



Louisiana-Pacific Corporation

P.O. Box 489
Fort Bragg, California 95437
707/964-4781

December 11, 1997

North Coast Regional Water Quality Control Board
North Coast Region
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

Subject: Proposed addition of Greenwood Creek to the 303 (d) List of Waterbodies.

Dear Board Members,

This letter is in regards to the proposal to add Greenwood Creek to the 303 (d) list as being impaired due to siltation and/or sedimentation. **Louisiana-Pacific (L-P) requests that the Board defer from listing the waterbody at this time and that you instruct Staff to further evaluate the threat of impairment and quantify the level of impairment.** Louisiana-Pacific would be willing to assist the Staff in this endeavor.

Attached to this letter is a brief analysis of the current turbidity levels recorded at the Greenwood Creek wells and reported to Public Health agencies. The analysis was prepared by Louisiana-Pacific Forest Hydrologist, Chris Surfleet.

Louisiana-Pacific owns approximately 9,700 acres in the drainage which equates to 59% of the total. L-P has prepared and submitted a Sustained Yield Plan (SYP) and is currently applying it to forest management operations.

The Greenwood Watershed Association points out in their letter to the Regional Water Quality Control Board that Louisiana-Pacific acknowledges that the lower planning watershed of Greenwood Creek is a high risk watershed for management actions. What the Greenwood Watershed Association is referring to is the Watershed Relative Risk Rating (WRRR) which L-P uses in it's Sustained Yield Plan. The WRRR is calculated for each planning watershed, that L-P has ownership in, on the basis of potential impact to sensitive resources such as fisheries or human uses. Because Greenwood Creek's lower planning watershed is adjacent to a drinking water supply it receives a high relative risk. This is not because the watershed is more degraded or the soils are more erodable, rather that L-P recognizes the Elk County Water District. This recognition is in the form of a High WRRR for the lower planning watershed providing a higher standard for management actions in this

planning watershed to avoid impacting the drinking water system. These higher standards include vegetative buffers on significant headwater streams (class III watercourses), longer rotation lengths for harvest entries, increased road construction and maintenance standards, equipment limitations near watercourses, and greater restrictions on the use of ground based yarding systems (skidders or tractors). These measures exceed the current Forest Practice Rules.

Also attached to this letter are copies of several reports prepared as part of a review of several past THP's located in the drainage. The reports were prepared by California Department of Forestry, Division of Mines and Geology and Regional Water Quality Board Staff. The reports clearly show that consideration was given during the review of the THP's to the beneficial uses of the Greenwood Creek waterbody. Over time review consisted of both field trips to the proposed THP's and to the drinking water supply.

Louisiana-Pacific agrees with the results of a recent document titled *Greenwood Creek Stream Survey: Data Analysis and Recommendations*, May 15, 1996, by Dr. Fred Euphrat. Dr. Euphrat states that "The mean pool filling by sediment was 25%. These values, compared to another study of North Coast watersheds, are relatively low, suggesting a creek in moderately good condition."

L-P would also like to correct the mis-information regarding the first ten year harvesting period. The SYP prescribes clearcutting on 9.9% of the L-P ownership in the Greenwood Creek planning watershed during the first ten year period.

In conclusion, Louisiana-Pacific has empathy for the water users at Elk. The costs associated with the continued support of a precarious system are high and burdensome to a small district. Considering the past regard give to beneficial uses, our turbidity analysis and the future protection offered by the SYP, we hope you concur that a 303(d) listing is not warranted at this time.

Sincerely

Tom Schultz
District manager

cc: Tom Thompson
Jim Lemieux.

Attachments:

- 1) Memo to Regional Water Quality Board, from Chris Surfleet, 12-10-97.
- 2) Memo to File, CDF review of THP 1-82-443M, by Peter H. Cafferata, 10-5-82.
- 3) Memo to File, Regional Water Quality Board Staff review of THP 1-85-517M, by Mark Alpert, 8-21-90.
- 4) Memo to Richard J. Ernest, CDF, Division of Mines and Geology review of THP 1-82-443M, by Charles Armstrong, 12-1-82.
- 5) Regional Water Quality Board, Executive Officer's Summary Report, THP 1-85-517M, by Charles S. Greene, 9-20-90.



Louisiana-Pacific Corporation

Wildlife and Fisheries Science Group • Forest Resources and Fiber Procurement Div. (Western Region)

Date: December 10, 1997

To: North Coast Regional Water Quality Control Board

From: Chris Surfleet, Watershed Specialist

Subject: Greenwood Creek Turbidity Comments

The surface water turbidity measurements taken from Greenwood Creek were compared to turbidities measured in three unharvested watersheds of Caspar Creek in the Jackson Demonstration State Forest. The Caspar Creek watershed is in coastal Mendocino County and has similar soil characteristics, geology, topography and weather as Greenwood Creek allowing a reasonable comparison between the two watersheds.

The Caspar Creek data showed storm flow turbidity ranging from 20 to 234 NTU in the 1996 winter in unharvested watersheds. These turbidities were from storms which did not exceed a recurrence interval of about 1 year. Turbidity collected at Greenwood Creek for 1992-1993 and 1995-1997, were compared to these values (1994 was not available from public sources)(see attached Figure 1 and 2). Typically, only 2-4 observations per year at Greenwood Creek were higher than the highest turbidities from the unharvested Caspar Creek watersheds, with the exception of 1995 which had 9 higher observations (Figure 1). Further investigation found that almost every high turbidity reading occurred in extreme storms, usually greater than a 5 year recurrence interval (Figure 2). It is during these extreme storms that there are greater increases in stream bank erosion, landslides, surface erosion and bank topping floods creating greater sediment inputs whether a watershed is managed or unmanaged. The samples taken at Greenwood Creek are taken once daily, not continuously throughout storm events. Because of this it cannot be certainly stated that the infrequent high turbidity levels observed in Greenwood Creek are from a trend of watershed degradation due to sedimentation. The infrequent high turbidity could be simply higher levels due to discrete erosion events occurring during large storms.

At Caspar Creek it was learned that as drainage area increased so did turbidity. All of the drainage areas in the Caspar Creek study are much smaller than Greenwood Creek. It should be expected that Greenwood Creek would have higher turbidity than the smaller Caspar Creek watersheds, because of higher flows and greater sediment sources due to the larger drainage area.

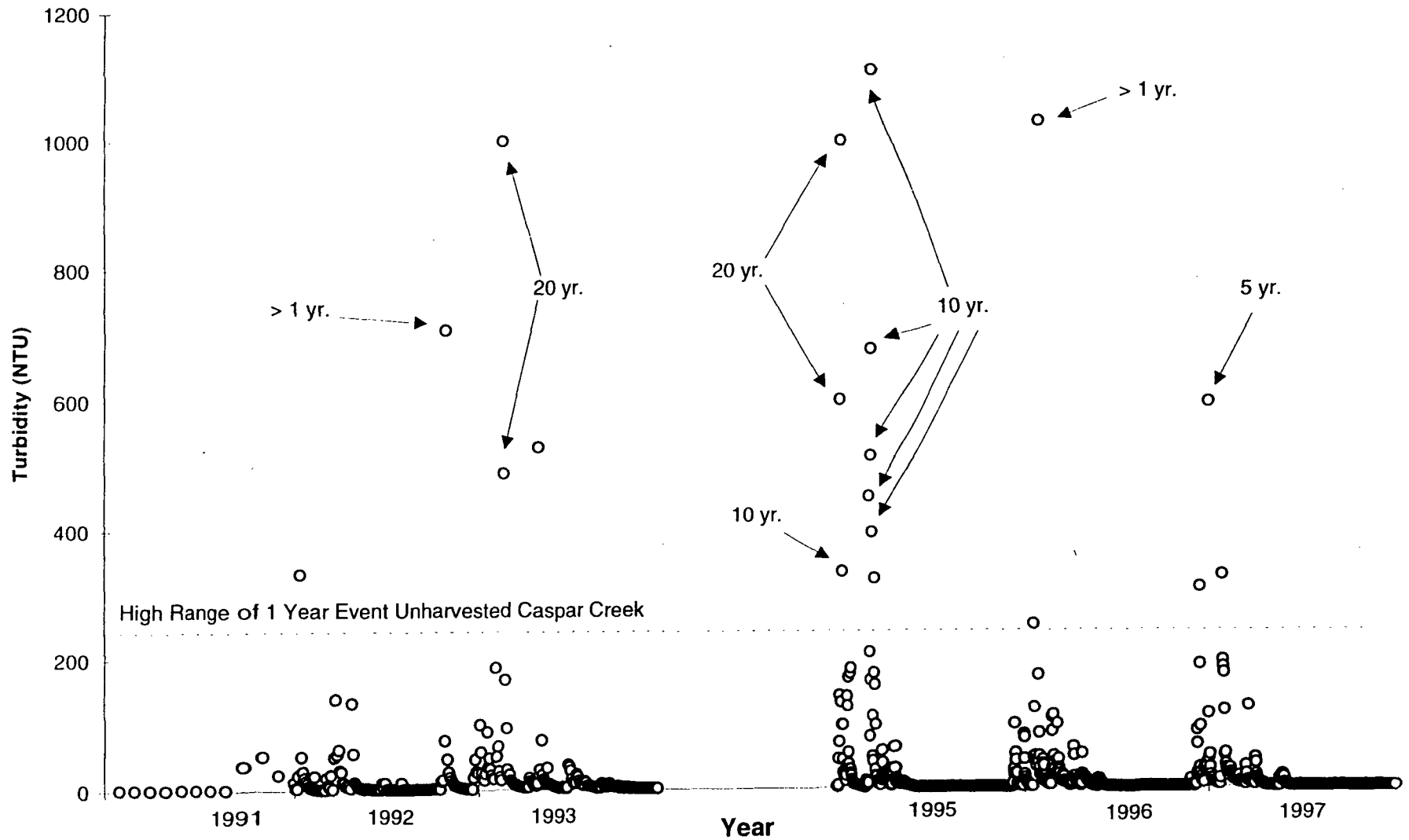
The Elk County Water District has claimed that a filtering system has been needed to handle the turbidity pollution of Greenwood Creek. If the well for the Elk County Water District is affected by Greenwood Creek turbidity levels, then the filter system would be necessary even if the watershed is not subject to timber harvesting activities. The turbidities in storm events for unharvested watersheds in Caspar Creek ranged from 20 to 234 NTUs. These are much higher than the 1 NTU standard suggested for drinking water.

It is unclear how much effect turbidity levels in the Elk County Water District well are affected by Greenwood Creek turbidity. There does not appear to be a correlation between the two data sets. When turbidity levels are at their lowest in Greenwood Creek in the summer months (typically < 1 NTU), well turbidity is often above drinking water standards (often greater than 5 NTUs). When storm flow turbidity is at its highest in Greenwood Creek the well often does not show corresponding high turbidity levels. It is these inconsistencies that suggest that there could be other factors affecting the well turbidity.

cc: Tom Schultz
Malcom Pious
Jim Lemieux

Attachment

**Figure 2. Daily Turbidity for Greenwood Creek
(Extreme Storm Event Values are Labelled by Recurrence Interval)**



Memorandum

To : Files

Date: October 5, 1982

Telephone: ATSS ()
()

From : Department of Forestry

Subject: 5100 FOREST REGULATION
5110 Forest Practice Act
Hydrologic Review on THP 1-82-443 M

This note reports the results of an inspection of the town of Elk's well held on October 5, 1982 with S. Acker, C. Acker, adjacent land owners on Greenwood Creek; M. McKay and myself of CDF.

Observations:

My stephen E. Acker is in charge of the water supply for the town of Elk, CA. A well located approximately 300 yards from the mouth of Greenwood Creek serves the 8 households and 200 people of Elk. The well is only 25 feet deep and 40 feet in from the bank's edge. It is situated in the flood plain and examination of the eroding channel indicates that the strata the well was bored through consists of very porous, uncemented gravel and sand. Mr. Acker stated that during the peak winter flows, water pumped from the well (50 gal/min) is turbid. No values of turbidity in NTU or JTU were given. Since no filtration is done, Mr. Acker is concerned that a poor logging job done on THP 1-82-443 M would further deteriorate the water quality in this well. The well is approximately 3/4 mile below the western edge of the THP.

Turbidity is certainly an important consideration in public water supplies. Consumers of public water supplies generally expect turbidity-free water. The U. S. Environmental Protection Agency has placed a limit of one JTU as the maximum amount allowable in public water supplies. Turbidity may be caused by a wide variety of suspended materials, ranging in size from colloidal to coarse dispersions. Flow velocities through even very porous gravels is quite slow, so turbidity in well water is made up of silt and clay sized particles which require long period of time to settle out.

Assurances were given to Mr. Acker that the Forest Practice Rules would be actively enforced on THP 1-82-443 M. The preharvest inspection done showed that the RPF had done an adequate job in preparing the plan. Turbidity and suspended sediment found in Greenwood Creek during peak flow events will undoubtedly be high regardless of whether harvesting takes place on 1-82-443 M. Good logging will help the situation at Elk's well from become worse, but it appears a filtration system is needed for a deeper well.

Peter H. Cafferata
PETER H. CAFFERATA
Hydrologist

PHC:dd

cc: RPF

P O T

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Received CDF
REGION I

SEP 07 1990

Regional Water Quality Control Board
North Coast Region

RESOURCE MANAGEMENT

- Interoffice Communication -

TO: Frank Reichmuth
File

FROM: Mark Alpert

DATE: August 28, 1990

SUBJECT: Field Inspection THP 1-85-517 MEN

Date: August 21, 1990 Participants

Time:	Field 6 hrs	Charles Greene	WQ
	Travel 4 hrs	Mark Alpert	WQ
	Office 4 hrs	Lee Susan	LP
		Tom Schultz	LP
		Jim Sweeley	LP
		Jim Purcel	CDF
		Mike McKay	CDF

On August 21, 1990 Charles Greene and I participated in an inspection of THP 1-85-517 MEN. This inspection was originally scheduled for Friday August 24, however, due to citizen protests and arrests, it was rescheduled at short notice. Representatives from Mendocino County were not able to obtain permission from LP due to the short time frame and consequently did not attend the inspection. It was sunny, clear during the inspection.

THP 1-85-517 MEN was approved in 1985, includes primarily cable yarding and a small area of tractor yarding (along ridgetops) of 205 acres by shelterwood preparatory cut and removal methods. The plan area is adjacent to both sides of Greenwood Creek, approximately 1 mile upstream from the town of Elk and the Pacific Ocean. Although the THP was approved in 1985, only the tractor yarding portion of the plan has been completed.

I do not know why logging has been delayed all these years. A recent amendment (#4) to the THP, which proposed changing the silvicultural method to shelterwood removal in the cable area, was denied by CDF. Since the THP expires in November 1990, LP is undoubtedly anxious to complete the work as approved in the original THP without further delays. Timber fallers have recently begun to cut trees and existing roads graded in anticipation of the harvesting operation. LP representatives indicated that the cable yarding would begin in approximately two weeks, barring further work stoppages caused by a local citizen group calling itself "breakfast first".

RECEIVED

SEP 5 1990

Dept. of Forestry & Fire Protection
Mendocino County
Resource Management

THP 1-85-517 TEN

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RESOURCE MANAGEMENT

During this inspection we did not observe degradation to beneficial uses of water, or violations of the Water Quality Basin Plan or Forest Practice Rules from this THP. The following are observations made during the inspection.

Observations

We began the inspection at the railroad car temporary bridge crossing of Greenwood Creek, which was installed at the end of the winter period 1990. Apparently, during the May rains the left bank (looking downstream) of the crossing was partially washed out. However, only a minor amount of sediment (from river deposits) was eroded. The main haul is in generally good condition, although the road reaches its cliffs away from the bridge crossing of Greenwood Creek, traverses steep slopes and crosses a small landslide that was a problem in the recent past.

We walked the entire length of the old railroad grade which is designated as an existing truck road on the THP map and technically could be reopened in compliance with the Forest Practice Rules. However, the old grade was constructed within the inner gorge and immediately adjacent to Greenwood Creek on very steep slopes. Numerous fill failures and landslides were observed along the road that in the past have contributed significant amounts of sediment directly into the creek. Presently, old slide surfaces are revegetated and the road surface is overgrown and generally is in a stable position and not contributing large quantities of sediment at the present time. However, reopening the old grade as a haul road would result in a high potential for increased erosion rates and sediment yield to Greenwood Creek. In addition, it would require excavation to reopen the road in several places where it narrows due to past landsliding, in particular in the upper end of the plan area. LP representatives indicated they were not planning to use the grade for hauling or for heavy equipment since they will be cable yarding from a road higher on the slope. We suggested that to more accurately reflect the present THP operation, that the old railroad grade road be deleted from the approved THP.

Greenwood Creek within the plan area generally appears to be good condition with cobble to boulder size bed and well defined pools and riffles. The creek is shaded by a mixed canopy primarily of alder and scattered conifers. LP representatives estimated that within the WLPZ that approximately 10 of the larger diameter trees are to be removed and that at least 50% of conifers will be retained. It appears that the shade canopy directly to Greenwood Creek will not be significantly reduced by the harvest. In

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RESOURCE MANAGEMENT

addition, they indicated that the southeast corner of the plan area adjacent to Greenwood creek would not be harvested. Perhaps those areas not to be harvested should be deleted from the approved THP.

We also evaluated the water district's primary water well. The district's concerns are twofold regarding this timber harvest plan. One concern is the loss of the well by bank cutting. The well is approximately 25 feet deep and located approximately 30 feet from the left bank (south side) of Greenwood Creek, which has a slight outside bend in the creek and immediately below highway 101 bridge crossing. A gabian rock wall constructed to protect the well from further bank cutting in 1986 is in good condition. Local residents indicated that historically Greenwood creek's main channel was further to the south of its present location.

The second concern is increased turbidity and degraded water quality. Specific details of the well design, specifically location and length of screen interval, if any, were not discussed. Consequently, it is unknown to what depth turbidity increases in Greenwood Creek have effected subsurface sediments and stream underflow.

It appears that the well is in jeopardy of continued bank cutting during future high flows. It does not, however, appear that the harvesting operation will increase peak storm flow, erosive force, or degrade water quality of Greenwood Creek. This determination is based on several factors including:

- * Use of cable yarding to minimize ground disturbance;
- * The overstory and ground vegetative cover to be retained on the slopes and within the WLPZ;
- * The small size of the harvest area in relation to the overall size of the Greenwood creek watershed;
- * All roads are existing and new road construction is not proposed; and
- * The period to operate is limited because the temporary bridge access to the south side must be removed by the winter period and the remainder of the harvest plan expires by mid-November.

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RESOURCE MANAGEMENT

Due to the meandering stream channel near the Elk water supply, the water district should consider adding a short concrete wall around the well head to protect it from future flooding. In addition, the water district should consider relocating the well to the north side of the river.

Recommendations

1. To more accurately reflect the present harvest plan designation of the railroad grade as a truck road should be deleted from the approved THP.
2. Those areas not intended to be harvested in the southeast corner of the plan area adjacent to Greenwood Creek should be deleted from the approved THP.
3. To evaluate compliance with the THP a second inspection should be scheduled after commencement of cable yarding.

Mark J. Alpert
Associate Engineering Geologist

Memorandum

Bean - Belva Sadie File

3

To : Richard J. Ernest, Chief, Region I
California Department of Forestry
P. O. Box 670
Santa Rosa, CA 95402

Date : December 1, 1982

RECEIVED

DEC 3 1982
Department of Forestry
Mendocino County
Resource Management

From : Department of Conservation
Division of Mines and Geology
P.O. Box 670, Santa Rosa 95402

Subject: GEOLOGIC REVIEW OF TIMBER HARVESTING PLAN 1-82-443 M

Inspection Date: 11/29/82

Participants - Affiliation:

Time Spent on Review:
3 Field, 1 Office, 4 Travel

Chuck Ciancio, L-P
Lee Susan, L-P
Ross Johnson, CDF
Jim Purcell, CDF
Mike McKay, CDF
Pete Cafferata, CDF
Frank Reichmuth, RWQCB
Ron Chuzch; RWQCB
Dick Moore, CDFG
Chuck Armstrong, CDMG
Gary Moran, Elk Water Co.
Charles Acker, Elk Water Co.
Berna Claire, Citizen

County: Mendocino

Quadrangle: Navarro 15'

Watershed: Greenwood Creek

Area: 300 Acres

Wilvicultural Method: Tractor and
Cable Yarder

Logging System: Tractor and Cable Yarder

EHR: Low and Moderate

Slopes: 20 to 100%

Township Range Section

Geologic Concerns:

15 N 17 W 25

- New Road Construction: XX
- Road Reconstruction: XX
- Landslides: XX
- Other: Water Supply Downstream

Reference(s):

Durham, J., 1979, Navarro 15' quadrangle: California Department of Forestry, Title II Geologic Data Compilation Project, Unpublished, scale: 1:62,500.

Armstrong, C. F., Memo to Dick Ernest 9/22/82: Geologic Review of Timber Harvesting Plan 1-82-443 M.

BACKGROUND

The first PHI for THP 1-82-443 M was conducted 9/21/82. A geologic review was made at that time. That review is listed as a reference and should be referred to for additional data. All observations and recommendations made during the geologic review of 9/21/82 remain unchanged.


NEW INFORMATION

A well site which is the main water supply for the village of Elk was visited. The site is on a terrace within 50 feet (horizontal) from Greenwood Creek. Water is being pumped from a level at or below the elevation of adjacent Greenwood Creek, indicating that water from the creek is being drawn into the well. The material in the terrace is unconsolidated, well sorted, thin-bedded (in places cross-bedded) sediment of all sizes: clay to marble-size gravel. These sediments are possibly river delta deposits of Pleistocene age coeval with the first marine terrace. Although none were observed, it is possible that beds exist where particles are so coarse that silt and clay suspended in the water would not be filtered out between the creek and the well.

At the time of observation, Greenwood Creek was quite turbid. However, water at the well head appeared clear. Reddish-brown water, probably containing colloidal Fe_2O_3 , was released when a purge valve at the well head was opened. The well water had a distinct taste of iron.

CONCLUSIONS

Sediment in Greenwood Creek does not reach the well intake at least during high water periods. Sediment at the well head may be colloidal Fe_2O_3 from the alluvial aquifer. The Elk community water well is not located at the most desirable site. It is potentially susceptible to: 1) erosion from meanders in Greenwood Creek, 2) high water flooding, and 3) waterborn pathogens.



CHARLES F. ARMSTRONG
Certified Engineering Geologist 976
Santa Rosa

APPROVED: _____

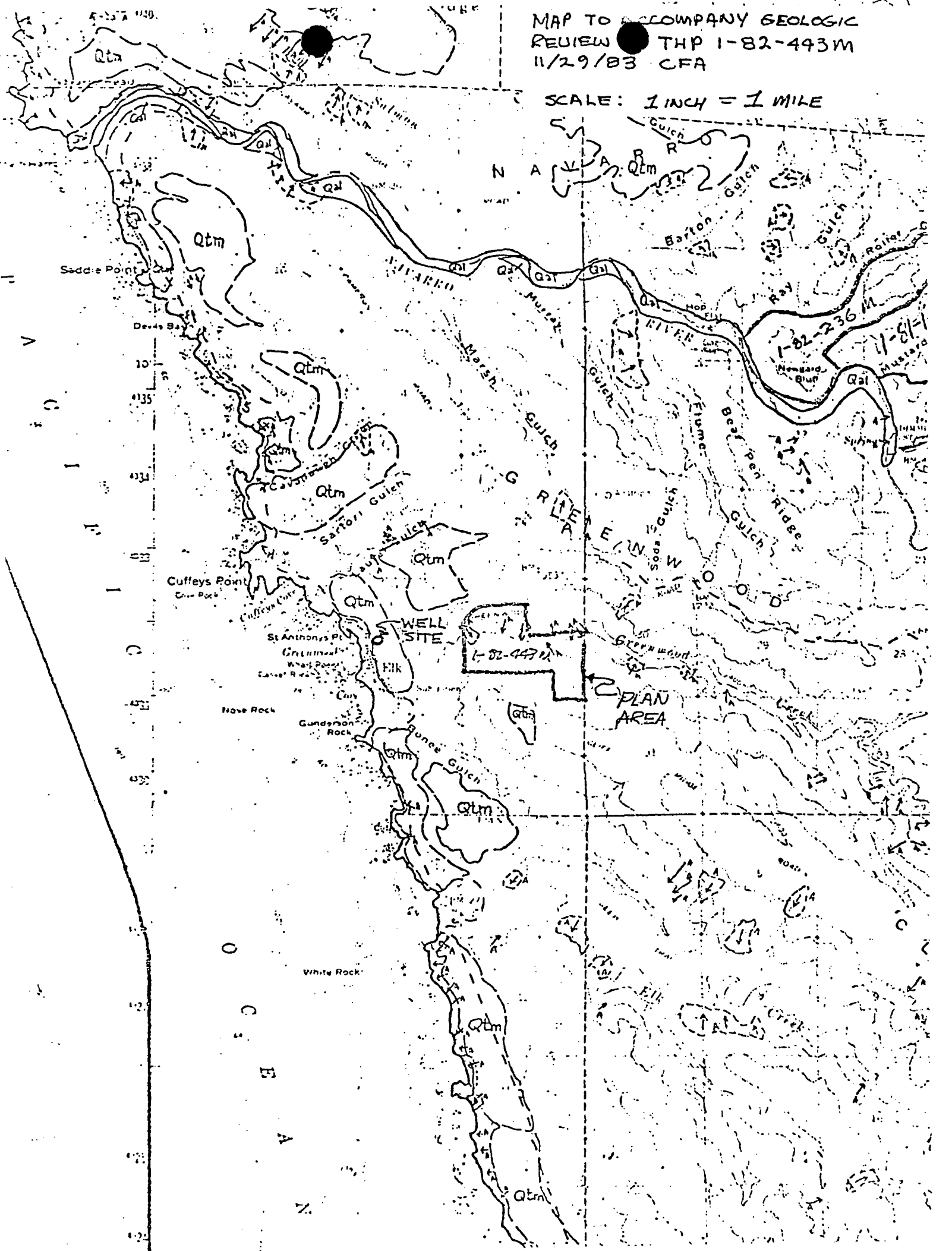
JAMES F. DAVIS
STATE GEOLOGIST
RG 3463

cc: (Unapproved) R. Johnson, T. Bedrossian
Ukiah Review Team

CFA/dj

MAP TO ACCOMPANY GEOLOGIC
REVIEW THP 1-82-443M
11/29/83 CFA

SCALE: 1 INCH = 1 MILE



State of California
Regional Water Quality Control Board
North Coast Region

Charles S. Greene

EXECUTIVE OFFICER'S SUMMARY REPORT
9:00 a.m., September 20, 1990
Eureka City Council Chambers
531 K Street
Eureka, California

ITEM: 16

SUBJECT: Request of Norman de Vall for the Regional Board to adopt Waste Discharge Requirements for Louisiana-Pacific Corporation on Timber Harvest Plan No. 1-85-517 MEN, near Elk, Mendocino County

DISCUSSION: The subject Timber Harvest Plan (THP) was submitted by the Louisiana-Pacific Corporation (L-P) to the California Department of Forestry and Fire Protection (CDF) on October 18, 1985. The THP was approved by CDF on November 19, 1985, following field review by inspectors from CDF and the Department of Mines and Geology and evaluation by the Review Team. The maximum of two one-year extensions have been granted for this THP, which will expire on November 14, 1990.

The THP covers 205 acres located on both sides of Greenwood Creek approximately one mile upstream from the Pacific Ocean and the town of Elk in Mendocino County. The THP proposed tractor yarding of 33 acres on moderate slopes located well above Greenwood Creek. The remaining 172 acres were planned for cable yarding. The proposed silvicultural methods were shelterwood, preparatory step in the cable yarding areas and shelterwood, removal step in the tractor yarding areas. The only areas operated on prior to this summer were the 33 acres of tractor yarding.

The Elk County Water District (ECWD) provides services to approximately 80 connections from two wells located adjacent to Greenwood Creek. The wells are located approximately 0.5 miles downstream from the subject THP.

Elk County Water District, Greenwood Watershed Association, Stewards for Bandito, Mary Pjerrou, Louis Martin, and Norman de Vall filed a lawsuit on this THP and two others in the Greenwood Creek and adjacent watersheds. At the request of Mr. de Vall and Mr. Charles Acker (Board President, ECWD), Regional Board staff, along with representatives from CDF and L-P, inspected the subject THP area on August 21, 1990 (Attachments 1 and 2). At the time of this inspection, the roads to be used had been opened and timber falling was underway. Mr. de Vall also requested a public meeting be held by the Regional Board to consider adopting waste discharge requirements.

Staff evaluated the timber harvesting operations with respect to compliance with the THP and the Basin Plan. Staff was particularly interested in determining if conditions existed outside the written plan that could present a threat to the beneficial uses of Greenwood Creek. Based on this inspection, staff found that no threats to the beneficial uses of Greenwood Creek were present and potential impacts to the stream appeared to be minimal.

A second inspection of the THP site was conducted by staff on September 6, 1990, in response to another request by Mr. de Vall (Attachment 3). Cable yarding was underway and had been completed on a portion of the site. Staff inspected these areas and walked down Greenwood Creek for most of its length within the THP boundary. Nothing was observed that would suggest that the timber harvesting operations were being conducted in a manner that would significantly impact the beneficial uses of Greenwood Creek.

In addition to the two recent field inspections of the subject THP, staff carried out a preliminary analysis of the cumulative effect of timber harvesting on the Greenwood Creek watershed (Attachment 4). This analysis was done using an abbreviated and more conservative adaptation of the management model that is used by the U.S. Forest Service for evaluating cumulative watershed effects on public forest lands. In conducting this analysis, staff focused on all timber harvesting activity that has occurred over the past six years. The effects of timber harvesting prior to 1985 also was taken into account. Based on this preliminary and simplified analysis, staff concluded that Greenwood Creek is not now at or even approaching a significant "threshold of concern" resulting from the cumulative impact of past and present timber harvesting.

Based on the field inspections of the subject THP and the conclusions derived from the cumulative effects analysis, staff concluded that the beneficial uses of Greenwood Creek would be protected and that no further mitigations would be required. Thus, staff determined that waste discharge requirements were not warranted on that basis, as well as on the basis of two facts: 1) Board Resolution No. 87-113 waives requirements for discharges that have no adverse effects on waters of the State, which includes timber harvest plans that comply with the Basin Plan, and 2) staff believes that any water quality concerns were satisfied by working within the review team process.

PRELIMINARY STAFF

RECOMMENDATIONS: The Regional Board should consider the request of Mr. de Vall to issue waste discharge requirements for the subject THP. After discussion, the Regional Board should affirm the waiver policy of the Board or direct staff to request a Report of Waste Discharge for Timber Harvest Plan No. 1-85-517 MEN.