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UNITED STATES GOVERNMENT

memorandum

N3035

DATE: November 13, 1980

REPLY TO ATTN OF: Geologist

SUBJECT: Gravel In Lower Redwood Creek

FILE: MADEJ

TO: Environmental Specialist

Sediment is stored in the Redwood Creek channel in various ways. In lower Redwood Creek, gravel and sand are found in terraces, point bars, mid-channel bars, and bars along the sides of straight-channel reaches. Terraces and point bars are stable bed forms; and, from a management standpoint, they should not be disturbed. In addition, some sediment is unvegetated and easily mobilized while other bars are stabilized into various degrees. In most cases, bars that have a vigorous stand of vegetation should also be left untouched.

In our sediment studies, we divided Redwood Creek into several reaches. Reach 1a runs from the estuary to the Highway 101 bridge in Orick; and Reach 1 stretches from the highway bridge to McArthur Creek. The total amount of stored sediment in Reach 1a, above the present thalweg, is 297,000 yd^3, of which 195,000 yd^3 is active (i.e., acceptable for removal). In Reach 1, there are 785,000 yd^3, of which 265,000 yd^3 are active.

Attached are copies of the 1978 color air photos. As a preliminary step, I outlined in orange areas that I believe could be excavated without detrimental effects on the stream. If more gravel was needed, I would have to re-evaluate the remaining bars in terms of potential damage to the stream. This is only meant as an initial survey of conditions, not as an approval of gravel excavation in Redwood Creek.

We have also have some preliminary data on size distribution and lithology of sediment stored in lower Redwood Creek. To determine the size distribution of material stored in gravel bars, two methods were used. In 1979, core samples 6 inches in diameter and 12 inches long were collected, oven-dried, sieved and weighed. Only two gravel bars downstream of McArthur Creek were sampled (Table 1). In addition, in 1976 the U.S.G.S. sampled four sites downstream of McArthur Creek, using the Wolman method of point counts. One-hundred rocks on the surface of the gravel bar are selected, according to a grid system, and the lengths of their intermediate axes are recorded. This system gives a good approximation of the size distribution of material on the surface of the bar; however, surface material may be coarser than most of the bar material below the gravel bar surface.

There are spatial and temporal differences in the size distribution of gravel bar material. Nevertheless, Table 1 shows the range of sizes that are present.

In terms of the lithology of the gravel bars, the percent, by weight, of schist ranges from 30% to 70% and averages about 50%. The other half is composed of sandstone (30%-60%) and chert, quartz, greenstone, and conglomerates (about 10%). The largest particles are generally sandstone; most of the fine fraction (less than 8mm in diameter) is derived from schist parent rock.

If you need more detail or have any questions on the above, let me know.

Mary Ann

Mary Ann Madej

Attachment:
TABLE 1, Size Distribution of Bed Material

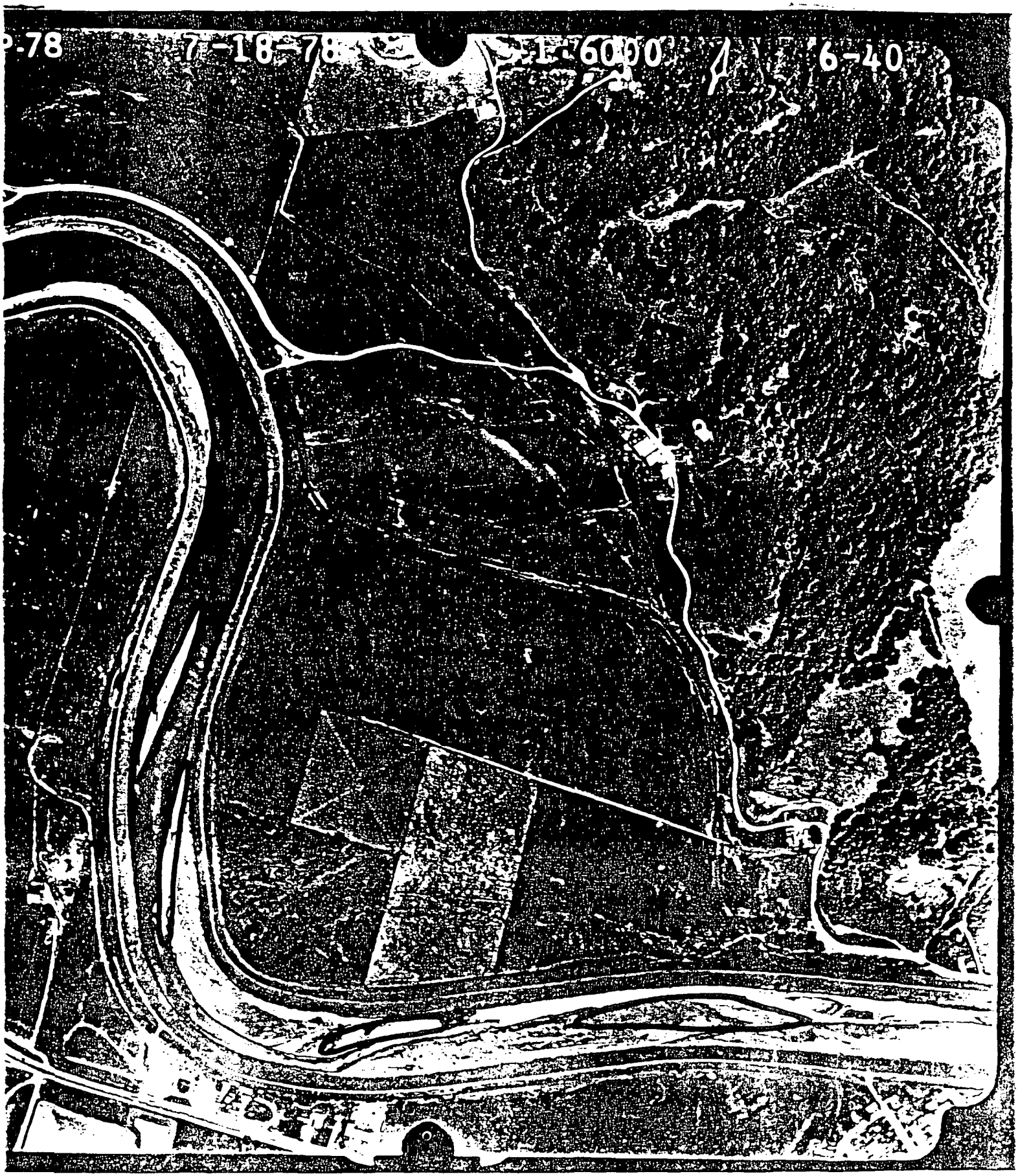
TABLE 1

Size Distribution of Bed Material

SITE	Greater than 45mm	32-45	22-32	16-22	11-16	08-11	4.6-8.0	2.3-4.6	2.0-2.3	1.0-2.0	0.5-1.0	Less than 0.5
(1979 Data-Core Samples)												
Upstream of mouth of Prairie Creek	32	8	7	7*	4	5	12	7	1	6	5	6
Near mouth of McArthur Creek	0	0	5	8	7	8	16	16*	3	16	12	9
(1976 Data-Pebble Counts)												
Between Hayes and Prairie Creeks	2	4	10		12		12	8		16*	5	31
Downstream of Hayes Creek	6	15	12		10		8*	8		2	3	36
Upstream of Hayes Creek	1	3	4		18		24*	16		13	5	16
Downstream of McArthur Creek	0	7	22		38*		18	4		4	2	5

* - Median size, D_{50}

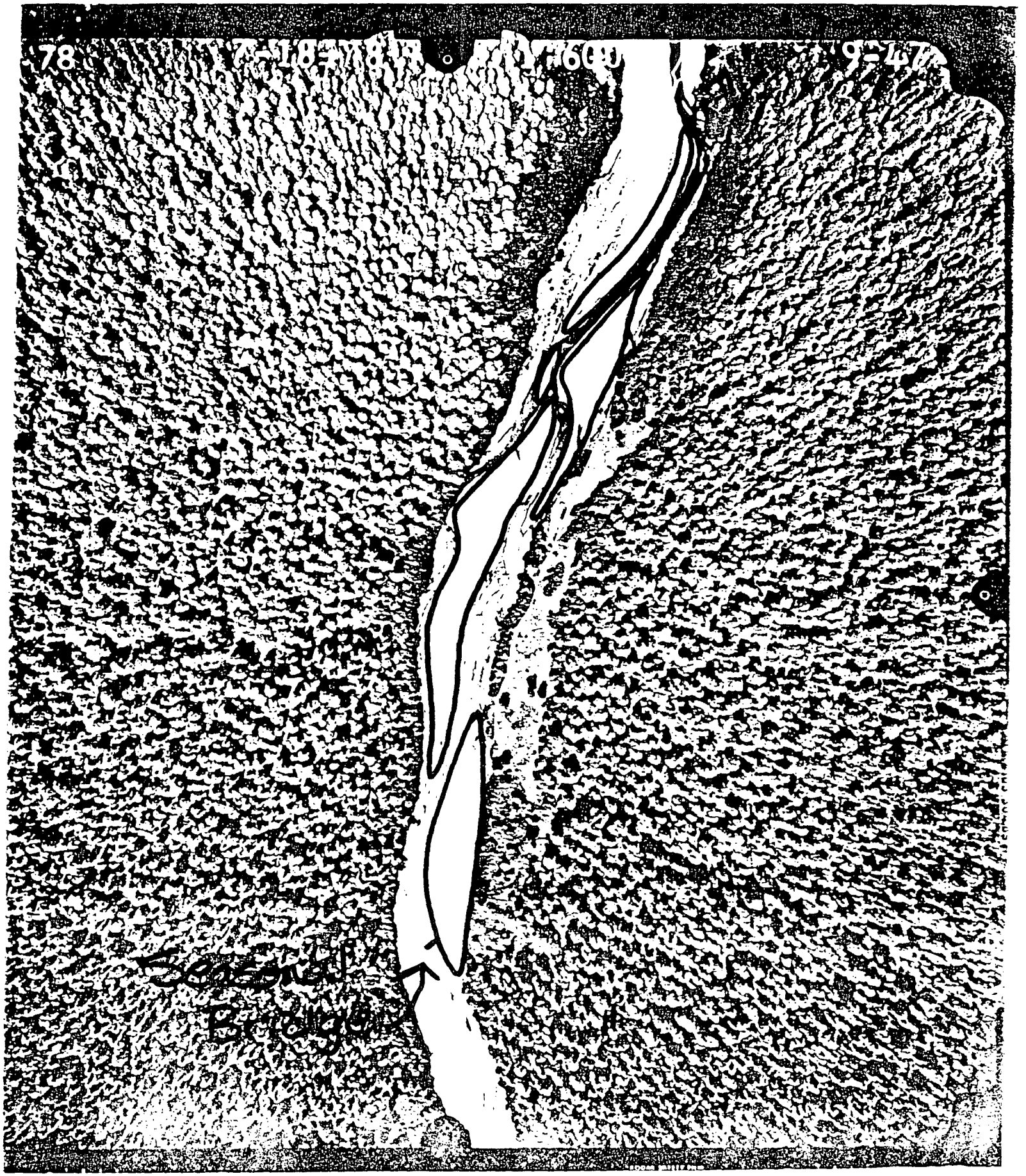

RNP 8
8-16-78
1:6000
S-3


-78
7-18-78
E 6000
6-40


NPA-78 7-18-78 1:6000

RNP 78-1 8/78
Proposed
Boundary
(approx.)


78
6000 A
9-49


78°
9°47'

United States Department of the Interior

NATIONAL PARK SERVICE
REDWOOD NATIONAL PARK
ARCATA OFFICE
P.O. BOX SS — 791 EIGHTH STREET
ARCATA, CALIFORNIA 95521

IN REPLY REFER TO

Per FYI + File.
Dave

D30101

March 22, 1982

Woody Woodruff
California Department of Transportation
P.O. Box 3700
Eureka, California 95501

Dear Woody,

Enclosed is a report prepared by one of our geologists regarding gravel in lower Redwood Creek. The report is based on information collected as part of a study of "Sediment Sources and Sediment Transport in the Redwood Creek Basin". The areas outlined on the copies of the aerial photos should give us a point to start talking from regarding gravel extraction in the lower creek.

I've outlined the approximate National Park boundary upstream from Orick. Although we've identified gravel bars with some removal potential within the park, this should not be considered approval to extract gravel from parklands.

We've done limited amounts of lithology and attrition tests on the sediment. If you need more information, give either myself or Mary Ann Madej a call (822-7611).

Sincerely,

John A. Sacklin

John A. Sacklin
Environmental Specialist

Enclosure

cc:
Dick Wood, California Department of Fish and Game,
619 2nd Street, Eureka, California 95501, with
enclosures.
Mary Ann Madej, with enclosures.

Year of the Visitor