 |
| 14  | 0.0700 | 0.0521 | 0.0758 | 0.0700 | 0.0700 | 0.4713 | 2.0115 | 1.1382 | 0.1600 | 0.0700 | 0.0700 |
| 15  | 0.0758 | 0.0500 | 0.0722 | 0.0727 | 0.0681 | 2.1918 | 1.0172 | 0.1600 | 0.0700 | 0.0700 |
| 16  | 0.0575 | 0.0641 | 0.0580 | 0.0573 | 0.0573 | 0.6486 | 2.2991 | 0.9592 | 0.1600 | 0.0700 | 0.0700 |
| 17  | 0.0325 | 0.0660 | 0.0680 | 0.0700 | 0.0700 | 0.6796 | 2.2575 | 0.9039 | 0.0700 | 0.0700 | 0.0700 |
| 18  | 0.0687 | 0.0700 | 0.0700 | 0.0700 | 0.0700 | 0.6263 | 2.7064 | 0.7960 | 0.0700 | 0.0700 | 0.0700 |
| 19  | 0.0700 | 0.0700 | 0.0700 | 0.0700 | 0.0700 | 0.6175 | 2.1332 | 0.7710 | 0.1000 | 0.0700 | 0.0700 |
| 20  | 0.0300 | 0.0856 | 0.0500 | 0.0646 | 0.0646 | 0.6257 | 3.1099 | 0.6500 | 0.0700 | 0.0700 | 0.0700 |
| 21  | 0.0287 | 0.0875 | 0.0725 | 0.0602 | 0.0657 | 0.6167 | 3.4427 | 0.6856 | 0.0700 | 0.0700 | 0.0700 |
| 22  | 0.0500 | 0.0577 | 0.0725 | 0.0602 | 0.0657 | 0.6167 | 3.4427 | 0.6856 | 0.0700 | 0.0700 | 0.0700 |
| 23  | 0.0192 | 0.0866 | 0.0800 | 0.0804 | 0.0427 | 4.1292 | 0.4553 | 0.0700 | 0.0700 | 0.0700 | 0.0700 |
| 24  | 0.0625 | 0.0466 | 0.1075 | 0.0700 | 0.0700 | 0.5709 | 3.7049 | 0.3253 | 0.0700 | 0.0700 | 0.0700 |
| 25  | 0.4087 | 0.1160 | 0.4087 | 0.4087 | 0.4087 | 0.4087 | 0.4087 | 0.4087 | 0.4087 | 0.4087 | 0.4087 | 0.4087 |

**Average rate**

| Feet | 0.0616 | 0.0595 | 0.0769 | 0.0712 | 0.5537 | 2.5256 | 1.1936 | 0.1431 | 0.0700 | 0.0700 | 0.0700 |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total yield | 0.3296 | 0.3182 | 0.3179 | 0.3082 | 2.1775 | 13.5137 | 6.1702 | 0.3763 | 0.3765 | 0.3655 | 0.3468 |

**Average annual rate:**

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**Average annual rate:**
# RICE CHEM HOGGAGE, CBIC FATS PER WEEK, OCTOBER 1962 - SEPTEMBER 1963

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Average rate: 4.0000

Total yield: 4,000,000

Average annual rate: 4.0000

Total annual yield: 40,000,000

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# RICE CHEM HOGGAGE, CBIC FATS PER WEEK, OCTOBER 1962 - SEPTEMBER 1963

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Average rate: 4.0000

Total yield: 4,000,000

Average annual rate: 4.0000

Total annual yield: 40,000,000
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**Average rate, cfs:** 0.1510

**Total yield, inches:** 2.808

**Average annual rate:** 0.1500

**Total annual yield:** 2.808

**Peak Time:** 0.2000

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**Average rate, cfs:** 0.1510

**Total yield, inches:** 2.808

**Average annual rate:** 0.1500

**Total annual yield:** 2.808

**Peak Time:** 0.2000
Van Fleet

Van Fleet watershed is the smallest 100 square mile gaged catchment on the DCEW. It is a tributary valley between Blue and Mud Creeks, and as a result, does not extend to the ridgeline and has a distinct shape (Fig. 13). It was gaged with a 4-inch Rain Gauge at the 7,100-foot elevation and streamflow records were obtained for 16 years from 1957 through 1973. 

Arroyo and culvert features cover the majority of this catchment, with steep-sided and open slopes evident on the upper and middle portion.

Figure 13.—Topographic map of Van Fleet Creek watershed.
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Average rate, cfs: 0.0023
Average annual rate: 0.0027 cfs

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**Average annual rate:**

- **Total yield:** 150,000 cubic feet
- **Peak flow:** 100 cubic feet per second
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| [Data entries] |     |     |     |     |     |     |     |     |     |     |     |     |     |

Average start, cfs: 2.0826
Total yield: 47.920
Peak flow: 5.0800

VAN FLEET CREEK EXCHANGE, CIVIC FEET PER SECOND, OCTOBER 1964-SEPTEMBER 1967.

| DATE          | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
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| [Data entries] |     |     |     |     |     |     |     |     |     |     |     |     |     |

Average start, cfs: 2.0826
Total yield: 47.920
Peak flow: 5.0800

VAN FLEET CREEK EXCHANGE, CIVIC FEET PER SECOND, OCTOBER 1955-SEPTEMBER 1956.

| DATE          | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
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Average start, cfs: 2.0826
Total yield: 47.920
Peak flow: 5.0800

VAN FLEET CREEK EXCHANGE, CIVIC FEET PER SECOND, OCTOBER 1964-SEPTEMBER 1967.

| DATE          | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
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| [Data entries] |     |     |     |     |     |     |     |     |     |     |     |     |     |

Average start, cfs: 2.0826
Total yield: 47.920
Peak flow: 5.0800

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Average range, avg: 0.1500
Average annual range: 1.1500
Peak time:
West Chicken Creek

West Chicken Creek drains 218 acres with an elevations range of 7,650 to 2,300 feet. It has a southwest aspect, an average slope of 20 percent, and an average stream gradient of 7 percent (fig. 14). In 1966, a 3-foot "H" suing was installed in the drainage at the mouth of this and the companion watershed, East Chicken Creek. Streamflow records began in water year 1968. This catchment is drained by a single well-defined channel with many ill-defined intermittent tributaries. On the main channel, barriers have constructed a number of dams, some of which show signs of recent activity.

Unlike the lower Farmington Canyon drainages, rock outcrops exist only along the high northwest boundary of the Chicken Creek catchments, although the same metamorphic group is the predominant rock type. Also present along these Precambrian rocks is a younger series of sedimentary shales, siltstones, sandstones, and conglomerates. A soil survey estimated that approximately 94 percent of the soils on West Chicken Creek watershed are cambisols and most of the remainder are creosolids (Johnston and Duty 1972).

West Chicken Creek supports dense aspen stands on both-trends of its area. Sagebrush and mountain brush (tamarack, cloverberry, and servineberry) are found on about 17 percent of the land, and conifers (Douglas-fir and subalpine fir) occupy about 4 percent. Grasses and forbs and wet meadow vegetation comprise about 15 percent of the ground cover (Johnston and Duty 1972).

For a more detailed description of the Chicken Creek watersheds, the reader is referred to "Description and Hydrologic Analysis of Two Small Watersheds in Utah's Wasatch Mountains" by Johnston and Duty (1972).

East Chicken Creek

East Chicken Creek is the companion watershed to West Chicken Creek at the headwaters of the Farmington Canyon drainage. It is northwestern-facing, consists of 227 acres, has a relatively gentle average slope of 24 percent, and about 3,000 feet of stream channel with an average slope of only 1 percent (fig. 14). Like West Chicken, it was gaged with a 3-foot "H" frame in 1966 and streamflow records are current for water year 1968.

The soils, geology, and vegetation on both Chicken Creek watersheds are quite similar. These and other features are well described in Johnston and Duty (1972). In short, the vegetative cover on the East Chicken Creek watershed is 64 percent aspen, 12 percent grass-forb, 7 percent meadow brush, 10 percent sagebrush, 5 percent conifer, and 1 percent wet meadow.

Figure 14.—Topographic map of Chicken Creek watershed.
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Average rate, cfs: 0.0272
Total yield, inches: 0.000
Average annual rate: 0.0504 cfs
Total annual yield: 21.99 inches

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Average rate, cfs: 0.0272
Total yield, inches: 0.000
Average annual rate: 0.0504 cfs
Total annual yield: 21.99 inches

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Farmington Creek, the largest of several west-facing drainages in the mountainous terrain of the Davis County Experimental Watershed, consists of several small permanent tributaries. Twelve of these tributaries, ranging in size from 63 to 464 acres, were gaged and annual streamflow data taken and recorded for many years since 1933. Mean daily, monthly, and annual flows are tabulated for all years of record for each of these tributaries. Periods of record range from 5 to 21 years. A watershed description and topographic map accompany the data from each tributary. Monthly precipitation data also are tabulated for one station in the middle of the Farmington Creek watershed. Many published ancillary data sources are cited.

KEYWORDS: water yields, hydrologic data, Wasatch Mountains, precipitation, runoff

The Intermountain Station, headquartered in Ogden, Utah, is one of eight regional experiment stations charged with providing scientific knowledge to help resource managers meet human needs and protect forest and range ecosystems. The Intermountain Station includes the States of Montana, Idaho, Utah, Nevada, and western Wyoming. About 221 million acres, or 85 percent, of the land area in the Station territory are classified as forest and rangeland. These lands include grasslands, deserts, shrublands, alpine areas, and well-stocked forests. They supply fiber for forest industries, minerals for energy and industrial development; and water for domestic and industrial consumption. They also provide recreation opportunities for millions of visitors each year.

Field programs and research work units of the Station are maintained in:

- Bozeman, Montana (in cooperation with Montana State University)
- Logan, Utah (in cooperation with Utah State University)
- Missoula, Montana (in cooperation with the University of Montana)
- Moscow, Idaho (in cooperation with the University of Idaho)
- Provo, Utah (in cooperation with Brigham Young University)
- Reno, Nevada (in cooperation with the University of Nevada)