Inventory of Spawning Habitat Used by Oregon Coastal Fall Chinook Salmon

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INTRODUCTION

Current trends in spawning escapement levels of coastal fall chinook salmon (*Onchorynchus tshawytscha*) in Oregon suggest that populations of the various north migrating stocks are at healthy levels of abundance. North migrating fall chinook stocks inhabit coastal river basins in Oregon from the Necanicum River south to the Coquille River (Figure 1). The inferred healthy status of these stocks is based upon an index of peak spawner counts derived from the Oregon Department of Fish and Wildlife's (ODFW) annual spawning survey program. A total of 56 standard index surveys (45.8 miles) are monitored on an annual basis to estimate peak escapement levels and stock status trends for north-migrating stocks. Standard surveys are assumed to be representative of fall chinook (ChF) spawning habitat throughout each of these basins, and thus corresponding spawner escapement levels are assumed to be accurate. However, standard surveys are primarily located in small tributaries that are most conducive to foot surveys and coastal ChF are known to spawn extensively in mainstem reaches and large tributaries. Counts in standard surveys may be sufficient to monitor long term trends of indexes of spawner abundance, however, they are likely inadequate for deriving estimates of total spawner abundance. To meet the objectives of ODFW's Coastal Chinook Salmon Plan (ODFW 1992) and comply with fisheries management programs as directed by the Pacific Salmon Treaty (Pacific Salmon Commission 1985) accurate annual estimates of spawner escapement are needed.

Presently, peak count indexes are used to estimate total spawner abundance as follows:

$$S_T = \frac{1}{0.48} \sum_{j=1}^{T} M_J \left[\frac{\sum_{i=1}^{j} P_{ij}}{\sum_{i=1}^{j} m_{ij}} \right] \tag{1}$$

where

S_T = Total fall chinook spawner population in area of interest

M_j = estimated miles of fall chinook spawning habitat in basin *j*

p_{ij} = peak count of fall chinook spawners in survey *i* in basin *j*

m_{ij} = mileage of spawning survey *i* in basin *j*.

These abundance estimates are utilized by ODFW and the Pacific Salmon Commission to implement various management strategies. There are concerns that estimates based upon this method may be biased, leading to inaccurate stock size estimates. Specifically, it is questionable whether index counts (p_{ij}) accurately represent basin-wide spawner abundance. Standard index surveys are typically located in small to moderate-sized tributaries which are reliably used by spawning ChF and can be surveyed with relative ease. Furthermore, there is a general belief that the current database of available spawning habitat (M_j) is inaccurate. This database is derived primarily from recommendations from ODFW personnel and has not been verified.

Recognizing the disparity between the quality of the available data and the reliability of parameter estimates needed for management, we initiated a study aimed at improving ChF spawner abundance estimates. We choose to concentrate our initial efforts on improving estimates of the extent of available spawning habitat (M_j). A better understanding of the extent M_j would not only directly improve the accuracy of spawner escapement estimates, but provide a context for assessing the representativeness of standard index surveys and also provide a sampling frame for other survey designs. Our approach in improving values of M_j was to develop a practical and accurate means of inventorying coastal river basins for ChF spawning habitat. This was done through comprehensive inventories of coastal basins for physical habitat elements associated with ChF spawning sites. These inventories were conducted during the summer low-flow period to reduce disruption caused by freshets that occur frequently during the spawning season. Identification of ChF spawning habitat was based on adapting published descriptions of physical habitat associated with chinook spawning sites to summer flow conditions.

To validate this approach we conducted spawner distribution surveys during the subsequent spawning season. We used these surveys to evaluate our ability to accurately identify physical habitat used for spawning by ChF. The objective of these surveys were to:

1. verify whether chinook are utilizing the habitat units identified during the summer inventory.

2. determine if there was a correlation between density of spawners and scores of the quality of habitat units.

3. compare the density of spawners occurring in standard index streams to that in respective mainstem reaches and large tributaries.

4. identify discrepancies between the criteria used for the summer habitat inventory and the habitat utilized by ChF spawners.

This report describes the results of work completed during the first year of this study (1995). Included is a description of the protocol we developed to inventory spawning habitat, an evaluation of this protocol based on spawner distribution conducted the following fall, detailed descriptions of spawning habitat availability for the five basins that were inventoried, and recommendations for future survey modifications and needs.

METHODS

Spawning Habitat Inventory

Survey Targets

For our initial inventory, we targeted basins where demographic life history data and spawner index counts are being collected. These basins are essentially free of hatchery strays, so spawner distribution should not be affected by hatchery returns. Basins surveyed during 1995, from north to south were the: Nehalem, Wilson, Siletz and Siuslaw Rivers (Figure 1). Within each of these basins, those areas deemed, through the existing database, to contain

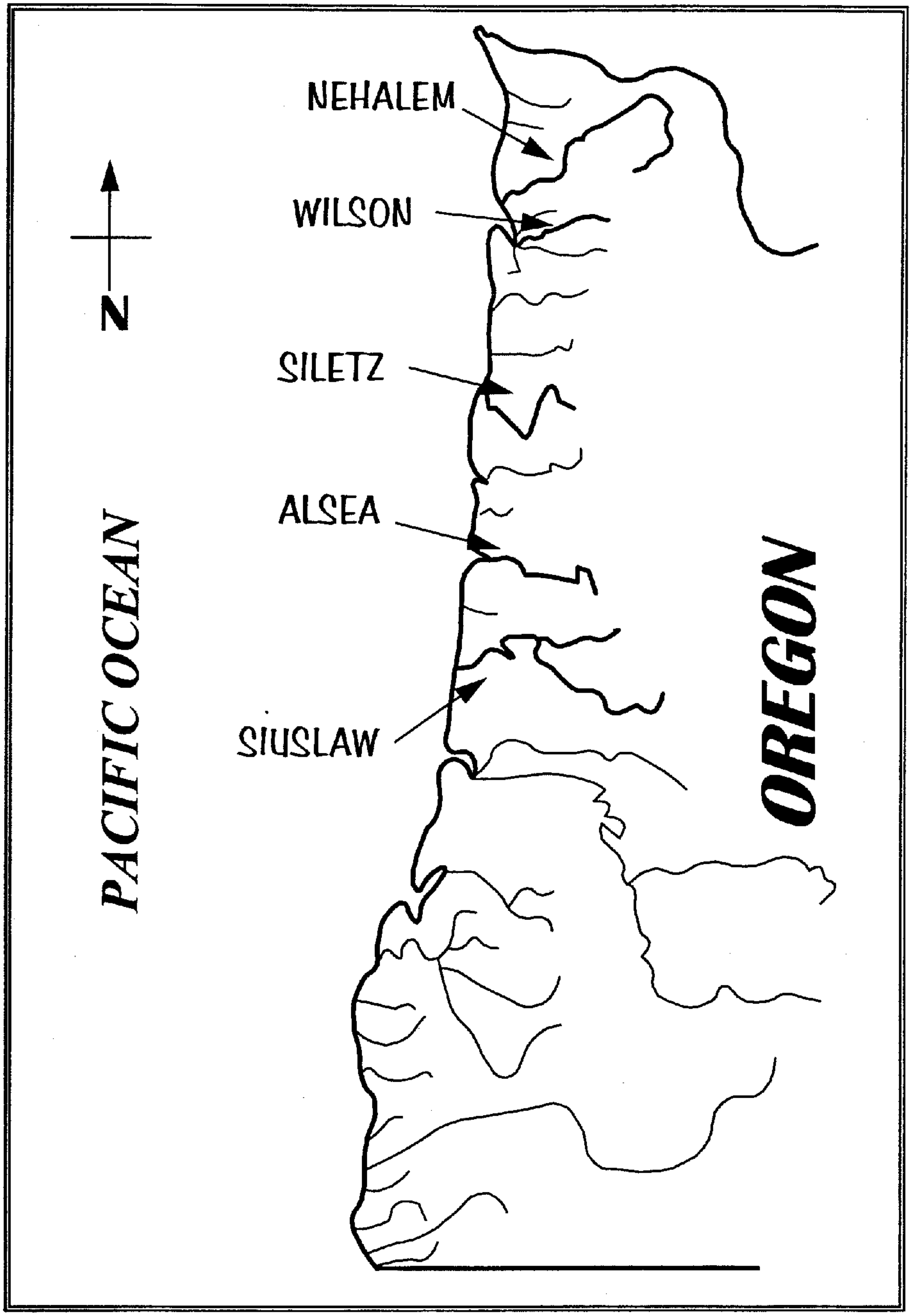

Figure 1. Map of the Oregon Coast showing river basins where inventories occurred.

potential fall chinook spawning habitat were inventoried. Additionally, at the request of district staff, we inventoried the portion of the mainstem and North Fork Alsea River where spring chinook salmon are believed to spawn.

We based the portion of each basin where our surveys would be targeted on ODFW's database of ChF spawning distribution. This database was compiled from the partially unconfirmed judgment of coastal district biologists, coupled with stratified random coho spawner surveys conducted during 1990-1995, where at least four spawning chinook were observed. Prior to our surveys, we consulted district biologists to update the distribution of potential spawning habitat mileage for the five targeted basins. This resulted in the following mileage estimates of potential ChF spawning habitat to be inventoried:

Basin	Mainstem	Large Tributaries	Small Tributaries	Total
Nehalem	12.8	27.1	65.1	105.0
Wilson	34.3	0	37.9	72.2
Siletz	38.7	13.5	36.7	88.9
Siuslaw	50.7	32.1	131.3	214.1

Surveys were conducted on a reach by reach basis. A reach is defined as a segment of stream extending from its mouth or one stream junction to the adjacent stream junction or headwaters. Within each reach, we quantified the availability of habitat which was deemed suitable for use for spawning.

Criteria for Identifying Spawning Habitat

Suitability was based upon criteria derived from the literature. Physical characteristics determining spawning habitat are water depth, water velocity, substrate composition, and slope of the streambed. Throughout their range, ChF have been observed spawning in a wide range of conditions for each of these parameters. Values for these habitat components cited in the literature are determined during fall and early winter spawning flows. Interpreting these conditions in low summer flows was somewhat subjective.

Water depths in which chinook were observed to spawn include 30-460 cm (Chapman 1943), 28-41 cm (Briggs 1953) and 10-120 cm (Bovee 1978). Surveys conducted throughout Oregon by Smith (1973) and Thompson (1972) suggested a minimum spawning depth of 24 cm. Based upon these studies, a depth of 24-100 cm under spawning flows (with 30-60 cm considered optimal) was established for this inventory. These depth criteria calibrated to summer flows resulted in a depth range of a minimum of having a wet surface to a maximum of 80 cm, with 15-60 cm being considered optimal.

Water velocities conducive to ChF spawning in Oregon are reported to be 0.33-0.76 m/s (Smith, 1973) and 0.30-0.91 m/s by Thompson (1972). Studies outside of Oregon have produced values both similar, 0.30-0.76 m/s (Briggs 1953) and highly variable 0.37-1.89 m/s (Chapman et al. 1986). For this project, a range of 0.3-0.8 m/s was selected as representative of water velocities utilized by spawning Oregon coastal ChF. Calibrating these flows to summer conditions was difficult. A measuring instrument was not utilized in the field, therefore visual estimations were made. The guidelines used by surveyors for interpreting suitable summer velocities ranged from a minimum velocity of perceptible water flow to a maximum of apparent surface turbulence but not dominated by whitewater.

Available estimates of the surface area of substrate used by ChF for redd construction are wide ranging. Chapman (1943) and Burner (1951) estimated redd area for ChF in tributaries of the Colombia River at 2.4-4.0 m^2 and 3.9-6.5 m^2 , respectively. Conversely, Neilson and Banford (1983) found redd areas ranging from 0.5-27.5 m^2 in the Nechako River, B.C. Redd areas reported for the Hanford reach of the Columbia River were 2.1-44.8 m^2 (Chapman et al. 1986). The objective of this habitat inventory was to identify locations that received a high degree of utilization by spawning ChF. Therefore, separate criteria were used to denote minimum area of suitable habitat required for those streams < 20 m bankful channel width and those ≥ 20 m. In the smaller streams, where ChF often spawn in smaller patches of gravel, a minimum of 4 m^2 surface area was used, while, in the larger streams we used 10 m^2 as the minimum surface area.

Another key component in identifying potential ChF spawning habitat is the composition of substrate. Due to their large size and high water flows in which they spawn, chinook are capable of spawning in larger substrate than most other salmonids. Thompson (1972) reported Oregon ChF spawning in gravel from 1.3-10.2 cm in diameter. Snake River ChF have been observed spawning in gravel ranging from 2.5-15.2 cm (Groves 1986). We used the following criteria for identifying suitable substrate. Within the minimum contiguous areas specified above, ≥ 50% of the substrate needed to range from 2.0-15 cm in diameter.

A summary of the physical criteria used for the inventory and how they were applied as field measurements is listed in Table 1.

Table 1. Physical criteria used to represent fall chinook spawning habitat in Oregon coastal streams.

Criteria	Depth	Velocity	Substrate size	Minimum area
Measured during spawning	24-100 cm	0.3-0.8 (m/s)	2-15 cm	4 m^2-(streams < 20 m wide) 10 m^2-(streams ≥ 20 m wide)
Visual Representation during summer flow	wet surface-top of thigh	minimum: visible flow, maximum: whitewater	≥ 50% golfball-softball sized within minimum area	same as above

In addition to the above criteria, two features are key in sites selected for redd construction by ChF spawners. Both the orientation and degree of slope of the substrate impact the likelihood that ChF will use an area. If gravel deposits are situated such that they slope parallel to the current rather than are bisected by it, they tend to be avoided. Similarly, if the lateral slope of the substrate is > 5% it jeopardizes the stability of the site and negates use (Conner et al. 1993). Many authors have emphasized the importance of subgravel flow in the choice of redd sites by chinook. This condition is often maximized at the interface between pools and riffles (Fig 2). The preference by salmonids to spawn in such "tailout" sites has been well documented (Briggs 1953; Chapman 1943). Stuart (1953) noted that downwelling currents occurred in such transitional areas and the gravel there was easy to excavate and relatively free of silt. Groot and Margolis (1991) state that: "provided the condition of good subgravel flow is met, chinook will spawn in water that is shallow or deep, slow or fast and where the gravel is coarse or fine". The physical criteria utilized in this inventory (Table 1) was designed to accommodate these features.

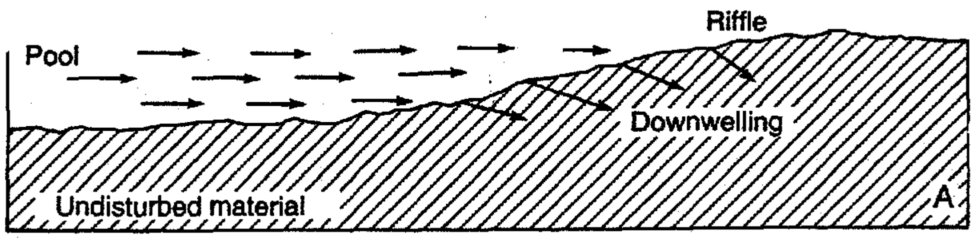

Figure 2. The pool-riffle interface creates the optimal downwelling conditions preferred by chinook salmon for spawning (taken from Groot and Margolis 1991).

Survey Procedure

The habitat inventory was conducted during a three month period beginning 27 June and terminating 26 September, 1995. This time frame was chosen to optimize viewing conditions of the habitat and navigability of the streams. Large tributaries and mainstem reaches were navigated through the use of inflatable kayaks. Smaller tributaries were surveyed by foot. The survey protocol employed was identical for both mainstem and tributary surveys. Each contiguous patch of substrate that met our criteria was designated as a *habitat unit*. Each targeted reach was surveyed to identify the presence of habitat units. In determining the upper distribution of ChF spawning habitat within each tributary stream, surveys were terminated 0.5 mile upstream of the last observed habitat unit. Mileage estimates for each reach surveyed were obtained by hip chain readings for foot surveys and through the use of a map wheel and 7.5 minute USGS topographic maps for floated surveys.

Inventories were conducted by a two person crew, with each member responsible for a specific set of duties. One person, the estimator, was responsible for estimating the surface area and substrate composition within each unit. The other member, the numerator, calibrated the estimator every fifth unit, identified the unit location and recorded the data. The two surveyors jointly determined the appropriate depth and velocity ratings and estimated the percent tailout in each unit.

The initial step upon designation of a unit was to determine its location either through use of a Global Positioning Satellite (GPS) Receiver or hip chain. The former was preferable, however, canopy closure in the smaller streams often inhibited the ability of GPS units to get a satellite reading. Locations were recorded as universal transmercator(UTM) coordinates or elapsed meters from the downstream boundary of the reach. These were later plotted on USGS 7.5 minute topographic maps. The unit locations were used in conjunction with data gathered from fall spawning surveys to evaluate the effectiveness of the protocol.

We estimated the surface area of each unit as the product of the visually estimated length and width that best represented the unit's configuration. Also at the location of each unit, the bankful channel width was estimated. Both of these values were calibrated by measuring the length and width of every fifth unit (beginning with the first) and developing relationships between measured and visually estimated distances. Estimates of surface area were used to determine the linear and area density of potential spawning habitat within each reach. Linear density was computed simply as the total m^2 of habitat units per mile of reach inventoried. Area density factors in variability in channel widths among reaches, and was calculated as follows:

$$D_j = \frac{100\sum_{i=1}^{j} h_{ij}}{r_j \bullet c_j} \qquad (2)$$

where

D_j = density of potential habitat per area of channel for reach j

h_{ij} = m^2 of potential habitat in unit i in reach j

r_j = length of reach j

c_j = mean width of channel for reach j

The substrate composition within each unit was broken into five categories: fines (silt or sand), pebble (≤ 2cm), gravel (>2-15cm), cobble (>15cm) and boulder or bedrock. The relative percentages of each of these categories were visually estimated for each unit. An attempt was made to calibrate these estimates by pacing off the greater dimension of the unit (either the length or the width) and tallying the substrate category immediately in front of the lead foot. As with the surface area and channel width, this calibration was conducted on every fifth unit.

For each unit we rated the overall depth and velocity of the water. These ratings were used to provide a general judgment of the suitability of these features for ChF spawning. Higher rankings indicated higher suitability.

The velocity rating was determined according to the ensuing scale:

5 - moderate and gradually increasing as it flows over unit (>50% must be in tailout)
3 - velocity is moderate and constant (i.e. glide)
1 - velocity is minimal (i.e. pool) or too fast for ideal conditions (i.e. riffle - rapid)

If the unit encompassed portions which fell into more than one category an average score of 2 or 4 was given.

Depth ratings were recorded on the following scale:

4 - 10-60 cm (top of shoe - top of knee)
2 - 61-90 cm (top of knee - thigh deep)
2 - 0-9 cm (surface wet - top of shoe)

Again, it was acceptable to average scores from different portions of the unit.

The last variable of concern was an estimate of what percentage of the unit contains the downwelling conditions associated with tailouts at the pool-riffle interface. Given the importance of these areas in site utilization by spawning ChF, the larger this value the greater the suitability of the habitat within the particular unit. We rated the occurrence of this condition in each unit by estimating the proportion of the unit that was located in a tailout.

Based upon the values obtained for each of these habitat components, a cumulative score of spawning habitat quality was calculated for each unit. This was determined according to the following:

$$Q_i = \frac{\left[\left(2V_i\right)+\left(\frac{S_i}{10}\right)+\left(\frac{T_i}{10}\right)\right]}{3} \qquad (3)$$

where

Q_i = habitat quality score for unit i
V_i = velocity rating for unit i
S_i = percent gravel in substrate for unit i
T_i = percent of unit i in tailout

The rating of depth was omitted from this equation because the variability between units was insignificant and difficulties were encountered interpreting ideal spawning depths during low summer flows.

To rate the quality of spawning habitat for an entire reach, unit scores were averaged as follows:

$$Q_j = \frac{\sum_{i=1}^{j} Q_i}{n_j} \qquad (4)$$

where

Q_j = average habitat quality for reach j
n_j = number of units in reach j

The overall suitability of a given reach for spawning or *reach score* (R_j) was calculated as:

$$R_j = Q_j \bullet D_j \tag{5}$$

Spawning Distribution Surveys

To verify habitat surveys, spawning surveys were conducted in a portion of the reaches surveyed during the summer. Due to stream levels and visibility conditions, the mainstem surveys were conducted during the early portion of the ChF spawning period, while the tributary surveys were performed in the latter part. Mainstem and large tributary surveys were conducted using inflatable kayaks, while smaller tributaries were surveyed on foot. In both cases, presence of spawners was determined through observation of live fish and/or redds. Upon detection, the location of the spawning site was recorded using GPS receivers (floated) or hip chains (walked). At each spawner site we recorded: (1) the number of live spawners and/or redds (2) the substrate composition of the redds and adjoining area, and (3) whether the spawning activity was associated with a tailout or not. Spawner and redd locations were plotted on topographic maps, and where possible these locations were cross referenced with summer habitat surveys.

RESULTS

Spawning Habitat Surveys

The Nehalem basin was surveyed in its entirety excluding two miles of the upper Salmonberry River that was inaccessible and two miles in Cronin Creek where access was denied. A total of 103 miles were inventoried, of which 95.5 were deemed to contain potential spawning habitat. We also completed our survey target in the Wilson basin. Of the 65.8 miles inventoried, 59 were classified as containing potentially suitable ChF spawning habitat. Due to time constraints, portions of both the Siletz and Siuslaw basins were omitted from the survey effort. Omissions in the Siletz Basin were limited to the Sams Creek drainage (~8.2 miles) and five tributaries not believed to be heavily used by ChF (~5.0 miles). In total, 80.5 miles of the Siletz Basin was surveyed of which 74.7 contained potentially suitable habitat. Approximately half of the Siuslaw basin was inventoried. This included the entire portion of the mainstem deemed suitable for potential ChF spawning, Lake Creek, the North Fork Siuslaw River subbasin, West Fork Indian Creek and the lower portion of Whittaker Creek. A total of 108.8 stream miles were inventoried in the Siuslaw of which 95.8 miles contained potentially suitable habitat. An additional 16.9 miles were inventoried in the mainstem Alsea River to identify key potential spawning areas for the depressed spring chinook stock in that basin.

A summary of the mileage inventoried and resultant ChF spawning habitat estimates in each of the basins is presented in Table 2. Because of problems in identifying all available habitat present in smaller tributaries, habitat estimates in tributaries are incomplete. ChF spawners were observed in several streams in which no suitable habitat was identified. Also, the ChF spawning distribution upper limit may be misrepresented. In some cases where no units were identified in the upper 0.5 mile of a given stream, there was evidence of ChF spawning in cobble dominated substrates not identified as suitable.

Table 2. Summary of the 1995 inventory of coastal fall chinook spawning habitat.

	Fall Chinook Spawning Habitat			
River Basin	Target from database (miles)	Portion surveyed (miles)	Portion with habitat (miles)	Available habitat (m^2)
Nehalem				
Mainstem	12.8	16.6	15.5	9,002
North Fk. & Salmonberry R.	27.1	27.5	26.5	10,587
Tributaries	65.1	58.9	53.5	10,745
Total	105.0	103.0	95.5	30,334
Wilson				
Mainstem	34.3	31.2	28.0	23,544
Tributaries	37.9	34.6	31.0	7,663
Total	72.2	65.8	59.0	31,207
Siletz				
Mainstem	38.7	42.6	38.6	76,221
Drift Cr.	13.5	13.9	13.9	5,686
Tributaries	36.7	24.0	22.2	6,127
Total	88.9	80.5	74.7	88,034
Siuslaw				
Mainstem	50.2	50.7	42.5	16,560
Lake Cr. & North Fk.	32.1	31.6	27.3	16,326
Tributaries	131.3	26.5	26.0	9,218
Total	213.6	108.8	95.8	42,104
Alsea[a]				
Mainstem	32.0	14.6	14.6	20,483
North Fork Alsea R.	4.6	2.3	2.3	763
Total	36.6	16.9	16.9	21,246

[a] *Only a portion of estimated available spawning habitat was targeted for surveys.*

The estimated amount of potential ChF habitat in each of the four target basins is presented in Figure 3. The results of the Alsea River inventory are omitted because of the limited area surveyed, precluding comparative analysis of the data. The information is subdivided into totals for mainstem reaches, large tributaries (subbasin level) and smaller tributaries. For each basin, estimates are made of (1) the total m^2 of potential habitat, (2) the density of habitat per linear mile of channel and (3) density of habitat per unit area of channel. A reach by reach summary of the inventory results is presented in **Appendix A**. Maps of the location of habitat units identified during the summer inventory are contained in **Appendix B**.

The potential spawning habitat in the Nehalem (30,334 m^2) and Wilson (31,207 m^2) basins is nearly equivalent. However, tributaries and the North Fork contain the bulk of the habitat in the Nehalem (70%) and spawning opportunities in the mainstem Nehalem River are limited. Conversely, in the Wilson basin the majority of potential habitat is present in the mainstem. The Siletz basin was determined to have the greatest amount of potential ChF spawning habitat (88,034m^2). The majority of the Siletz habitat is found in the mainstem (87%, 73% and 60% for the respective abundance units). Dependent upon annual flow regimes, much of this mainstem habitat may or may not be available for ChF spawners. In both the Siletz and Wilson the opportunities for spawning outside of the mainstem in low water years is limited. Within the Siuslaw basin, Lake Creek and the North Fork contained 38% of the habitat observed, However, the contribution of the tributaries to the amount of potential habitat in this basin would increase significantly with completion of the Siuslaw inventory.

The results derived from the ranking scheme developed to evaluate the relative quality of each habitat unit within the reaches are summarized in Figures 4-8. The Nehalem and Wilson basins have a high proportion of spawning habitat (51% and 61% respectively) that is of marginal quality ($\leq$ 6.0). This is driven by the cobble dominated nature of the substrate in these two basins as compared to the Siletz and Siuslaw. The higher quality habitat within the Nehalem basin is in the North Fork Nehalem and Salmonberry River, while the mainstem and tributary habitat have a similar distribution in terms of quality (Figure 5). In contrast, there is a substantial discrepancy between the quality of habitat in the mainstem Wilson River and its tributaries, with habitat of higher quality being in the tributaries (Figure 6). This is largely due to the abundance of high quality habitat in the Little North Fork.

Figure 4 illustrates the Siletz basin contains not only the greatest amount of spawning habitat but it is also of the highest quality. Most of the superior habitat in this basin is found in the mainstem (Figure 7). Here, vast units were encountered with excellent gravel deposits and high tailout percentages. These conditions are commonly associated with large aggregations of spawning chinook. Such areas are present in the other basins but scarce by comparison.

The Siuslaw Basin also contains a high concentration of superior quality habitat with 60% scoring >6.1. The distribution of the quality of habitat among the mainstem, two major tributaries and smaller tributaries was similar (Figure 8). This may change upon completion of the inventory effort in the remainder of the tributaries. The mainstem Siuslaw does not contain a large amount of potential ChF spawning habitat, however, based on our rating scheme, most of the habitat is of high quality (63% > 6.0).

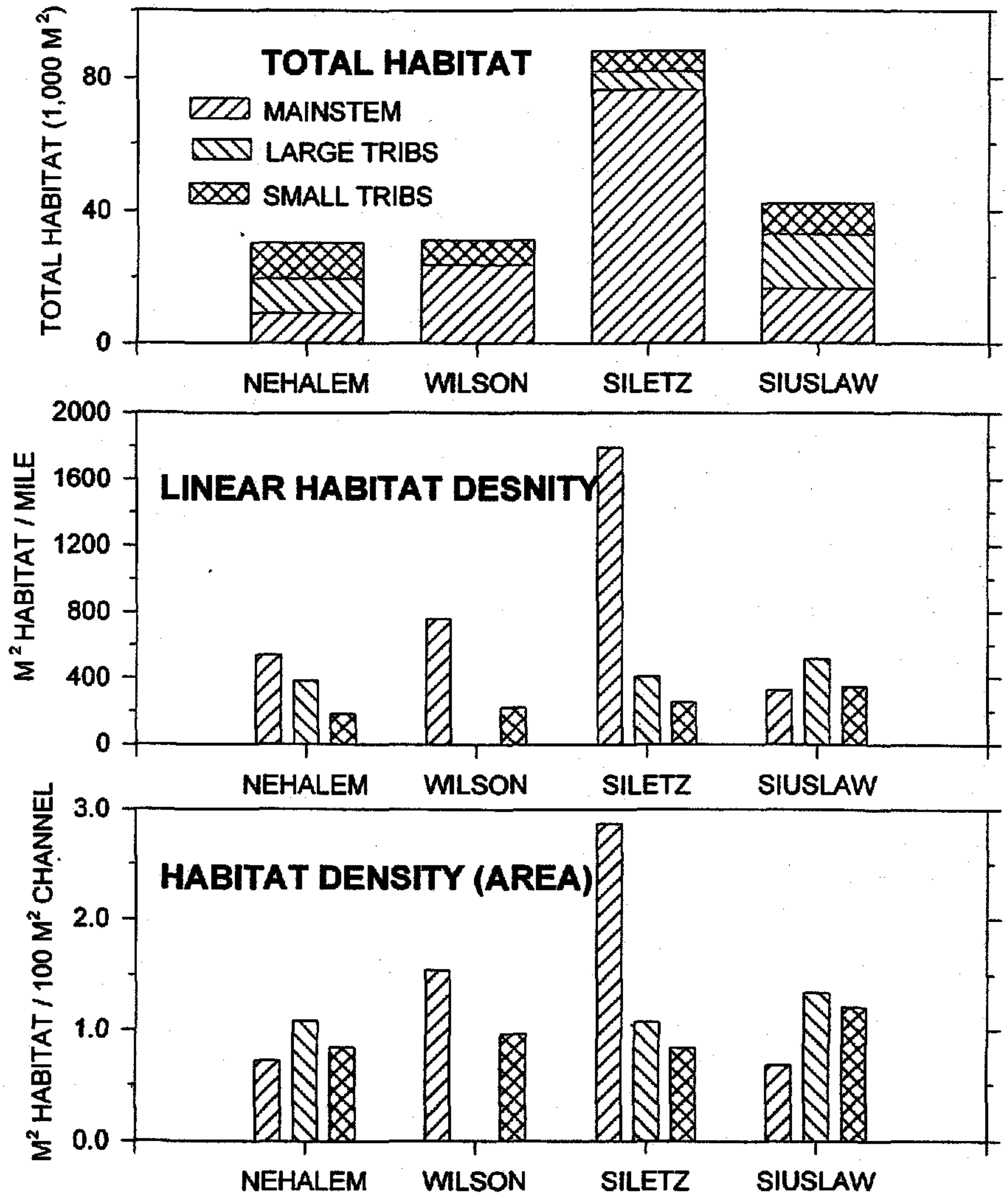

Figure 3. Distribution of fall chinook spawning habitat among mainstem, large tributary and small tributary reached inventoried in 1995. Habitat occurrence based on a: total area, b: density per linear mile of channel and c: density per 100 units of channel area.

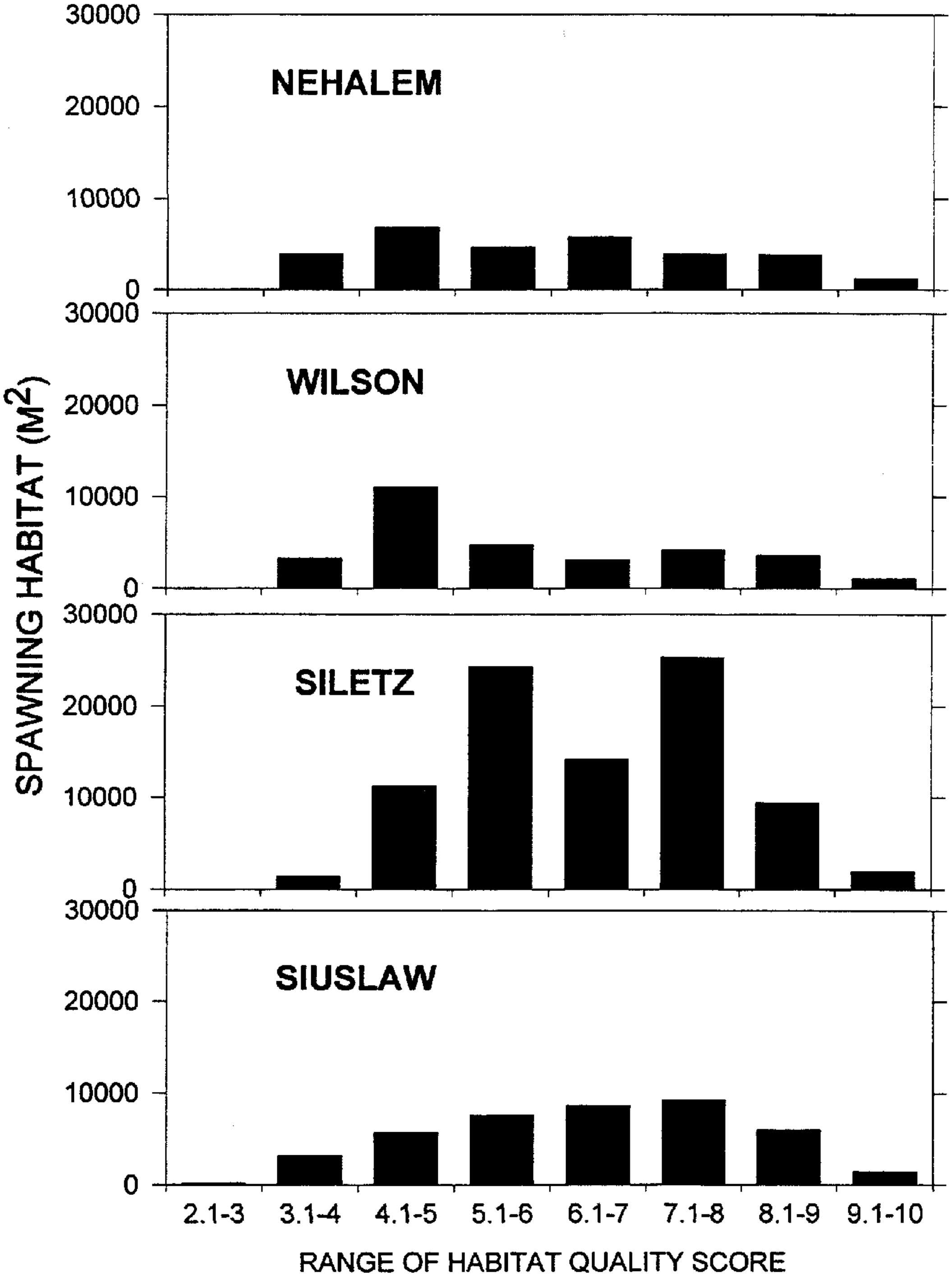

Figure 4. Distribution of spawning habitat quality among four coastal basins inventoried in 1995.

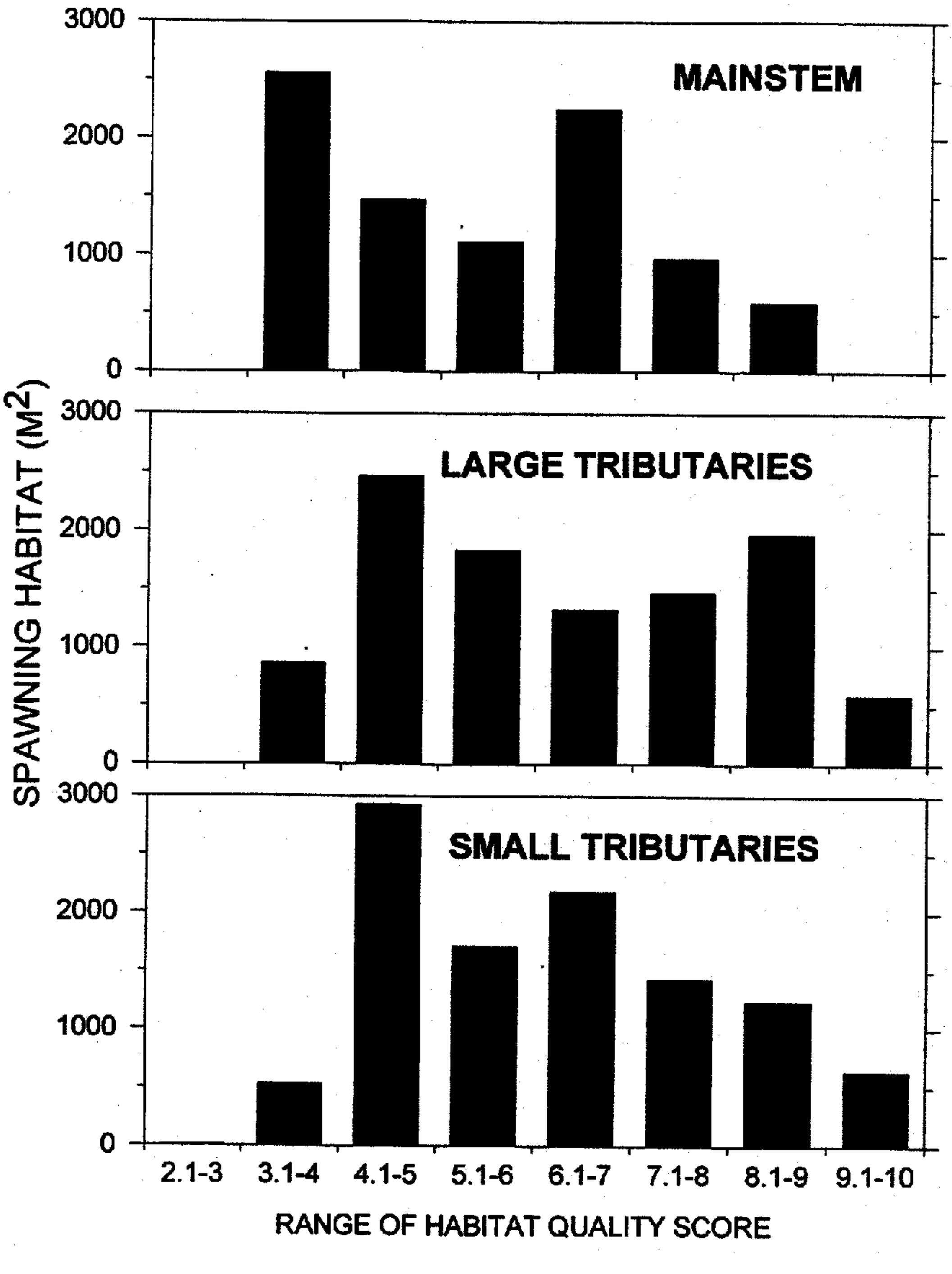

Figure 5. Distribution of spawning habitat quality within mainstem reaches, large tributaries and small tributaries of the Nehalem Basin, 1995.

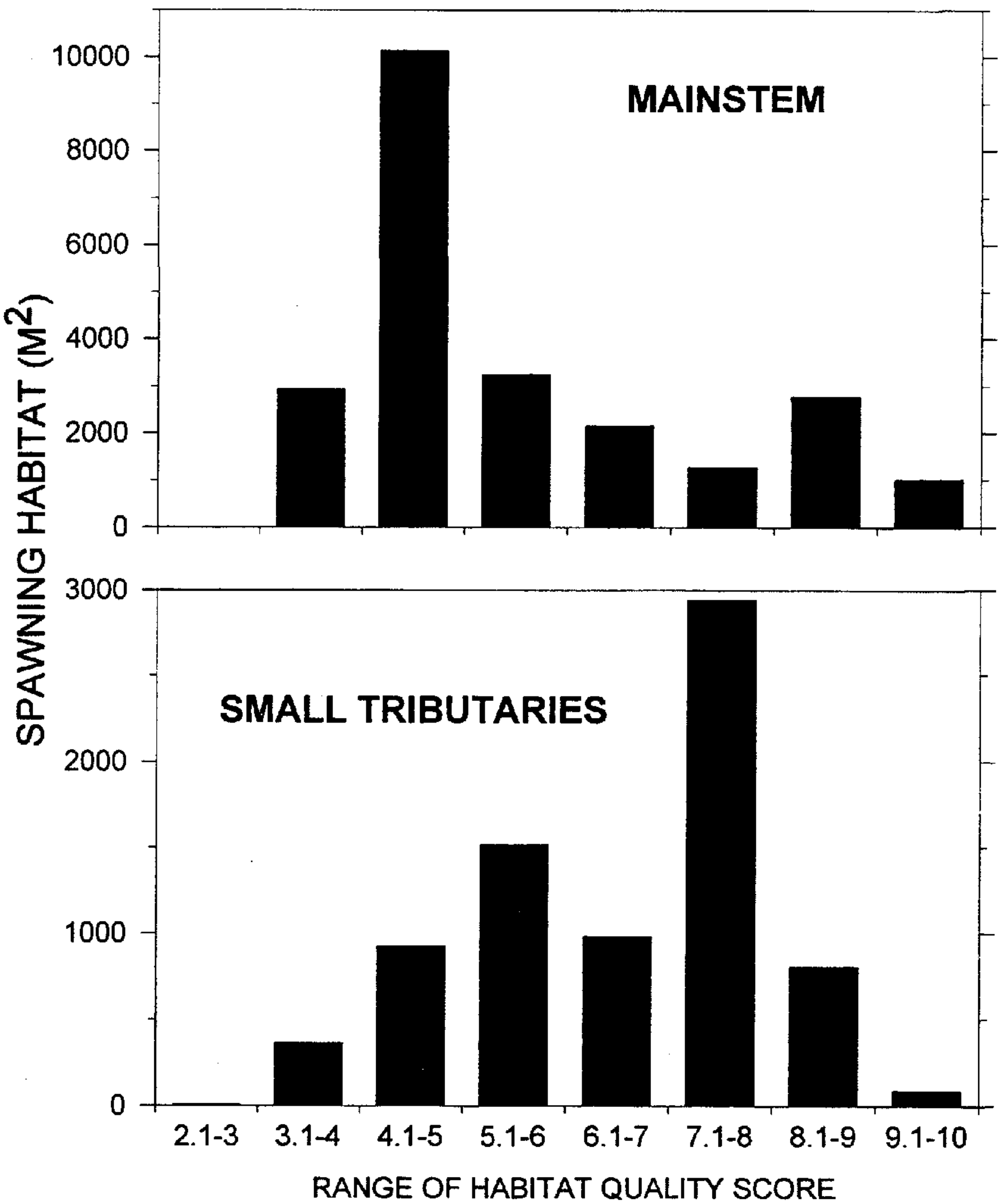

Figure 6. Distribution of spawning habitat quality within mainstem reaches and small tributaries of the Wilson Basin, 1995.

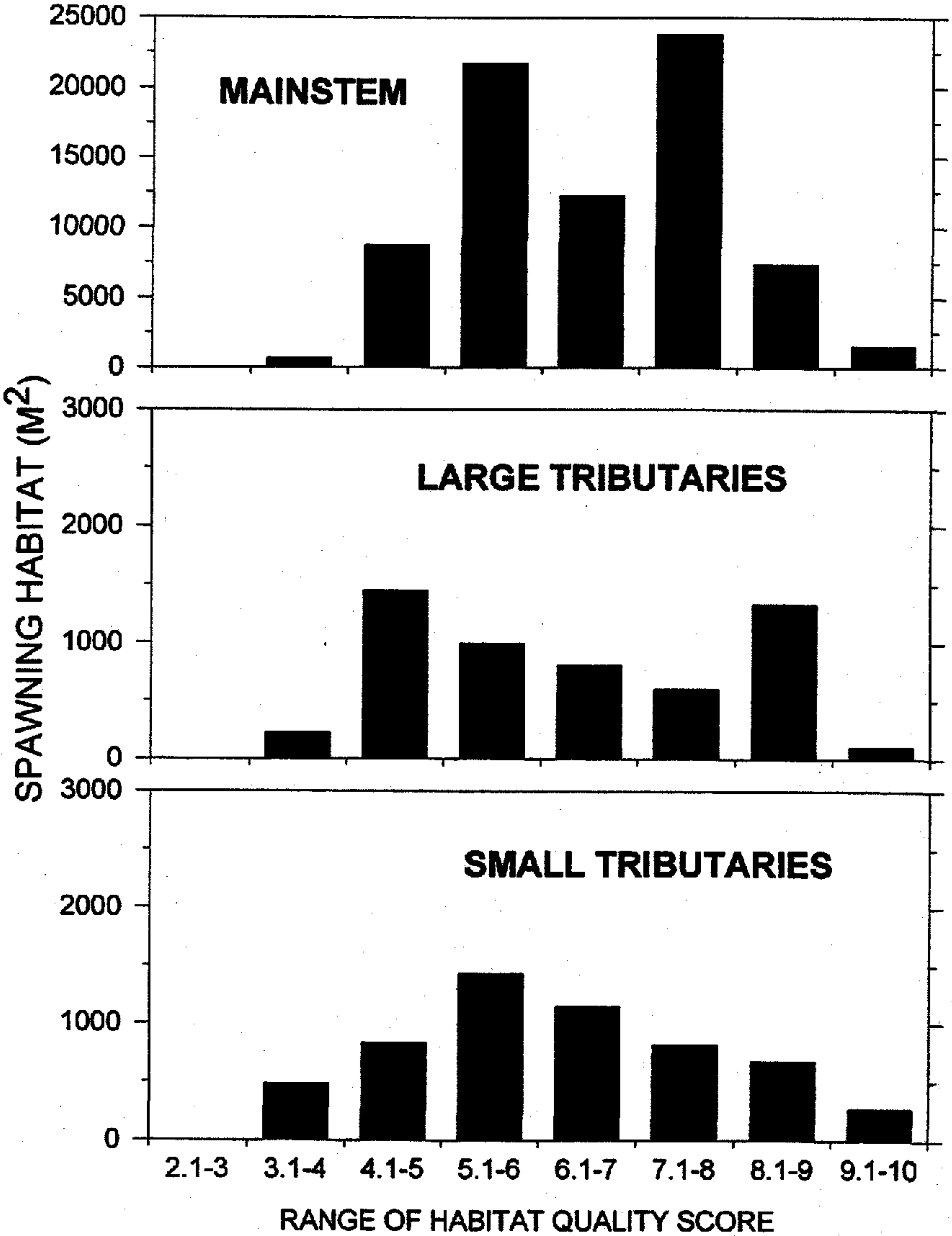

Figure 7. Distribution of spawning habitat quality within mainstem reaches, large tributaries and small tributaries of the Siletz Basin, 1995.

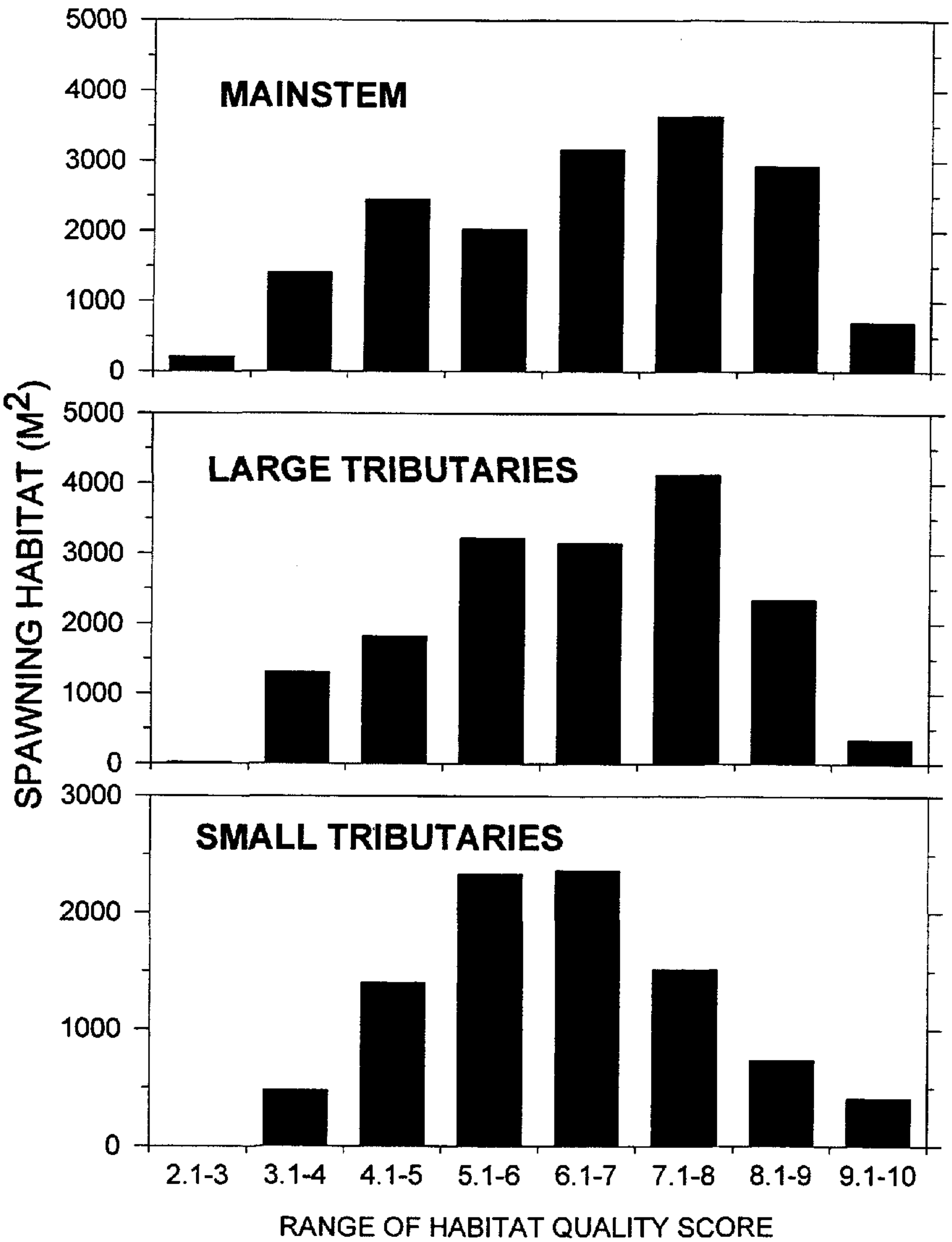

Figure 8. Distribution of spawning habitat quality within mainstem reaches, large tributaries and small tributaries of the Siuslaw Basin, 1995.

Spawning Distribution Surveys

Results of the spawning distribution surveys were mixed in terms of meeting the target objectives. Because of time constraints and variable flow levels, a limited number of surveys could be conducted and not all of these surveys were conducted during the peak ChF spawning period. Furthermore, in some cases, cross-referencing spawner locations with habitat units were confounded by differences in the method used to determine locations in the summer versus the fall spawning season. It was difficult matching locations gathered from hip chain readings with those obtained from GPS positions. This situation occurred in the North Fork Nehalem and Drift Creek (Siletz) surveys. In both of these streams, summer inventories were conducted on foot while the spawning surveys were floated. Both sets of locations were plotted on maps and lined up as closely as possible, but the data were only partially comparable. In interpreting the data from site verification surveys, spawners were assumed to be associated with identified habitat units if the GPS readings of the two locations were within 20 m of each other (typical margin of error for readings) in the floated surveys or within 10 m in the foot surveys. In most cases, it could be determined whether spawning sites were located in units, but if the spawning sites or units were clustered it was difficult to cross reference specific units.

A summary of the spawning distribution surveys conducted and the data gathered is presented in Table 3. For a more detailed account of the these surveys refer to **Appendix C**. In the tributaries, the inability to consistently link spawner locations with specific units hindered evaluation of the density of spawners in relation to the quality of units. Additionally, the mainstem surveys were not performed often enough to determine the relationship between the density of spawners and the density of units. Each survey would have to be conducted on several occasions to compare the density of spawners among units or reaches. The mainstem Siuslaw R., Siletz R. and Wilson R. surveys were conducted prior to the peak spawning period. Subsequent surveys likely would have revealed a higher density of spawners in the affected reaches. Conversely, the North Fork Nehalem R. survey was conducted after the spawning peak and high water periods had flattened old redds. This led to the survey suggesting under utilization by ChF.

The data presented in Table 3 shows that the summer inventory worked well in identifying potential sites for ChF spawning in reaches located in mainstems and larger tributaries. However, this was not the case for many of the smaller tributaries. Within the Nehalem basin, 83% of the spawner locations within the North Fork and Salmonberry River were located in units, while only 32% of the spawners were associated with units in the smaller tributaries. Clearly, we had problems capturing the range of suitable habitats utilized by ChF in smaller tributaries of the Nehalem basin. Particularly disconcerting was streams in which there was the poorest representation of spawners in units were standard index streams. These reaches annually have significant numbers of ChF spawners, yet the protocol employed identified very little potential habitat in each of these except in Humbug Creek.

Based upon observations made during spawning surveys, the most evident shortcoming in the protocol was the substrate composition. Throughout the portion of the Nehalem basin utilized by ChF, the substrate in the tributaries is cobble dominated. During the inventory of these streams, very few areas were observed that met the criteria of having $\geq$ 50% golfball-softball sized gravel. However, observations made during spawning ground surveys suggest that ChF are capable of spawning in areas with < 50% of this substrate classification. Cursory observation of the redds indicates that they consistently are > 70% gravel, but the surrounding

Table 3. Results of spawning distribution surveys conducted fall, 1995 to verify spawning habitat inventory.

Survey location	Timing of Survey	Spawners	Redds	Percent of spawners or redds in units	Sites with >4 spawners or redds	
					Number	Percent in units
Nehalem Basin						
East Humbug Cr.	P	15	7	27	0	-
Humbug Cr.	E	19	7	15	0	-
Cook Cr.	L	6	7	0	0	-
Little North Fork Nehalem R.	P	0	5	80	0	-
Gods Valley Cr.	P	14	23	33	0	-
Sweethome Cr.	P	33	23	43	1	100
North Fork Nehalem R.	P	37	73	88	5	100
Salmonberry R.	P	32	6	66	3	67
Total Tributaries	-	87	72	32	1	100
Total N. Fk. & Salmonberry R.	-	69	79	83	8	88
Wilson Basin						
Little North Fork Wilson R.	P	77	92	69	8	75
Cedar Cr.	E	14	23	70	0	-
Wilson R. (Beaver Cr.-Deadman Cr.)	E	6	44	80	2	100
Wilson R. (Fox Cr.-Cedar Cr.)	E	9	74	69	5	80
Total Tributaries	-	91	115	69	8	75
Total Mainstem	-	15	118	73	7	86
Siletz Basin						
Cedar Cr.	P	11	38	67	2	100
Euchre Cr.	P	26	70	55	5	60
Sunshine Cr.	L	3	17	21	0	-
Big Rock Cr.	P	22	44	40	2	50
Drift Cr.	P	61	82	85	7	100
Siletz R. (Hough Cr.-Tangerman Cr.)	E	57	90	95	7	100
Total Tributaries	-	62	169	51	9	67
Total Mainstem and Drift Cr.	-	118	172	91	14	100
Siuslaw Basin						
Whittaker Cr.	P	17	9	73	0	-
West Fk. Indian Cr.	P	150	143	72	9	89
Lake Cr.	P	236	151	93	8	88
Siuslaw R. (Waite Cr.-Wildcat Cr.)	P	4	34	95	3	100
Siuslaw R. (Esmond Cr.-Clay Cr.)	E	37	43	88	3	100
Siuslaw R. (Luyne Cr.-Oxbow Cr.)	E	5	12	94	0	-
Total Tributaries	-	167	152	84	17	88
Total Mainstem and Lake Cr.	-	282	240	85	6	100

[a] *P = survey during peak survey, E = survey prior to peak spawning, L = survey after peak spawning.*

habitat was not. Personal observations indicate chinook are capable of creating their own microhabitat for spawning. With sufficient flow, during the excavation process the fines float downstream and the cobble is moved to the side creating a redd of relatively uniform substrate. In these areas, chinook seek out pockets between large cobble containing adequate subsurface flow and hydrological characteristics in which to build their redds. Identifying these pockets during the summer inventory would be extremely difficult.

Wilson basin mainstem and tributary spawning surveys contained similar numbers of spawners associated with habitat units. Similar to the Nehalem, most of the tributaries in this basin are cobble dominated. The high percentage of spawners in units in the Wilson River tributaries is probably attributable to the small number of surveys conducted (2). One of these surveys, the Little North Fork, is a large gravel rich tributary with the lower portion exhibiting characteristics typical of upper mainstem areas. If the tributary survey effort had been more intensive, it is likely the percentage of spawners associated with units would have decreased significantly. The Cedar Creek survey was conducted prior to the spawning peak, however, it was unique in that it was the one cobble dominated stream in which the spawner locations correlated well with the habitat units. Both mainstem surveys were conducted prior to the spawning peak, but in each case the relationship between spawner abundance and habitat units was strong (80% and 69%).

The Siletz basin spawning surveys generated dichotomous results similar to the Nehalem basin. The mainstem and Drift Creek surveys verified that in the larger streams spawners utilize the habitat units identified in the inventory. However, the cobble dominated tributaries again proved problematic. Sunshine Creek was particularly troublesome. Virtually no potential habitat was identified in this stream during the summer inventory. It is likely that the scenario previously described with the Nehalem took place here and to lesser extent in Euchre Creek as well.

Interpretation of the spawning survey results from the Siuslaw basin is complicated by the small number of tributary surveys conducted. The mainstem surveys were consistent with the other basins in having a high percentage of spawners associated with units. In the two upper surveys, the spawners observed were in units. However, there were many units of seemingly analogous habitat that were unutilized. This was partially due to the early timing of the surveys. Concerning the tributaries, the percentage of spawners in units was considerably higher than in the northern basins. This was driven by two factors. First, 96% of the observations were in either the West Fork of Indian Creek or Lake Creek, both of which are large streams that annually contain large aggregations of spawners. Second, the geomorphology of the Siuslaw basin is vastly different from the northern basins. The substrate of the Siuslaw is dominated by bedrock, gravel and silt, with comparatively little cobble. Therefore, the habitat inventory protocol better captured the range of habitat conditions utilized by spawning ChF in the Siuslaw tributaries than those in the other basins.

Despite the problems in identifying all the sites where ChF will spawn, if one targets only those locations where > 4 spawners were observed, then the correlation between spawner location and habitat unit increases significantly (Table 3). Of the 70 observations with > 4 spawners, 89% were located in habitat units. This suggests that while we failed to include all of the potential habitat in the inventory, we were successful in identifying those areas where there are high concentrations of spawners. Typically these are located in the mainstems and larger tributaries which tend to have more contiguous blocks of homogeneous spawnable substrate conducive to aggregate spawning.

One of the objectives of the spawning surveys was to evaluate the relationship between indexes of spawning habitat quality and spawner density. This analysis was done by comparing mean habitat quality scores between two ranges of spawner density. For those spawner locations in which specific unit identity could be determined, the habitat quality score was noted. Within each basin, the mean score was determined for all those units in which > 4 spawners were observed and all units in which 1-3 spawners were located. These comparisons failed to detect any differences between habitat quality scores associated with the two ranges of spawner density. This result infers that the protocol used in this study may need to be modified to more accurately rank the quality ChF spawning habitat.

DISCUSSION

The study was largely successful in gaining a better understanding of the quantity and distribution of ChF spawning habitat in the four targeted basins. Additionally, a framework was established upon which techniques can be refined to inventory potential ChF spawning habitat in coastal river basins. The inventory data facilitated improvement of the ChF spawning habitat database. Several mainstem reaches were identified that are currently in the database which contain no opportunities for chinook spawning. The same was true for several tributary reaches. However, given the problems encountered identifying the potential habitat in small tributaries, no tributary reaches could be eliminated. The inventory data were also useful for correcting errors in reach lengths.

The protocol developed for this study proved effective in gaining a quantifiable estimate of potential spawning habitat for mainstem and large tributary reaches with $\geq$ 20 m bankful channel widths. In such areas, the habitat units tend to be more dispersed and consist of more homogenous habitat. Habitat in these reaches commonly contains those attributes that one associates with "typical" ChF spawning habitat: uniform substrate dominated by large gravel, depth of 0.3-1.0 meters and tailouts with slightly increasing yet moderate velocity. The inventory was specifically designed to encompass these conditions. Those areas where ChF aggregate spawn tend to be in these habitats. This was substantiated by the spawning distribution surveys. Therefore, in low water years when the majority of ChF spawning occurs in these larger streams, this habitat inventory data, coupled with unbiased spawning surveys, could produce a representative escapement estimate.

Given the shortcomings that were revealed with the protocol in identifying habitat in the smaller tributaries, attempts to derive escapement estimates based upon the habitat inventory would be erroneous. The biggest problem with identifying the potential habitat in the tributaries was the substrate composition. When necessary, chinook will spawn in substrates containing less than 50% gravel. To rectify this discrepancy, the logical amendment to the protocol would be to change the substrate criteria to encompass a broader range of substrate size. However, frequently this change in survey protocol would identify much of the entire tributary as potential habitat. Thus, generating excessively liberal habitat estimates. Clearly, attempts to identify and quantify spawning habitat in the smaller tributaries is problematic. Therefore, it is questionable whether surveying these areas is a viable endeavor. Furthermore, annual ChF spawning distribution is dependent upon flow regimes affecting spawner access as well as habitat conditions.

One of the objectives of the study was to develop a ranking scheme to qualitatively evaluate the habitat that is present. This was conducted during the habitat inventory with seemingly favorable results. However, the results obtained from the spawning surveys demonstrated that attempts to correlate the density of spawners with the habitat quality of the units were not successful. There was little difference in the habitat quality between units containing high numbers of spawners and those containing low numbers. Given this result, and the problems encountered in scoring the various habitat components, attempts to rank the quality the spawning habitat are questionable.

Observations made while conducting spawning distribution surveys revealed noteworthy spawning behavior exhibited by ChF. Foremost among these, is their ability to utilize and manipulate a broad range of substrates to create their own microhabitat in which to deposit eggs. The use of cobble dominated substrates often leads to ChF spawning in small pockets of suitable habitat in many tributaries. Chinook were also observed spawning in higher velocities than anticipated. These areas were often associated with riffles downstream from tailouts. Several observations were made of chinook spawning in long riffles with considerable velocity. It is apparent that chinook are capable of spawning in a wide range of conditions providing subsurface flow is adequate. The availability of adequate subsurface flow appears to be the driving force behind site selection of spawning ChF. Unfortunately, this variable is difficult to conceptualize in the field. This results in ChF spawning in large aggregations in some sites, while seemingly analogous habitat is often void of spawners.

Apparently a prime factor in the distribution of coastal ChF in Oregon coastal river basins is the flow regimes during the October through mid December spawning period. During years with moderate fall flows, ChF spawners are well distributed throughout both the mainstems and tributaries. In years when there are early freshets and high fall flows, mainstem spawning is minimal, while the smaller tributaries receive high use. Conversely, when freshets are late and fall flows are low, access is often denied to the upper portions of basins and the smaller tributaries. In these years, mainstem spawning is widespread in the lower reaches. Thus, given the dynamic nature of ChF spawning distribution throughout the basins, the proportion of estimated potential spawning habitat in use annually could vary considerably. This greatly complicates attempts to estimate annual spawner escapement abundance based upon gross miles of potential habitat.

BASIN SUMMARIES

Nehalem River

Within the Nehalem basin, ChF are thought to utilize only that portion of the basin from Fishhawk Creek (near Jewell) downstream to the mouth for spawning. Above this point, the basin is believed to be used exclusively by summer chinook. In addition to the mainstem, ChF are distributed throughout the North Fork subbasin and the lower 12 miles of the Salmonberry River. Based upon the habitat inventory, 95.5 miles were designated as potential ChF spawning habitat. An additional four miles that were not inventoried, due to logistical problems, are believed to be suitable, yielding a total of 99.5 inhabitable miles. Within this area, limited opportunities exist for mainstem spawning. Spawnable mainstem miles totaled 15.5. However, district personnel believe 11 of these miles from Humbug Creek to Fishhawk Creek are used exclusively by summer chinook. This has not been confirmed. It is logical that given ChF use the Fishhawk drainage, they would to some degree spawn in suitable sites in the mainstem directly below this tributary. There is minimal potential habitat elsewhere in the mainstem, with the exception of a five mile segment directly above tidewater. Alternatively, random coho spawning surveys conducted from 1990-1994 suggest minimal use of the Fishhawk drainage by ChF (peak for the drainage was 8 ChF in Beneke Creek in 1993). This suggests that the upper distribution in the mainstem subbasin for all but a few ChF may be Humbug Creek. Current spawning surveys conducted in the Jewell area for summer chinook should be repeated on a regular basis during the ChF spawning period to clarify this matter.

The majority of tributaries throughout the Nehalem basin are cobble dominated. Based upon the habitat inventory, the tributaries with the greatest potential for ChF spawning are the lower six miles of Humbug Creek, the North Fork above Gods Valley Creek and the Salmonberry River from Buick Canyon to Belfort Creek (Table 4). Annual spawning surveys in these areas should be incorporated into the survey program. These surveys, coupled with surveys of the lower mainstem and North Fork in low water years would give an accurate representation of the level of spawning occurring annually outside of the standard index streams. The distribution of spawning in this basin probably does not vary considerably with the water year except in the level of spawning occurring in the lower mainstem and lower North Fork.

Conspicuous in their absence from Table 4 are three standard surveys: Cook, Soapstone and East Humbug Creeks. The first two streams are typical of the cobble dominated streams throughout the lower portion of the basin. East Humbug Creek has lower gradient and the substrate is more influenced by pebbles. It was the opinion of our survey crew that this tributary was better suited for coho than chinook. Although the habitat inventory data does not confirm this, it appears that, excluding mainstem and large tributary reaches, the standard surveys capture the majority of chinook spawning that occurs in the Nehalem basin during a typical year. Other streams inventoried that likely contain moderate numbers of spawners on an annual basis are: Lost Creek (mainstem), Cronin Creek, Coal Creek, Gods Valley Creek, Sweethome Creek and Little North Fork. Foley Creek in the lower basin is an anomaly. It is the one stream in which a significant amount of potential habitat was identified, that ChF use only sparingly. This may be related to the presence of chum salmon (*Onchorynchus keta*) in this stream. However, there are a number of streams on the north and central Oregon coast inhabited by both spawning ChF and chum. At present, the absence of ChF in Foley Creek remains speculative.

Overall, the lower Nehalem basin is relatively gravel poor and ChF here have both quantitatively and qualitatively fewer spawning opportunities than in the other three basins. It is likely that chinook spawner populations here are stable, but not as robust as elsewhere. In many cases, due to the substrate, they spawn in marginal habitat, yet spawning surveys indicate stable long-term trends in population abundance.

Table 4. Nehalem Basin reaches with greatest potential for ChF spawning as determined by summer habitat inventory.

Reach	Lower Boundary	Upper Boundary	Spawning Potential Score[a]
		Mainstem	
Nehalem R.	Cow Cr.	Klines Cr.	15.70
Nehalem R.	Peterson Cr.	Anderson Cr.	10.75
Nehalem R.	Cook Cr.	Lost Cr.	10.33
Nehalem R.	Klines Cr.	Moores Cr.	7.53
		North Fork Nehalem R. and Salmonberry R.	
Salmonberry R.	Buick Canyon	Belfort Cr.	25.23
Nehalem R. N Fk.	Lost Cr.	Sweethome Cr.	18.76
Nehalem R. N Fk.	Unnamed Trib.	Grassy Lake Cr.	13.24
Nehalem R. N Fk.	Gods Valley Cr.	Lost Cr.	10.27
Salmonberry R.	Tank Cr.	Tunnel Cr.	8.76
Nehalem R. N Fk.	Sweethome Cr.	Fall Cr.	7.21
		Tributaries	
Humbug Cr.	Mcclure Cr.	Larsen Cr.	61.17
Humbug Cr.	Larsen Cr.	Big Cr.	18.62
Foley Cr.	E Foley Cr.	Crystal Cr.	17.13
Foley Cr.	Crystal Cr.	Dry Cr.	17.01
Humbug Cr.	Mouth	Cedar Cr.	12.57
Fishhawk Cr.	Beneke Cr.	Little Fishhawk Cr.	9.49
Lost Cr.	Mouth	Headwaters	9.10
Coal Cr.	Mouth	Coal Cr. W Fk	8.10

[a] *spawning potential score = habitat density X avg. habitat quality of units within reach (>7)*

Wilson River

The Wilson River has numerous opportunities for mainstem spawning (28 miles) particularly the lower six miles above tidewater and the eight mile reach between Fox and Cedar Creeks. Above this point, the density of habitat decreases, however, there are still many areas of marginal-good mainstem spawning habitat up to the confluence of the Devils Lake and South Forks.

Similar to the Nehalem, the tributaries in the Wilson basin tend to be cobble dominated. The notable exception is the Little North Fork. This large tributary contains excellent spawning habitat in the lower three miles. Due to access problems, it was not inventoried above this point, however, potential habitat is known to continue upstream. The 0.5 mile above the mouth is a standard survey which annually hosts large numbers of ChF spawners. While conducting a spawning survey above the standard survey, ChF were observed successfully excavating redds in cobble dominated substrates. On occasion these sites were chosen over seemingly superior adjacent habitat.

The other tributary in which large numbers of spawners are observed on an annual basis is Cedar Creek. This is a cobble dominated standard survey with numerous patches of marginal habitat dispersed throughout the lower two miles. Based upon the habitat inventory, two other sites were identified that contained significant quantities of gravel : the lower two miles of the Devils Lake Fork and 1.5 miles of the West Fork of the North Fork Wilson River (Table 5).

The mainstem North Fork Wilson River is similar to Cedar Creek in being cobble dominated with pockets of suitable habitat above Lester Creek. The level at which this stream is utilized by ChF spawners is unknown. It is recommended that this area is surveyed periodically during the spawning period to quantify use.

It is likely, the annual distribution of spawners in the Wilson basin is greatly influenced by fall stream flows. Given the relative shortage of habitat in the tributaries, there is probably a great deal of mainstem spawning regardless of the prevailing weather pattern. However, the reaches of the mainstem in which the majority of spawning occurs probably varies considerably.

The Wilson is a relatively small basin, as such the total ChF spawner escapement would be expected to be less than in the other three basins inventoried. The abundance of high quality habitat well distributed throughout the mainstem and the large estuary for rearing partially compensate for the shortage of habitat in the tributaries. The two standard surveys, Little North Fork and Cedar Creek, are both accessible to chinook in most flow conditions, thus, they serve as good index sites to monitor trends in basin-wide spawner escapement. However, the abundance of habitat in the mainstem, coupled with the shortage of habitat in other tributaries, renders the standard surveys grossly inadequate as a tool to use in quantitatively estimating interannual spawner abundance. It is recommended that supplemental mainstem surveys be conducted annually to assist in this endeavor.

Table 5. Wilson Basin reaches with greatest potential for ChF spawning as determined by summer habitat inventory.

Reach	Lower Boundary	Upper Boundary	Spawning Potential Score[a]
	Mainstem		
Wilson R.	Beaver Cr.	Hughey Cr.	33.64
Wilson R.	Hatchery Cr.	Deadman Cr.	32.73
Wilson R.	Wilson R, N. Fk., Little	Mining Cr.	14.22
Wilson R.	Wilson R, N. Fk.	Ben Smith Cr.	10.40
Wilson R.	Deadman Cr.	Negro Jack Cr.	9.40
Wilson R.	Runyon Cr.	Wilson R., N.Fk.	7.92
Wilson R.	Fox Cr.	Muesial Cr.	7.07
	Tributaries		
Wilson R., N. Fk. Little	Mouth	White Cr.	26.55
Wilson R., Devils Lake Fk.	Fern Rock Cr.	Idiot Cr.	8.03
Wilson R., N. Fk., W. Fk.	Wilson R., N. Fk., W. Fk., N. Fk.	Headwaters	6.89
White Cr.	Mouth	Headwaters	6.83
Wilson R., Devils Lake Fk.	Mouth	Fern Rock Cr.	6.81

[a] *spawning potential score = habitat density X avg. habitat quality of units within reach (>6)*

Siletz River

The Siletz basin had the greatest spawning potential for ChF of the basins that we inventoried. This is due primarily to the vast amount of high quality habitat in the mainstem from tidewater (RM 22) up to Elk Creek (RM 63). Within this 40 mile stretch, the reach from Moonshine Park (RM 52) to 0.5 mile above the steel bridge (RM 57) is essentially void of habitat. In those reaches that contain spawning habitat, many large units with tailouts were observed, providing numerous opportunities for aggregate spawning.

Drift Creek contains a considerable amount of potential spawning habitat as well. The habitat is present in two blocks in this large tributary: the section extending two miles above tidewater and the section starting just below North Creek (RM 10) and extending to Smith Creek (RM 16). The former has good habitat, but it is probably only used in extreme low water years. The upper segment has exceptional habitat, and the spawning survey verified it is well used by ChF. Sampson Creek and its unnamed tributary have potential for high chinook use as well. Due to time constraints, only the lower mile was inventoried, but ChF habitat continues upstream. The Drift Creek subbasin contains as much habitat as the cumulative total for all other Siletz tributaries that were inventoried.

The habitat inventory suggests that aside from the areas mentioned above, those reaches with the greatest potential for ChF spawning are: Cedar Creek (lower mile), Euchre Creek (lower mile), Schooner Creek (lower two miles), Big Rock Creek (lower mile) and Rock Creek (the mile below Big Rock) (Table 6). Three of these sites are standard surveys, which like the Wilson, suggest these surveys are not representative of the tributary habitat basin wide. Thus, they are useful in generating escapement trends, but lacking in terms of utility for abundance estimates.

Several of the tributaries inventoried in the Siletz were cobble dominated similar to those in the Wilson and Nehalem. Notable among these is Sunshine Creek. This is a standard survey in which significant numbers of spawners are observed except in low water years. However, very little potential habitat was identified here. Again, the problem with identifying spawnable habitat in cobble dominated substrate is apparent. A similar situation was revealed in Buck Creek where ChF spawners were observed in a random coho survey in which little habitat was identified. Further cause for concern is the documented presence of spawners in streams that are not currently in the database (i.e. Palmer Creek and Savage Creek). This necessitates amendment of the inhabitable miles in the database. In years with early freshets of considerable magnitude this may be a widespread occurrence that significantly impacts spawner escapement estimates.

Those tributaries that were not inventoried in 1995 should be surveyed in the future to make coverage of the basin comprehensive. The most significant area that was omitted is the Sams Creek drainage. ChF are known to spawn in this drainage, however, the level of use and amount of potential habitat is unclear. The lower portions of Bentilla and Mill Creeks should be evaluated for their suitability for ChF spawning as well.

The copious amounts of high quality ChF spawning habitat identified in this inventory suggest that the Siletz basin annually has the largest population of ChF spawners among the basins surveyed. The distribution of ChF spawners in the Siletz basin is dependent upon the fall stream levels. During high water years, lower mainstem spawning is minimal while those tributaries with suitable habitat receive high use. Conversely, in low water years the mainstem is extensively used while many tributaries are rendered inaccessible. In most years ChF spawners are well distributed throughout the basin. With the vast majority of the potential habitat present in the mainstem, there is a need to implement annual mainstem spawning surveys to monitor escapement in this area. In conjunction, an upper Drift Creek survey should be incorporated into the district program to monitor escapement in this subbasin.

Concerning the standard surveys, both Euchre and Cedar Creeks are lower tributaries that are annually accessible to ChF. Therefore, they effectively represent the ChF spawner escapement trends throughout the basin. However, Sunshine and Big Rock Creeks, located in the upper basin, underestimate spawner escapement in low water years.

Table 6. Siletz Basin reaches with greatest potential for ChF spawning as determined by summer habitat inventory.

Reach	Lower Boundary	Upper Boundary	Spawning Potential Score[a]
		Mainstem	
Siletz R.	Ojalla Cr.	Thompson Cr.	67.93
Siletz R.	Thompson Cr.	Tangerman Cr,	52.53
Siletz R.	Hough Cr.	Reed Cr.	45.94
Siletz R.	Reed Cr.	Euchre Cr.	43.42
Siletz R.	Dewey Cr.	Mill Cr.	36.72
Siletz R.	Euchre Cr.	Ojalla Cr.	32.15
Siletz R.	Jaybird Cr.	Cedar Cr.	19.19
Siletz R.	Mill Cr.	Bentilla Cr.	18.83
Siletz R.	Cedar Cr.	Hough Cr.	14.91
Siletz R.	Buck Cr.	Sunshine Cr.	7.76
		Tributaries	
Schooner Cr.	Mouth	Erickson Cr.	16.48
Drift Cr.	North Cr.	Wildcat Cr.	12.19
Sampson Cr.	Mouth	Unnamed Trib.	8.31
Rock Cr.	Mouth	Big Rock Cr.	8.19
Cedar Cr.	Mouth	Headwaters	7.47
Drift Cr.	Gordey Cr.	North Cr.	7.18
Euchre Cr.	Mouth	Savage Cr.	4.82
Buck Cr.	Mouth	Buck Cr.,E. Fk.	4.20

[a] *spawning potential score = habitat density X avg. habitat quality of units within reach (>4)*

Siuslaw River

With only half of the Siuslaw basin inventoried, it is difficult to draw conclusions about the basinwide availability of ChF habitat. Time constraints precluded inventory of the entire basin. Priority was placed on the mainstem and large tributaries, where the least is known about the availability of ChF spawning habitat. Of those areas surveyed, Table 7 lists those reaches that were found to have the greatest potential for ChF spawning.

All the mainstem reaches within the ChF database were surveyed with revealing results. From the head of tide upstream to San Antone Creek (RM 36) the mainstem substrate is entirely bedrock with no spawning potential. Above this point are 42.5 spawnable miles containing 16,560 m^2 of potential habitat. The survey was not continued beyond Camp Creek, and it is likely spawning opportunities above here are minimal. However, an inventory of an additional five miles upstream to verify this should be undertaken. Throughout its length the

Siuslaw River is dominated by bedrock. Interspersed with the vast stretches of bedrock are intermittent areas of gravel deposition. Significant among these areas are three segments: Waite Creek to Whittaker Creek (3 miles), Big Canyon Creek to Clay Creek (11 miles) and Luyne Creek to Bear Creek (8 miles). The district annually conducts supplemental spot surveys at several points within these areas. It is recommended that these be expanded to get a better estimate of the level of mainstem spawning.

The two other blocks inventoried in 1995 were Lake and Indian Creeks in the Lake Creek subbasin, and the North Fork subbasin. Lake Creek was inventoried from its mouth up to Fish Creek. The substrate from the mouth up to Deadwood Creek (5 miles), is entirely bedrock and cobble except for two sites between Indian and Deadwood Creeks. The habitat becomes increasingly more favorable as you progress upstream within the 12 miles above this point. The upper 0.7 mile is a standard survey which has the highest annual average density of spawners among all standard surveys, coastwide. Indian Creek, a major tributary of Lake Creek, was surveyed from the mouth up the West Fork. Within this section, the reach from Velvet Creek to Elk Creek has a considerable amount of excellent ChF spawning habitat. Here again, a supplemental spawning survey would be beneficial. Outside of this reach, the substrate is almost exclusively bedrock. The West Fork of Indian was also inventoried. There is good spawning habitat in this creek from the mouth up to Pyle Creek, with the best contained in the standard survey from Rogers Creek to Pyle Creek.

The North Fork subbasin was inventoried in its entirety. The mainstem from Russell Creek to Cedar Creek (10 miles) contains a large amount of moderate to excellent ChF spawning habitat dispersed throughout. The only other significant potential habitat identified in this subbasin is located in the lower two miles of McCleod Creek. It is impossible to interpret the spawning potential of the Siuslaw tributaries because so few were inventoried.

Alsea River

The inventory effort in the Alsea basin was minimal. Specifically, 17 miles of the upper mainstem and lower North Fork were surveyed to evaluate the potential spawning habitat available to both spring and fall chinook. The spring chinook population in the Alsea is depressed and of questionable stability. Better knowledge of the spawning distribution of this stock would improve our ability to make management decisions. The inventory revealed a considerable amount of high quality chinook spawning habitat throughout the survey area. Many of the units identified had characteristics favorable for aggregate spawning (excellent gravel deposits associated with large tailouts). In particular, the segments from Fall Creek to Digger Creek (2 miles), Benner Creek to Maltby Creek (6 miles) and from Mill Creek to the lower mile of the North Fork (2.5 miles) contain copious amounts of spawning gravel. While conducting the inventory, 13 spring chinook redds were observed, all within the above areas. Later surveys conducted by district personnel confirmed that ChF use this area extensively as well (ODFW 1995).

Table 7. Siuslaw Basin reaches with greatest potential for ChF spawning as determined by summer habitat inventory.

Reach	Lower Boundary	Upper Boundary	Spawning Potential Score[a]
		Mainstem	
Siuslaw R.	North Cr.	Mill Cr.	24.88
Siuslaw R.	Haskins Cr.	Larue Cr.	18.73
Siuslaw R.	Big Canyon Cr.	Esmond Cr.	15.08
Siuslaw R.	Oxbow Cr.	Bear Cr.	14.33
Siuslaw R.	Luyne Cr.	Oxbow Cr.	13.92
Siuslaw R.	Trail Cr.	North Cr.	10.40
Siuslaw R.	Wildcat Cr.	Whittaker Cr.	9.66
		Lake Creek and North Fork Siuslaw R.	
Lake Cr.	Lamb Cr.	Fish Cr.	60.08
Lake Cr.	Johnson Cr.	Hula Cr.	22.67
Siuslaw R, N. Fk.	Mcleod Cr.	Cataract Cr.	18.11
Lake Cr.	Deadwood Cr.	Johnson Cr.	17.92
Lake Cr.	Steinhauer Cr.	Greenleaf Cr.	17.56
Siuslaw R., N. Fk.	Drew Cr.	Wilhelm Cr.	14.70
Siuslaw R., N. Fk.	Porter Cr.	Cedar Cr.	13.49
Siuslaw R., N. Fk.	Russell Cr.	Mcleod Cr.	12.98
Siuslaw R., N. Fk.	Wilhelm Cr.	Porter Cr.	12.80
Siuslaw R., N. Fk.	Jim Dick Cr.	Russell Cr.	9.12
Lake Cr.	Greenleaf Cr.	Lamb Cr.	8.61
		Tributaries	
Indian Cr., W. Fk.	Rogers Cr.	Pyle Cr.	45.98
Condon Cr.	Mouth	Billie Cr.	22.49
Indian Cr., W. Fk.	Long Cr.	Rogers Cr.	11.98
Indian Cr.	Mouth	Velvet Cr.	9.84

[a] *spawning potential score = habitat density X avg. habitat quality of units within reach (>8)*

RECOMMENDATIONS

Despite the problems encountered in identifying potential spawning habitat in tributaries with channel widths <20 meters, it is clear the standard survey streams are not representative of the available ChF habitat in each of the basins. This does not jeopardize their importance in providing an annual index of spawner escapement and evaluating trends in stock health. However, as the exclusive tool for estimating interannual spawner abundance their utility is limited. For example, extrapolating the number of peak spawners observed in Cedar, Euchre, Big Rock and Sunshine Creeks into a estimate for basin-wide abundance in the Siletz is inaccurate. The habitat in these surveys is neither representative of the majority of other tributaries nor of the mainstem. If an estimate of total spawner escapement is the goal, then an alternative method must be developed that incorporates the complete realm of ChF spawning habitat. In this context, continuation of the ChF habitat inventory in a modified format has merit.

The 1995 inventory had two major functions. First, it produced an accurate quantitative estimate of the potential ChF habitat present in the mainstem and large tributaries of four Oregon coastal basins. Second, it served as a template from which modifications can be made to improve its usefulness for future inventories. The first of these modifications is to restrict the surveys to those streams in excess of 20 meters channel width. In these streams the adopted protocol worked well, while in the smaller streams problems were encountered that compromised its usefulness. If the inventory was restricted to the larger streams, the surveys could be conducted exclusively with inflatable kayaks. This would expedite the survey effort, and facilitate coverage of more coastal basins. Using this approach, the prime survey period would be June - August, when flow conditions are optimal. By restricting the inventory to larger streams, location of habitat units could be obtained through the exclusive use of GPS receivers, thus, standardizing the data.

The most significant recommended modification of the protocol is the modification or elimination of the habitat qualification procedures. The spawning surveys conducted failed to show a relation between the estimated quality of the habitat with the density of spawners. It is difficult to discern whether this was a result of our rating system for the various parameters evaluated or due to the limited spawner density data recorded.

We recommend implementing annual spawning surveys of the mainstems and larger tributaries of coastal basins. This would increase the accuracy of the overall spawning survey program in terms of spawner escapement estimates. These surveys would be best accomplished by employing the use inflatabe kayaks or rafts. Results of spawning habitat surveys should be used to prioritize where surveys should be conducted. Other issues that need to be considered in conducting these surveys include calibrating abundance counts for variation in observation efficiency. Depending on the flow regime observation conditions in coastal basins can vary substantially from one year to the next. A mark-recovery procedure employing chinook carcasses such as that described by Boydstun (1994) should be considered as a means of calibrating counts.

In conclusion, current spawner escapement estimates based solely upon the standard index streams are in need of improvement. The habitat inventory will not enable generation of an accurate annual escapement estimate, but it will improve our knowledge of the basin-wide distribution of ChF habitat. A possible means of improving the escapement estimate would be to increase the sample size and representativeness of the spawning surveys. This could be accomplished by integrating the data from those random coho surveys that are located within the ChF database with the standard surveys. Together, these would provide a estimate for those streams < 20m channel widths. In addition, the mainstem spawning surveys would be used in conjunction with the habitat inventory data to estimate escapement in those streams ≥ 20m channel width.

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LITERATURE CITED

Bovee, K.D. 1978. Probability - of - use criteria for the family Salmonidae. U.S. Fish Widl. Serv. FWS/obs-78/07; Instream Flow Inf. Paper 4:80 p.

Briggs, J.C. 1953. The behavior and reproduction of salmonid fishes in a small coastal stream. Calif. Dep. Fish Game Fish. Bull. 94:62 p.

Boydstun, L.B. 1994. Analysis of two mark-recapture methods to estimate the fall chinook *(Oncorhynchus tshawytscha)* spawning run in Bogus Creek, California. Calif. Fish and Game. 80(1):1-13.

Burner, C.J. 1951. Characteristics of spawning nests of Columbia River salmon. Fish. Bull. Fish Wildl. Serv. 61:97-110.

Chapman, D.W., D.E. Weitcamp, T.L. Welsh, M.B. Dell, and T.H. Schadt. 1986. Effects of river flow on the distribution of chinook salmon redds. Trans. Am. Fish. Soc. 115:537-547.

Chapman, W.M. 1943. The spawning of chinook salmon in the main Columbia River. Copeia 1943:168-170.

Conner, W.P., A.P. Garcia, H.L. Burge, and R.H. Taylor. 1993. Fall chinook salmon spawning in free-flowing reaches of the Snake River. Pages 20-38 in D.W. Rondorf and W.H. Miller, editors. Identification of the spawning, rearing and migratory requirements of fall chinook salmon in the Columbia River basin. Annual report to Bonneville Power Administration, Contract DE-AI79-91BP21708, Portland, Oregon.

Cooney C. X. and S.E. Jacobs. 1995. Oregon coastal salmon spawning surveys, 1995. Oregon Department of Fish and Wildlife, Ocean Salmon Management Information Report, Portland.

Groot, C. and L. Margolis, 1991. Pacific salmon life histories. University of British Columbia Press, Vancouver, BC. 312-393.

Groves, P.A. 1993. Habitat available for, and used by, fall chinook salmon within Hells Canyon Reach of the Snake River. Annual Report 1992. Environmental Affairs Department, Idaho Power Company, Boise, ID.

Neilson, J.D. and C.E. Banford. 1983. Chinook salmon (*Onchorynchus tshawytscha*) spawner characteristics in relation to redd physical features. Can J. Zool. 61:1524-1531.

ODFW (Oregon Department of Fish and Wildlife). 1991. Comprehensive plan for production and management of Oregon's salmon and trout: Coastal Chinook Salmon Plan. Oregon Department of Fish and Wildlife, Portland.

ODFW (Oregon Department of Fish and Wildlife). 1995. Spring chinook spawning distribution surveys, Alsea and Siletz basins. Lincoln Fisheries Management District, Newport.

Pacific Salmon Commission. 1985. First Annual Report. Pacific Salmon Commission, Vancouver, B.C.

Smith, A.K. 1973. Development and application of spawning velocity and depth criteria for Oregon salmonids. Trans. Am. Fish. Soc. 102:312-316.

Smith, C.J. and P. Castle. 1994. Puget Sound chinook salmon (*Onchorhynchus tshawytscha*) escapement estimates and methods - 1991. Wash. Dept. of Fish and Wildlife. Proj. Rep. Ser. No. 1.

APPENDIX A

Summaries of Inventories of Fall Chinook Spawning Habitat
for Individual Stream Reaches

APPENDIX TABLE A-1 SUMMARY OF NEHALEM BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%) FINES	PEBBLE	GRAVEL	COBBLE	LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
25840.0	COAL CR	MOUTH	COAL CR, W FK	1,820.0	14.6	14	262.6	8.2	13.2	69.6	8.9	0.14	0.99	8.2	8.1
25841.0	COAL CR, W FK	MOUTH	HEADWATERS	1,260.0	11.8	2	6.3	10.0	7.5	60.0	22.5	0.00	0.04	5.9	0.2
25842.0	COAL CR	COAL CR, W FK	HEADWATERS	1,600.0	12.8	10	164.2	8.0	10.0	69.5	12.5	0.10	0.80	8.0	6.5
25853.0	NEHALEM R, N FK	HENDERSON CR	BOYKIN CR	600.0	27.4	2	146.0	7.5	17.5	70.0	5.0	0.24	0.89	5.1	4.6
25855.0	NEHALEM R, N FK	BOYKIN CR	UNNAMED TRIB	2,150.0	28.7	2	400.1	7.5	17.5	65.0	10.0	0.19	0.65	6.9	4.5
25857.0	NEHALEM R, N FK	UNNAMED TRIB	GRASSY LAKE CR	2,150.0	30.4	9	1,164.5	3.9	10.6	64.4	18.3	0.54	1.78	7.4	13.2
25859.0	NEHALEM R, N FK	GRASSY LAKE CR	COUGAR CR	900.0	31.2	0									
25861.0	NEHALEM R, N FK	COUGAR CR	TRAIL CR	600.0	27.8	0									
25863.0	NEHALEM R, N FK	TRAIL CR	SOAPSTONE CR	4,800.0	25.7	5	237.9	8.0	8.0	62.0	22.0	0.05	0.19	6.3	1.2
25864.0	SOAPSTONE CR	MOUTH	BUCHANAN CR	1,710.0	23.5	4	32.3	7.5	12.5	63.8	16.3	0.02	0.08	5.7	0.5
25865.0	BUCHANAN CR	MOUTH	HEADWATERS	868.0	10.8	3	26.7	5.0	8.3	56.7	30.0	0.03	0.29	7.4	2.1
25866.0	SOAPSTONE CR	BUCHANAN CR	JACK HORNER CR	850.0	27.8	0									
25871.0	NEHALEM R, N FK	SOAPSTONE CR	SALLY CR	3,100.0	17.5	2	71.5	2.5	10.0	67.5	20.0	0.02	0.13	7.0	0.9
25871.7	NEHALEM R, N FK	SALLY CR	GODS VALLEY CR	1,700.0	17.0	3	108.0	5.0	25.0	58.3	3.3	0.06	0.37	5.0	1.9
25872.0	GODS VALLEY CR	MOUTH	HEADWATERS	4,433.0	10.3	24	325.0	5.8	18.8	68.1	7.3	0.07	0.71	7.3	5.2
25873.0	NEHALEM R, N FK	GODS VALLEY CR	LOST CR	1,520.0	21.3	9	576.7	3.8	15.6	65.0	16.1	0.38	1.78	5.8	10.3
25874.0	LOST CR	MOUTH	HEADWATERS	250.0	6.2	0									
25875.0	NEHALEM R, N FK	LOST CR	SWEET HOME CR	2,090.0	18.9	17	1,215.1	6.2	13.5	62.9	17.5	0.58	3.08	6.1	18.8
25876.0	SWEET HOME CR	MOUTH	HEADWATERS	3,525.0	9.5	14	209.2	6.4	18.9	61.4	13.2	0.06	0.63	5.7	3.6
25877.0	NEHALEM R, N FK	SWEET HOME CR	FALL CR	1,620.0	20.6	9	435.3	2.8	15.6	58.9	22.8	0.27	1.31	5.5	7.2
25878.0	FALL CR	MOUTH	HEADWATERS	1,420.0	8.6	2	84.6	5.0	22.5	67.5	5.0	0.06	0.69	5.0	3.5
25879.0	NEHALEM R, N FK	FALL CR	NEHALEM R, LITTLE N FK	7,167.0	16.3	41	1,146.6	7.3	16.5	62.1	14.4	0.16	0.98	7.0	6.9
25880.0	NEHALEM R, LITTLE N FK	MOUTH	HEADWATERS	4,080.0	13.7	29	715.4	6.2	15.2	66.4	12.2	0.18	1.28	7.2	9.3
25887.0	FOLEY CR	MOUTH	DANIELS CR	968.0	11.4	2	30.3	17.5	27.5	55.0	0.0	0.03	0.28	6.9	1.9
25887.3	FOLEY CR	DANIELS CR	SCHOOL CR	180.0	12.2	0									

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-1 SUMMARY OF NEHALEM BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%) FINES	PEBBLE	GRAVEL	COBBLE	LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
25887.8	FOLEY CR	SCHOOL CR	E FOLEY CR	1,200.0	12.6	7	284.5	10.7	17.9	70.0	0.7	0.24	1.88	6.5	12.2
25888.0	E FOLEY CR	MOUTH	HEADWATERS	1,920.0	12.2	2	158.4	12.5	17.5	65.0	5.0	0.08	0.67	5.6	3.8
25889.0	FOLEY CR	E FOLEY CR	CRYSTAL CR	2,800.0	8.0	19	600.6	9.2	18.7	66.6	6.3	0.21	2.69	6.4	17.1
25891.0	FOLEY CR	CRYSTAL CR	DRY CR	1,880.0	8.8	15	451.6	6.0	19.0	64.3	10.3	0.24	2.74	6.2	17.0
25893.0	FOLEY CR	DRY CR	HEADWATERS	2,400.0	7.1	2	35.1	10.0	35.0	55.0	0.0	0.01	0.21	6.4	1.3
25900.0	NEHALEM R	PETERSON CR	ANDERSON CR	1,570.0	51.8	2	2,426.6	0.0	15.0	65.0	20.0	1.55	2.99	3.6	10.7
25902.0	NEHALEM R	ANDERSON CR	COOK CR	2,900.0	62.0	3	1,284.1	6.7	16.7	63.3	13.3	0.44	0.71	5.5	4.0
25903.0	COOK CR	MOUTH	DRY CR	1,700.0	16.1	4	114.6	3.8	18.8	65.0	12.5	0.07	0.42	7.9	3.3
25905.0	COOK CR	DRY CR	HARLISS CR	1,850.0	24.5	2	19.2	5.0	12.5	70.0	12.5	0.01	0.04	8.1	0.3
25907.0	COOK CR	HARLISS CR	PIATT CANYON	1,875.0	18.0	1	20.0	5.0	25.0	65.0	5.0	0.01	0.06	9.3	0.5
25909.0	COOK CR	PIATT CANYON	HANSON CR	150.0	18.0	0									
25911.0	COOK CR	HANSON CR	COOK CR, S FK	2,600.0	16.9	6	122.5	5.0	17.5	63.3	14.2	0.05	0.28	6.7	1.9
25912.0	COOK CR, S FK	MOUTH	HEADWATERS	750.0	9.6	0									
25913.0	COOK CR	COOK CR, S FK	COOK CR, E FK	1,330.0	13.1	0									
25914.0	COOK CR, E FK	MOUTH	HEADWATERS	810.0	9.6	0									
25915.0	COOK CR	COOK CR, E FK	HOEVETT CR	900.0	12.2	0									
25916.0	NEHALEM R	COOK CR	LOST CR	1,750.0	57.2	4	1,363.5	7.5	13.8	56.3	22.5	0.78	1.36	7.6	10.3
25917.0	LOST CR	MOUTH	HEADWATERS	5,200.0	12.6	39	968.2	3.2	15.5	66.5	14.5	0.19	1.48	6.2	9.1
25919.0	FALL CR	MOUTH	HEADWATERS	800.0	6.6	0									
25921.0	HELLOFF CR	MOUTH	HEADWATERS	830.0	6.2	0									
25927.0	SALMONBERRY R	MOUTH	HATCHERY CR	500.0	22.0	1	23.3	10.0	20.0	60.0	10.0	0.05	0.21	6.7	1.4
25929.0	SALMONBERRY R	HATCHERY CR	BUICK CANYON	1,850.0	26.8	5	222.5	0.0	11.0	65.0	24.0	0.12	0.45	4.8	2.2
25931.0	SALMONBERRY R	BUICK CANYON	BELFORT CR	3,000.0	28.0	18	3,293.0	2.2	13.1	62.5	22.2	1.10	3.93	6.4	25.2
25933.0	SALMONBERRY R	BELFORT CR	PRESTON CR	1,050.0	25.3	4	260.2	2.5	10.0	58.8	28.8	0.25	0.98	5.3	5.2
25935.0	SALMONBERRY R	PRESTON CR	TANK CR	1,765.0	18.5	3	168.1	1.7	13.3	56.7	28.3	0.10	0.51	7.5	3.8

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-1 SUMMARY OF NEHALEM BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%)				LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
								FINES	PEBBLE	GRAVEL	COBBLE				
25937.0	SALMONBERRY R	TANK CR	TUNNEL CR	996.0	22.0	4	268.7	8.8	11.3	63.8	15.0	0.27	1.23	7.1	8.8
25939.0	SALMONBERRY R	TUNNEL CR	SALMONBERRY R, S FK	2,160.0	23.7	8	510.3	7.5	12.5	65.0	15.0	0.24	1.00	6.9	6.9
25943.0	SALMONBERRY R	SALMONBERRY R, S FK	BATHTUB CR	560.0	21.3	2	33.4	7.5	7.5	72.5	10.0	0.06	0.28	8.1	2.3
25945.0	SALMONBERRY R	BATHTUB CR	SALMONBERRY R, N FK	1,917.0	22.3	9	165.2	6.7	8.9	60.0	24.4	0.09	0.39	7.3	2.8
25947.0	SALMONBERRY R	SALMONBERRY R, N FK	BELDING CR	1,780.0	16.4	11	140.8	6.8	11.8	67.3	14.1	0.08	0.48	7.6	3.7
25967.0	HUMBUG CR	MOUTH	CEDAR CR	2,768.0	15.9	18	912.3	6.4	13.6	60.6	18.6	0.33	2.07	6.1	12.6
25969.0	HUMBUG CR	CEDAR CR	MCCLURE CR	700.0	14.5	3	93.0	10.0	11.7	61.7	16.7	0.13	0.91	7.3	6.7
25971.0	HUMBUG CR	MCCLURE CR	LARSEN CR	253.0	15.7	4	305.5	8.8	8.8	61.3	21.3	1.21	7.69	8.0	61.2
25973.0	HUMBUG CR	LARSEN CR	BIG CR	3,385.0	17.9	19	1,609.5	8.9	12.6	59.7	18.7	0.48	2.65	7.0	18.6
25975.0	HUMBUG CR	BIG CR	ALDER CR	2,400.0	17.3	13	289.8	3.8	11.2	66.2	18.8	0.12	0.70	6.4	4.5
25976.0	ALDER CR	MOUTH	CEDAR CR	650.0	5.3	0									
25979.0	HUMBUG CR	ALDER CR	E HUMBUG CR	1,615.0	15.7	5	98.0	7.0	9.0	62.0	22.0	0.06	0.39	7.3	2.8
25980.0	E HUMBUG CR	MOUTH	HEADWATERS	3,350.0	10.5	4	45.9	5.0	3.8	62.5	28.8	0.01	0.13	7.2	0.9
25981.0	W HUMBUG CR	MOUTH	BEAVER CR	2,100.0	14.1	5	89.3	5.0	16.0	56.0	23.0	0.04	0.30	6.4	1.9
25982.0	BEAVER CR	MOUTH	DESTRUCTION CR	450.0	7.6	0									
25985.0	W HUMBUG CR	BEAVER CR	HEADWATERS	2,575.0	12.1	6	108.7	1.0	12.5	59.2	27.5	0.04	0.35	5.5	1.9
25986.0	NEHALEM R	HUMBUG CR	QUARTZ CR	2,820.0	36.9	3	733.7	10.0	6.7	60.0	23.3	0.26	0.71	5.6	4.0
25990.0	NEHALEM R	QUARTZ CR	OSWEG CR	1,650.0	36.9	0									
25992.0	NEHALEM R	OSWEG CR	GEORGE CR	5,000.0	29.5	4	525.1	8.8	6.3	71.3	13.8	0.11	0.36	6.1	2.2
25994.0	NEHALEM R	GEORGE CR	COW CR	1,610.0	40.8	1	64.5	10.0	10.0	65.0	15.0	0.04	0.10	7.9	0.8
25996.0	NEHALEM R	COW CR	KLINES CR	850.0	34.3	3	635.7	10.0	5.0	63.3	18.3	0.75	2.18	7.2	15.7
25998.0	NEHALEM R	KLINES CR	MOORES CR	1,000.0	56.9	3	619.7	3.3	15.0	61.7	20.0	0.62	1.09	6.9	7.5
26000.0	NEHALEM R	MOORES CR	BUSTER CR	2,000.0	71.9	6	919.0	5.0	11.7	68.3	15.8	0.46	0.64	5.9	3.8
26001.0	BUSTER CR	MOUTH	LITTLE ROCK CR	2,600.0	12.1	10	208.2	10.0	7.5	61.5	21.0	0.08	0.66	7.3	4.8
26003.0	BUSTER CR	LITTLE ROCK CR	WALKER CR	1,740.0	10.5	1	13.3	10.0	5.0	60.0	25.0	0.01	0.07	6.7	0.5

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-1 SUMMARY OF NEHALEM BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%)				LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
								FINES	PEBBLE	GRAVEL	COBBLE				
26008.0	NEHALEM R	BUSTER CR	FISHHAWK CR	5,379.0	52.4	5	429.8	8.0	11.0	62.0	18.0	0.08	0.15	5.7	0.9
26009.0	FISHHAWK CR	MOUTH	BENEKE CR	1,120.0	24.0	4	201.2	1.3	11.3	62.5	25.0	0.18	0.75	7.5	5.6
26010.0	BENEKE CR	MOUTH	GILMORE CR	1,846.0	18.8	8	276.7	2.5	15.6	62.5	19.4	0.15	0.80	6.2	5.0
26012.0	BENEKE CR	GILMORE CR	WALKER CR	6,130.0	16.0	24	872.6	6.7	15.0	62.9	15.4	0.14	0.89	6.1	5.4
26013.0	WALKER CR	MOUTH	TRAILOVER CR	2,293.0	10.6	8	155.4	16.3	16.9	59.4	7.5	0.07	0.64	8.0	5.1
26019.0	FISHHAWK CR	BENEKE CR	LITTLE FISHHAWK CR	2,365.0	19.4	15	757.8	7.0	11.3	65.0	17.0	0.32	1.65	5.8	9.5
26020.0	LITTLE FISHHAWK CR	MOUTH	HEADWATERS	850.0	3.3	0									
26021.0	FISHHAWK CR	LITTLE FISHHAWK CR	ALDER CR	3,103.0	12.4	2	77.2	5.0	10.0	65.0	20.0	0.02	0.20	5.3	1.1

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-2 SUMMARY OF WILSON BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%)				LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
								FINES	PEBBLE	GRAVEL	COBBLE				
25634.0	WILSON R	SLIDE CR	BEAVER CR	700.0	45.1	1	92.9	10.0	40.0	50.0	0.0	6.08	0.29	3.3	1.0
25636.0	WILSON R	BEAVER CR	HUGHEY CR	4,600.0	55.1	11	11,889.1	7.7	22.7	63.6	5.9	248.92	4.69	7.2	33.6
25640.0	WILSON R	HUGHEY CR	WILSON R, N FK, LITTLE	3,200.0	9.3	8	176.7	5.6	16.3	60.6	17.5	111.10	0.59	7.4	4.4
25641.0	WILSON R, N FK, LITTLE	MOUTH	WHITE CR	5,425.0	20.5	31	4,004.9	7.7	12.4	65.0	14.8	296.66	3.60	7.4	26.6
25642.0	WHITE CR	MOUTH	HEADWATERS	810.0	6.9	5	57.1	9.0	18.0	68.0	5.0	14.35	1.03	6.7	6.8
25643.0	WILSON R, N FK, LITTLE	WHITE CR	BLOWOUT CR	1,200.0	19.8	1	13.6	10.0	25.0	60.0	5.0	3.23	0.06	8.4	0.5
25646.0	WILSON R	WILSON R, N FK, LITTLE	MINING CR	2,666.0	37.5	10	2,248.6	6.0	16.5	60.0	19.4	145.35	2.25	6.3	14.2
25648.0	WILSON R	MINING CR	HATCHERY CR	500.0	42.8	1	108.4	0.0	20.0	60.0	20.0	4.14	0.51	3.7	1.9
25650.0	WILSON R	HATCHERY CR	DEADMAN CR	340.0	34.5	2	673.6	7.5	10.0	67.5	15.0	33.03	5.74	5.7	32.7
25652.0	WILSON R	DEADMAN CR	NEGRO JACK CR	1,700.0	50.4	5	1,225.8	9.0	8.0	65.0	18.0	74.26	1.43	6.6	9.4
25654.0	WILSON R	NEGRO JACK CR	SMITH CR	1,600.0	46.3	5	568.6	8.0	13.0	63.0	16.0	53.26	0.77	6.8	5.2
25656.0	WILSON R	SMITH CR	SLIDE CR	350.0	29.2	1	12.7	5.0	10.0	60.0	25.0	6.23	0.12	7.7	1.0
25658.0	WILSON R	SLIDE CR	FERN CR	400.0	29.2	0		0.0	0.0	0.0	0.0				
25660.0	WILSON R	FERN CR	ZIG ZAG CR	700.0	26.9	0		0.0	0.0	0.0	0.0				
25662.0	WILSON R	ZIG ZAG CR	KANSAS CR	2,700.0	24.9	3	130.6	8.3	13.3	71.7	6.7	23.18	0.19	7.2	1.4
25664.0	WILSON R	KANSAS CR	BEAR CR	1,650.0	42.8	3	645.9	5.0	13.3	65.0	15.0	28.25	0.91	5.2	4.8
25666.0	WILSON R	BEAR CR	FALL CR	1,750.0	41.7	1	64.2	5.0	25.0	60.0	10.0	3.17	0.09	5.9	0.5
25667.0	FALL CR	MOUTH	HEADWATERS	820.0	2.9	0		0.0	0.0	0.0	0.0				
25668.0	WILSON R	FALL CR	FOX CR	1,700.0	30.3	0		0.0	0.0	0.0	0.0				
25670.0	WILSON R	FOX CR	MUESIAL CR	4,300.0	30.5	9	1,508.5	3.3	21.1	58.9	16.7	52.78	1.15	6.2	7.1
25672.0	WILSON R	MUESIAL CR	KEENIG CR	1,000.0	33.0	3	186.4	0.0	13.3	65.0	21.7	16.98	0.57	6.6	3.7
25674.0	WILSON R	KEENIG CR	JORDAN CR	800.0	43.2	3	175.7	3.3	18.3	60.0	18.3	20.26	0.51	6.2	3.1
25675.0	JORDAN CR	MOUTH	HEADWATERS	8,470.0	15.1	12	135.5	5.0	17.9	53.3	23.8	34.61	0.11	5.0	0.5
25676.0	WILSON R	JORDAN CR	WOLF CR	1,500.0	36.7	3	195.0	11.7	13.3	65.0	10.0	18.27	0.35	7.2	2.5
25678.0	WILSON R	WOLF CR	CEDAR CR	4,850.0	39.0	11	1,187.6	5.5	12.7	66.4	15.5	94.70	0.63	6.6	4.1

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-2 SUMMARY OF WILSON BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%)				LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
								FINES	PEBBLE	GRAVEL	COBBLE				
25679.0	CEDAR CR	MOUTH	CEDAR CR, N FK	4,772.0	15.7	13	260.9	8.8	14.2	53.1	23.8	46.58	0.35	6.7	2.3
25679.7	CEDAR CR	CEDAR CR, N FK	HEADWATERS	1,210.0	9.2	3	17.7	10.0	10.0	55.0	25.0	8.70	0.16	4.8	0.8
25680.0	WILSON R	CEDAR CR	JONES CR	1,400.0	27.4	2	198.8	12.5	12.5	67.5	7.5	12.80	0.52	4.7	2.4
25681.0	JONES CR	MOUTH	HEADWATERS	800.0	1.0	0		0.0	0.0	0.0	0.0				
25682.0	WILSON R	JONES CR	RUNYON CR	1,700.0	29.2	0		0.0	0.0	0.0	0.0				
25684.0	WILSON R	RUNYON CR	WILSON R, N FK	600.0	30.4	2	277.8	5.0	7.5	55.0	32.5	16.19	1.52	5.2	7.9
25685.0	WILSON R, N FK	MOUTH	BEND CR	420.0	17.8	2	83.5	2.5	22.5	55.0	20.0	7.72	1.12	4.8	5.4
25687.0	WILSON R, N FK	BEND CR	MAX CR	1,000.0	18.1	3	104.6	13.3	8.3	53.3	25.0	11.21	0.58	4.9	2.8
25687.2	WILSON R, N FK	MAX CR	LESTER CR	296.0	17.8	1	61.0	0.0	10.0	50.0	40.0	3.17	1.16	3.3	3.9
25687.4	WILSON R, N FK	LESTER CR	WILSON R, N FK, W FK	2,492.0	21.6	9	236.5	4.4	9.4	59.4	26.7	40.70	0.44	6.8	3.0
25688.0	WILSON R, N FK, W FK	MOUTH	WILSON R, N FK, W FK, N F	3,237.0	18.9	14	578.6	0.0	11.1	58.6	30.4	61.07	0.95	5.5	5.2
25688.3	WILSON R, N FK, W FK, N	MOUTH	HEADWATERS	1,805.0	6.9	0		0.0	0.0	0.0	0.0				
25688.7	WILSON R, N FK, W FK	WILSON R, N FK, W FK, N F	HEADWATERS	2,415.0	12.6	15	375.0	0.7	11.3	58.7	29.3	46.04	1.23	5.6	6.9
25689.0	WILSON R, N FK	WILSON R, N FK, W FK	HEADWATERS	4,483.0	16.0	11	269.1	4.1	11.4	55.0	29.5	35.31	0.38	6.0	2.2
25694.0	WILSON R	WILSON R, N FK	BEN SMITH CR	2,000.0	27.4	7	1,012.9	8.6	10.0	60.7	20.7	59.04	1.85	5.6	10.4
25696.0	WILSON R	BEN SMITH CR	MOORE CR	1,250.0	25.3	3	239.6	10.0	11.7	63.3	15.0	19.20	0.76	7.9	6.0
25698.0	WILSON R	MOORE CR	DOG CR	650.0	23.3	0		0.0	0.0	0.0	0.0				
25700.0	WILSON R	DOG CR	ELK CR	4,650.0	20.5	7	662.1	8.6	13.6	59.3	17.9	44.33	0.69	5.7	3.9
25701.0	ELK CR	MOUTH	ELK CR, W FK	1,360.0	13.5	4	55.7	2.5	12.5	60.0	25.0	9.91	0.30	6.4	1.9
25702.0	ELK CR, W FK	MOUTH	HEADWATERS	446.0	4.1	0		0.0	0.0	0.0	0.0				
25703.0	ELK CR	ELK CR, W FK	HEADWATERS	3,160.0	10.3	8	90.0	3.8	15.0	58.8	22.5	20.54	0.28	5.0	1.4
25704.0	WILSON R	ELK CR	WILSON R, DEVIL'S LAKE FK	650.0	19.5	2	62.4	5.0	17.5	52.5	25.0	6.35	0.49	4.1	2.0
25705.0	WILSON R, S FK	MOUTH	HEADWATERS	4,362.0	10.8	13	480.6	13.1	12.7	55.4	19.6	74.65	1.02	5.7	5.8
25706.0	WILSON R, DEVIL'S LAKE	MOUTH	FERN ROCK CR	2,073.0	15.1	9	274.0	7.8	14.4	69.4	8.3	36.86	0.88	7.8	6.8
25708.0	WILSON R, DEVIL'S LAKE	FERN ROCK CR	IDIOT CR	1,891.0	18.9	5	459.9	9.0	16.0	69.0	6.0	30.67	1.29	6.2	8.0

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-2 SUMMARY OF WILSON BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%) FINES	PEBBLE	GRAVEL	COBBLE	LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
25709.0	IDIOT CR	MOUTH	HEADWATERS	1,000.0	2.2	0		0.0	0.0	0.0	0.0				
25710.0	WILSON R, DEVIL'S LAKE	IDIOT CR	DRIFT CR	1,400.0	18.0	2	105.8	7.5	15.0	70.0	7.5	9.00	0.42	6.3	2.6

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-3 SUMMARY OF SILETZ BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%)				LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
								FINES	PEBBLE	GRAVEL	COBBLE				
25102.0	SILETZ R	JAYBIRD CR	CEDAR CR	950.0	44.7	3	1,321.5	3.3	30.0	66.7	0.0	44.83	3.11	6.2	19.2
25102.5	CEDAR CR	MOUTH	HEADWATERS	5,155.0	16.6	27	881.4	8.5	22.4	61.7	7.4	124.37	1.03	7.3	7.5
25102.6	SILETZ R	CEDAR CR	HOUGH CR	3,250.0	51.0	6	3,954.1	1.7	35.8	62.5	0.0	152.33	2.39	6.2	14.9
25102.8	SILETZ R	HOUGH CR	REED CR	1,375.0	43.4	3	3,979.3	3.3	15.0	66.7	15.0	91.46	6.67	6.9	45.9
25104.0	SILETZ R	REED CR	EUCHRE CR	1,500.0	43.4	5	3,792.4	2.0	28.0	63.0	7.0	121.41	5.63	7.5	43.4
25105.0	EUCHRE CR	MOUTH	SAVAGE CR	5,273.0	20.7	19	781.1	11.6	16.8	54.7	16.8	106.76	0.72	6.7	4.8
25109.0	EUCHRE CR	SAVAGE CR	HEADWATERS	500.0	18.8	0		0.0	0.0	0.0	0.0				
25110.0	SILETZ R	EUCHRE CR	OJALLA CR	6,150.0	40.4	18	11,336.7	0.6	22.2	65.6	11.7	311.41	4.57	7.0	32.2
25112.0	SILETZ R	OJALLA CR	THOMPSON CR	3,900.0	44.3	10	16,297.1	1.0	20.0	65.5	13.5	228.71	9.43	7.2	67.9
25114.0	SILETZ R	THOMPSON CR	TANGERMAN CR	3,825.0	41.3	13	14,438.5	3.5	18.1	61.9	16.5	254.86	9.14	5.7	52.5
25116.0	SILETZ R	TANGERMAN CR	DEWEY CR	6,525.0	43.8	11	3,165.1	5.9	19.5	65.0	9.1	123.30	1.11	6.3	7.0
25120.0	SILETZ R	DEWEY CR	MILL CR	950.0	51.9	2	2,687.4	2.5	12.5	72.5	12.5	53.28	5.45	6.7	36.7
25124.0	SILETZ R	MILL CR	BENTILLA CR	8,450.0	50.0	18	11,564.1	3.9	17.8	62.2	15.8	373.57	2.74	6.9	18.8
25126.0	SILETZ R	BENTILLA CR	SAM CR	350.0	45.7	1	38.3	5.0	15.0	70.0	10.0	4.00	0.24	4.8	1.2
25132.0	SILETZ R	SAM CR	ROCK CR	4,800.0	46.1	3	991.7	3.3	13.3	60.0	23.3	56.53	0.45	7.4	3.3
25133.0	ROCK CR	MOUTH	BIG ROCK CR	9,035.0	19.6	23	2,024.8	10.9	15.7	63.5	10.0	141.37	1.14	7.2	8.2
25134.0	BIG ROCK CR	MOUTH	FALL CR	4,200.0	17.0	14	288.6	11.1	15.4	56.4	17.1	51.01	0.40	5.8	2.3
25146.0	SILETZ R	ROCK CR	MILL CR	1,150.0	37.0	2	141.9	2.5	15.0	65.0	12.5	12.42	0.33	7.6	2.5
25152.0	SILETZ R	MILL CR	PALMER CR	5,600.0	40.4	6	204.1	6.7	13.3	60.8	19.2	20.32	0.09	6.3	0.6
25154.0	SILETZ R	PALMER CR	WILDCAT CR	2,350.0	25.1	1	51.8	0.0	20.0	60.0	20.0	2.20	0.09	4.4	0.4
25156.0	SILETZ R	WILDCAT CR	FALLS CR	4,250.0		0		0.0	0.0	0.0	0.0				
25158.0	SILETZ R	FALLS CR	BUCK CR	3,400.0	35.5	5	517.1	1.0	16.0	63.0	20.0	39.72	0.43	7.0	3.0
25159.0	BUCK CR	MOUTH	BUCK CR, E FK	687.0	16.0	5	87.2	10.0	28.0	56.0	6.0	15.96	0.79	5.3	4.2
25161.0	BUCK CR	BUCK CR, E FK	BUCK CR, S FK	800.0	13.3	0		0.0	0.0	0.0	0.0				
25164.0	SILETZ R	BUCK CR	SUNSHINE CR	900.0	45.7	2	371.1	2.5	12.5	65.0	20.0	18.47	0.90	8.6	7.8

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-3 SUMMARY OF SILETZ BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%)				LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
								FINES	PEBBLE	GRAVEL	COBBLE				
25165.0	SUNSHINE CR	MOUTH	DEER CR	2,873.0	33.1	3	55.1	5.0	13.3	60.0	21.7	8.44	0.06	4.3	0.2
25167.0	SUNSHINE CR	DEER CR	FOURTH OF JULY CR	1,450.0	20.1	0		0.0	0.0	0.0	0.0				
25172.0	SILETZ R	SUNSHINE CR	HOLMAN CR	2,400.0	28.8	2	449.0	0.0	12.5	62.5	25.0	26.12	0.65	6.3	4.1
25174.0	SILETZ R	HOLMAN CR	ELK CR	4,000.0	33.0	5	920.0	4.0	20.0	59.0	17.0	52.65	0.70	6.3	4.4
25176.0	SILETZ R	ELK CR	FALLS CR	2,100.0	27.0	0		0.0	0.0	0.0	0.0				
25235.0	DRIFT CR	GORDEY CR	NORTH CR	2,400.0	26.2	39	3,229.8	6.5	22.8	64.4	5.4	254.14	1.00	7.2	7.2
25237.0	DRIFT CR	NORTH CR	WILDCAT CR	4,475.0	22.6	24	1,943.0	7.3	15.2	60.4	16.3	167.27	1.92	6.4	12.2
25239.0	DRIFT CR	WILDCAT CR	SAMPSON CR	4,021.0	21.4	12	447.5	6.7	15.8	58.8	18.8	43.70	0.52	6.0	3.1
25240.0	SAMPSON CR	MOUTH	UNNAMED	1,018.0	22.4	4	335.4	7.5	17.5	53.8	21.3	19.79	1.47	5.7	8.3
25241.0	UNNAMED	MOUTH	HEADWATERS	822.0	18.4	3	73.0	11.7	20.0	53.3	15.0	12.08	0.48	6.6	3.2
25243.0	DRIFT CR	SAMPSON CR	SMITH CR	1,401.0	15.4	3	65.2	6.7	13.3	56.7	23.3	12.08	0.30	6.0	1.8
25253.0	SCHOONER CR	MOUTH	ERICKSON CR	3,916.0	14.9	31	1,469.2	10.6	23.5	56.8	8.8	184.17	2.51	6.6	16.5
25255.0	SCHOONER CR	ERICKSON CR	SCHOONER CR, N FK	2,595.0	14.1	5	132.5	12.0	22.0	58.0	8.0	17.95	0.36	6.7	2.4

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-4 SUMMARY OF SIUSLAW BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%) FINES	PEBBLE	GRAVEL	COBBLE	LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
24014.0	SIUSLAW R, N FK	MORRIS CR	CONDON CR	875.0	20.0	0		0.0	0.0	0.0	0.0				
24015.0	CONDON CR	MOUTH	BILLIE CR	2,435.0	15.6	17	1,483.7	9.7	22.4	60.3	7.6	110.56	3.91	5.8	22.5
24017.0	CONDON CR	BILLIE CR	UNCLE CR	1,127.0	15.5	7	147.3	8.6	19.3	60.0	12.1	37.21	0.84	6.6	5.5
24018.0	UNCLE CR	MOUTH	HEADWATERS	1,944.0	11.9	5	77.6	8.0	15.0	55.0	22.0	22.84	0.34	5.3	1.8
24019.0	CONDON CR	UNCLE CR	HEADWATERS	710.0	14.5	0		0.0	0.0	0.0	0.0				
24020.0	SIUSLAW R, N FK	CONDON CR	JIM DICK CR	2,950.0	18.4	1	18.0	5.0	25.0	70.0	0.0	4.11	0.03	9.5	0.3
24022.0	SIUSLAW R, N FK	JIM DICK CR	RUSSELL CR	600.0	17.8	4	122.8	10.0	26.3	62.5	1.3	21.91	1.15	8.0	9.1
24024.0	SIUSLAW R, N FK	RUSSELL CR	MCLEOD CR	2,700.0	18.7	12	786.2	10.4	25.0	62.5	2.1	79.86	1.56	8.3	13.0
24025.0	MCLEOD CR	MOUTH	HEADWATERS	4,717.0	12.7	25	618.5	6.8	20.2	63.6	9.0	85.41	1.03	6.6	6.8
24026.0	SIUSLAW R, N FK	MCLEOD CR	CATARACT CR	2,118.0	19.5	14	1,059.1	7.5	25.4	60.7	6.4	111.36	2.56	7.1	18.1
24028.0	SIUSLAW R, N FK	CATARACT CR	DREW CR	4,581.0	18.8	11	600.5	5.4	17.1	52.9	16.3	63.15	0.70	6.3	4.4
24030.0	SIUSLAW R, N FK	DREW CR	WILHELM CR	900.0	18.8	4	391.6	8.8	15.0	53.8	22.5	28.63	2.31	6.4	14.7
24031.0	WILHELM CR	MOUTH	HEADWATERS	1,673.0	11.5	4	41.4	6.3	23.8	58.8	11.3	9.15	0.21	6.0	1.3
24032.0	SIUSLAW R, N FK	WILHELM CR	PORTER CR	2,230.0	19.0	12	743.2	6.3	22.1	60.8	10.8	70.81	1.76	7.3	12.8
24033.0	PORTER CR	MOUTH	HEADWATERS	2,110.0	10.7	8	75.0	9.4	16.3	60.6	13.8	17.07	0.33	7.3	2.4
24034.0	SIUSLAW R, N FK	PORTER CR	CEDAR CR	4,500.0	16.6	28	1,451.9	5.7	22.3	60.7	11.4	146.10	1.94	7.0	13.5
24036.0	SIUSLAW R, N FK	CEDAR CR	ELMA CR	892.0		0		0.0	0.0	0.0	0.0				
24119.0	SIUSLAW R	COUNT CR	CAMP CR	1,625.0	43.4	0		0.0	0.0	0.0	0.0				
24121.0	SIUSLAW R	CAMP CR	OLD MAN CR	1,050.0	43.4	0		0.0	0.0	0.0	0.0				
24123.0	SIUSLAW R	OLD MAN CR	LAKE CR	500.0	43.4	0		0.0	0.0	0.0	0.0				
24124.0	LAKE CR	MOUTH	INDIAN CR	3,850.0	37.9	0		0.0	0.0	0.0	0.0				
24125.0	INDIAN CR	MOUTH	VELVET CR	2,575.0	23.9	1	82.4	10.0	30.0	55.0	5.0	5.11	0.13	4.2	0.6
24127.0	INDIAN CR	VELVET CR	ELK CR	8,400.0	23.8	22	3,269.6	9.8	20.7	60.2	7.5	166.09	1.63	6.0	9.8
24129.0	INDIAN CR	ELK CR	CREMO CR	4,800.0	25.8	3	125.2	5.0	20.0	61.7	11.7	11.12	0.10	7.8	0.8
24131.0	INDIAN CR	CREMO CR	INDIAN CR, W FK	1,700.0	24.2	1	26.6	10.0	25.0	60.0	5.0	4.18	0.06	9.1	0.6

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-4 SUMMARY OF SIUSLAW BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%)				LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
								FINES	PEBBLE	GRAVEL	COBBLE				
24132.0	INDIAN CR, W FK	MOUTH	LONG CR	2,944.0	13.7	12	209.2	7.1	18.3	62.5	12.1	39.44	0.52	6.7	3.4
24134.0	INDIAN CR, W FK	LONG CR	ROGERS CR	3,682.0	14.3	21	963.3	7.1	22.1	61.7	9.0	99.20	1.83	6.5	12.0
24136.0	INDIAN CR, W FK	ROGERS CR	PYLE CR	1,910.0	14.8	18	1,811.4	8.6	20.6	63.6	7.2	146.40	6.41	7.2	46.0
24150.0	LAKE CR	INDIAN CR	GREEN CR	3,000.0	42.1	3	582.8	5.0	15.0	66.7	13.3	20.20	0.46	6.3	2.9
24152.0	LAKE CR	GREEN CR	DEADWOOD CR	1,250.0	34.0	0		0.0	0.0	0.0	0.0				
24182.0	LAKE CR	DEADWOOD CR	JOHNSON CR	2,400.0	23.9	7	1,671.4	5.7	20.0	66.4	5.7	65.36	2.91	6.2	17.9
24184.0	LAKE CR	JOHNSON CR	HULA CR	1,000.0	29.2	3	922.8	0.0	23.3	68.3	8.3	29.90	3.16	7.2	22.7
24186.0	LAKE CR	HULA CR	ALMASIE CR	2,200.0	28.4	6	142.6	4.2	24.2	62.5	8.3	23.73	0.23	6.9	1.6
24188.0	LAKE CR	ALMASIE CR	CHAPPELL CR	550.0	29.9	1	45.8	5.0	20.0	60.0	10.0	3.11	0.28	3.7	1.0
24190.0	LAKE CR	CHAPPELL CR	WILCUT CR	1,750.0	30.8	2	127.1	5.0	12.5	67.5	15.0	9.64	0.24	3.7	0.9
24192.0	LAKE CR	WILCUT CR	NELSON CR	450.0	35.5	1	31.5	5.0	25.0	60.0	10.0	7.39	0.20	6.1	1.2
24198.0	LAKE CR	NELSON CR	WHEELER CR	1,600.0	27.0	2	207.7	10.0	20.0	67.5	2.5	14.07	0.48	6.4	3.1
24200.0	LAKE CR	WHEELER CR	STEINHAUER CR	2,200.0	26.1	6	316.2	6.7	22.5	57.5	12.5	24.63	0.55	6.3	3.5
24202.0	LAKE CR	STEINHAUER CR	GREENLEAF CR	3,400.0	23.6	13	2,153.4	5.0	16.9	60.0	16.5	126.51	2.68	6.5	17.6
24204.0	LAKE CR	GREENLEAF CR	LAMB CR	2,060.0	21.9	8	635.8	10.6	19.4	61.9	6.9	35.88	1.41	6.1	8.6
24206.0	LAKE CR	LAMB CR	FISH CR	2,570.0	19.9	18	4,315.8	7.2	17.5	68.1	6.9	134.15	8.44	7.1	60.1
24236.0	SIUSLAW R	LAKE CR	BRUSH CR	2,600.0	35.6	0		0.0	0.0	0.0	0.0				
24240.0	SIUSLAW R	BRUSH CR	TILDEN CR	1,100.0	35.6	0		0.0	0.0	0.0	0.0				
24242.0	SIUSLAW R	TILDEN CR	BARBER CR	3,900.0	35.5	4	301.9	10.0	22.5	55.0	10.0	17.91	0.22	4.2	0.9
24244.0	SIUSLAW R	BARBER CR	PAT CR	1,400.0	39.2	0		0.0	0.0	0.0	0.0				
24246.0	SIUSLAW R	PAT CR	BEECH CR	750.0	39.2	0		0.0	0.0	0.0	0.0				
24248.0	SIUSLAW R	BEECH CR	SAN ANTONE CR	850.0	34.0	0		0.0	0.0	0.0	0.0				
24250.0	SIUSLAW R	SAN ANTONE CR	SMITH CR	2,625.0	42.2	7	917.8	7.1	20.7	67.9	3.6	31.81	0.83	6.0	5.0
24252.0	SIUSLAW R	SMITH CR	MEADOW CR	1,750.0	35.6	2	180.9	7.5	22.5	60.0	10.0	8.22	0.29	7.7	2.2
24254.0	SIUSLAW R	MEADOW CR	ROCK CR	1,400.0	39.5	1	68.5	10.0	30.0	60.0	0.0	3.12	0.12	7.7	1.0

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-4 SUMMARY OF SIUSLAW BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%) FINES	PEBBLE	GRAVEL	COBBLE	LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
24256.0	SIUSLAW R	ROCK CR	TURNER CR	2,250.0	37.6	8	853.6	7.5	20.0	63.1	7.5	34.74	1.01	6.2	6.3
24260.0	SIUSLAW R	TURNER CR	WAITE CR	800.0	32.5	0		0.0	0.0	0.0	0.0				
24262.0	SIUSLAW R	WAITE CR	WILDCAT CR	5,500.0	50.0	14	1,977.7	7.5	15.7	60.7	14.3	94.40	0.72	6.6	4.7
24300.0	SIUSLAW R	WILDCAT CR	WHITTAKER CR	2,550.0	34.0	5	1,273.5	10.0	17.0	62.0	11.0	47.01	1.47	6.6	9.7
24301.0	WHITTAKER CR	MOUTH	BOUNDS CR	1,623.0	16.8	8	318.3	2.5	18.1	65.0	14.4	31.72	1.17	5.2	6.0
24304.0	SIUSLAW R	WHITTAKER CR	WOLF CR	8,100.0	35.7	8	1,202.1	4.4	22.5	60.6	11.3	60.87	0.42	6.8	2.8
24346.0	SIUSLAW R	WOLF CR	BIG CANYON CR	1,700.0	21.9	2	91.7	0.0	35.0	65.0	0.0	6.21	0.25	6.1	1.5
24348.0	SIUSLAW R	BIG CANYON CR	ESMOND CR	2,050.0	23.3	10	1,502.0	4.5	20.0	63.5	10.5	48.23	3.15	4.8	15.1
24360.0	SIUSLAW R	ESMOND CR	CEDAR CR	1,800.0	20.0	4	254.6	7.5	23.8	58.8	10.0	21.44	0.71	6.5	4.6
24362.0	SIUSLAW R	CEDAR CR	FAWN CR	625.0	19.5	0		0.0	0.0	0.0	0.0				
24363.1	SIUSLAW R	FAWN CR	PUGH CR	4,350.0	17.9	4	418.4	13.8	15.0	55.0	12.5	36.04	0.54	6.1	3.3
24363.3	SIUSLAW R	PUGH CR	TRAIL CR	2,050.0	4.1	5	13.4	7.0	23.0	61.0	9.0	20.88	0.16	5.3	0.8
24363.5	SIUSLAW R	TRAIL CR	NORTH CR	2,260.0	19.6	7	675.8	5.7	20.0	65.7	8.6	54.65	1.53	6.8	10.4
24364.0	SIUSLAW R	NORTH CR	MILL CR	1,075.0	23.7	8	772.8	3.8	28.1	64.4	3.8	72.77	3.03	8.2	24.9
24366.0	SIUSLAW R	MILL CR	COLLINS CR	400.0	23.9	4	479.6	6.3	20.0	62.5	11.3	19.62	5.02	6.8	33.9
24368.0	SIUSLAW R	COLLINS CR	HASKINS CR	790.0	23.9	1	58.9	5.0	25.0	70.0	0.0	7.10	0.31	8.8	2.7
24370.0	SIUSLAW R	HASKINS CR	LARUE CR	725.0	23.9	3	488.1	6.7	21.7	63.3	8.3	24.35	2.82	6.6	18.7
24372.0	SIUSLAW R	LARUE CR	CLAY CR	3,100.0	25.7	10	648.8	10.0	20.0	62.0	8.0	56.78	0.82	7.6	6.2
24374.0	SIUSLAW R	CLAY CR	EDRIS CR	1,325.0	22.7	2	172.0	10.0	20.0	65.0	5.0	8.80	0.57	5.8	3.3
24376.0	SIUSLAW R	EDRIS CR	BURNTWOOD CR	1,700.0	25.8	4	196.1	8.8	20.0	60.0	8.8	20.08	0.45	7.6	3.4
24378.0	SIUSLAW R	BURNTWOOD CR	BIERCE CR	2,800.0	20.5	2	687.6	10.0	17.5	65.0	7.5	15.63	1.20	4.9	5.9
24380.0	SIUSLAW R	BIERCE CR	JOHNSON CR	2,875.0	21.3	8	252.8	8.1	18.1	61.9	11.9	36.02	0.41	6.0	2.5
24382.0	SIUSLAW R	JOHNSON CR	LUYNE CR	2,750.0	17.6	3	83.6	10.0	25.0	63.3	1.7	15.74	0.17	6.1	1.0
24384.0	SIUSLAW R	LUYNE CR	OXBOW CR	7,000.0	20.8	28	2,721.5	5.9	20.5	65.2	7.3	211.96	1.87	7.4	13.9
24390.0	SIUSLAW R	OXBOW CR	BEAR CR	675.0	18.4	2	213.2	7.5	20.0	67.5	5.0	25.70	1.71	8.4	14.3

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

APPENDIX TABLE A-4 SUMMARY OF SIUSLAW BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%) FINES	PEBBLE	GRAVEL	COBBLE	LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
24394.0	SIUSLAW R	BEAR CR	HAIGHT CR	1,900.0	20.0	0		0.0	0.0	0.0	0.0				
24398.0	SIUSLAW R	HAIGHT CR	CAMP CR	2,500.0	20.0	2	66.2	15.0	17.5	55.0	12.5	19.48	0.13	8.2	1.1

a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

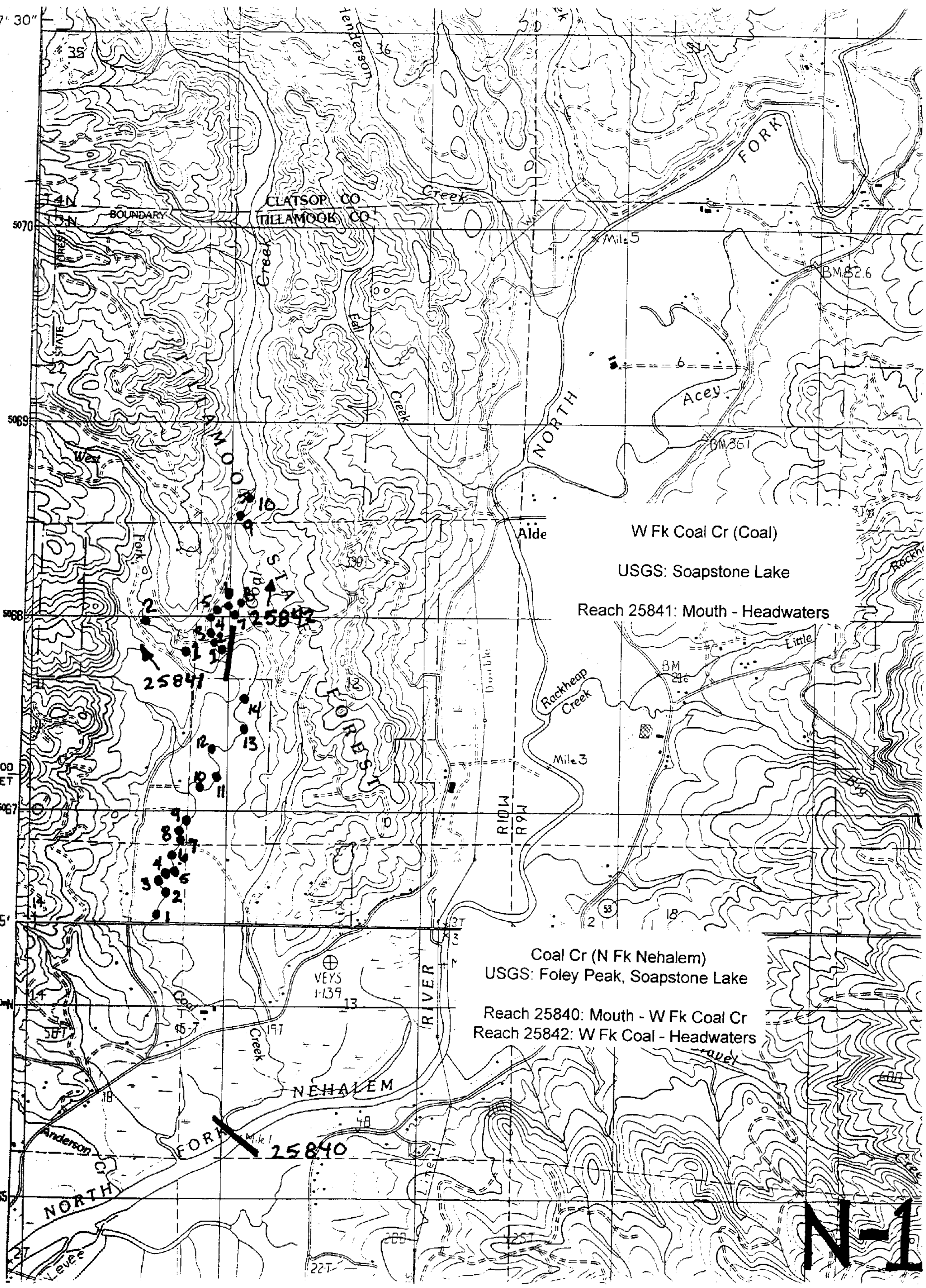
APPENDIX TABLE A-5 SUMMARY OF ALSEA BASIN REACHES INVENTORIED FOR FALL CHINOOK SPAWNING HABITAT a/

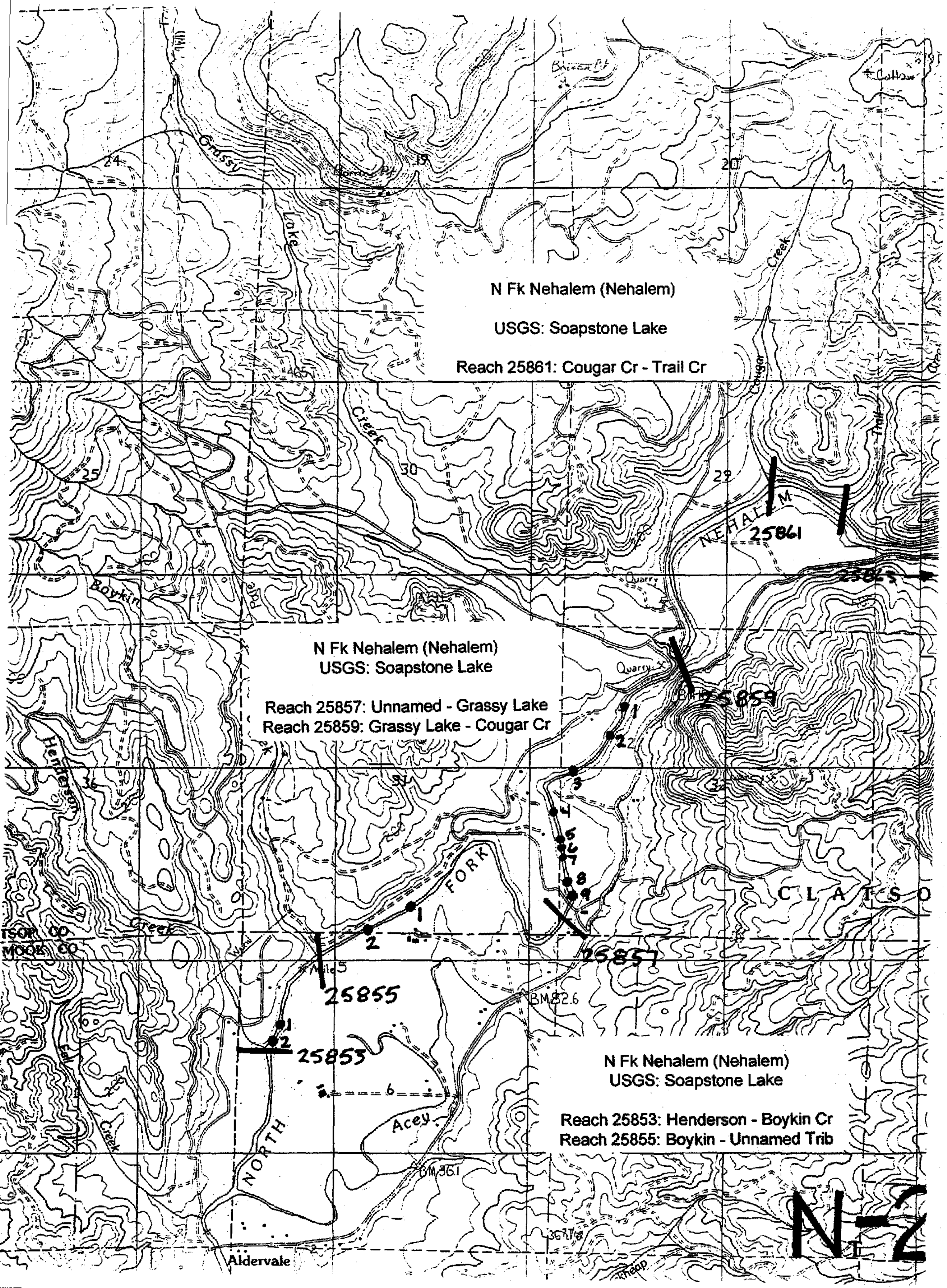
ID	REACH	LOWER BOUNDRY	UPPER BOUNDRY	REACH LENGTH	CHANNEL WITH	NUMBER OF UNITS	AVERAGE UNIT AREA	SUBSTRATE COMPOSITION (%) FINES	PEBBLE	GRAVEL	COBBLE	LINEAR HABITAT DENSITY	AREA HABITAT DENSITY	MEAN HABITAT SCORE	REACH SCORE
24810.0	ALSEA R	FALL CR	DIGGER CR	3,750.0	30.6	9	2,840.7	5.6	15.6	66.7	11.7	0.76	2.48	7.4	18.4
24812.0	ALSEA R	DIGGER CR	BENNER CR	3,850.0	29.8	6	2,971.2	6.7	25.0	60.8	5.8	0.77	2.59	7.3	18.8
24814.0	ALSEA R	BENNER CR	SULMAN CR	5,100.0	28.6	14	3,565.8	8.6	17.9	65.4	6.1	0.70	2.44	7.7	18.9
24820.0	ALSEA R	SULMAN CR	NARROW CR	3,450.0	30.3	18	5,289.5	7.5	16.4	66.9	9.4	1.53	5.05	7.7	39.1
24822.0	ALSEA R	NARROW CR	MALTBY CR	700.0	26.0	4	955.7	1.3	18.8	66.3	12.5	1.37	5.24	8.1	42.3
24824.0	ALSEA R	MALTBY CR	SCHOOLHOUSE CR	2,450.0	24.3	6	2,255.9	2.5	16.7	67.5	13.3	0.92	3.78	6.7	25.3
24826.0	ALSEA R	SCHOOLHOUSE CR	MILL CR	2,150.0	24.6	8	1,463.9	2.5	13.8	65.0	18.8	0.68	2.77	7.4	20.6
24830.0	ALSEA R	MILL CR	ROBERTS CR	250.0	23.3	1	188.9	0.0	15.0	75.0	10.0	0.76	3.25	5.0	16.2
24832.0	ALSEA R	ROBERTS CR	CATHCART CR	1,000.0	26.0	4	1,377.6	2.5	11.3	68.8	17.5	1.38	5.29	6.2	32.6
24834.0	ALSEA R	CATHCART CR	ALSEA R, N FK	700.0	19.9	4	336.8	2.5	12.5	67.5	17.5	0.48	2.42	7.0	17.0
24835.0	ALSEA R, N FK	MOUTH	KIGER CR	1,850.0	19.1	10	532.3	5.0	13.5	61.0	22.5	0.29	1.51	6.7	10.1
24837.0	ALSEA R, N FK	KIGER CR	HONEY GROVE CR	500.0	19.9	3	136.6	3.3	16.7	56.7	23.3	0.27	1.38	5.5	7.6
24839.0	ALSEA R, N FK	HONEY GROVE CR	SEELEY CR	1,250.0	17.4	2	93.9	7.5	17.5	65.0	10.0	0.08	0.43	8.3	3.6

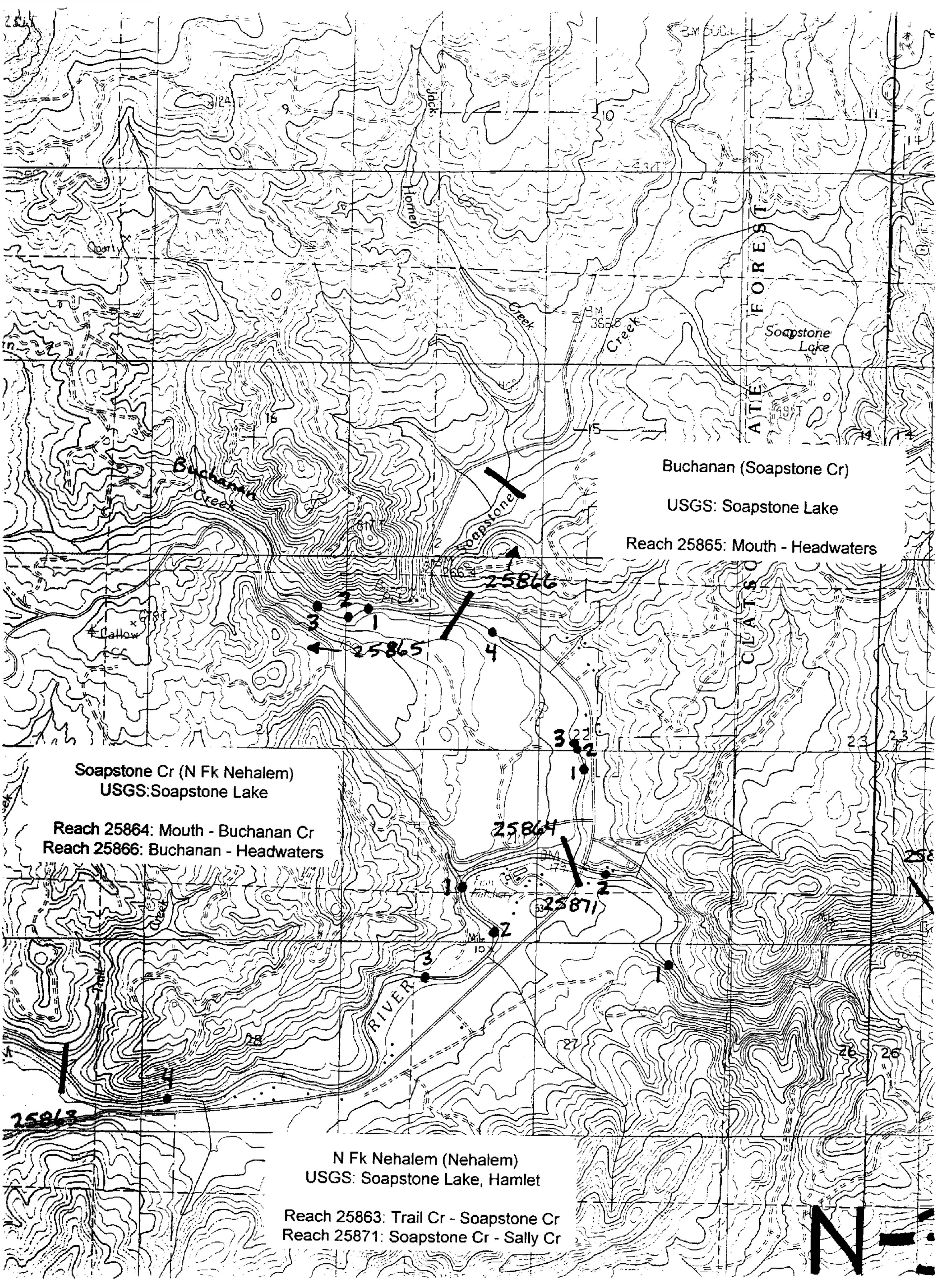
a/ DISTANCES IN METERS; AREAS IN SQUARE METERS.

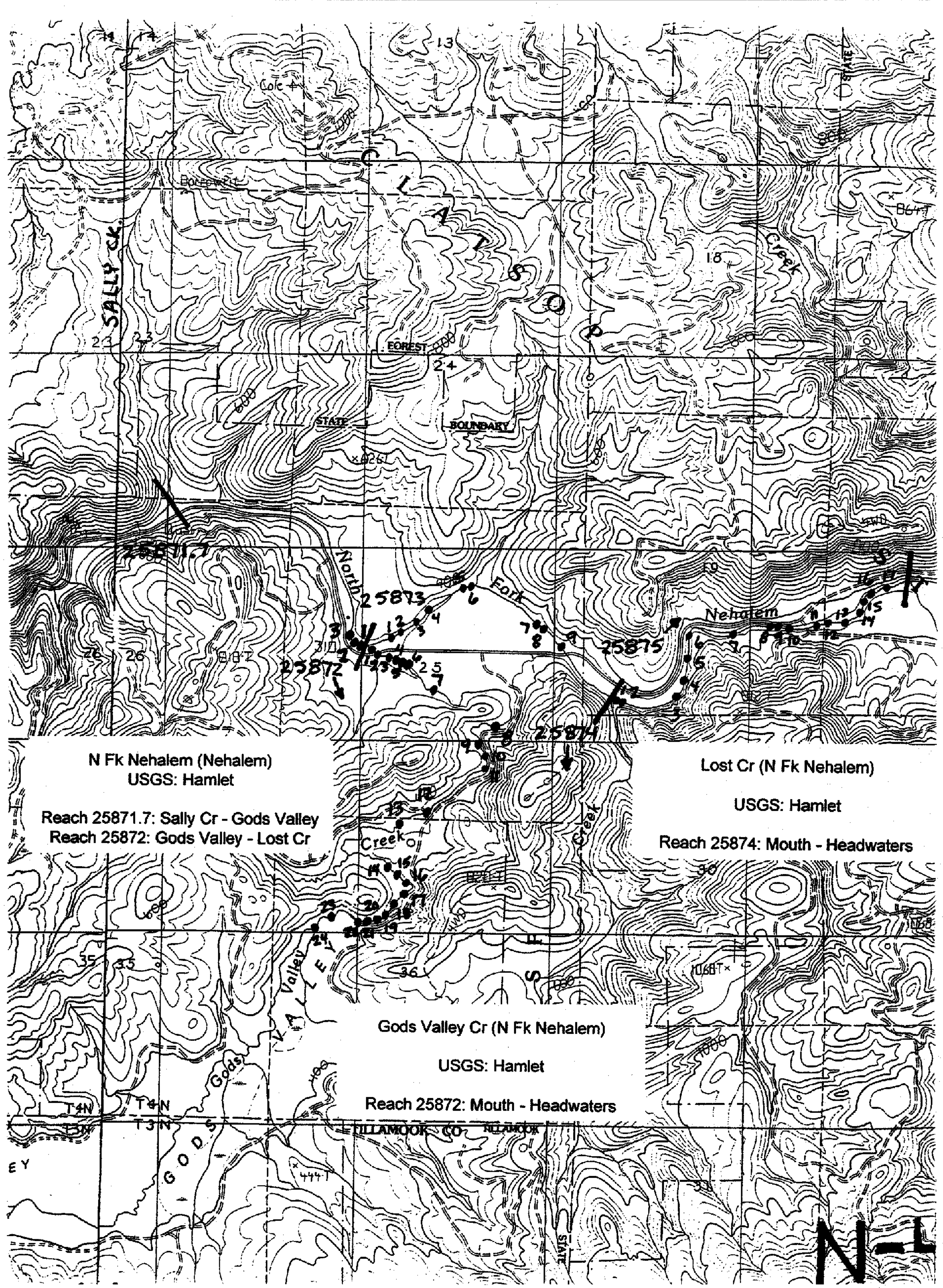
APPENDIX B

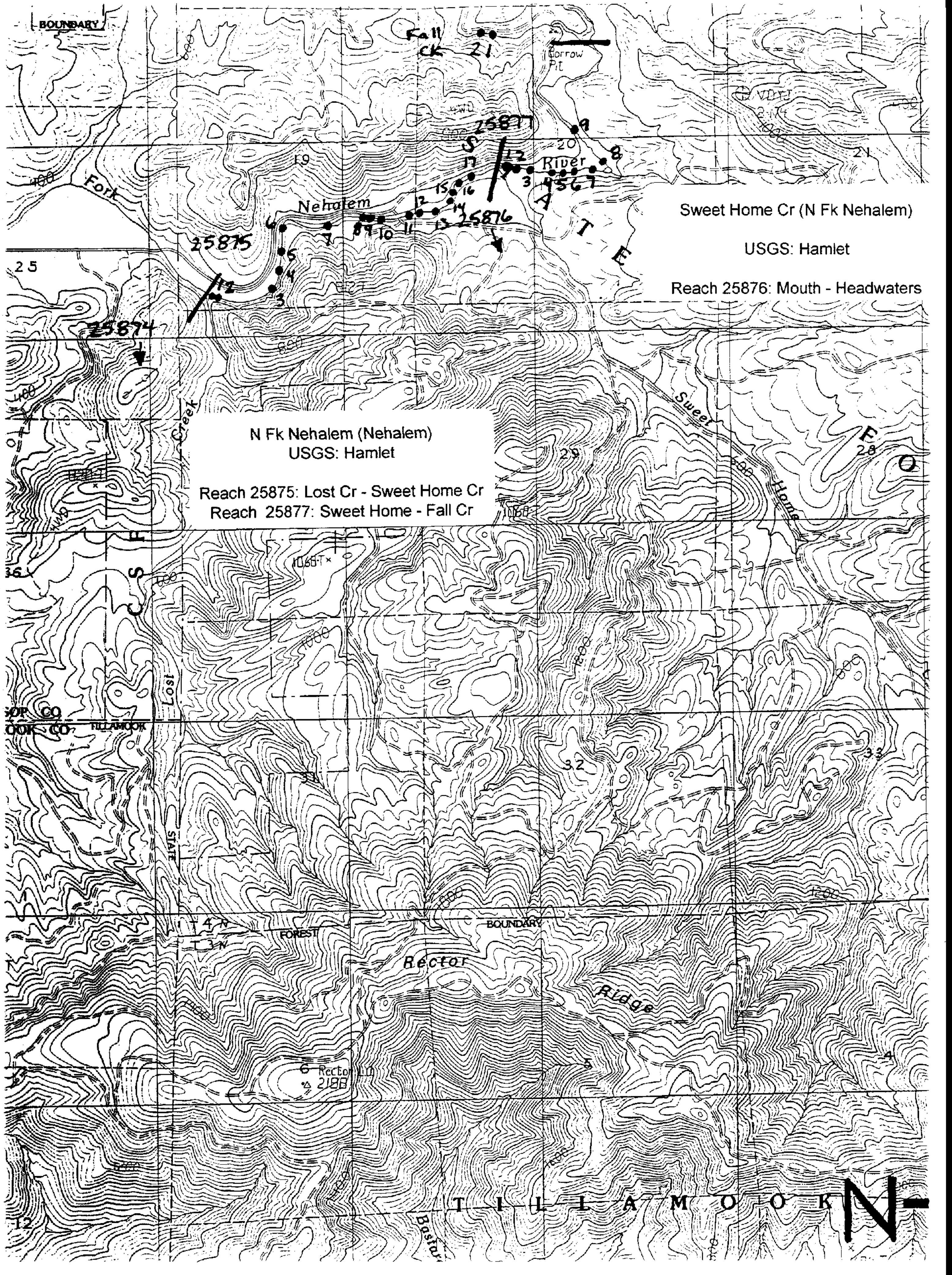
Maps Depicting the Locations of Fall Chinook Spawning Habitat Units


W Fk Coal Cr (Coal)
USGS: Soapstone Lake
Reach 25841: Mouth - Headwaters
Coal Cr (N Fk Nehalem)
USGS: Foley Peak, Soapstone Lake
Reach 25840: Mouth - W Fk Coal Cr
Reach 25842: W Fk Coal - Headwaters
25841
25842
25840
CLATSOP CO
TILLAMOOK CO
BOUNDARY
T4N
T3N
NORTH FORK
NEHALEM
RIVER
TILLAMOOK STATE FOREST
Acey
Rackheap Creek
Little
Double
Mile 5
Mile 3
Mile 1
BM 82.6
VEYS
Anderson Cr
Levee
R9W
R10W
N-1

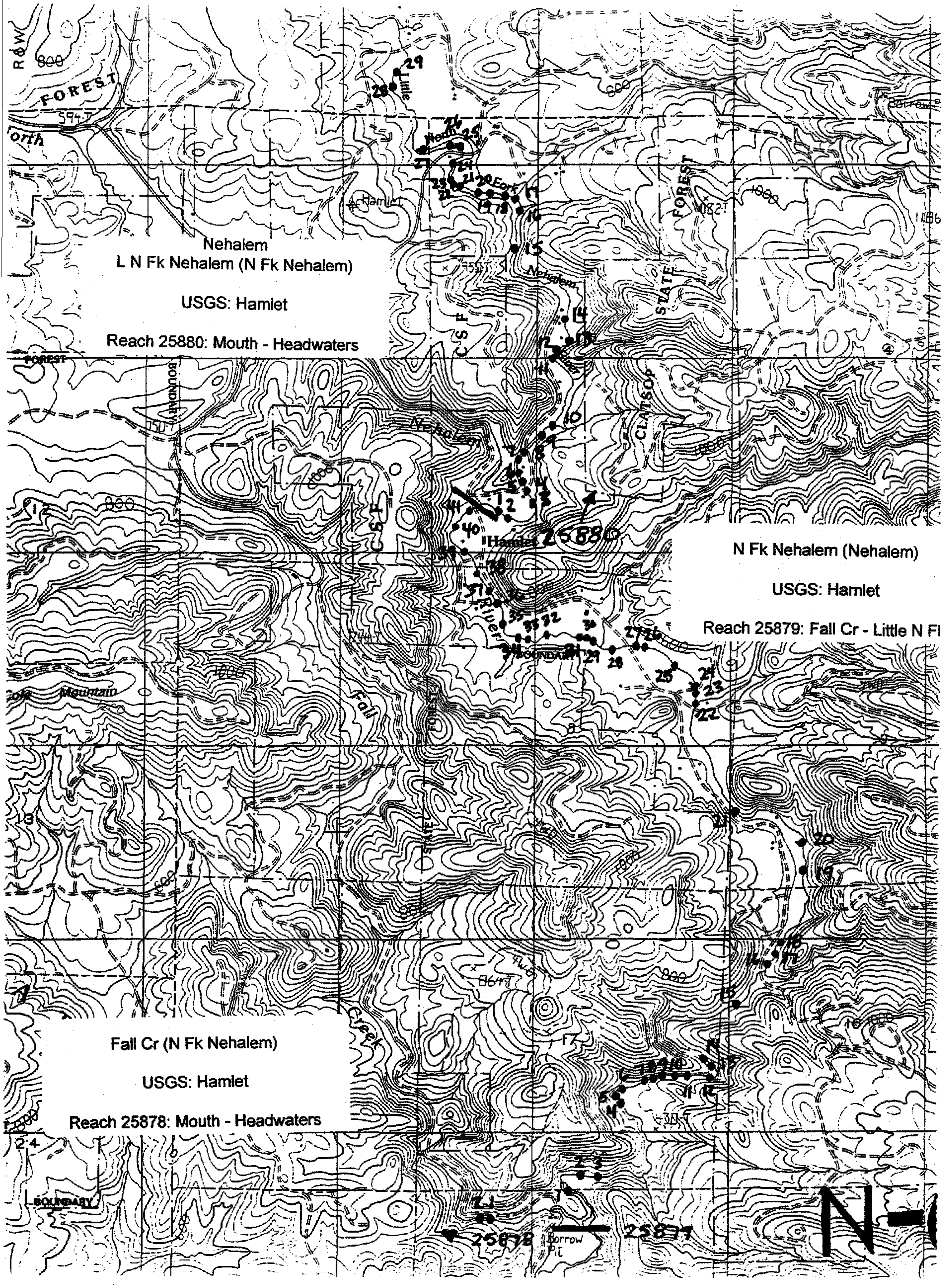

N Fk Nehalem (Nehalem)
USGS: Soapstone Lake
Reach 25861: Cougar Cr - Trail Cr
N Fk Nehalem (Nehalem)
USGS: Soapstone Lake
Reach 25857: Unnamed - Grassy Lake
Reach 25859: Grassy Lake - Cougar Cr
N Fk Nehalem (Nehalem)
USGS: Soapstone Lake
Reach 25853: Henderson - Boykin Cr
Reach 25855: Boykin - Unnamed Trib
25861
25859
25857
25855
25853
Grassy
Lake
Creek
Cougar
Creek
Trail
NEHALEM
Boykin
Henderson
Creek
FORK
NORTH
Acey
CLATSO
Quarry
Mile 5
BM 82.6
BM 36.1
Aldervale
N-2

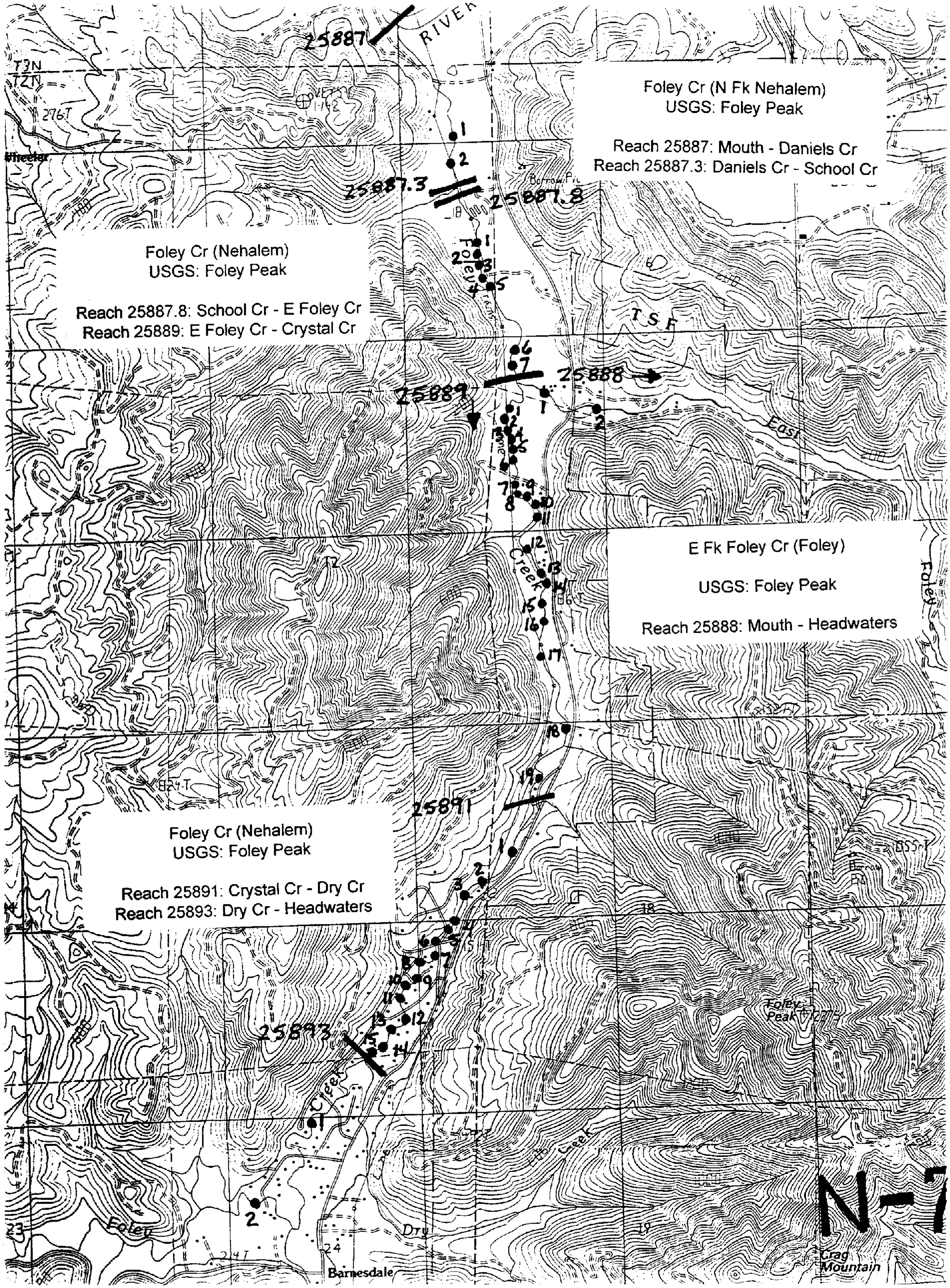

Buchanan (Soapstone Cr)
USGS: Soapstone Lake
Reach 25865: Mouth - Headwaters
Soapstone Cr (N Fk Nehalem)
USGS:Soapstone Lake
Reach 25864: Mouth - Buchanan Cr
Reach 25866: Buchanan - Headwaters
N Fk Nehalem (Nehalem)
USGS: Soapstone Lake, Hamlet
Reach 25863: Trail Cr - Soapstone Cr
Reach 25871: Soapstone Cr - Sally Cr
Buchanan Creek
Soapstone
Creek
Jack
Homer
Soapstone Lake
FOREST
CLATSO
RIVER
Trail
Creek
Fish Hatchery
Quarry
25866
25865
25864
25871
25863
N-

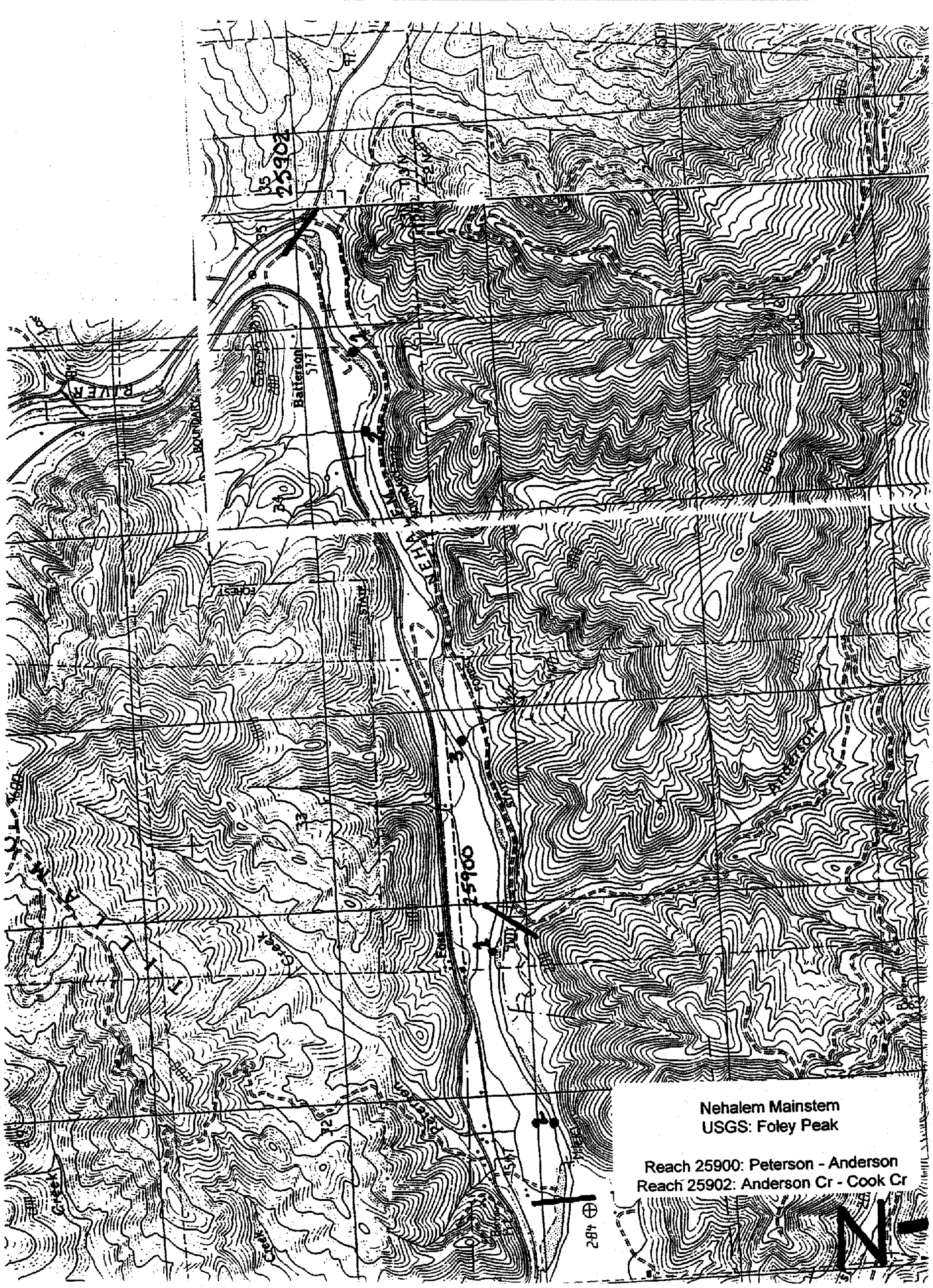

N Fk Nehalem (Nehalem)
USGS: Hamlet
Reach 25871.7: Sally Cr - Gods Valley
Reach 25872: Gods Valley - Lost Cr
Lost Cr (N Fk Nehalem)
USGS: Hamlet
Reach 25874: Mouth - Headwaters
Gods Valley Cr (N Fk Nehalem)
USGS: Hamlet
Reach 25872: Mouth - Headwaters
SALLY CK.
CLATSOP
FOREST
STATE
BOUNDARY
North Fork
Nehalem
Creek
25871.7
25872
25873
25874
25875
T4N
T3N
TILLAMOOK CO
N-L

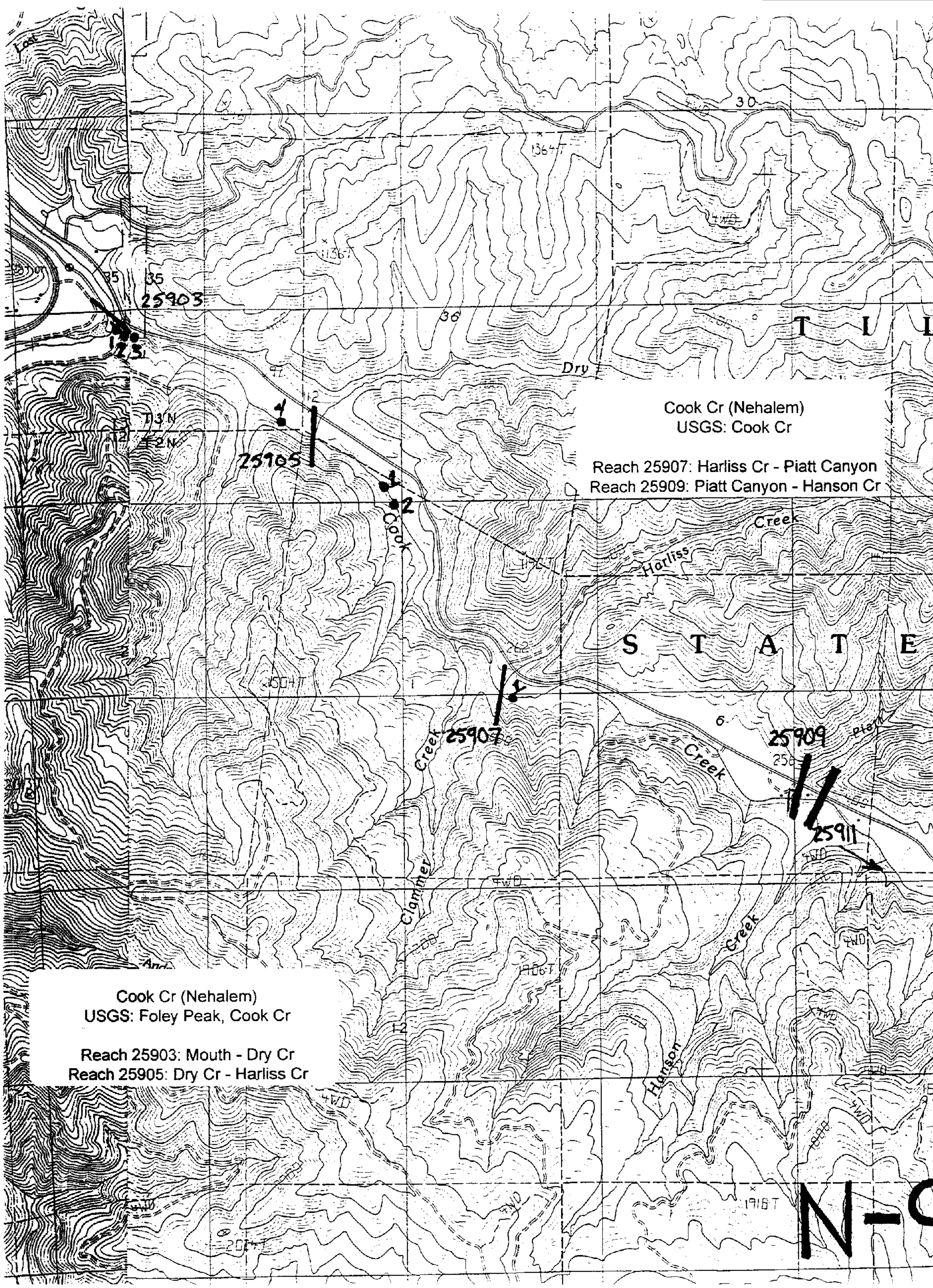


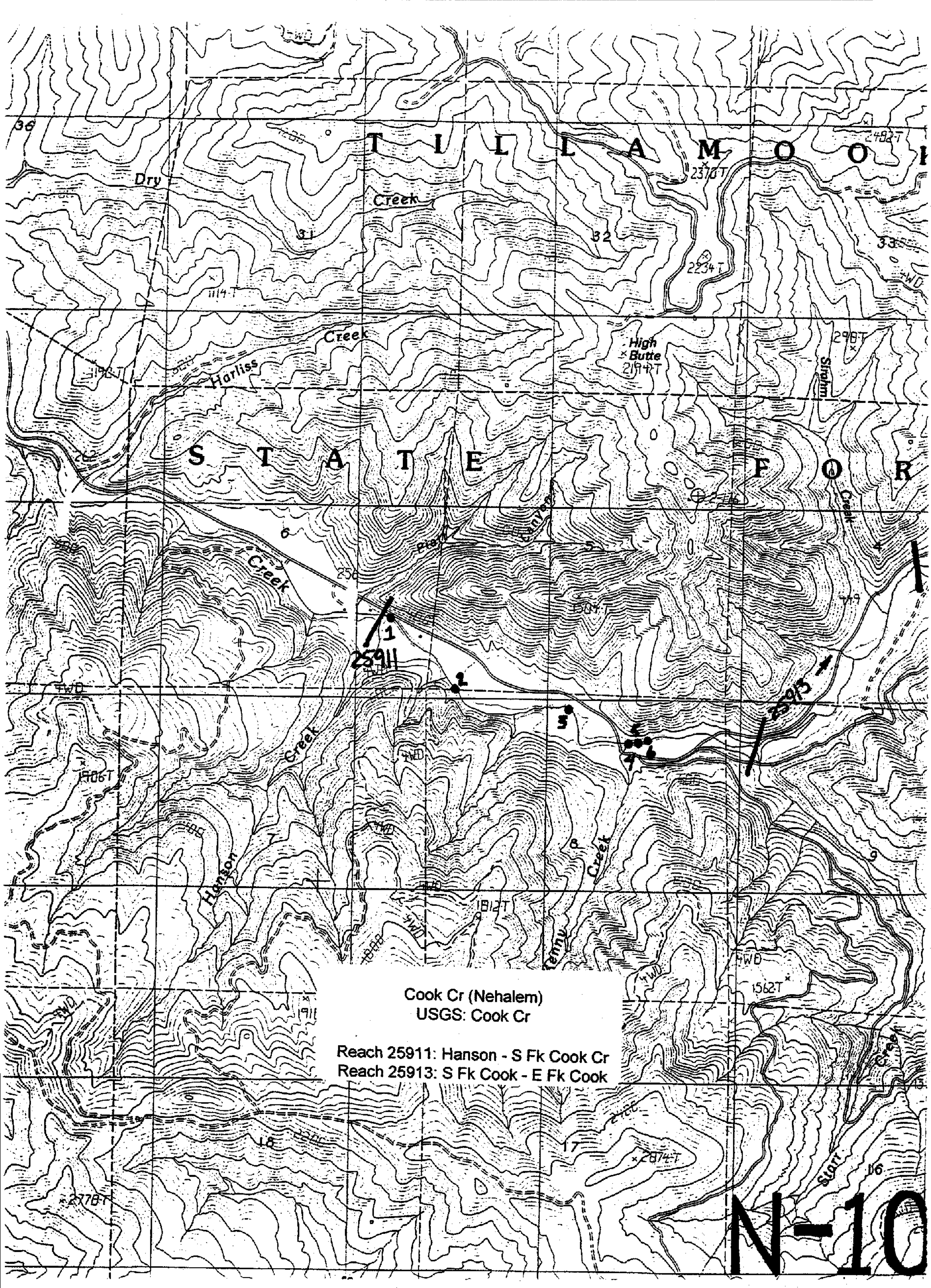
Sweet Home Cr (N Fk Nehalem)
USGS: Hamlet
Reach 25876: Mouth - Headwaters
N Fk Nehalem (Nehalem)
USGS: Hamlet
Reach 25875: Lost Cr - Sweet Home Cr
Reach 25877: Sweet Home - Fall Cr
Fall CK 21
25877
25876
25875
25874
Nehalem
River
Fork
Lost Creek
Sweet Home
Borrow Pit
BOUNDARY
FOREST
Rector Ridge
Rector L.O.
2188
TILLAMOOK
TILLAMOOK CO
STATE

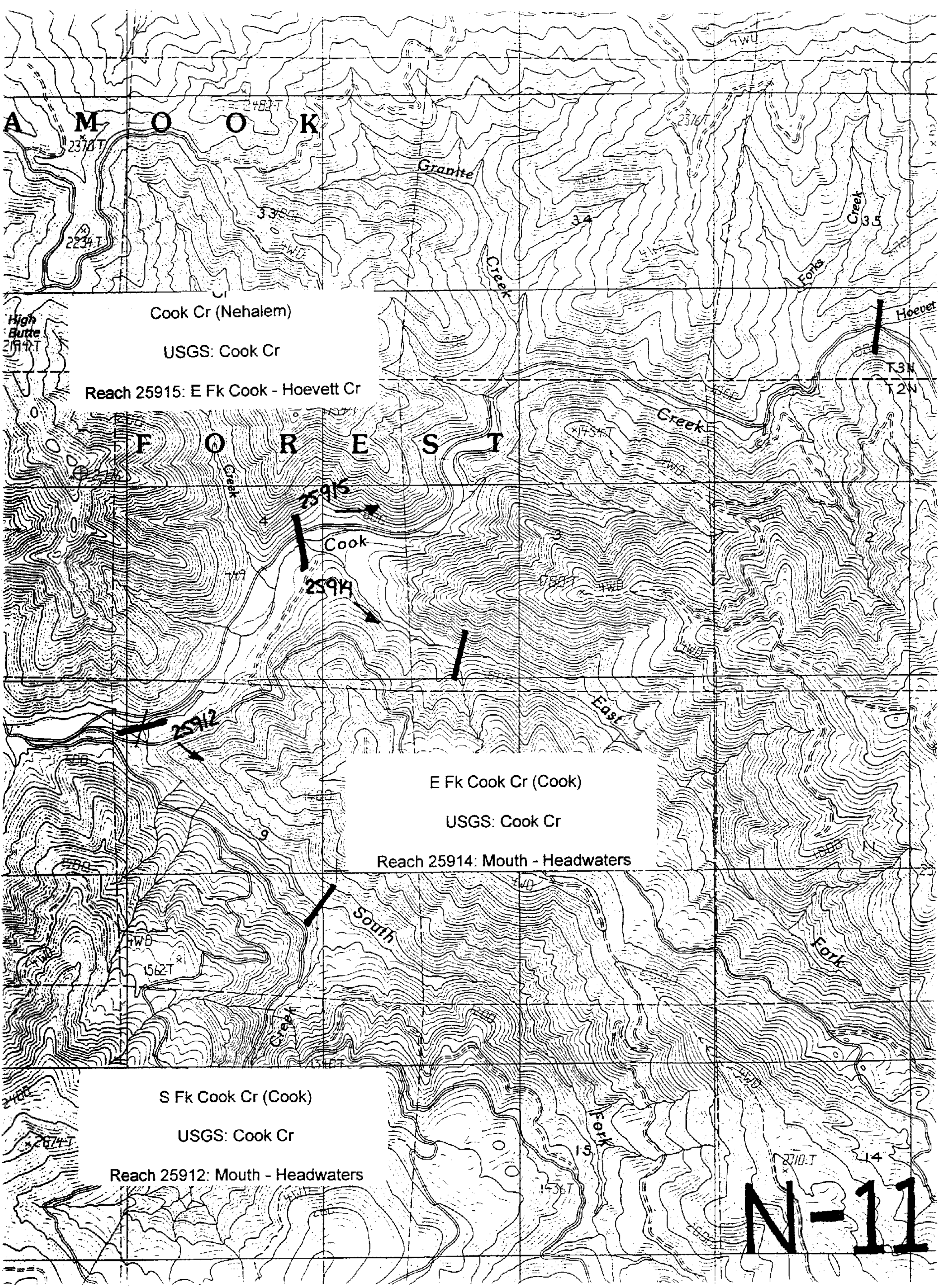

Nehalem
L N Fk Nehalem (N Fk Nehalem)
USGS: Hamlet
Reach 25880: Mouth - Headwaters
N Fk Nehalem (Nehalem)
USGS: Hamlet
Reach 25879: Fall Cr - Little N Fl
Fall Cr (N Fk Nehalem)
USGS: Hamlet
Reach 25878: Mouth - Headwaters
FOREST
STATE
FOREST
CLATSOP
BOUNDARY
Hamlet
25880
25878
25879
Borrow Pit
Fall
Creek
N


Foley Cr (N Fk Nehalem)
USGS: Foley Peak
Reach 25887: Mouth - Daniels Cr
Reach 25887.3: Daniels Cr - School Cr
Foley Cr (Nehalem)
USGS: Foley Peak
Reach 25887.8: School Cr - E Foley Cr
Reach 25889: E Foley Cr - Crystal Cr
E Fk Foley Cr (Foley)
USGS: Foley Peak
Reach 25888: Mouth - Headwaters
Foley Cr (Nehalem)
USGS: Foley Peak
Reach 25891: Crystal Cr - Dry Cr
Reach 25893: Dry Cr - Headwaters
25887
25887.3
25887.8
25889
25888
25891
25893
RIVER
T3N
T2N
Wheeler
TSF
East
Creek
Foley
Dry
Foley Peak
Crag Mountain
Barnesdale
N-7

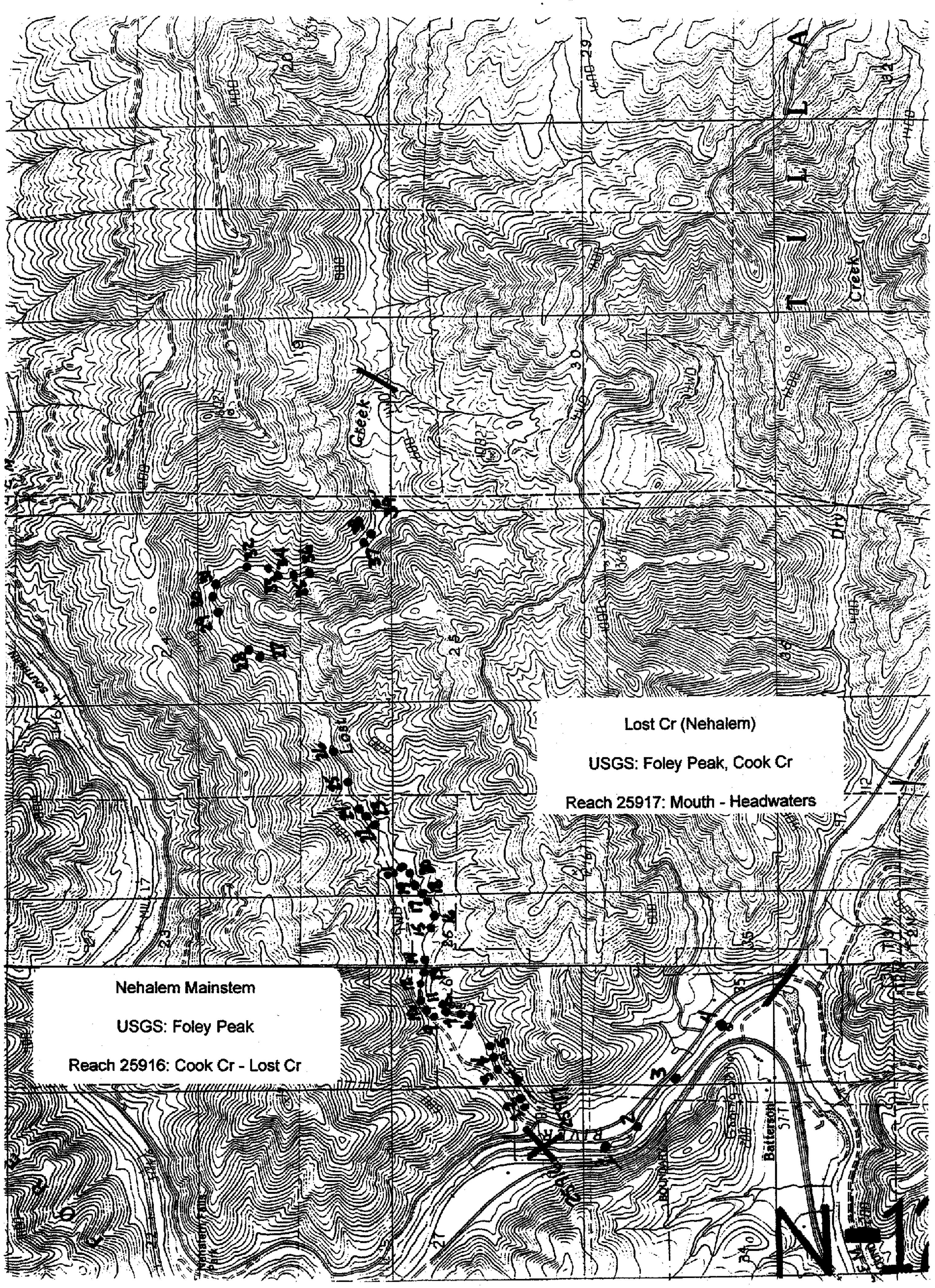

Nehalem Mainstem
USGS: Foley Peak
Reach 25900: Peterson - Anderson
Reach 25902: Anderson Cr - Cook Cr
25902
25900
Batterson
NEHALEM
RIVER
BOUNDARY
STATE
FOREST
Anderson
Creek
N

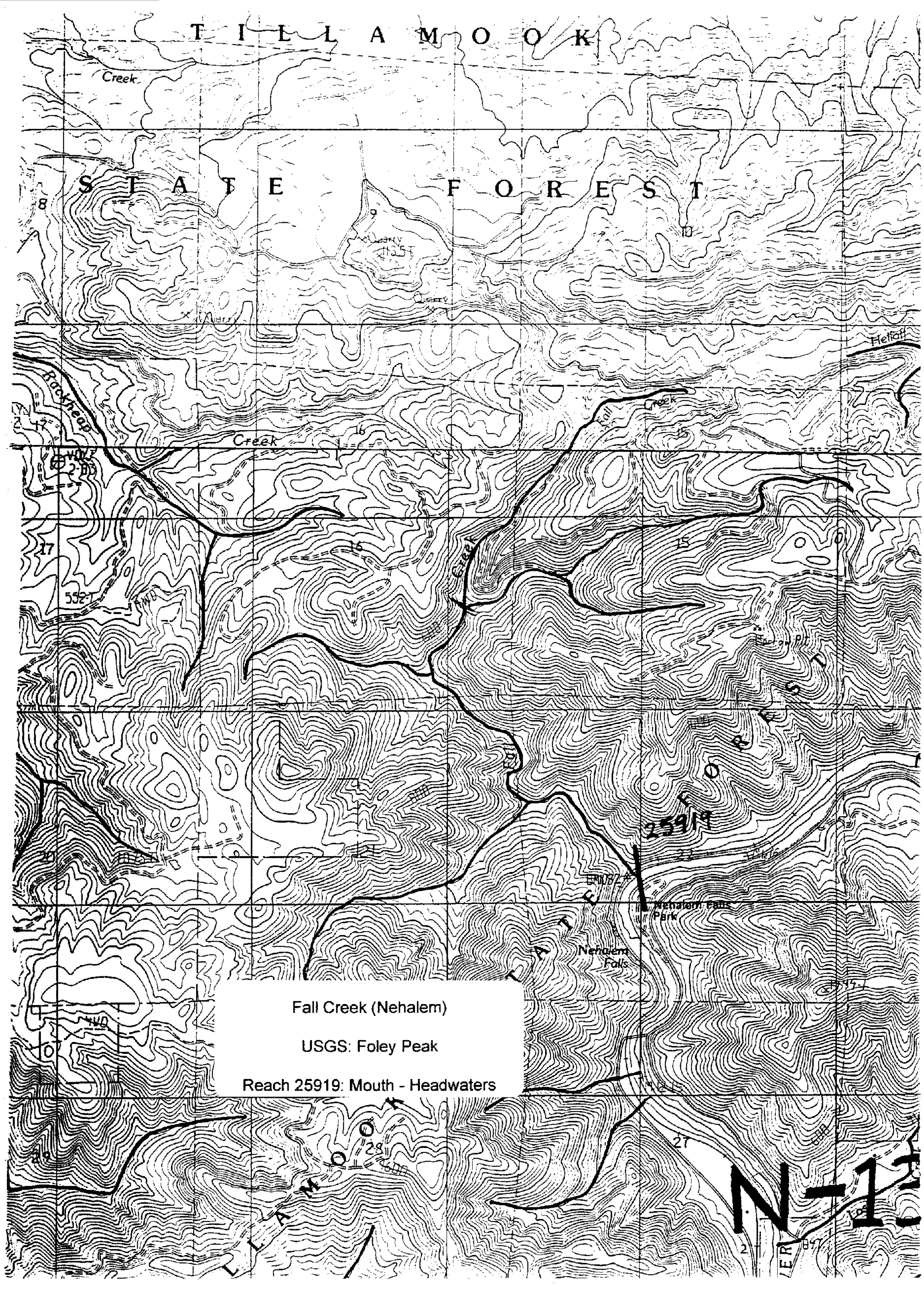

Cook Cr (Nehalem)
USGS: Cook Cr
Reach 25907: Harliss Cr - Piatt Canyon
Reach 25909: Piatt Canyon - Hanson Cr
Cook Cr (Nehalem)
USGS: Foley Peak, Cook Cr
Reach 25903: Mouth - Dry Cr
Reach 25905: Dry Cr - Harliss Cr
25903
25905
25907
25909
25911
T I L
S T A T E
Dry
Cook
Harliss Creek
Creek
Clammer
Creek
Hanson Creek
N-C


TILLAMOOK
STATE FOR
Dry Creek
Harliss Creek
High Butte 2194T
Strahm Creek
Creek
Hanson Creek
Fenny Creek
Start Creek
25911
25913
Cook Cr (Nehalem)
USGS: Cook Cr
Reach 25911: Hanson - S Fk Cook Cr
Reach 25913: S Fk Cook - E Fk Cook
N-10



A M O O K
F O R E S T
Cook Cr (Nehalem)
USGS: Cook Cr
Reach 25915: E Fk Cook - Hoevett Cr
E Fk Cook Cr (Cook)
USGS: Cook Cr
Reach 25914: Mouth - Headwaters
S Fk Cook Cr (Cook)
USGS: Cook Cr
Reach 25912: Mouth - Headwaters
25915
25914
25912
Granite
Creek
Forks
Creek
Hoevet
Creek
Cook
East
South
Fork
Creek
Fork
High Butte
T3N
T2N
N-11

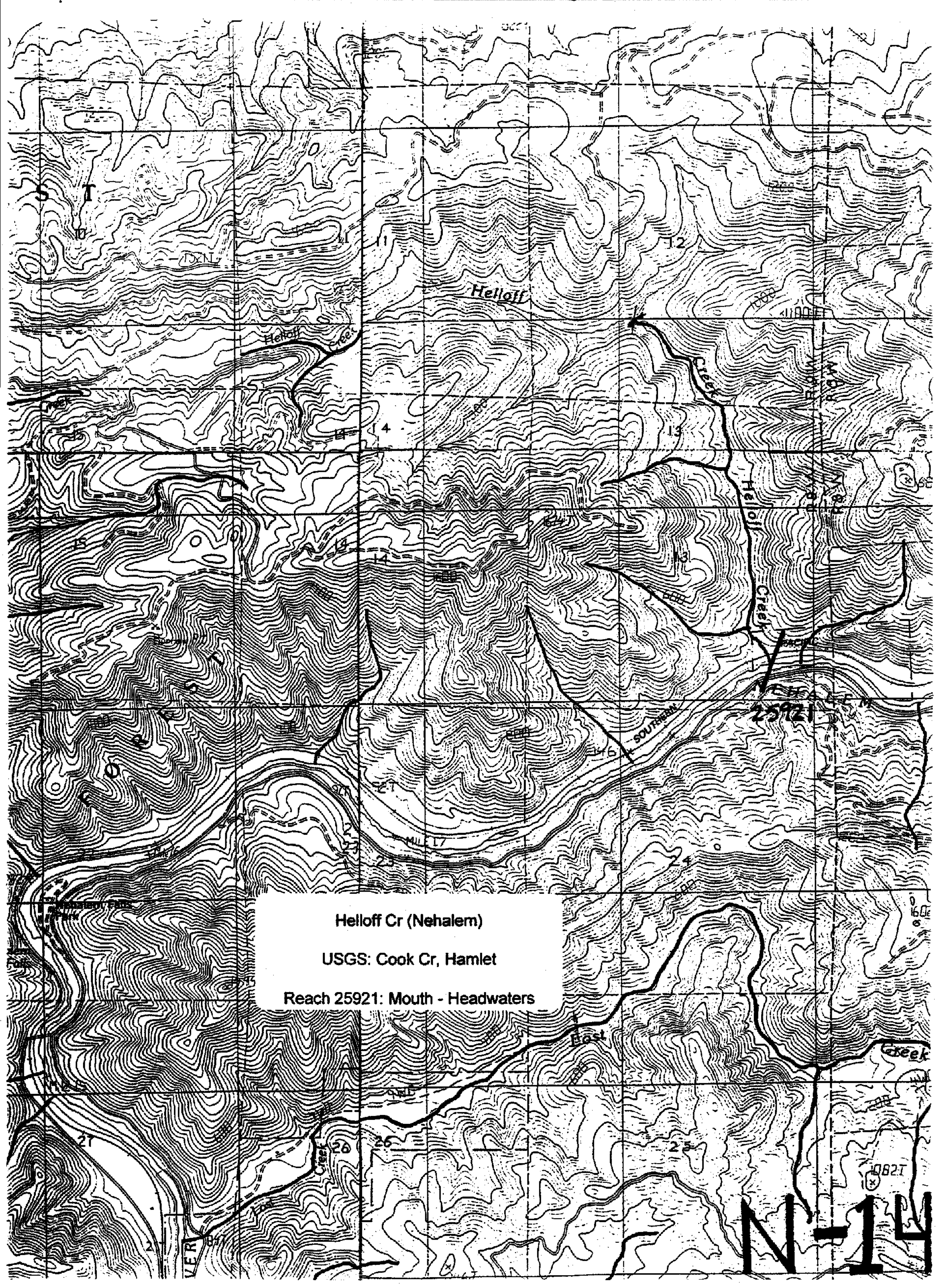

Lost Cr (Nehalem)
USGS: Foley Peak, Cook Cr
Reach 25917: Mouth - Headwaters
Nehalem Mainstem
USGS: Foley Peak
Reach 25916: Cook Cr - Lost Cr
Creek
Lost
Dry
Creek
Batterson



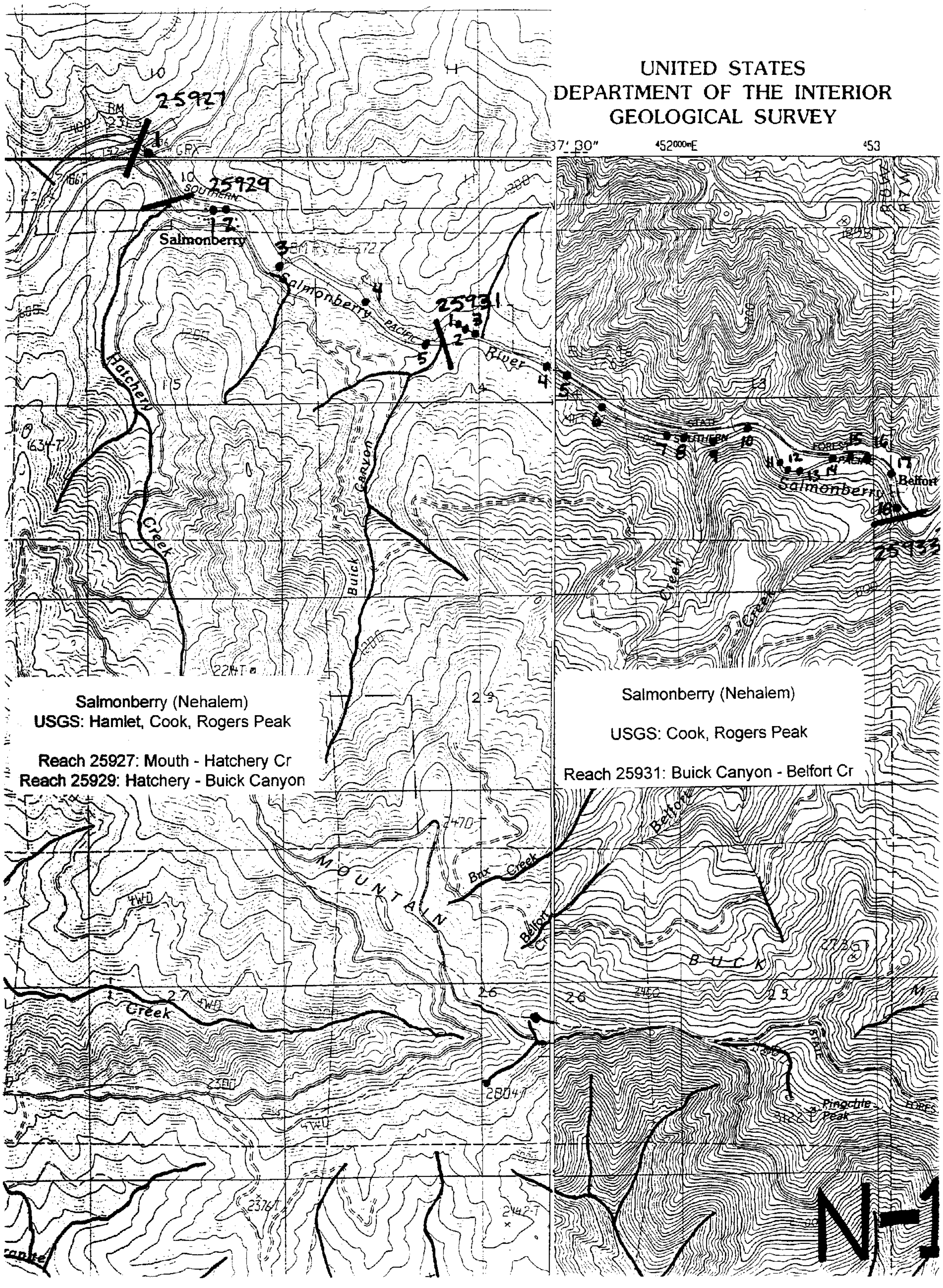
Fall Creek (Nehalem)

USGS: Foley Peak

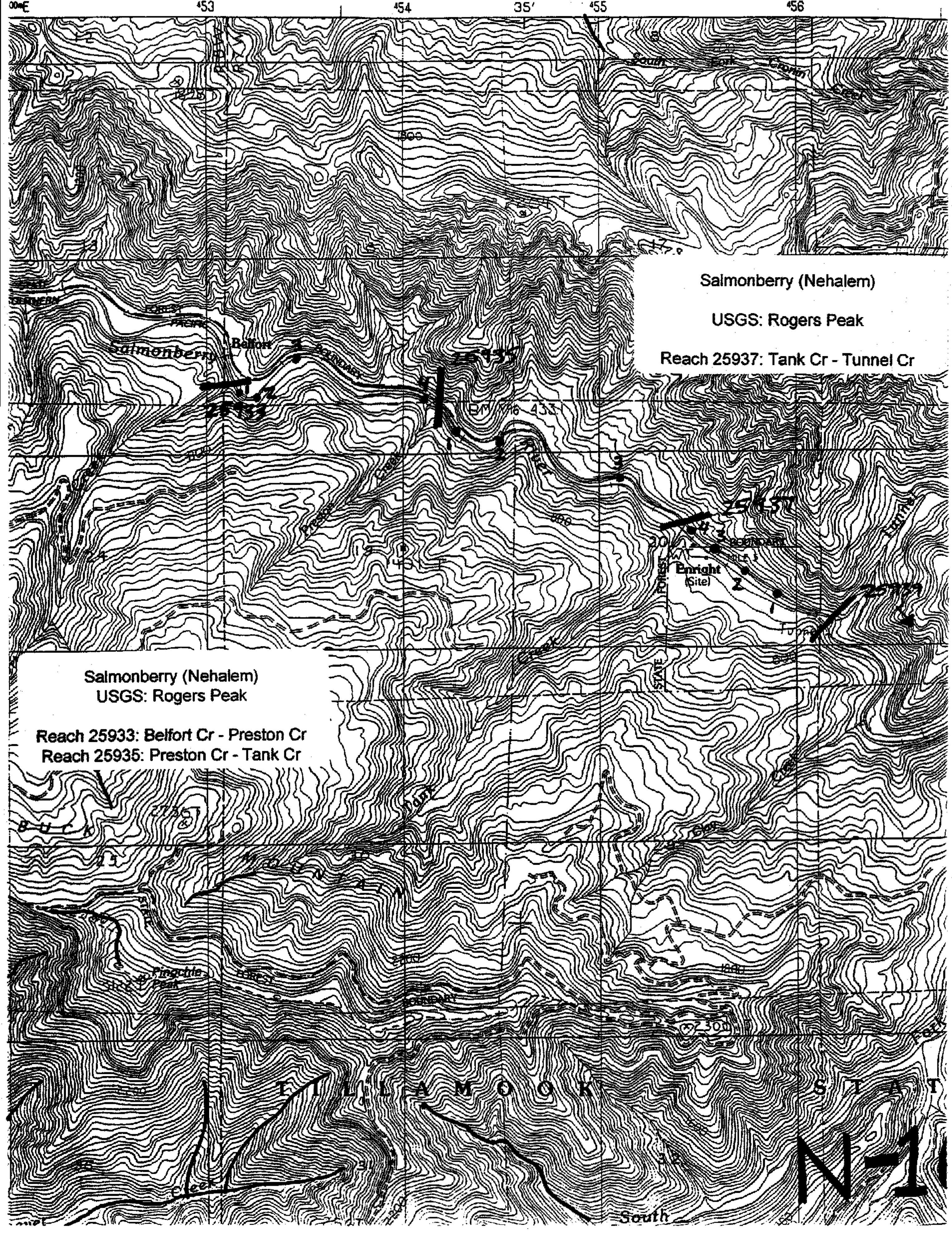
Reach 25919: Mouth - Headwaters

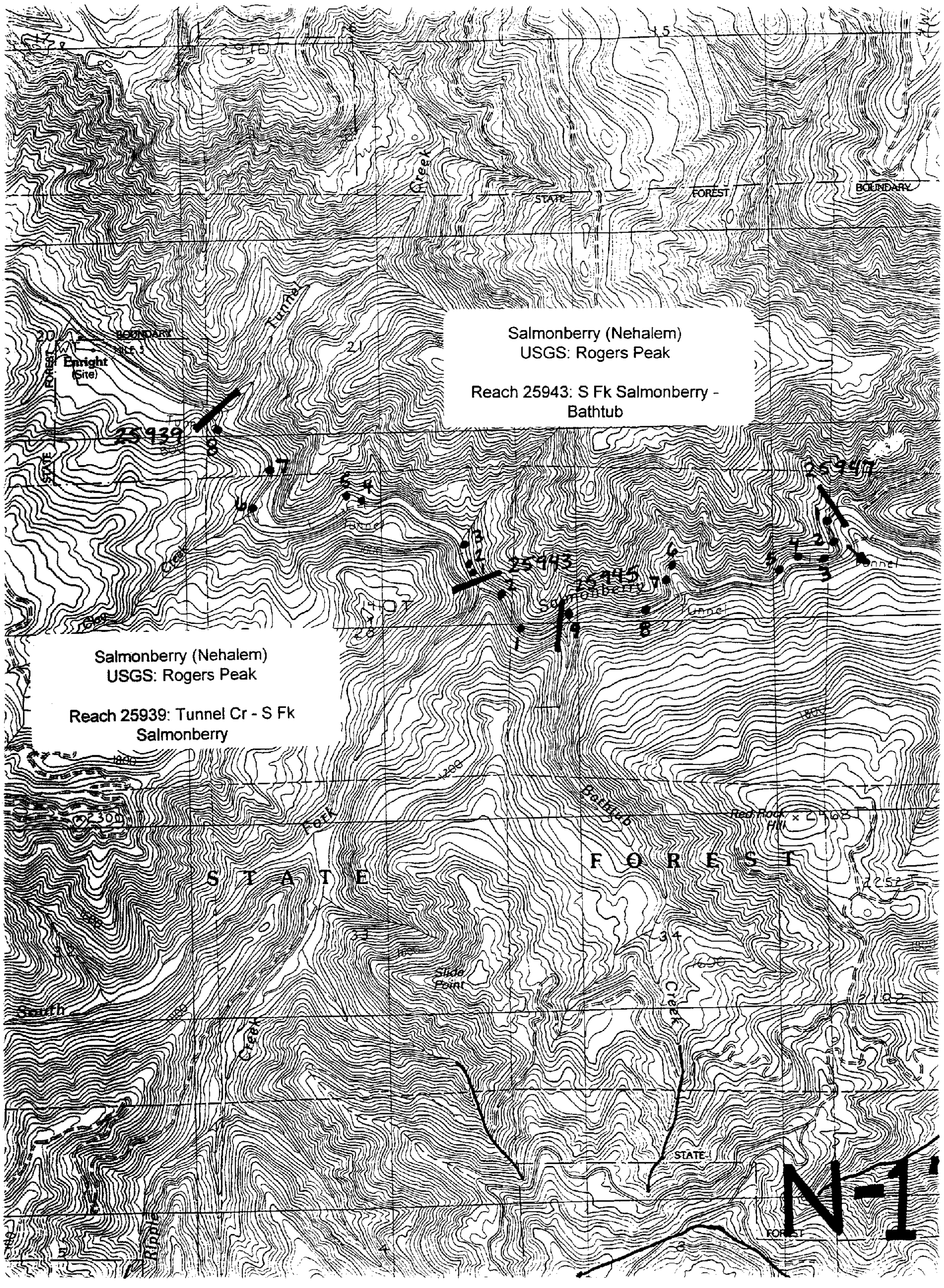


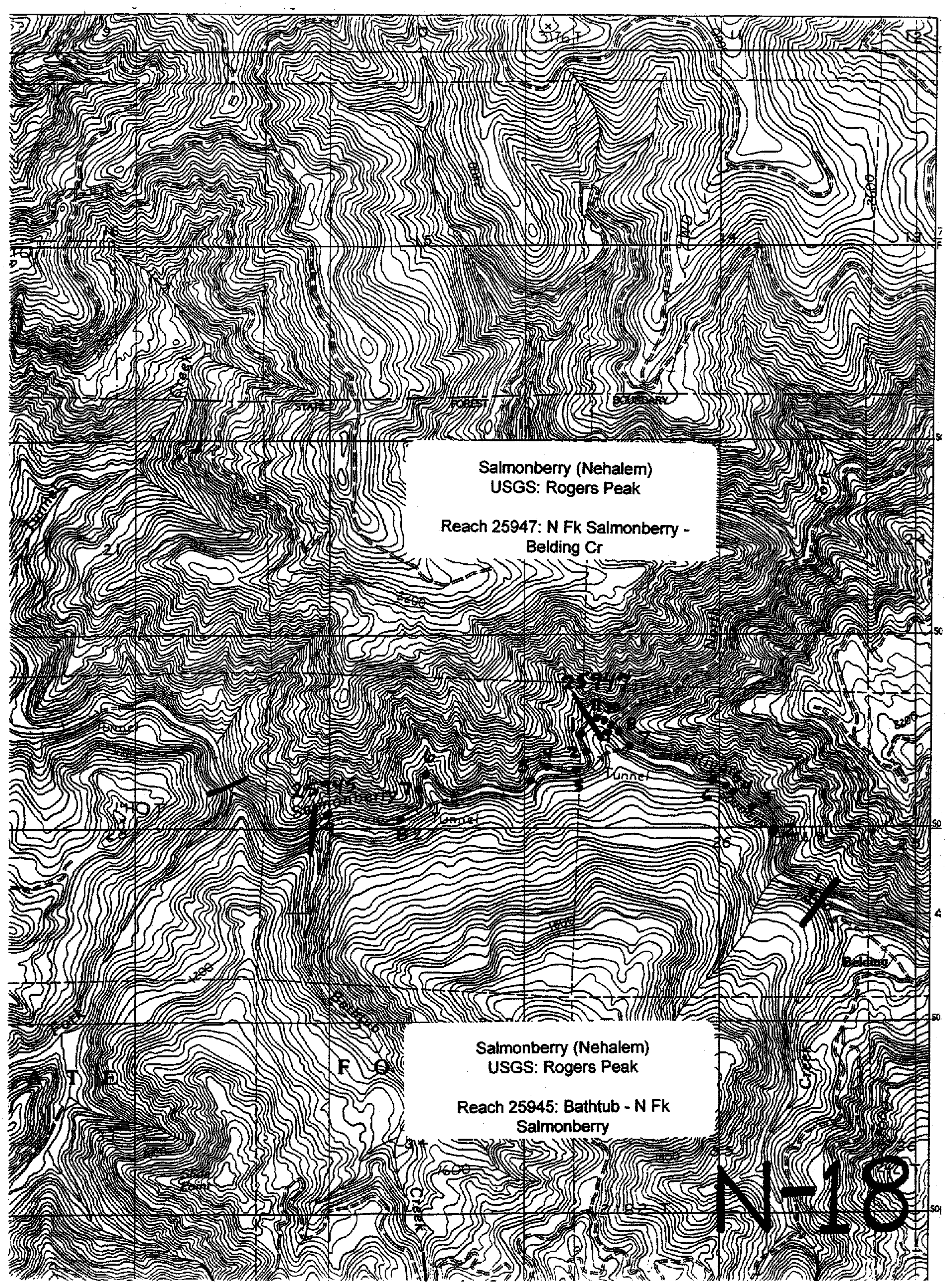
Helloff
Helloff Creek
Creek
Helloff Creek
25921
SOUTHERN
Fost
Creek
Helloff Cr (Nehalem)
USGS: Cook Cr, Hamlet
Reach 25921: Mouth - Headwaters
N-14

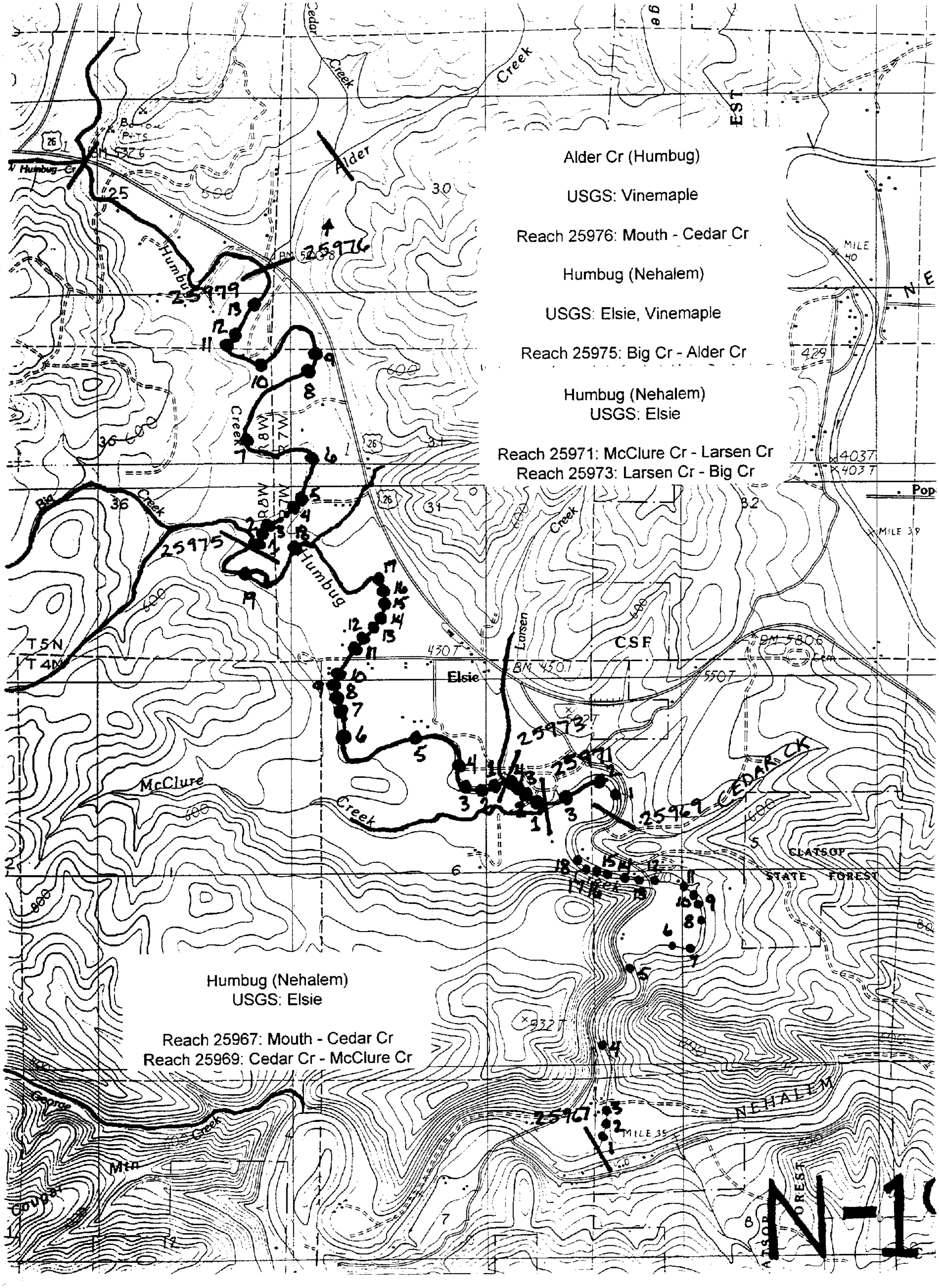

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
25927
25929
25931
25933
Salmonberry
Salmonberry River
Hatchery Creek
Buick Canyon
Belfort
Belfort Cr
Brix Creek
MOUNTAIN
BUCK
Creek
Pinochle Peak
Salmonberry (Nehalem)
USGS: Hamlet, Cook, Rogers Peak
Reach 25927: Mouth - Hatchery Cr
Reach 25929: Hatchery - Buick Canyon
Salmonberry (Nehalem)
USGS: Cook, Rogers Peak
Reach 25931: Buick Canyon - Belfort Cr
N-1

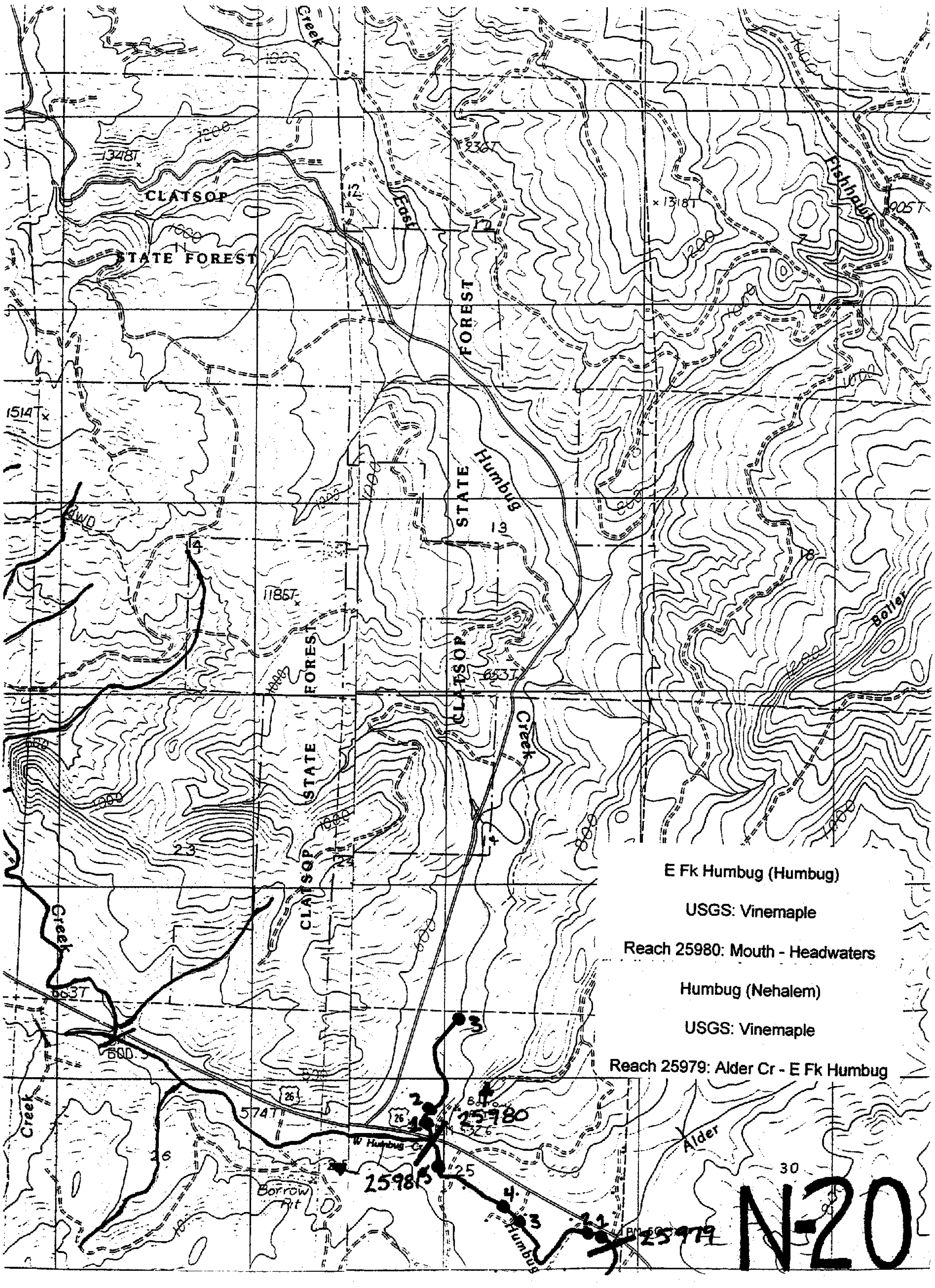
T OF THE INTERIOR
GICAL SURVEY

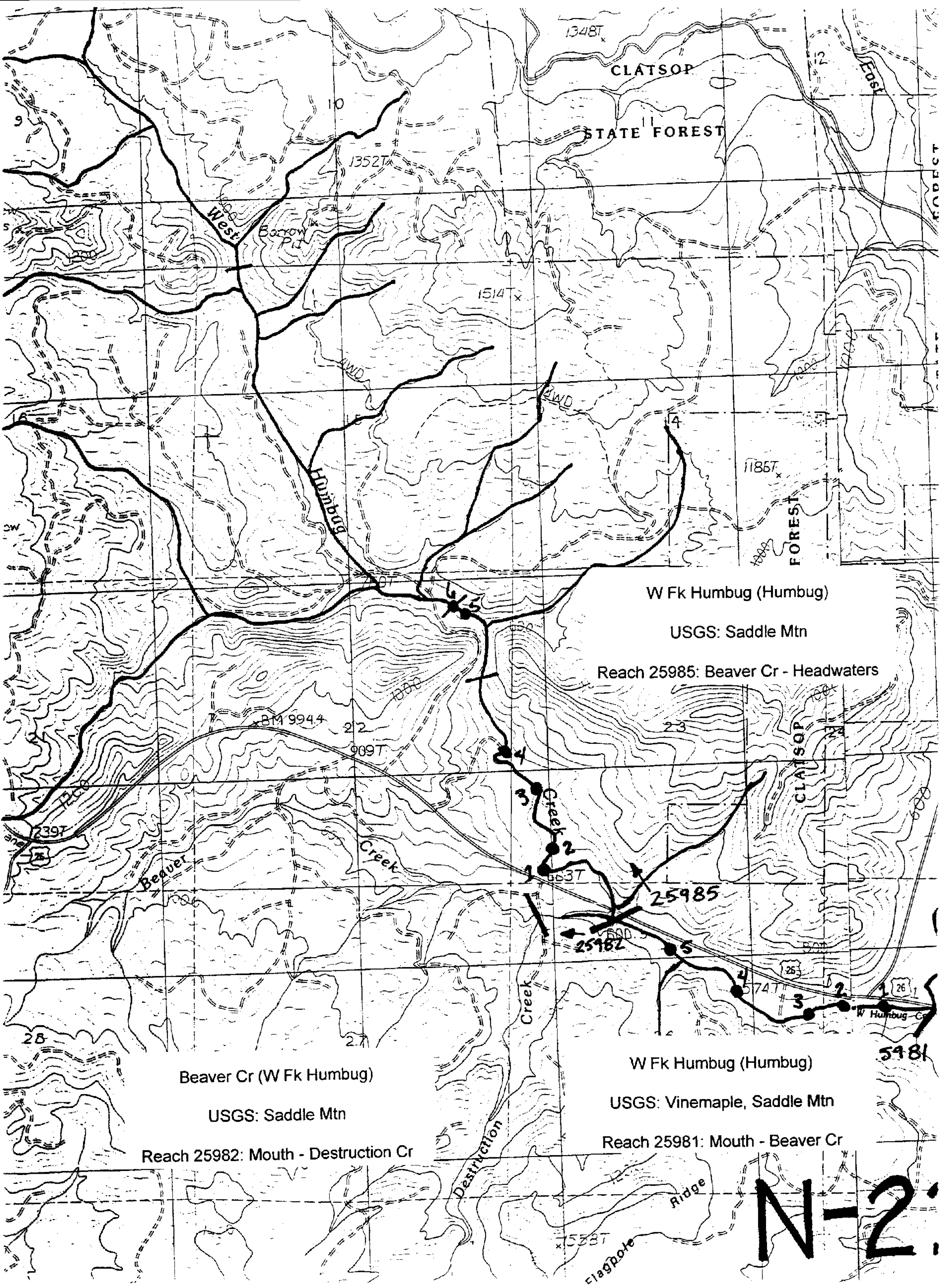


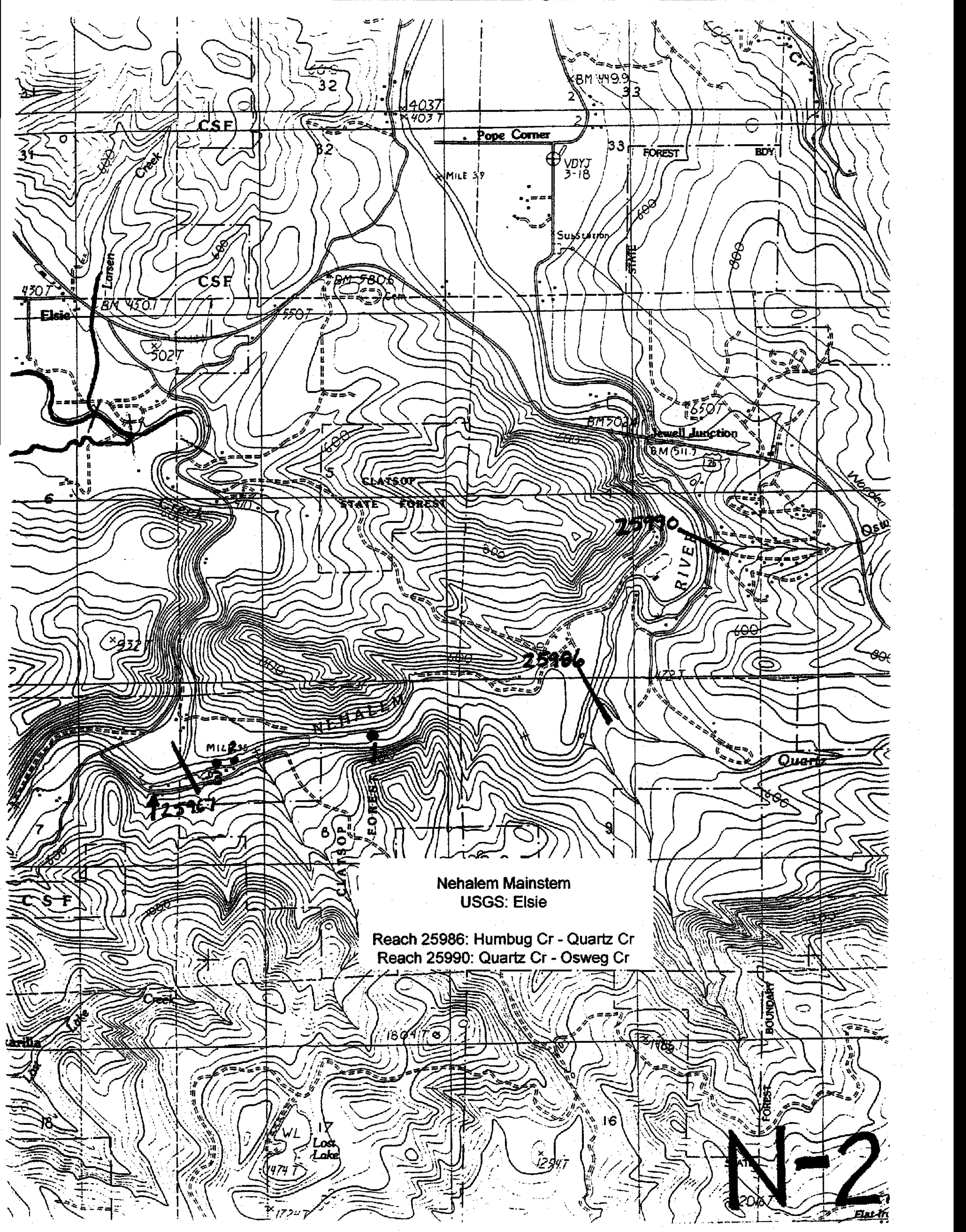

Salmonberry (Nehalem)
USGS: Rogers Peak
Reach 25943: S Fk Salmonberry - Bathtub
Salmonberry (Nehalem)
USGS: Rogers Peak
Reach 25939: Tunnel Cr - S Fk Salmonberry
25939
25943
25945
25947
Tunnel
Creek
Enright (Site)
STATE
FOREST
BOUNDARY
Salmonberry
Bathtub
Red Rock Hill
Slide Point
South
Fork
S T A T E
F O R E S T
N-1

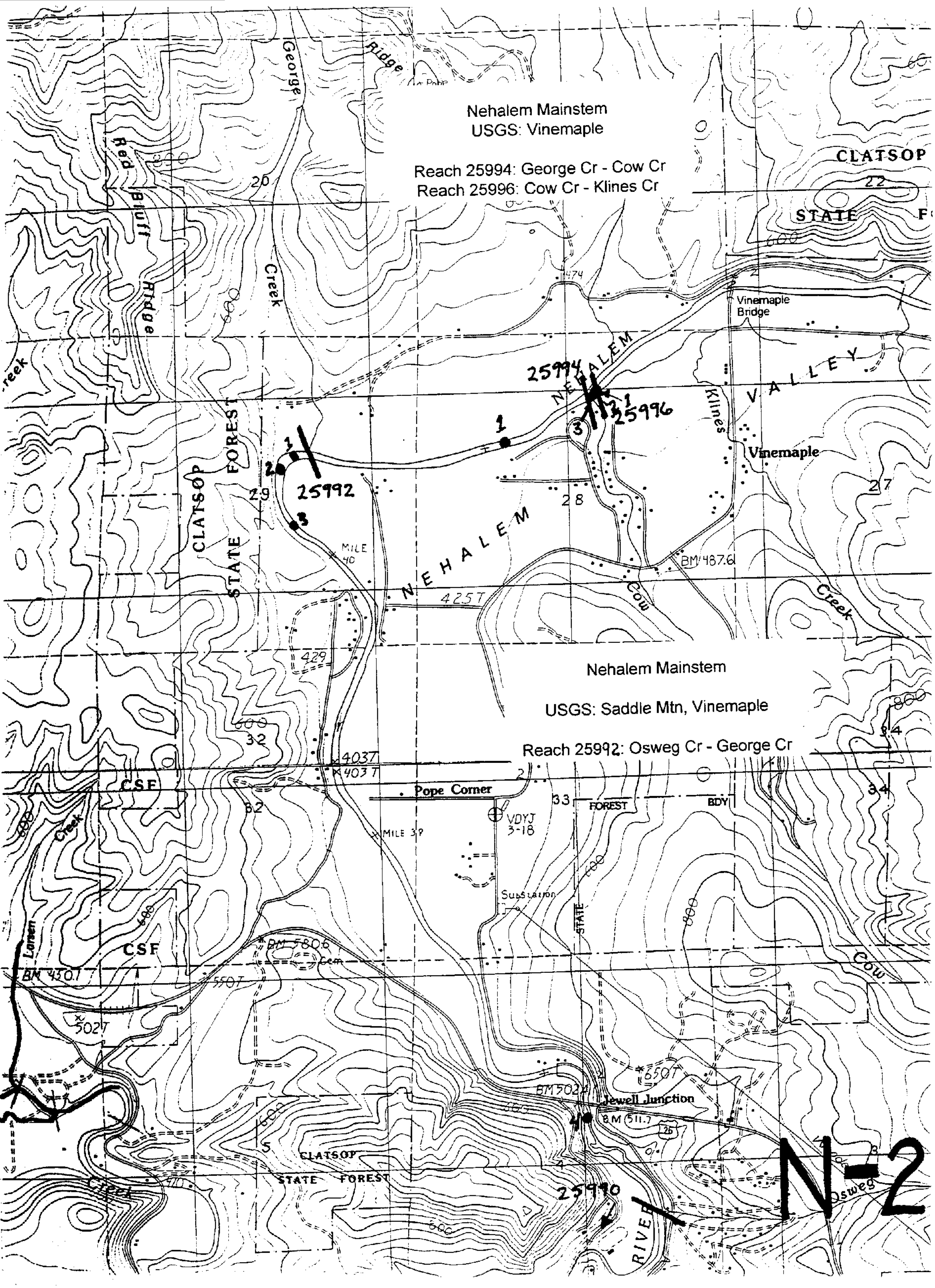

Salmonberry (Nehalem)
USGS: Rogers Peak
Reach 25947: N Fk Salmonberry - Belding Cr
Salmonberry (Nehalem)
USGS: Rogers Peak
Reach 25945: Bathtub - N Fk Salmonberry
STATE
FOREST
BOUNDARY
Tunnel
Belding
Creek
N-18

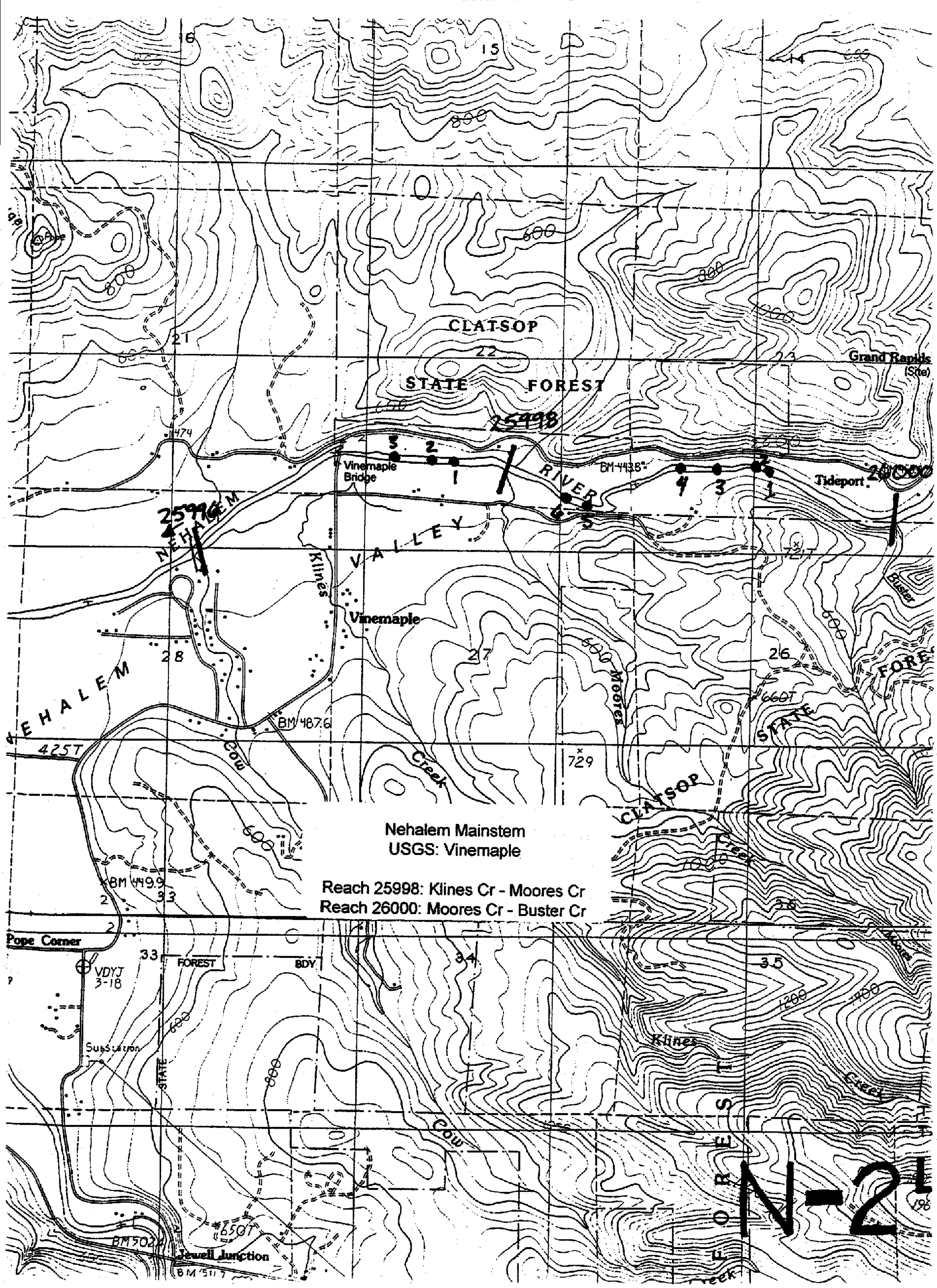

Alder Cr (Humbug)
USGS: Vinemaple
Reach 25976: Mouth - Cedar Cr
Humbug (Nehalem)
USGS: Elsie, Vinemaple
Reach 25975: Big Cr - Alder Cr
Humbug (Nehalem)
USGS: Elsie
Reach 25971: McClure Cr - Larsen Cr
Reach 25973: Larsen Cr - Big Cr
Humbug (Nehalem)
USGS: Elsie
Reach 25967: Mouth - Cedar Cr
Reach 25969: Cedar Cr - McClure Cr
Cedar Creek
Creek
Alder
Humbug Cr
Humbug Creek
Humbug
Big Creek
Larsen
McClure Creek
Elsie
CSF
CEDAR CK
CLATSOP STATE FOREST
NEHALEM
George Creek
Cougar Mtn
T5N
T4N
25976
25979
25975
25973
25971
25969
25967
MILE 40
MILE 39
MILE 35


E Fk Humbug (Humbug)
USGS: Vinemaple
Reach 25980: Mouth - Headwaters
Humbug (Nehalem)
USGS: Vinemaple
Reach 25979: Alder Cr - E Fk Humbug
CLATSOP STATE FOREST
CLATSOP STATE FOREST
CLATSOP STATE FOREST
CLATSOP STATE FOREST
East
Fishhawk
Humbug
Creek
Creek
Creek
Boiler
Alder
Humbug
Borrow Pit
W Humbug Cr
25980
25981
25979
N-20

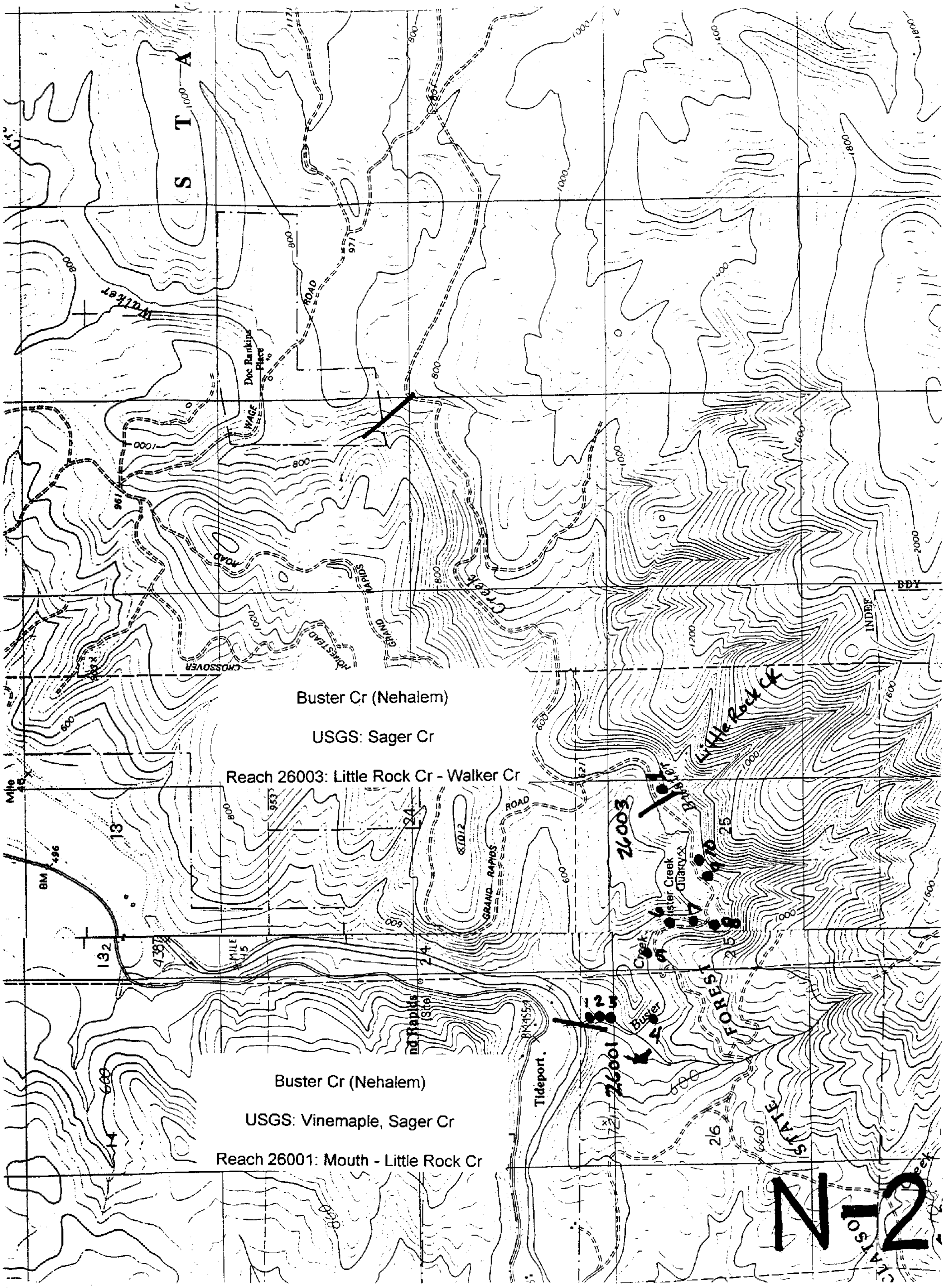

W Fk Humbug (Humbug)
USGS: Saddle Mtn
Reach 25985: Beaver Cr - Headwaters
Beaver Cr (W Fk Humbug)
USGS: Saddle Mtn
Reach 25982: Mouth - Destruction Cr
W Fk Humbug (Humbug)
USGS: Vinemaple, Saddle Mtn
Reach 25981: Mouth - Beaver Cr
CLATSOP
STATE FOREST
West
Humbug
Borrow Pit
Beaver
Creek
Destruction Creek
Flagpole
Ridge
25985
25982
5981
N-2


Nehalem Mainstem
USGS: Elsie
Reach 25986: Humbug Cr - Quartz Cr
Reach 25990: Quartz Cr - Osweg Cr
N-2
Pope Corner
Jewell Junction
Elsie
CSF
CLATSOP
STATE FOREST
NEHALEM
RIVER
Larsen
Creek
Quartz
Lost Lake
Substation
FOREST
BDY
BOUNDARY
25990
25986
25967


Nehalem Mainstem
USGS: Vinemaple
Reach 25994: George Cr - Cow Cr
Reach 25996: Cow Cr - Klines Cr
Nehalem Mainstem
USGS: Saddle Mtn, Vinemaple
Reach 25992: Osweg Cr - George Cr
25994
25996
25992
25990
N-2
NEHALEM
VALLEY
Vinemaple Bridge
Vinemaple
Klines
Cow Creek
George Creek
Red Bluff Ridge
CLATSOP STATE FOREST
Pope Corner
Jewell Junction
Osweg
RIVER
CSF
Substation



Nehalem Mainstem
USGS: Vinemaple
Reach 25998: Klines Cr - Moores Cr
Reach 26000: Moores Cr - Buster Cr
CLATSOP
STATE FOREST
25998
26000
25996
Vinemaple Bridge
RIVER
NEHALEM
VALLEY
Klines
Vinemaple
Tideport
Grand Rapids (Site)
Moores
Buster
Cow
Creek
Pope Corner
Jewell Junction
Substation
FOREST BDY
N-2



Buster Cr (Nehalem)

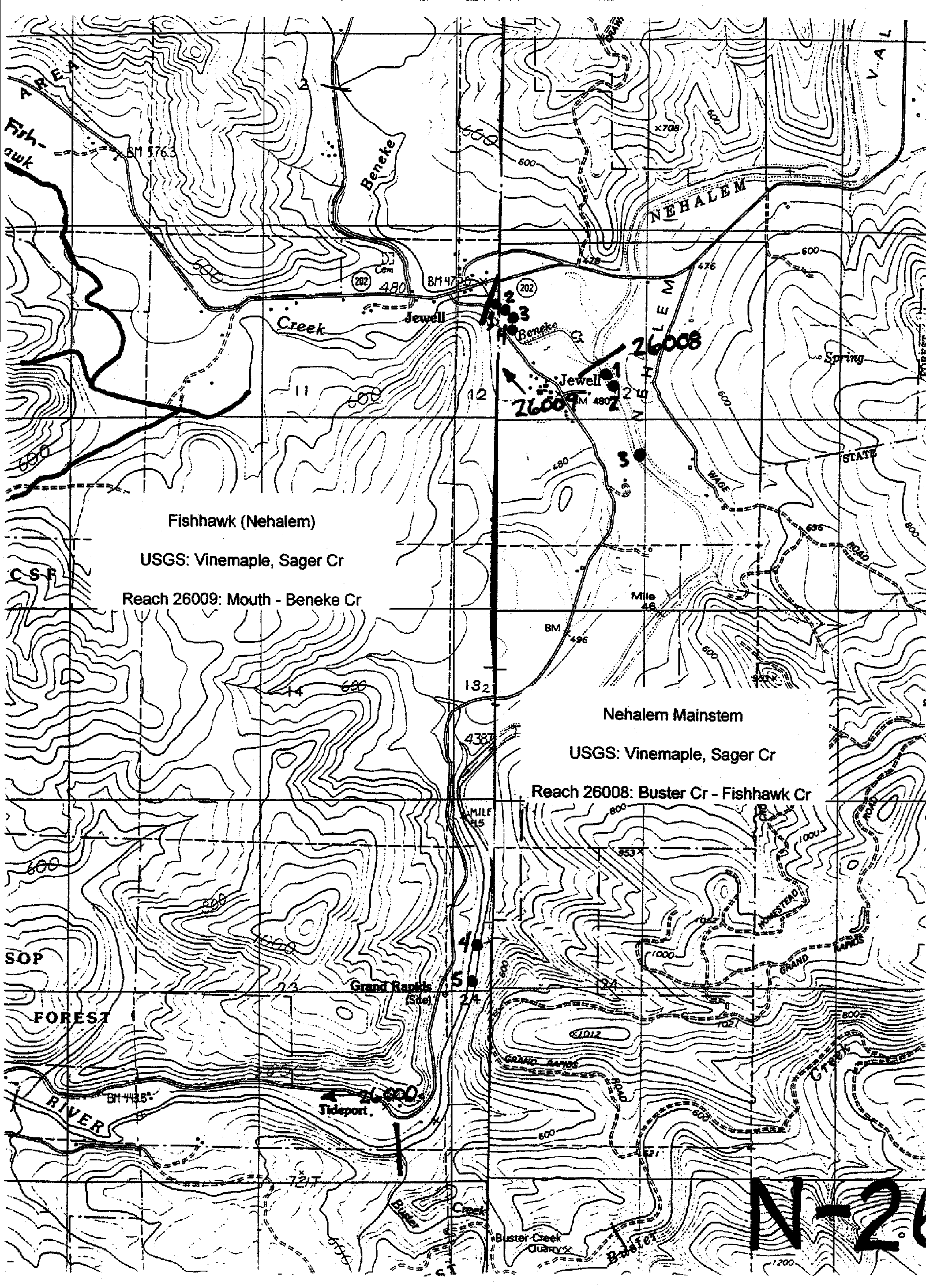
USGS: Sager Cr

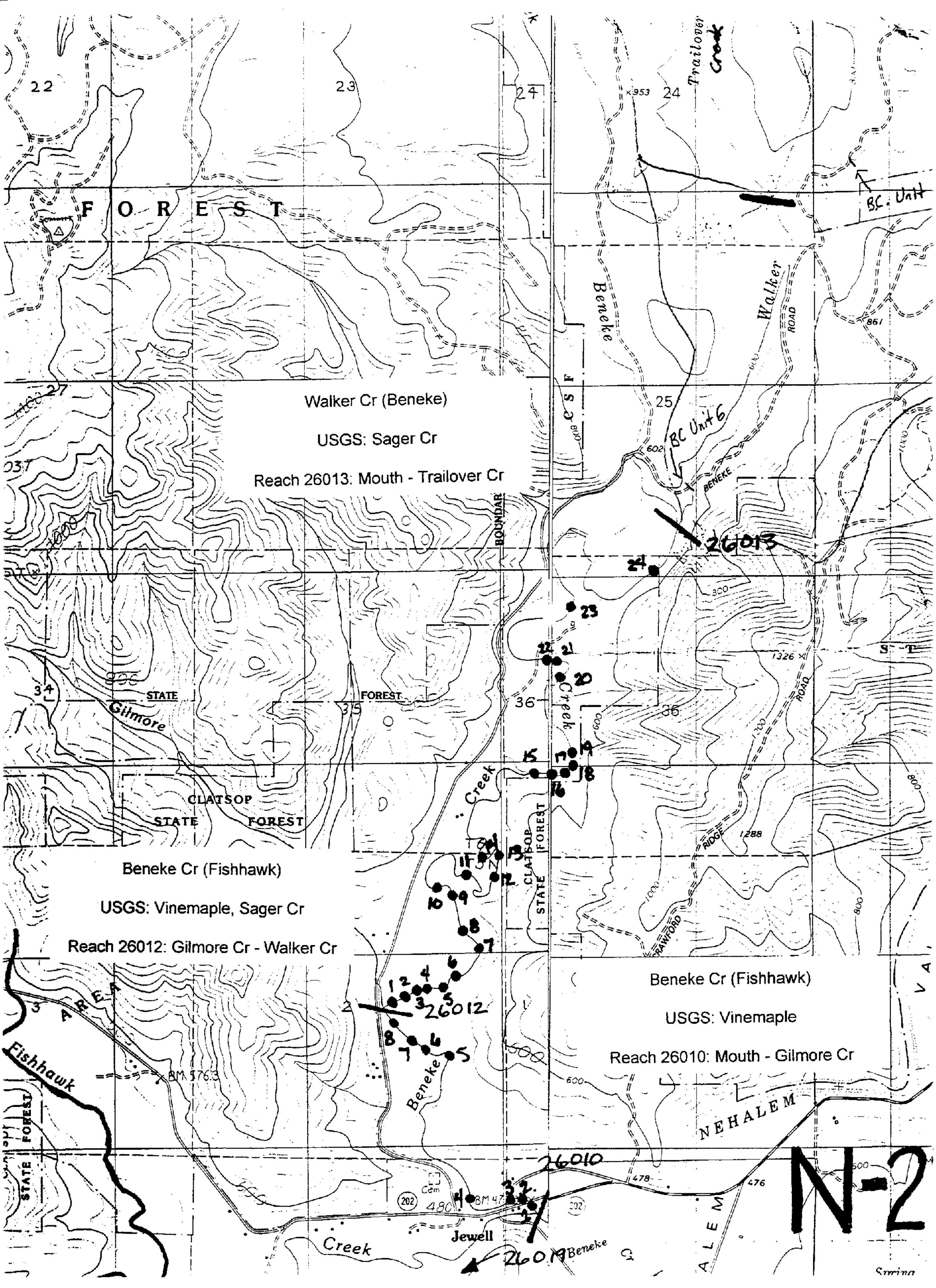
Reach 26003: Little Rock Cr - Walker Cr

Buster Cr (Nehalem)

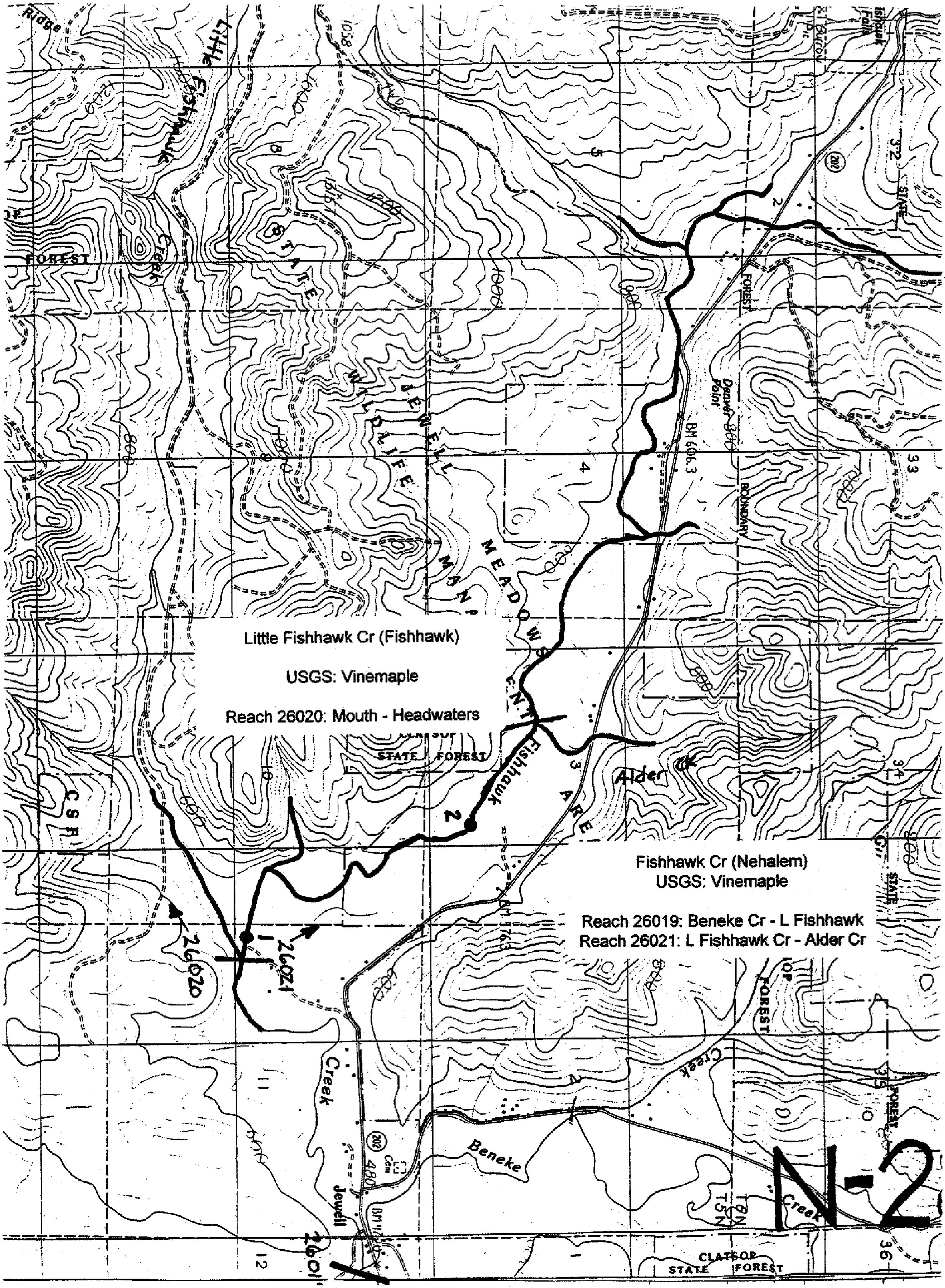
USGS: Vinemaple, Sager Cr

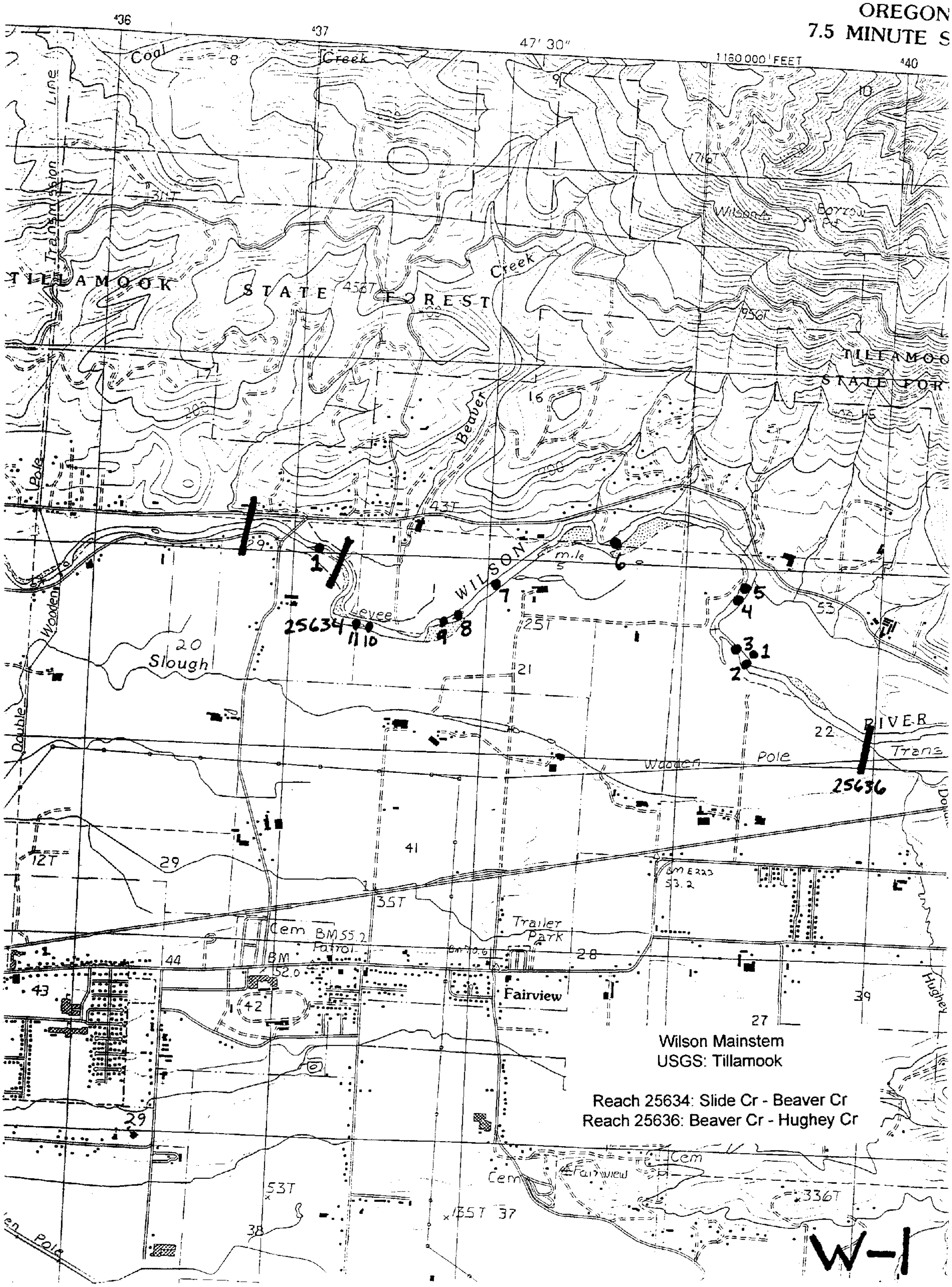
Reach 26001: Mouth - Little Rock Cr

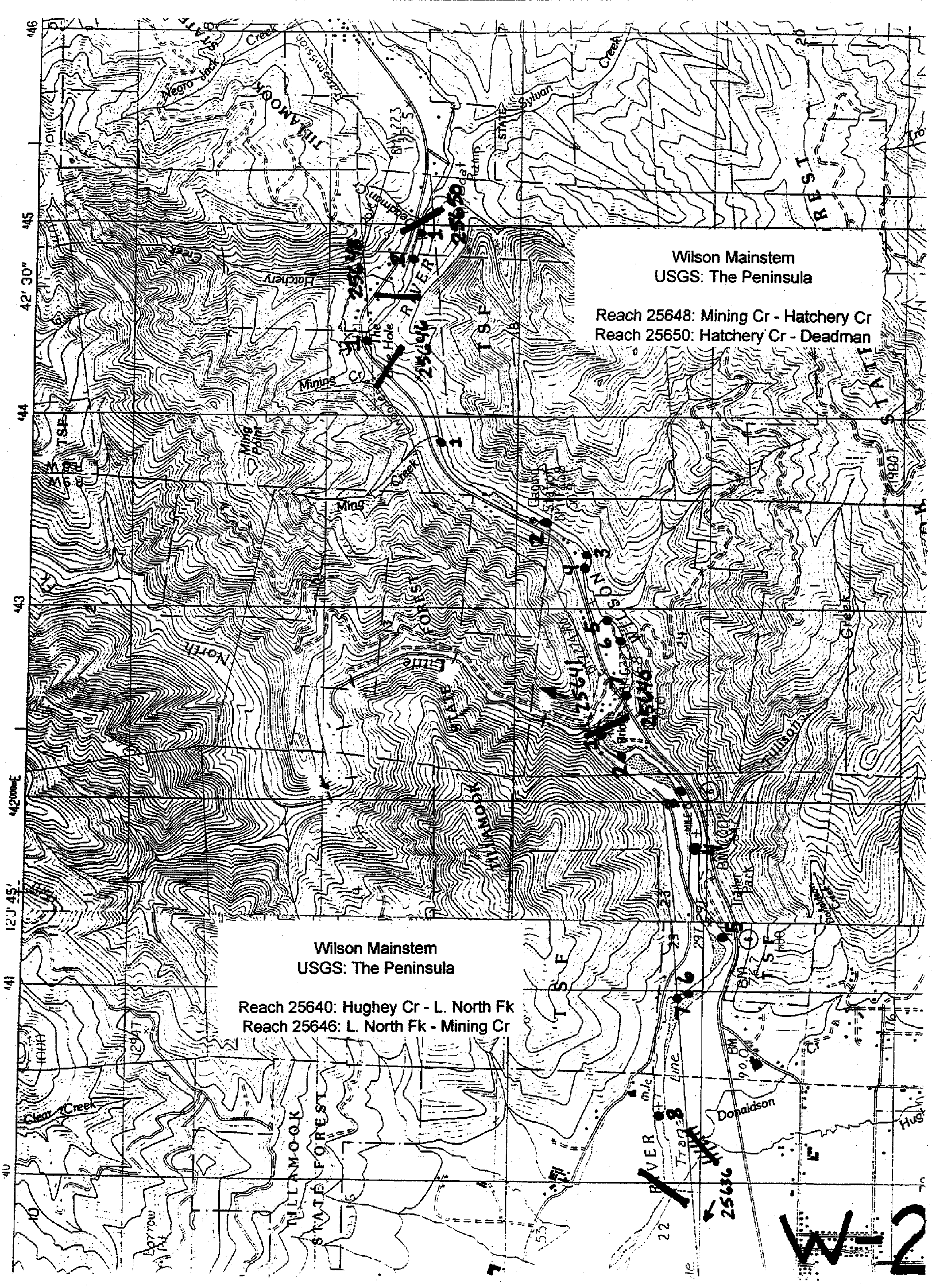

Fishhawk (Nehalem)
USGS: Vinemaple, Sager Cr
Reach 26009: Mouth - Beneke Cr
Nehalem Mainstem
USGS: Vinemaple, Sager Cr
Reach 26008: Buster Cr - Fishhawk Cr
26008
26009
Jewell
Grand Rapids (Site)
Tideport
Beneke Cr
Buster Creek Quarry
NEHALEM
N-2

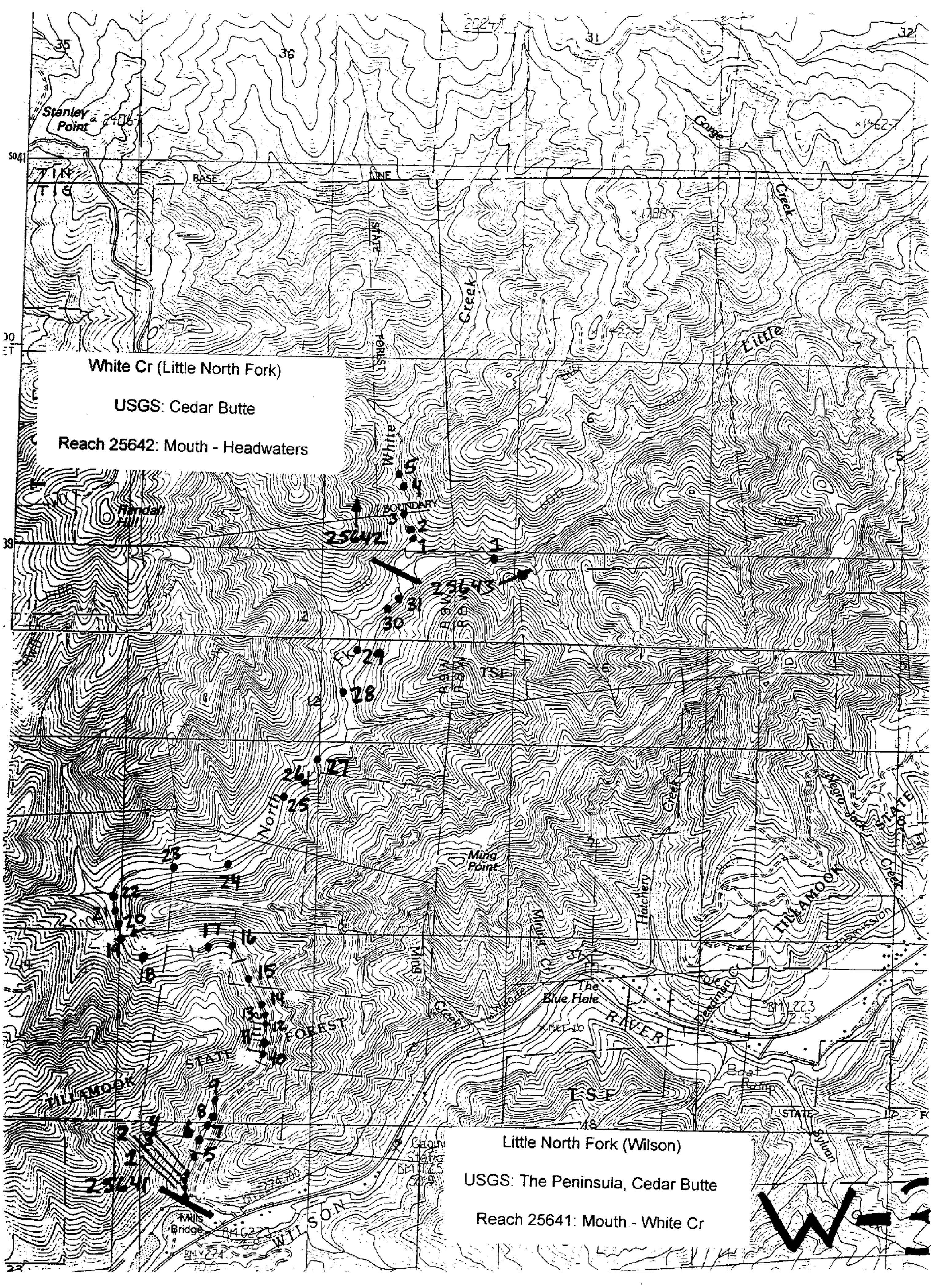


Walker Cr (Beneke)
USGS: Sager Cr
Reach 26013: Mouth - Trailover Cr
Beneke Cr (Fishhawk)
USGS: Vinemaple, Sager Cr
Reach 26012: Gilmore Cr - Walker Cr
Beneke Cr (Fishhawk)
USGS: Vinemaple
Reach 26010: Mouth - Gilmore Cr
26013
26012
26010
BC Unit 6
BC. Unit
Trailover Creek
N-2
FOREST
CLATSOP STATE FOREST
STATE FOREST
Gilmore
Beneke
Walker
Creek
Fishhawk
NEHALEM
Jewell
BOUNDARY
RIDGE
ROAD
CRAWFORD


Little Fishhawk Cr (Fishhawk)
USGS: Vinemaple
Reach 26020: Mouth - Headwaters
Fishhawk Cr (Nehalem)
USGS: Vinemaple
Reach 26019: Beneke Cr - L Fishhawk
Reach 26021: L Fishhawk Cr - Alder Cr
Little Fishhawk Creek
Fishhawk
Alder Ck
Beneke Creek
Creek
Jewell
26020
26021
26019
STATE FOREST
CLATSOP STATE FOREST
JEWELL MEADOWS WILDLIFE MANAGEMENT AREA
Denver Point
BOUNDARY
N-2


OREGON
7.5 MINUTE S
Coal Creek
47' 30"
1 160 000 FEET
Transmission Line
TILLAMOOK STATE FOREST
Creek
Beaver
WILSON
RIVER
Levee
Slough
25634
25636
Wooden Pole
Trans
Double
Trailer Park
Cem
Fairview
Hughey
Wilson Mainstem
USGS: Tillamook
Reach 25634: Slide Cr - Beaver Cr
Reach 25636: Beaver Cr - Hughey Cr
W-1


Wilson Mainstem
USGS: The Peninsula
Reach 25648: Mining Cr - Hatchery Cr
Reach 25650: Hatchery Cr - Deadman
Wilson Mainstem
USGS: The Peninsula
Reach 25640: Hughey Cr - L. North Fk
Reach 25646: L. North Fk - Mining Cr
W-2
Mining Cr
Hatchery
Sylvan
Creek
Donaldson
Clear Creek
North
Little
TILLAMOOK
STATE FOREST
RIVER
Trailer Park
Tram line



White Cr (Little North Fork)

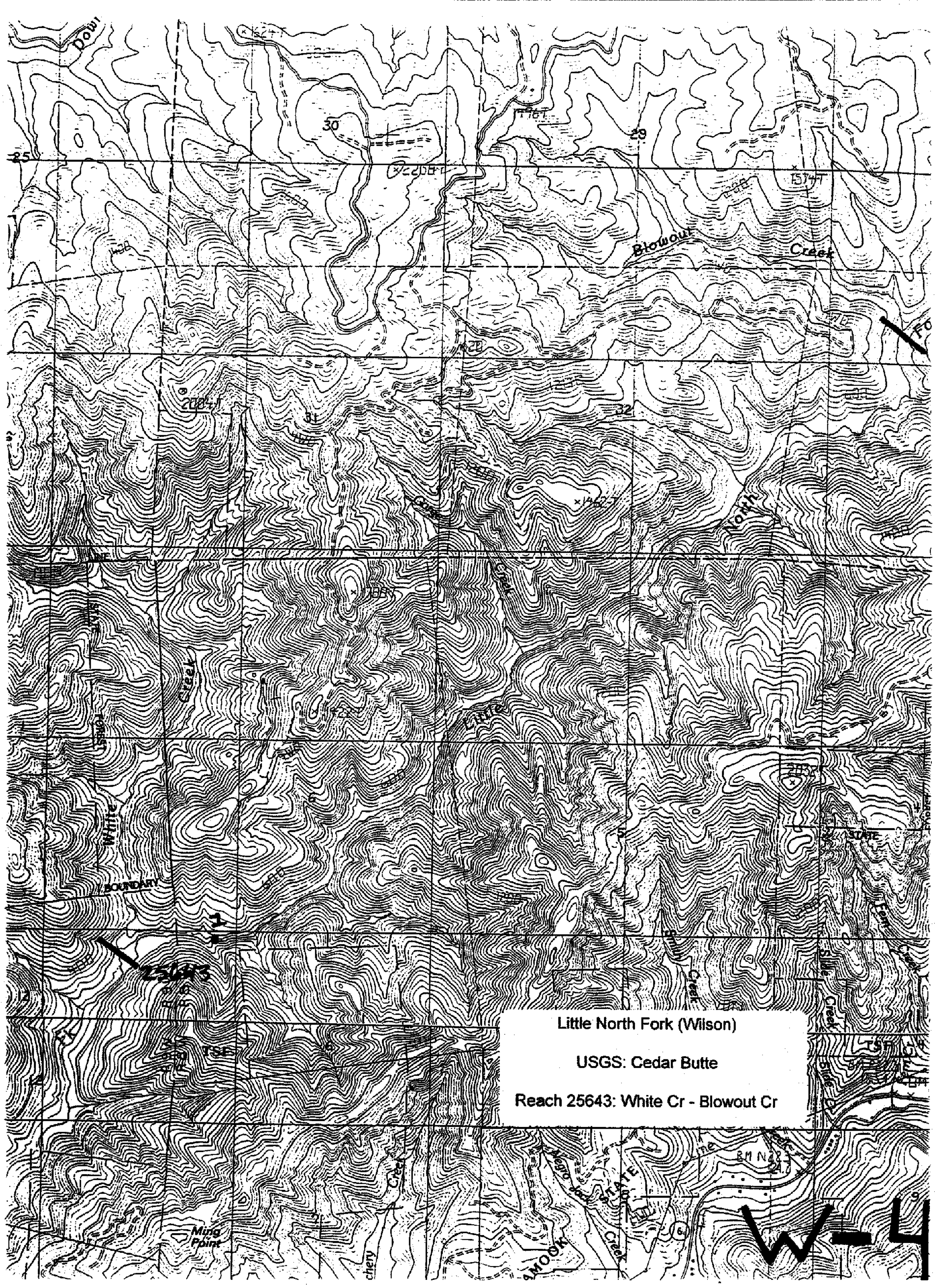
USGS: Cedar Butte

Reach 25642: Mouth - Headwaters

Little North Fork (Wilson)

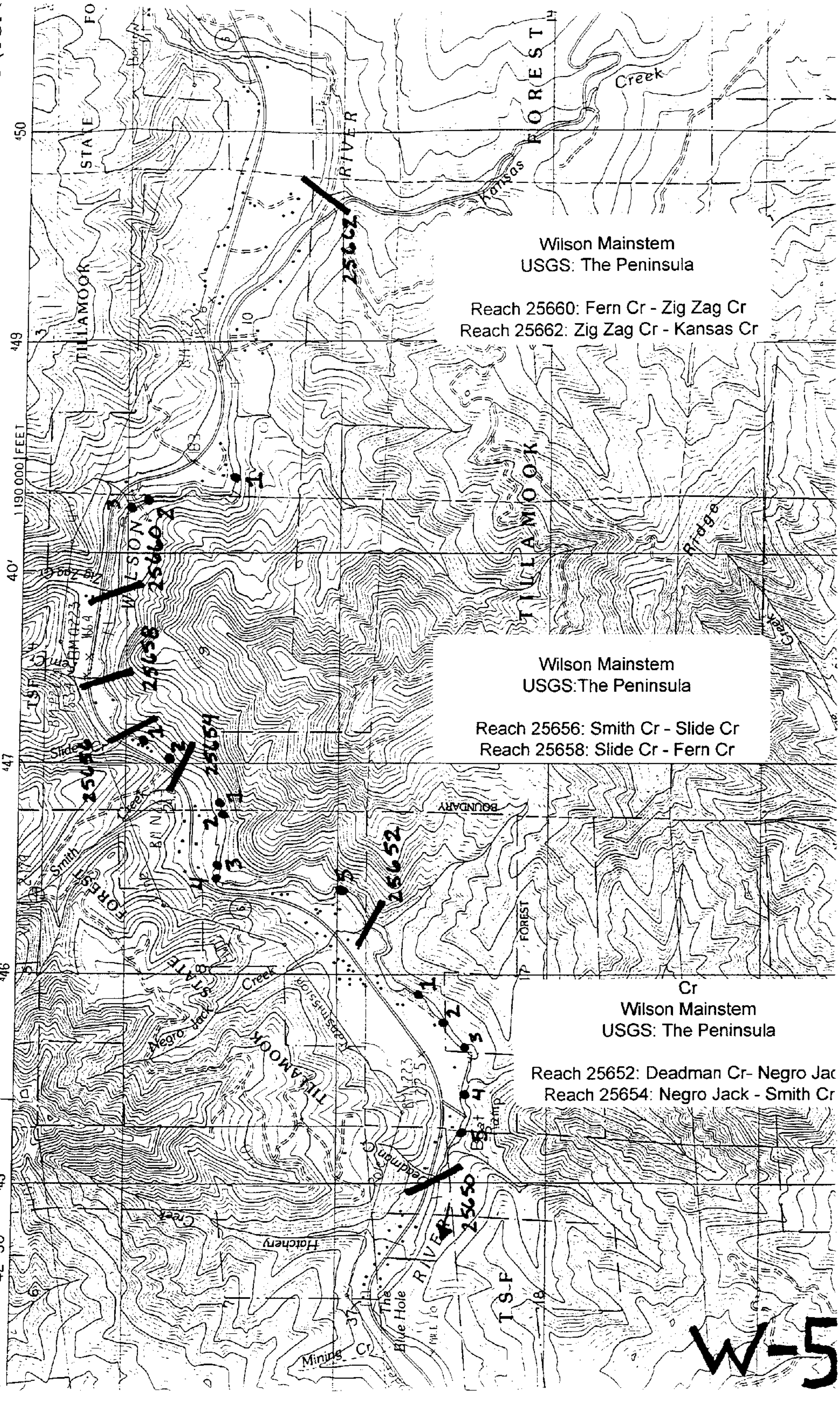
USGS: The Peninsula, Cedar Butte

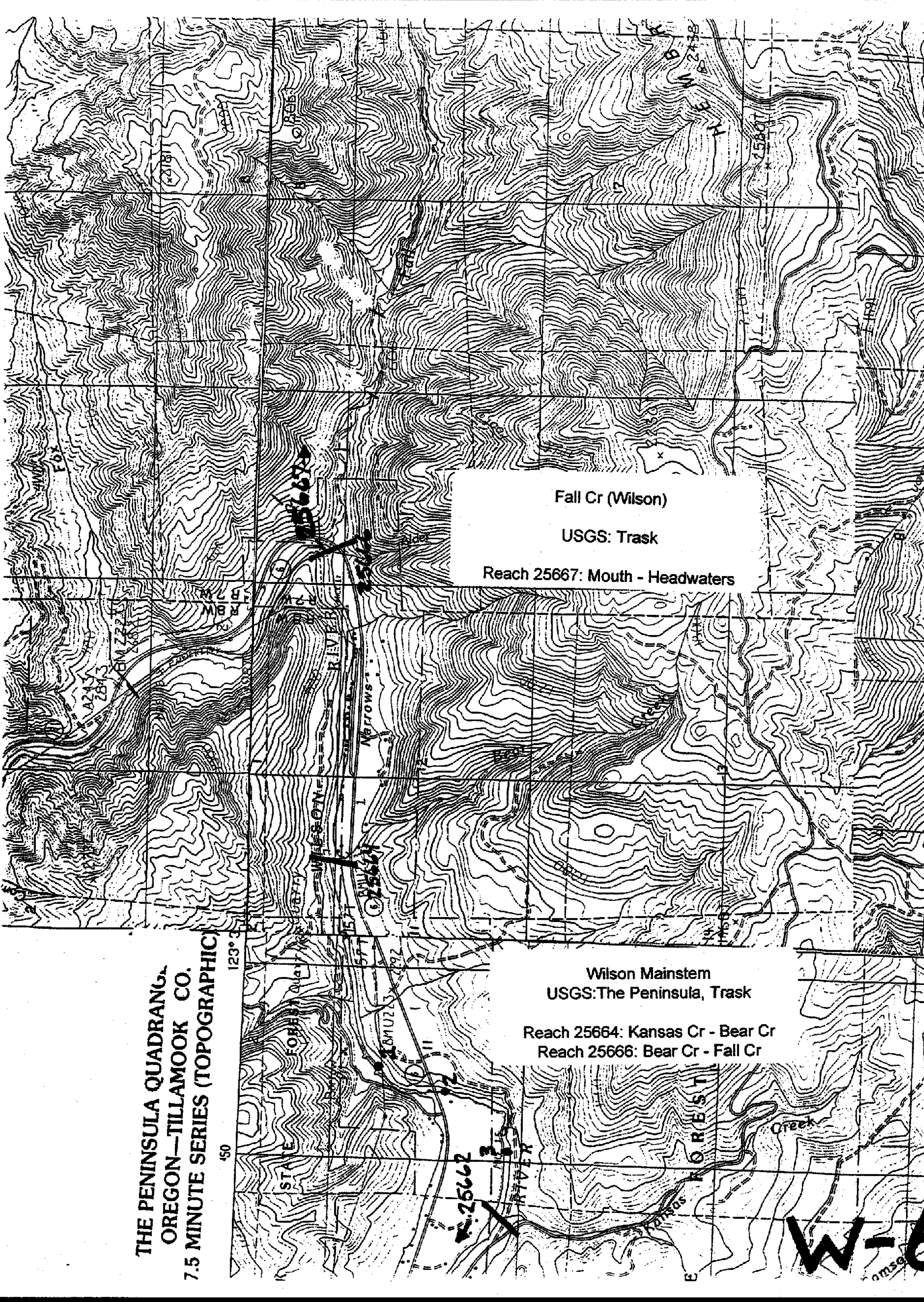
Reach 25641: Mouth - White Cr



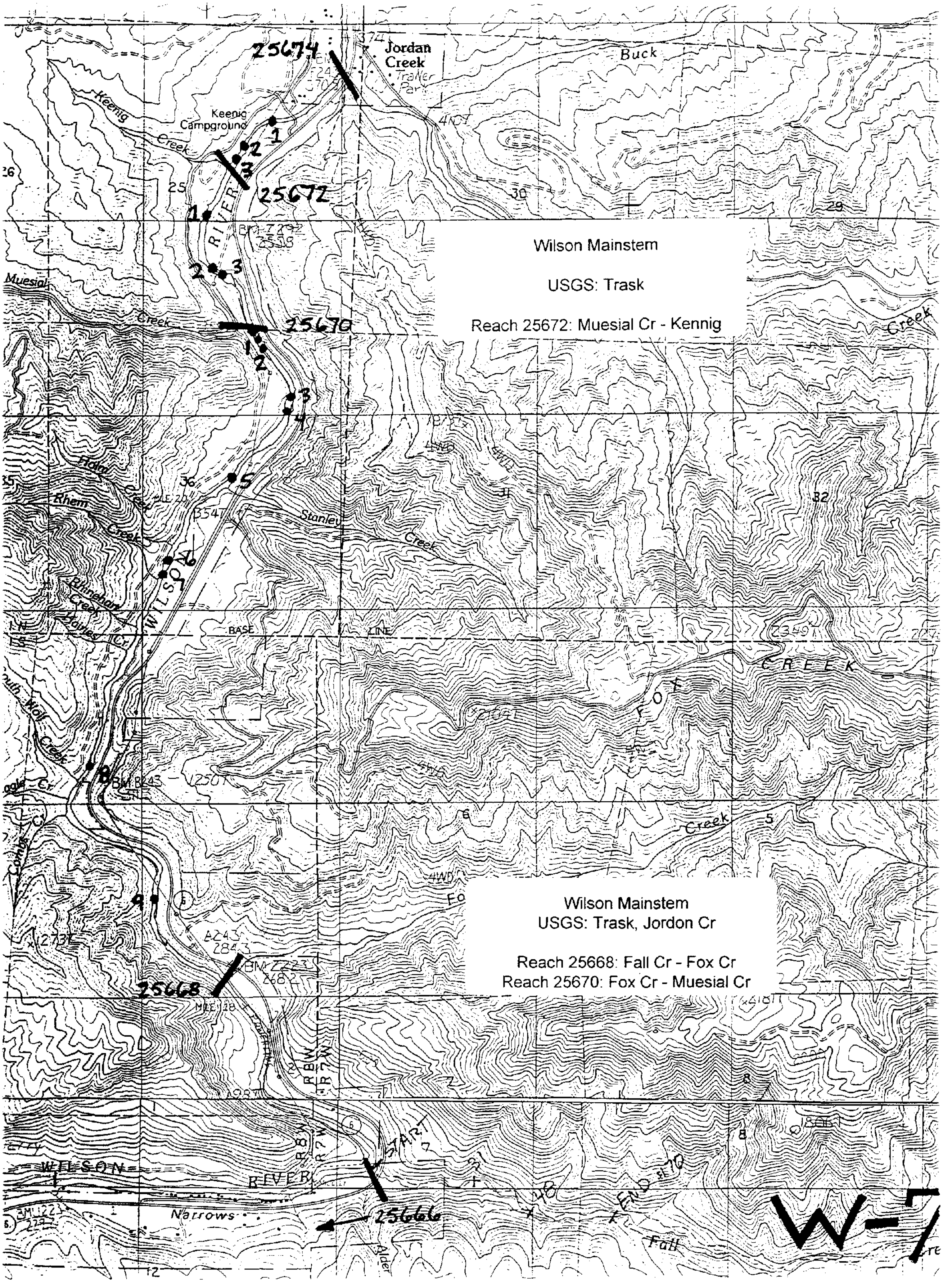
Blowout
Creek
White
Creek
North
Little
BOUNDARY
STATE
25643
Ming
Point
Little North Fork (Wilson)
USGS: Cedar Butte
Reach 25643: White Cr - Blowout Cr
W-4

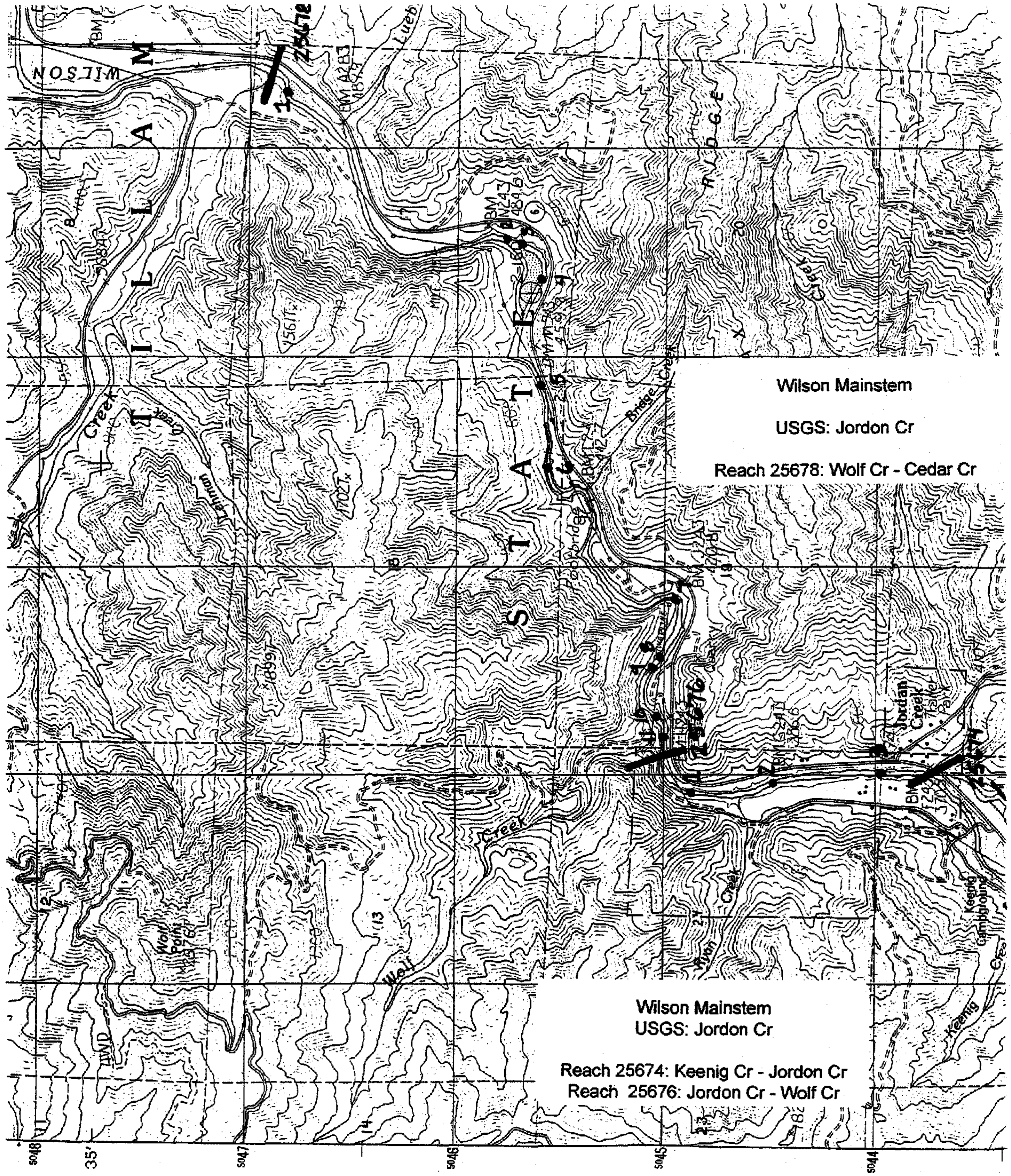
THE PENINSULA QUAD
OREGON—TILLAMOO
7.5 MINUTE SERIES (TOPO



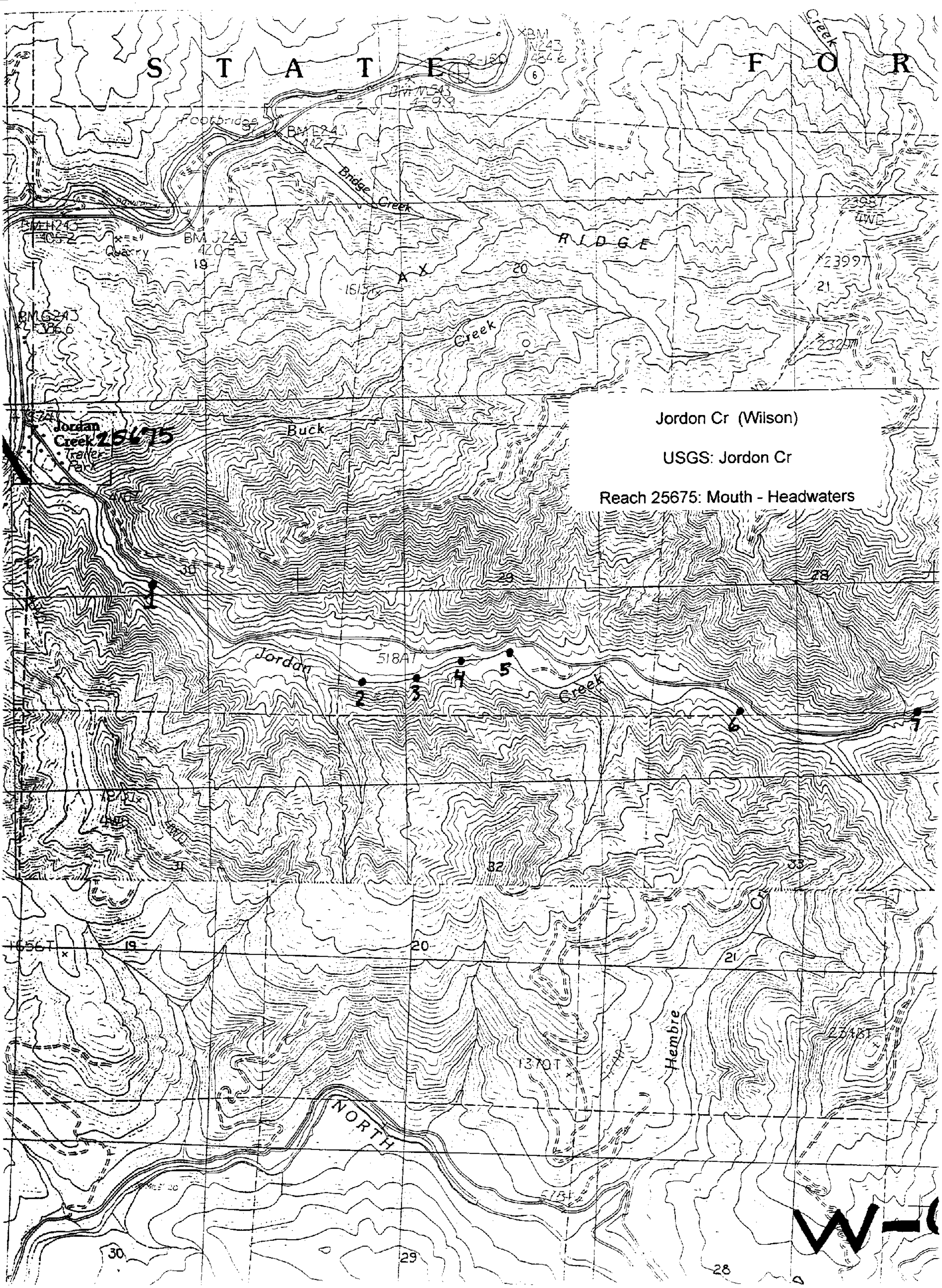


Fall Cr (Wilson)
USGS: Trask
Reach 25667: Mouth - Headwaters
Wilson Mainstem
USGS:The Peninsula, Trask
Reach 25664: Kansas Cr - Bear Cr
Reach 25666: Bear Cr - Fall Cr
25667
25666
25664
25662
WILSON
RIVER
Narrows
Creek
STATE FOREST
THE PENINSULA QUADRANG.
OREGON—TILLAMOOK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
W-6

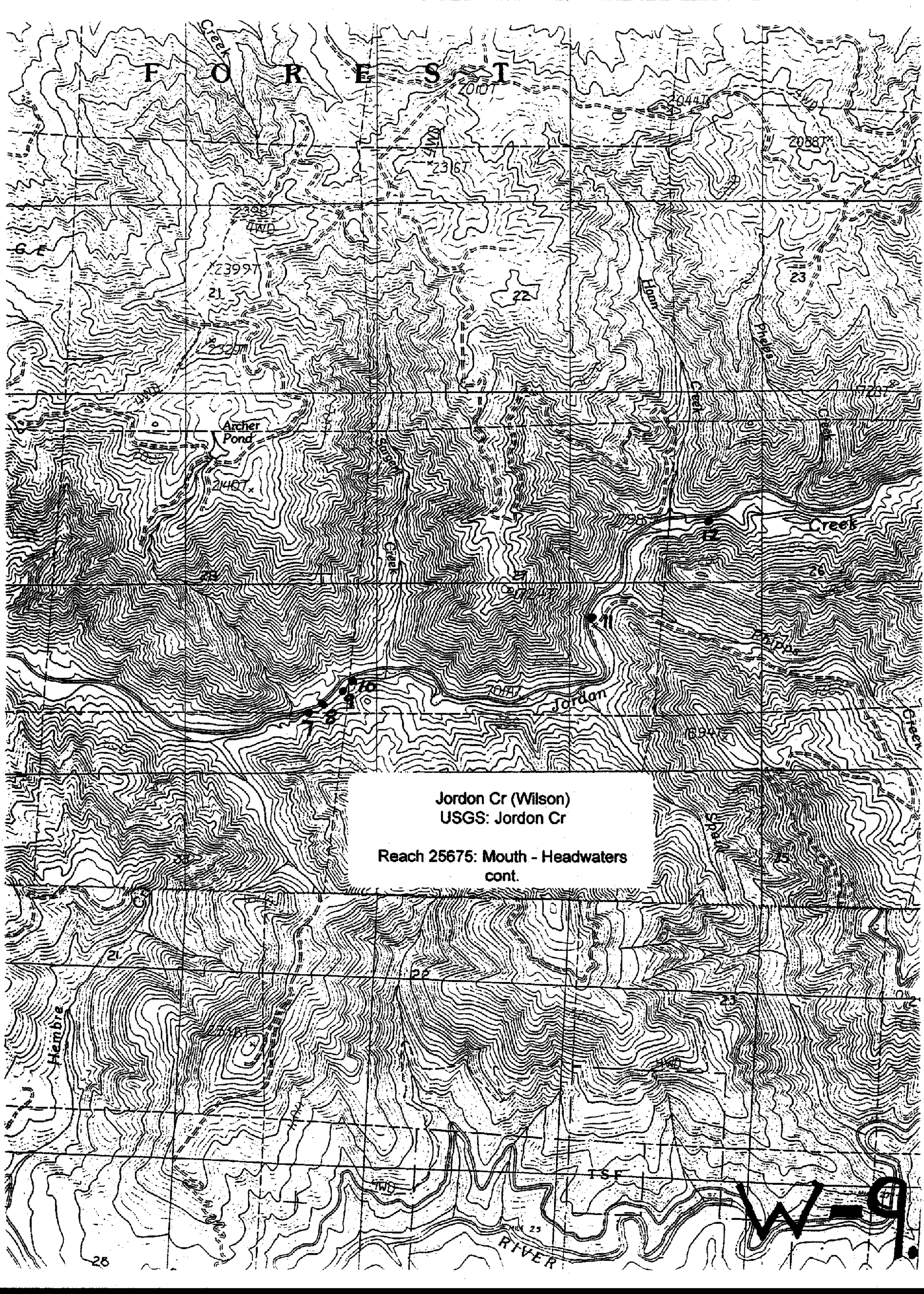

Wilson Mainstem
USGS: Trask
Reach 25672: Muesial Cr - Kennig
Wilson Mainstem
USGS: Trask, Jordon Cr
Reach 25668: Fall Cr - Fox Cr
Reach 25670: Fox Cr - Muesial Cr
25674
25672
25670
25668
25666
Jordan Creek
Keenig Campground
Keenig Creek
Muesial Creek
Buck
Stanley Creek
Rhem Creek
Holm Creek
FOX CREEK
WILSON RIVER
Narrows
Fall
BASE LINE
START
END
W-7

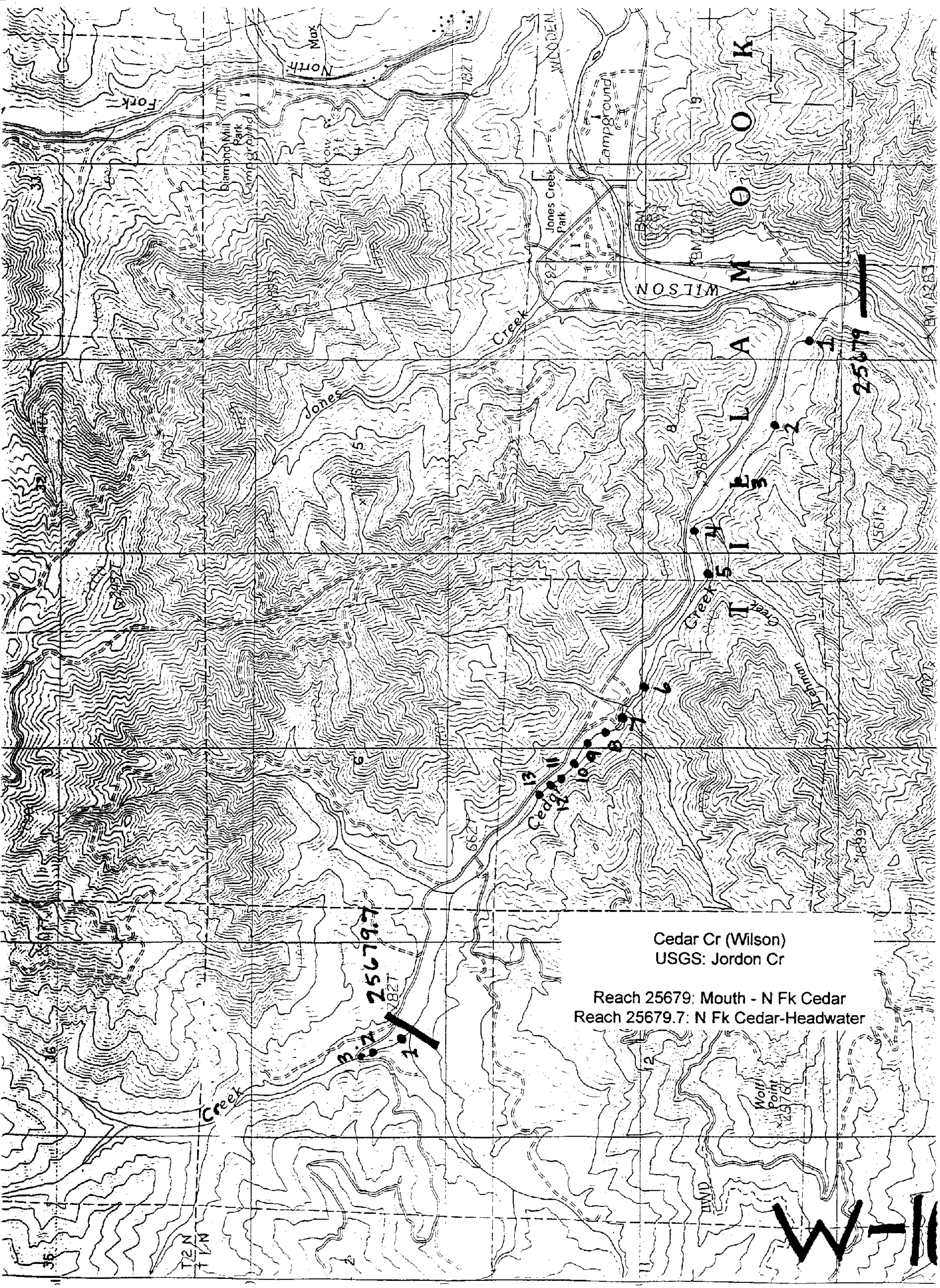

Wilson Mainstem
USGS: Jordon Cr
Reach 25678: Wolf Cr - Cedar Cr
Wilson Mainstem
USGS: Jordon Cr
Reach 25674: Keenig Cr - Jordon Cr
Reach 25676: Jordon Cr - Wolf Cr
WILSON
Jordan Creek Trailer Park
Keenig Campground

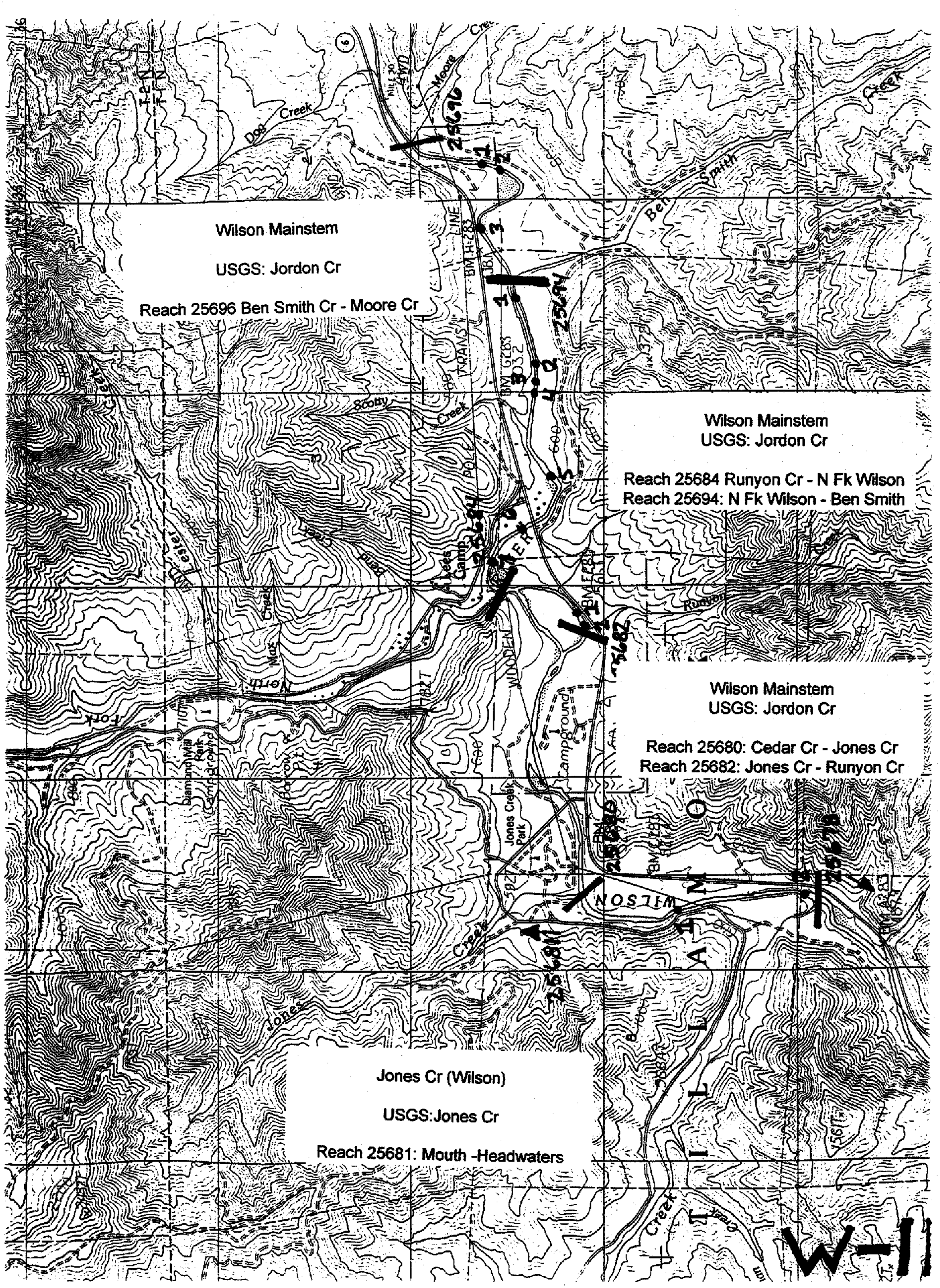
W-1

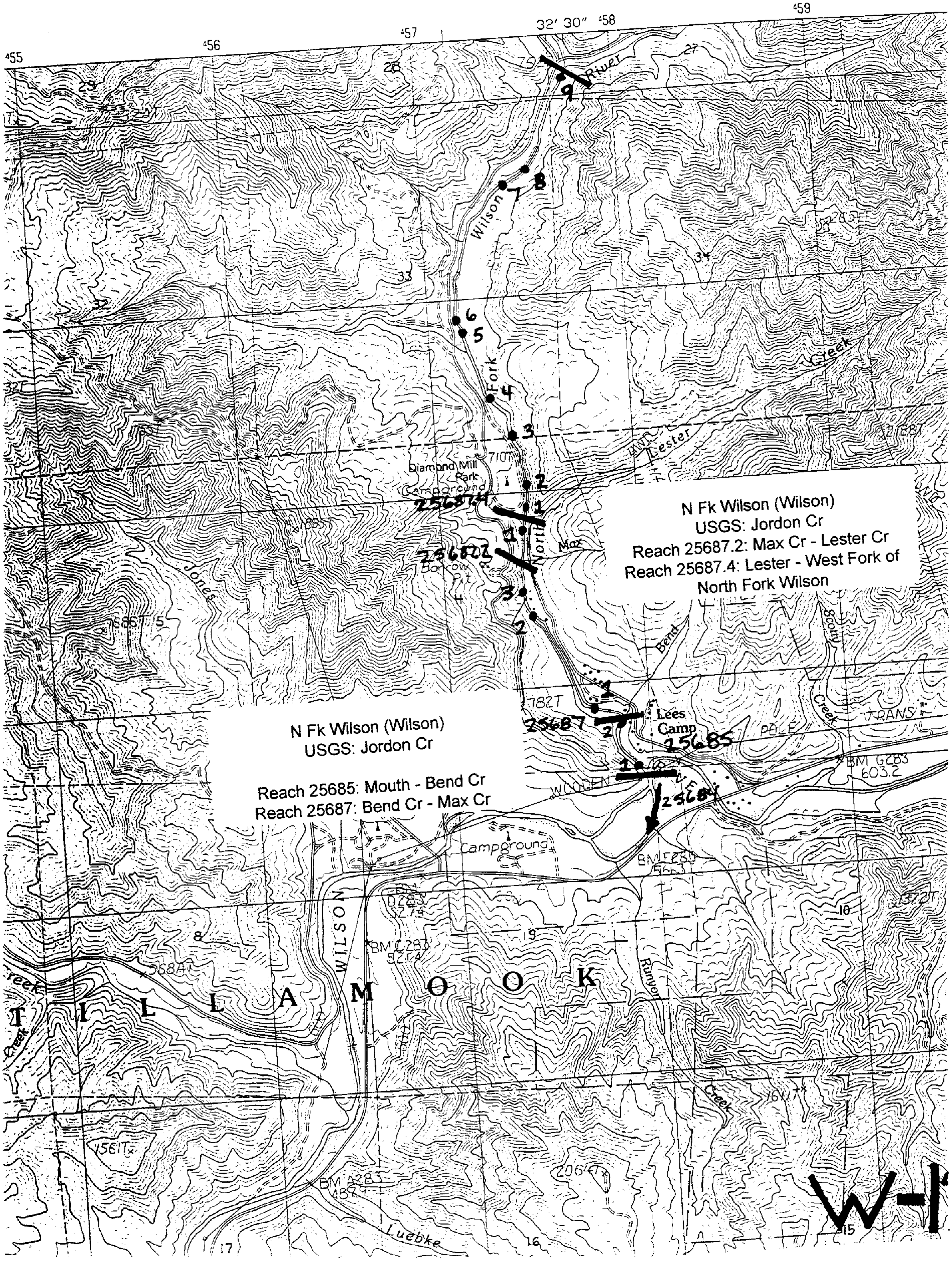


Jordon Cr (Wilson)
USGS: Jordon Cr
Reach 25675: Mouth - Headwaters
S T A T E F O R
Jordan Creek 25675
Trailer Park
Jordan
Creek
Buck
Creek
RIDGE
Bridge Creek
Footbridge
Quarry
BM J243
BM G243
BM H243
518A T
1 2 3 4 5 6 7
19 20 21 30 29 28 31 32 33 19 20 21 30 29 28
Hembre
NORTH
1370T
1656T
4WD
W-

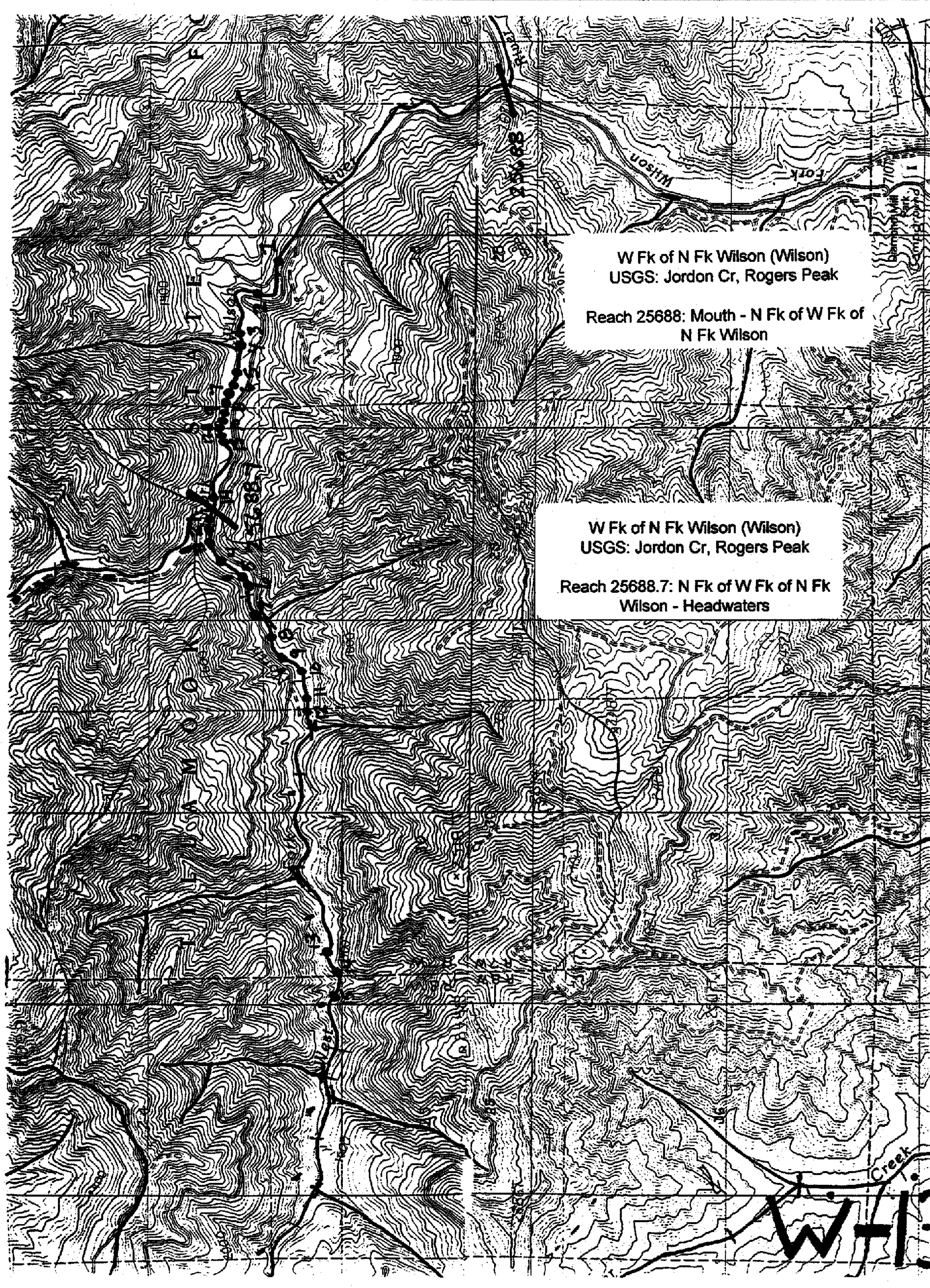

F O R E S T
Archer Pond
Jordan
Creek
RIVER
Hembre
4WD
7
8
9
10
11
12
Jordon Cr (Wilson)
USGS: Jordon Cr
Reach 25675: Mouth - Headwaters cont.
W-9.

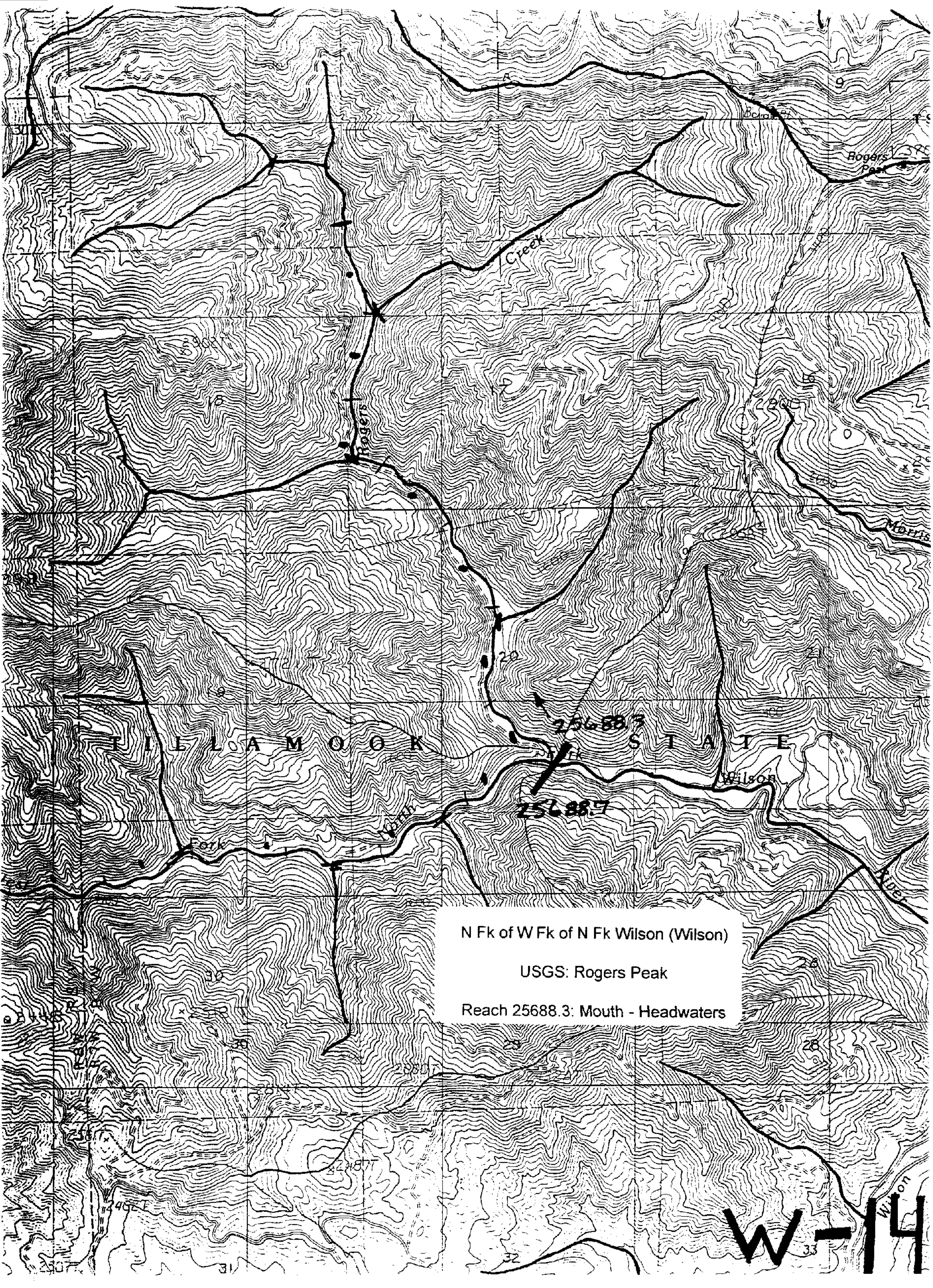

Cedar Cr (Wilson)
USGS: Jordon Cr
Reach 25679: Mouth - N Fk Cedar
Reach 25679.7: N Fk Cedar-Headwater
25679
25679.7


Wilson Mainstem
USGS: Jordon Cr
Reach 25696 Ben Smith Cr - Moore Cr
Wilson Mainstem
USGS: Jordon Cr
Reach 25684 Runyon Cr - N Fk Wilson
Reach 25694: N Fk Wilson - Ben Smith
Wilson Mainstem
USGS: Jordon Cr
Reach 25680: Cedar Cr - Jones Cr
Reach 25682: Jones Cr - Runyon Cr
Jones Cr (Wilson)
USGS:Jones Cr
Reach 25681: Mouth -Headwaters
W-11

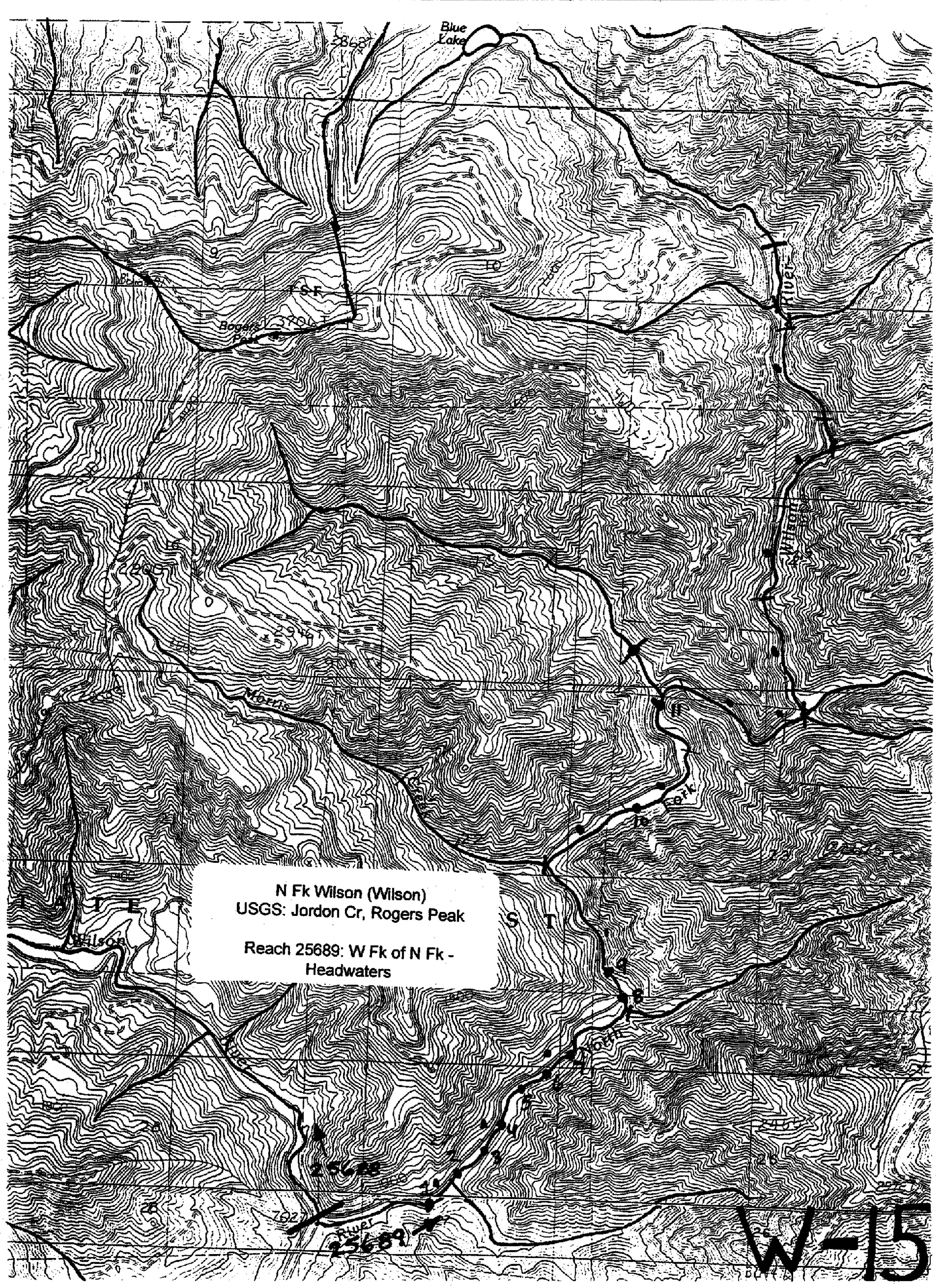


N Fk Wilson (Wilson)
USGS: Jordon Cr
Reach 25687.2: Max Cr - Lester Cr
Reach 25687.4: Lester - West Fork of North Fork Wilson
N Fk Wilson (Wilson)
USGS: Jordon Cr
Reach 25685: Mouth - Bend Cr
Reach 25687: Bend Cr - Max Cr
25687.4
25687.2
25687
25685
25684
Diamond Mill Park Campground
Lees Camp
Campground
North Fork
Wilson
River
Lester
Max
Bend
Scotty
Creek
Jones
WILSON
Runyon
Luebke
TILLAMOOK
W-

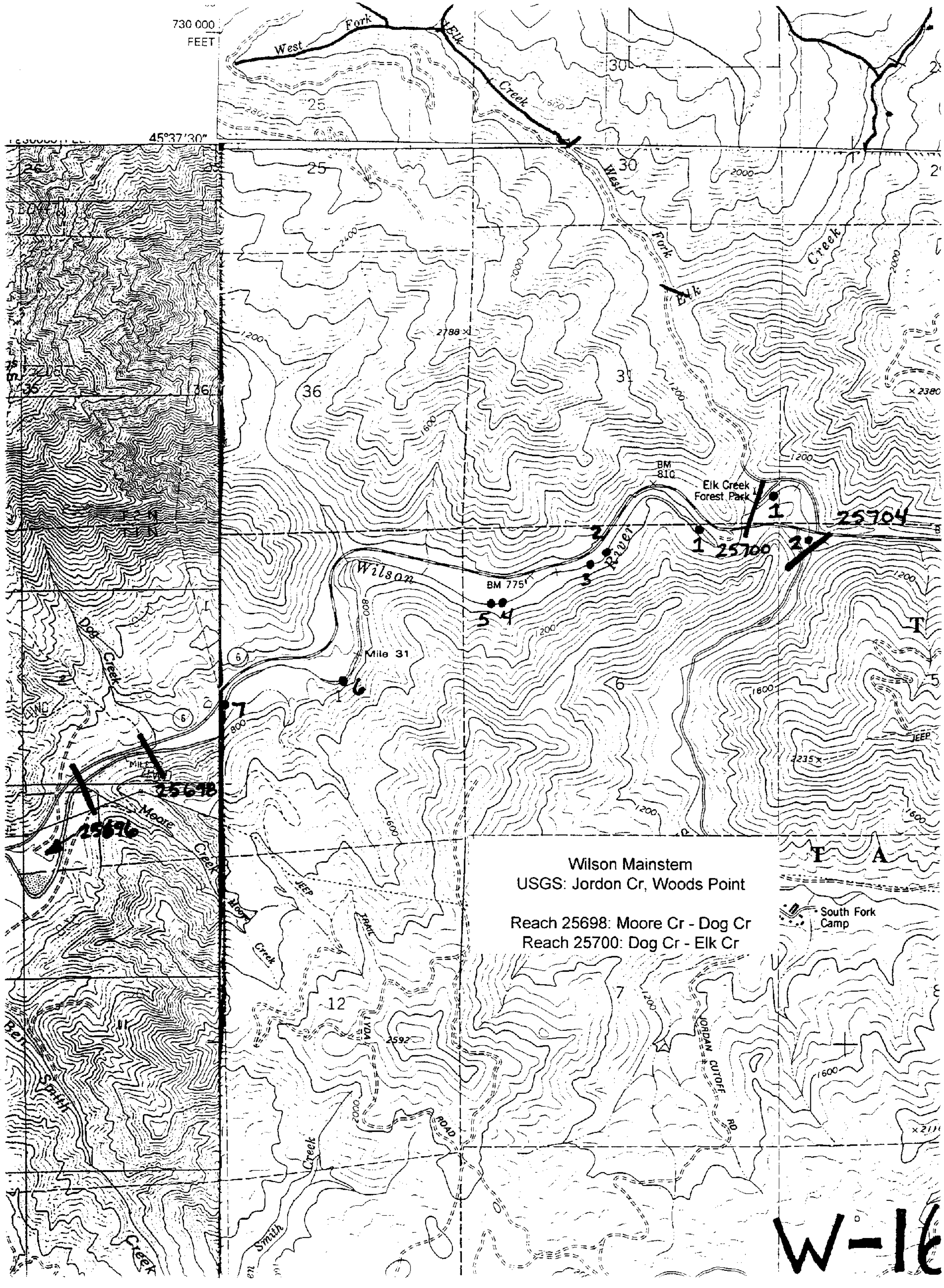

W Fk of N Fk Wilson (Wilson)
USGS: Jordon Cr, Rogers Peak
Reach 25688: Mouth - N Fk of W Fk of N Fk Wilson
W Fk of N Fk Wilson (Wilson)
USGS: Jordon Cr, Rogers Peak
Reach 25688.7: N Fk of W Fk of N Fk Wilson - Headwaters
W-1



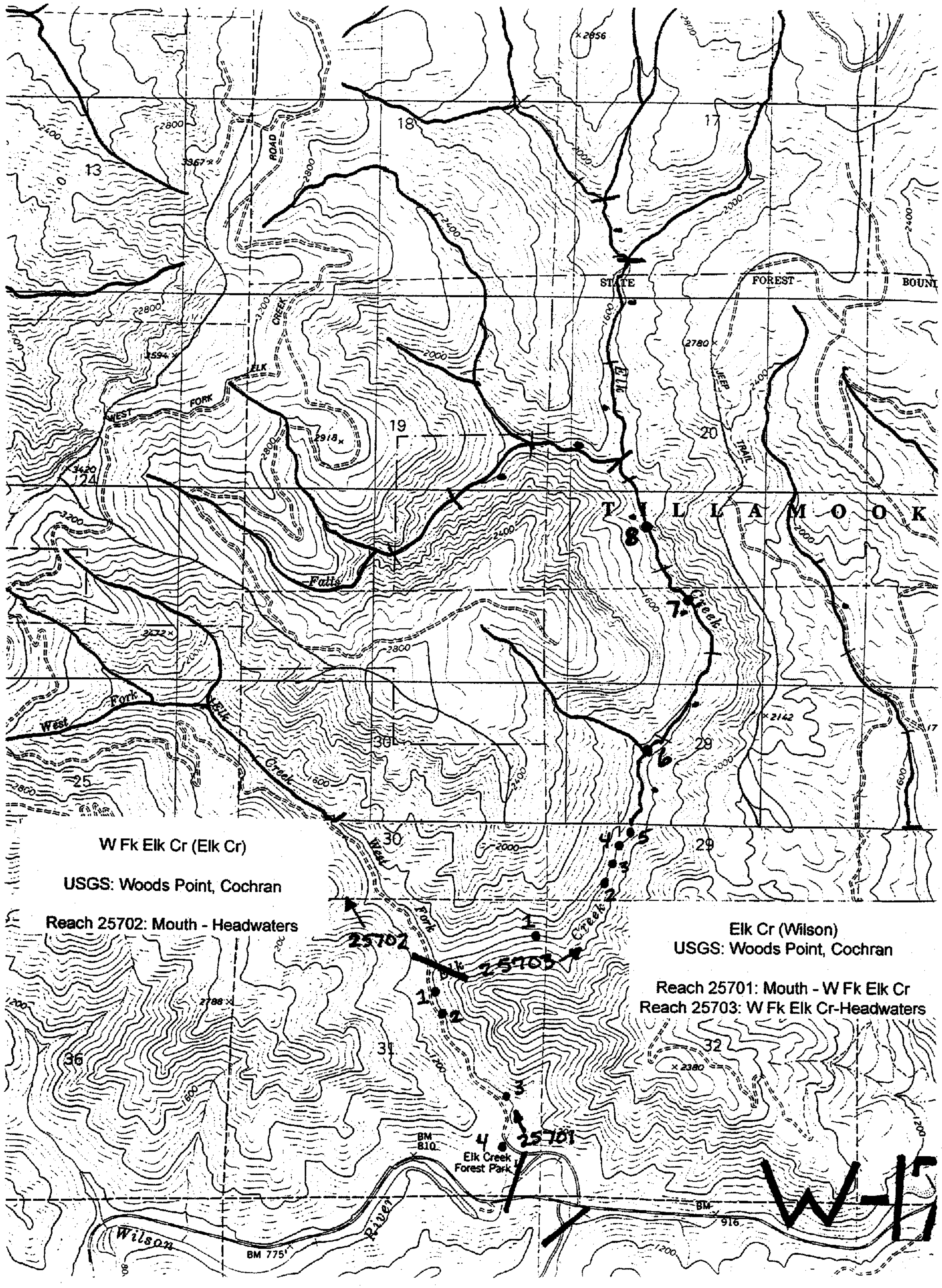
N Fk of W Fk of N Fk Wilson (Wilson)
USGS: Rogers Peak
Reach 25688.3: Mouth - Headwaters
25688.3
25688.7
TILLAMOOK STATE
Rogers
Creek
Wilson
North
Fork
Rogers Peak
W-14



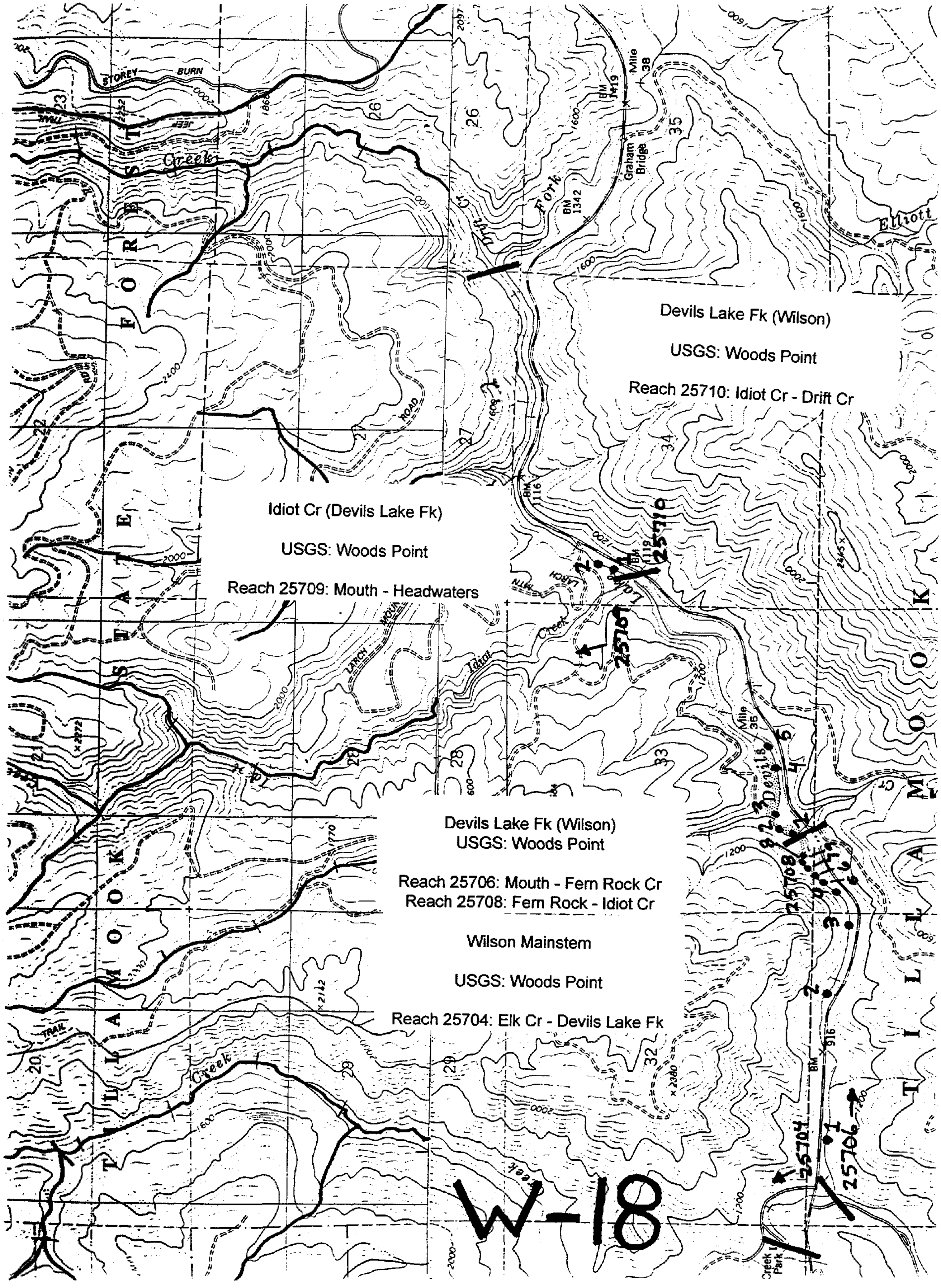
Blue Lake
Rogers Peak
Morris
River
Wilson
25688
25689
N Fk Wilson (Wilson)
USGS: Jordon Cr, Rogers Peak
Reach 25689: W Fk of N Fk - Headwaters
W-15

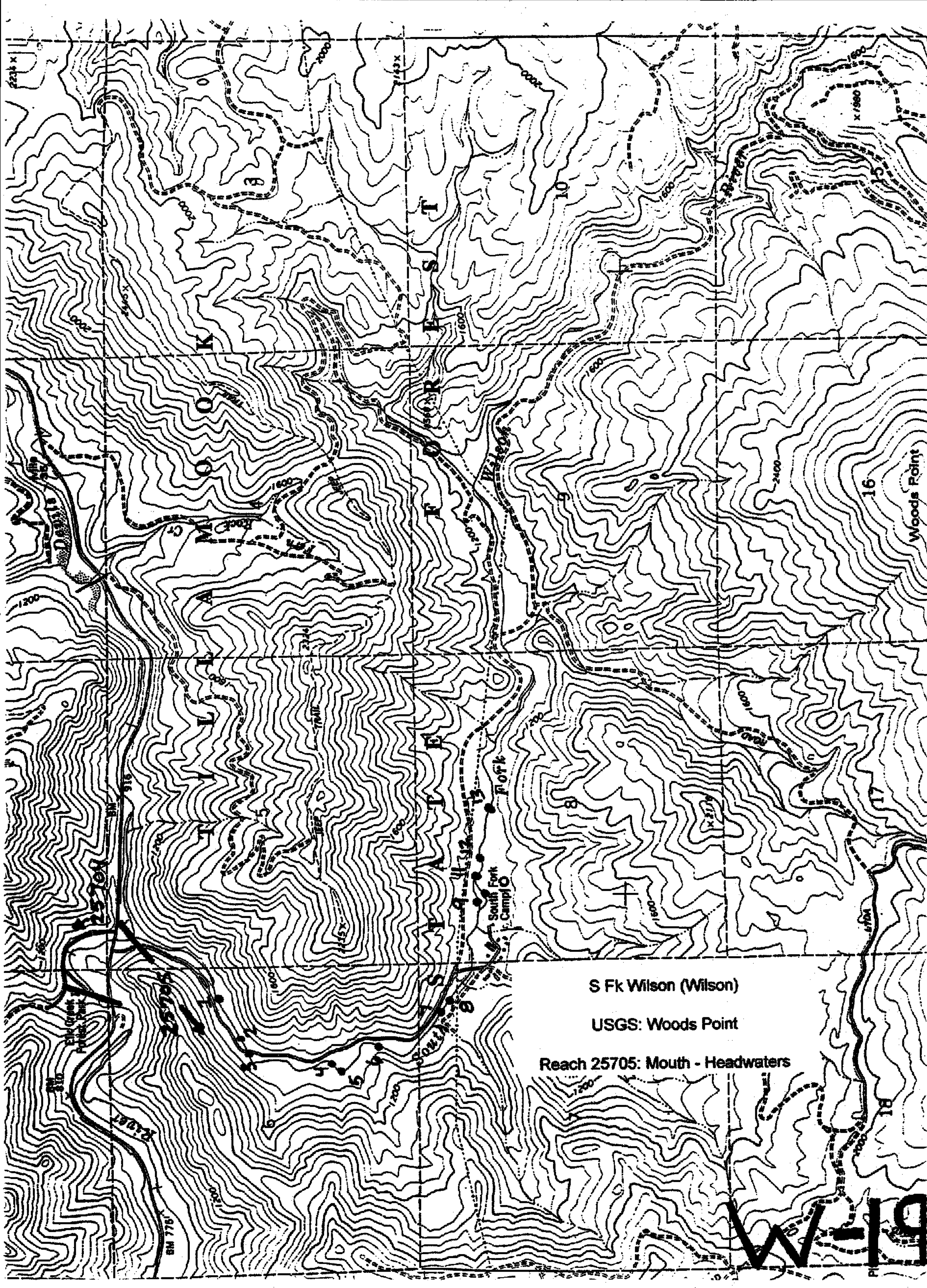


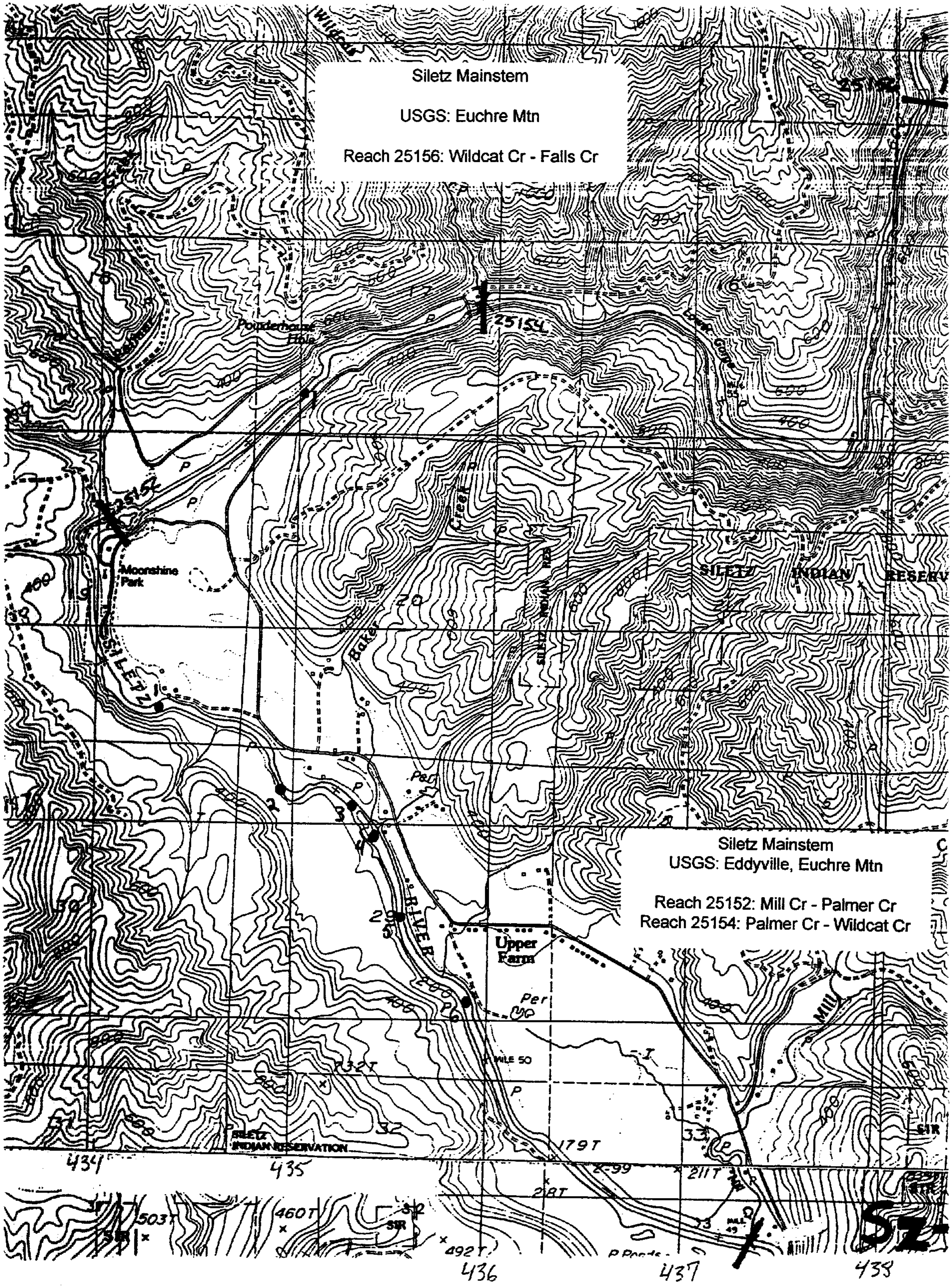
730 000
FEET
45°37'30"
West Fork Elk Creek
West Fork Elk Creek
Wilson River
Elk Creek Forest Park
BM 810
BM 775
Mile 31
25700
25704
25698
25696
Dog Creek
Moore Creek
Ben Smith Creek
South Fork Camp
JEEP TRAIL
LYDA ROAD
JORDAN CUTOFF RD
2788
2592
2235
Wilson Mainstem
USGS: Jordon Cr, Woods Point
Reach 25698: Moore Cr - Dog Cr
Reach 25700: Dog Cr - Elk Cr
W-16

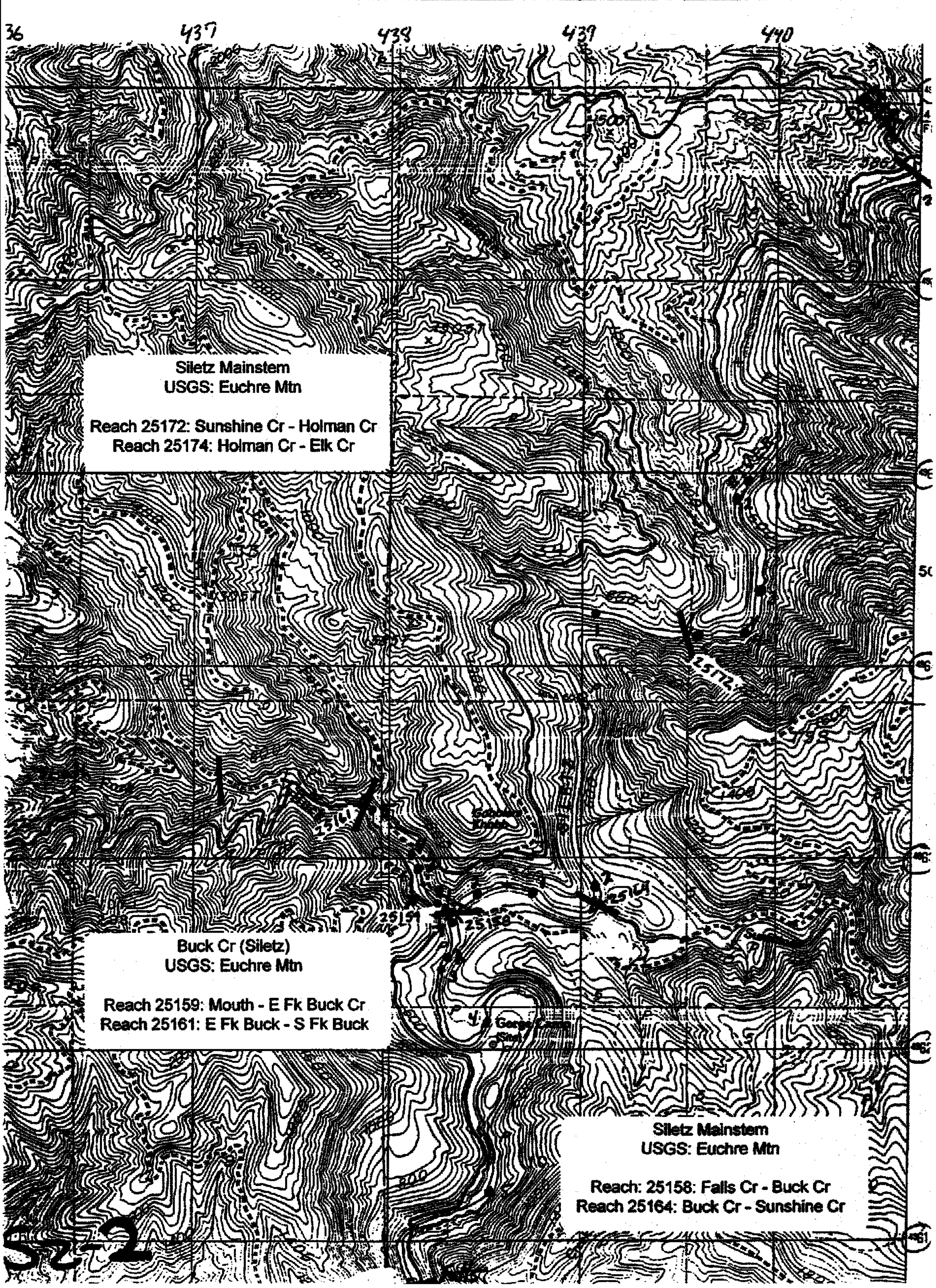


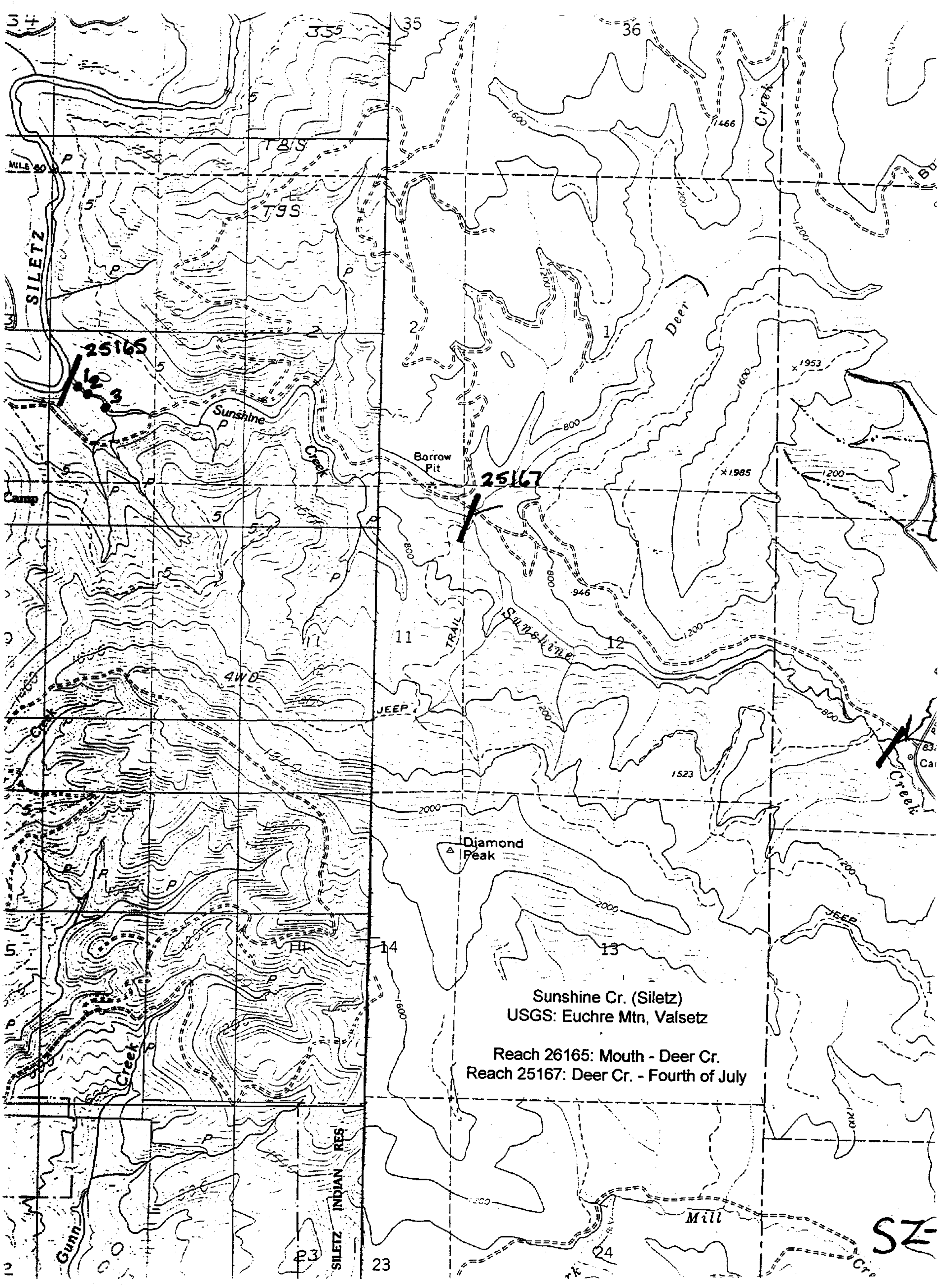
W Fk Elk Cr (Elk Cr)
USGS: Woods Point, Cochran
Reach 25702: Mouth - Headwaters
Elk Cr (Wilson)
USGS: Woods Point, Cochran
Reach 25701: Mouth - W Fk Elk Cr
Reach 25703: W Fk Elk Cr-Headwaters
25702
25703
25701
TILLAMOOK
STATE FOREST BOUN
West Fork Elk Creek
Elk Creek
Falls
JEEP TRAIL
Wilson River
Elk Creek Forest Park
BM 810
BM 916
BM 775
W-15

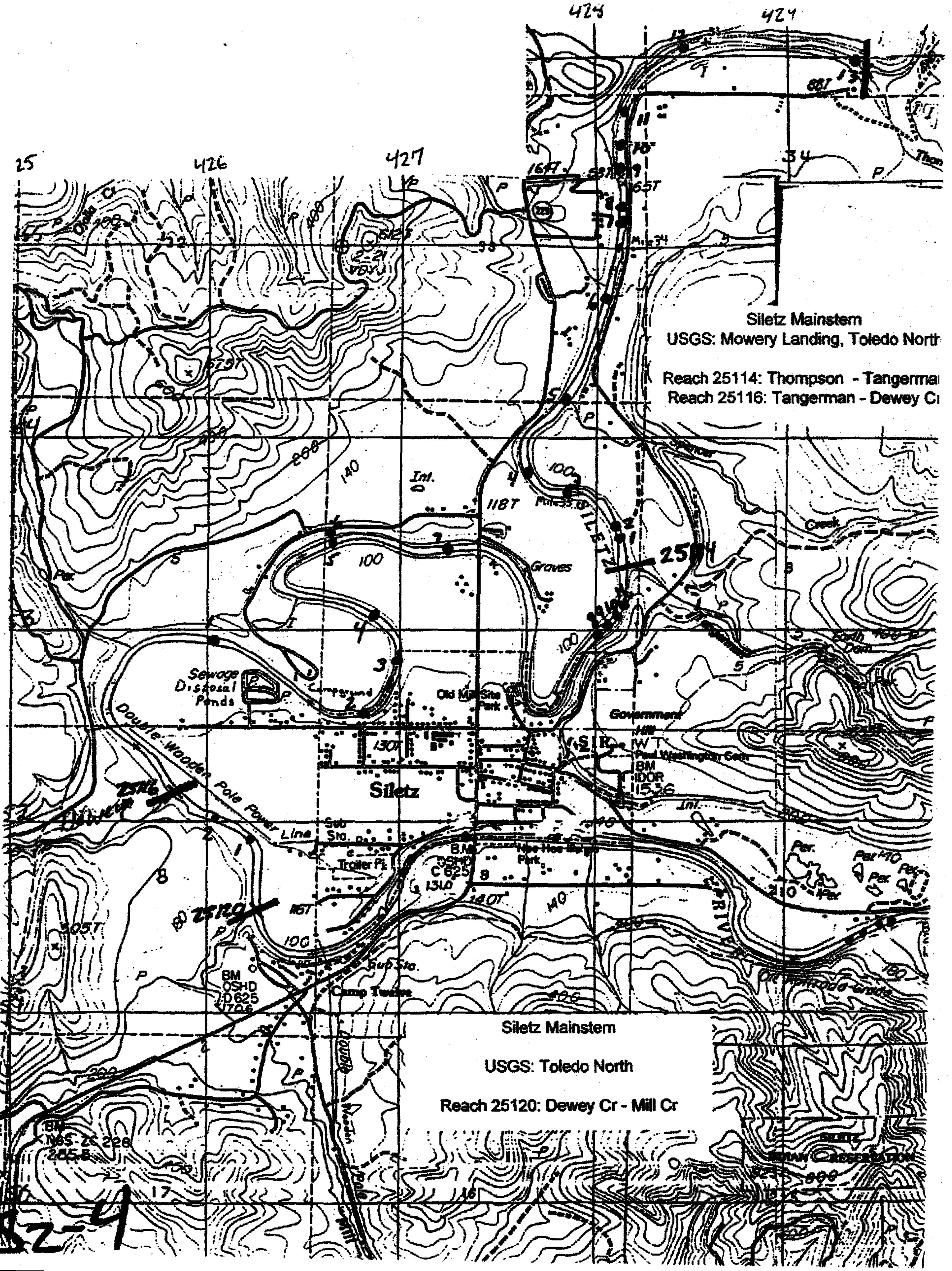

Devils Lake Fk (Wilson)
USGS: Woods Point
Reach 25710: Idiot Cr - Drift Cr
Idiot Cr (Devils Lake Fk)
USGS: Woods Point
Reach 25709: Mouth - Headwaters
Devils Lake Fk (Wilson)
USGS: Woods Point
Reach 25706: Mouth - Fern Rock Cr
Reach 25708: Fern Rock - Idiot Cr
Wilson Mainstem
USGS: Woods Point
Reach 25704: Elk Cr - Devils Lake Fk
25710
25709
25708
25704
25706
W-18
STOREY BURN
Creek
Drift Cr
Fork
Graham Bridge
Elliott
Idiot
Creek
LARCH MTN
ROAD
TRAIL
JEEP
Devils
TILLAMOOK STATE FOREST
Mile 38
Mile 35
Creek Park

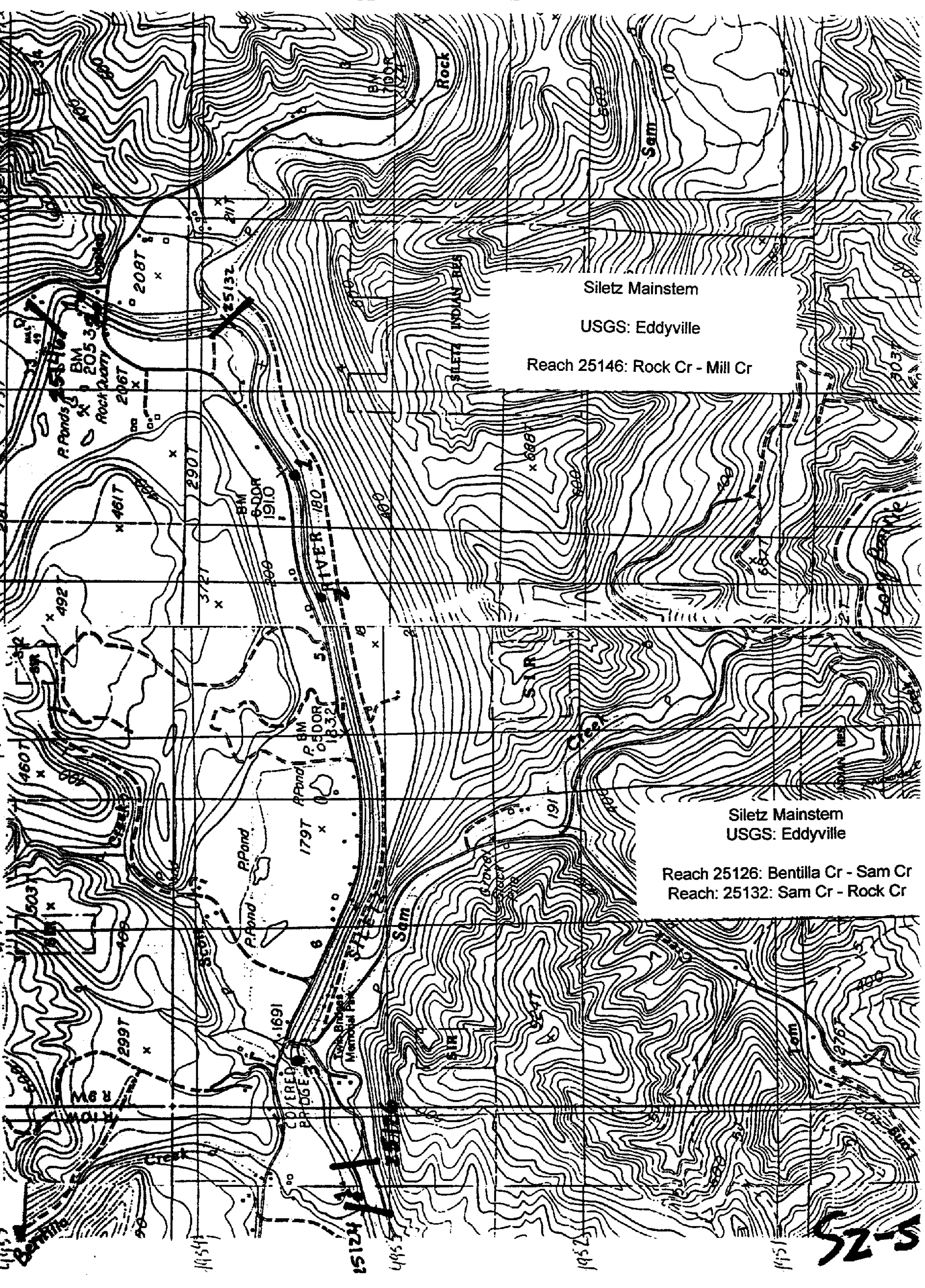

S Fk Wilson (Wilson)
USGS: Woods Point
Reach 25705: Mouth - Headwaters


Siletz Mainstem
USGS: Euchre Mtn
Reach 25156: Wildcat Cr - Falls Cr
Siletz Mainstem
USGS: Eddyville, Euchre Mtn
Reach 25152: Mill Cr - Palmer Cr
Reach 25154: Palmer Cr - Wildcat Cr
25154
25152
Powderhouse Hole
Moonshine Park
Baker
Creek
SILETZ INDIAN RESERV
SILETZ RIVER
Upper Farm
MILE 50
SILETZ INDIAN RESERVATION
434
435
436
437
438

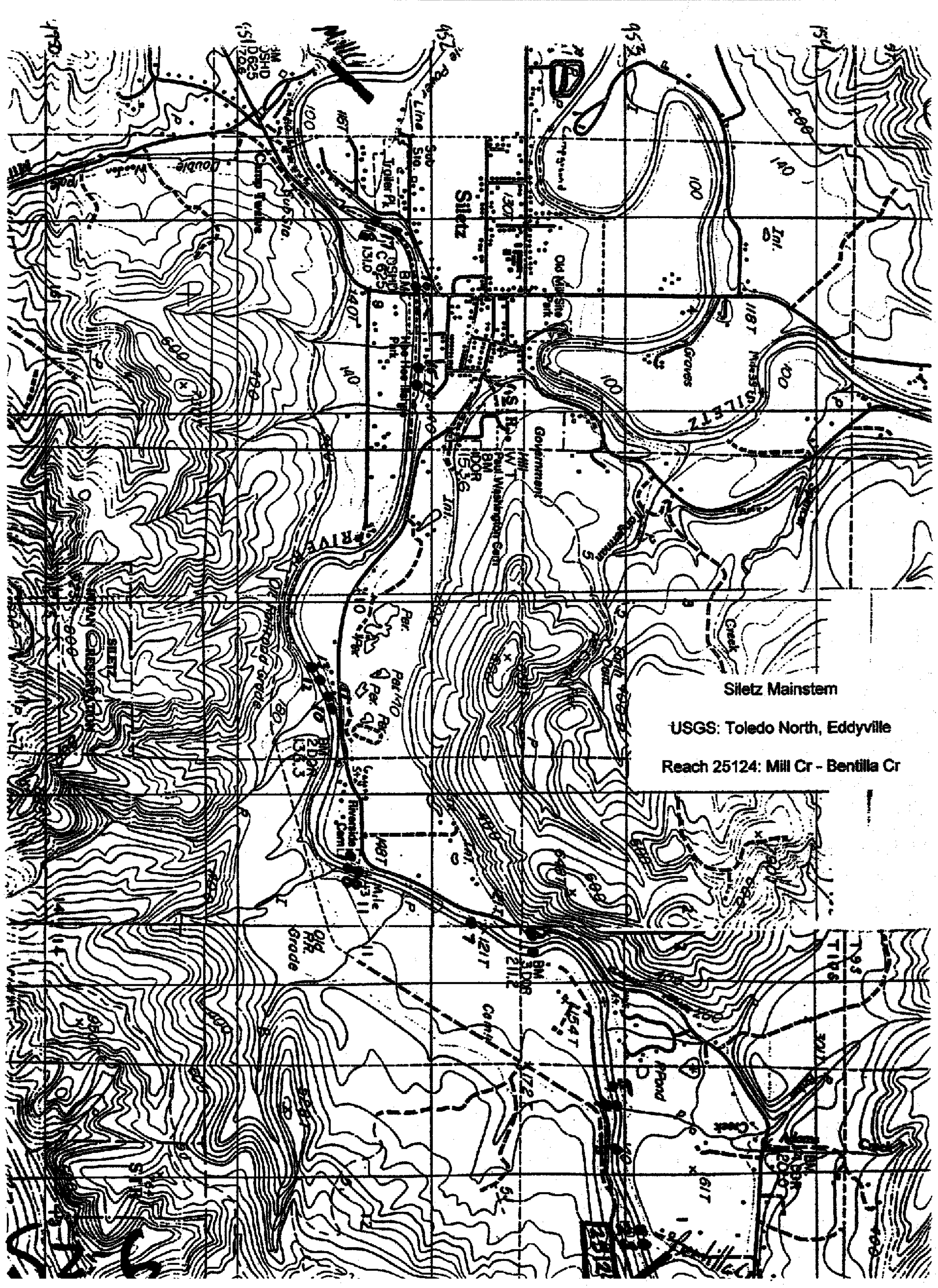

436
437
438
439
440
Siletz Mainstem
USGS: Euchre Mtn
Reach 25172: Sunshine Cr - Holman Cr
Reach 25174: Holman Cr - Elk Cr
25172
25161
25159
25158
25164
Buck Cr (Siletz)
USGS: Euchre Mtn
Reach 25159: Mouth - E Fk Buck Cr
Reach 25161: E Fk Buck - S Fk Buck
Siletz Mainstem
USGS: Euchre Mtn
Reach: 25158: Falls Cr - Buck Cr
Reach 25164: Buck Cr - Sunshine Cr
SZ-2


Sunshine Cr. (Siletz)
USGS: Euchre Mtn, Valsetz
Reach 26165: Mouth - Deer Cr.
Reach 25167: Deer Cr. - Fourth of July
25165
25167
SILETZ
MILE 80
T8S
T9S
Sunshine Creek
Sunshine
Creek
Deer Creek
Barrow Pit
Camp
TRAIL
4WD
JEEP
Diamond Peak
SILETZ INDIAN RES
Gunn Creek
Mill
1466
1953
1985
946
1523
1600
1200
800
2000
34
35
36
2
1
11
12
14
13
23
24
SZ


Siletz Mainstem
USGS: Mowery Landing, Toledo North
Reach 25114: Thompson - Tangerma
Reach 25116: Tangerman - Dewey C
Siletz Mainstem
USGS: Toledo North
Reach 25120: Dewey Cr - Mill Cr
Siletz
Sewage Disposal Ponds
Campground
Old Mill Site Park
Government Hill
Paul Washington Cem
Double Wooden Pole Power Line
Sub Sta.
Trailer Pk
Camp Tueker
Graves
Spencer
Creek
Old Railroad Grade
BM OSHD C 625 131.0
BM OSHD D 625 170.6
BM IDOR 153.6
BM NGS ZC 228 255.8
424
424
425
426
427
25114
25116
25120



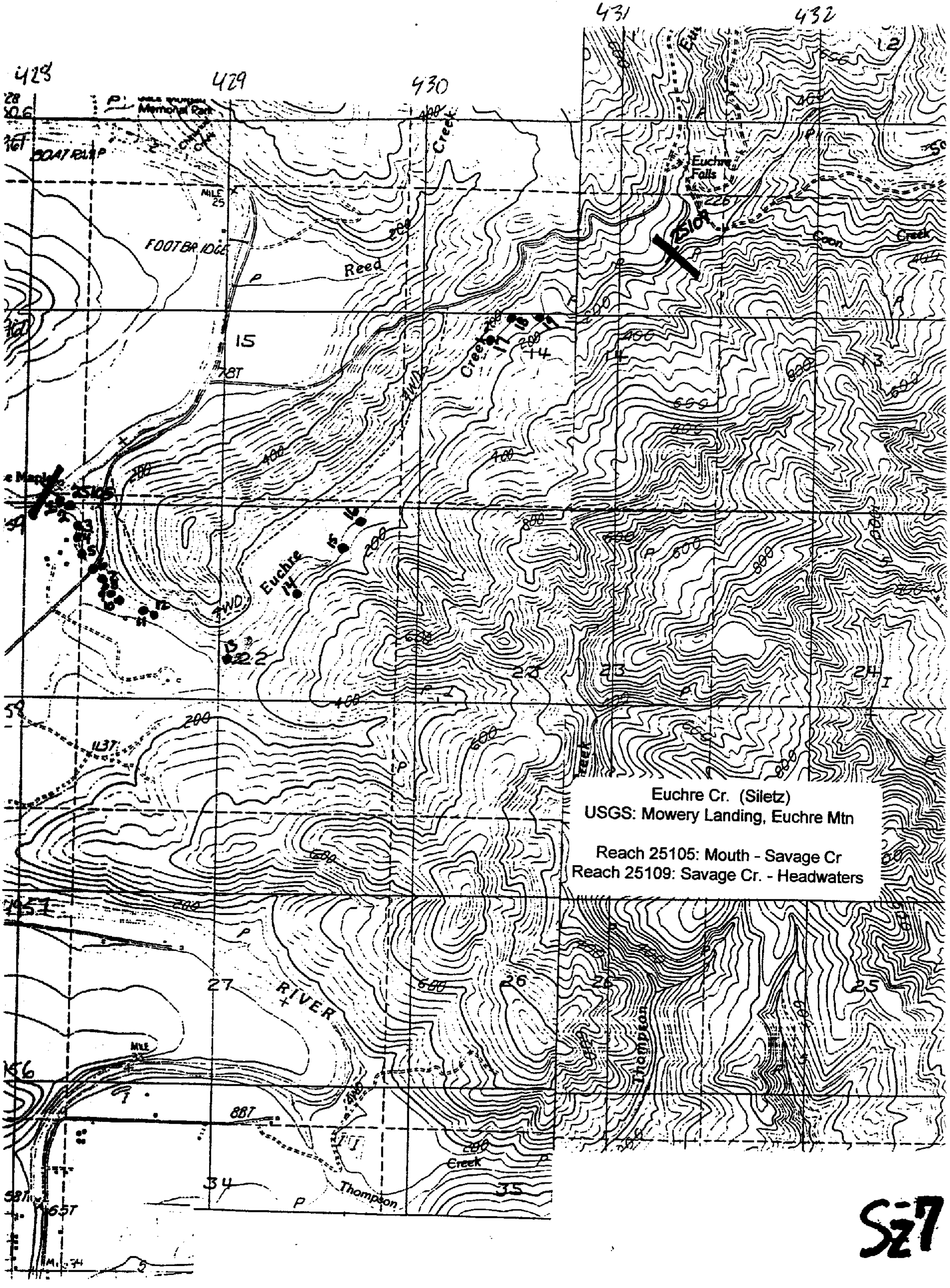
Siletz Mainstem
USGS: Eddyville
Reach 25146: Rock Cr - Mill Cr
Siletz Mainstem
USGS: Eddyville
Reach 25126: Bentilla Cr - Sam Cr
Reach: 25132: Sam Cr - Rock Cr
Rock
Sam
SILETZ INDIAN RES
RIVER
Rock Quarry
P. Ponds
Long Prairie
Creek
Sam
Tom
P. Pond
Two Bridges Memorial Park
COVERED BRIDGE
Bentilla
25132
25124
S2-5

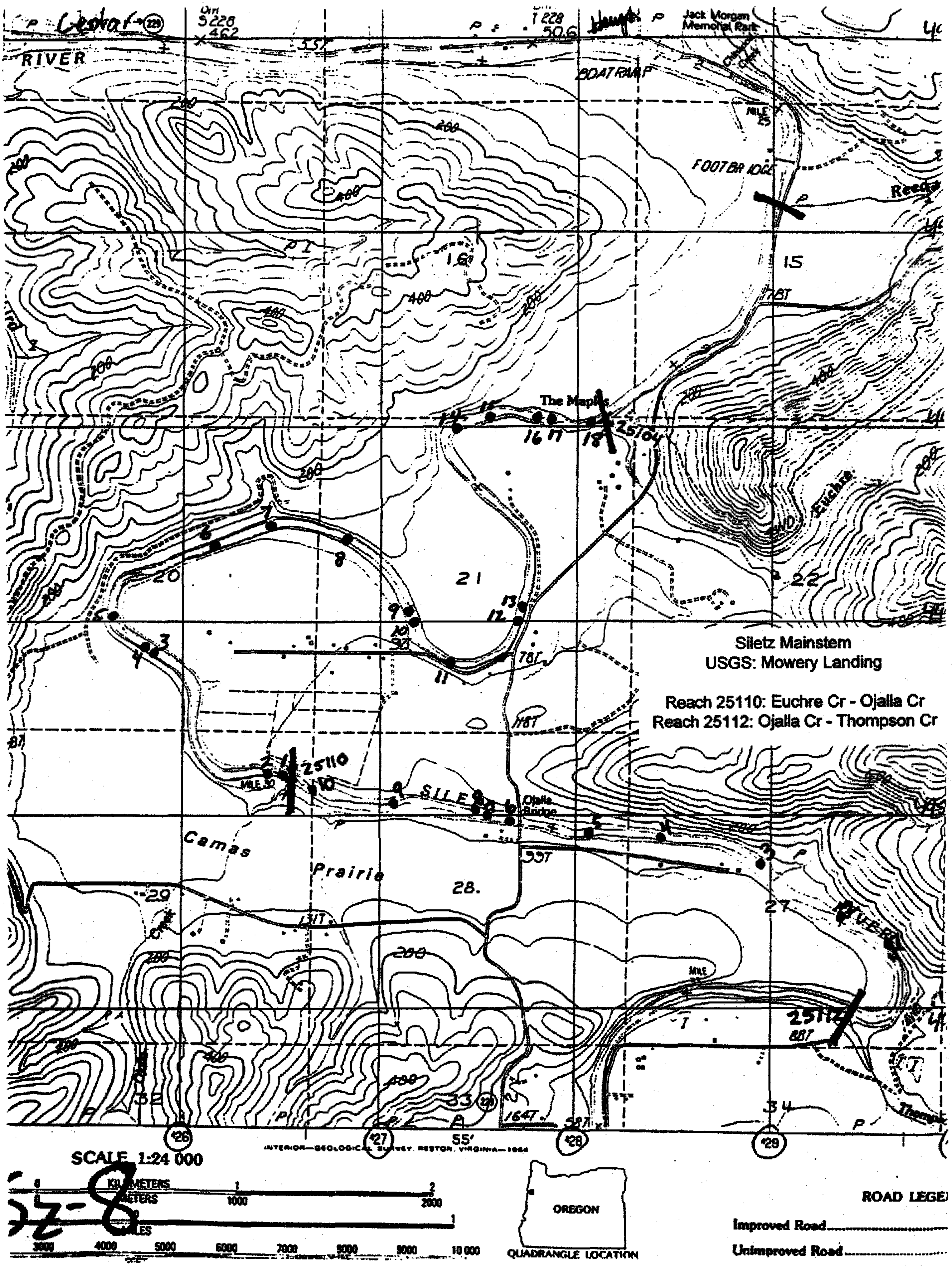


Siletz Mainstem

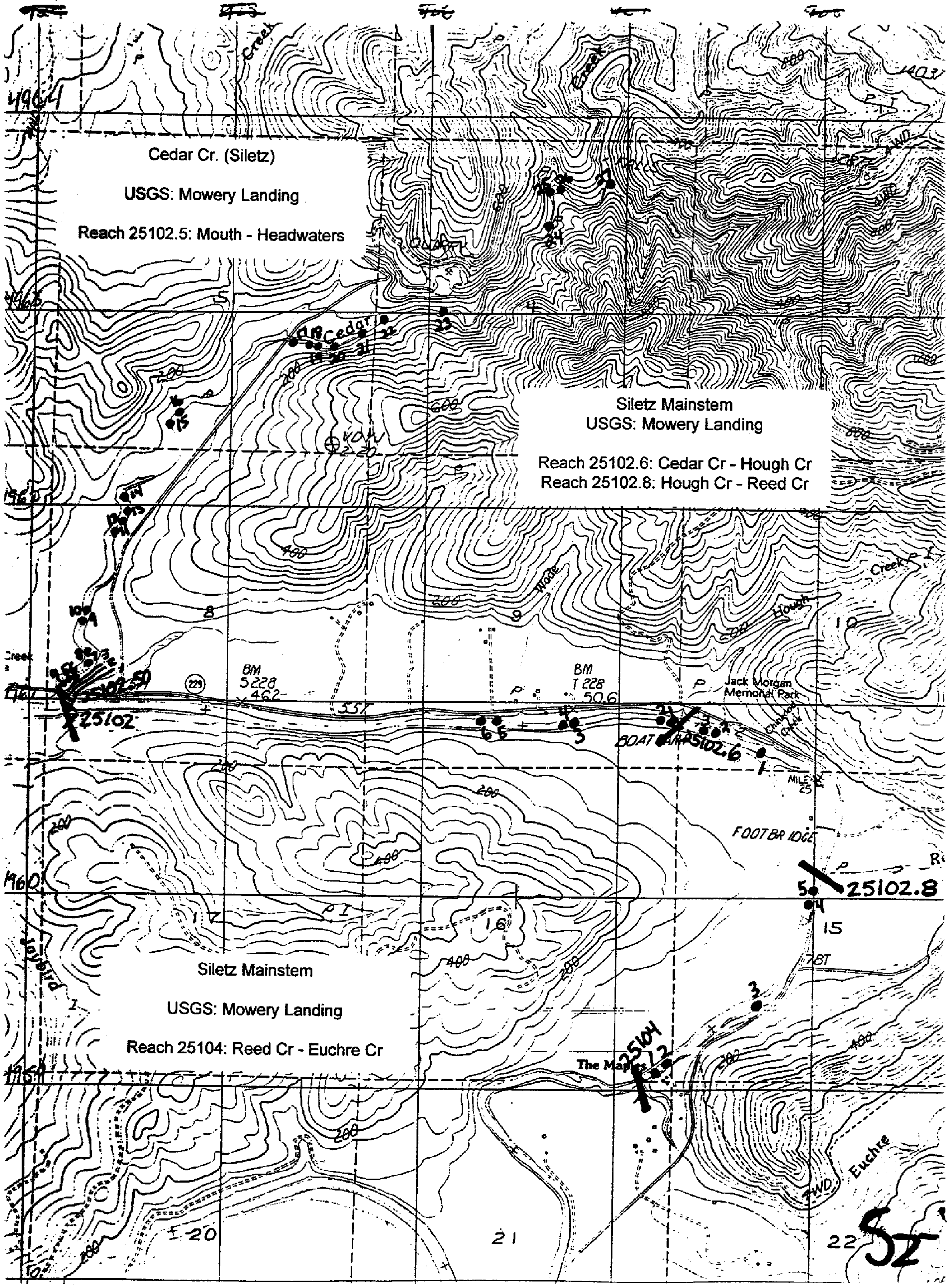
USGS: Toledo North, Eddyville

Reach 25124: Mill Cr - Bentilla Cr

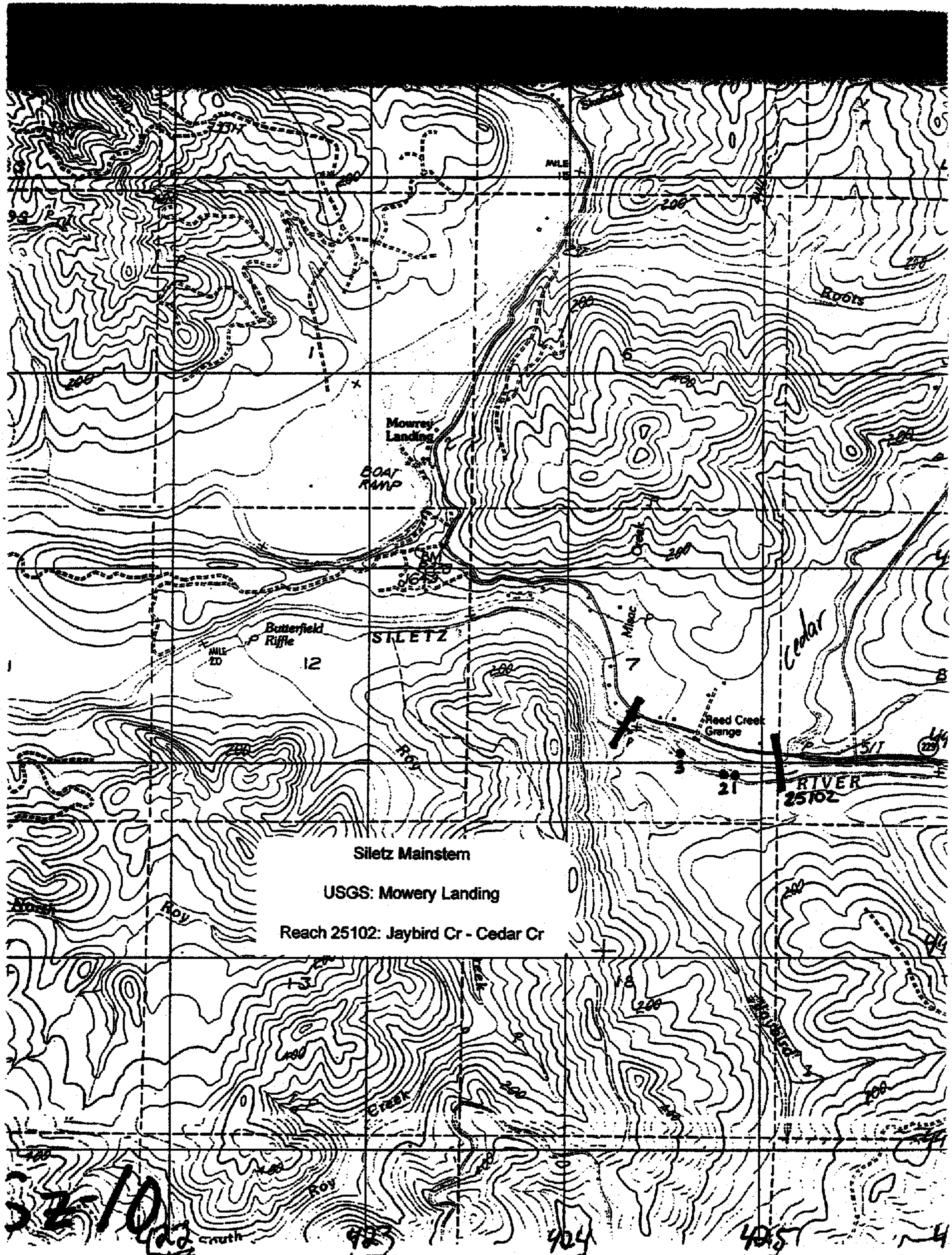

Euchre Cr. (Siletz)
USGS: Mowery Landing, Euchre Mtn
Reach 25105: Mouth - Savage Cr
Reach 25109: Savage Cr. - Headwaters
428
429
430
431
432
Memorial Park
BOAT RAMP
FOOTBRIDGE
Reed
Creek
Euchre
Falls
Coon
Creek
25109
25105
Euchre
RIVER
Thompson
Creek
S27

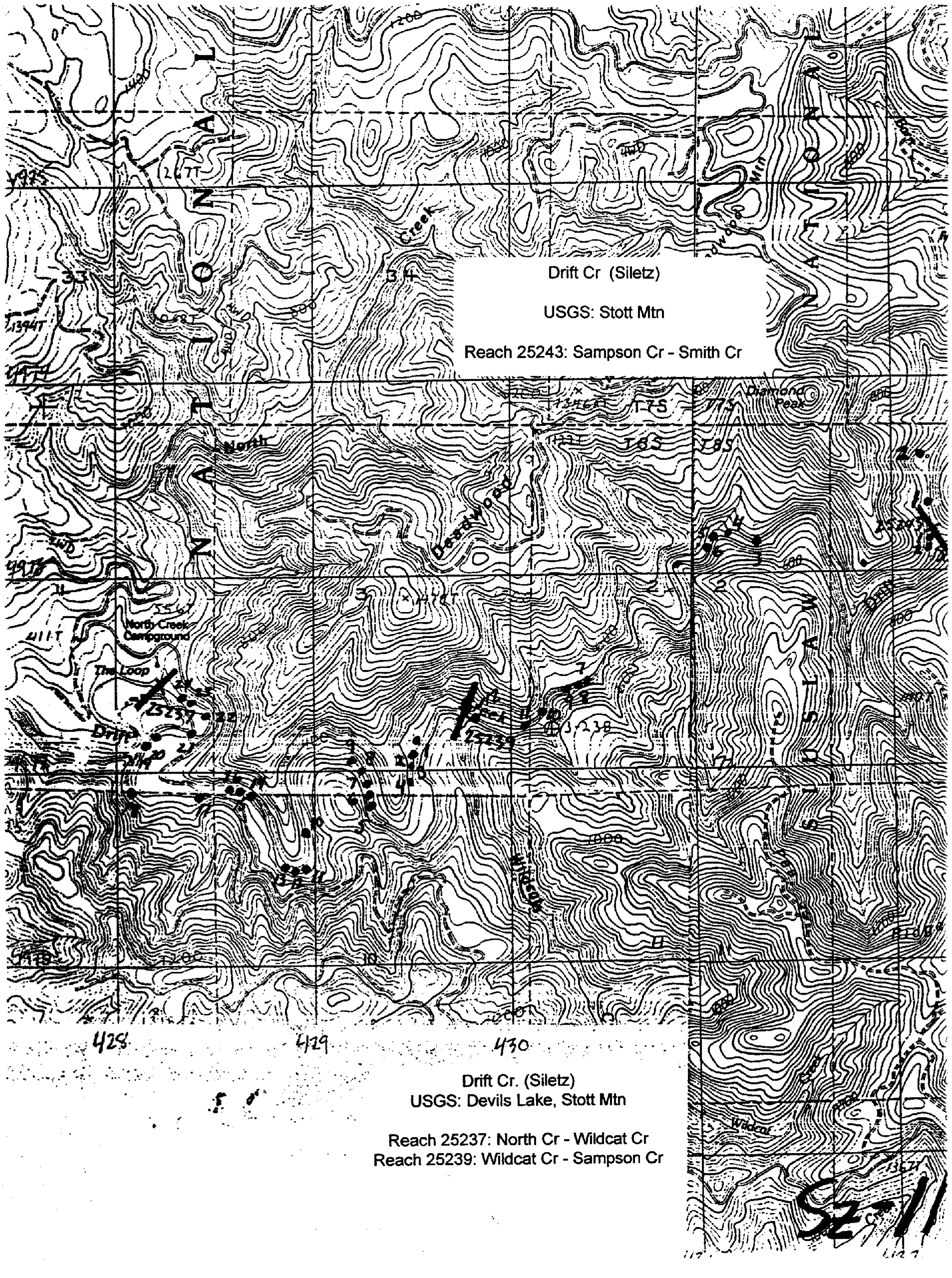


Siletz Mainstem
USGS: Mowery Landing
Reach 25110: Euchre Cr - Ojalla Cr
Reach 25112: Ojalla Cr - Thompson Cr
RIVER
Jack Morgan Memorial Park
BOAT RAMP
FOOTBRIDGE
The Maples
25104
25110
25112
MILE 30
SILETZ
Ojalla Bridge
Camas
Prairie
Euchre
21
22
28.
27
34
33
32
20
29
15
16
SCALE 1:24 000
KILOMETERS
METERS
MILES
FEET
OREGON
QUADRANGLE LOCATION
ROAD LEGEND
Improved Road
Unimproved Road
INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1984
55'
SZ-8



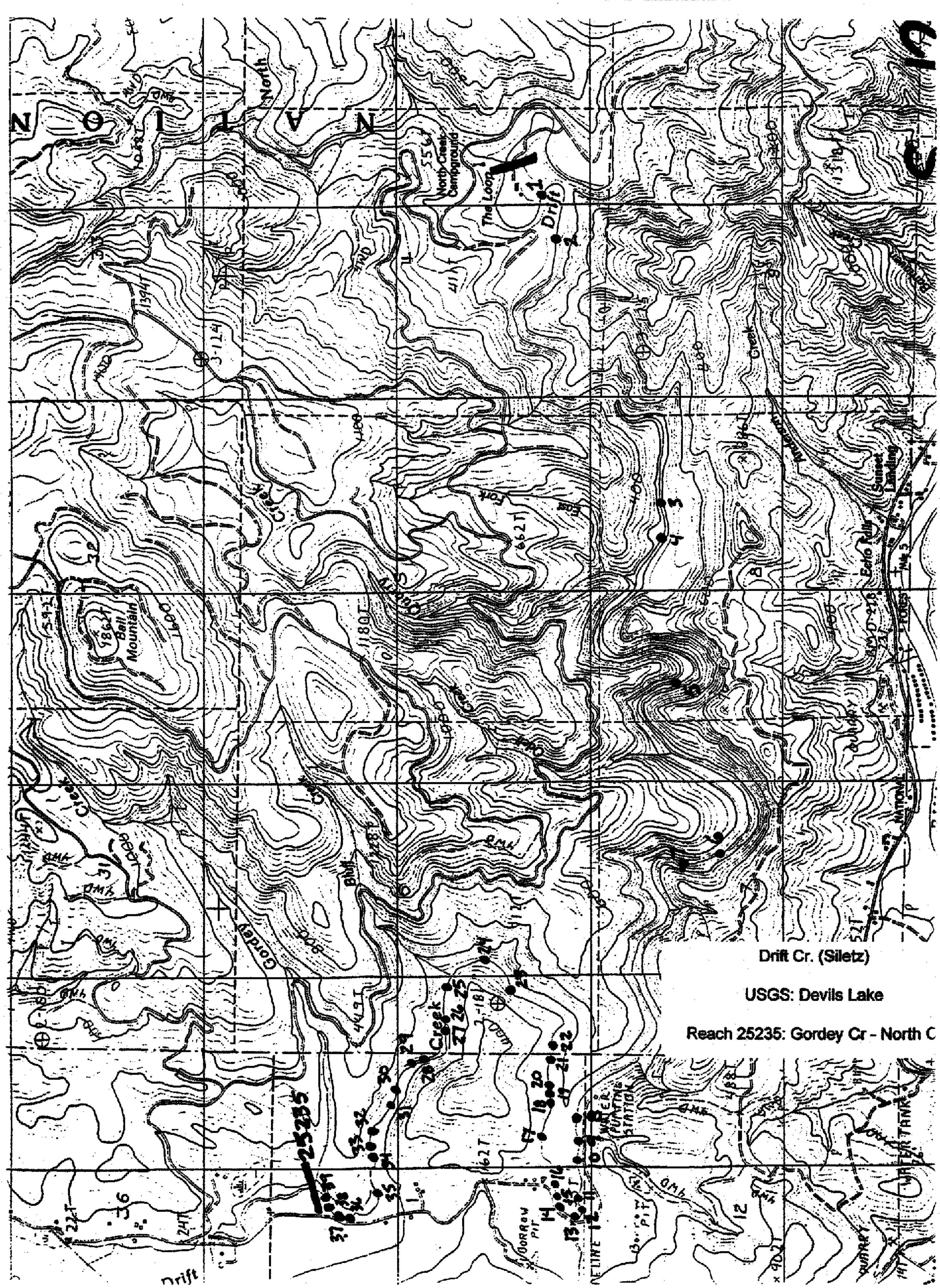
Cedar Cr. (Siletz)
USGS: Mowery Landing
Reach 25102.5: Mouth - Headwaters
Siletz Mainstem
USGS: Mowery Landing
Reach 25102.6: Cedar Cr - Hough Cr
Reach 25102.8: Hough Cr - Reed Cr
Siletz Mainstem
USGS: Mowery Landing
Reach 25104: Reed Cr - Euchre Cr
Cedar
Creek
Wade
Hough
Jack Morgan Memorial Park
BOAT RAMP
25102
25102.6
25102.8
25104
FOOTBRIDGE
The Maples
Euchre
52


Siletz Mainstem
USGS: Mowery Landing
Reach 25102: Jaybird Cr - Cedar Cr
Mowrey Landing
BOAT RAMP
Butterfield Riffle
SILETZ
RIVER
25102
Reed Creek Grange
Cedar
Roots
Creek
Roy
North
200
400

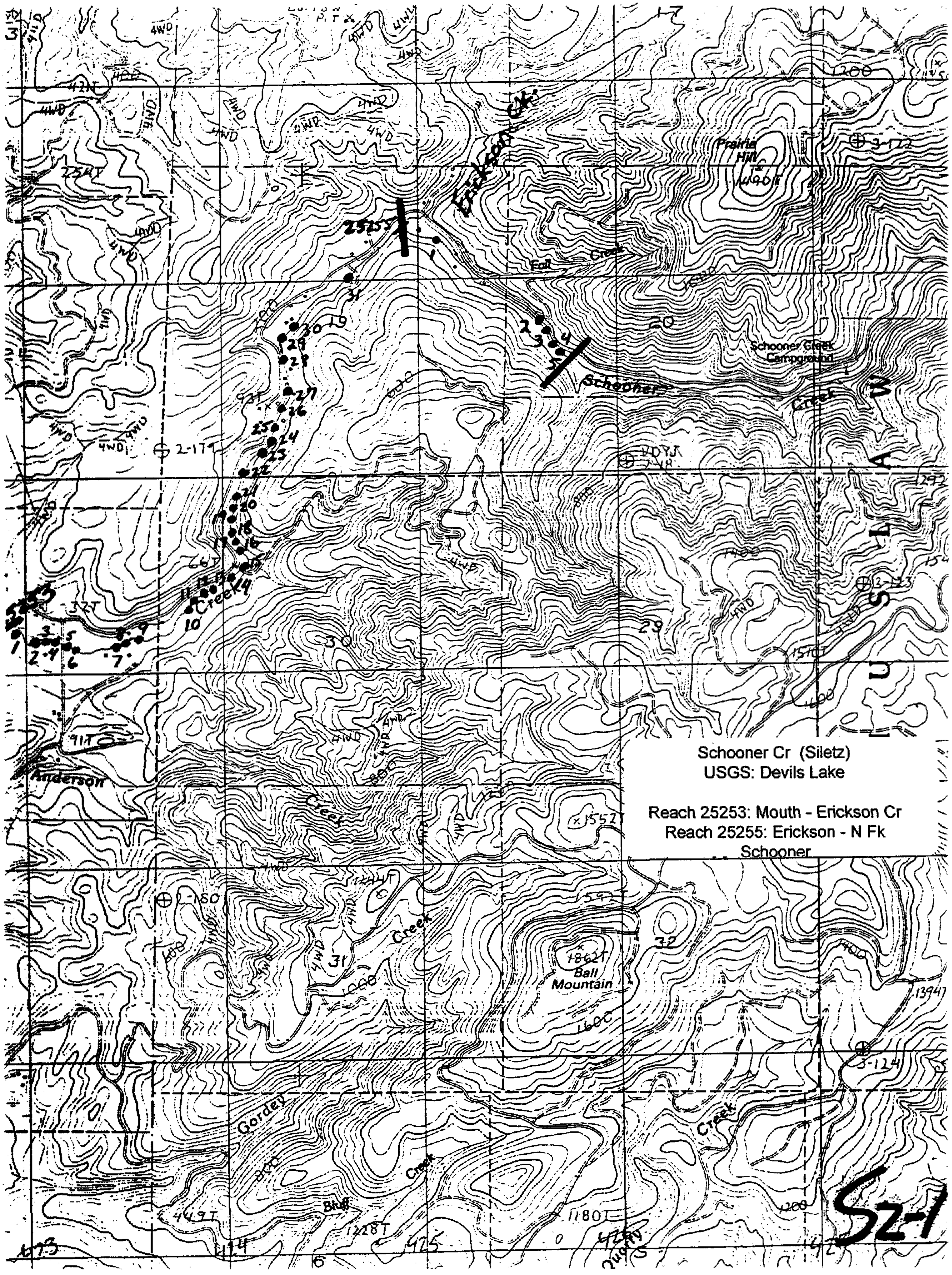


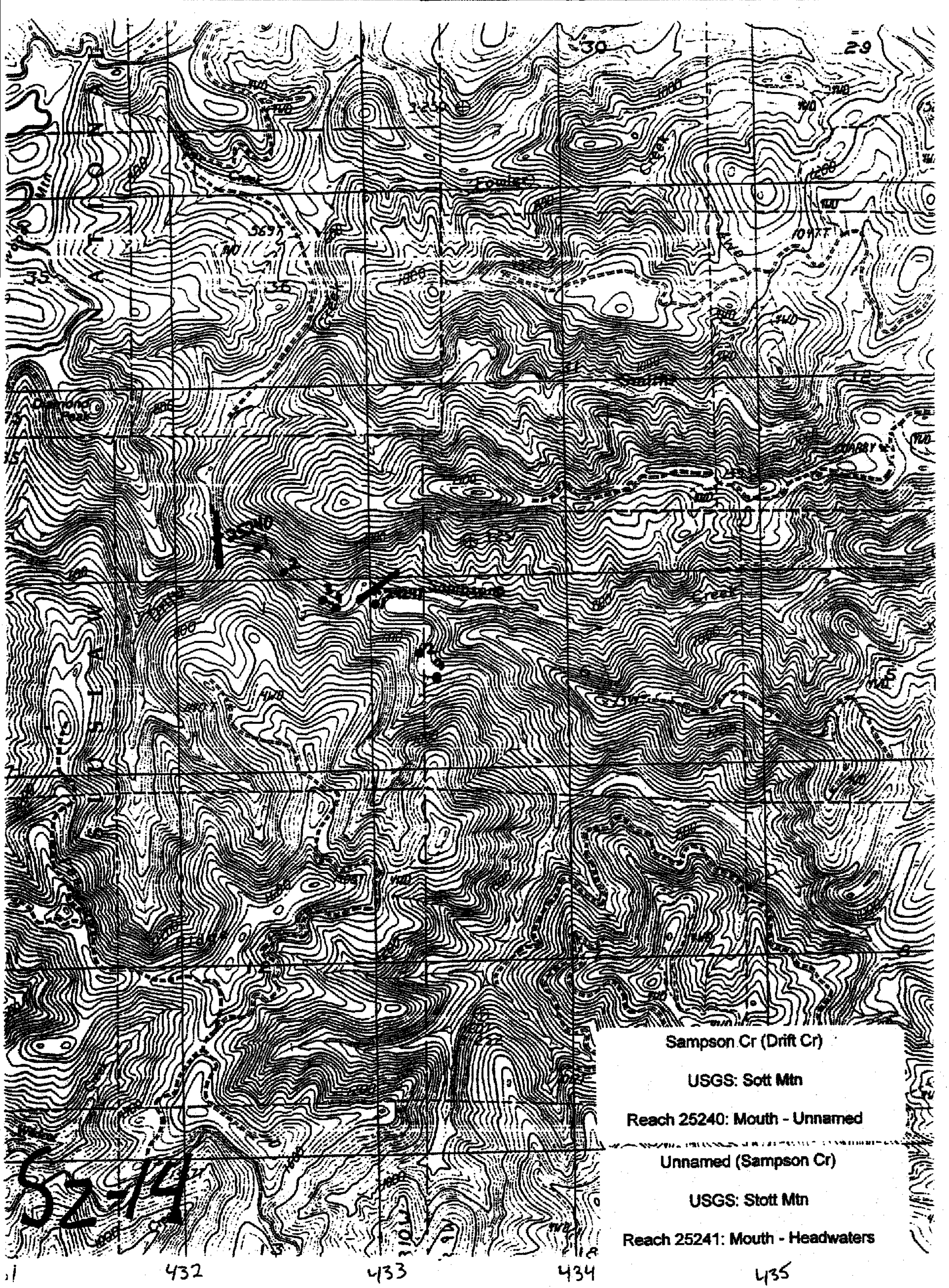
Drift Cr. (Siletz)
USGS: Devils Lake, Stott Mtn

Reach 25237: North Cr - Wildcat Cr
Reach 25239: Wildcat Cr - Sampson Cr

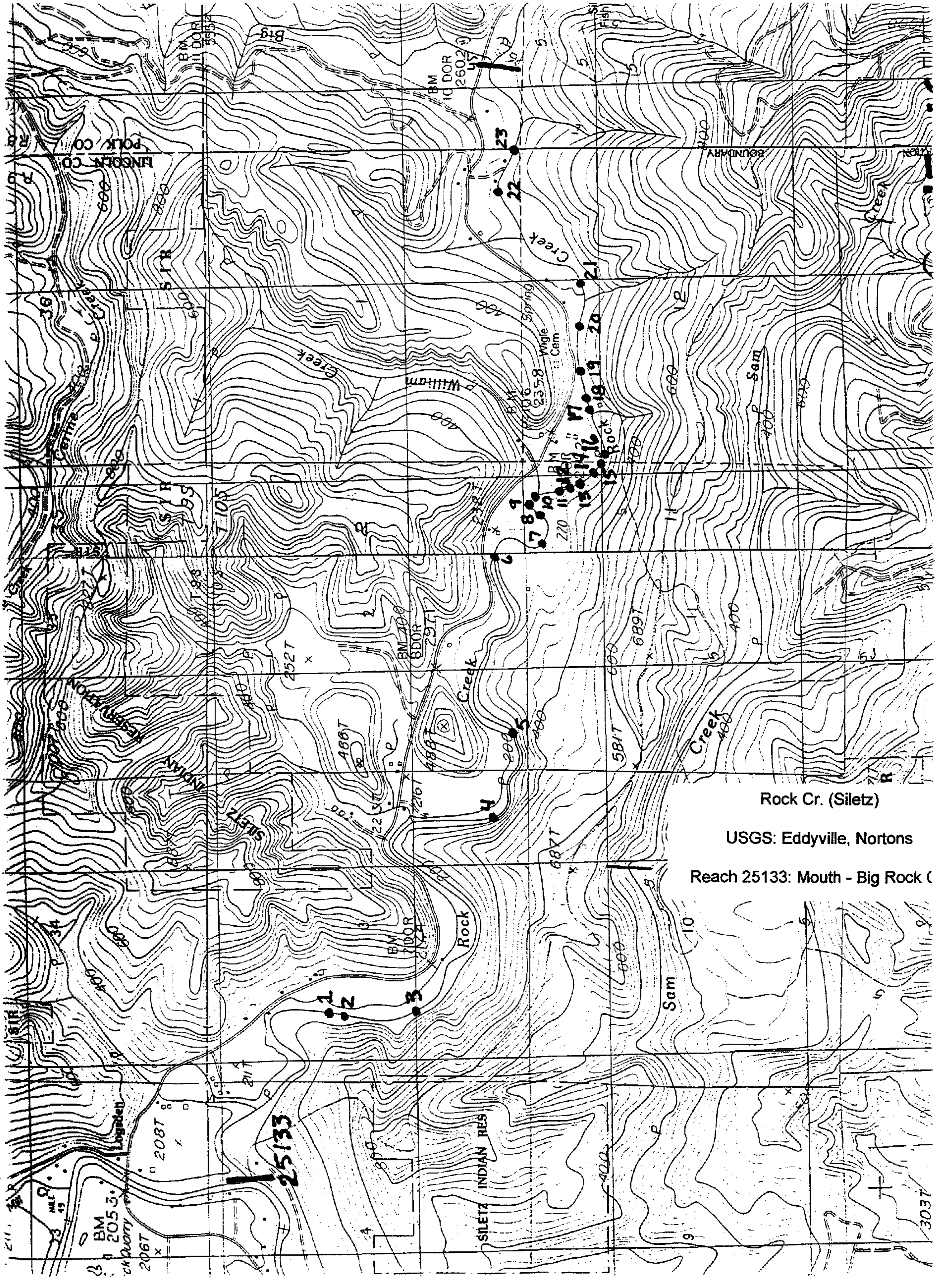


Drift Cr. (Siletz)
USGS: Devils Lake
Reach 25235: Gordey Cr - North C
Bell Mountain
North Creek Campground
The Loop
Sunset Landing
25235


Schooner Cr (Siletz)
USGS: Devils Lake
Reach 25253: Mouth - Erickson Cr
Reach 25255: Erickson - N Fk Schooner
Erickson Ck
Prairie Hill
Fall Creek
Schooner Creek Campground
Schooner Creek
Anderson Creek
Ball Mountain
Gordey Creek
Bluff Creek
SZ-1



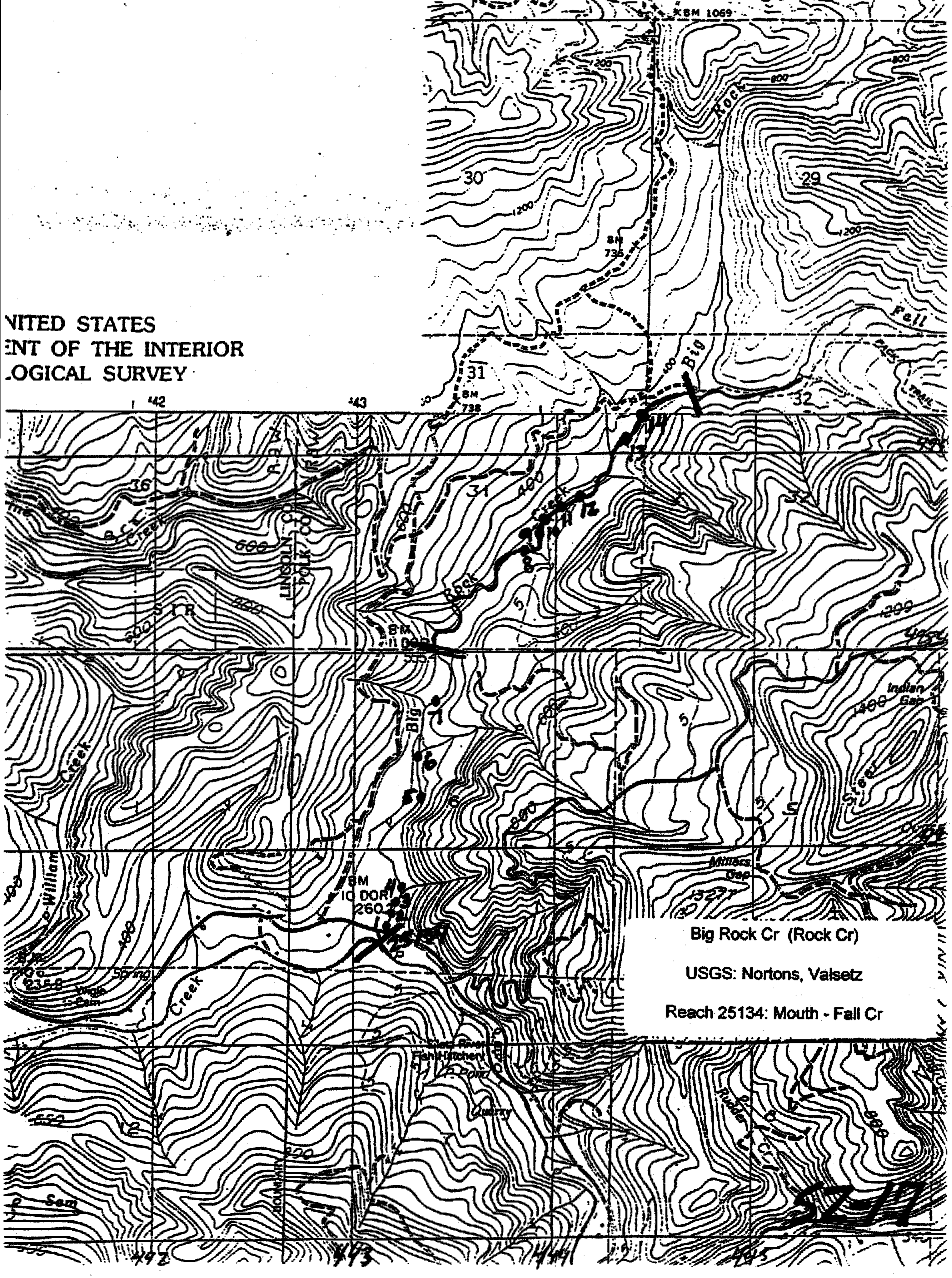
Sampson Cr (Drift Cr)
USGS: Sott Mtn
Reach 25240: Mouth - Unnamed
Unnamed (Sampson Cr)
USGS: Stott Mtn
Reach 25241: Mouth - Headwaters
Fowler
Creek
Diamond Peak
S2-14
432
433
434
435

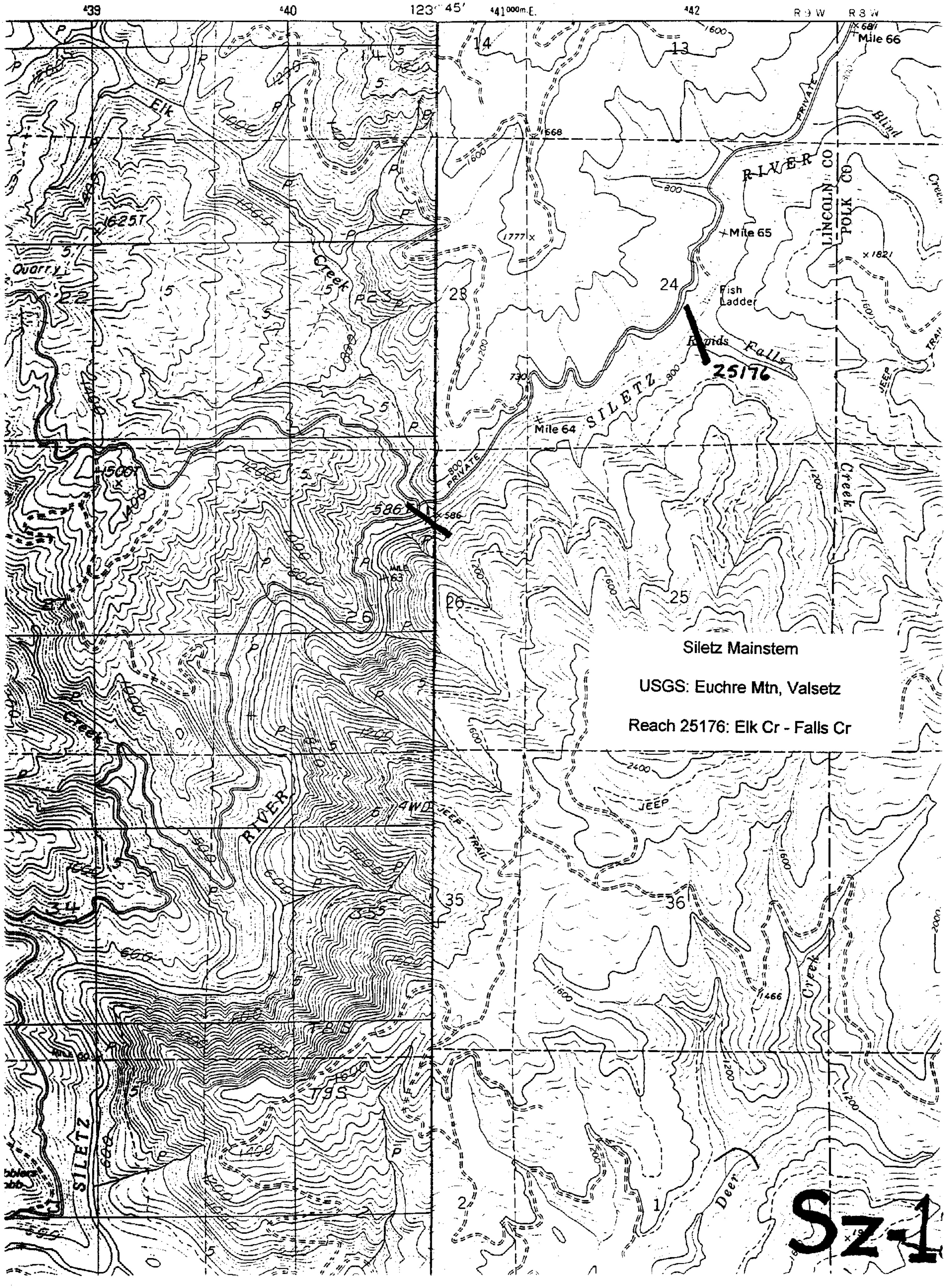


Rock Cr. (Siletz)

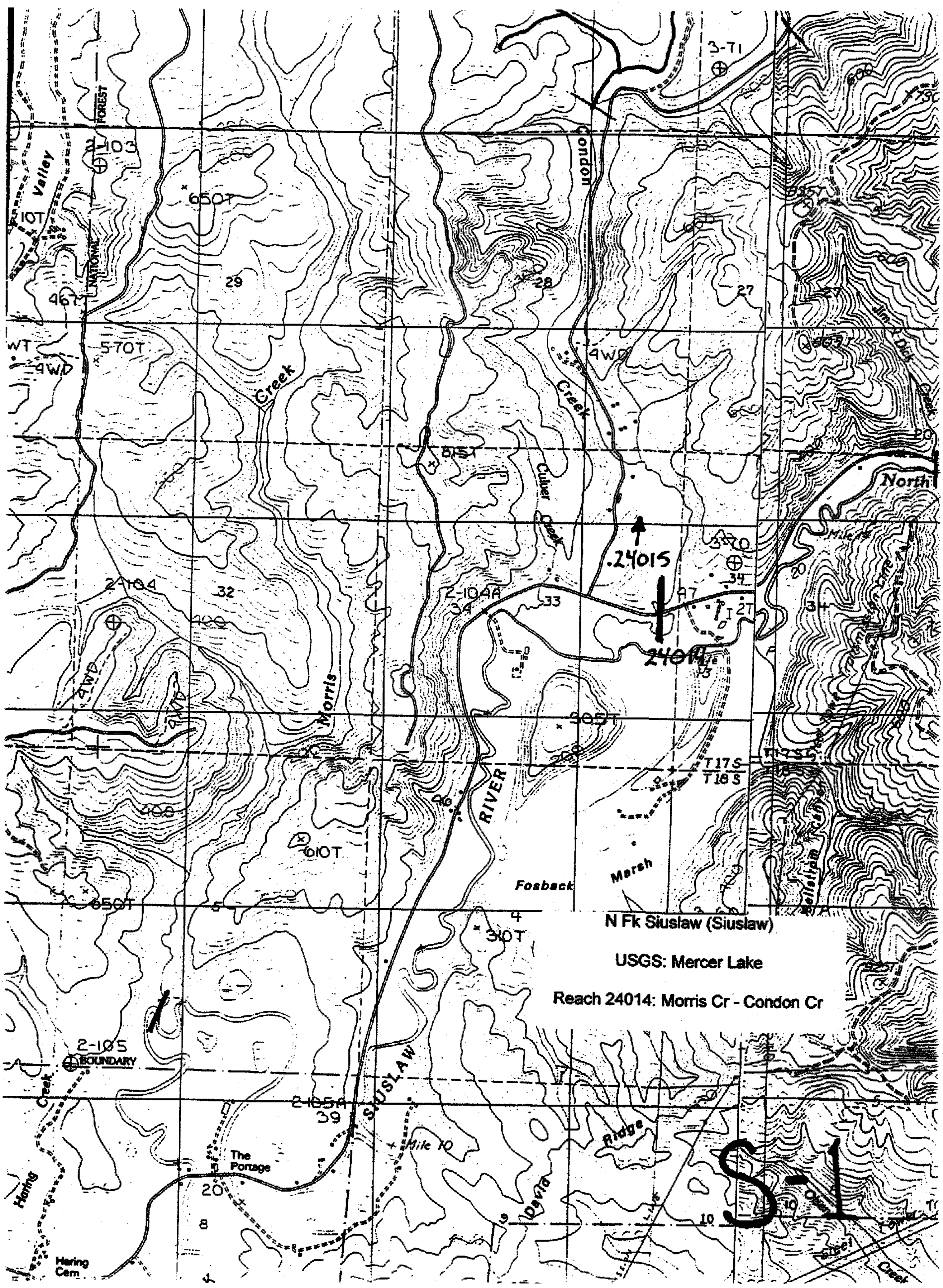
USGS: Eddyville, Nortons

Reach 25133: Mouth - Big Rock C

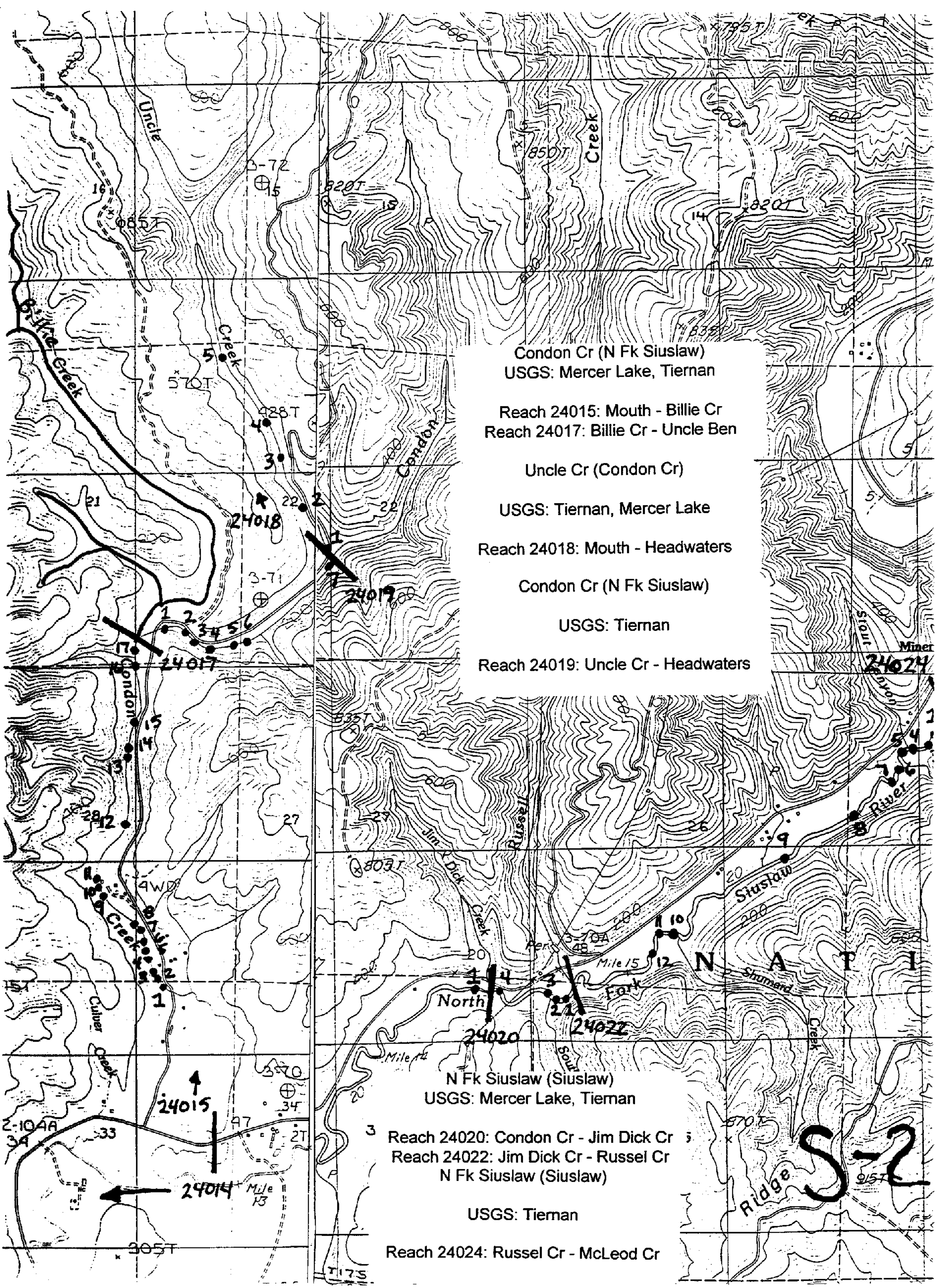

NITED STATES
ENT OF THE INTERIOR
LOGICAL SURVEY
Big Rock Cr (Rock Cr)
USGS: Nortons, Valsetz
Reach 25134: Mouth - Fall Cr
Rock
Big
Fall
Creek
Indian Gap
Millers Gap
Fish Hatchery
Quarry
LINCOLN CO
POLK CO
BM 736
BM 738
BM 260
42
43
30
29
31
32
36



Siletz Mainstem
USGS: Euchre Mtn, Valsetz
Reach 25176: Elk Cr - Falls Cr
25176
Mile 66
Mile 65
Mile 64
Fish Ladder
Rapids
Falls
SILETZ
RIVER
Elk
Creek
Quarry
PRIVATE
LINCOLN CO
POLK CO
Blind
JEEP
4WD JEEP TRAIL
Deer
Sz-1



N Fk Siuslaw (Siuslaw)
USGS: Mercer Lake
Reach 24014: Morris Cr - Condon Cr
24015
24014
S-1
Condon Creek
Culver Creek
Morris
Creek
SIUSLAW RIVER
North
Fosback Marsh
Ridge
David
The Portage
Haring Cem
Haring Creek
BOUNDARY
NATIONAL FOREST
Valley
Mile 10
T 17 S
T 18 S
3-71
3-70
2-103
2-104
2-104A
2-105
2-105A



Condon Cr (N Fk Siuslaw)
USGS: Mercer Lake, Tiernan

Reach 24015: Mouth - Billie Cr
Reach 24017: Billie Cr - Uncle Ben

Uncle Cr (Condon Cr)

USGS: Tiernan, Mercer Lake

Reach 24018: Mouth - Headwaters

Condon Cr (N Fk Siuslaw)

USGS: Tiernan

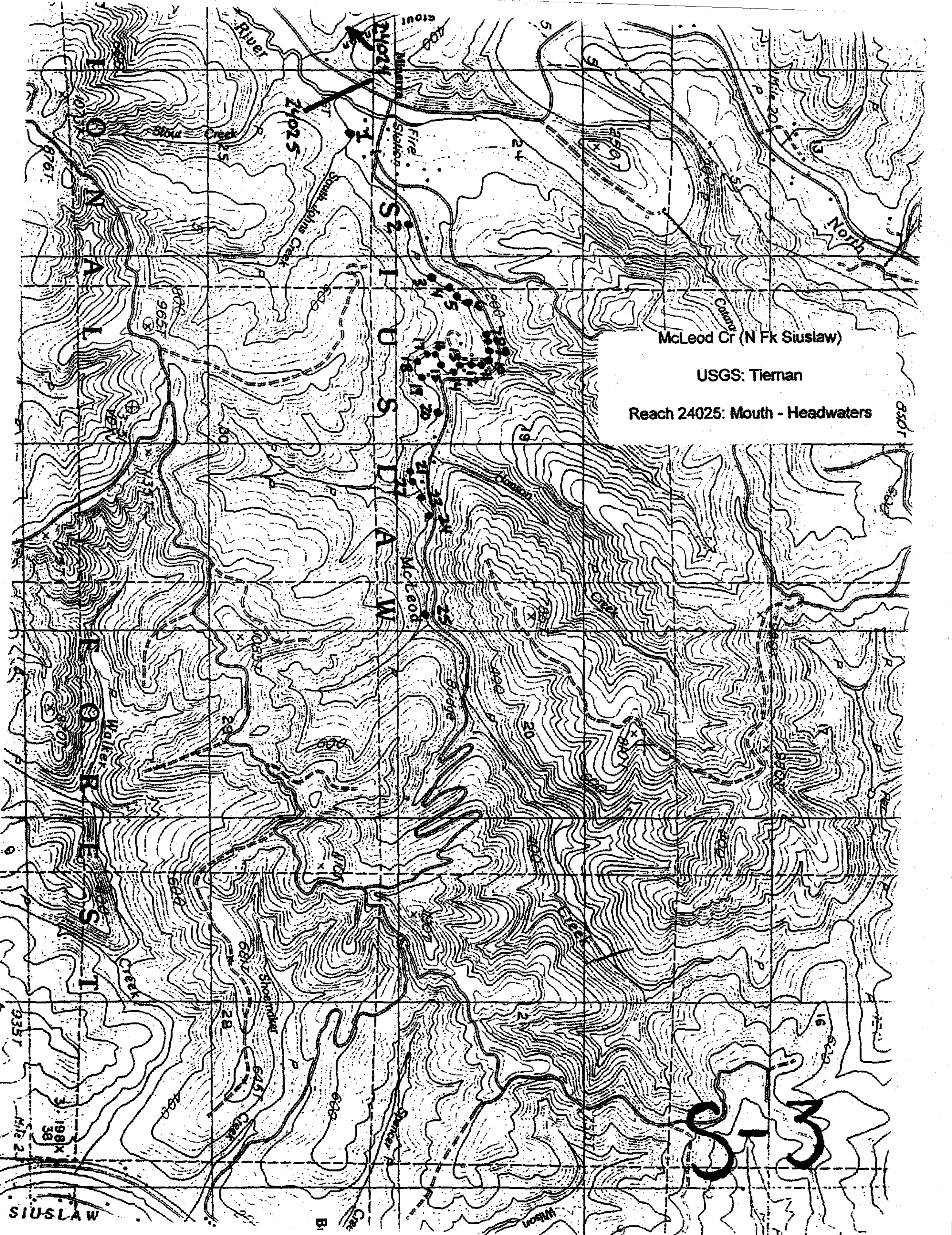
Reach 24019: Uncle Cr - Headwaters

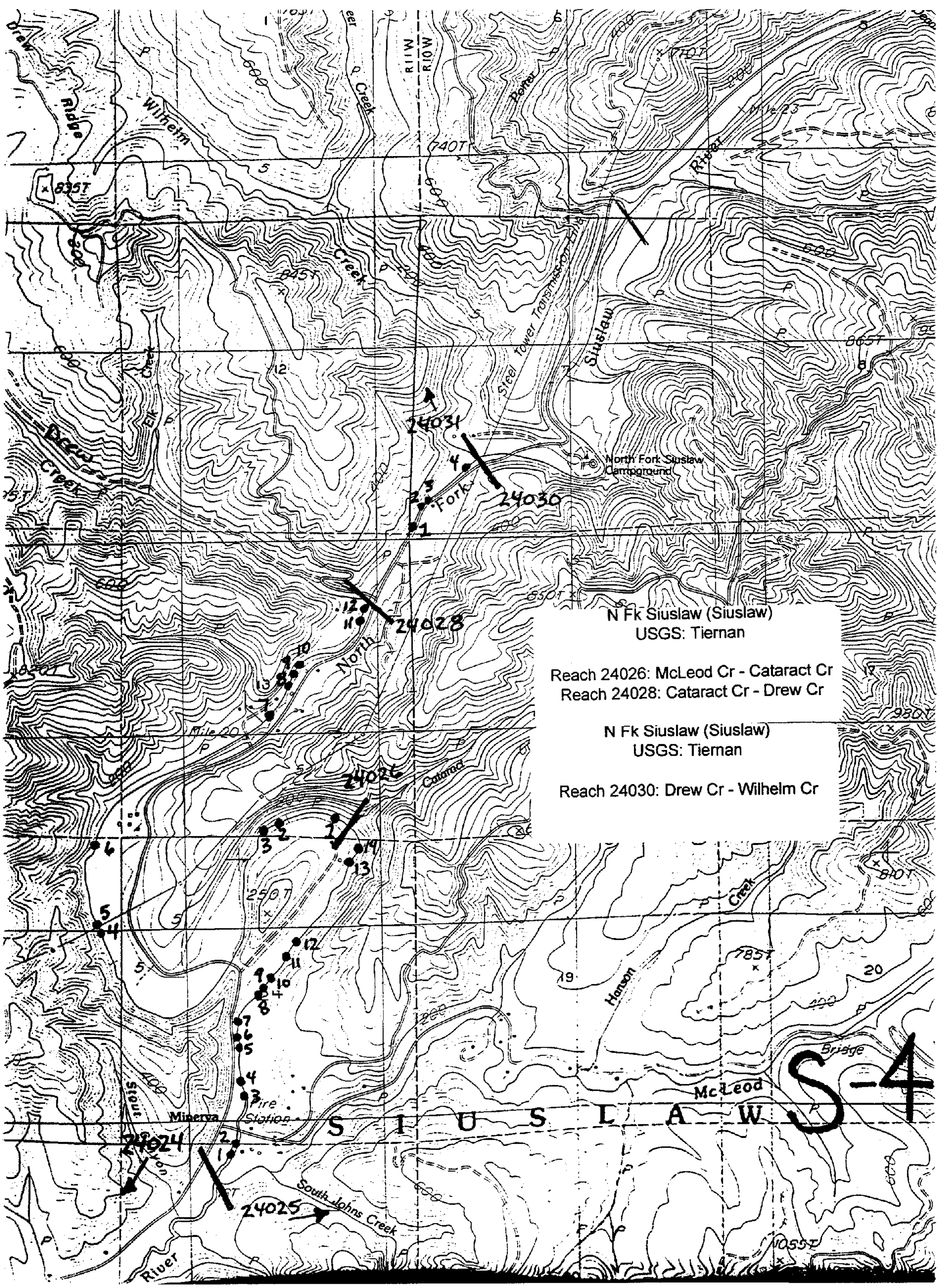
N Fk Siuslaw (Siuslaw)
USGS: Mercer Lake, Tiernan

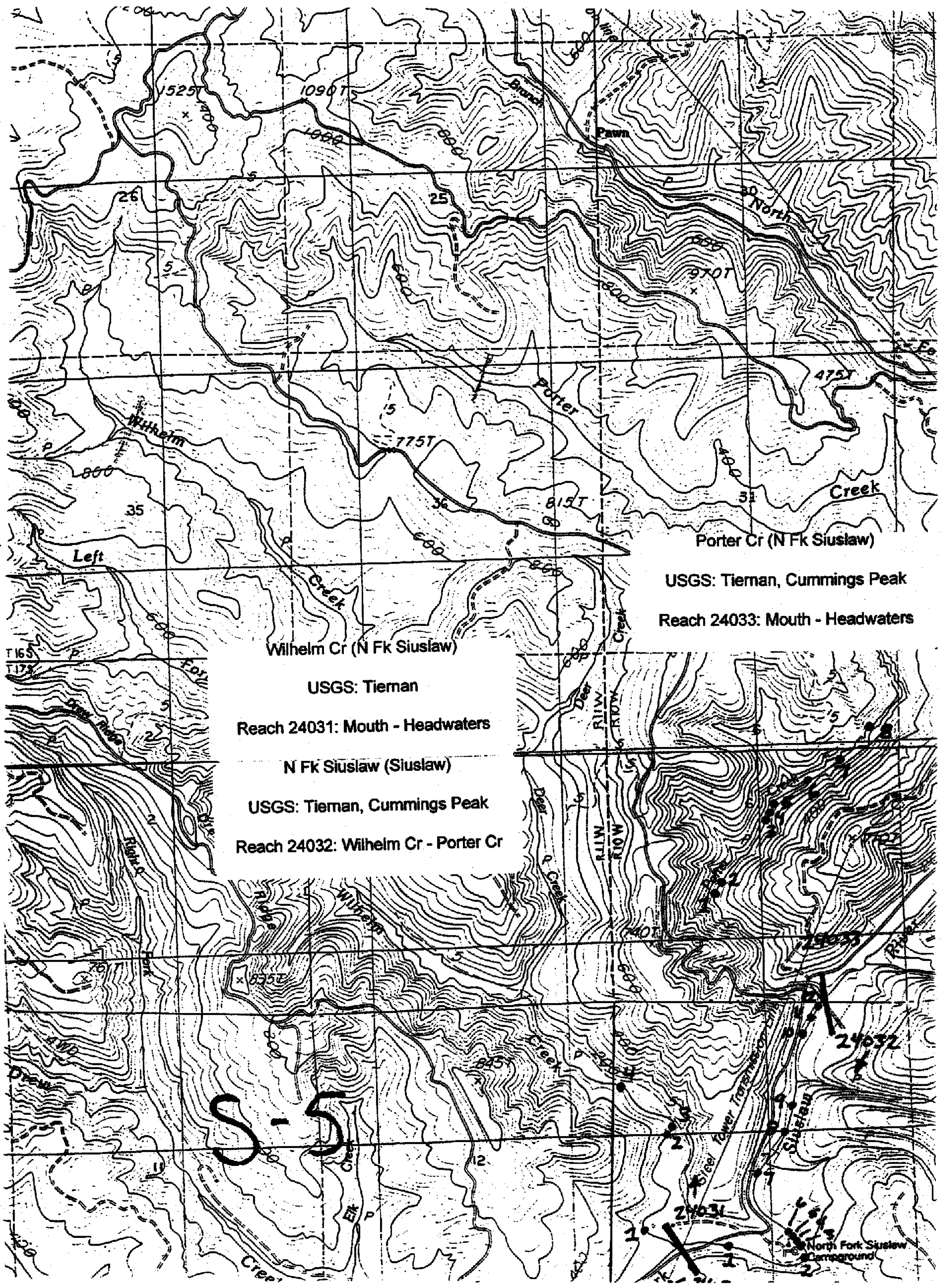
Reach 24020: Condon Cr - Jim Dick Cr
Reach 24022: Jim Dick Cr - Russel Cr
N Fk Siuslaw (Siuslaw)

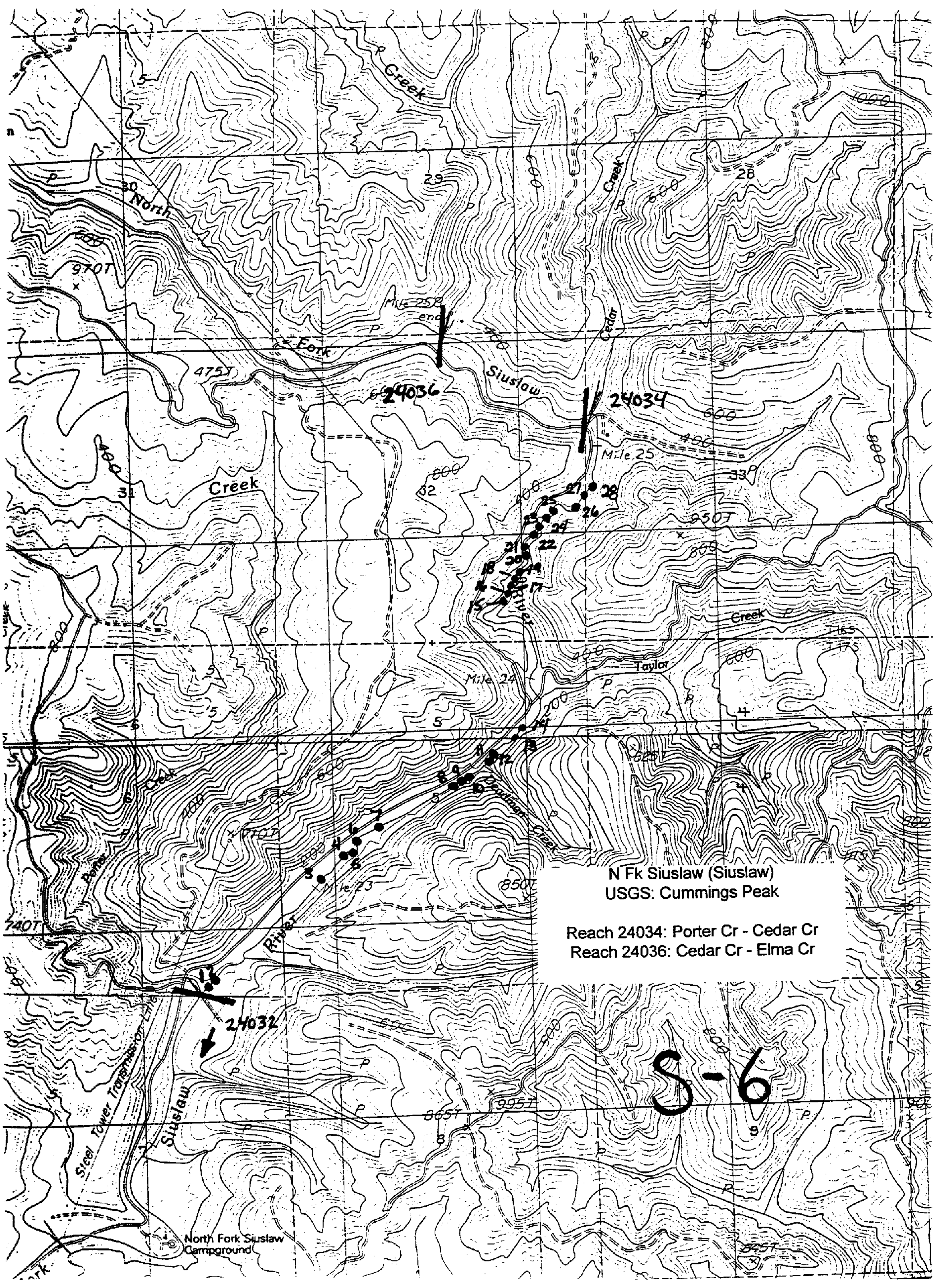
USGS: Tiernan

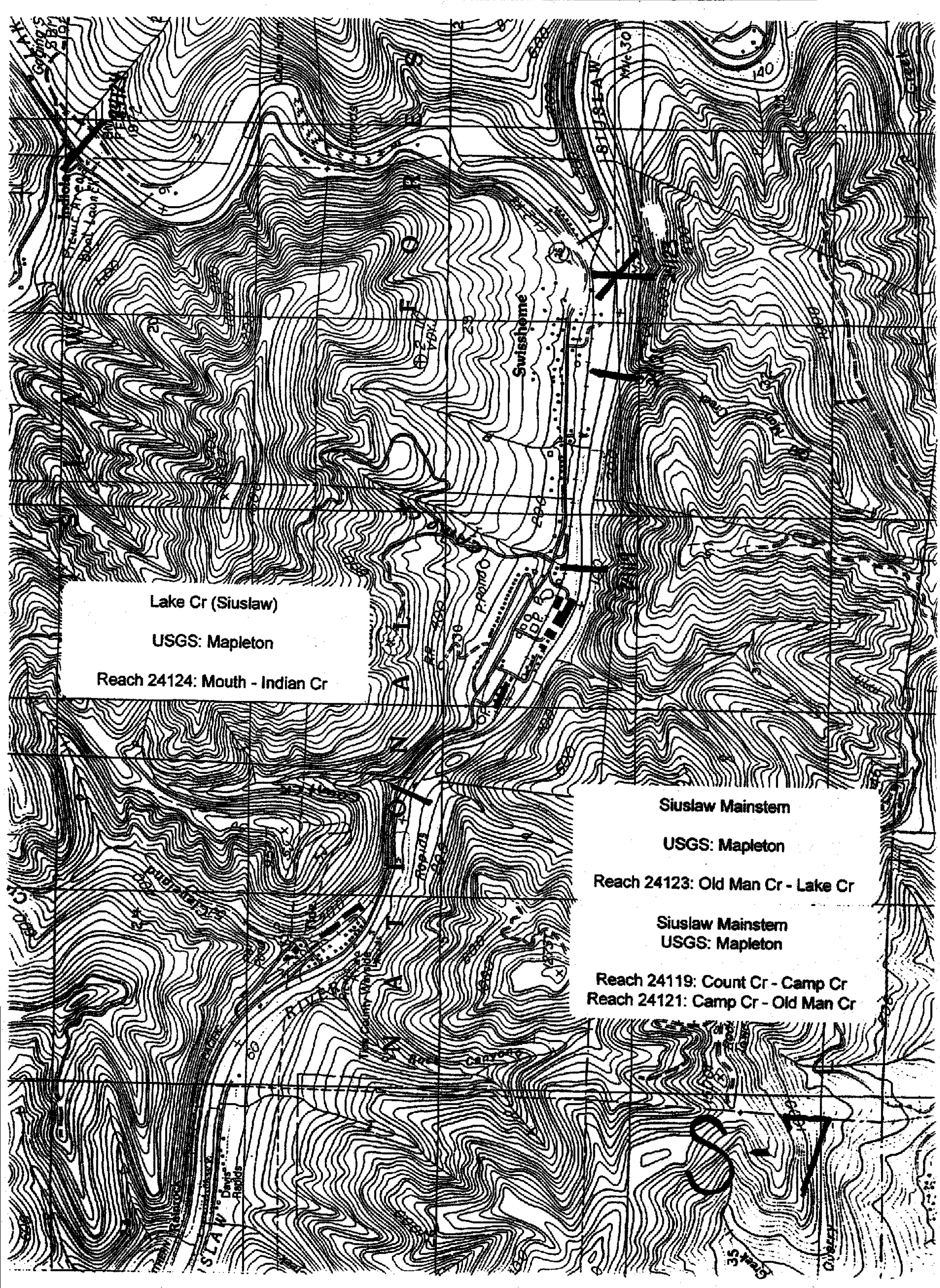
Reach 24024: Russel Cr - McLeod Cr


McLeod Cr (N Fk Siuslaw)
USGS: Tiernan
Reach 24025: Mouth - Headwaters
24025
24024
Stout Creek
South Johns Creek
Fire Station
McLeod
Dodson Creek
Bogus
Walker Creek
Shoemaker Creek
Spencer
Wilson
Cataract
North
River
SIUSLAW
SIUSLAW NATIONAL FOREST
S-3

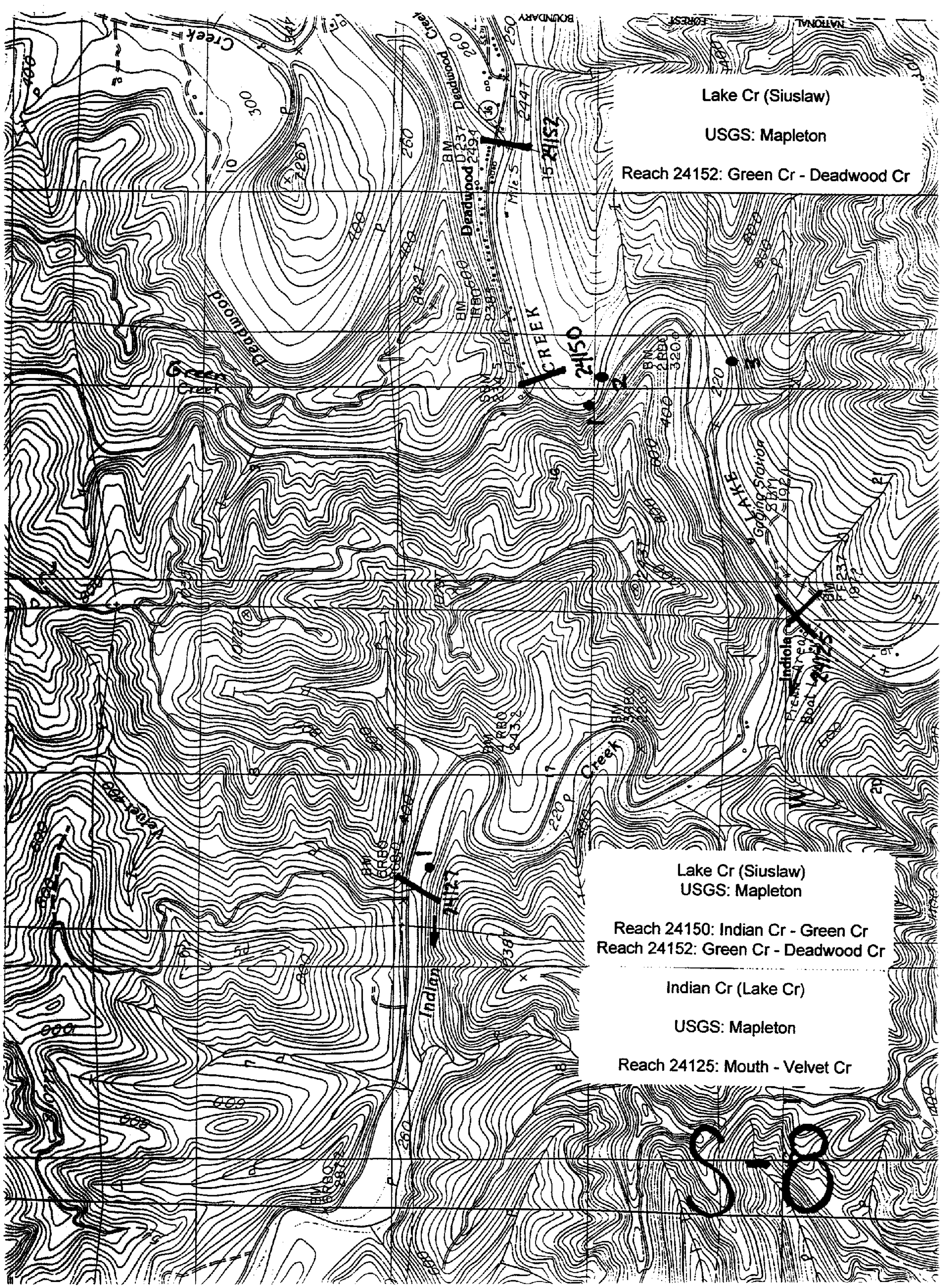

N Fk Siuslaw (Siuslaw)
USGS: Tiernan
Reach 24026: McLeod Cr - Cataract Cr
Reach 24028: Cataract Cr - Drew Cr
N Fk Siuslaw (Siuslaw)
USGS: Tiernan
Reach 24030: Drew Cr - Wilhelm Cr
24031
24030
24028
24026
24024
24025
North Fork Siuslaw Campground
Steel Tower Transmission Line
Siuslaw
River
Wilhelm
Creek
Drew
Ridge
Elk
Creek
North
Fork
Cataract
Hanson
Creek
McLeod
Bridge
South Johns Creek
Minerva
Fire Station
S I U S L A W
S-4

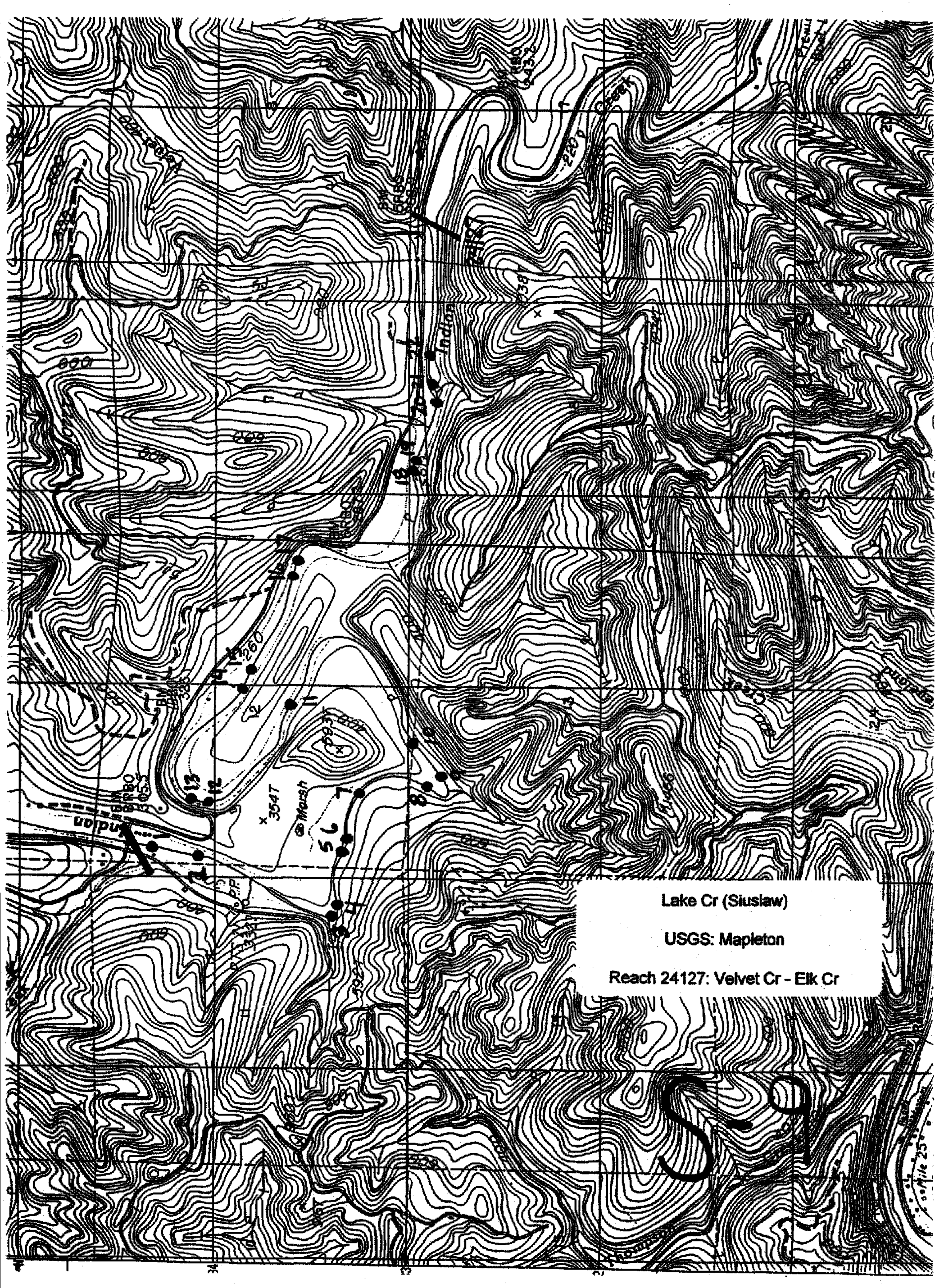

Porter Cr (N Fk Siuslaw)
USGS: Tiernan, Cummings Peak
Reach 24033: Mouth - Headwaters
Wilhelm Cr (N Fk Siuslaw)
USGS: Tiernan
Reach 24031: Mouth - Headwaters
N Fk Siuslaw (Siuslaw)
USGS: Tiernan, Cummings Peak
Reach 24032: Wilhelm Cr - Porter Cr
Pawn
North
Porter
Creek
Wilhelm
Left
Creek
Deer
Siuslaw
North Fork Siuslaw Campground
24033
24032
24031
S-5

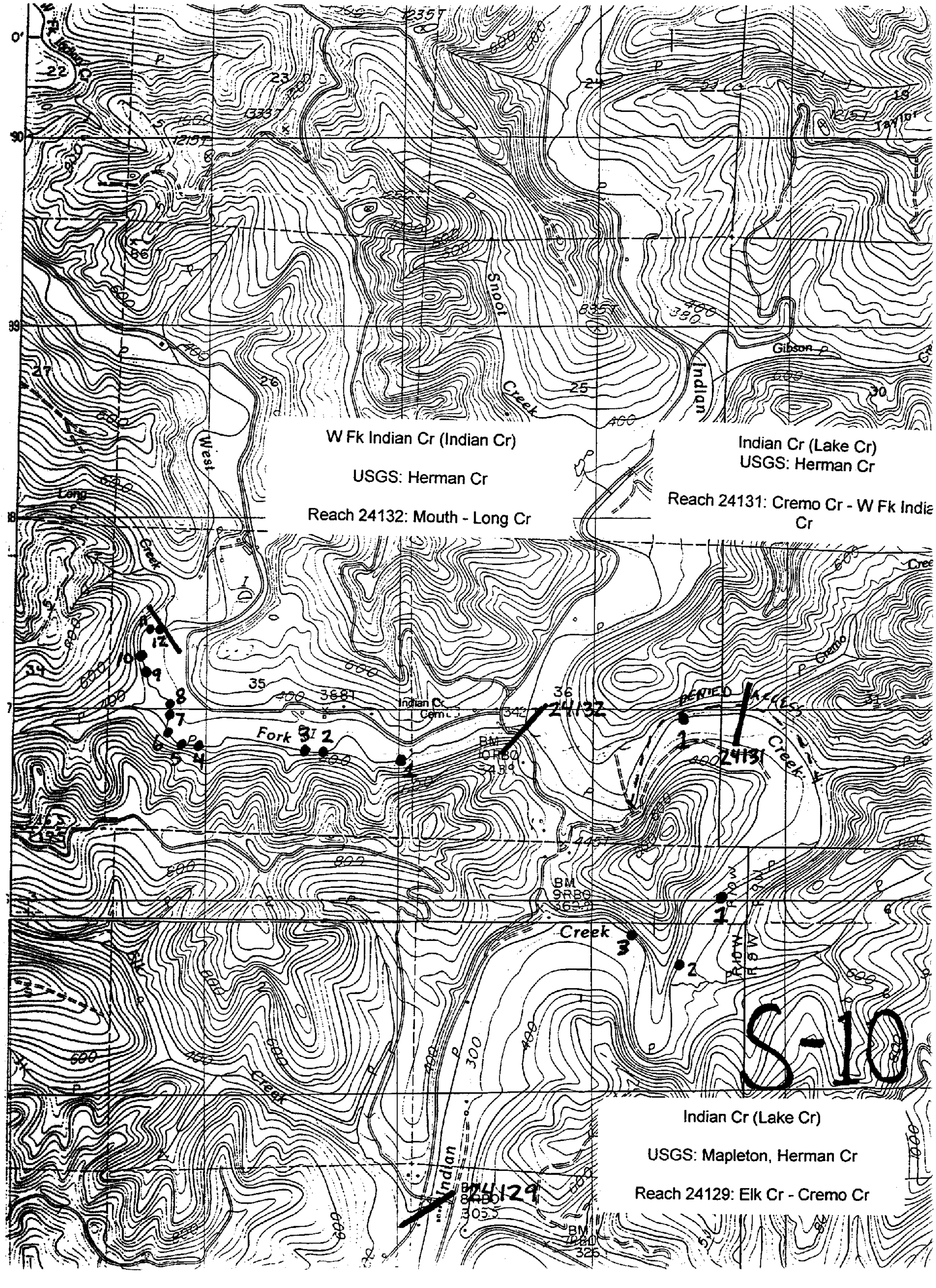

N Fk Siuslaw (Siuslaw)
USGS: Cummings Peak
Reach 24034: Porter Cr - Cedar Cr
Reach 24036: Cedar Cr - Elma Cr
24036
24034
24032
Mile 25.8 end
Mile 25
Mile 24
Mile 23
North Fork Siuslaw Campground
Steel Tower Transmission Line
North
Fork
Siuslaw
River
Creek
Cedar
Taylor
Porter
Deadman Creek
S-6

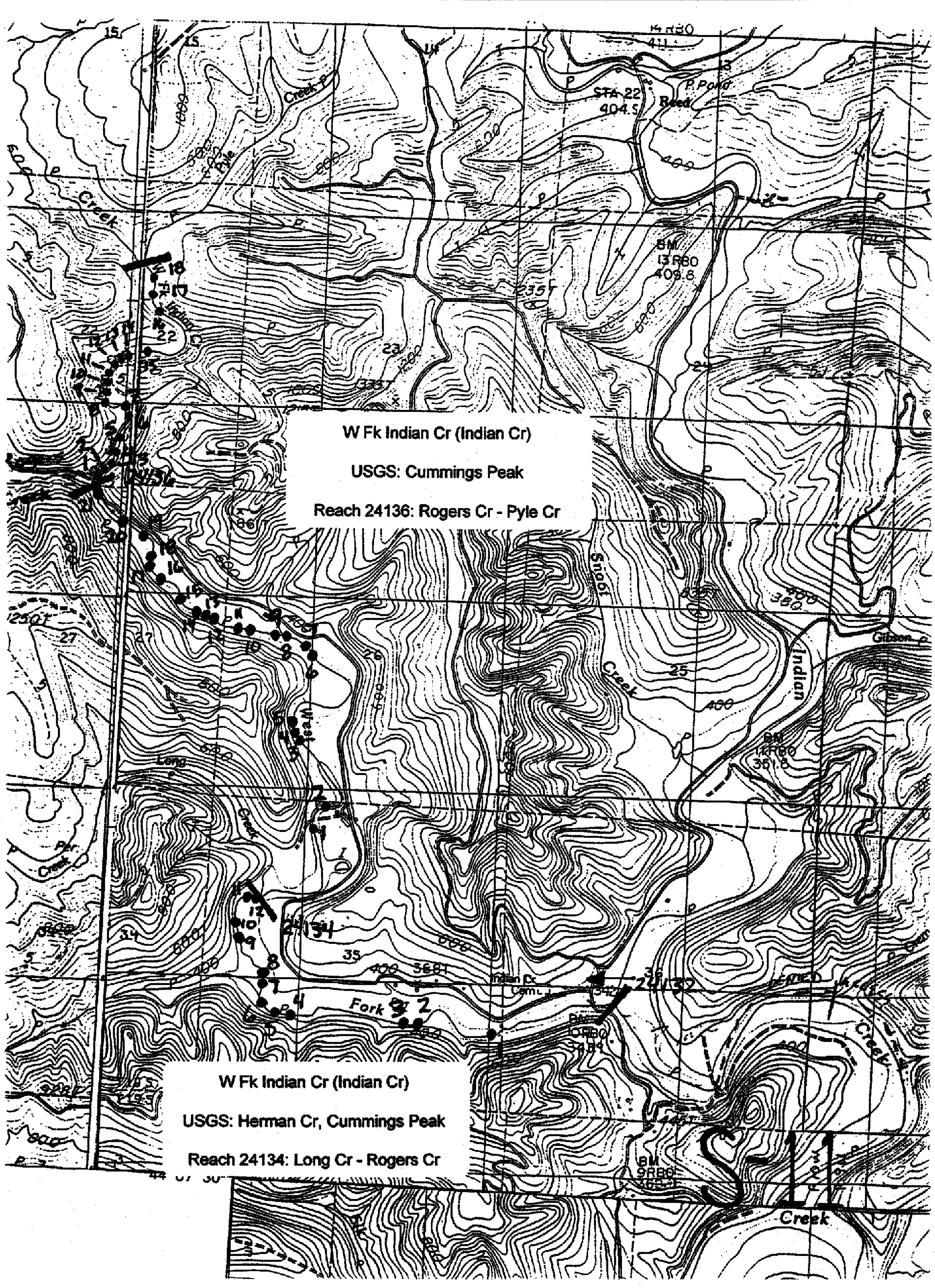


Lake Cr (Siuslaw)
USGS: Mapleton
Reach 24124: Mouth - Indian Cr
Siuslaw Mainstem
USGS: Mapleton
Reach 24123: Old Man Cr - Lake Cr
Siuslaw Mainstem
USGS: Mapleton
Reach 24119: Count Cr - Camp Cr
Reach 24121: Camp Cr - Old Man Cr
Swisshome
S-7


Lake Cr (Siuslaw)
USGS: Mapleton
Reach 24152: Green Cr - Deadwood Cr
Lake Cr (Siuslaw)
USGS: Mapleton
Reach 24150: Indian Cr - Green Cr
Reach 24152: Green Cr - Deadwood Cr
Indian Cr (Lake Cr)
USGS: Mapleton
Reach 24125: Mouth - Velvet Cr
S-8
24152
24150
24125
Deadwood
Green
Creek
LAKE
CREEK
Indiola
Indian
Gaging Station
Deadwood Creek


Lake Cr (Siuslaw)
USGS: Mapleton
Reach 24127: Velvet Cr - Elk Cr
Indian
Creek
Marsh
S-9


W Fk Indian Cr (Indian Cr)
USGS: Herman Cr
Reach 24132: Mouth - Long Cr
Indian Cr (Lake Cr)
USGS: Herman Cr
Reach 24131: Cremo Cr - W Fk India
Cr
Indian Cr (Lake Cr)
USGS: Mapleton, Herman Cr
Reach 24129: Elk Cr - Cremo Cr
24132
24131
24129
S-10
West
Fork
Creek
Snoot
Creek
Indian
Gibson
Cremo
Long
Taylor
Indian Cr Cem
BM 10RBO
BM 9RBO
Elk



W Fk Indian Cr (Indian Cr)

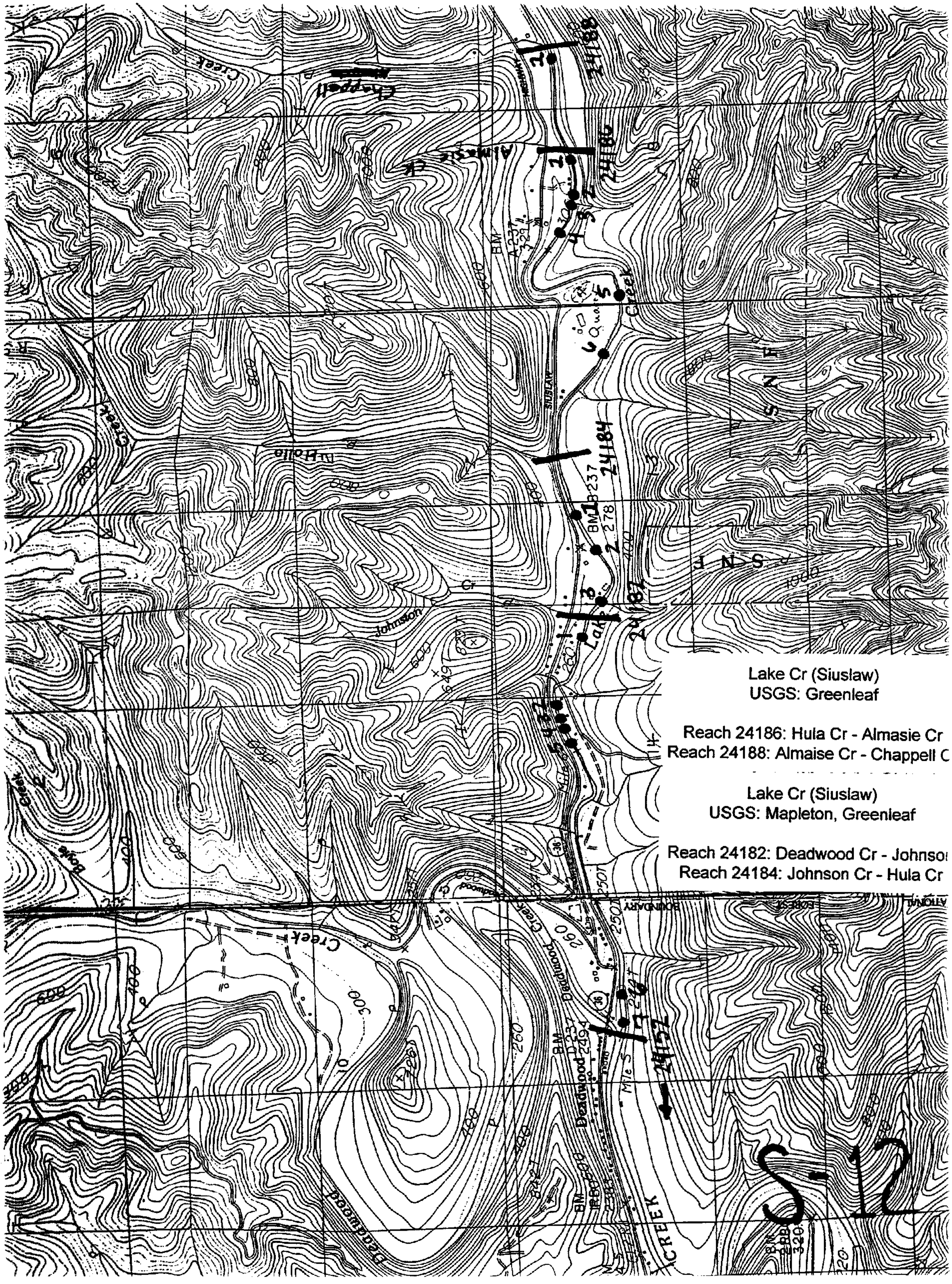
USGS: Cummings Peak

Reach 24136: Rogers Cr - Pyle Cr

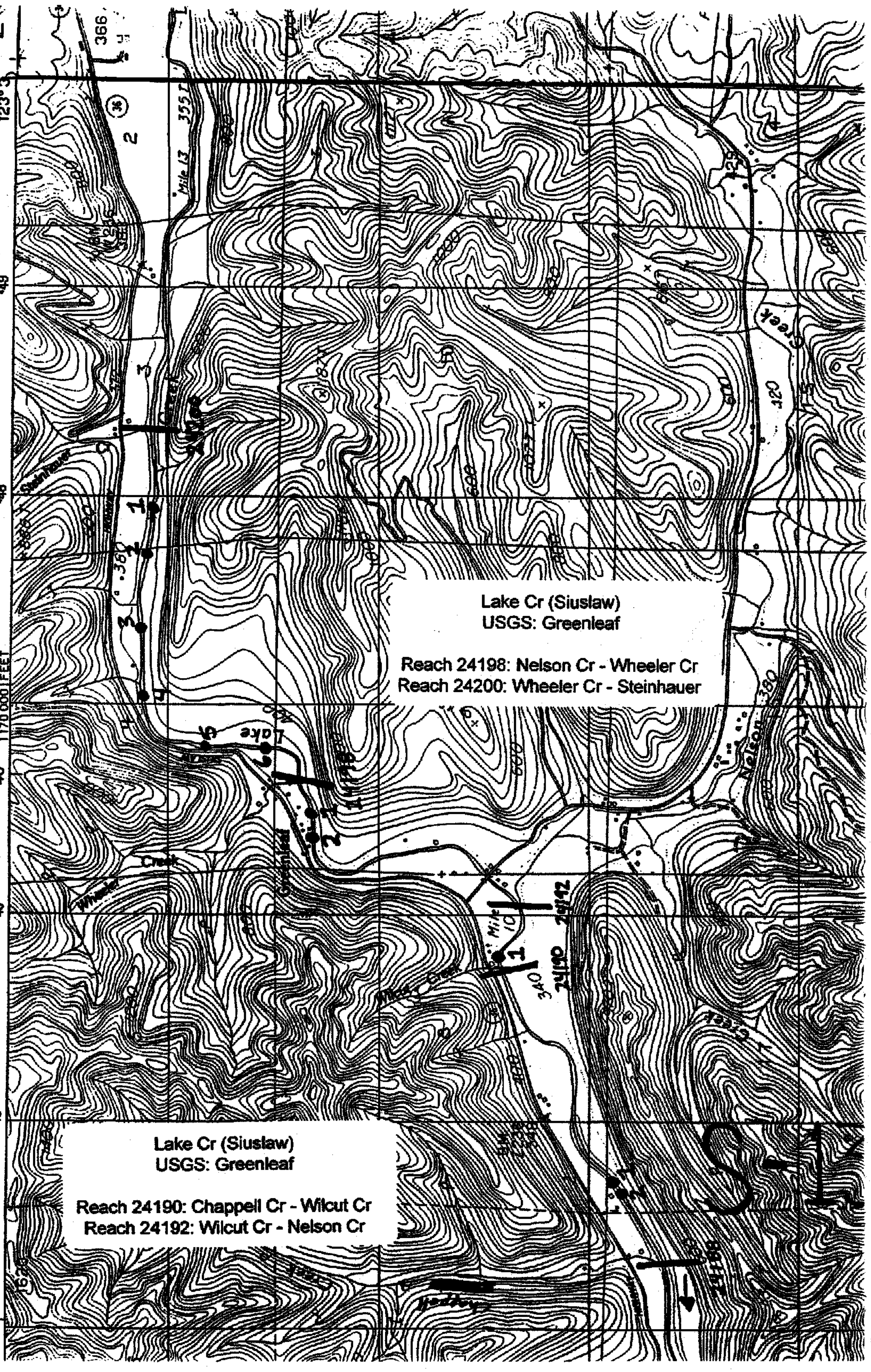
W Fk Indian Cr (Indian Cr)

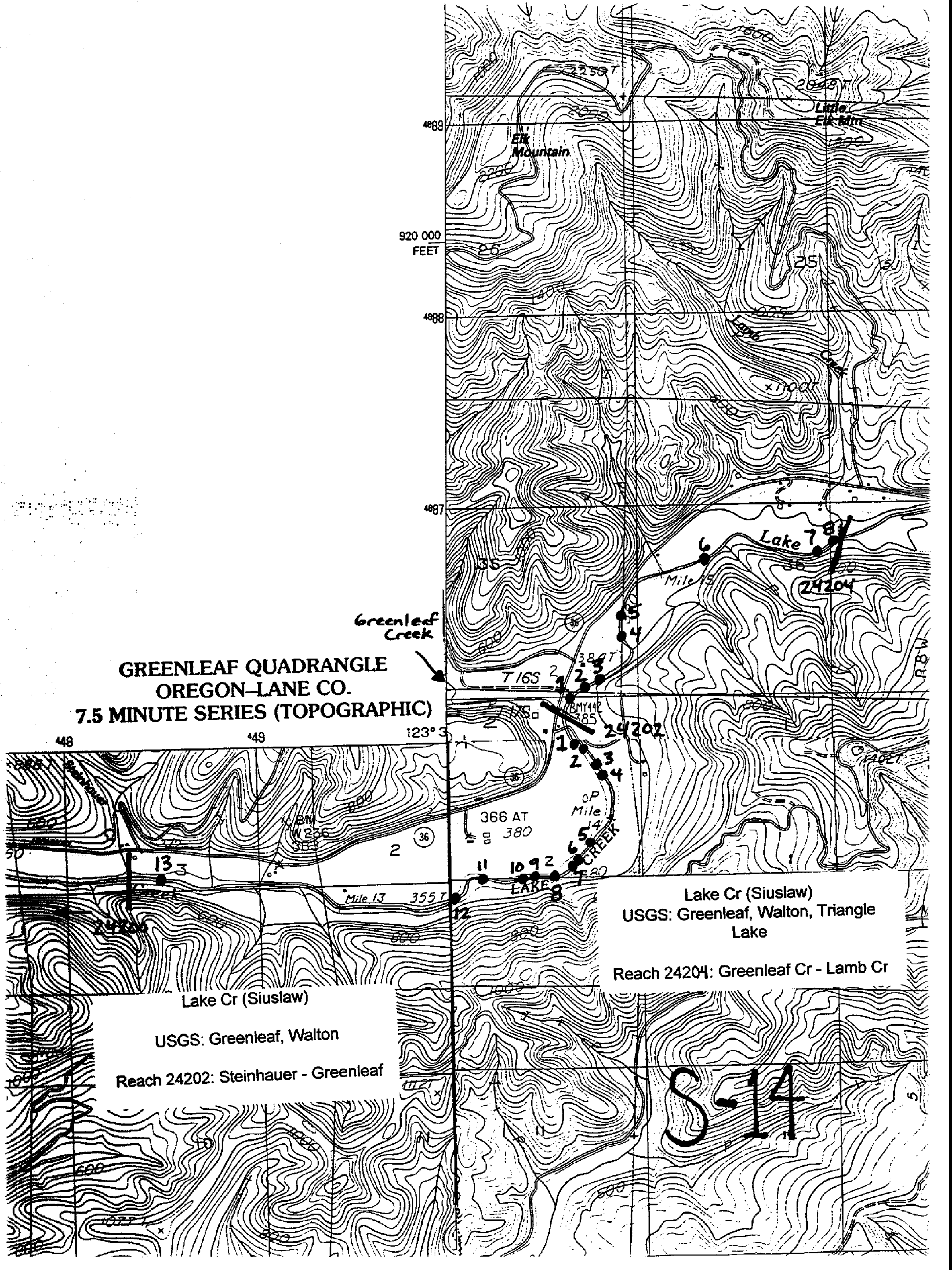
USGS: Herman Cr, Cummings Peak

Reach 24134: Long Cr - Rogers Cr

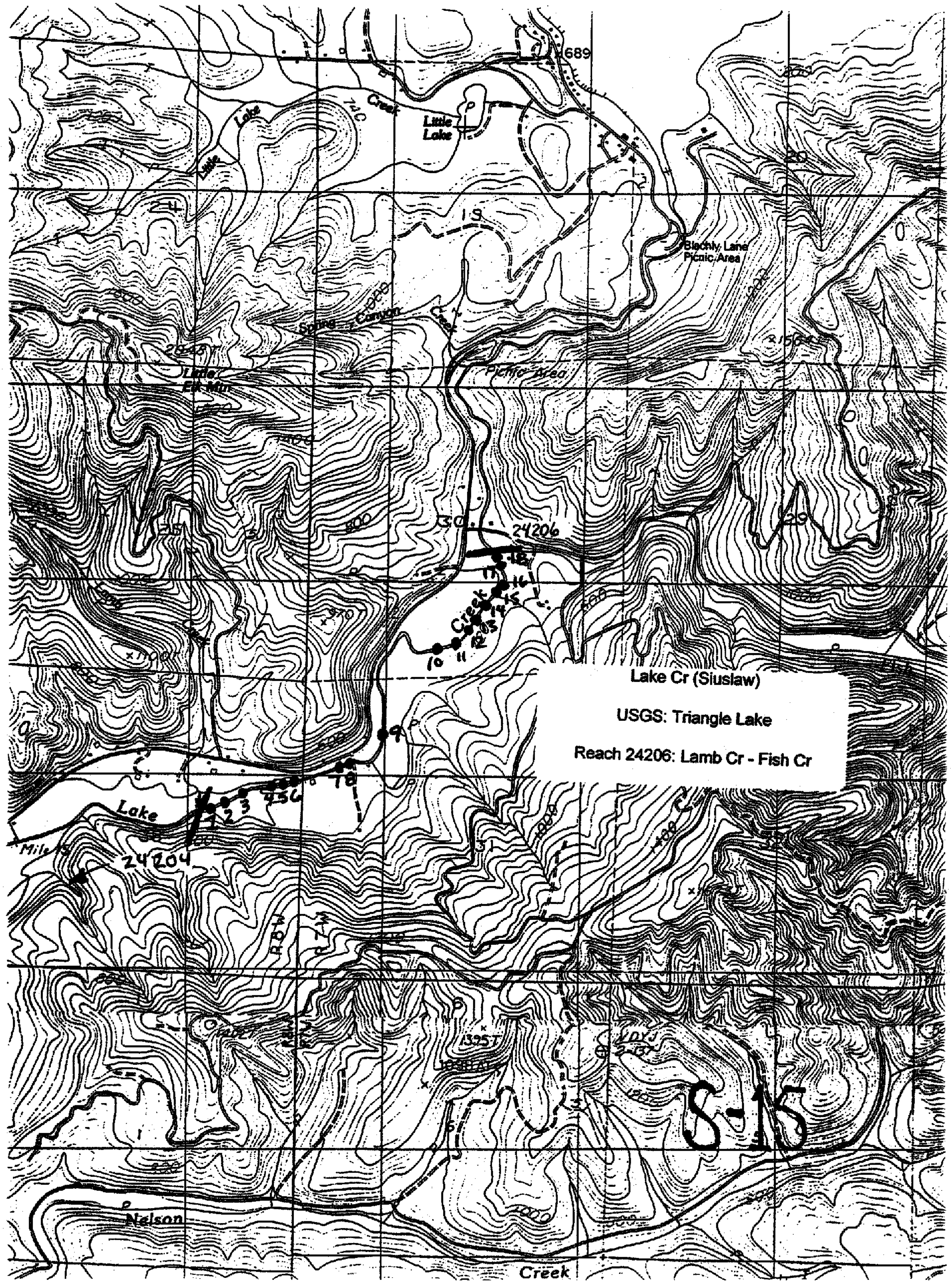

Lake Cr (Siuslaw)
USGS: Greenleaf
Reach 24186: Hula Cr - Almasie Cr
Reach 24188: Almaise Cr - Chappell C
Lake Cr (Siuslaw)
USGS: Mapleton, Greenleaf
Reach 24182: Deadwood Cr - Johnso
Reach 24184: Johnson Cr - Hula Cr
S-12
24188
24186
24184
24182
24152
Chappell
Almasie Ck
Johnston
Cr
Creek
Deadwood
Deadwood Creek
SIUSLAW
CREEK
BOUNDARY
Mile 5

GREENLEAF QUADRANGLE
OREGON–LANE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

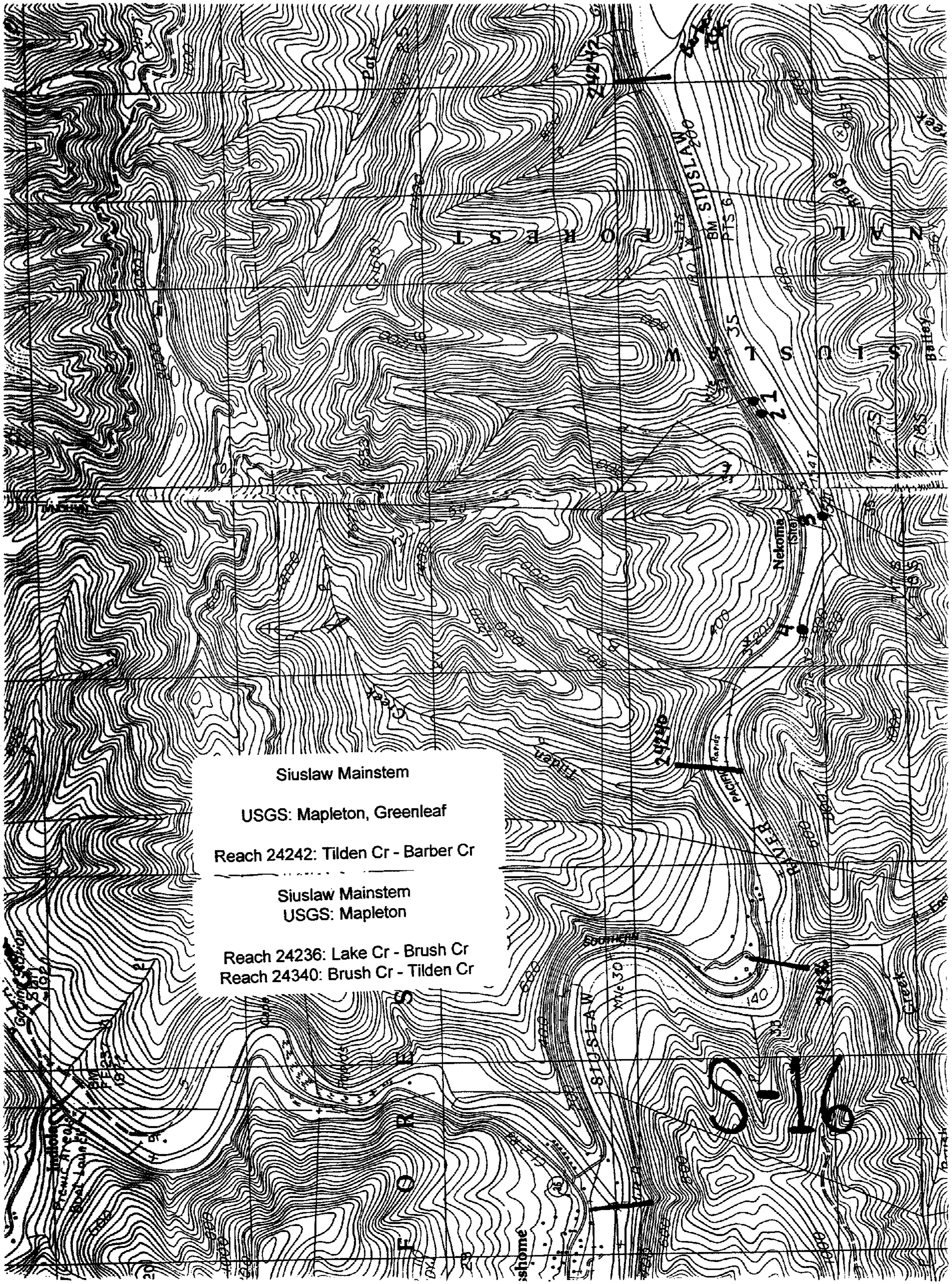




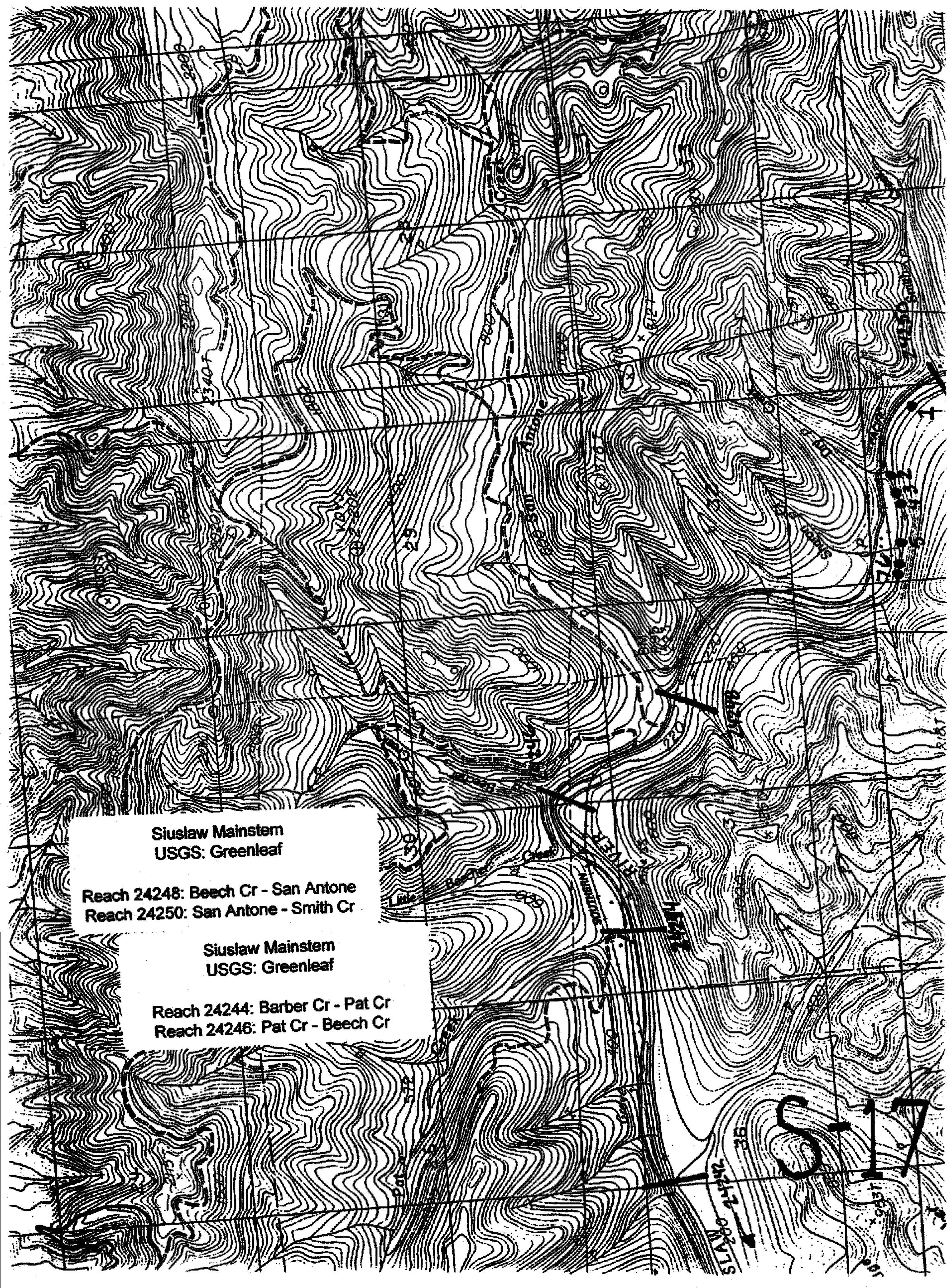
Elk Mountain
Little Elk Mtn
Lamb Creek
Greenleaf Creek
Lake
24204
24202
24206
Mile 15
Mile 14
Mile 13
CREEK
LAKE
366 AT
920 000 FEET
GREENLEAF QUADRANGLE
OREGON–LANE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
Lake Cr (Siuslaw)
USGS: Greenleaf, Walton, Triangle Lake
Reach 24204: Greenleaf Cr - Lamb Cr
Lake Cr (Siuslaw)
USGS: Greenleaf, Walton
Reach 24202: Steinhauer - Greenleaf
S-14

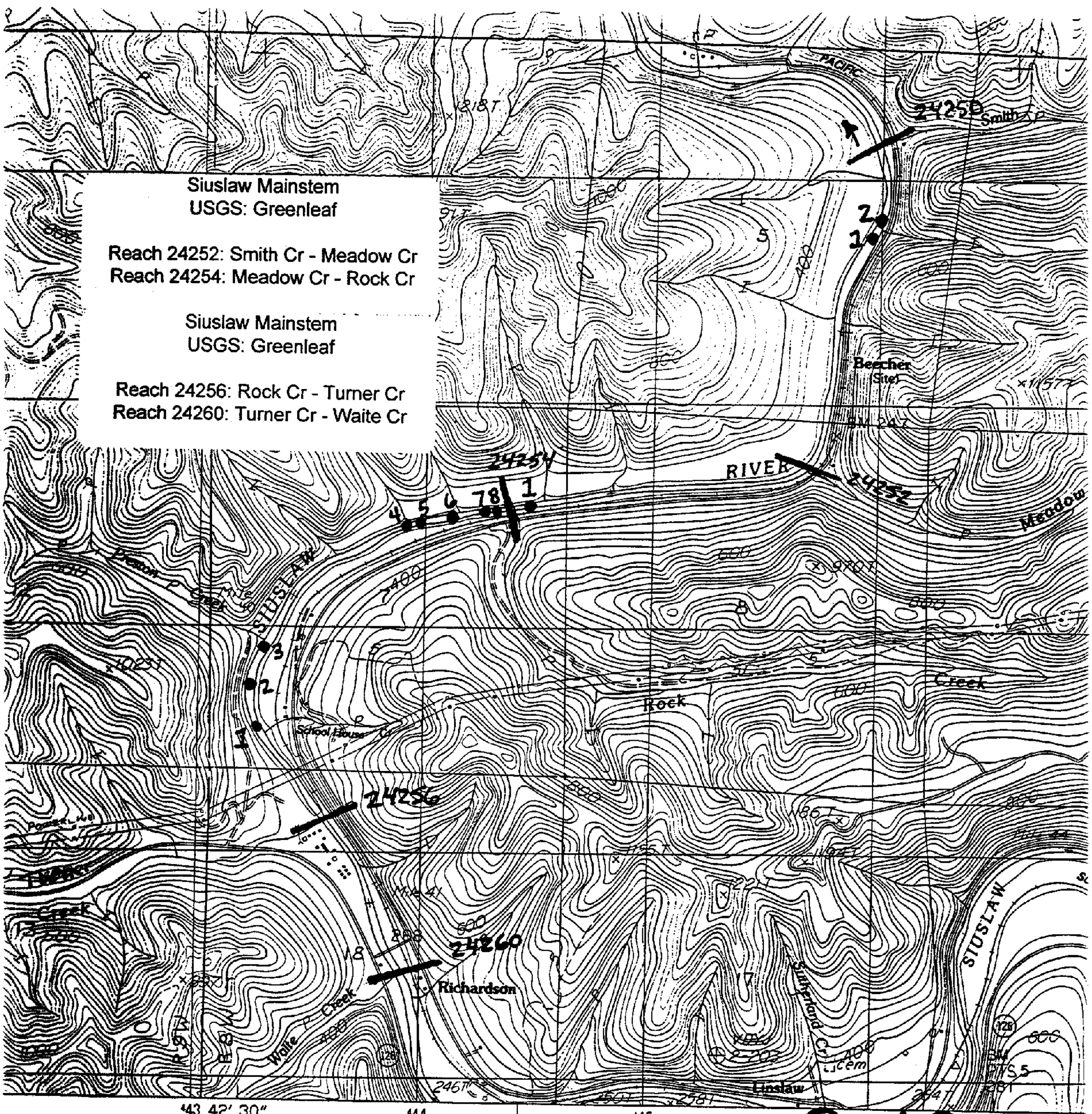


Lake Cr (Siuslaw)
USGS: Triangle Lake
Reach 24206: Lamb Cr - Fish Cr
Little Lake
Creek
Blachly Lane Picnic Area
Spring Canyon
Creek
Little Elk Mtn
Picnic Area
24206
Creek
24204
Lake
Nelson
Creek
S-15



Siuslaw Mainstem
USGS: Mapleton, Greenleaf
Reach 24242: Tilden Cr - Barber Cr
Siuslaw Mainstem
USGS: Mapleton
Reach 24236: Lake Cr - Brush Cr
Reach 24340: Brush Cr - Tilden Cr
S-16
24242
SIUSLAW
NATIONAL FOREST
Nekoma
RIVER
Tilden
SIUSLAW

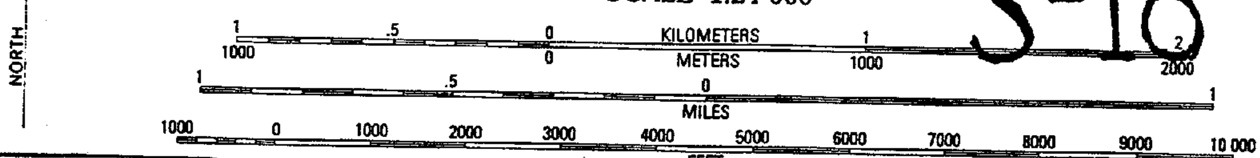

Siuslaw Mainstem
USGS: Greenleaf
Reach 24248: Beech Cr - San Antone
Reach 24250: San Antone - Smith Cr
Siuslaw Mainstem
USGS: Greenleaf
Reach 24244: Barber Cr - Pat Cr
Reach 24246: Pat Cr - Beech Cr
S-17



S-18

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1984

SCALE 1:24 000



QUADRANGLE

PROVISIONAL MAP
Produced from original manuscript drawings. Information shown as of date of field check. 3

CONTOUR INTERVAL 40 FEET
SUPPLEMENTARY CONTOUR INTERVAL 20 FEET

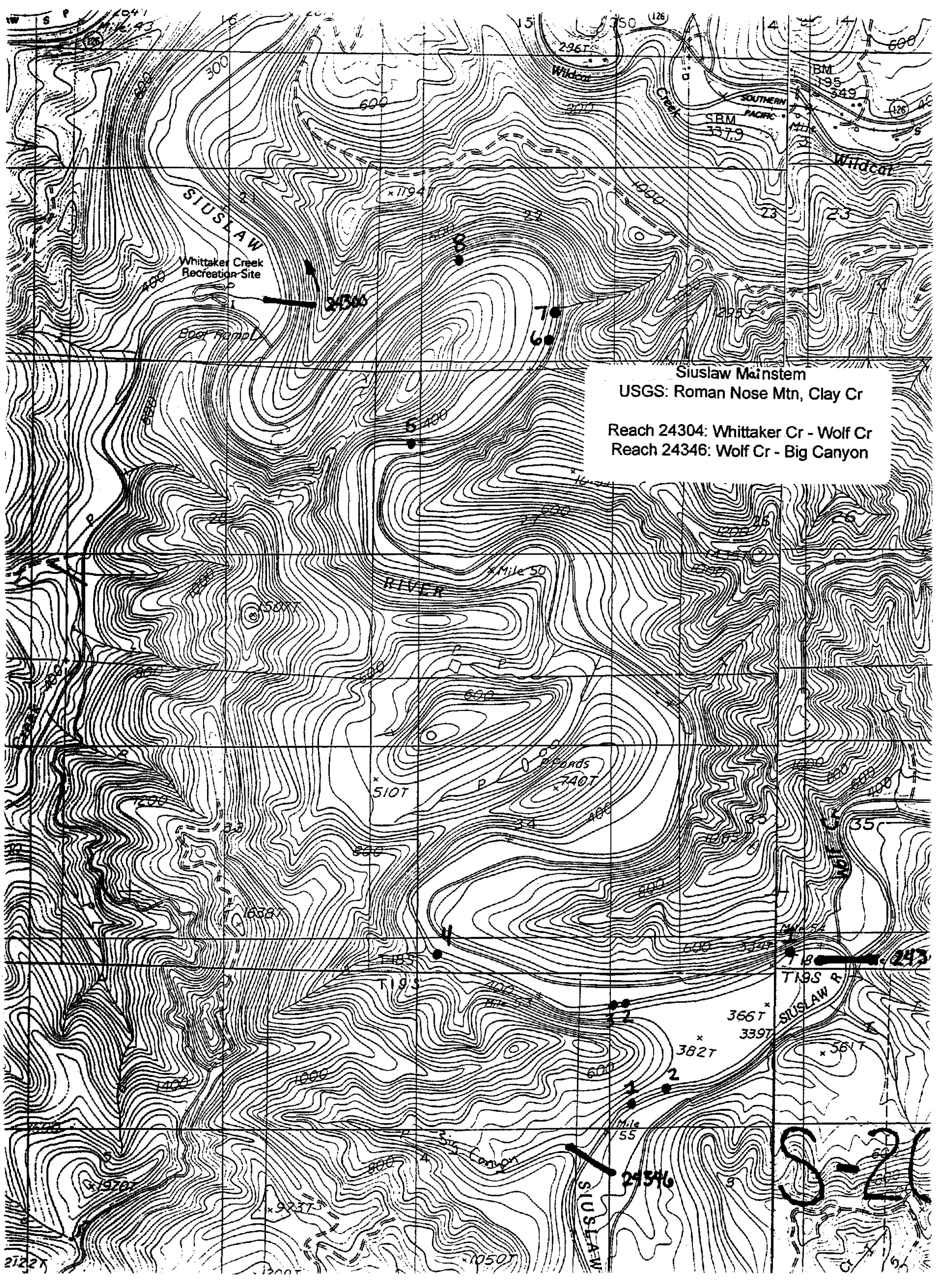
To convert meters to feet multiply by 3.2808
To convert feet to meters multiply by 0.3048

1	2	3
4		5
6	7	8

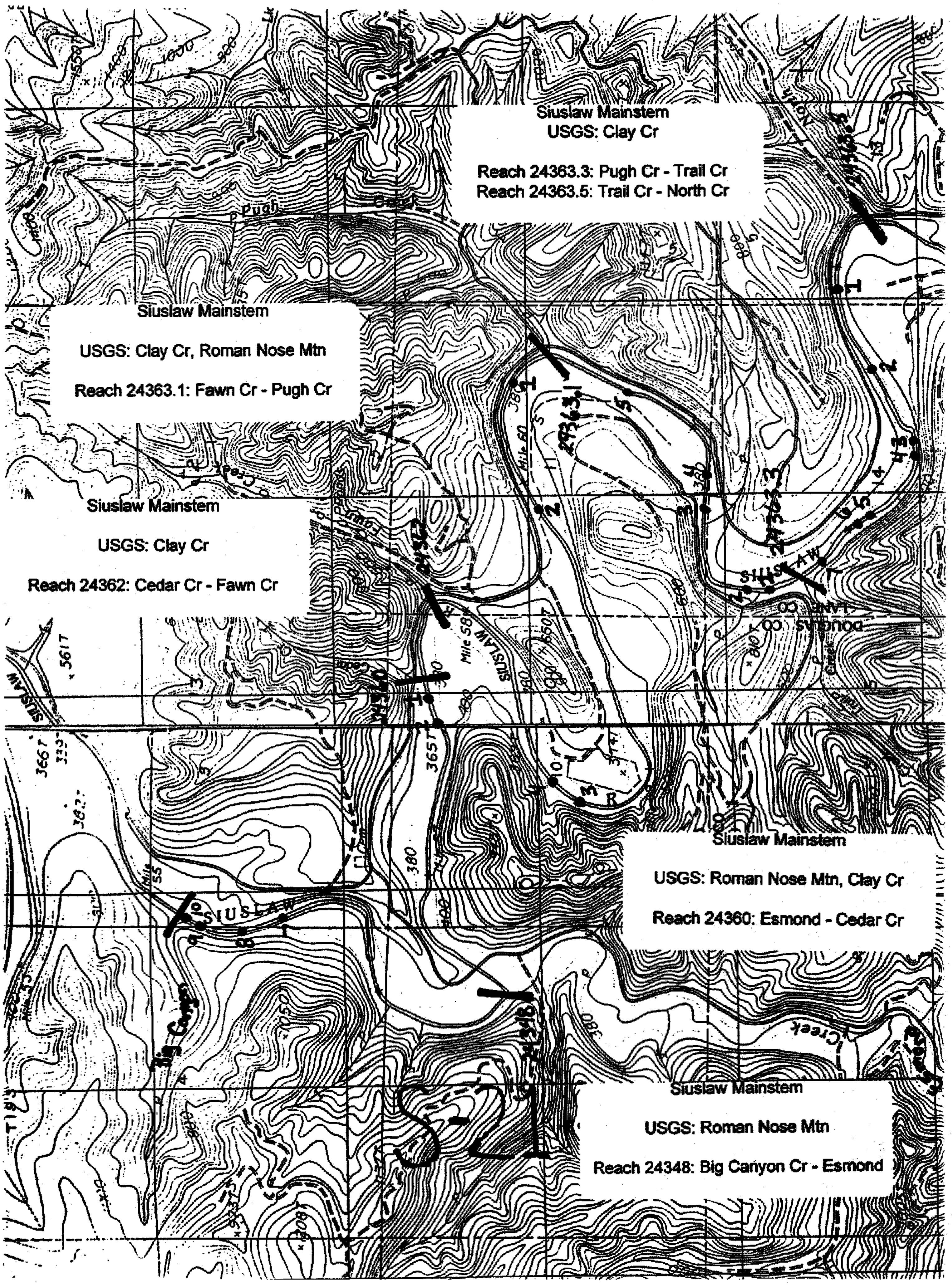
ADJOINING 7.5′

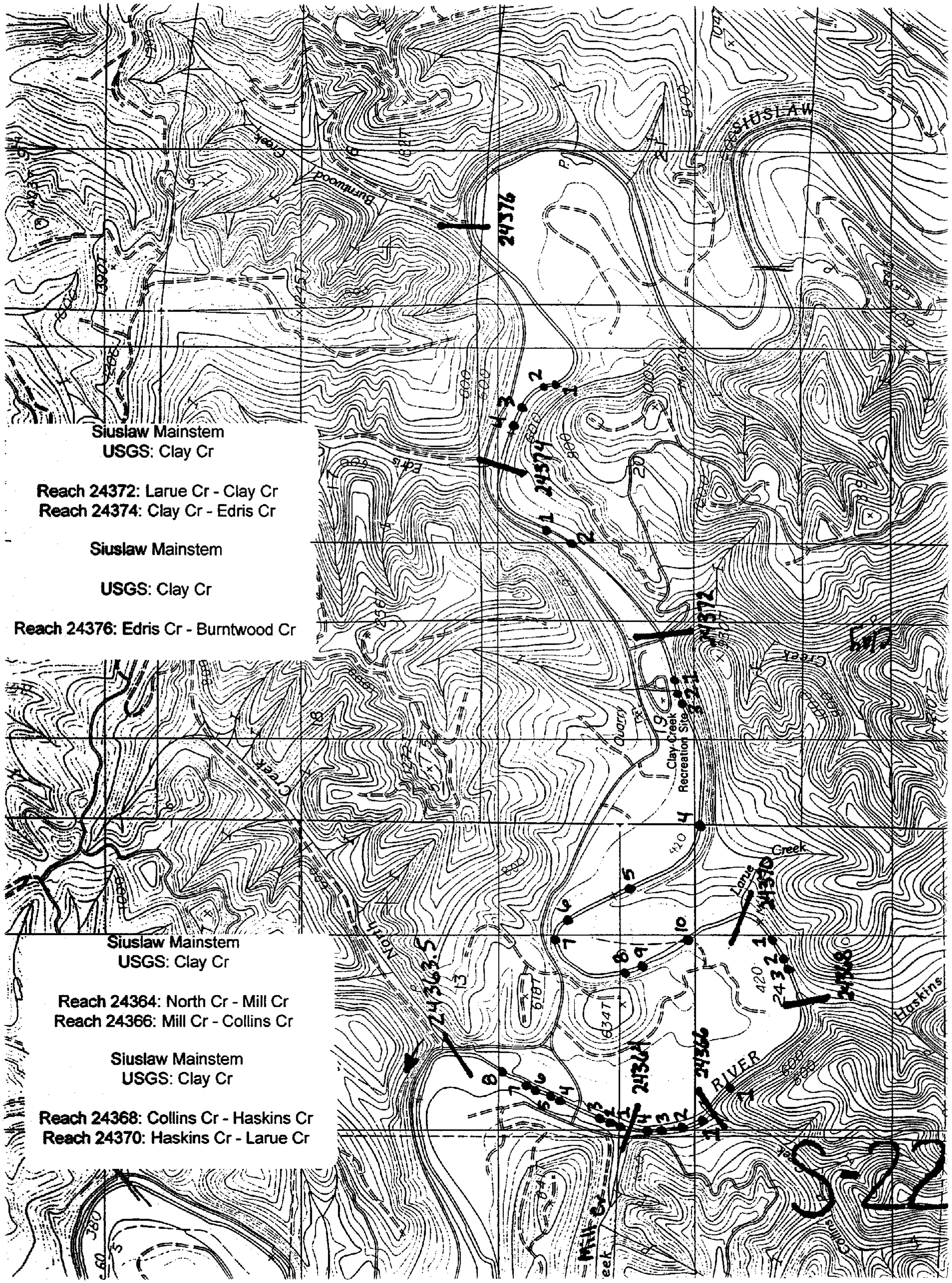
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092


Siuslaw Mainstem
USGS: Greenleaf, Roman Nose Mtn
Reach 24262: Waite Cr - Wildcat Cr
Reach 24300: Wildcat Cr - Whittaker Cr
Whittaker Cr (Siuslaw)
USGS: Roman Nose Mtn
Reach 24301: Mouth - Bounds Cr
S-19
SIUSLAW
RIVER
Whittaker Creek Recreation Site
Linslaw County Park
Creek



Siuslaw Mainstem
USGS: Roman Nose Mtn, Clay Cr
Reach 24304: Whittaker Cr - Wolf Cr
Reach 24346: Wolf Cr - Big Canyon
Whittaker Creek
Recreation Site
Boat Ramp
SIUSLAW
RIVER
Wildcat
Creek
SOUTHERN
PACIFIC
Mile 50
Ponds
Wolf
T18S
T19S
24346
S-2


Siuslaw Mainstem
USGS: Clay Cr
Reach 24363.3: Pugh Cr - Trail Cr
Reach 24363.5: Trail Cr - North Cr
Siuslaw Mainstem
USGS: Clay Cr, Roman Nose Mtn
Reach 24363.1: Fawn Cr - Pugh Cr
Siuslaw Mainstem
USGS: Clay Cr
Reach 24362: Cedar Cr - Fawn Cr
Siuslaw Mainstem
USGS: Roman Nose Mtn, Clay Cr
Reach 24360: Esmond - Cedar Cr
Siuslaw Mainstem
USGS: Roman Nose Mtn
Reach 24348: Big Canyon Cr - Esmond
S-21
SIUSLAW
LANE CO
DOUGLAS CO
Pugh
Creek
Mile 58
Mile 50



Siuslaw Mainstem
USGS: Clay Cr

Reach 24372: Larue Cr - Clay Cr
Reach 24374: Clay Cr - Edris Cr

Siuslaw Mainstem

USGS: Clay Cr

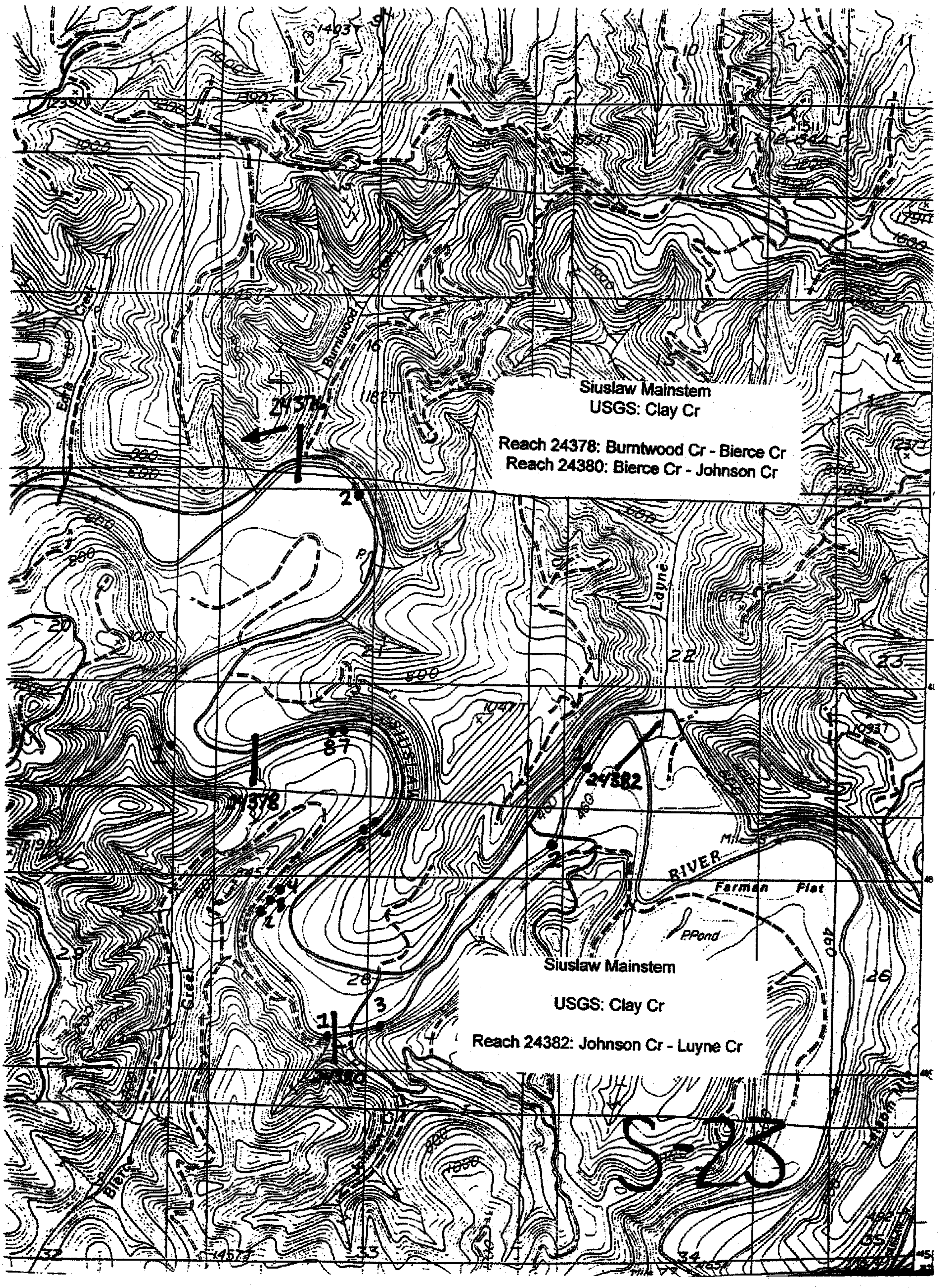
Reach 24376: Edris Cr - Burntwood Cr

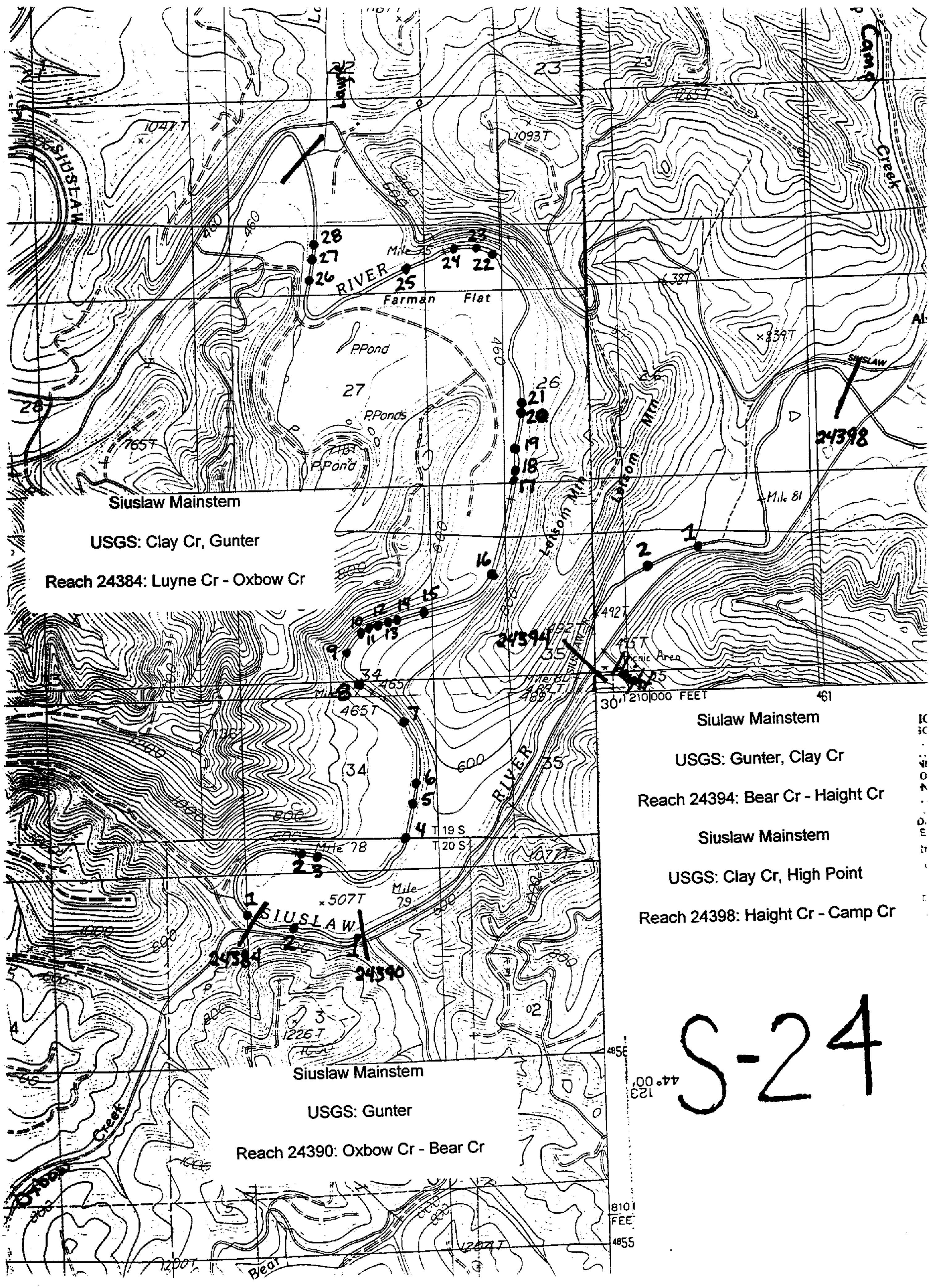
Siuslaw Mainstem
USGS: Clay Cr

Reach 24364: North Cr - Mill Cr
Reach 24366: Mill Cr - Collins Cr

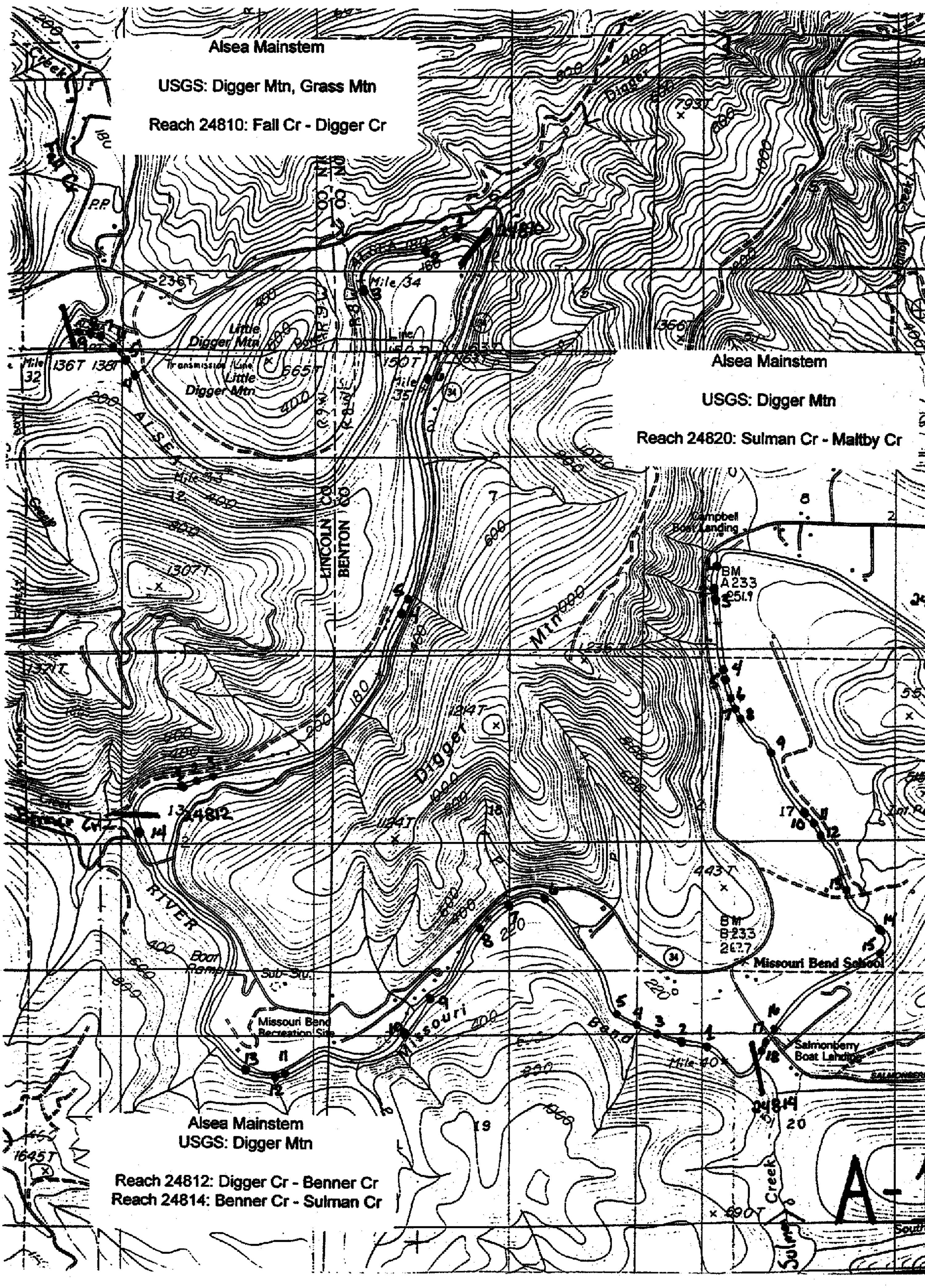
Siuslaw Mainstem
USGS: Clay Cr

Reach 24368: Collins Cr - Haskins Cr
Reach 24370: Haskins Cr - Larue Cr

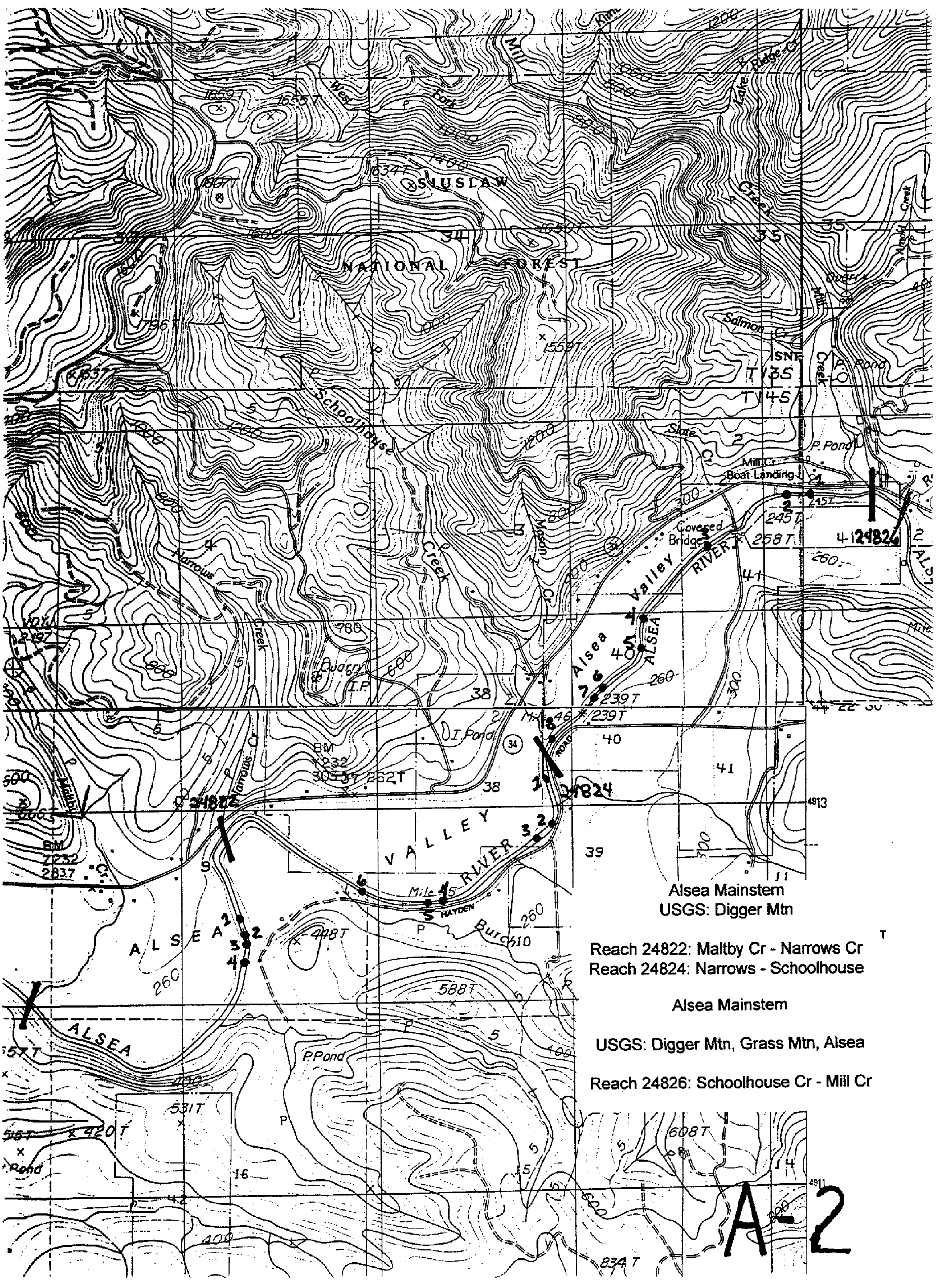

Siuslaw Mainstem
USGS: Clay Cr
Reach 24378: Burntwood Cr - Bierce Cr
Reach 24380: Bierce Cr - Johnson Cr
Siuslaw Mainstem
USGS: Clay Cr
Reach 24382: Johnson Cr - Luyne Cr
24378
24382
24380
Burntwood
Luyne
RIVER
Farman Flat
Pond
Bierce
S-23


Siuslaw Mainstem
USGS: Clay Cr, Gunter
Reach 24384: Luyne Cr - Oxbow Cr
Siulaw Mainstem
USGS: Gunter, Clay Cr
Reach 24394: Bear Cr - Haight Cr
Siuslaw Mainstem
USGS: Clay Cr, High Point
Reach 24398: Haight Cr - Camp Cr
Siuslaw Mainstem
USGS: Gunter
Reach 24390: Oxbow Cr - Bear Cr
24384
24390
24394
24398
Farman Flat
RIVER
SIUSLAW
Camp Creek
Oxbow Creek
Mile 78
Mile 79
Mile 81
Loisom Mtn
Picnic Area
T 19 S
T 20 S
1 210 000 FEET

S-24



Alsea Mainstem
USGS: Digger Mtn, Grass Mtn
Reach 24810: Fall Cr - Digger Cr
Alsea Mainstem
USGS: Digger Mtn
Reach 24820: Sulman Cr - Maltby Cr
Alsea Mainstem
USGS: Digger Mtn
Reach 24812: Digger Cr - Benner Cr
Reach 24814: Benner Cr - Sulman Cr
Little Digger Mtn
Digger Mtn
LINCOLN CO
BENTON CO
ALSEA
RIVER
Campbell Boat Landing
Missouri Bend School
Missouri Bend Recreation Site
Salmonberry Boat Landing
Missouri Bend
Boat Ramp
24812
24814
A-1



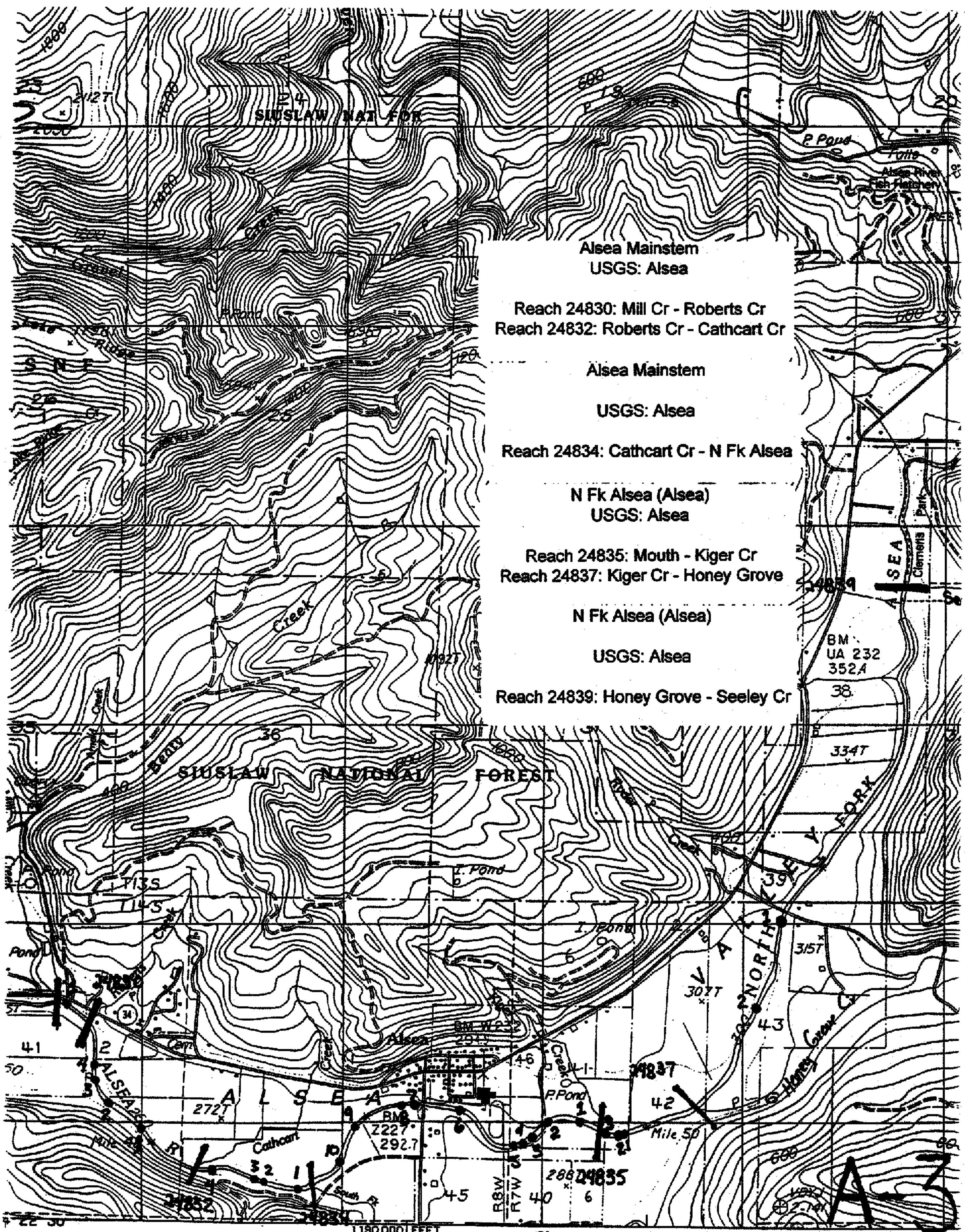
Alsea Mainstem
USGS: Digger Mtn

Reach 24822: Maltby Cr - Narrows Cr
Reach 24824: Narrows - Schoolhouse

Alsea Mainstem

USGS: Digger Mtn, Grass Mtn, Alsea

Reach 24826: Schoolhouse Cr - Mill Cr



SURVEY
F OREGON
.....1975-76
.... 1985
IAL CONIC

SCAL

APPENDIX C

Results of Spawning Distribution Surveys

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH #: 25980 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: E HUMBUG CR **UPPER BOUND:** HEADWATERS -

ASIN: NEHALEM RIVER **SURVEY LENGTH (M):** 1720 **VISIBILITY:** 0

SUBBASIN: MAIN STEM **DATE:** 11/22/9 **PEAK CODE:**

MAINSTEM/TRIB: T

COMMENTS:

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		507	1	3	40	N	N	
		679	2	4	40	Y	Y	3
		793	1	1	50	N	N	
		918	1	4	30	N	N	
		1264	1	2	20	Y	N	
		1600	1	1	50	Y	N	

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25967 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: HUMBUG CR **UPPER BOUND:** CEDAR CR

ASIN: NEHALEM RIVER **SURVEY LENGTH (M):** 1361 **VISIBILITY:** 0

SUBBASIN: MAIN STEM **DATE:** 11/16/9 **PEAK CODE:**

MAINSTEM/TRIB: T

COMMENTS:

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		25	1	1	50	Y	N	
		165	1	3	40	Y	Y	2
		177	1	10	50	Y	N	
		190	1	2	30	Y	N	
		725	3	3	60	Y	N	

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25931 **LOWER BOUND:** BUICK CANYON **SURVEYORS:**

REACH: SALMONBERRY R **UPPER BOUND:** BELFORT CR

ASIN: NEHALEM RIVER **SURVEY LENGTH (M):** 1451 **VISIBILITY:** 0

SUBBASIN: SALMONBERRY RIVER **DATE:** 11/21/9 **PEAK CODE:**

MAINSTEM/TRIB: T

COMMENTS:

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		29	1	7	40	Y	N	
		46	1	8	30	Y	Y	4
		250	1	4	50	Y	N	
		800	1	3	50	Y	Y	8
		1200	2	10	50	Y	Y	9

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25907 LOWER BOUND: HARLISS CR - SURVEYORS:

REACH: COOK CR UPPER BOUND: PIATT CANYON MANNING

ASIN: NEHALEM RIVER SURVEY LENGTH (M): 1866 VISIBILITY: 2

SUBBASIN: MAIN STEM DATE: 11/19/9 PEAK CODE: L

MAINSTEM/TRIB: T

COMMENTS:
PREVIOUS SURVEY HAD 24 CHF

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		26	1		70	N	N	
		487	2	3	50	Y	N	
		503	1		50	Y	N	
		597	1	1	30	Y	N	
		654	1	1	70	Y	N	
		1029	1	1	70	Y	N	

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25880 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: NEHALEM R, LITTLE N **UPPER BOUND:** HEADWATERS HODGSON

ASIN: NEHALEM RIVER **SURVEY LENGTH (M):** 1850 **VISIBILITY:** 1

SUBBASIN: NORTH FORK **DATE:** 11/16/9 **PEAK CODE:** P

MAINSTEM/TRIB: T

COMMENTS:

PRIME CONDITIONS,LACK OF FISH PUZZLING,REPORTS OF FISH EARLIER, OLD REDDS INDISTINGUISHABLE

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		500	1		70	N	Y	5
		1427	3		70	Y	Y	14
		1715	1		70	Y	N	0

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25879 **LOWER BOUND:** FALL CR **SURVEYORS:**

REACH: NEHALEM R, N FK **UPPER BOUND:** NEHALEM R, LITTLE N FK HODGSON,WEBER

ASIN: NEHALEM RIVER **SURVEY LENGTH (M):** 7167 **VISIBILITY:** 2

SUBBASIN: NORTH FORK **DATE:** 11/17/9 **PEAK CODE:** P

MAINSTEM/TRIB: M

COMMENTS:
PRIME CONDITIONS, MINIMAL SPAWNING, OLD REDDS INDISTINGUISHABLE

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
446300	5073600		1	1	70	Y	Y	1
446550	5073900		5	1	70	Y	Y	5
446552	5073941		6		70	Y	Y	6
446500	5074300		2		70	Y	Y	12
446910	5075910		5	2	65	Y	Y	-27
446897	5076099		2		70	Y	Y	-28
445850	5076550		2		60	Y	Y	37
445793	5076780		2	2	70	Y	Y	38
445700	5076900		3	3	65	Y	Y	39
445720	5077200		1		70	Y	N	0

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25877 **LOWER BOUND:** SWEET HOME CR - **SURVEYORS:**

REACH: NEHALEM R, N FK **UPPER BOUND:** FALL CR HODGSON,WEBER

ASIN: NEHALEM RIVER **SURVEY LENGTH (M):** 1620 **VISIBILITY:** 2

SUBBASIN: NORTH FORK **DATE:** 11/17/9 **PEAK CODE:** P

MAINSTEM/TRIB: M

COMMENTS:

PRIME CONDITIONS, MINIMAL SPAWNING, OLD REDDS INDISTINGUISHABLE

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
445880	5072850		2		60	N	Y	1
446380	5072800		2		60	Y	Y	6
446360	5072830		2	3	50	Y	N	0
446350	5072850		3	1	60	Y	Y	7
446324	5073289		1	1	60	N	N	0

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25876 LOWER BOUND: MOUTH SURVEYORS:

REACH: SWEET HOME CR UPPER BOUND: HEADWATERS HODGSON

ASIN: NEHALEM RIVER SURVEY LENGTH (M): 1700 VISIBILITY: 2

SUBBASIN: NORTH FORK DATE: 11/16/9 PEAK CODE: P

MAINSTEM/TRIB: T

COMMENTS:
MOST FISH SPAWNING, SURVEY BEGAN ~.75MILE ABOVE MOUTH DUE TO HIGH WATER & GRADIENT

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		1055	1	1	70	Y	Y	5
		1075	5	5	60	Y	Y	6
		1125	4	7	55	Y	Y	7
		1160	1		40	Y	Y	8
		1315	1	3	50	N	N	
		1450	1	1	55	Y	N	
		1525	1	1	40	Y	N	
		1575	1	1	60	Y	N	
		1635	1	4	50	N	N	
		1650	3	7	40	N	N	
		1910	1	2	60	N	N	
		2230	2	1	50	N	N	
		2270	1		60	N	N	

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25875 **LOWER BOUND:** LOST CR **SURVEYORS:**

REACH: NEHALEM R, N FK **UPPER BOUND:** SWEET HOME CR HODGSON,WEBER

ASIN: NEHALEM RIVER **SURVEY LENGTH (M):** 2090 **VISIBILITY:** 2

SUBBASIN: NORTH FORK **DATE:** 11/17/9 **PEAK CODE:** P

MAINSTEM/TRIB: M

COMMENTS:
PRIME CONDITIONS, MINIMAL SPAWNING, OLD REDDS INDISTINGUISHABLE

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
445000	5072660		2	2	60	N	Y	8
445058	5072666		15	17	75	Y	Y	10
445400	5072620		3		60	Y	Y	14
445447	5072570		3	1	40	N	N	0
445467	5072576		10	3	60	Y	Y	-15

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25873 LOWER BOUND: GODS VALLEY CR SURVEYORS:

REACH: NEHALEM R, N FK UPPER BOUND: LOST CR HODGSON,WEBER

ASIN: NEHALEM RIVER SURVEY LENGTH (M): 1520 VISIBILITY: 2

SUBBASIN: NORTH FORK DATE: 11/17/9 PEAK CODE: P

MAINSTEM/TRIB: M

COMMENTS:
PRIME CONDITIONS, MINIMAL SPAWNING, OLD REDDS INDISTINGUISHABLE

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
442110	5072530		1		60	N	Y	1

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25872 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: GODS VALLEY CR **UPPER BOUND:** HEADWATERS HODGSON

ASIN: NEHALEM RIVER **SURVEY LENGTH (M):** 1850 **VISIBILITY:** 2

SUBBASIN: NORTH FORK **DATE:** 11/16/9 **PEAK CODE:** P

MAINSTEM/TRIB: T

COMMENTS:
HIGH WATER, SOME FISH & REDDS UNDOUBTEDLY MISSED IN LOWER PORTION

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		340	3	3	60	Y	Y	6
		365	3	2	65	Y\N	N	0
		410	3	1	70	Y	N	0
		500	1		50	Y	N	0
		630	3	2	60	Y	N	0
		1010	1	1	40	Y	Y	-9
		1070	3		50	N	Y	-10
		1190	1		55	Y	Y	-11
		1340	2		55	Y	N	0
		1370	2	2	50	N	N	0
		1450	1	1	40	Y	N	0
		1665	0	2	40	Y	Y	-12

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # :	25871.7	**LOWER BOUND:**	SALLY CR		**SURVEYORS:**
REACH:	NEHALEM R, N FK	**UPPER BOUND:**	GODS VALLEY CR		HODGSON,WEBER
ASIN:	NEHALEM RIVER	**SURVEY LENGTH (M):**	1700	**VISIBILITY:** 2	
SUBBASIN:	NORTH FORK	**DATE:**	11/17/9	**PEAK CODE:** P	
		MAINSTEM/TRIB:	M		

COMMENTS:

PRIME CONDITIONS, MINIMAL SPAWNING, OLD REDDS INDISTINGUISHABLE

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25679 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: CEDAR CR **UPPER BOUND:** CEDAR CR, N FK HODGSON,VAN DYKE

ASIN: WILSON RIVER **SURVEY LENGTH (M):** 4940 **VISIBILITY:** 1

SUBBASIN: MAIN STEM **DATE:** 11/3/95 **PEAK CODE:** E

MAINSTEM/TRIB: T

COMMENTS:
SURVEY BETWEEN PULSES OF CHF SPAWNING

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		245	3		50	Y	Y	1
		534	1		40	Y	N	
		655	1		30	Y	N	
		850	2	4	50	Y/N	Y	2
		1228	1	2	70	Y	Y	3
		1270	1		40	N	N	
		1642	2	4	65	Y	Y	5
		1662	1		45	N	N	
		2447	2	2	50	Y	Y	8
		2527	1	1	60	Y	Y	9
		2750	1		65	Y	N	
		2950	2		70	Y/N	Y	12
		3047	1		30	N	N	
		3960	4	1	30	N	N	

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25678 **LOWER BOUND:** WOLF CR **SURVEYORS:**

REACH: WILSON R **UPPER BOUND:** CEDAR CR HODGSON,KLUMPH

ASIN: WILSON RIVER **SURVEY LENGTH (M):** 4850 **VISIBILITY:** 1

SUBBASIN: MAIN STEM **DATE:** 11/2/95 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
SURVEY BETWEEN PULSES OF CHF SPAWNING

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
438800	5036240		2		75	Y	N	
439186	5035729		2		65	N	N	
453280	5045200		5		70	Y	Y	10
453550	5045120		11	2	70	Y	Y	8
453580	5045094		2	1	70	N	N	
453614	5044967		1		40	Y	N	
454480	5045611		2		70	Y	Y	6
454800	5045630		5		75	Y	Y	5
455323	5045759		2		55	Y	Y	4
455494	5045789		3		55	Y	Y	3
456063	5046750		1		50	N	N	
456242	5046760		3		60	Y	Y	1

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # :	25676	**LOWER BOUND:**	JORDAN CR			**SURVEYORS:**
REACH:	WILSON R	**UPPER BOUND:**	WOLF CR			HODGSON,KLUMPH
ASIN:	WILSON RIVER	**SURVEY LENGTH (M):**	1500	**VISIBILITY:**	1	
SUBBASIN:	MAIN STEM	**DATE:**	11/1/95	**PEAK CODE:**	E	
		MAINSTEM/TRIB:	M			

COMMENTS:
SURVEY BETWEEN PULSES OF CHF SPAWNING

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
452727	5044840		2		60	N	N	
452877	5045000		3		65	Y	Y	1

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25672 **LOWER BOUND:** MUESIAL CR **SURVEYORS:**

REACH: WILSON R **UPPER BOUND:** KEENIG CR HODGSON,KLUMPH

ASIN: WILSON RIVER **SURVEY LENGTH (M):** 1000 **VISIBILITY:** 1

SUBBASIN: MAIN STEM **DATE:** 11/2/95 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
SURVEY BETWEEN PULSES OF CHF SPAWNING

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
452450	5042510		2		75	N	Y	3
452294	5043045		2	1	60	Y	Y	1

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25674 LOWER BOUND: KEENIG CR SURVEYORS:

REACH: WILSON R UPPER BOUND: JORDAN CR HODGSON,KLUMPH

ASIN: WILSON RIVER SURVEY LENGTH (M): 800 VISIBILITY: 1

SUBBASIN: MAIN STEM DATE: 11/1/95 PEAK CODE: E

MAINSTEM/TRIB: M

COMMENTS:
SURVEY BETWEEN PULSES OF CHF SPAWNING

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
452685	5043660		2	1	65	Y	Y	1
452873	5043700		2		70	Y	N	
452869	5043790		3		60	N	N	

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25670 **LOWER BOUND:** FOX CR **SURVEYORS:**

REACH: WILSON R **UPPER BOUND:** MUESIAL CR HODGSON,KLUMPH

ASIN: WILSON RIVER **SURVEY LENGTH (M):** 4300 **VISIBILITY:** 1

SUBBASIN: MAIN STEM **DATE:** 11/1/95 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:

SURVEY BETWEEN PULSES OF CHF SPAWNING

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
452242	5039200		5	1	40	Y	N	
452050	5039550		2		70	Y/N	Y	9
451700	5040200		5	2	80	Y	Y	8
452060	5041080		3	1	65	Y	N	
452142	5041210		3		65	Y	Y	6
452720	5042033		1		65	Y	Y	4

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # :	25650	**LOWER BOUND:**	HATCHERY CR			**SURVEYORS:**
REACH:	WILSON R	**UPPER BOUND:**	DEADMAN CR			HODGSON,KLUMPH
ASIN:	WILSON RIVER	**SURVEY LENGTH (M):**	340	**VISIBILITY:**	1	
SUBBASIN:	MAIN STEM	**DATE:**	11/1/95	**PEAK CODE:**	E	
		MAINSTEM/TRIB:	M			

COMMENTS:
LOW USE DUE TO HIGH WATER YEAR ?

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
444881	5036583		3		70	Y	Y	2

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # :	25648	LOWER BOUND:	MINING CR			SURVEYORS:
REACH:	WILSON R	UPPER BOUND:	HATCHERY CR			HODGSON,KLUMPH
ASIN:	WILSON RIVER	SURVEY LENGTH (M):	500	VISIBILITY:	1	
SUBBASIN:	MAIN STEM	DATE:	11/1/95	PEAK CODE:	E	
		MAINSTEM/TRIB:	M			

COMMENTS:
LOW USE DUE TO HIGH WATER YEAR ?

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25646 **LOWER BOUND:** WILSON R, N FK, LITTLE **SURVEYORS:**

REACH: WILSON R **UPPER BOUND:** MINING CR HODGSON,KLUMPH

ASIN: WILSON RIVER **SURVEY LENGTH (M):** 2666 **VISIBILITY:** 1

SUBBASIN: MAIN STEM **DATE:** 11/1/95 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
LOW USE DUE TO HIGH WATER YEAR ?

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
442680	5035530		4		65	Y	Y	10
443190	5035700		7		65	Y	Y	6
443404	5035730		3		55	Y/N	N	
443476	5035908		2		70	Y/N	Y	5
444040	5036442		1		80	N	Y	3
444245	5036587		13	6	80	Y/N	Y	2

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25641 LOWER BOUND: MOUTH SURVEYORS:

REACH: WILSON R, N FK, LITTL UPPER BOUND: WHITE CR HODGSON

ASIN: WILSON RIVER SURVEY LENGTH (M): 1600 VISIBILITY: 1

SUBBASIN: LITTLE NORTH FORK DATE: 11/1/95 PEAK CODE: E

MAINSTEM/TRIB: T

COMMENTS:
SURVEY BETWEEN PULSES OF CHF SPAWNING

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		45	3	2	75	N	Y	2
		115	2	3	70	Y	Y	17
		168	3	2	60	N	N	
		180	13	9	65	Y	N	
		209	5	7	60	N	N	
		325	8	12	80	N	Y	5
		399	1	1	20	N	N	
		410	2	3	40	N	Y	18
		415	10	11	50	Y	Y	6
		475	7	7	60	Y	Y	7
		570	4	0	75	Y	Y	8
		622	18	12	60	Y	Y	9
		670	5	1	60	Y/N	Y	19
		681	3	3	45	N	N	
		725	2	1	65	N	N	
		750	1		65	Y	Y	20
		830	1		70	Y	N	
		1180	1		40	Y	N	
		1330	1	2	40	Y	Y	23
		1570	2	1	40	Y	Y	24

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25641 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: WILSON R, N FK, LITTL **UPPER BOUND:** WHITE CR

ASIN: WILSON RIVER **SURVEY LENGTH (M):** 1600 **VISIBILITY:** 0

SUBBASIN: LITTLE NORTH FORK **DATE:** 12/8/95 **PEAK CODE:** P

MAINSTEM/TRIB: T

COMMENTS:

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		45	3	2	75	N	Y	2
		115	2	3	70	Y	Y	17
		168	3	2	60	N	N	
		180	13	9	65	Y	N	
		209	5	7	60	N	N	
		325	8	12	80	N	Y	5
		399	1	1	20	N	N	
		410	2	3	40	N	Y	18
		415	10	11	50	Y	Y	6
		475	7	7	60	Y	Y	7
		570	4	0	75	Y	Y	8
		622	18	12	60	Y	Y	9
		670	5	1	60	Y/N	Y	19
		681	3	3	45	N	N	
		725	2	1	65	N	N	
		750	1		65	Y	Y	20
		830	1		70	Y	N	
		1180	1		40	Y	N	
		1330	1	2	40	Y	Y	23
		1570	2	1	40	Y	Y	24

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25640 LOWER BOUND: HUGHEY CR SURVEYORS:

REACH: WILSON R UPPER BOUND: WILSON R, N FK, LITTLE HODGSON,KLUMPH

ASIN: WILSON RIVER SURVEY LENGTH (M): 3200 VISIBILITY: 1

SUBBASIN: MAIN STEM DATE: 11/1/95 PEAK CODE: E

MAINSTEM/TRIB: M

COMMENTS:
LOW USE DUE TO HIGH WATER YEAR ?

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
441710	5034990		2		65	Y	Y	4
441940	5034900		4		70	N	N	
442050	5035090		2		70	N	Y	3
442150	5035780		3		70	Y	N	

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # :	25636	**LOWER BOUND:**	BEAVER CR			**SURVEYORS:**
REACH:	WILSON R	**UPPER BOUND:**	HUGHEY CR			HODGSON,KLUMPH
ASIN:	WILSON RIVER	**SURVEY LENGTH (M):**	4600	**VISIBILITY:**	1	
SUBBASIN:	MAIN STEM	**DATE:**	11/1/95	**PEAK CODE:**	E	
		MAINSTEM/TRIB:	M			

COMMENTS:

LOW USE DUE TO HIGH WATER YEAR ?

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25243 **LOWER BOUND:** SAMPSON CR **SURVEYORS:**

REACH: DRIFT CR **UPPER BOUND:** SMITH CR HODGSON,JACOBS

ASIN: SILETZ RIVER **SURVEY LENGTH (M):** 850 **VISIBILITY:** 1

SUBBASIN: DRIFT CREEK **DATE:** 11/6/95 **PEAK CODE:** P

MAINSTEM/TRIB: M

COMMENTS:

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
432200	4973210		1		60	Y	N	
432240	4973300		1	1	60	Y	N	
432223	4973450		2	1	80	Y	YN	1

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25239 **LOWER BOUND:** WILDCAT CR **SURVEYORS:**

REACH: DRIFT CR **UPPER BOUND:** SAMPSON CR HODGSON,JACOBS

ASIN: SILETZ RIVER **SURVEY LENGTH (M):** 4021 **VISIBILITY:** 1

SUBBASIN: DRIFT CREEK **DATE:** 11/6/95 **PEAK CODE:** P

MAINSTEM/TRIB: M

COMMENTS:
GOOD SURVEY

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
430177	4972368		1		75	Y	Y	11
430300	4972400		5	4	65	Y	Y	-9
430320	4972420		1		70	Y	N	
430340	4972440		1		65	N	Y	-8
430350	4972460		1	1	65	N	N	
430380	4972480		1	1	55	N	N	
431326	4973170		4	7	70	Y	Y	6
431320	4972980		3	1	55	Y (1N)	Y	5
-30			3	2	70	N	N	
431520	4972000		4	4	55	N	Y	3
432017	4973000		2		40	N	N	
432180	4973150		5	2	50	Y/N	Y	2
432190	4973150		5	6	80	Y (1N)	Y	1

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25237 **LOWER BOUND:** NORTH CR **SURVEYORS:**

REACH: DRIFT CR **UPPER BOUND:** WILDCAT CR HODGSON,JACOBS

ASIN: SILETZ RIVER **SURVEY LENGTH (M):** 3100 **VISIBILITY:** 1

SUBBASIN: DRIFT CREEK **DATE:** 11/6/95 **PEAK CODE:** P

MAINSTEM/TRIB: M

COMMENTS:
GOOD SURVEY

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
428660	4971820		3		75	Y	Y	16
428715	4971780		7	4	75	Y	Y	15
428950	4971700		8	10	50	Y/N	Y/N	13
428900	4972000		2		40	N	N	
429050	4972100		1		70	Y	N?	
429100	4972100		6	6	60	N	Y	9
429143	4972065		2	1	60	Y	Y	8
429220	4972000		1		75	Y	N	
429280	4971950		8	8	65	Y	Y	7
429450	4971700		3	1	70	Y	Y	5
429515	4972230		1	1	65	Y	Y	1

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH #: 25165 **LOWER BOUND:** MOUTH - **SURVEYORS:**

REACH: SUNSHINE CR **UPPER BOUND:** DEER CR MANNING

ASIN: SILETZ RIVER **SURVEY LENGTH (M):** 1935 **VISIBILITY:** 1

SUBBASIN: MAIN STEM **DATE:** 12/7/95 **PEAK CODE:** L

MAINSTEM/TRIB: T

COMMENTS:

SURVEY CONDUCTED ON 12/7 AND 12/19 , BOTH TIMES AFTER PEAK

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		27	2		65	N	N	
		50	3		45	N	Y	2
		530	1		50	Y	Y	3
		607	1		40	N	N	
		770	1		40	N	N	
		810	1	1	45	Y	N	
		1045	2		50	N	N	
		1372	2		45	Y	N	
		1444	1	1	55	Y	N	
		1788	2		55	Y	N	
		1877	1	1	60	Y	N	

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25134 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: BIG ROCK CR **UPPER BOUND:** FALL CR MANNING

ASIN: SILETZ RIVER **SURVEY LENGTH (M):** 1908 **VISIBILITY:** 1

SUBBASIN: ROCK CREEK **DATE:** 11/21/9 **PEAK CODE:** P

MAINSTEM/TRIB: T

COMMENTS:

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		52	3		70	Y	N	
		96	3		70	Y	N	
		160	1		55	Y	Y	1
		200	1		65	N	Y	2
		245	3	2	75	N	N	
		320	1		65	Y	Y	3
		475	2		75	Y	Y	4
		550	1		75	Y	N	
		595	2	1	65	N	N	
		642	3	1	75	Y	N	
		727	3	1	60	Y	N	
		835	6	4	60	Y	N	
		866	2	1	60	Y	N	
		1075	3	2	55	Y	Y	7
		1716	2	1	80	N	N	
		1730	7	8	75	N	Y	7
		1775	1	1	30	N	N	

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH #:	25116	**LOWER BOUND:**	TANGERMAN CR		**SURVEYORS:**
REACH:	SILETZ R	**UPPER BOUND:**	DEWEY CR		HODGSON,JACOBS
ASIN:	SILETZ RIVER	**SURVEY LENGTH (M):**	1200	**VISIBILITY:** 2	
SUBBASIN:	MAIN STEM	**DATE:**	10/30/9	**PEAK CODE:** E	
		MAINSTEM/TRIB:	M		

COMMENTS:
LOW USE DUE TO HIGH WATER YEAR ?

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
428190	4953190		7	3	75	Y/N	Y	10.11

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25114 **LOWER BOUND:** THOMPSON CR **SURVEYORS:**

REACH: SILETZ R **UPPER BOUND:** TANGERMAN CR HODGSON,JACOBS

ASIN: SILETZ RIVER **SURVEY LENGTH (M):** 3825 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/30/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
LOW USE DUE TO HIGH WATER YEAR ?

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
428407	4956103		3		75	Y	Y	12
428050	4954750		23	18	55	Y	Y	6
427660	4953830		8	2	60	Y/N	Y	4

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25112 **LOWER BOUND:** OJALLA CR **SURVEYORS:**

REACH: SILETZ R **UPPER BOUND:** THOMPSON CR HODGSON,JACOBS

ASIN: SILETZ RIVER **SURVEY LENGTH (M):** 2800 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/30/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
LOW USE DUE TO HIGH WATER YEAR ?

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
427550	4956950		2		75	N	Y	6
427934	4956893		7	8	70	Y	Y	5
428330	4956880		9	10	70	Y	Y	4
429000	4956640		8	4	70	Y	Y	3
429650	4955980		4	4	60	Y	N	

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25110
LOWER BOUND: EUCHRE CR
SURVEYORS: HODGSON,JACOBS

REACH: SILETZ R
UPPER BOUND: OJALLA CR

ASIN: SILETZ RIVER
SURVEY LENGTH (M): 2000
VISIBILITY: 2

SUBBASIN: MAIN STEM
DATE: 10/30/9
PEAK CODE: E

MAINSTEM/TRIB: M

COMMENTS:
LOW USE DUE TO HIGH WATER YEAR ?

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
428109	4958904		2		75	Y	Y	18
427900	4958950		2		70	Y	Y	17

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25105 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: EUCHRE CR **UPPER BOUND:** SAVAGE CR MANNING

ASIN: SILETZ RIVER **SURVEY LENGTH (M):** 2171 **VISIBILITY:** 1

SUBBASIN: MAIN STEM **DATE:** 11/21/9 **PEAK CODE:** P

MAINSTEM/TRIB: T

COMMENTS:

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		85	2		70	N	N	
		115	2		60	Y	Y	2
		185	2		70	Y	N	
		225	1		75	N	Y	3
		255	3	1	65	Y	Y	4
		430	7	3	65	Y	N	
		456	1	3	60	N	N	
		532	2	1	70	Y	N	
		587	1		65	Y	Y	8
		655	5	2	65	Y	Y	9
		708	2	2	65	Y	Y	10
		818	8	4	60	N	Y	11
		867	1		55	N	Y	12
		905	2		45	Y	N	
		1100	4		65	Y	N	
		1193	3	2	50	Y	N	
		1282	1		50	Y	N	
		1370	3		60	Y	Y	13
		1473	1		65	Y	N	
		1550	1		70	Y	N	
		1680	3		55	Y	N	
		1828	5		70	Y	N	
		1950	10	8	55	N	Y	15

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25104
LOWER BOUND: REED CR
SURVEYORS: HODGSON,JACOBS
REACH: SILETZ R
UPPER BOUND: EUCHRE CR
ASIN: SILETZ RIVER
SURVEY LENGTH (M): 1500
VISIBILITY: 2
SUBBASIN: MAIN STEM
DATE: 10/30/9
PEAK CODE: E
MAINSTEM/TRIB: M

COMMENTS:
LOW USE DUE TO HIGH WATER YEAR ?

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
429038	4960201		3	5	80	N	Y	5
428347	4959029		9	3	75	Y	Y	1

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25102.8 **LOWER BOUND:** HOUGH CR **SURVEYORS:**

REACH: SILETZ R **UPPER BOUND:** REED CR HODGSON,JACOBS

ASIN: SILETZ RIVER **SURVEY LENGTH (M):** 1375 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/30/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
LOW USE DUE TO HIGH WATER YEAR ?

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
428426	4960942		3		80	Y	Y	2.3

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 25102.5 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: CEDAR CR **UPPER BOUND:** HEADWATERS MANNING

ASIN: SILETZ RIVER **SURVEY LENGTH (M):** 1600 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 11/21/9 **PEAK CODE:** P

MAINSTEM/TRIB: T

COMMENTS:
VISIBILITY POOR

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		50	1		60	Y	Y	3
		200	3		50	N	Y	7
		275	1		65	Y	N	
		350	3		70	N	Y	7
		395	1	1	60	N	Y	8
		445	2	1	65	N	N	
		615	1		70	N	Y	9
		650	3	2	65	N	Y	10
		955	2		50	N	Y	11
		1075	7	4	60	Y	Y	13
		1166	3	1	65	Y	N	
		1440	3	1	55	N	N	
		1515	3	1	50	N	N	
		1560	5		65	N	Y	14

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24384 **LOWER BOUND:** LUYNE CR **SURVEYORS:**

REACH: SIUSLAW R **UPPER BOUND:** OXBOW CR HODGSON,WOODS

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 7000 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/27/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
WATER DARK, SURVEY EARLY FOR UPPER RIVER

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
458900	4860150		2	1	80	Y	Y	25
459537	4859270		2	1	65	Y	Y	20
459470	4859244		3	1	60	Y	Y	19
458601	4858300		1		60	N	Y	10
458590	4858080		2	1	75	Y	Y	8
458888	4857590		1		70	Y	N	
458443	4857160		1	1	65	Y	Y	3

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24372 **LOWER BOUND:** LARUE CR **SURVEYORS:**

REACH: SIUSLAW R **UPPER BOUND:** CLAY CR HODGSON,FISH

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 3100 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/27/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
WATER DARK, SURVEY EARLY FOR UPPER RIVER

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
453030	4861677		3	1	65	Y	Y	6

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24370 **LOWER BOUND:** HASKINS CR - **SURVEYORS:**

REACH: SIUSLAW R **UPPER BOUND:** LARUE CR HODGSON,FISH

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 725 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/27/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:

WATER DARK, SURVEY EARLY FOR UPPER RIVER

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
452907	4860590		2	2	65	Y	Y	2

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # :	24368	LOWER BOUND:	COLLINS CR			SURVEYORS:
REACH:	SIUSLAW R	UPPER BOUND:	HASKINS CR			HODGSON,FISH
ASIN:	SIUSLAW RIVER	SURVEY LENGTH (M):	790	VISIBILITY:	2	
SUBBASIN:	MAIN STEM	DATE:	10/27/9	PEAK CODE:	E	
		MAINSTEM/TRIB:	M			

COMMENTS:

WATER DARK, SURVEY EARLY FOR UPPER RIVER

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24366 **LOWER BOUND:** MILL CR **SURVEYORS:**

REACH: SIUSLAW R **UPPER BOUND:** COLLINS CR HODGSON,FISH

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 400 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/27/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:

WATER DARK, SURVEY EARLY FOR UPPER RIVER

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
452000	4861130		1	1	60	Y	Y	2

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24364 **LOWER BOUND:** NORTH CR - **SURVEYORS:**

REACH: SIUSLAW R **UPPER BOUND:** MILL CR HODGSON,FISH

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 1075 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/27/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
WATER DARK, SURVEY EARLY FOR UPPER RIVER

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
452178	4861800		6	2	65	Y	Y	6
452100	4861400		12	12	70	Y	Y	2.3

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24363.5 **LOWER BOUND:** TRAIL CR **SURVEYORS:**

REACH: SIUSLAW R **UPPER BOUND:** NORTH CR HODGSON,FISH

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 2260 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/27/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
WATER DARK, SURVEY EARLY FOR UPPER RIVER

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
450700	4862550		1	3	55	Y	Y	7
451700	4862270		2	3	60	Y	Y	2

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24363.3 **LOWER BOUND:** PUGH CR **SURVEYORS:**

REACH: SIUSLAW R **UPPER BOUND:** TRAIL CR HODGSON,FISH

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 2050 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/27/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:

WATER DARK, SURVEY EARLY FOR UPPER RIVER

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
451500	4863450		1	1	50	Y	Y	5
450550	4862850		1	2	70	Y	Y	2
450500	4862750		2	2	50	Y	Y	1

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24363.1 **LOWER BOUND:** FAWN CR **SURVEYORS:**

REACH: SIUSLAW R **UPPER BOUND:** PUGH CR HODGSON,FISH

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 4350 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/27/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
WATER DARK, SURVEY EARLY FOR UPPER RIVER

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
451600	4864100		1		60	Y	Y	1
450000	4864100		4	2	60	N	N	
450500	4864700		1	1	65	Y	N	0

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # :	24362	**LOWER BOUND:**	CEDAR CR			**SURVEYORS:**
REACH:	SIUSLAW R	**UPPER BOUND:**	FAWN CR			HODGSON,FISH
ASIN:	SIUSLAW RIVER	**SURVEY LENGTH (M):**	625	**VISIBILITY:**	2	
SUBBASIN:	MAIN STEM	**DATE:**	10/27/9	**PEAK CODE:**	E	
		MAINSTEM/TRIB:	M			

COMMENTS:
WATER DARK, SURVEY EARLY FOR UPPER RIVER

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24360 **LOWER BOUND:** ESMOND CR **SURVEYORS:**

REACH: SIUSLAW R **UPPER BOUND:** CEDAR CR HODGSON,FISH

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 1800 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/27/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:
WATER DARK, SURVEY EARLY FOR UPPER RIVER

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
450000	4864500		6	5	70	Y	Y	1
448620	4864400		1	2	50	Y	Y	4
448850	4864600		1	1	40	Y	N	
448900	4864600		2	1	60	Y	Y	3
449820	4864450		1	1	70	Y	Y	2

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24301 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: WHITTAKER CR **UPPER BOUND:** BOUNDS CR CANNON

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 600 **VISIBILITY:** 0

SUBBASIN: MAIN STEM **DATE:** 11/20/9 **PEAK CODE:**

MAINSTEM/TRIB: T

COMMENTS:

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		94	1	1	85	Y	N	
		124	1	1	90	Y	N	
		238	1	2	70	Y	N	
		360	1	1	80	Y	Y	3
		380	4	8	80	Y	Y	4
		410	1	4	75	Y	Y	5

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24206 **LOWER BOUND:** LAMB CR **SURVEYORS:**

REACH: LAKE CR **UPPER BOUND:** FISH CR RAPP

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 915 **VISIBILITY:** 2

SUBBASIN: LAKE CREEK **DATE:** 11/15/9 **PEAK CODE:** P

MAINSTEM/TRIB: T

COMMENTS:
WATER HIGH

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		7	1		60	Y	N	
		42	7	9	55	Y	N	
		128	1		55	N	N	
		213	13	9	65	Y	Y	10
		290	44	55	65	Y/N	Y	11
		401	39	75	70	Y/N	Y	12
		518	17	33	60	Y	Y	13
		591	6	19	70	N	Y	14
		673	2	2	55	N	N	
		683	2	2	60	N	Y	15
		693	6	9	70	Y	Y	16
		788	2	3	75	N	N	
		806	2	7	65	N	Y	17
		845	1	1	65	N	N	
		865	8	12	70	Y	Y	18

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24262 **LOWER BOUND:** WAITE CR - **SURVEYORS:**

REACH: SIUSLAW R **UPPER BOUND:** WILDCAT CR HODGSON,WOODS

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 3000 **VISIBILITY:** 2

SUBBASIN: MAIN STEM **DATE:** 10/26/9 **PEAK CODE:** E

MAINSTEM/TRIB: M

COMMENTS:

WATER HIGH,HARD TO DISTINGUISH INDIVIDUAL REDDS, PEAK FOR LOWER RIVER?

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
446416	4872410		10	2	65	N	Y	12
446410	4872580		1	1	60	Y	Y	11
446410	4872620		8		70	Y/N	Y	10
446410	4872620		7		70	Y/N	Y	9
446400	4872650		3		75	N	Y	8
446450	4872720		1	1	75	N	N	
446450	4872750		2		65	Y	Y	7
446450	4872800		2		65	Y	Y	6

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH # : 24136 **LOWER BOUND:** ROGERS CR **SURVEYORS:**

REACH: INDIAN CR, W FK **UPPER BOUND:** PYLE CR RAPP

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 1910 **VISIBILITY:** 2

SUBBASIN: LAKE CREEK **DATE:** 11/15/9 **PEAK CODE:** P

MAINSTEM/TRIB: T

COMMENTS:

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		1	3	3	70	N		
		37	1		60	Y	Y	1
		80	1	2	75	Y	N	2
		170	2	2	75	Y/N	Y	4
		268	1	2	65	Y	Y	5
		311	1	1	65	Y	N	
		324	2	2	70	N	Y	6
		365	19	34	75	Y/N	Y	7
		562	1		70	Y	Y	9
		628	1	1	65	Y	Y	10
		640	4	10	70	Y	N	
		651	3		75	Y/N	Y	11
		730	1		60	Y	Y	12
		740	2	2	70	N	N	
		775	2	7	75	Y	Y	13
		840	2	8	60	Y	Y	14
		989	2	1	65	Y	Y	15
		1000	2	3	60	N	N	
		1010	1	2	60	N	N	
		1040	1	1	70	N	N	
		1187	1		75	N	N	
		1600	1		55	Y	N	
		1788	1		60	Y	Y	17
		1885	2	2	60	Y	Y	18

OREGON DEPARTMENT OF FISH AND WILDLIFE
FALL CHINOOK SPAWNER DISTRIBUTIOIN SURVEY

REACH #: 24132 **LOWER BOUND:** MOUTH **SURVEYORS:**

REACH: INDIAN CR, W FK **UPPER BOUND:** LONG CR HODGSON,COONEY

ASIN: SIUSLAW RIVER **SURVEY LENGTH (M):** 2840 **VISIBILITY:** 2

SUBBASIN: LAKE CREEK **DATE:** 11/17/9 **PEAK CODE:** P

MAINSTEM/TRIB: T

COMMENTS:
WATER HIGH, SOME FISH AND REDDS UNDOUBTEDLY MISSED

GPS X (UTM)	GPS Y (UTM)	DISTANCE UPSTREAM (M)	NUMBER REDDS	NUMBER LIVE	GRAVEL(%)	REDDS IN TAILOUT	REDDS IN UNIT	UNIT #
		560	2		70	Y	N	
		1210	7	4	65	N	Y	-2
		1300	1	1	60	N	N	
		2380	1		65	Y	N	
		2410	1	1	65	N	N	
		2480	6	10	65	Y	Y	10
		2550	1		65	N	N	