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TECHNICAL ADDENDUM

Ecosystem Research Institute

DEER CREEK
ENVIRONMENTAL ASSESSMENT

TECHNICAL ADDENDUM

WATER
QUALITY INVESTIGATIONS

PREPARED FOR
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INTRODUCTION

This report attempts to predict the total suspended solids concentrations in Huntington Creek as a result of the variable flow (7 cfs to 22 cfs) 3-day step discharge scenario. This flow pattern was selected because it represented the lowest mass/day discharge while still meeting the full range of flows needed by the project 7-22 cfs.

RESULTS

The discharge of total suspended solids both in tons/day and mg/l from Deer Creek into Huntington Creek were predicted and plotted in Figures 4-7 and 4-8 (pages 29 and 30 - Deer Creek Environmental Assessment). In the bottom set of curves in Figures 4-7 and 4-8, a variable flow rate (7 to 22 cfs) with a 1 cfs increase every three days was employed. This same flow pattern was used in the prediction of water quality impacts to Huntington Creek.

Flow in Huntington Creek at the time of this survey (August 9, 1990) was measured at 65 cfs which was close to the 10-year average for this same time period (Figure I-1). As can be seen from this figure, baseflows start in late November (approximately 45 cfs). An inspection of the historical water quality in Huntington Creek indicated a late summer peak in total suspended solids (Figures 4-5 and 4-6). This peak is the result of storms which frequent the site during September. October, November and December have average concentrations of 50 mg/l and only 4 tons/day loading. Utilizing the flow, water quality, and projected Deer Creek discharge data, predicted TSS concentrations in Huntington Creek were made. The results can be seen in Figure I-2 and I-3.

In Figure I-2, the effect of starting the Deer Creek discharge on September 1 can be seen. The receiving stream (Huntington Creek) had the average water quality conditions (500 mg/l in September and 50 mg/l in October) as shown in Figure 4-5. The data indicates that there would not be a significant increase in TSS in Huntington Creek given these conditions.

If the Deer Creek discharge is started on October 1 with the historical Huntington Creek water quality conditions shown in Figure 4-6 (approximately 50 mg/l) the resultant water quality conditions for TSS can be seen in Figure I-3. The data indicates that a maximum concentration of 100 mg/l over the ambient level would occur on day 30 of the variable release pattern, but never exceed 200 mg/l total suspended solids in the stream.

This represents less than one half the background average concentration found in September on month earlier. It should be noted that the higher the initial TSS concentration in Huntington Creek, the less the impact by Deer Creek (Figure I-4).

CONCLUSIONS

(1) Using the mass balance approach, it was determined that the variable rate flow pattern from the Deer Creek mine would not increase the TSS concentrations in Huntington Creek if average September water quality conditions were occurring.

(2) In a similar manner, if releases occurred in October and November, the TSS concentration in Huntington Creek would increase a maximum of 100 mg/l but never exceed 200 mg/l.

(3) Based upon existing water quality conditions, these TSS concentrations would not have an effect upon the Huntington Creek fishery.

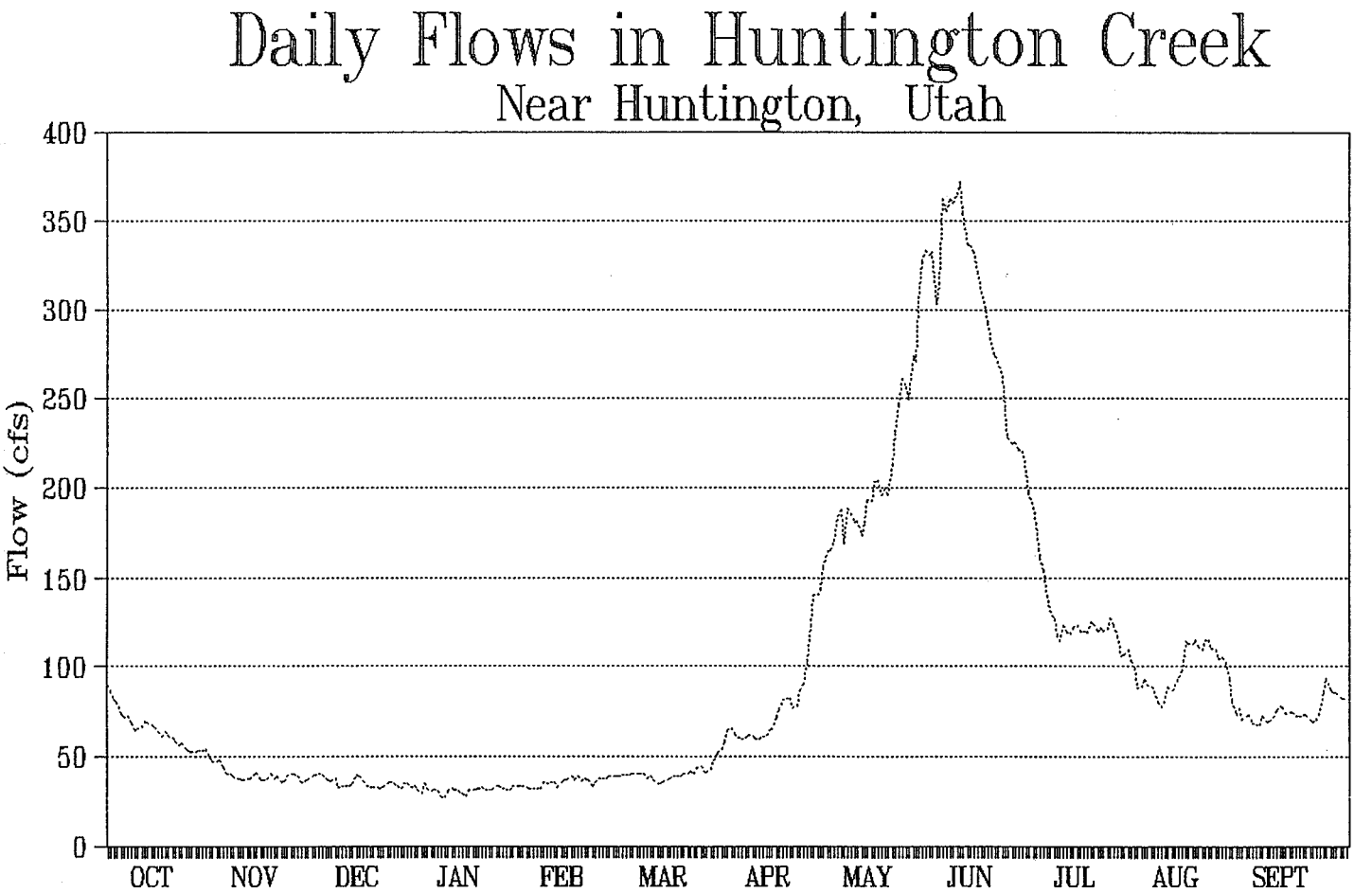

FIGURE I-1. The average flows in Huntington Creek near the project site from 1979-1989. Flows on August 9, 1990 were 65 cfs.

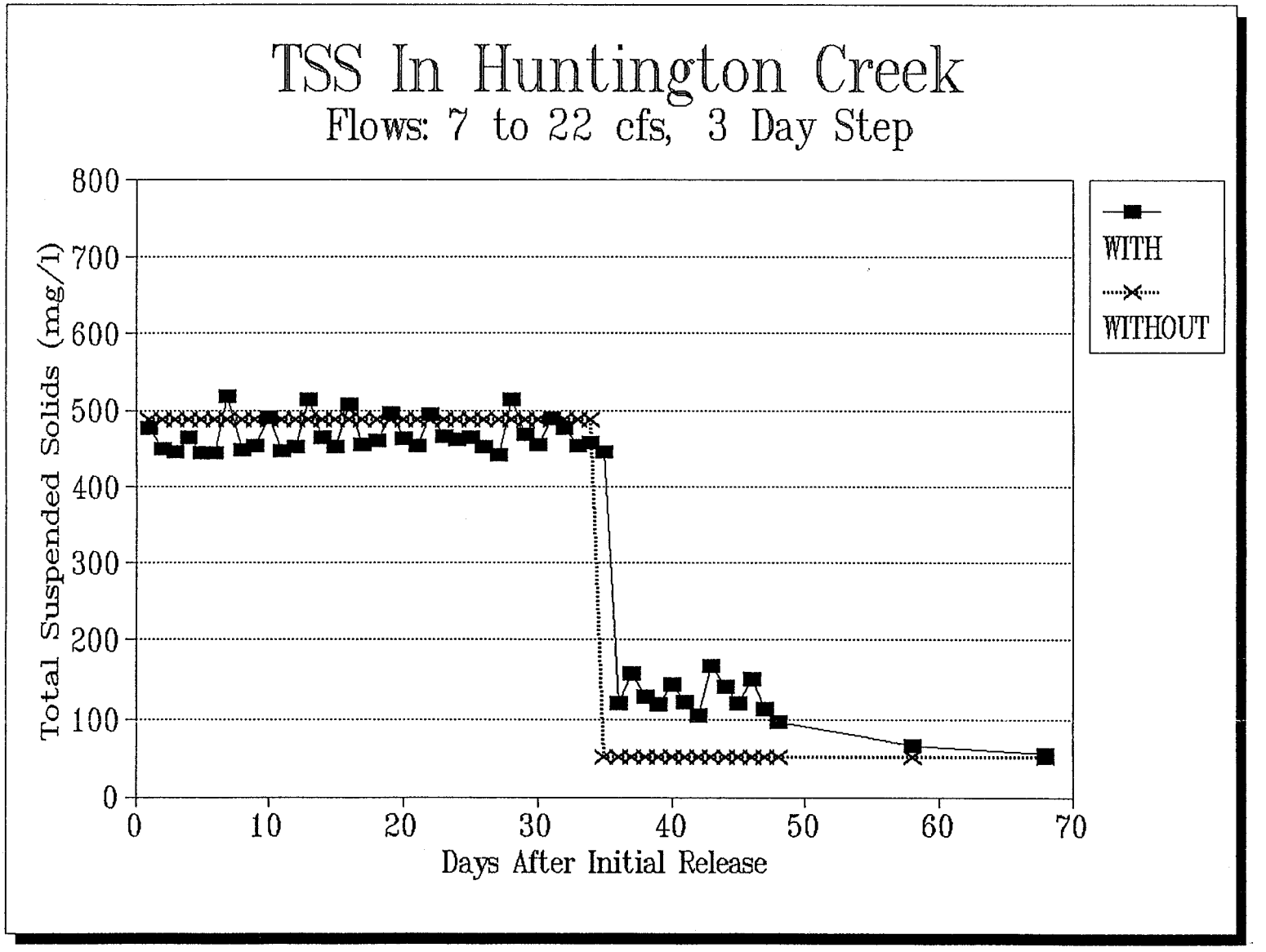

FIGURE I-2. The concentration of TSS (mg/l) in Huntington Creek with and without the input of the Deer Creek discharge. The pattern was variable rate starting at 7 cfs and ending at 22 cfs. The step rate was 1 cfs/3 days. Average water quality conditions were assumed for September and October.

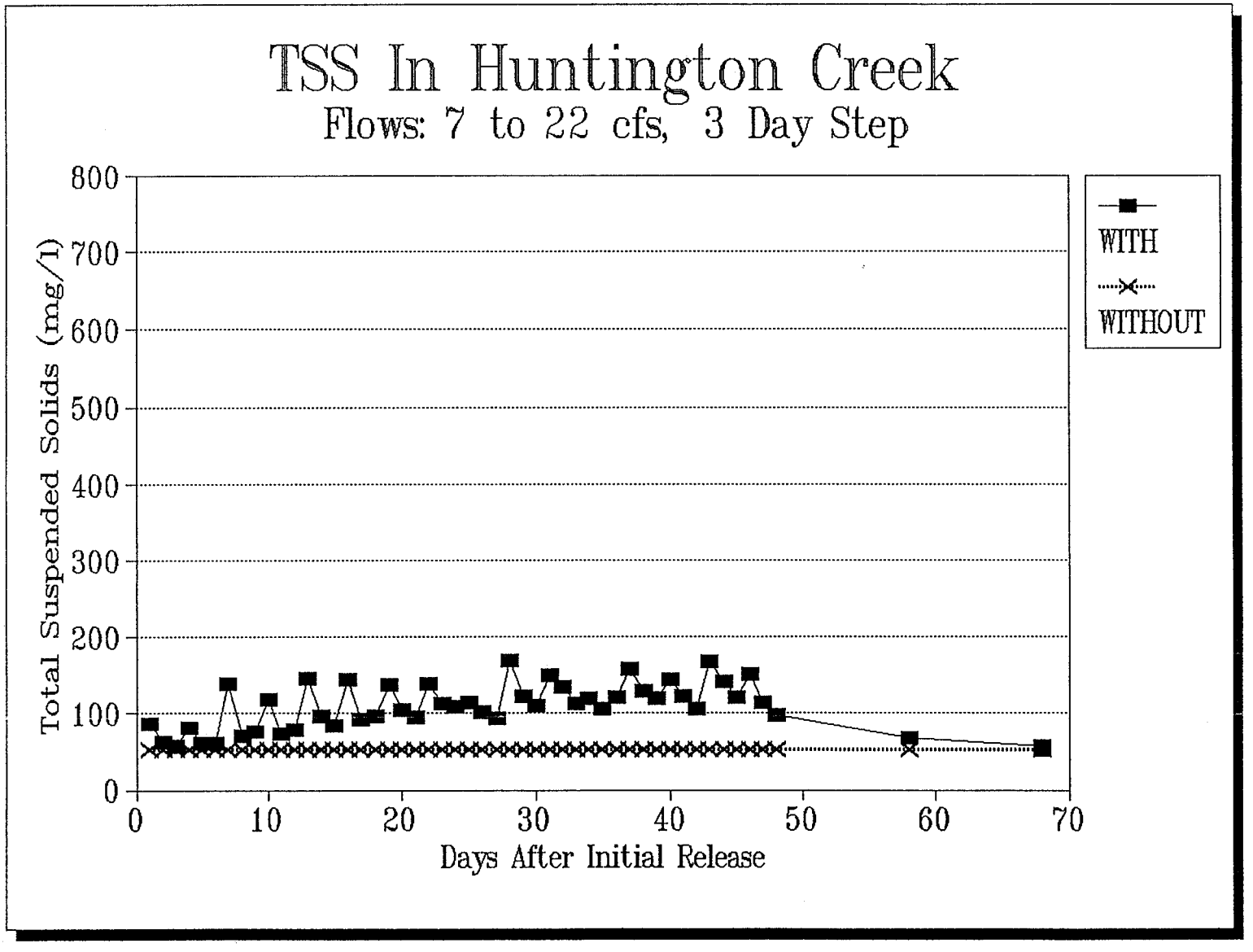

FIGURE I-3. The concentration of TSS (mg/l) in Huntington Creek with and without the input of the Deer Creek discharge. The pattern was variable rate starting at 7 cfs and ending at 22 cfs. The step rate was 1 cfs/3 days. Average water quality conditions were assumed for October and November.

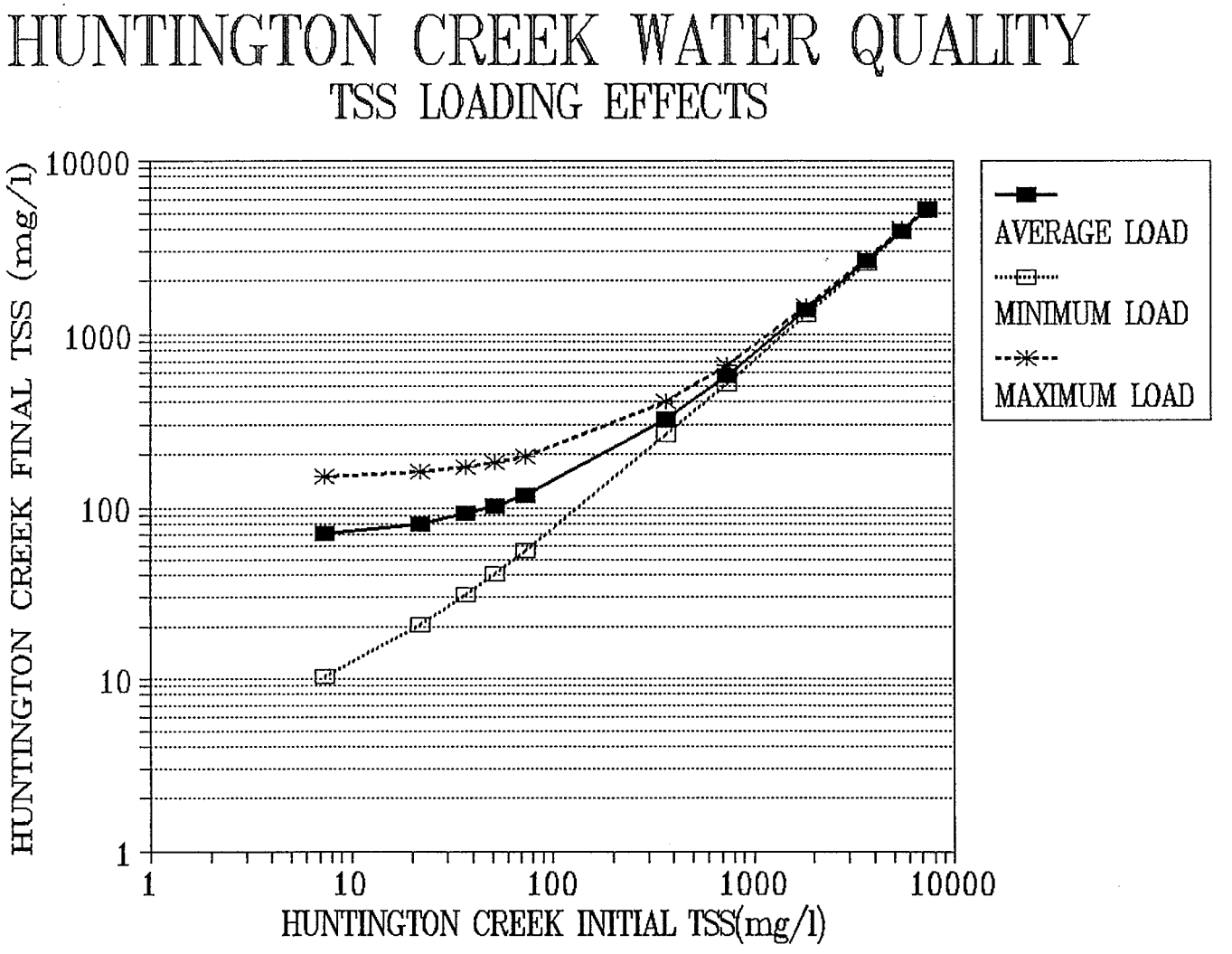

FIGURE I-4. A comparison of water quality changes from initial conditions in Huntington Creek given an average load (12.8 tons/day), a minimum load (1 ton/day) and a maximum load (28 tons/day) delivered from Deer Creek. These loading rates are representative of the 3-step variable flow input. Deer Creek flows were 22 cfs and Huntington Creek 50 cfs.