APPENDIX G
FIELD NOTES

Blue Goose Mine JRM + Z. Greenland

6/24/08 Conditions: Sunny, 70's

0700 Group meets at Motel to prep equipment for field work. Todays tasks include:

1. Mine waste rock volume estimation (B. Duvel)
2. River sediment and fish sampling (B. Rawls + M. Mudge)
3. Adit + Seep Sampling (J. Ray + Z. Greenland)

0800 M. Mudge and B. Rawls to store to pick up perishable supplies for today.

B. Duvel, J. Ray + Z. Greenland to Forest Service office to copy maps. JRM 6/24/08

1100 J. Ray, Z. Greenland, B. Duvel leave Mudfold for site.

1130 Checked in with B. Rawls + M. Mudge to pick up supplies, continued to mine site.

1200 Arrive at site, break for lunch and prep supplies.

1230 Begin climbing to mine

ONE ADIT OBSERVED DURING CLIMB, WILL SAMPLE ON RETURN TO VEHICLE.

AT END OF ROAD, TEAM ASSESSES BEST ROUTE TO TOP. B. DUVEL REACHES TOP AND BEGINS HIS INVESTIGATION

1430 COLLECT AD-01-080624-UNS.
pH = 2.40
MAX TDS + COND OF METER (>3999 µs/cm + > 2000 ppm TDS)
T = 26.0°C
1 L UNPRESERVED CONAINER ONLY ½ FULL + NOTED ON COC TO CONTACT PM IF NOT ENOUGH SAMPLE VOLUME FOR REQUESTED ANALYSES.

1600 COLLECT SP-01-080624-UNS
pH = 6.84
COND = 92 µs/cm
T = 19.5°C
TDS = 46 ppm

1645 COLLECT AD-02-080624-UNS
pH = 7.73
COND = 435 µs/cm

T = 9.2°C
TDS = 463 ppm
B. DUEVEL COLLECTS WASTE ROCK
- VOLUME FOR LABORATORY
ANALYSIS WHILE JJR + ZO
COLLECT AD-02-080624-URS
- WEIR SET UP OUTSIDE OF ADIT,
~1/2" ~~vol~~ in HEIGHT OF FLOWOVER
WEIR.
1815 COLLECT DAM-01-080624-URS
pH = 3.42
COND = 310 µS/cm
T = 16.1°C
TDS = 155 ppm
1900 PACK UP AT VEHICLES
AND RETURN TO MEDFORD

"Rite in the Rain

/27/08

AR-2-FISH COLLECTION
SETTINGS:
BURST OF PULSES
300V
35 Hz
DUTY CYCLE 3

BLUE LEDGE MINE JRAY B. RAWLS
6/27/08 SUNNY 90s
1620 ARRIVE AT JC-04 VIA
OLD LOGGING ROAD. SAMPLE
POINT APPROXIMATELY
150' UPSTREAM OF A ~~DRY~~
~~CREEKBED~~ SIDE CHANNEL
WATER QUALITY PARAMETERS
pH = 7.19
COND = 79 µS
T = 16.9°
WATER DEPTH ~ 2"
1630 COLLECTED JC-04-SW-
080627-URS
1 250ml UNP. FF
1 500ml HNO_3 FF.
1 L UNP.
1635 COLLECTED JC-04-SD-
080627-URS
1 4 OZ JAR
3/4 QT ZIPLOC
1640 COLLECTED JC-04-RS-
080627-URS
1 4 OZ JAR
3/4 QT ZIPLOC
*THIS SAMPLE WAS NOT

ON ORIGINAL PLAN, HOWEVER,
COLLECTED DUE TO LACK
OF ACCESS TO JC-06.
1705 RETURN TO VEHICLES
ON ROAD, MOB TO
APPLEGATE RIVER ELECTRO-
FISHING LOCATION

BLUE LEDGE

MINE

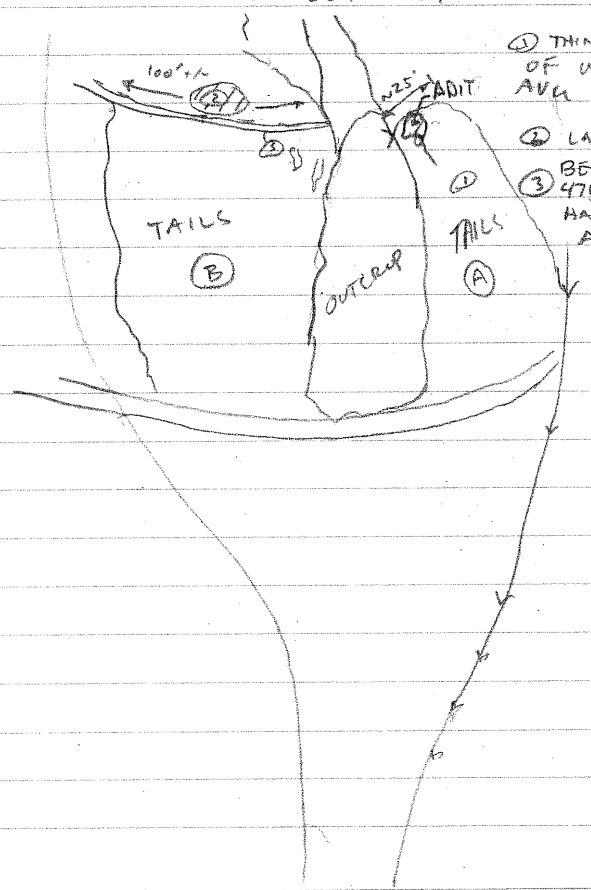
6/24/08 -

6/24/08

0800 - ARRIVE AT FS OFFICE - MEET W/ PETE JONES, GO THROUGH FILES, DUPLICATE MAPS.

1200 ARRIVE AT MINE SITE. BEGIN RECON.

- ESTIMATE TAILINGS SLOPES ~1.2H:1V +/-, SOME STEEPER, SOME FLATTER.
- ROAD ACCESS TO CENTER OF PILE BELOW ROCK OUTCROP



① THIN VENIR OF WASTE - AVG 3-6"

② LARGE ADIT

③ BENCH @ ~4750+/- OLD HAUL ROAD/ ACCESS

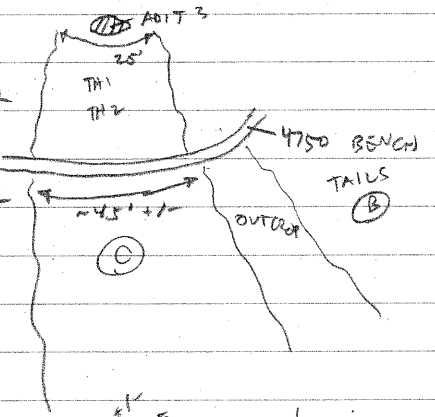
6/24/08

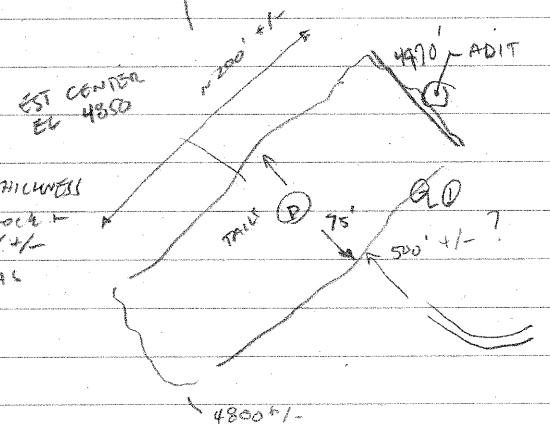
@ ~4750', BENCH EXTENDS TO ADIT 2 - POTENTIAL ACCESS POINT.

TH 1 - ~6" TAILS OVER BLACK HORIZON

TH 2 ~6" TAILS OVER ROOT HORIZON

ADIT 4 - ~75' SOUTH OF S. EDGE OF PILE (C)





① IN GULLY, THICKNESS BETWEEN ROCK + WASTE IS 2'+/-

- OTHER AREAS 6"+

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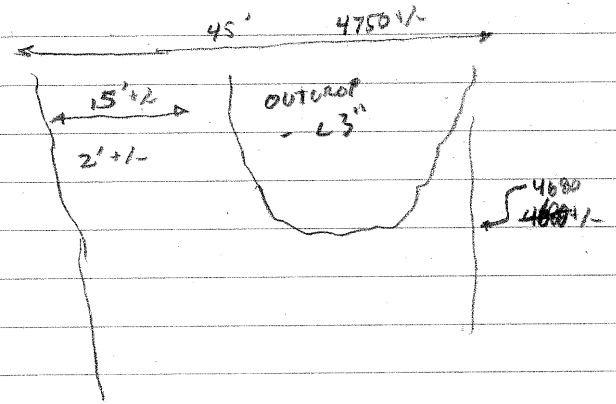
TAILINGS DUMP "C"

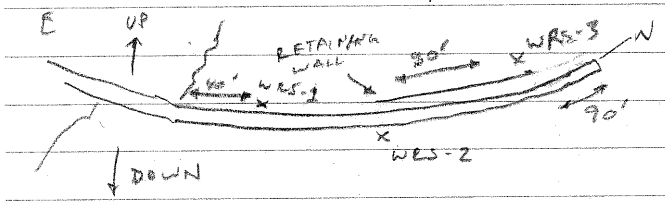


1700 - 1730 SAMPLING BULK WASTE ROCK FROM SLOPE - SAMPLES OBTAINED ALONG ACCESS ROAD LEADING TO OUTCROP ON UPPER SLOPE.

WRS-3 : AT FAR END OF WASTE ROCK RETAINING WALL, EL ~4507. 90' E OF END OF ROAD, DIRECTLY BELOW ROCK NOSE. - UPSLOPE

WRS-2: 80' E OF WRS-3, @ ~ E END OF WALL, ~EL. 4500, DOWN SLOPE

WRS-1: ~EL 4481', UPSLOPE 40' FROM EAST EDGE OF TAILS (UPSLOPE SIDE)



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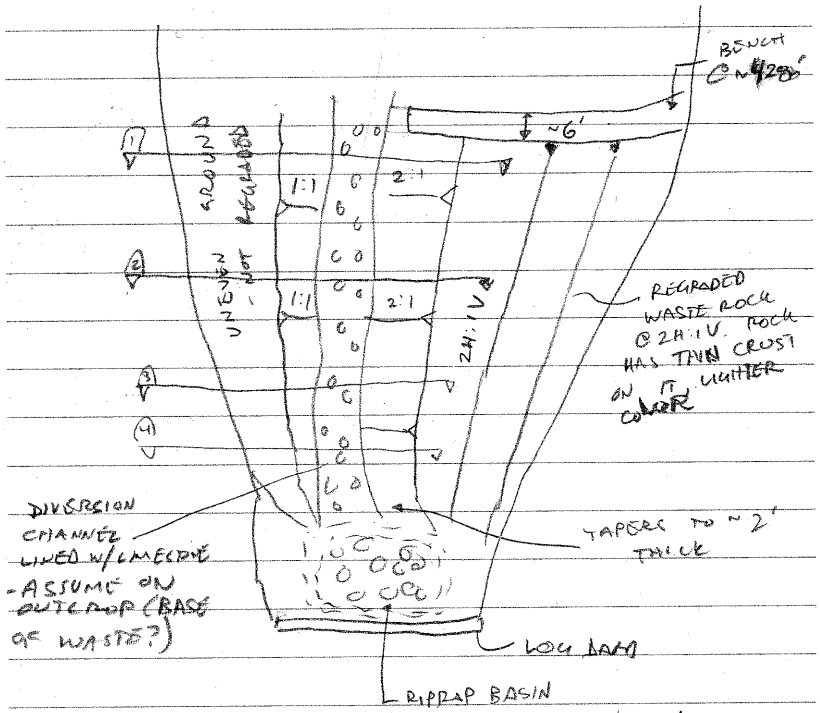
1000 ARRIVE @ SITE - HIKE UP TO ROAD @ MIDPOINT TO ASSESS SITE W/ OREMLAND.

1100 - DOWN TO MEET SURVEYORS - THEY DO NOT SHOW UP.

• NOTE - ACCESS POINT ON CAT ROAD JUST ABOVE LIMESTONE TREATMENT DAM

REGRADE AREA



NOTE - OBTAIN EPA CM/DESIGN INFO! * *

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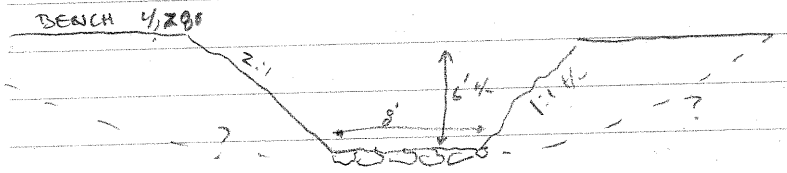
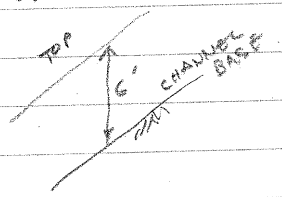
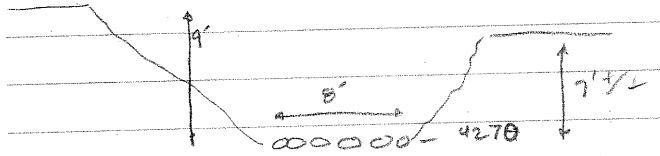
SECTION 1 (LOOKING DOWN)



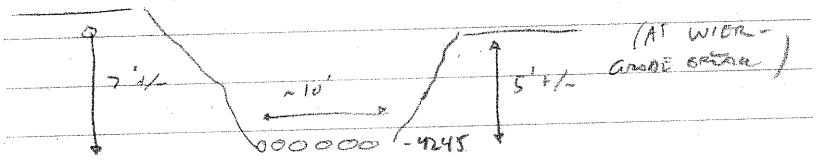
NOTE: 6' MEASURE VERT TO SLOPE



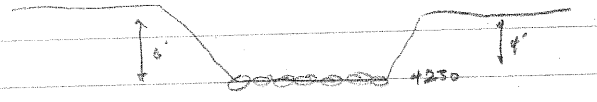
SECTION 2



SECTION 3



SECTION 4



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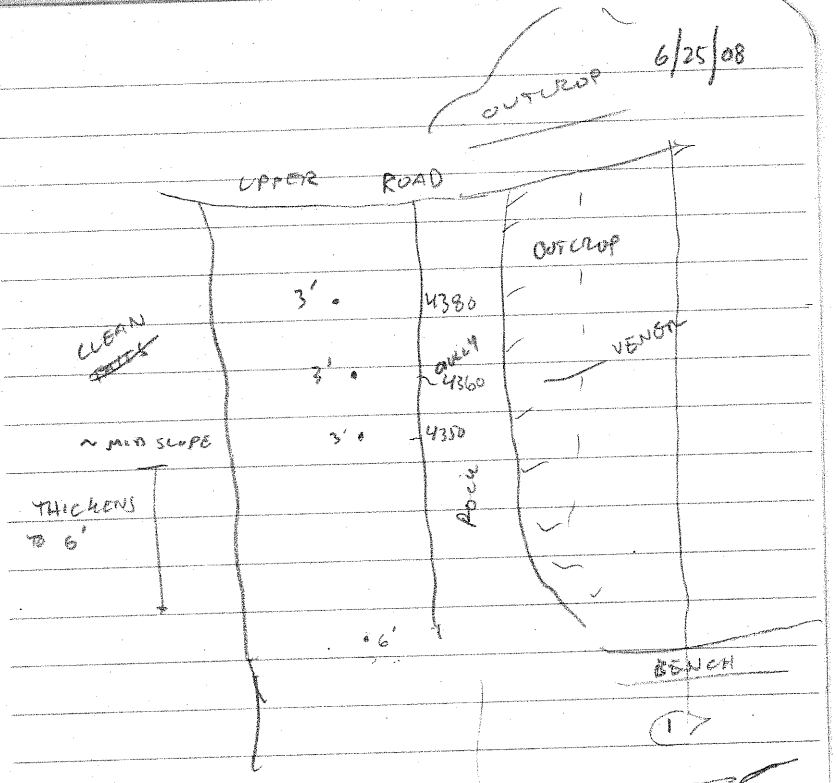
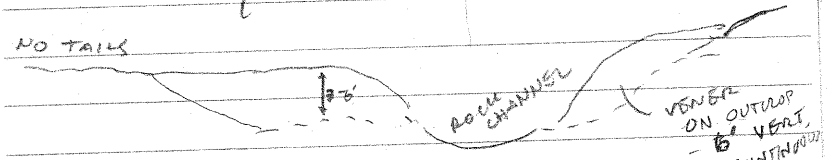
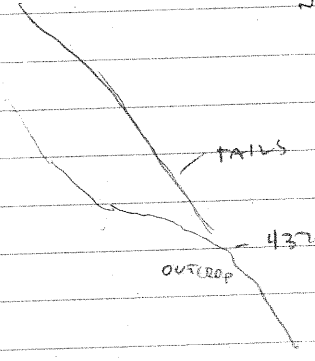




SECTION 1

- BELOW OUTCROP
ON UPPER ROAD



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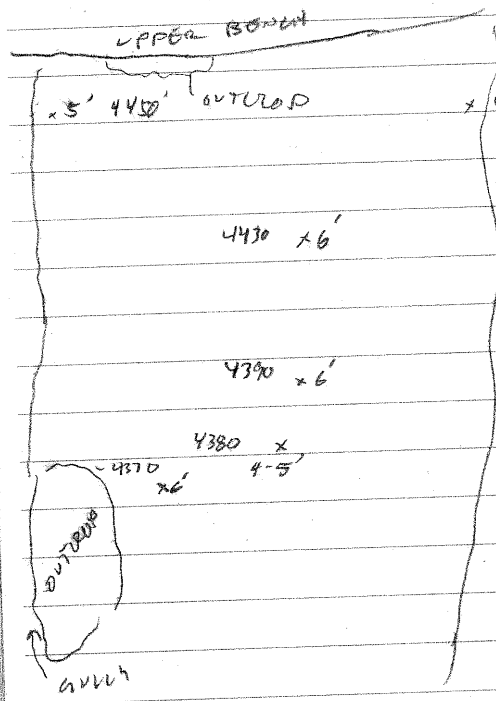
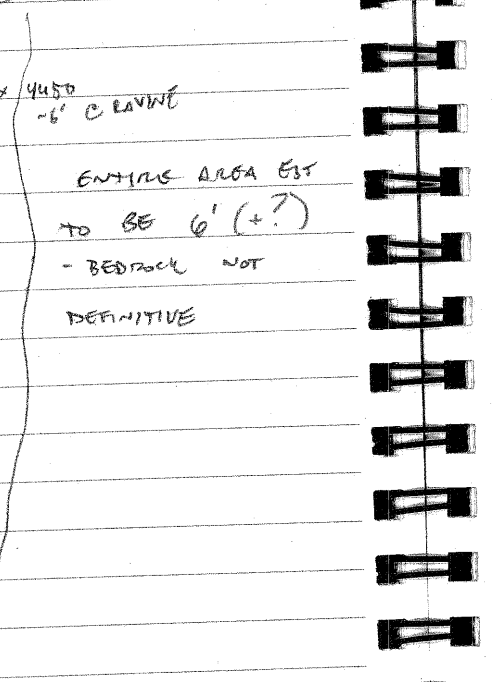
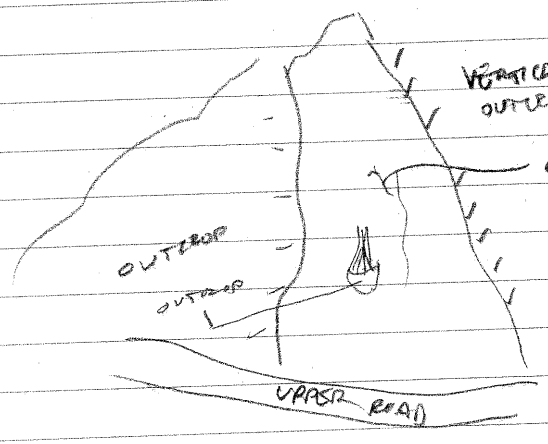
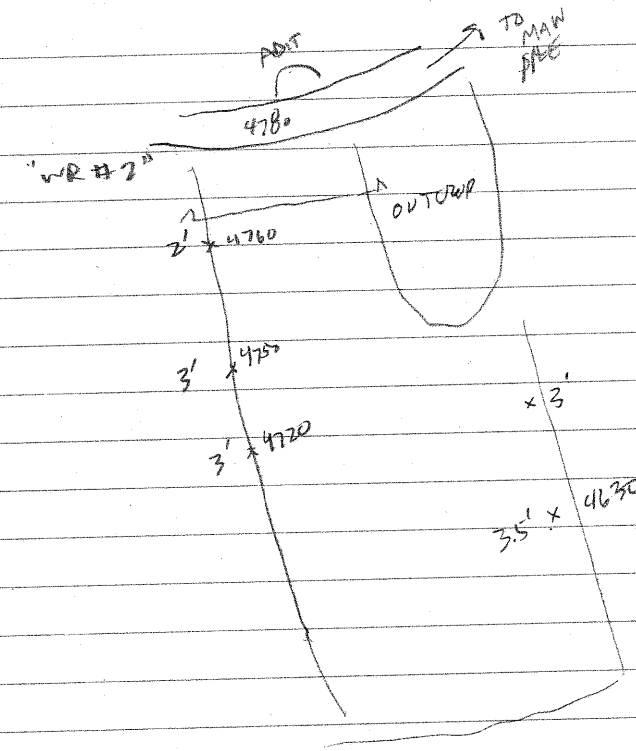
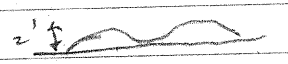
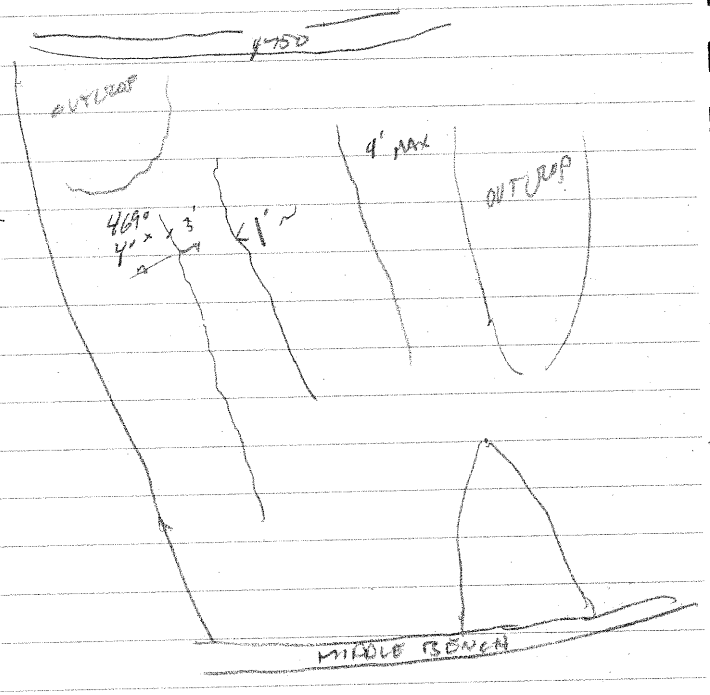

UPPER BENCH
x 5' 4450' OUTCROP
4430 x 6'
4390 x 6'
4380 x 4-5'
4370 x6'
OUTCROP
GULLY


x 4450
~6' CRAVINE
ENTIRE AREA EST
TO BE 6' (+?)
- BEDROCK NOT
DEFINITIVE


VERTICAL
OUTCROP W/ CABLE
6' IN RIVULET
OUTCROP
OUTCROP
UPPER ROAD


ADIT
TO MAIN PIPE
4780
"WR #2"
OUTCROP
2' x 4760
3' x 4750
3' x 4720
x 3'
3.5' x 4630


2'

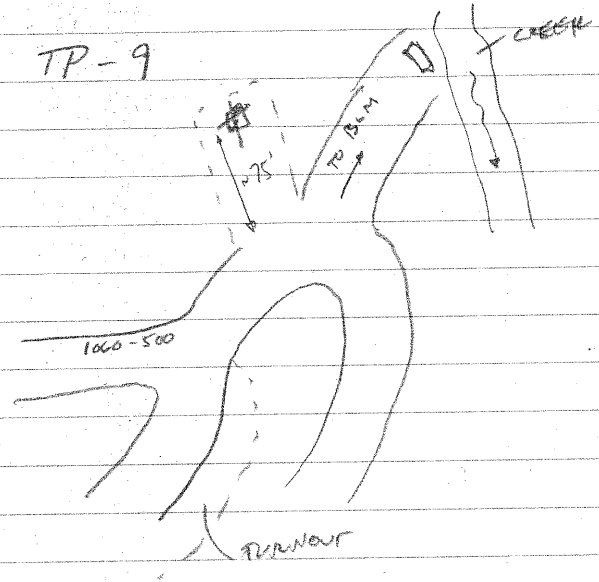


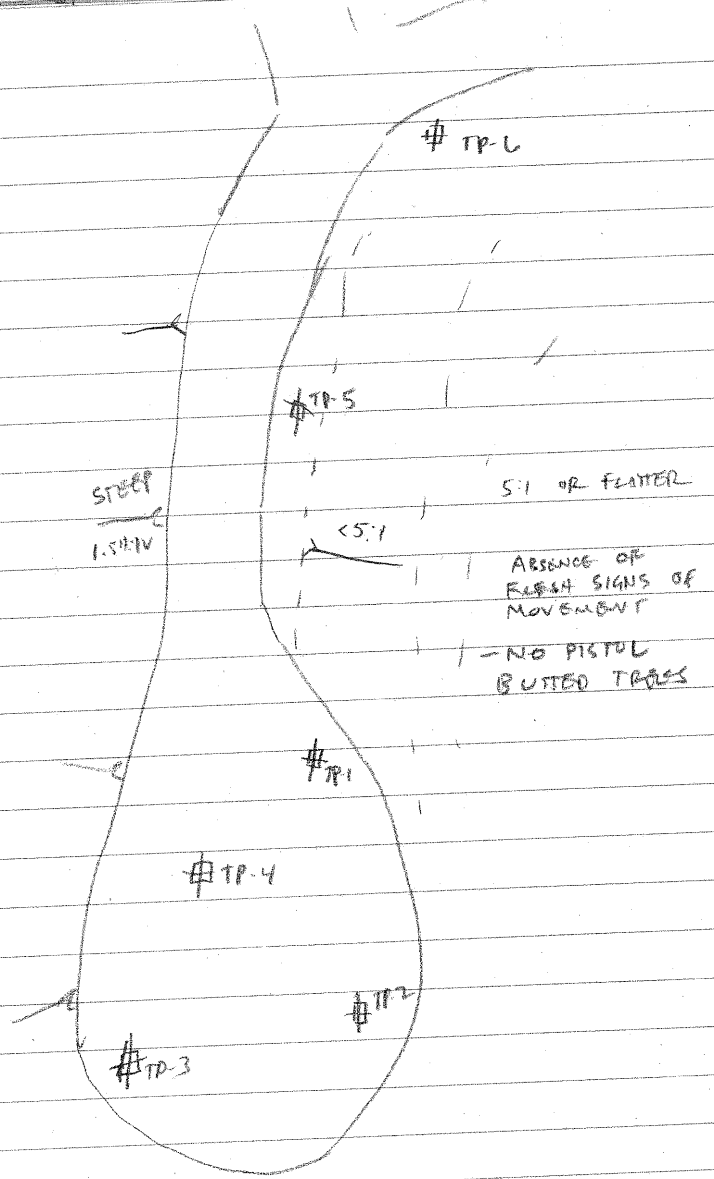
6/26/08

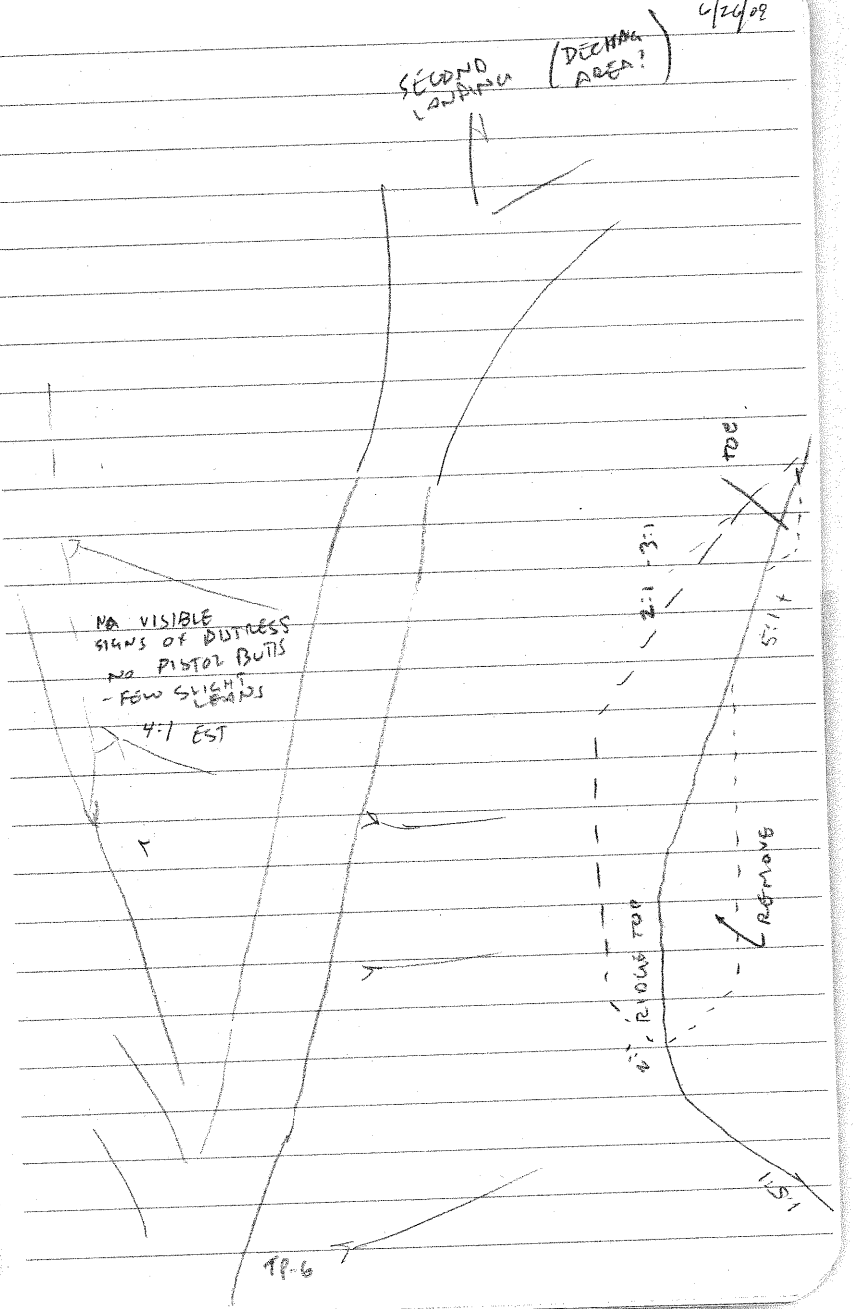
900 MEET BACKHOE OPERATOR @ RESERVOIR

1000 ARRIVE @ DISPOSAL SITE.

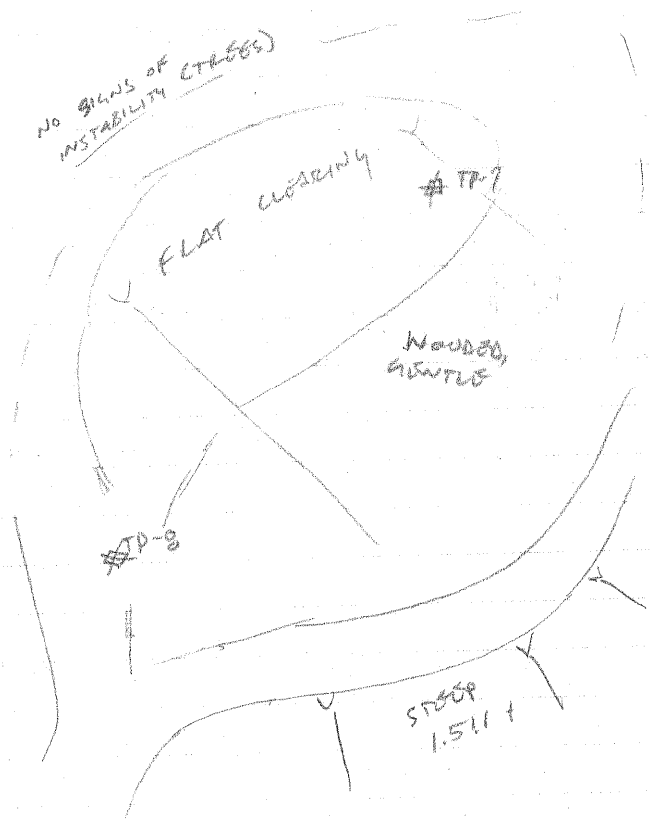
TP - 9




TP-6
TP-5
STEEP
1.5:1 IV
5:1 OR FLATTER
<5:1
ABSENCE OF FRESH SIGNS OF MOVEMENT
- NO PISTOL BUTTED TREES
TP-1
TP-4
TP-2
TP-3


6/26/09
SECOND LANDING
(DECHAG AREA?)
NO VISIBLE SIGNS OF DISTRESS
NO PISTOL BUTTS
- FEW SLIGHT LEANS
4:1 EST
TOE
2:1 - 3:1
5:1
REMOVE
RIDGE TOP
1.5:1
TP-6

6/26/08


NO SIGNS OF INSTABILITY (TREES)
FLAT CLEARING
TP-7
WOODED, GENTLE
TP-8
STEEP 1.511 t

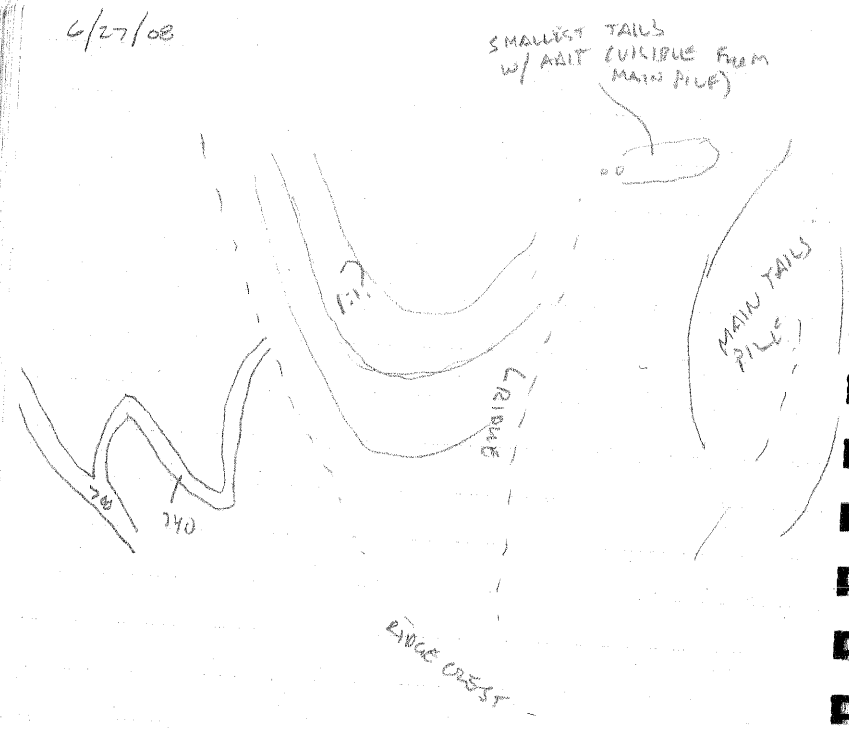
6/27/08

BLUE LEDGE MINE

1430 MEET RAWLS + RAY ON LOWER REACH - SWITCH VEHICLES TO VISIT UPPER ACCESS POINT

- DRIVE UP 1055 ROAD - ROAD IS NARROW + WINDING BUT PASSABLE - LOW BOY MAY BE DIFFICULT, DUMP ON. "ACCESS" TO UPPER END OF MINE IS CLOSEST TO 700 ROAD. FROM 700 TO 740 ROAD, ROAD IS STEEP + NARROW - 4WD ONLY ON 740. CONSTRUCTION EQUIPMENT CAN ACCESS W/O PROBLEM. ROAD ENDS AT CREST OF RIDGELINE. TOP EAST OF RIDGE (TOWARDS MINE) IS V. STEEP - NATURAL SLOPES 1:1 +/- AT END OF ROAD, BACKSIDE OF RIDGE CONTAINING MINE SITE + (IMMEDIATELY WEST OF MAIN PILE).
- SIGNIFICANT EFFORT REQUIRED TO GET CONSTRUCTION MACHINERY DOWN TO MINE SITE FROM ABOVE - POTENTIALLY EASIER FROM BELOW.
- I DID NOT FOLLOW S. SPUR OF 700 ROAD TO TERMINUS - ENDS AT HIGHER EL (5500+) AND HAD DOWNED TREES BLOCKING VEHICLE ACCESS.

6/27/08



1700 RETURN TO RAWLS + RAY.
LEAVE SITE.

Smith - Root LR-24

Blue Ledge 6/26/08

E. Fish w/ Jim Wheaton
of CDFG

Elliot Crk 02
Met team from UC Davis
Confirmed ~~#~~ Cottid sp
as Reticulate Sculpin
- Sampling Elliot for
sculpin but also
capture fin-clipped
bows new station

Sampled ~ 100 ft
of stream area
including bowles &
mid channel riffle
riffle habs.
27 Sculpin captured
11 - 1+ & 16 - 0+

Sunset 300 J 6
~ 20 min

Elliot CK 04
Upstream for Joe Bar
Bridge
~30 min & 150'
- Bank & midchannel
hub
- 13 Sculpin
7 - lt / 6 - ot
1 Native Bow
~5"
Hematoma but
survived

EC 07 Site is ~ 200'
Above confluence w/ Joe
~ 35 min & 125' CK
- Bank & mid-channel
- Sculpins
6 - lt
14 - ot

Joe CK 02 site is ~ 50'
upstream from confluence
w/ Elliot CK.
~ 200' for 40 min
No Fish / No Macroinverts

6/24 Blue Ledge Mine - M Mudge
- B. Rauls

7:00 - Field prep w/ crew @ hotel
↳ unloaded / reorganized / repacked for field activities.
* mine waste rock pile (Zack, Jenny, Dan)
* river sediment / fish. (Brad, Matt)
↳ supply run @ Fred Meyer.

9:00 - Mob to site.

10:30 - Arrived @ 1st location
↳ prepd for reservoir sampling.
* ARV-01 thru ARV-04

Conditions:
- Sunny, 70's

- For reservoir samples, depth too deep for trident, so deployed rubber raft & float tube.

11:50 - Collected ARV-02 sample (sediment)
↳ used Ekman box core dredge sampler
* 1 x 4oz jar
* 1 qrt. ziplock.

- ~~Collec~~ MSA
* depth to sediment ~ 8 ft., deployed sampler several times inorder to get adequate sample volume.

M.S. Mudge

* grey, fine sand, w/ minor silt, grains of flect minerals (mica?)
- cont. to ARV-03, slight headwind making it hard to navigate.

12:25 - Collected ARV-03 sample. (sediment)
↳ used Ekman box core dredge sampler
* 1 x 4oz jar
* 1 qrt. ziplock.
* depth to sediment ~15 ft., deployed sampler several times in order to obtain adequate sample volume.
* grey, fine → very fine sand w/ silt.
- cont. to next location.

12:57 - Collected ARV-04 sample. (sediment)
↳ used Ekman box core dredge sampler
* 1 x 4oz jar
* 1 qrt. ziplock.
* depth to sediment ~20 ft, deployed sampler several times in order to obtain adequate sample volume.
* grey, fine → coarse sand w/ minor silt.
* surface water sample collected before sediment using bailer / grab technique.
* 1 x 500 mL Poly w/ HNO_3 (TF)
* 1 x 250 mL Poly (TF)

M.S. Mudge

* 1 x 1L Poly
(TF) w/ disposable 0.45 µm water filter and bailer (disposable)
Water Quality Measurements:
pH = 7.91
conductivity = 95 µS
temp = 21.2°C
* probe ~1 ft. below surface.
- Rubber raft punctured one of the pontoons, so had to go ashore and attempt patch (w/ duct tape).
↳ not successful, so decided to pull boat/float tube and cont. additional sample from shoreline (w/ wading as necessary)
- Hiked back to vehicle, packed out boat / float tube and equipment.
- Setup for cont. river sediment sampling.

15:35 - Collected ARV-01 sample. (sediment)
↳ used Ekman box core dredge sampler w/ trident.
* sampled on (W) side river in depositional area.
↳ 1 x 4oz jar
↳ 1 qrt. ziplock

M.S. Mudge

*depth to sediment = 5 ft.
* grey, med sand w/ trace silt.
- Setup on AR-02 (just (N) of bridge)
Water Quality Measurements:
pH = 7.65
conductivity = ~~[illegible]~~ 95 µS
temp = 14.3 °C
*probe ~1.5 ft below surface.
15:58 - collected water sample, using bailer/grab methods.
15:58 - collected AR-02 sample (sediment)
↳ used shovel
*sampled on (W) side of river in a depositional area.
↳ 1 x 4oz
↳ 1 qrt. ziplock.
*depth to sediment = 3 ft.
* grey, gravely sand, med → coarse sand, fine gravel (rounded).
- back to vehicle to drop-off samples & prep for next locations.

16:15 AR 2
Adult Salmonid observed
~12-15 in.
M. S. Mudge

- Setup / moved vehicle to (E) side of Applegate River, upstream / (S) of bridge.
- AR-01
Water Quality Measurements:
pH = 7.62
conductivity = 100 µS
temp = 14.1 °C
- *probe ~8" below water surface.
16:40 - collected water sample using bailer/grab methods. ↳ 1 x 500 mL Poly w/ HNO_3 (E), 1 x 250 mL Poly (E) ↳ 1 x 1L Poly
16:45 - collected AR-01-SD (sediment)
↳ 1 x 4oz jar
↳ 1 qrt. ziplock.
*used shovel. *depth to sediment = 1 ft.
*sampled on (E) side of river in a depositional area just downstream of Applegate / Elliot confluence.
* grey, sand w/ gravel, fine → coarse sand coarse gravel (rounded)
16:58 - collected AR-01-RS (riparian)
↳ 1 x 4oz jar
↳ 1 qrt. ziplock.
*used shovel.
* sampled ~12 ft from water on (E) riverbank, @ ordinary high water/bank full
M. S. Mudge

EC-01 (upstream of confluence w/ Applegate River ~ 200' ft. (S))
~ 30' (S) of orange flagging tied on tree branch.

Water Quality Measurements:
pH = 7.57
conductivity = 103 µS
temp = 14.2 °C
*probe ~ 1 ft. below water surface.

17:25 - collected EC-01-SW (surface water)
↳ ~~used shovel~~ µsn
↳ ~~1 x 4 oz~~ µsn
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1L Poly.
*used bailer / grab methods.

17:35 - Collected EC-01-SD (sediment)
*used shovel
↳ 1 x 4 oz jar
↳ 1 qrt. ziplock.
*depth to sample = 1.5 ft.
*sampled on (E) side of river in a depositional area.

*USFW stowaway temp probe in river @ location.
"* Chris Moyer 541-750-7017"

M.S. Mudge

17:45 - collected EC-01-RS (riparian)
*used shovel
*sampled ~5 ft. from surface water @ ordinary high water / bank full. on (E) riverbank
↳ 1 x 4 oz jar
↳ 1 qrt. ziplock.

17:53 - observed caddis fly & stonefly @ EC-01 location.
- Packed out supplies / equipment back to vehicle.

18:30 - Mob'd up to mine site to meet up w/ other crew.
- Update on their progress:
↳ located handfull of adits.
↳ identified 4 waste rock piles
↳ collected WR samples for SPLP analysis.
↳ collected adit / seep water samples.

19:00 - Loaded vehicles, mob'd to hotel.

20:15 - Back @ hotel

M.S. Mudge

6/25/08 Blue Ledge Mine - M. Mudge
- B. Rawls.

7:00 - Field prep / loaded vehicles @ hotel.
- Met w/ J. Ray (sample COCs, shipping)
↳ reviewed field notes, updated sampling nomenclature, FedEx details
- Met w/ B. Rawls
↳ reviewed sampling locations, logistics w/ fish sampling (CA USFW biologist)
- Mine waste Rock activities today are:
↳ begin survey of piles.
↳ test pitting to determine pile thickness.

9:30 - Mob to site.

10:45 - Arrived @ next sampling location (EC-02)
- Field prep.
- @ EC-02 location (~80 ft. W of Forest Service Road bridge) (ie. downstream)
- Water Quality Measurements
pH = 7.5 *probe ~6" under surface.
conductivity = 103 µS.
temp = 11.1 °C
- Collected EC-02-SW-080625-URS (surface water)
*used bailer/grab methods.
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1L Poly

11:20 - Collected EC-02-SD-080625-URS (Sediment)
*used shovel, sample 4-6" below water
*sample on (N) side of river in depositional area.
↳ 1 x 4oz jar
↳ 1 qrt. ziplock.

11:36 - Collected EC-02-RS-080625-URS (riparian)
*used shovel, sample ~8 from water surface on (N) bank, within 1 vertical foot of ordinary bank / vegetation line.
↳ 1 x 4oz jar
↳ 1 qrt. ziplock.
* observed caddis fly & stone-fly in the area.
- Packed up, moved to next location upstream
* No hatched caddis, mayfly, stone fly. (ie. still in larva stage).
- Met B. Drevell on forest service road,
↳ surveyors haven't shown up yet, he's going to 1st campground @ reservoir to check. for them.

- Setup @ EC-03
- Water Quality Measurements
  pH = $7^{.39}$
  conductivity = 103 µS
  temp = $11^{.6}$ °C
  * probe ~ 1 ft below water surface

12:10 - Collected EC-03-SW-080625-URS (surface water)
  * used bailer / grab methods
    ↳ 1 x 500 mL Poly w/ HNO_3 (FF)
    ↳ 1 x 250 mL Poly (FF)
    ↳ 1 x 1 L Poly

12:15 - Collected EC-03-SD-080625-URS (sediment)
  * used shovel, sample collect on (S) side of river in depositional area / behind rock outcrop / boulder.
  * sample ~10" below water surface
    ↳ 1 x 4 oz jar
    ↳ 1 qrt. ziplock.
  * grey, ~~med-coarse~~ fine → coarse sand, with fine → med. gravel (rounded).
- preponderance of caddis fly, fewer stoneflys (but still present). high velocity area of stream

12:35 - Back @ vehicle, prep'd for sampling in Joe Bar area (private residences)
  ↳ EC-04 → EC-07 & JC-01 → JC-02
    * 6 samples.
  ↳ prep'd sample cont. for each location in designated ziplocks, then packed back pack.

13:20 - Moved vehicle to Joe Bar area.
  - Met J. Ray on roadway.
    ↳ was in Medford shipping water samples to lab and buying additional equipment (waders & wading boots).
    ↳ she's going to drive up to mine site and check on the other team.

~13:00 - OBEC surveyors drove past on forest service road. (running late) (supposed to be on site @ ~11am)

13:40 - Setup @ EC-04
  - Water Quality Measurements:
    pH = $7^{.51}$
    conductivity = 101 µS
    temp = $13^{.5}$ °C
  * probe ~ 1 ft. under water

13:50 - collected EC-04-SW-080625-URS (surface water)

*used bailer / grab methods
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1 L Poly

13:55 - Collected EC-04-SD-080625-URS (sediment)
*used shovel, sample collected on (N) side of river in depositional area (behind rocks / boulders)
*sample ~18" under water
↳ 1 x 4 oz jar
↳ 1 qt. ziplock.
*grey, med → coarse sand w/ gravel (fine-med & rounded.

14:20 - collected EC-04-SD-DUP-080625-URS
↳ 1 x 4 oz jar
↳ 1 qt. ziplock.

14:35 - collected EC-04-SW-DUP-080625-URS
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1 L Poly.

~14:00 - Landowner approached us, wanted to know what was going on and why we were on "private property".
↳ indicated we were working for Forest Service.

- Met J. Ray @ vehicle, field prep.

14:50 - Back on Elliott Creek.
↳ began hiking upstream

15:15 - @ EC-05 location
- Water Quality Measurements:
pH = 7.45
Conductivity = 90 µS
temp = 11.3 °C
*probe ~10 inches below water surface.

15:30 - Collected EC-05-SW-080625-URS (surface water).
*used bailer / grab methods.
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1 L Poly.
*collected MS / MSD @ this location. (double volume).

15:40 - Collected EC-05-SD-080625-URS (sediment)
*used shovel, sample collected from (N) edge of river in depositional area.
*appears to be ephemeral tributary on (N) bank @ sample location.
*sample ~10 inches below water
↳ 1 x 4 oz jar

↳ 1 qrt. ziplock

* collected MS/MSD @ this location (double volume).

* grey, fine → coarse sand w/ minor fine gravel.

15:50 - Collected EC-05-RS-080625-URS (riparian)

* used shovel, sample collected from (N) river bank w/in 1 vertical foot of ordinary high water/vegetation.

* sample collected ~ 3' from water surface.

↳ 1 x 4oz jar

↳ 1 qrt. ziplock.

* grey, fine → med sand w/ minor fine gravel (rounded).

15:53 - Collected EC-05-RS-DUP-080625-URS

↳ 1 x 4oz jar

↳ 1 qrt. ziplock.

FISH HAB INFO

EC 04

CADDISFLY NUMBERS APPEAR SIMILAR TO D/S SAMPLE POINTS

FEWER STONE FLYS OBSERVED

LOCAL LANDOWNER INFO

STEELHEAD SPAWN IN AREA W/IN LAST 2 YEARS

RESIDENT CUTS & BOWS PRESENT

STLHD & CHNK USED TO BE PREVALENT B/F DAM

EC 05

CADIS PRESENT BUT LESS NUMEROUS

STONEFLY NOT NEARLY AS NUMEROUS

ABU EXAMPLES ARE STILL SMALL & LARVAL IN DEVELOPMENT

- cont. hiking upstream to next sampling location.
  ↳ several scoured chutes / ledges in river bed.

16:43 - Arrived @ EC-06 (just downstream of Joe Creek confluence)
- Water Quality Measurements.
  pH = 6^{92}
  conductivity = 82 µS
  temp = 10^{9} °C
  * probe ~10" under water surface.

16:50 - Collected EC-06-SW-080625-URS (surface water)
  * used bailer / grab methods
  ↳ 1 x 500 mL Poly w/ HNO_3 (FF)
  ↳ 1 x 250 mL Poly (FF)
  ↳ 1 x 1 L Poly.

16:55 - Collected EC-06-SD-080625-URS (sediment)
  * used shovel, sample collected from (W) side of river and ~100 ft. downstream of Joe Creek confluence
  * sample ~4" under water surface.
  ↳ 1 x 4oz jar,
  ↳ 1 ziplock (qwt).

* B. Rawls observed limestone cobbles in sample area (possible wash down from EPH action @ mine site?)
* cobbles ranged from 4"-18" diameter.
- observed caddisfly & stonefly (lots of both), no hatches, yet.
- Packed up gear & moved upstream on Elliott Creek.

17:15 - @ EC-07 location.
- Water Quality Measurements:
  pH = 7^{56}
  conductivity = 91 µS
  temp = 10^{8} °C
  * probe ~10" under water surface.

17:25 - Collected EC-07-SW-080625-URS (surface water)
  * used bailer / grab methods.
  ↳ 1 x 500 mL Poly w/ HNO_3 (FF)
  ↳ 1 x 250 mL Poly (FF)
  ↳ 1 x 1L Poly.

17:30 - Collected EC-07-SD-080625-URS (sediment)
  * used shovel, sample collected from (N) side of river in depositional area. (bulk eddy).
  * sample ~10" below water surface.

17:36 - Collected EC-07-RS-080625-URS
(riparian)
* used shovel, sample collected on (N) riverbank and within 1 vertical foot of ordinary high water / vegetation.
* sample collected ~4 ft. from water surface.
↳ 1.4 oz jar
↳ 1 qrt. ziplock.
* collected MS/MSD @ this location (double volume).
* grey, fine → med sand.
- Packed up and headed back to Joe Creek confluence (bridge/road)
↳ observed caddis & stonefly are abundant.
- Hiked up to road, M. Mudge stayed w/ gear & B. Rawls / J. Ray
18:15 - PACKED UP VEHICLES.
- MET WITH ZACH C + BRIAN D. COMING DOWN FROM MINE SITE.
18:40 LEFT SITE FOR MESHFORD
19:50 ARRIVE BACK AT HOTEL.

6/26/08 BLUE LEDGE MINE - M. MUDGE - J. RAY
7:00 FIELD PREP / EXCHANGING EQUIPMENT + LOADING VEHICLES AT HOTEL.
↳ disposal site evaluation crew - B. Overall
↳ electro-fishing - B. Rawls - Z. Crenland
↳ river sampling - M. Mudge - J. Ray
8:15 - Mob to site.
9:55 - Arrived @ Joe creek & Elliott creek confluence.
↳ Packed up equipment for sampling up Joe Creek.
* JC-01 thru JC-03 & TCJC-01. (4 sample locations)
10:48 - Arrived @ JC-01 (~50' upstream of bridge)
↳ ~ 200 ft. upstream from confluence w/ Elliot Creek (S/SW of confluence)
- Water Quality Measurements:
pH = 7.41
conductivity = 75 µS
temp = 10.5°C
* probe ~ 4" under water
11:08 - Collected JC-01-SW-080626-URS
(surface water)
* used bailer / grab methods.

↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1 L Poly

11:15 - Collected JC-01-SD-080626-URS (sediment)
* used shovel, sample collected on (S) side of creek in depositional area.
* sample in ~10" of water.
↳ 1 x 4oz jar
↳ 1 qrt. ziplock
* gray, med → coarse sand w/ fine → med gravel (rounded).

11:20 - Collected JC-01-RS-080626-URS (riparian)
* used shovel, sample collected w/in 1 vertical foot of ordinary high / vegetation line.
* sample ~5' from water surface.
* (S) creek bank is exposed rock outcrop, so no deposition.
↳ 1 x 4oz jar
↳ 1 qrt. ziplock.
- Packed up and cont. upstream to next sample location.
↳ very steep gradient for creek, lots of bedrock chutes w/ pools.
↳ steep banks on either side, up to 30ft tall w/ little to no access.
- observed 2 frogs in creek on travel to next location
- Arrived @ JC-02 (~1,000 ft. upstream of JC-01)
- Water Quality Measurements:
pH = 6.77
conductivity = 74 µS
temp = 11.6 °C
* probe ~10" under water surface.

12:20 - Collected JC-02-SW-080626-URS (surface water)
* used bailer / grab methods.
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1 L Poly.

12:25 - Collected JC-07-SD-080626-URS
* used shovel, collected sample from middle of creek bed. in ~3' of water.
↳ 1 x 4oz jar
↳ 1 qrt. ziplock.
* gray, coarse sand w/ fine → med gravel (rounded)
- Packed up and cont. upstream
↳ still very steep gradient for creek.

not as many bedrock ledges / chutes, but still very steep w/ cliffed riverbank on either side.

- located JC-03 location and ~~[illegible]~~ T1JC-01 (tributary entering from (W), No flow, but observed creek bed up ~150 ft. to confirm.)
- Setup for JC-03 sampling.
  - ↳ location ~50 ft. downstream of T1JC confluence.
- Water Quality Measurements:
  - pH = 6.97
  - conductivity = 75 µS
  - temp = 12.2 °C
  - * probe ~10 inches under water.

13:40 - Collected JC-03-SW-080626-URS (Surface water)

- * used bailer / grab methods
  - ↳ 1 × 500 mL Poly w/ HNO_3 (FF)
  - ↳ 1 × 250 mL Poly (FF)
  - ↳ 1 × 1L Poly

13:45 - Collected JC-03-SD-080626-URS (Sediment)

- * used shovel, collected sample from (E) side of creek in ~12 inches of water, in depositional area (behind cobble)
  - ↳ 1 × 4 oz jar
  - ↳ 1 qrt ziplock.
- * grey, med → coarse sand w/ fine → med gravel (rounded).

13:50 - Collected JC-03-RS-080626-URS (riparian)

- * used shovel, sample collected from (E) creek bank... difficult to determine ordinary high / vegetation line b/c the creek has cut it's channel thru the bedrock resulting in very steep banks (i.e. very little possibility of overflow deposits).
  - ↳ sample may represent topsoil that has sloughed down riverbank instead of overbank deposits.
  - ↳ 1 × 4 oz jar
  - ↳ 1 qrt ziplock.
- * brown, fine → med sand w/ some gravel (fine, subrounded).
- Packed up equipment and cont upstream looking for access up (E) riverbank to get back to vehicle.
- Bushwacked up hillside and reached road.

- Hiked back to vehicle, break for lunch
15:45 - Packed coolers, prep'd for additional sampling.
- Drove up road looking for tributaries.
16:10 - Arrived @ Manzanita Gulch.
↳ has flow.
16:25 - Collected M6-01-SW-080626-CBS (surface water)
*used bailer/grab methods.
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1 L Poly
- Water Quality Measurements:
pH = 7.78
conductivity = 164 µS
temp = 13.1 °C
* probe ~2" below water.
*sample collected ~6 ft. upstream of culvert.
- Cont. driving up road towards mine.
↳ located potential access to JC-06 (old logging / forest service road?)
*overgrown, but safer grade, don't know if it goes to river/creek.
↳ began map review.

17:20 - B. Rawls & Z. Overland arrived
↳ completed all California fish sampling
↳ completed stream flow measurements.
- Discussed the remaining scope
↳ OR fish sampling
↳ remaining river sampling
↳ geotech GPS locations.
↳ waste rock samples (5-gal buckets)
- Decided to have B. Rawls / Z. Overland head to (W) side drainage and assess T3 JC tributary and collect water sample if flowing.
- B. Dinerell approached w/ excavation contractor
↳ completed assessment, contractor mobing home.
↳ B. Dinerell heading back up to disposal site to complete notes/photos etc.
18:00 - Cont. up to Mine site to cont. river/creek sampling.
- @ JC-08 location (~30' downstream of mine's waste rock discharge

- Water Quality Measurements:
  - pH = 6.44
  - conductivity = 47 µS
  - temp = 10.5°C
  - * probe ~10 inches under water's surface
18:15 - Collected JC-08-SW-080626-URS (surface water)
  - * used bailer / grab methods.
    - ↳ 1 x 500 mL Poly w/ HNO_3 (FF)
    - ↳ 1 x 250 mL Poly (FF)
    - ↳ 1 x 1L Poly.
18:25 - Collected JC-08-SD-080626-URS (sediment)
  - * used shovel, sample collected from (E) side of creek in depositional area behind cobbles.
  - * sample collected in ~12 inches of water
    - ↳ 1 x 4oz jar
    - ↳ 1 qt. ziplock.
  - * collected MS/MSD @ this location
    - ↳ for water (SW) & sediment (SD)
- Assessed next location for safe access.
  - ↳ JC-07.
    - * very steep terrain leading down to creek.
- creek is a series of chutes thru bedrock w/ very steep banks (really it's almost all bedrock / boulders / cobbles)
- Hiked down to JC-07 location.
19:10 - @ JC-07 (~300 ft. downstream / (N) of JC-08)
- Water Quality Measurements:
  - pH = 7.45
  - conductivity = 6.4 µS
  - temp = 12.3°C
  - * probe ~10 inches under water.
19:20 - Collected JC-07-SW-080626-URS (surface water)
  - * used bailer / grab methods
    - ↳ 1 x 500 mL Poly w/ HNO_3 (FF)
    - ↳ 1 x 250 mL Poly (FF)
    - ↳ 1 x 1L Poly.
19:22 * collected dup
  - ↳ JC-07-SW-DUP-080626-URS
- Packed up
21:30 RETURN TO HOTEL

6/27/08 BLUE LEDGE MINE M. MUDGE J. RAY

0700 MEET TO MOB TO SITE, REPLENISH ICE ON SAMPLES

0730 E. OLEMLAND LEAVES TO SITE TO COMPLETE WASTE ROCK COLLECTION FOR GEOTECH AND POTENTIAL BENCH STUDIES.

0740 J. RAY + M. MUDGE MOB TO SITE

0930 ARRIVE AT SITE. E. OLEMLAND HAS BROUGHT DOWN 3 WASTE ROCK BUCKETS TO VEHICLE. M. MUDGE + E. OLEMLAND CLIMB ROAD TO COLLECT TWO ADDITIONAL BUCKETS AND EXPLORE ALTERNATIVE ROUTE TO . ONE FORMER LOGGING ROAD BRANCHES OFF AT TURN ON MINE ACCESS ROAD WHERE GEAR TRAIL TO THE TOP ADITS SPLITS FROM ROAD, LIKELY THE BEST CHANCE TO GET TO AFTER EXAMINATION OF CONTOUR MAP.

J. RAY STAYS AT VEHICLE, PREPS BOTTLES + SUPPLIES FOR JC BRGD SAMPLES.

1100 LOCATE JC-09. SAMPLE POINT APPROXIMATELY 30' DOWNSTREAM/ NORTH OF CONFLUENCE OF JC AND . ALSO ADJACENT TO CONCRETE FOOTING (USED FOR FORMER OPERATIONS?)

WATER QUALITY PARAMETERS*
*DEPTH ~ 6"

pH = 7.29
COND = 48 µS
TEMP = 9.1°C

1105 COLLECTED JC-09-SW-080627-UES (SURFACE WATER ONLY

* USED BAILER / GRAB METHODS

COLLECTED: 1-250ml UNP. (F) Poly
1-500ml HNO_3 (F) Poly
1-1L UNP. Poly

- Back @ vehicle, packed up for collecting background samples + JC-10 thru JC-15 (6 samples)

11:30 - @ JC-10 location
* ~30' ft. upstream

- Water Quality Measurements.
  pH = 8.13
  conductivity = 55 µS
  temp = 9.7 °C
  * probe ~ 6" under water surface.

11:33 - Collected JC-10-SW-080627-URS
(surface water)
  * used bailer/grab techniques
    ↳ 1 x 500 mL Poly w/ HNO_3 (FF)
    ↳ 1 x 250 mL Poly (FF)
    ↳ 1 x 1 L Poly.

11:38 - collected JC-10-SD-080627-URS
(sediment)
  * used shovel, sample collected from depositional area (behind watson (W) side of creek)
  * sample collected in ~18 inches of water
    ↳ 1 x 4 oz jar
    ↳ 1 qrt. ziplock
  * grey, fine → coarse sand.
    ↳ worm-like grub observed in sample (see photos).
- Packed up, headed upstream,
- @ JC-11 location.
  (~140 ft upstream / (W)-(Sw) from JC-10)

- Water Quality Measurements:
  pH = 7.93
  conductivity = 54 µS
  temp = 10.2 °C
  * probe ~ 6" under water

11:52 - collected JC-11-SW-080627-URS
(surface water)
  * used bailer/grab methods.
    ↳ 1 x 500 mL Poly w/ HNO_3 (FF)
    ↳ 1 x 250 mL Poly ~~w/ HNO_3~~ (FF)
    ↳ 1 x 1 L Poly.

12:0 - collected JC-11-SD-080627-URS
(sediment)
  * used shovel, sample collected from center of creek in ~12 inches of water.
    ↳ 1 x 4 oz jar.
    ↳ 1 qrt. ziplock.
  * grey, med → coarse sand w/ some fine gravel (rounded).
- Packed up, moved to next location.
- @ JC-12
  (~120 ft. upstream of JC-11)
  * GPS has poor coverage and not very accurate at this location.

- Water Quality Measurements.
  pH = 7.93
  conductivity = 56 uS
  temp = 10.13 °C
  * probe ~16 inches below water surface.

12:12 - Collected JC-12-SW-080627-URS
(Surface water)
  * used bailer / grab methods.
  ↳ 1 x 500 mL Poly w/ HNO_3 (FF)
  ↳ 1 x 250 mL Poly (FF)
  ↳ 1 x 1 L Poly

12:15 - Collected JC-12-SD-080627-URS
(Sediment)
  * used shovel, sample collected from center of creek in depositional area (behind cobble / boulder).
  ↳ 1 x 4 oz jar
  ↳ 1 qrt. ziplock.
  * grey, fine → coarse sand w/ some gravel (fine, rounded).

12:25 - collected JC-12-RS-080627-URS
(riparian)
  * used shovel, sample collected from (W) river bank ~5 ft from standing water.
  ↳ difficult to determine ordinary high / vegetation line b/c forest is thick and not a lot of understory plants.
  ↳ 1 x 4 oz jar
  ↳ 1 qrt. ziplock.
- Packed up and moved to next location.
- @ JC-13 location.
  (u
- Water Quality Measurements.
  - pH = 7.89
  - conductivity = 56 uS
  temp = 10.1 °C
  * probe ~6 inches under water.

12:40 - Collected JC-13-SW-080627-URS
(Surface water)
  * used bailer / grab ~~sampling~~ usu methods.
  ↳ 1 x 500 mL Poly w/ HNO_3 (FF)
  ↳ 1 x 250 mL Poly (FF)
  ↳ 1 x 1 L Poly
- Collected JC-13-SD-080627-URS
(sediment)
  * used shovel, sample collected from center of creek in ~18 inches of water.

↳ 1 x 4oz jar
↳ 1 qrt. ziplock.
- Packed up and moved upstream.
↳ beginning to get very steep and can see a waterfall / chute ahead (maybe 300 ft)
- @ JC-14 location (~60 ft. upstream)
- Water Quality Measurements:
pH = 7.6
conductivity = 55 µS
temp = 10.2 °C
* probe ~10 inches under water.

13:00 - Collected JC-14-SW-080627-URS (surface water)
* used bailer / grab methods
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1 L Poly.

13:05 - Collected JC-14-SD-080627-URS (sediment)
* used shovel, sample collected from center of creek in depositional area.
↳ 1 x 4oz jar
↳ 1 qrt. ziplock.
* med-coarse sand w/ some fine gravel (rounded)
* grey

13:10 - Collected JC-14-RS-080627-URS (riparian)
* used shovel, sample collected from (W) bank within 1 vert. foot of ordinary high/vegetation line.
↳ 1 x 4oz jar
↳ 1 qrt. ziplock.
* grey, fine-coarse sand w/ minor fine gravel
- Packed up, moved upstream to final location.
- @ JC-15 (~60 ft. upstream of JC-14)
* very steep streambed w/ waterfall/chute ~60 ft. upstream / (S)
- Water Quality Measurements.
pH = 7.6
conductivity = 55 µS
temp = 11.2 °C
* probe ~10 inches under water.
- Collected JC-15-SW-080627-URS (surface water)
* used bailer / grab methods.
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1 L Poly.

- Collected JC-15-SD-080627-URS (sediment)
  * used shovel, sample collected from (E) side of creek in depositional area
  * sample in ~10 inches of water.
  - ↳ 1 x 4oz jar
  - ↳ 1 qrt. ziplock.
* grey, med → coarse sand w/ some fine gravel (rounded)
- Packed up and headed back to vehicles.
- loaded coolers w/ samples, prep'd for remaining river sampling locations
  * 1st group → JC-06 & JC-04
    * JC-05 not easily/safely accessible.
  * 2nd group → T4JC-01 & T4JC-02
    * if possible, contours are very steep.

14:30 - B. Rawls arrived.
- 1st group (J Ray & B. Rawls) headed down forest service road to JC-06.

14:50 - 2nd group (M. Mudge & Z. Oremland) began hike up mine access road.

- at curve in road (where goat trail begins to top of mine) bushwacked (S) @ ~4400 ft. elev. to locate tributary and collect 2 background samples.
* Very steep / precipitous terrain, used extreme caution.
  - ↳ crossed 1 dry creek bed.
  - ↳ located 2nd creek (had some flow
    * looked up slope, but could not see waste rock pile.
- followed creek down to confluence w/ T4JC
  - ↳ steep gradient w/ lots of bedrock / cobble / boulders & chutes. (B)

15:40 - @ T4JC-01 (upstream of 2nd creek confluence ~50 ft.)
- Water Quality Measurements:
  pH = 6.96
  conductivity = 20 µS
  temp = 13.6 °C
* probe ~6 inches underwater

15:45 - Collected T4JC-01-SW-080627-KRS
(surface water)
* used bailer/grab methods.
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1L Poly
* location in creek too steep a gradient for any sediment accumulation (all bedrock scoured creekbed w/ woody debris).
- Packed up and headed upstream to next location.

16:03 - @ T4JC-02 (upstream of T4JC-01 ~ 50 ft.
- Water Quality Measurements.
pH = 6.62
conductivity = 19 uS
temp = 13.3°C
* probe ~10 inches under water.

16:10 - Collected T4JC-02-SW-080627-KRS
(surface water)
* used bailer/grab methods.
↳ 1 x 500 mL Poly w/ HNO_3 (FF)
↳ 1 x 250 mL Poly (FF)
↳ 1 x 1L Poly.

* location in creek has no sediment.
↳ bedrock scoured creekbed.
- Packed up and headed back down to vehicle. (took ridge between JC & T4JC)
↳ much safer way down.

16:50 - back @ vehicle.
- Packed samples on ice, prep'd