

SECTION C HYDROLOGY

INTRODUCTION

This section provides the available river peak flow data for the Navarro River the watershed adjacent to the Albion WAU. The peak flow data is used to show the magnitude of storm events and when they occurred. High river peak flow events are indicative of the largest storms, with large storms typically comes high erosion and sediment transport events. The Navarro River peak flow data was the only long term river flow data available in close proximity to the Albion WAU. The Navarro River peak flow data probably does not provide a direct relationship with the peak flows of the Albion River. However, for the purpose of showing the timing and magnitude of large storm events of the area, the Navarro River peak flow data is assumed to be sufficient.

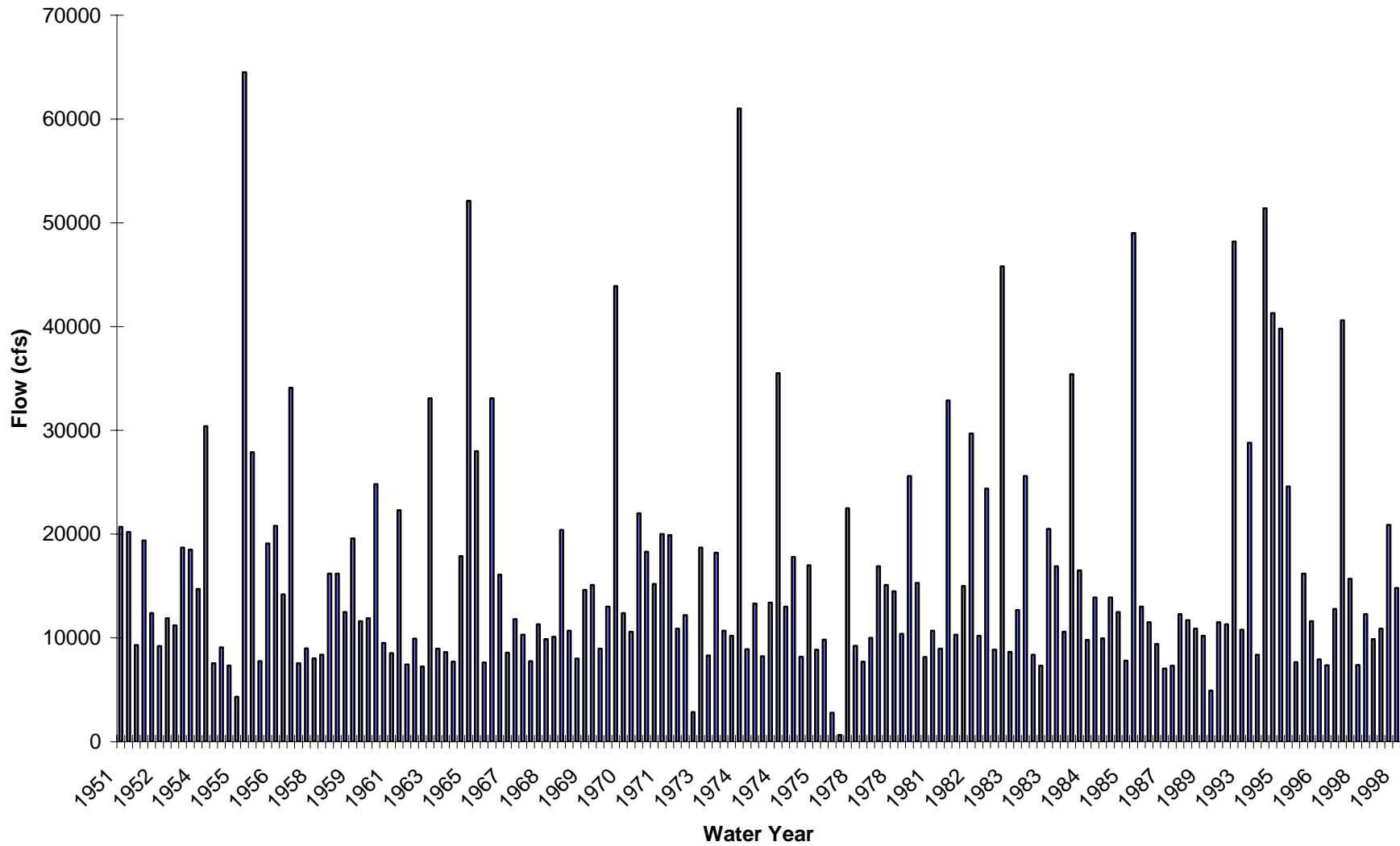
Peak Flows

The peak flow information was taken from the United States Geological Survey (USGS) gage 11468000, Navarro River near the ocean, from water years 1952-2001. All peak flows greater than base flow (7000 cfs) are shown over the period of record (Figure C-1). To estimate the recurrence interval of the flood events of the Navarro River the USGS annual peak flow series was used. An extreme value type I distribution (Gumbel, 1958) was fitted to the data. Table C-1 shows the estimated recurrence interval for peak discharges in the basin.

Table C-1. Flood Recurrence for Peak Flows of the Navarro River, 1952-2001.

| <u>Recurrence Interval (years)</u> | <u>Peak Discharge (cfs)</u> |
|------------------------------------|-----------------------------|
| 2 | 19,920 |
| 5 | 33714 |
| 10 | 42845 |
| 25 | 54383 |
| 50 | 62943 |
| 100 | 71439 |

Figure C-1. High Peak Flows (above base flow) for Navarro River, 1951-2001



Using the peak flow record from 1952-1998, the flood of record is 1955 (64,500 cfs) considered to be greater than a 50 year event for the Navarro River (Table C-1). In the last decade alone there has been 2 storms greater than a 10 year recurrence (1993 and 1995), 5 storms greater than a 5 year recurrence (1993, 1995(3) and 1998) and 8 storms greater than >2 yr. recurrence. This indicates a high number of extreme storms occurring within the last decade. The high occurrence of these extreme storms in the last decade suggests that the Albion WAU has been subjected to stressful hydrologic conditions, possibly creating a greater incidence of landslides, road failures or surface erosion than previous decades.

Throughout the last 40-50 years in the Albion WAU there have been numerous large flood events (>2 year recurrence, Figure C-1). These flood events have the capacity to re-shape river or stream channels and transport large sediment loads. The meteorological events which created these large floods also can be assumed to be a major contributor to the erosion and mass wasting delivered to the watercourses in the WAU.

LITERATURE CITED

Gumbel, E.J. 1958. Statistics of extremes. Columbia University Press, New York.