

STREAM INVENTORY REPORT

Kimball Gulch

INTRODUCTION

A stream inventory was conducted from August 20 to August 27, 2008 on Kimball Gulch. The survey began at the confluence with South Fork Cottaneva Creek and extended upstream 0.6 miles.

The Kimball Gulch inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the habitat available to anadromous salmonids in Kimball Gulch. The objective of the biological inventory was to document the presence and distribution of juvenile salmonid species.

The objective of this report is to document the current habitat conditions and recommend options for the potential enhancement of habitat for coho salmon, and steelhead trout. Recommendations for habitat improvement activities are based upon target habitat values suitable for salmonids in California's north coast streams.

WATERSHED OVERVIEW

Kimball Gulch is a tributary to South Fork Cottaneva Creek, tributary to Cottaneva Creek, which drains to the Pacific Ocean, located in Mendocino County, California (Map 1). Kimball Gulch's legal description at the confluence with South Fork Cottaneva Creek is T22N R17W S19. Its location is 39.7462° north latitude and 123.7883° west longitude, LLID number 1237872397463. Kimball Gulch is a first order stream and has approximately 1.0 miles of blue line stream according to the USGS Westport 7.5 minute quadrangle. Kimball Gulch drains a watershed of approximately 0.95 square miles. Elevations range from about 225 feet at the mouth of the creek to 1,814 feet in the headwater areas. Mixed conifer forest dominates the watershed. The watershed is entirely privately owned and is managed for timber production. Vehicle access exists via Highway 1 at Rockport.

METHODS

The habitat inventory conducted in Kimball Gulch follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al, 1998). The Watershed Stewards Project/AmeriCorps (WSP) Members that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Game (DFG). This inventory was conducted by a two-person team.

SAMPLING STRATEGY

The inventory uses a method that samples approximately 10% of the habitat units within the survey reach. All habitat units included in the survey are classified according to habitat type and their lengths are measured. All pool units are measured for maximum depth, depth of pool tail

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crest (measured in the thalweg), dominant substrate composing the pool tail crest, and embeddedness. Habitat unit types encountered for the first time are measured for all the parameters and characteristics on the field form. Additionally, from the ten habitat units on each field form page, one is randomly selected for complete measurement.

HABITAT INVENTORY COMPONENTS

A standardized habitat inventory form has been developed for use in California stream surveys and can be found in the *California Salmonid Stream Habitat Restoration Manual*. This form was used in Kimball Gulch to record measurements and observations. There are eleven components to the inventory form.

1. Flow:

Flow is measured in cubic feet per second (cfs) near the bottom of the stream survey reach using a Marsh-McBirney Model 2000 flow meter.

2. Channel Type:

Channel typing is conducted according to the classification system developed and revised by David Rosgen (1994). This methodology is described in the *California Salmonid Stream Habitat Restoration Manual*. Channel typing is conducted simultaneously with habitat typing and follows a standard form to record measurements and observations. There are five measured parameters used to determine channel type: 1) water slope gradient, 2) entrenchment, 3) width/depth ratio, 4) substrate composition, and 5) sinuosity. Channel characteristics are measured using a clinometer, hand level, hip chain, tape measure, and a stadia rod.

3. Temperatures:

Both water and air temperatures are measured and recorded at every tenth habitat unit. The time of the measurement is also recorded. Both temperatures are taken in degrees Fahrenheit at the middle of the habitat unit and within one foot of the water surface.

4. Habitat Type:

Habitat typing uses the 24 habitat classification types defined by McCain and others (1990). Habitat units are numbered sequentially and assigned a type identification number selected from a standard list of 24 habitat types. Dewatered units are labeled "dry". Kimball Gulch habitat typing used standard basin level measurement criteria. These parameters require that the minimum length of a described habitat unit must be equal to or greater than the stream's mean wetted width. All measurements are in feet to the nearest tenth. Habitat characteristics are measured using a clinometer, hip chain, and stadia rod.

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5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out areas is measured by the percent of the cobble that is surrounded or buried by fine sediment. In Kimball Gulch, embeddedness was ocularly estimated. The values were recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3) and 76 - 100% (value 4). Additionally, a value of 5 was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate like bedrock, log sills, boulders or other considerations.

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide juvenile salmonids protection from predation, reduce water velocities so fish can rest and conserve energy, and allow separation of territorial units to reduce density related competition for prey. The shelter rating is calculated for each fully-described habitat unit by multiplying shelter value and percent cover. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All cover is then classified according to a list of nine cover types. In Kimball Gulch, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. Thus, shelter ratings can range from 0-300 and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. In all fully-described habitat units, dominant and sub-dominant substrate elements were ocularly estimated using a list of seven size classes and recorded as a one and two, respectively. In addition, the dominant substrate composing the pool tail-outs is recorded for each pool.

8. Canopy:

Stream canopy density was estimated using modified handheld spherical densimeters as described in the *California Salmonid Stream Habitat Restoration Manual*. Canopy density relates to the amount of stream shaded from the sun. In Kimball Gulch, an estimate of the percentage of the habitat unit covered by canopy was made from the center of approximately every third unit in addition to every fully-described unit, giving an approximate 30% sub-sample. In addition, the area of canopy was estimated ocularly into percentages of coniferous or hardwood trees.

9. Bank Composition and Vegetation:

Bank composition elements range from bedrock to bare soil. However, the stream banks are usually covered with grass, brush, or trees. These factors influence the ability of stream banks to withstand winter flows. In Kimball Gulch, the dominant composition type and the dominant vegetation type of both the right and left banks for each fully-described unit were selected from the habitat inventory form. Additionally, the percent of each bank covered by vegetation (including downed trees, logs, and rootwads) was estimated and recorded.

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10. Large Woody Debris Count:

Large woody debris (LWD) is an important component of fish habitat and an element in channel forming processes. In each habitat unit all pieces of LWD partially or entirely below the elevation of bankfull discharge are counted and recorded. The minimum size to be considered is twelve inches in diameter and six feet in length. The LWD count is presented by reach and is expressed as an average per 100 feet.

11. Average Bankfull Width:

Bankfull width can vary greatly in the course of a channel type stream reach. This is especially true in very long reaches. Bankfull width can be a factor in habitat components like canopy density, water temperature, and pool depths. Frequent measurements taken at riffle crests (velocity crossovers) are needed to accurately describe reach widths. At the first appropriate velocity crossover that occurs after the beginning of a new stream survey page (ten habitat units), bankfull width is measured and recorded in the appropriate header block of the page. These widths are presented as an average for the channel type reach.

BIOLOGICAL INVENTORY

Biological sampling during the stream inventory is used to determine fish species and their distribution in the stream. Fish presence was observed from the stream banks in Kimball Gulch. In addition, underwater observations were made at 21 sites using techniques discussed in the *California Salmonid Stream Habitat Restoration Manual*.

DATA ANALYSIS

Data from the habitat inventory form are entered into Stream Habitat 2.0.18, a Visual Basic data entry program developed by Karen Wilson, Pacific States Marine Fisheries Commission in conjunction with the California Department of Fish and Game. This program processes and summarizes the data, and produces the following ten tables:

- Riffle, Flatwater, and Pool Habitat Types
- Habitat Types and Measured Parameters
- Pool Types
- Maximum Residual Pool Depths by Habitat Types
- Mean Percent Cover by Habitat Type
- Dominant Substrates by Habitat Type
- Mean Percent Vegetative Cover for Entire Stream
- Fish Habitat Inventory Data Summary by Stream Reach (Table 8)
- Mean Percent Dominant Substrate / Dominant Vegetation Type for Entire Stream
- Mean Percent Shelter Cover Types for Entire Stream

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Graphics are produced from the tables using Microsoft Excel. Graphics developed for Kimball Gulch include:

- Riffle, Flatwater, Pool Habitat Types by Percent Occurrence
- Riffle, Flatwater, Pool Habitat Types by Total Length
- Total Habitat Types by Percent Occurrence
- Pool Types by Percent Occurrence
- Maximum Residual Depth in Pools
- Percent Embeddedness
- Mean Percent Cover Types in Pools
- Substrate Composition in Pool Tail-outs
- Mean Percent Canopy
- Dominant Bank Composition by Composition Type
- Dominant Bank Vegetation by Vegetation Type

HABITAT INVENTORY RESULTS

* ALL TABLES AND GRAPHS ARE LOCATED AT THE END OF THE REPORT *

The habitat inventory of August 20 to August 27, 2008, was conducted by E. Hicks and J. Braren (WSP). The total length of the stream surveyed was 3,360 feet.

Stream flow was measured near the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 0.11 cfs on September 4, 2008.

Kimball Gulch is a B3 channel type for 1,396 feet of the stream surveyed (Reach 1), and an A3 channel type for the remaining 1,964 feet of the stream surveyed (Reach 2). B3 channels are moderately entrenched, moderate gradient, riffle dominated channel with infrequently spaced pools, very stable plan and profile, stable banks and cobble-dominant substrates. A3 channels are steep, narrow, cascading, step-pool, high energy debris transporting channels associated with depositional soils, and cobble-dominant substrates.

Water temperatures taken during the survey period ranged from 54 to 58 degrees Fahrenheit. Air temperatures ranged from 52 to 64 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 45% pool units, 26% riffle units, 18% flatwater units, 7% dry units and 3% no survey units (Graph 1). Based on total length of Level II habitat types there were 33% flatwater units, 28% pool units, 21% riffle units, 13% dry units and 4% no survey units (Graph 2).

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Ten Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were mid-channel pool units, 27%; low gradient riffle units, 22%; and step run units, 17% (Graph 3). Based on percent total length, step run units made up 32%, low gradient riffle units 19%, and step pool units 14%.

A total of 45 pools were identified (Table 3). Main channel pools were the most frequently encountered at 89% (Graph 4), and comprised 93% of the total length of all pools (Table 3).

Table 4 is a summary of maximum residual pool depths by pool habitat types. Pool quality for salmonids increases with depth. Eight of the 45 pools (18%) had a residual depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 45 pool tail-outs measured, 14 had a value of 1 (31.1%); 24 had a value of 2 (53.3%); 5 had a value of 3 (11.1%); 2 had a value of 4 (4.4%) (Graph 6). On this scale, a value of 1 indicates the best spawning conditions and a value of 4 the worst.

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Riffle habitat types had a mean shelter rating of 16, flatwater habitat types had a mean shelter rating of 8, and pool habitats had a mean shelter rating of 34 (Table 1). Of the pool types, the main channel pools had the highest mean shelter rating at 35. Scour pools had a mean shelter rating of 29 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Large woody debris is the dominant cover type in Kimball Gulch. Graph 7 describes the pool cover in Kimball Gulch. Large woody debris is the dominant pool cover type followed by small woody debris.

Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate observed in pool tail-outs. Gravel was the dominant substrate observed in 62% of the pool tail-outs. Small cobble was the next most frequently observed dominant substrate type and occurred in 36% of the pool tail-outs.

The mean percent canopy density for the surveyed length of Kimball Gulch was 97%. Three percent of the canopy was open. Of the canopy present, the mean percentages of hardwood and coniferous trees were 13% and 87%, respectively. Graph 9 describes the mean percent canopy in Kimball Gulch.

For the stream reach surveyed, the mean percent right bank vegetated was 97%. The mean percent left bank vegetated was 98%. The dominant elements composing the structure of the stream banks consisted of 81% cobble/gravel, 8% bedrock, 8% sand/silt/clay, and 3% boulder (Graph 10). Coniferous trees were the dominant vegetation type observed in 64.4% of the units surveyed. Additionally, 17.8% of the units surveyed had hardwood trees as the dominant vegetation type, and 17.8% had brush as the dominant vegetation type (Graph 11).

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BIOLOGICAL INVENTORY RESULTS

Twenty-one sites were snorkel surveyed for species composition and distribution in Kimball Gulch on September 2, 2008. Water temperatures taken during the survey period of 1200 to 1355 were 55 degrees Fahrenheit. Air temperatures ranged from 63 to 64 degrees Fahrenheit. The sites were sampled by I. Mikus and S. McSmith (DFG).

In reach 1, which comprised the first 1,358 feet of stream, ten sites were sampled. The reach sites yielded 1 young-of-the-year steelhead/rainbow trout (SH/RT) and 3 age 1+ SH/RT.

In reach 2, eleven sites were sampled starting approximately 1,473 from the confluence with South Fork Cottaneva Creek and continuing upstream 1,729 feet. The reach sites yielded no salmonids.

The following chart displays the information yielded from these sites:

2008 Kimball Gulch underwater observations.

| Date | Site # | Hab. Unit # | Hab. Type | Approx. Dist. From mouth (ft.) | Coho | | SH/RT | | |
|-------------------------|--------|-------------|-----------|--------------------------------|------|----|-------|----|----|
| | | | | | YOY | 1+ | YOY | 1+ | 2+ |
| Reach 1 B3 Channel Type | | | | | | | | | |
| 09/02/08 | 1 | 002 | 4.2 | 39 | 0 | 0 | 0 | 1 | 0 |
| 09/02/08 | 2 | 006 | 4.2 | 274 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 3 | 008 | 4.2 | 338 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 4 | 013 | 4.4 | 498 | 0 | 0 | 1 | 1 | 0 |
| 09/02/08 | 5 | 015 | 5.6 | 562 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 6 | 023 | 5.6 | 794 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 7 | 031 | 4.2 | 1036 | 0 | 0 | 0 | 1 | 0 |
| 09/02/08 | 8 | 035 | 4.2 | 1100 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 9 | 037 | 4.2 | 1136 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 10 | 041 | 4.4 | 1299 | 0 | 0 | 0 | 0 | 0 |
| Reach 2 A3 Channel Type | | | | | | | | | |
| 09/02/08 | 11 | 44 | 5.6 | 1473 | 0 | 0 | 0 | 0 | 0 |

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| Date | Site # | Hab. Unit # | Hab. Type | Approx. Dist. From mouth (ft.) | Coho | | SH/RT | | |
|----------|--------|-------------|-----------|--------------------------------|------|----|-------|----|----|
| | | | | | YOY | 1+ | YOY | 1+ | 2+ |
| 09/02/08 | 12 | 47 | 4.2 | 1529 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 13 | 49 | 4.2 | 1561 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 14 | 51 | 4.2 | 1638 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 15 | 58 | 4.2 | 1868 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 16 | 63 | 4.4 | 2009 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 17 | 71 | 4.2 | 2482 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 18 | 75 | 4.2 | 2695 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 19 | 80 | 4.2 | 2813 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 20 | 85 | 5.6 | 2954 | 0 | 0 | 0 | 0 | 0 |
| 09/02/08 | 21 | 95 | 4.2 | 3222 | 0 | 0 | 0 | 0 | 0 |

DISCUSSION

Kimball Gulch is a B3 channel type for the first 1,396 feet of stream surveyed and an A3 channel type for the remaining 1,964 feet. The suitability of B3 and A3 channel types for fish habitat improvement structures is as follows: B3 channel types are excellent for plunge weirs, boulder clusters and bank-placed boulders, single and opposing wing-deflectors, and log cover. A3 channel types are generally not suitable for fish habitat improvement structures.

The water temperatures recorded on the survey days August 20, 2008 to August 27, 2008, ranged from 54 to 58 degrees Fahrenheit. Air temperatures ranged from 52 to 64 degrees Fahrenheit. To make any conclusions, temperatures would need to be monitored throughout the warm summer months, and more extensive biological sampling would need to be conducted.

Flatwater habitat types comprised 33% of the total length of this survey, riffles 21%, and pools 28%. The pools are relatively shallow, with 8 of the 45 (18%) pools having a maximum residual depth greater than 2 feet. In general, pool enhancement projects are considered when primary pools comprise less than 40% of the length of total stream habitat. In first and second order streams, a primary pool is defined to have a maximum residual depth of at least two feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width. Installing structures that will increase or deepen pool habitat is recommended for the B3 channel type.

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Thirty-eight of the 45 pool tail-outs measured had embeddedness ratings of 1 or 2. Seven of the pool tail-outs had embeddedness ratings of 3 or 4. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered to indicate good quality spawning substrate for salmon and steelhead. Sediment sources in Kimball Gulch should be mapped and rated according to their potential sediment yields, and control measures should be taken.

Forty-four of the 45 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean shelter rating for pools was 34. The shelter rating in the flatwater habitats was 8. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by large woody debris in Kimball Gulch. Large woody debris is the dominant cover type in pools followed by small woody debris. Log and root wad cover structures in the pool and flatwater habitats would enhance both summer and winter salmonid habitat. Log cover structure provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition.

The mean percent canopy density for the stream was 97%. Reach 1 had a canopy density of 95%, Reach 2 had a canopy density of 96%. The percentage of right and left bank covered with vegetation was 97% and 98%, respectively.

RECOMMENDATIONS

- 1) Kimball Gulch should be managed as an anadromous, natural production stream.
- 2) There are several log debris accumulations present on Kimball Gulch that are retaining fine sediment. The modification of these debris accumulations is desirable, but must be done carefully, over time, to avoid excessive sediment loading in downstream reaches.
- 3) Increase woody cover in the pool and flatwater habitat units. Most of the existing cover in the pools is from small woody debris. Adding high quality complexity with woody cover in the pools is desirable.
- 4) Active and potential sediment sources related to the road system need to be identified, mapped, and treated according to their potential for sediment yield to the stream and its tributaries.
- 5) The limited water temperature data available suggest that maximum temperatures are within the acceptable range for juvenile salmonids. To establish more complete and meaningful temperature regime information, 24-hour monitoring during the July and August temperature extreme period should be performed for 3 to 5 years.

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COMMENTS AND LANDMARKS

The following landmarks and possible problem sites were noted. All distances are approximate and taken from the beginning of the survey reach.

| Position (ft): | Habitat unit # | Comments: |
|----------------|----------------|---|
| 0 | 0001.00 | Start of survey at confluence with South Fork Cottaneva Creek. This unit is within the influence of South Fork Cottaneva Creek. Reach 1 begins and is a B3 channel type. |
| 39 | 0002.00 | This unit is within the influence. There is a culvert on the side of the right bank contributing approximately 0.01% to the flow. The creek does not flow through the culvert. There is a 3.5' plunge. |
| 52 | 0003.00 | There is a relic railroad trestle in this unit. |
| 338 | 0008.00 | There was a salmonid 1+ observed. |
| 348 | 0009.00 | The water flows subsurface in this unit. |
| 363 | 0010.00 | Log debris accumulation (LDA) #01 contains 16 pieces of large woody debris and measures 5' high x 14' wide x and 55' long with water flowing through and no visible gaps. Sediment retention ranges from silt to large cobble and measures 12' wide x 16' long x and 7' high. This LDA poses as a possible barrier for salmonids. |
| 562 | 0015.00 | There is a 2' high jump. |
| 753 | 0021.00 | LDA #02 is 22' long x 17' wide x 7' high with no visible gaps. This LDA poses as a possible barrier. |
| 794 | 0023.00 | There is a 4.5' high jump. |
| 803 | 0024.00 | There is a 2' high jump. |
| 985 | 0029.00 | LDA #02 is 23' long x 19' wide x 5' high with 10 pieces of large woody debris (LWD). There are no visible gaps and may pose as a possible barrier to salmonids. Sand-gravel sediment is being retained 14' long x 12' wide x 4' high. |
| 1008 | 0030.00 | Water is subsurface. |
| 1036 | 0031.00 | There is a 1' high jump. |

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| | | |
|------|---------|---|
| 1207 | 0039.00 | There is a 4' high jump. |
| 1241 | 0040.00 | There is an instream structure collecting LWD. |
| 1333 | 0041.00 | There is a 3' high jump. |
| 1396 | 0043.00 | Channel type changes from B3 to A3, Reach 2 begins. |
| 1473 | 0044.00 | There is a 4.3' high jump. |
| 1529 | 0047.00 | There is a 4' high jump. |
| 1543 | 0048.00 | Water flows subsurface sediment retention measuring 18' long x 10' wide x 3' high. |
| 1673 | 0053.00 | There are a series of two 3' high jumps. |
| 2353 | 0069.00 | Water originates from subsurface source at top habitat unit. |
| 2730 | 0076.00 | There is a 4.1' high jump. |
| 2766 | 0078.00 | LDA in this unit. |
| 2847 | 0081.00 | Water flows subsurface. |
| 2974 | 0085.00 | There is a 2.3' high jump. |
| 3040 | 0087.00 | There is a 5.3' high jump. |
| 3140 | 0089.00 | There is a 14% gradient which was measured with an eye level. There is a 6' high boulder jump with a shallow jump pool. |
| 3151 | 0090.00 | There is a landslide/rockslide on the left bank measuring 30' wide x 100' long. |
| 3160 | 0091.00 | There is a 4.5' high jump. |
| 3222 | 0096.00 | Unit is unsurveyable due to LDA and a large sediment load. Water flows subsurface. There is an LDA at the bottom of the habitat unit. |
| 3291 | 0097.00 | There is an LDA that is 7' high, 24' wide and 30' long with a 2.5' high jump; consisting of 18 pieces of LWD. Water flows subsurface above the LDA and there are no gaps. Sediment being retained ranges in size from silt to large cobble and measures 24' wide, 23' long and 4' deep at the base. There are no fish upstream. |

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- 3338 0099.00 There is an LDA with a 12' jump over a 20' span. The pool at the bottom is 0.6' deep. There are a series of jumps which measure 1.3' high, 4' high and 5' high.
- 3360 0099.00 End of survey due to end of anadromy. There is a 6' high jump over a boulder, and 3 successive LDAs retaining sediment and debris. There is a 14% gradient. The habitat above is suitable for fish because of the flowing water.

REFERENCES

Flosi, G., Downie, S., Hopelain, J., Bird, M., Coey, R., and Collins, B. 1998. *California Salmonid Stream Habitat Restoration Manual*, 3rd edition. California Department of Fish and Game, Sacramento, California.

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LEVEL III and LEVEL IV HABITAT TYPES

RIFFLE

| | | | |
|----------------------|-------|-------|-------|
| Low Gradient Riffle | (LGR) | [1.1] | { 1 } |
| High Gradient Riffle | (HGR) | [1.2] | { 2 } |

CASCADE

| | | | |
|---------------|-------|-------|-------|
| Cascade | (CAS) | [2.1] | { 3 } |
| Bedrock Sheet | (BRS) | [2.2] | {24} |

FLATWATER

| | | | |
|--------------|-------|-------|------|
| Pocket Water | (POW) | [3.1] | {21} |
| Glide | (GLD) | [3.2] | {14} |
| Run | (RUN) | [3.3] | {15} |
| Step Run | (SRN) | [3.4] | {16} |
| Edgewater | (EDW) | [3.5] | {18} |

MAIN CHANNEL POOLS

| | | | |
|-------------------------|-------|-------|-------|
| Trench Pool | (TRP) | [4.1] | { 8 } |
| Mid-Channel Pool | (MCP) | [4.2] | {17} |
| Channel Confluence Pool | (CCP) | [4.3] | {19} |
| Step Pool | (STP) | [4.4] | {23} |

SCOUR POOLS

| | | | |
|--|--------|-------|-------|
| Corner Pool | (CRP) | [5.1] | {22} |
| Lateral Scour Pool - Log Enhanced | (LSL) | [5.2] | {10} |
| Lateral Scour Pool - Root Wad Enhanced | (LSR) | [5.3] | {11} |
| Lateral Scour Pool - Bedrock Formed | (LSBk) | [5.4] | {12} |
| Lateral Scour Pool - Boulder Formed | (LSBo) | [5.5] | {20} |
| Plunge Pool | (PLP) | [5.6] | { 9 } |

BACKWATER POOLS

| | | | |
|----------------------------------|-------|-------|-------|
| Secondary Channel Pool | (SCP) | [6.1] | { 4 } |
| Backwater Pool - Boulder Formed | (BPB) | [6.2] | { 5 } |
| Backwater Pool - Root Wad Formed | (BPR) | [6.3] | { 6 } |
| Backwater Pool - Log Formed | (BPL) | [6.4] | { 7 } |
| Dammed Pool | (DPL) | [6.5] | {13} |

ADDITIONAL UNIT DESIGNATIONS

| | | | |
|-----------------------------|-------|-------|--|
| Dry | (DRY) | [7.0] | |
| Culvert | (CUL) | [8.0] | |
| Not Surveyed | (NS) | [9.0] | |
| Not Surveyed due to a marsh | (MAR) | [9.1] | |

Table 1 - Summary of Riffle, Flatwater, and Pool Habitat Types

Stream Name: Kimball Gulch

LLID: 1237872397463 Drainage: Rockport

Survey Dates: 8/20/2008 to 8/27/2008

Confluence Location: Quad: WESTPORT

Legal Description: T22NR17WS19

Latitude: 39:44:47.0N

Longitude: 123:47:14.0W

| Habitat Units | Units Fully Measured | Habitat Type | Habitat Occurrence (%) | Mean Length (ft.) | Total Length (ft.) | Total Length (%) | Mean Width (ft.) | Mean Depth (ft.) | Mean Max Depth (ft.) | Mean Area (sq.ft.) | Estimated Total Area (sq.ft.) | Mean Volume (cu.ft.) | Estimated Total Volume (cu.ft.) | Mean Residual Pool Vol (cu.ft.) | Mean Shelter Rating |
|--------------------|-----------------------------------|--------------|------------------------|-------------------|---------------------------|------------------|------------------|------------------|----------------------|----------------------------|-------------------------------|----------------------|---------------------------------|---------------------------------|---------------------|
| 7 | 0 | DRY | 7.1 | 64 | 445 | 13.2 | | | | | | | | | |
| 18 | 6 | FLATWATER | 18.2 | 61 | 1097 | 32.6 | 4.1 | 0.4 | 0.8 | 250 | 4506 | 104 | 1866 | | 8 |
| 3 | 0 | NOSURVEY | 3.0 | 47 | 142 | 4.2 | | | | | | | | | |
| 45 | 45 | POOL | 45.5 | 21 | 956 | 28.5 | 8.1 | 0.8 | 1.4 | 157 | 7083 | 177 | 7957 | 136 | 34 |
| 26 | 8 | RIFFLE | 26.3 | 28 | 720 | 21.4 | 3.0 | 0.3 | 0.5 | 38 | 979 | 11 | 297 | | 16 |
| Total Units | Total Units Fully Measured | | | | Total Length (ft.) | | | | | Total Area (sq.ft.) | | | Total Volume (cu.ft.) | | |
| 99 | 59 | | | | 3360 | | | | | 12568 | | | 10120 | | |

Table 2 - Summary of Habitat Types and Measured Parameters

Stream Name: Kimball Gulch

LLID: 1237872397463

Drainage: Rockport

Survey Dates: 8/20/2008 to 8/27/2008

Confluence Location: Quad: WESTPORT

Legal Description: T22NR17WS19

Latitude: 39:44:47.0N

Longitude: 123:47:14.0W

| Habitat Units | Units Fully Measured | Habitat Type | Habitat Occurrence (%) | Mean Length (ft.) | Total Length (ft.) | Total Length (%) | Mean Width (ft.) | Mean Depth (ft.) | Max Depth (ft.) | Mean Area (sq.ft.) | Estimated Total Area (sq.ft.) | Mean Volume (cu.ft.) | Estimated Total Volume (cu.ft.) | Mean Residual Pool Vol (cu.ft.) | Mean Shelter Rating | Mean Canopy (%) |
|---------------|----------------------|--------------|------------------------|-------------------|--------------------|------------------|------------------|------------------|-----------------|--------------------|-------------------------------|----------------------|---------------------------------|---------------------------------|---------------------|-----------------|
| 22 | 5 | LGR | 22.2 | 29 | 630 | 18.8 | 3 | 0.2 | 0.4 | 35 | 768 | 8 | 181 | | 5 | 97 |
| 2 | 1 | HGR | 2.0 | 30 | 59 | 1.8 | 2 | 0.2 | 0.6 | 16 | 32 | 3 | 6 | | 90 | 94 |
| 2 | 2 | CAS | 2.0 | 16 | 31 | 0.9 | 4 | 0.5 | 1.2 | 55 | 111 | 23 | 47 | | 8 | 98 |
| 1 | 1 | RUN | 1.0 | 9 | 9 | 0.3 | 2 | 0.2 | 0.4 | 17 | 17 | 3 | 3 | | 5 | 99 |
| 17 | 5 | SRN | 17.2 | 64 | 1088 | 32.4 | 4 | 0.4 | 1 | 297 | 5049 | 124 | 2103 | | 8 | 97 |
| 27 | 27 | MCP | 27.3 | 15 | 404 | 12.0 | 8 | 0.9 | 3.9 | 120 | 3227 | 132 | 3568 | 106 | 30 | 97 |
| 13 | 13 | STP | 13.1 | 37 | 484 | 14.4 | 7 | 0.8 | 1.9 | 246 | 3195 | 266 | 3455 | 200 | 43 | 96 |
| 1 | 1 | LSL | 1.0 | 21 | 21 | 0.6 | 5 | 0.4 | 0.6 | 105 | 105 | 84 | 84 | 42 | 20 | 96 |
| 4 | 4 | PLP | 4.0 | 12 | 47 | 1.4 | 11 | 1.0 | 1.8 | 139 | 555 | 212 | 850 | 155 | 31 | 97 |
| 7 | 0 | DRY | 7.1 | 64 | 445 | 13.2 | | | | | | | | | | |
| 3 | 0 | NS | 3.0 | 47 | 142 | 4.2 | | | | | | | | | | |

Total Units
99

Total Units Fully Measured
59

Total Length (ft.)
3360

Total Area (sq.ft.)
13059

Total Volume (cu.ft.)
10298

Table 3 - Summary of Pool Types

Stream Name: Kimball Gulch

LLID: 1237872397463

Drainage: Rockport

Survey Dates: 8/20/2008 to 8/27/2008

Confluence Location: Quad: WESTPORT

Legal Description: T22NR17WS19

Latitude: 39:44:47.0N

Longitude: 123:47:14.0W

| Habitat Units | Units Fully Measured | Habitat Type | Habitat Occurrence (%) | Mean Length (ft.) | Total Length (ft.) | Total Length (%) | Mean Width (ft.) | Mean Residual Depth (ft.) | Mean Area (sq.ft.) | Estimated Total Area (sq.ft.) | Mean Residual Pool Vol (cu.ft.) | Estimated Total Resid.Vol. (cu.ft.) | Mean Shelter Rating |
|---------------|----------------------|--------------|------------------------|-------------------|--------------------|------------------|------------------|---------------------------|--------------------|-------------------------------|---------------------------------|-------------------------------------|---------------------|
| 40 | 40 | MAIN | 89 | 22 | 888 | 93 | 7.8 | 0.8 | 161 | 6423 | 137 | 5479 | 35 |
| 5 | 5 | SCOUR | 11 | 14 | 68 | 7 | 10.0 | 0.9 | 132 | 660 | 132 | 660 | 29 |

| Total Units | Total Units Fully Measured | Total Length (ft.) | Total Area (sq.ft.) | Total Volume (cu.ft.) |
|-------------|----------------------------|--------------------|---------------------|-----------------------|
| 45 | 45 | 956 | 7083 | 6140 |

Table 4 - Summary of Maximum Residual Pool Depths By Pool Habitat Types

Stream Name: Kimball Gulch

LLID: 1237872397463

Drainage: Rockport

Survey Dates: 8/20/2008 to 8/27/2008

Confluence Location: Quad: WESTPORT

Legal Description: T22NR17WS19

Latitude: 39:44:47.0N

Longitude: 123:47:14.0W

| Habitat Units | Habitat Type | Habitat Occurrence (%) | < 1 Foot Maximum Residual Depth | < 1 Foot Percent Occurrence | 1 < 2 Feet Maximum Residual Depth | 1 < 2 Feet Percent Occurrence | 2 < 3 Feet Maximum Residual Depth | 2 < 3 Feet Percent Occurrence | 3 < 4 Feet Maximum Residual Depth | 3 < 4 Feet Percent Occurrence | >= 4 Feet Maximum Residual Depth | >= 4 Feet Percent Occurrence |
|---------------|--------------|------------------------|---------------------------------|-----------------------------|-----------------------------------|-------------------------------|-----------------------------------|-------------------------------|-----------------------------------|-------------------------------|----------------------------------|------------------------------|
| 27 | MCP | 60 | 9 | 33 | 10 | 37 | 7 | 26 | 1 | 4 | 0 | 0 |
| 13 | STP | 29 | 3 | 23 | 10 | 77 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | LSL | 2 | 1 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | PLP | 9 | 0 | 0 | 4 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |

| Total Units | Total < 1 Foot Max Resid. Depth | Total < 1 Foot % Occurrence | Total 1< 2 Foot Max Resid. Depth | Total 1< 2 Foot % Occurrence | Total 2< 3 Foot Max Resid. Depth | Total 2< 3 Foot % Occurrence | Total 3< 4 Foot Max Resid. Depth | Total 3< 4 Foot % Occurrence | Total >= 4 Foot Max Resid. Depth | Total >= 4 Foot % Occurrence |
|-------------|---------------------------------|-----------------------------|----------------------------------|------------------------------|----------------------------------|------------------------------|----------------------------------|------------------------------|----------------------------------|------------------------------|
| 45 | 13 | 29 | 24 | 53 | 7 | 16 | 1 | 2 | 0 | 0 |

Mean Maximum Residual Pool Depth (ft.): 1.4

Table 5 - Summary of Mean Percent Cover By Habitat Type

Stream Name: Kimball Gulch

LLID: 1237872397463

Drainage: Rockport

Survey Dates: 8/20/2008 to 8/27/2008

Dry Units: 7

Confluence Location: Quad: WESTPORT

Legal Description: T22NR17WS19

Latitude: 39:44:47.0N

Longitude: 123:47:14.0W

| Habitat Units | Units Fully Measured | Habitat Type | Mean % Undercut Banks | Mean % SWD | Mean % LWD | Mean % Root Mass | Mean % Terr. Vegetation | Mean % Aquatic Vegetation | Mean % White Water | Mean % Boulders | Mean % Bedrock Ledges |
|---------------|----------------------|--------------|-----------------------|------------|------------|------------------|-------------------------|---------------------------|--------------------|-----------------|-----------------------|
| 22 | 5 | LGR | 0 | 16 | 40 | 0 | 0 | 0 | 0 | 44 | 0 |
| 2 | 1 | HGR | 0 | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 2 | CAS | 0 | 30 | 20 | 0 | 0 | 0 | 50 | 0 | 0 |
| 26 | 8 | TOTAL RIFFLE | 0 | 24 | 36 | 0 | 0 | 0 | 13 | 28 | 0 |
| 1 | 1 | RUN | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 80 |
| 17 | 5 | SRN | 1 | 27 | 6 | 12 | 0 | 0 | 0 | 54 | 0 |
| 18 | 6 | TOTAL FLAT | 1 | 26 | 5 | 10 | 0 | 0 | 0 | 45 | 13 |
| 27 | 27 | MCP | 4 | 17 | 49 | 7 | 0 | 0 | 1 | 20 | 2 |
| 13 | 13 | STP | 2 | 26 | 53 | 7 | 0 | 0 | 3 | 5 | 4 |
| 1 | 1 | LSL | 0 | 10 | 90 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 4 | PLP | 10 | 8 | 58 | 0 | 0 | 0 | 10 | 15 | 0 |
| 45 | 45 | TOTAL POOL | 4 | 19 | 52 | 6 | 0 | 0 | 2 | 15 | 2 |
| 3 | 0 | NS | | | | | | | | | |
| 99 | 59 | TOTAL | 3 | 20 | 45 | 6 | 0 | 0 | 3 | 19 | 3 |

Table 6 - Summary of Dominant Substrates By Habitat Type

Stream Name: Kimball Gulch

LLID: 1237872397463

Drainage: Rockport

Survey Dates: 8/20/2008 to 8/27/2008

Dry Units: 7

Confluence Location: Quad: WESTPORT

Legal Description: T22NR17WS19

Latitude: 39:44:47.0N

Longitude: 123:47:14.0W

| Habitat Units | Units Fully Measured | Habitat Type | % Total Silt/Clay Dominant | % Total Sand Dominant | % Total Gravel Dominant | % Total Small Cobble Dominant | % Total Large Cobble Dominant | % Total Boulder Dominant | % Total Bedrock Dominant |
|---------------|----------------------|--------------|----------------------------|-----------------------|-------------------------|-------------------------------|-------------------------------|--------------------------|--------------------------|
| 22 | 5 | LGR | 0 | 0 | 20 | 60 | 20 | 0 | 0 |
| 2 | 1 | HGR | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| 2 | 2 | CAS | 0 | 0 | 50 | 50 | 0 | 0 | 0 |
| 1 | 1 | RUN | 0 | 0 | 100 | 0 | 0 | 0 | 0 |
| 17 | 5 | SRN | 0 | 0 | 0 | 60 | 40 | 0 | 0 |
| 27 | 26 | MCP | 15 | 23 | 19 | 19 | 15 | 8 | 0 |
| 13 | 13 | STP | 8 | 15 | 15 | 46 | 15 | 0 | 0 |
| 1 | 1 | LSL | 0 | 0 | 0 | 100 | 0 | 0 | 0 |
| 4 | 4 | PLP | 0 | 25 | 25 | 25 | 25 | 0 | 0 |

Table 7 - Summary of Mean Percent Canopy for Entire Stream

Stream Name: Kimball Gulch

LLID: 1237872397463 Drainage: Rockport

Survey Dates: 8/20/2008 to 8/27/2008

Confluence Location: Quad: WESTPORT Legal Description: T22NR17WS19 Latitude: 39:44:47.0N Longitude: 123:47:14.0W

| Mean Percent Canopy | Mean Percent Conifer | Mean Percent Hardwood | Mean Percent Open Units | Mean Right Bank % Cover | Mean Left Bank % Cover |
|---------------------|----------------------|-----------------------|-------------------------|-------------------------|------------------------|
| 97 | 87 | 13 | 0 | 97 | 98 |

Note: Mean percent conifer and hardwood for the entire reach are means of canopy components from units with canopy values greater than zero.

Open units represent habitat units with zero canopy cover.

Table 8 - Fish Habitat Inventory Data Summary

Stream Name: Kimball Gulch LLID: 1237872397463 Drainage: Rockport
 Survey Dates: 8/20/2008 to 8/27/2008 Survey Length (ft.): 3360 Main Channel (ft.): 3360 Side Channel (ft.): 0
 Confluence Location: Quad: WESTPORT Legal Description: T22NR17WS19 Latitude: 39:44:47.0N Longitude: 123:47:14.0W

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 1

| | | |
|---|---|---|
| Channel Type: B3 | Canopy Density (%): 95.8 | Pools by Stream Length (%): 31.3 |
| Reach Length (ft.): 1396 | Coniferous Component (%): 83.0 | Pool Frequency (%): 42.9 |
| Riffle/Flatwater Mean Width (ft.): 3.8 | Hardwood Component (%): 17.0 | Residual Pool Depth (%): |
| BFW: | Dominant Bank Vegetation: Coniferous Trees | < 2 Feet Deep: 78 |
| Range (ft.): 14 to 16 | Vegetative Cover (%): 97.3 | 2 to 2.9 Feet Deep: 22 |
| Mean (ft.): 15 | Dominant Shelter: Large Woody Debris | 3 to 3.9 Feet Deep: 0 |
| Std. Dev.: 1 | Dominant Bank Substrate Type: Cobble/Gravel | >= 4 Feet Deep: 0 |
| Base Flow (cfs.): 0.1 | Occurrence of LWD (%): 56 | Mean Max Residual Pool Depth (ft.): 1.4 |
| Water (F): 54 - 55 Air (F): 58 - 64 | LWD per 100 ft.: | Mean Pool Shelter Rating: 34 |
| Dry Channel (ft): 43 | Riffles: 7 | |
| | Pools: 19 | |
| | Flat: 8 | |
| Pool Tail Substrate (%): Silt/Clay: 0 Sand: 0 Gravel: 44 Sm Cobble: 56 Lg Cobble: 0 Boulder: 0 Bedrock: 0 | | |
| Embeddedness Values (%): 1. 33.3 2. 66.7 3. 0.0 4. 0.0 5. 0.0 | | |

STREAM REACH: 2

| | | |
|---|---|---|
| Channel Type: A3 | Canopy Density (%): 96.9 | Pools by Stream Length (%): 26.4 |
| Reach Length (ft.): 1964 | Coniferous Component (%): 88.7 | Pool Frequency (%): 47.4 |
| Riffle/Flatwater Mean Width (ft.): 3.4 | Hardwood Component (%): 11.3 | Residual Pool Depth (%): |
| BFW: | Dominant Bank Vegetation: Coniferous Trees | < 2 Feet Deep: 85 |
| Range (ft.): 16 to 19 | Vegetative Cover (%): 97.6 | 2 to 2.9 Feet Deep: 11 |
| Mean (ft.): 18 | Dominant Shelter: Large Woody Debris | 3 to 3.9 Feet Deep: 4 |
| Std. Dev.: 1 | Dominant Bank Substrate Type: Cobble/Gravel | >= 4 Feet Deep: 0 |
| Base Flow (cfs.): 0.0 | Occurrence of LWD (%): 39 | Mean Max Residual Pool Depth (ft.): 1.4 |
| Water (F): 54 - 58 Air (F): 52 - 64 | LWD per 100 ft.: | Mean Pool Shelter Rating: 34 |
| Dry Channel (ft): 402 | Riffles: 23 | |
| | Pools: 22 | |
| | Flat: 6 | |
| Pool Tail Substrate (%): Silt/Clay: 0 Sand: 0 Gravel: 74 Sm Cobble: 22 Lg Cobble: 4 Boulder: 0 Bedrock: 0 | | |
| Embeddedness Values (%): 1. 29.6 2. 44.4 3. 18.5 4. 7.4 5. 0.0 | | |

Table 9 - Mean Percentage of Dominant Substrate and Vegetation

Stream Name: Kimball Gulch

LLID: 1237872397463

Drainage: Rockport

Survey Dates: 8/20/2008 to 8/27/2008

Confluence Location: Quad: WESTPORT

Legal Description: T22NR17WS19

Latitude: 39:44:47.0N

Longitude: 123:47:14.0W

Mean Percentage of Dominant Stream Bank Substrate

| Dominant Class of Substrate | Number of Units Right Bank | Number of Units Left Bank | Total Mean Percent (%) |
|-----------------------------|----------------------------|---------------------------|------------------------|
| Bedrock | 9 | 1 | 8.5 |
| Boulder | 1 | 3 | 3.4 |
| Cobble / Gravel | 44 | 51 | 80.5 |
| Sand / Silt / Clay | 5 | 4 | 7.6 |

Mean Percentage of Dominant Stream Bank Vegetation

| Dominant Class of Vegetation | Number of Units Right Bank | Number of Units Left Bank | Total Mean Percent (%) |
|------------------------------|----------------------------|---------------------------|------------------------|
| Grass | 0 | 0 | 0.0 |
| Brush | 10 | 11 | 17.8 |
| Hardwood Trees | 13 | 8 | 17.8 |
| Coniferous Trees | 36 | 40 | 64.4 |
| No Vegetation | 0 | 0 | 0.0 |

Total Stream Cobble Embeddedness Values: 2

Table 10 - Mean Percent of Shelter Cover Types For Entire Stream

StreamName: Kimball Gulch

LLID: 1237872397463

Drainage: Rockport

Survey Dates: 8/20/2008 to 8/27/2008

Confluence Location: Quad: WESTPORT

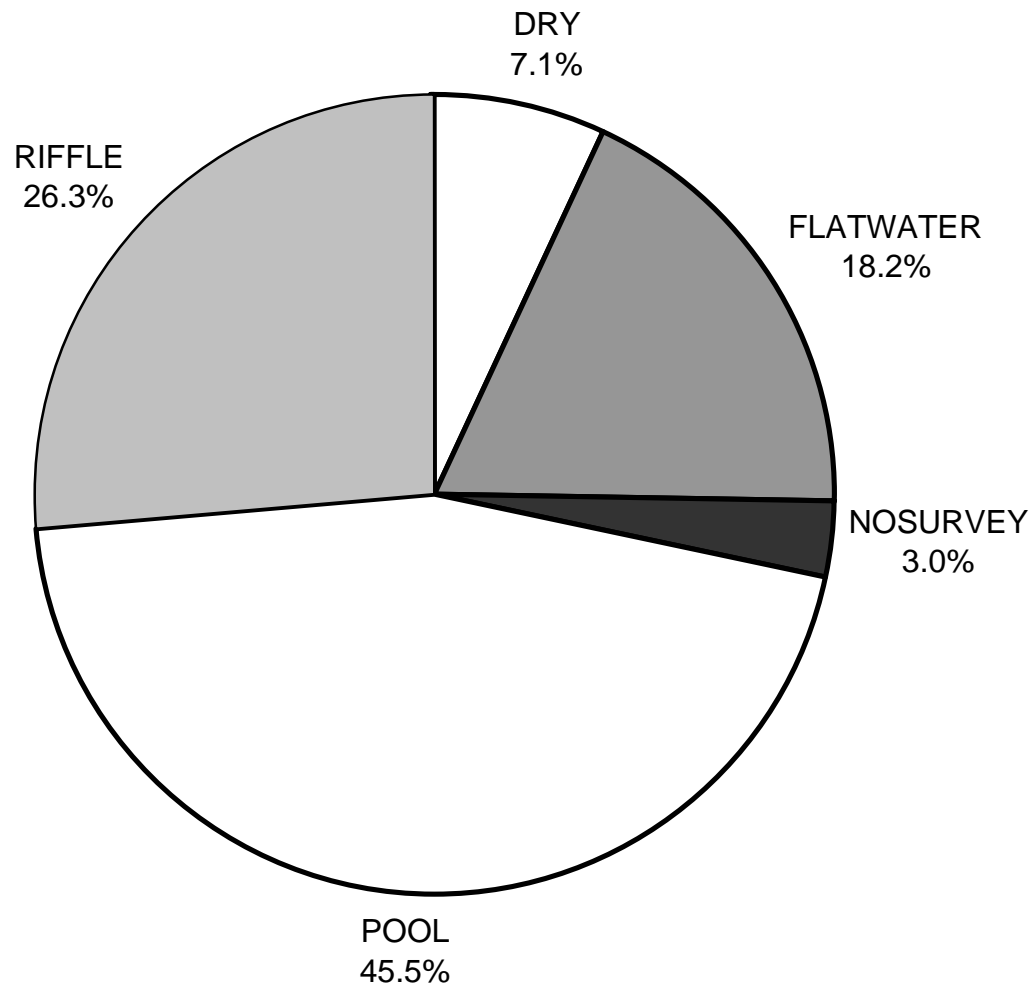
Legal Description: T22NR17WS19

Latitude: 39:44:47.0N

Longitude: 123:47:14.0W

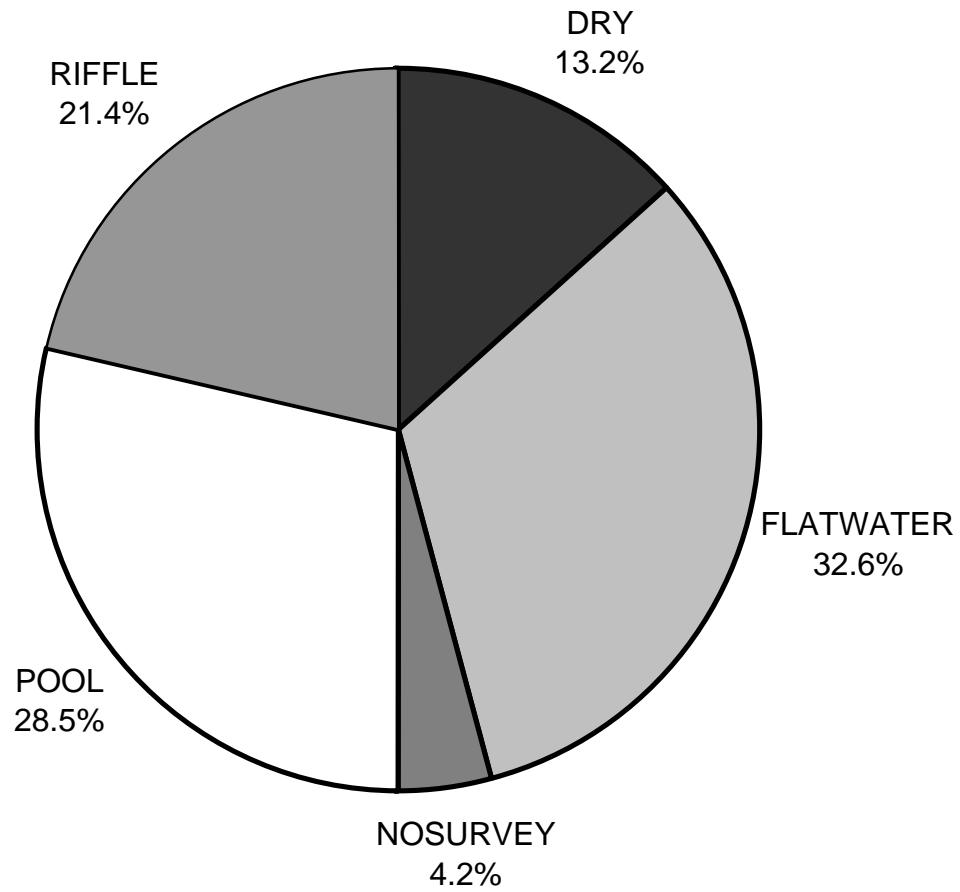
| | Riffles | Flatwater | Pools |
|----------------------------|----------------|------------------|--------------|
| UNDERCUT BANKS (%) | 0 | 1 | 4 |
| SMALL WOODY DEBRIS (%) | 24 | 26 | 19 |
| LARGE WOODY DEBRIS (%) | 36 | 5 | 52 |
| ROOT MASS (%) | 0 | 10 | 6 |
| TERRESTRIAL VEGETATION (%) | 0 | 0 | 0 |
| AQUATIC VEGETATION (%) | 0 | 0 | 0 |
| WHITEWATER (%) | 13 | 0 | 2 |
| BOULDERS (%) | 28 | 45 | 15 |
| BEDROCK LEDGES (%) | 0 | 13 | 2 |

KIMBALL GULCH 2008 HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 1

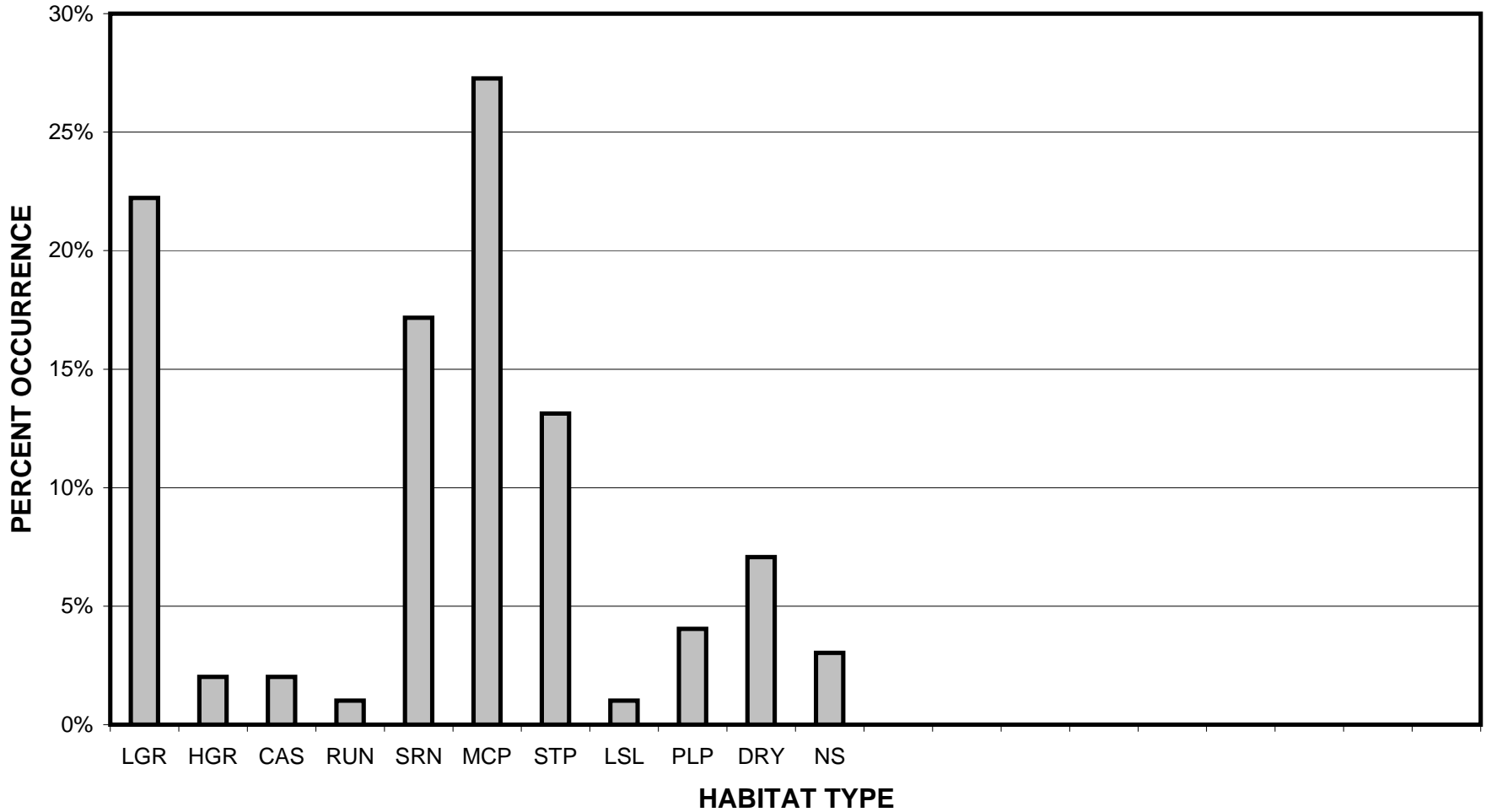
KIMBALL GULCH 2008 HABITAT TYPES BY PERCENT TOTAL LENGTH



GRAPH 2

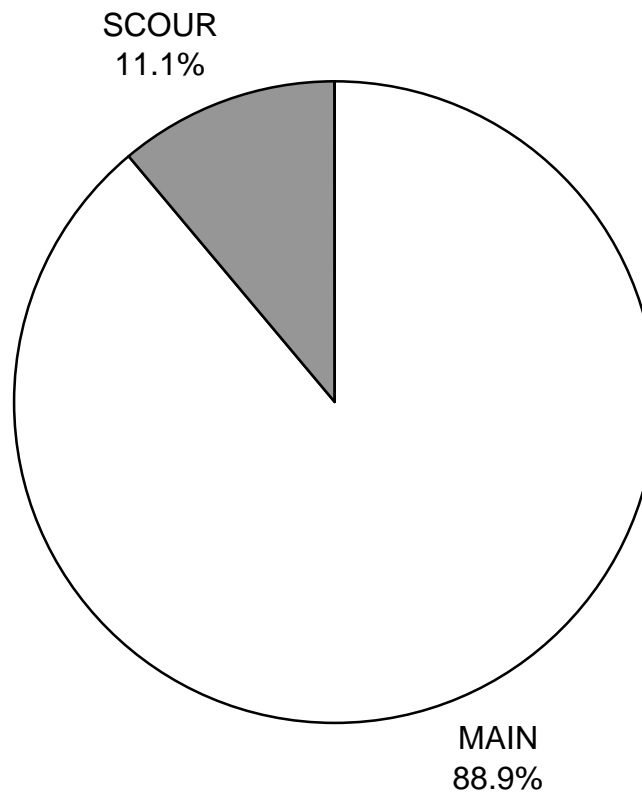
KIMBALL GULCH 2008

HABITAT TYPES BY PERCENT OCCURRENCE



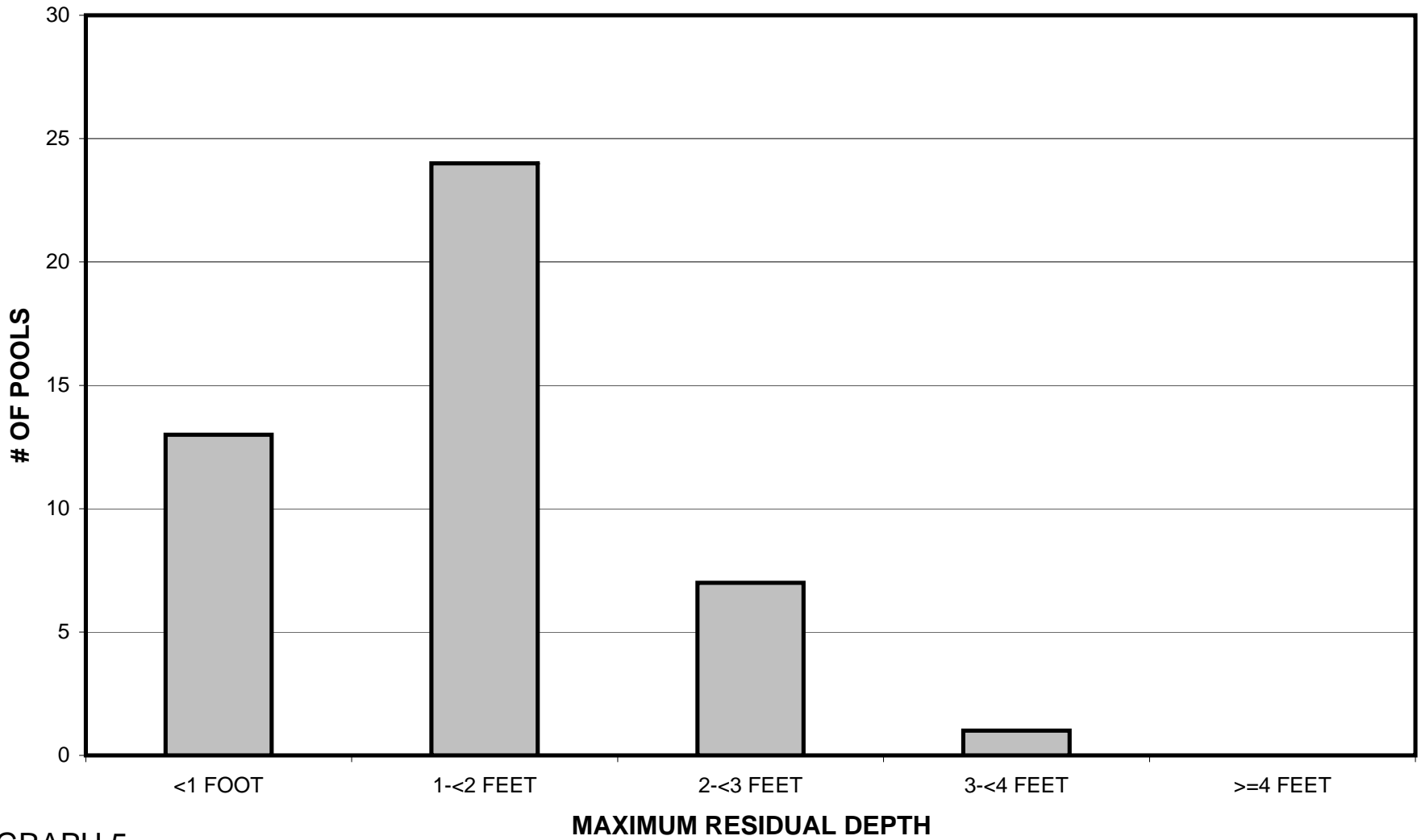
GRAPH 3

KIMBALL GULCH 2008 POOL TYPES BY PERCENT OCCURRENCE



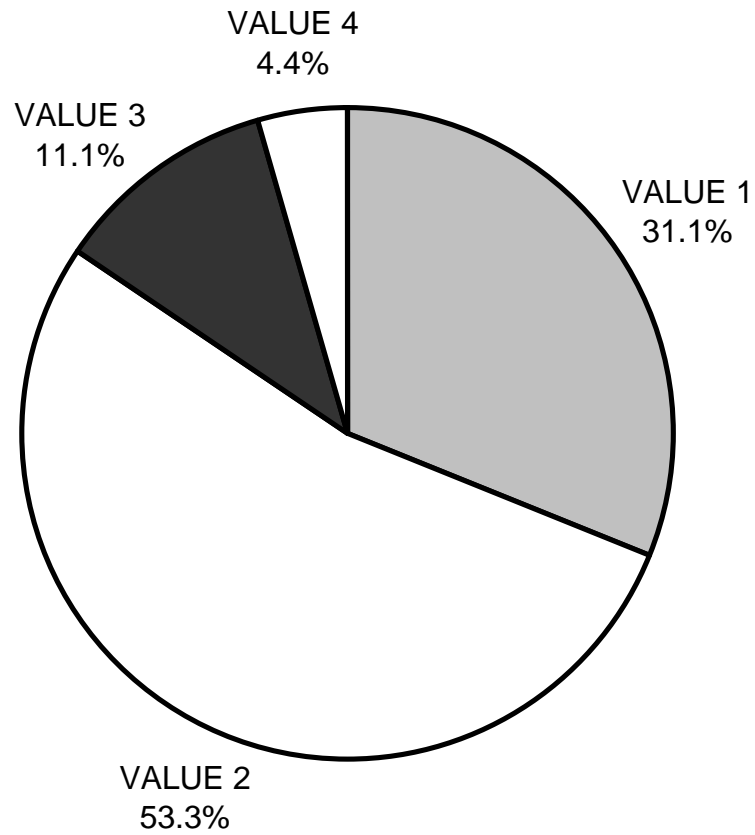
GRAPH 4

KIMBALL GULCH 2008 MAXIMUM DEPTH IN POOLS



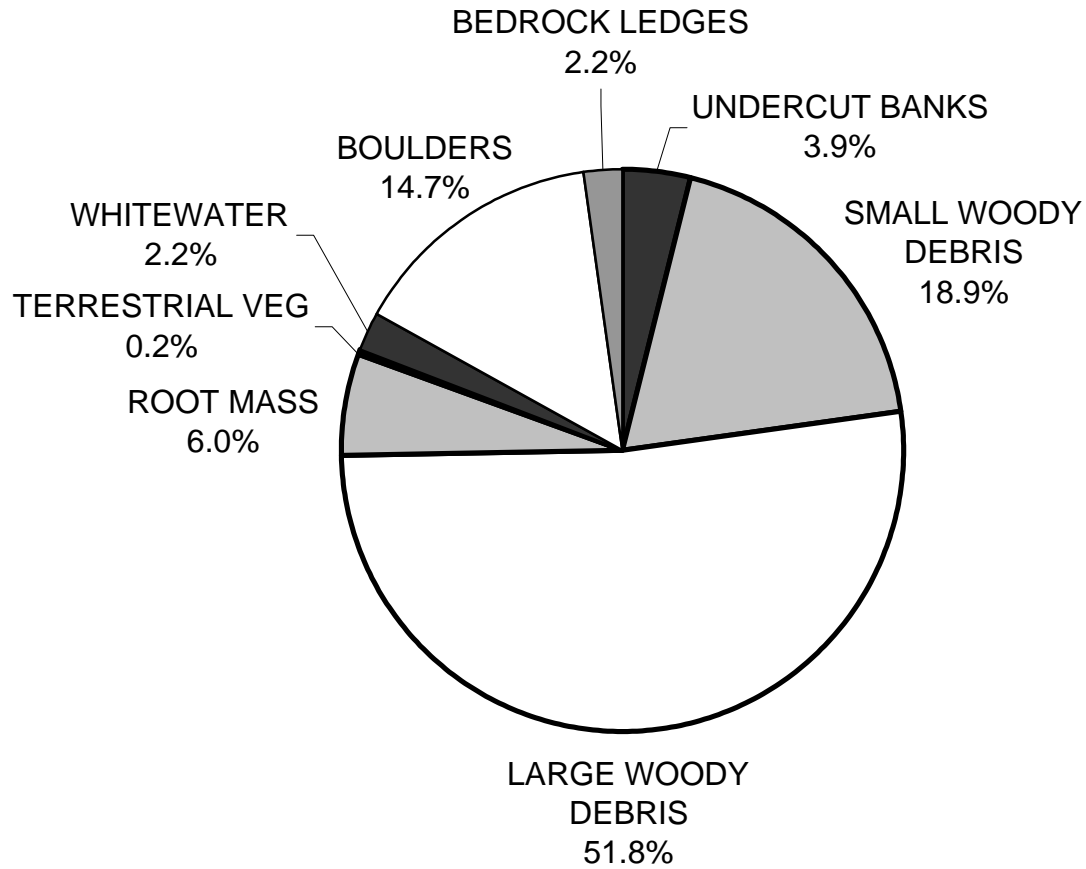
GRAPH 5

KIMBALL GULCH 2008 PERCENT EMBEDDEDNESS



GRAPH 6

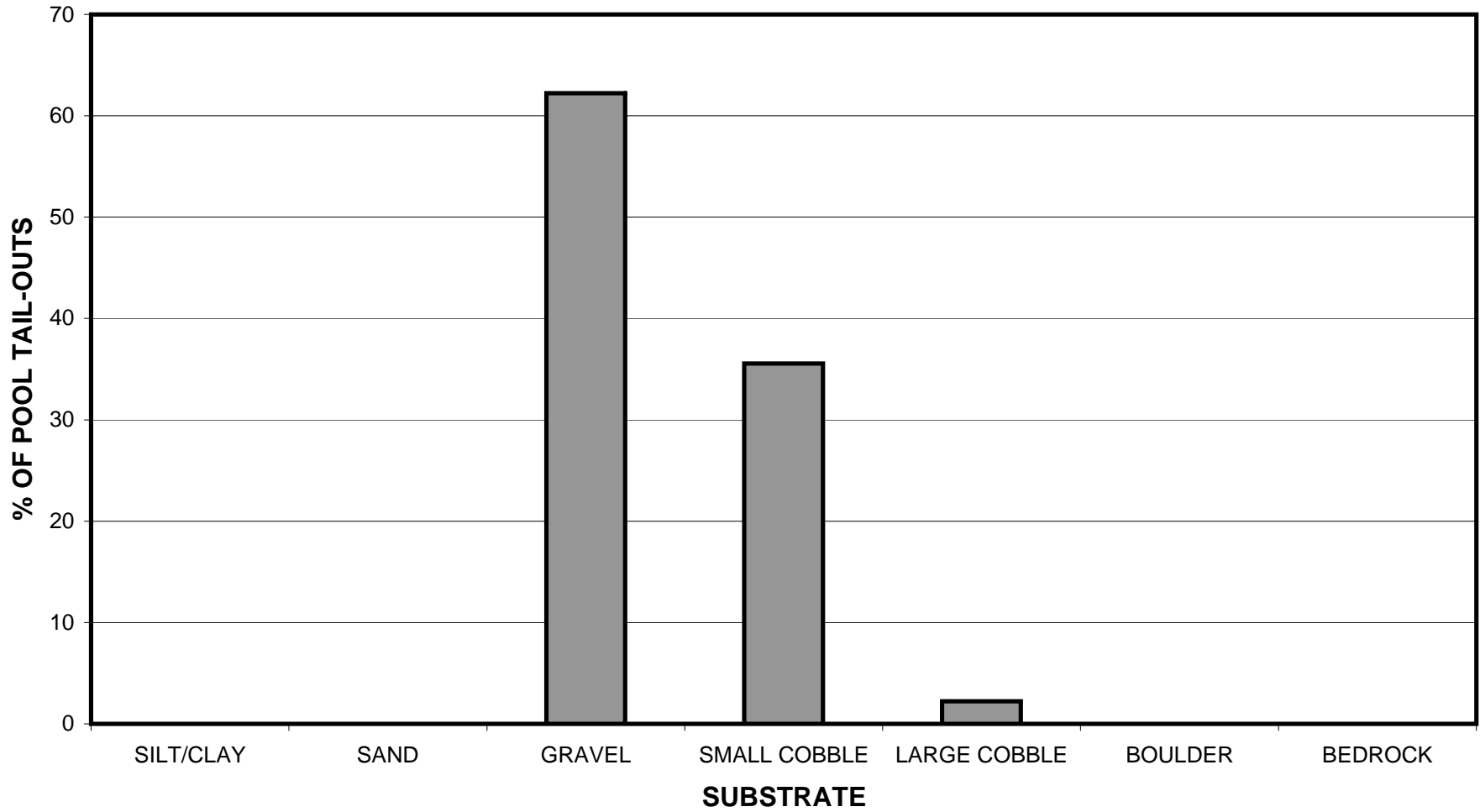
KIMBALL GULCH 2008 MEAN PERCENT COVER TYPES IN POOLS



GRAPH 7

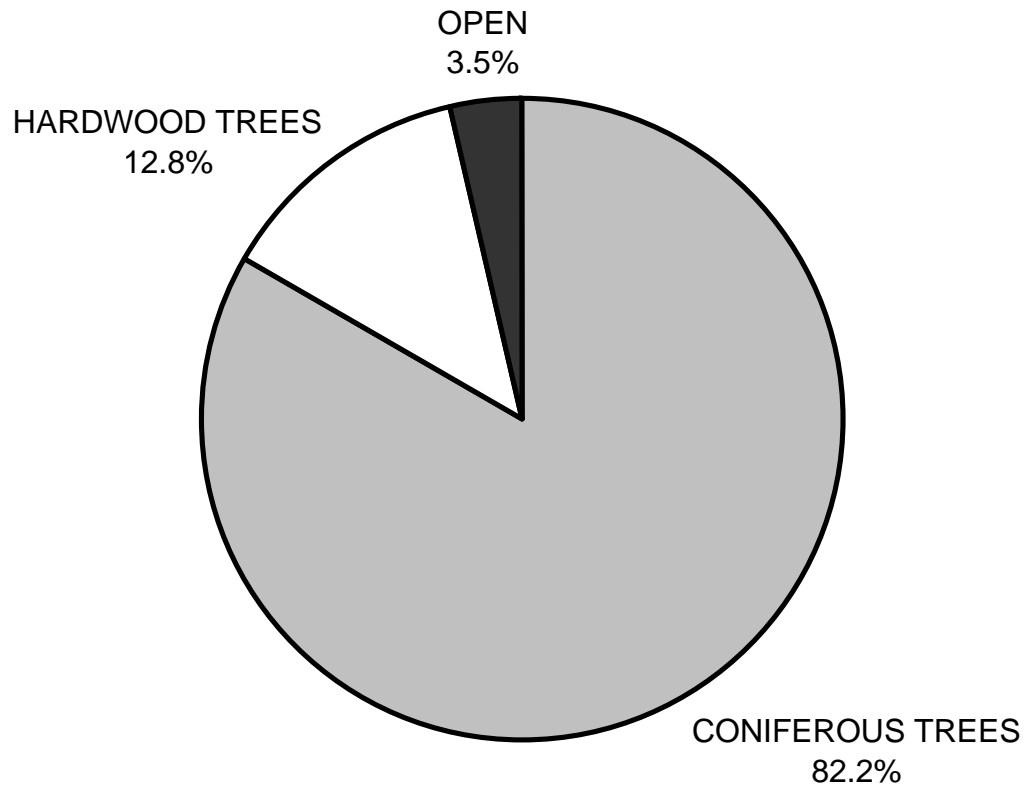
KIMBALL GULCH 2008

SUBSTRATE COMPOSITION IN POOL TAIL-OUTS



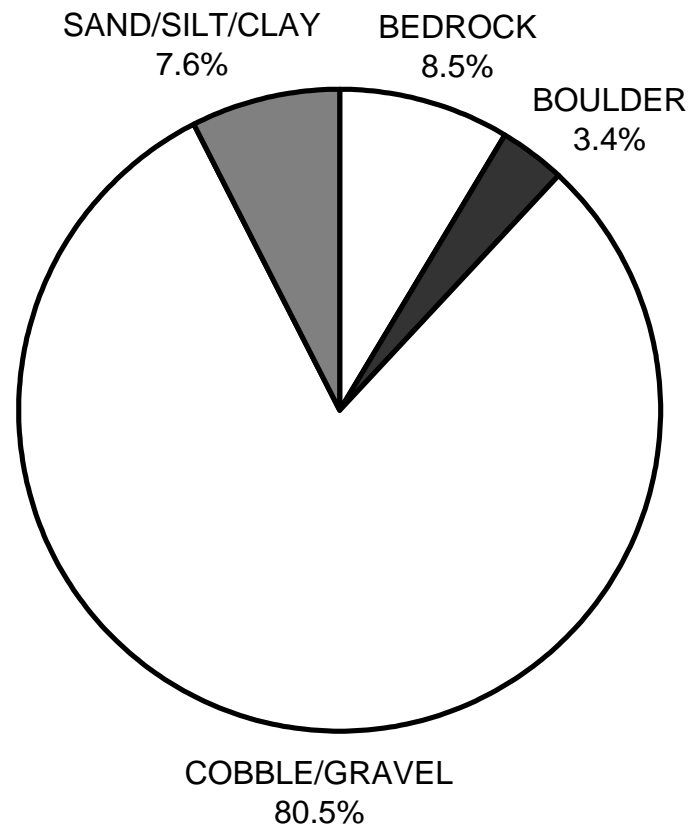
GRAPH 8

**KIMBALL GULCH 2008
MEAN PERCENT CANOPY**



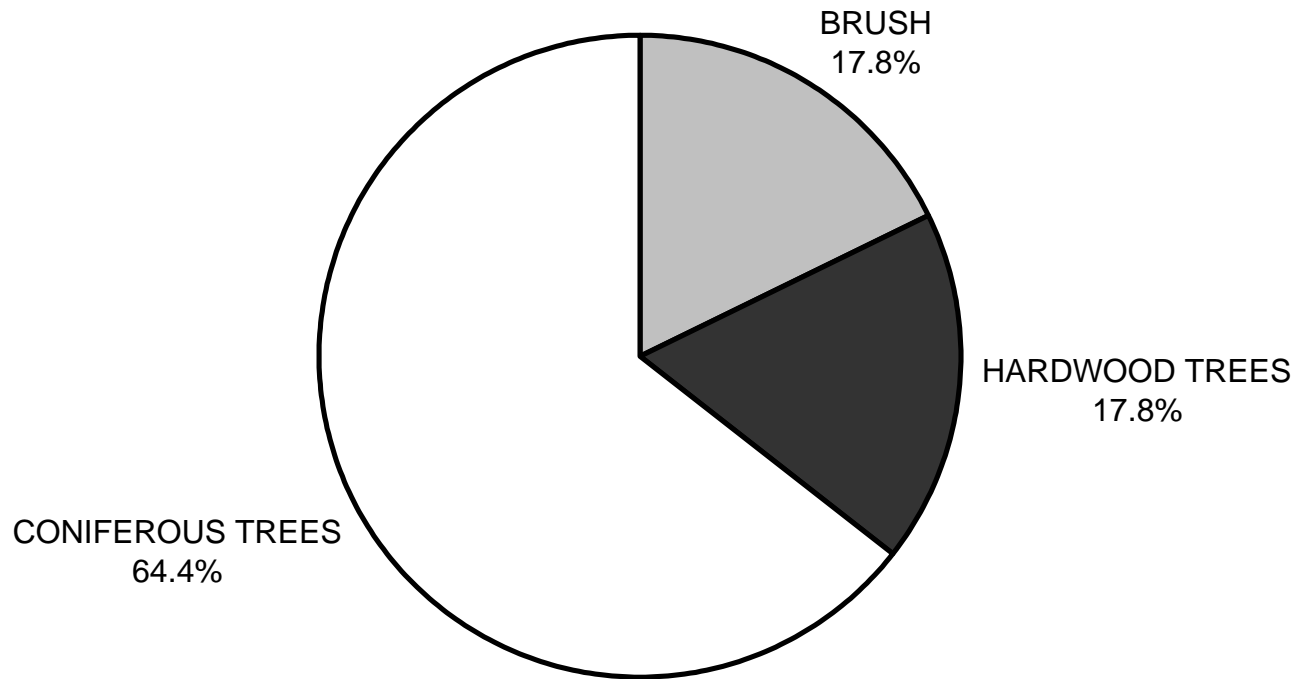
GRAPH 9

KIMBALL GULCH 2008 DOMINANT BANK COMPOSITION IN SURVEY REACH



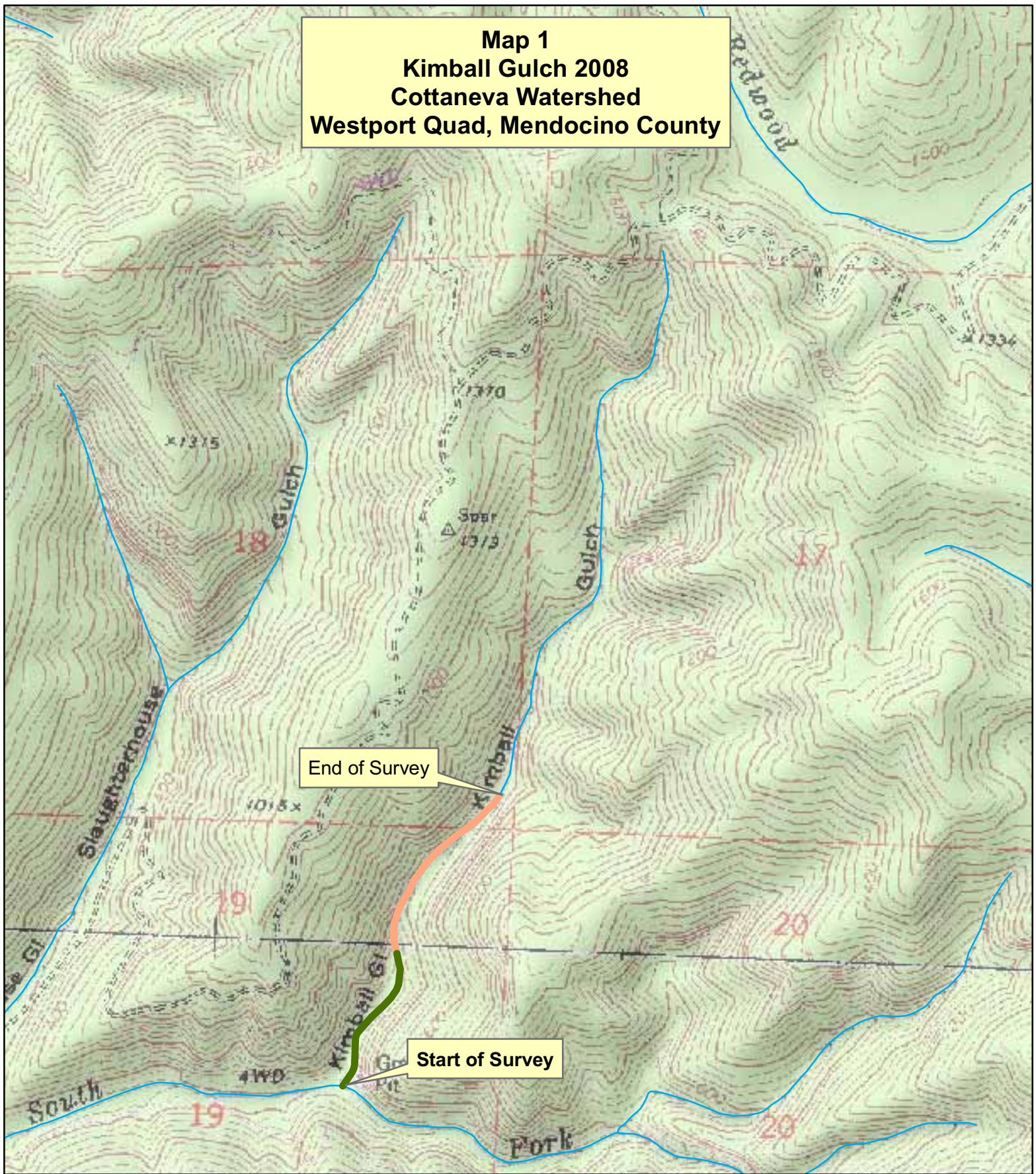
GRAPH 10

**KIMBALL GULCH 2008
DOMINANT BANK VEGETATION IN SURVEY REACH**



GRAPH 11

Map 1
Kimball Gulch 2008
Cottaneva Watershed
Westport Quad, Mendocino County



End of Survey

Start of Survey

Legend

- Reach 1, B3 Channel Type
- Reach 2, A3 Channel Type

