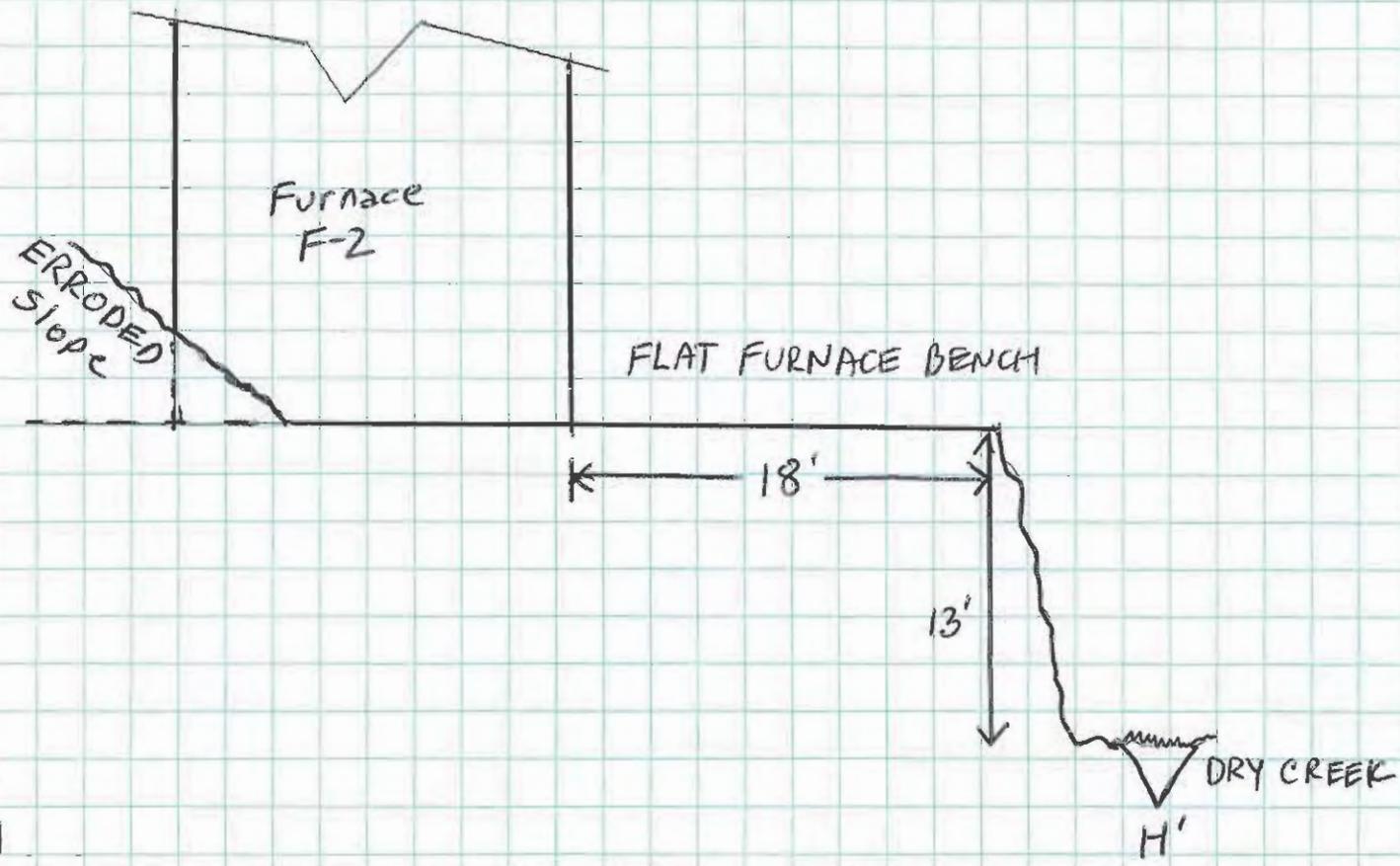
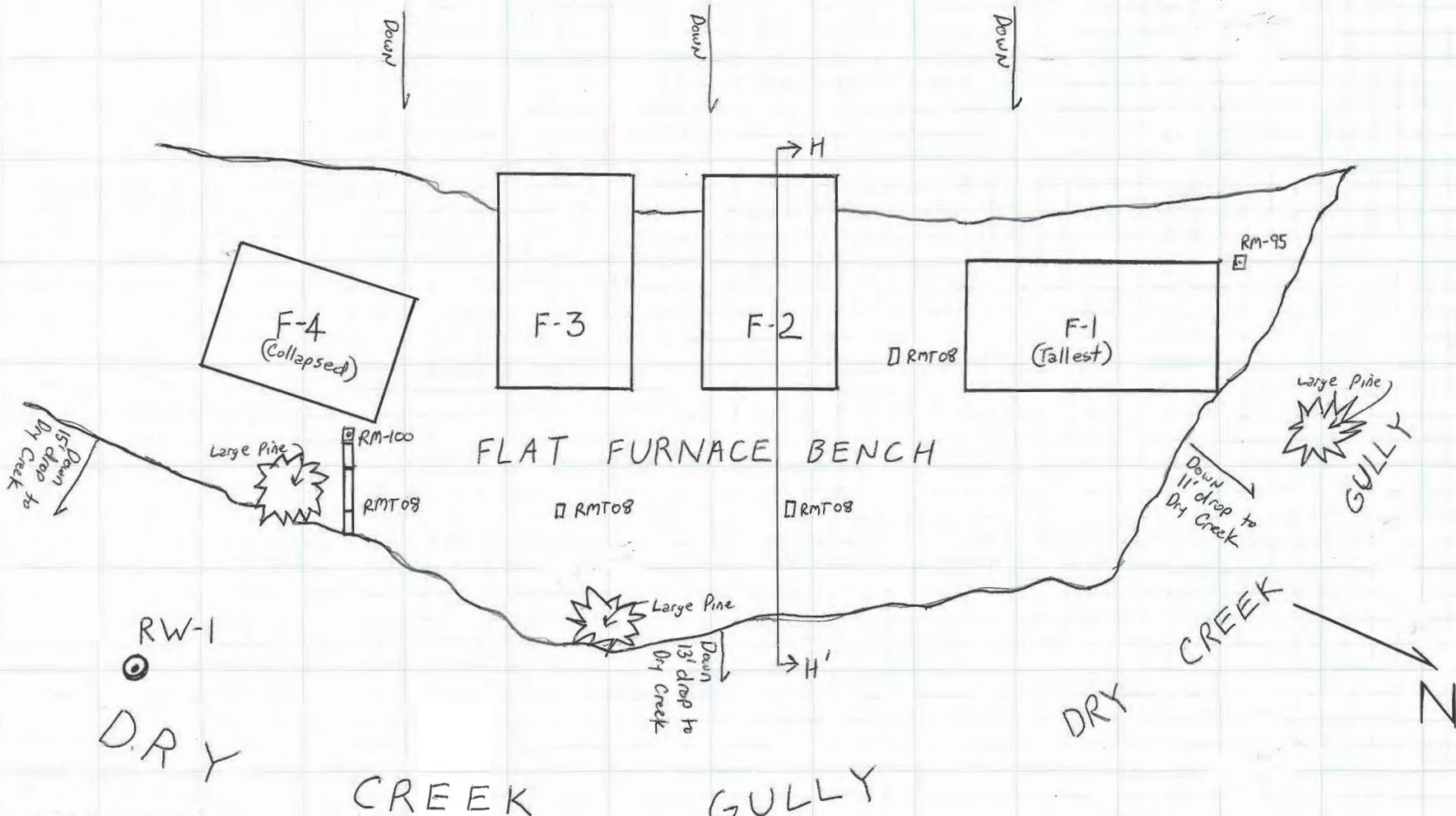


Appendix D
Waste Volume Calculations



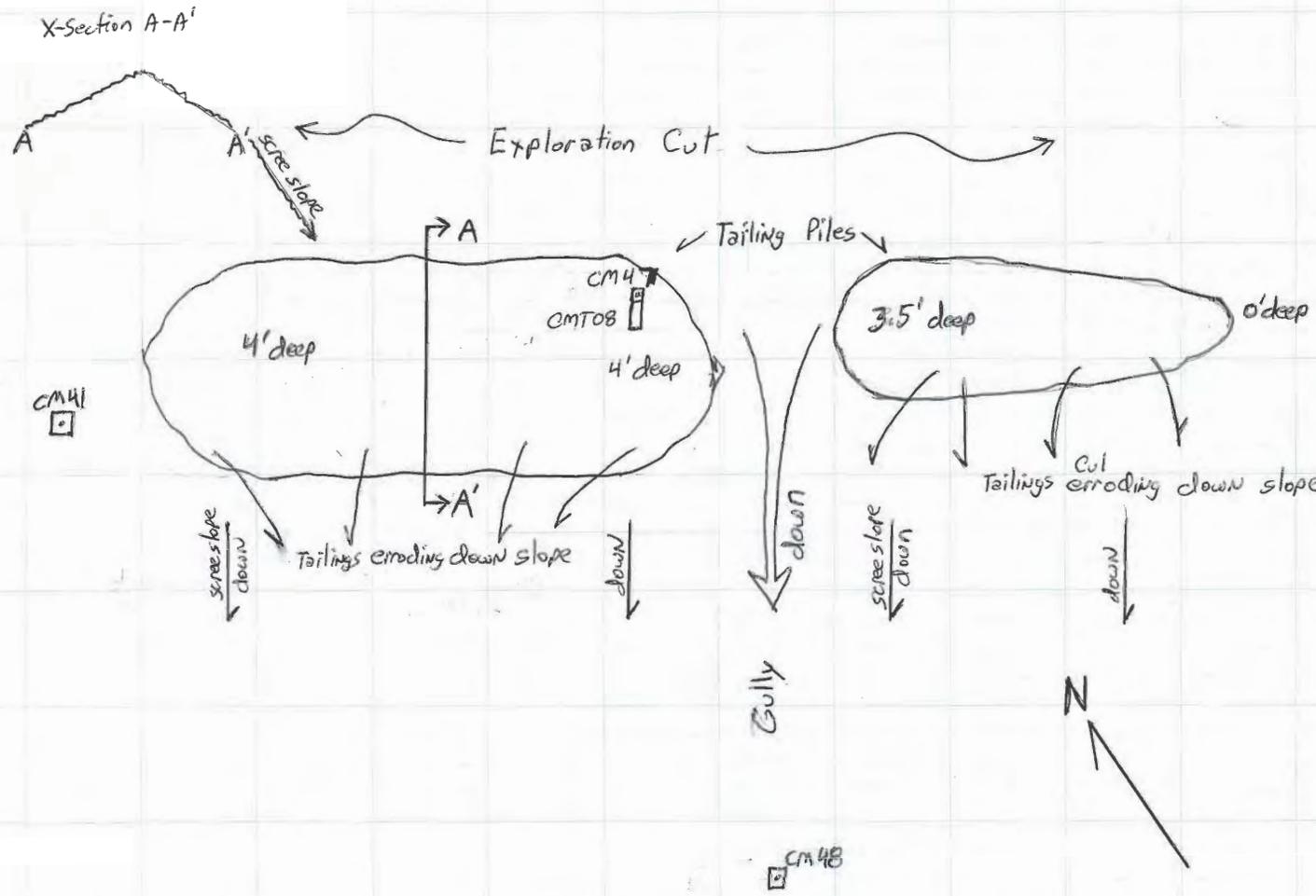
RESEARCH MINE FURNACE AREA
X-SECTION H-H'

12-01-2010
Chris McCormack
ECM



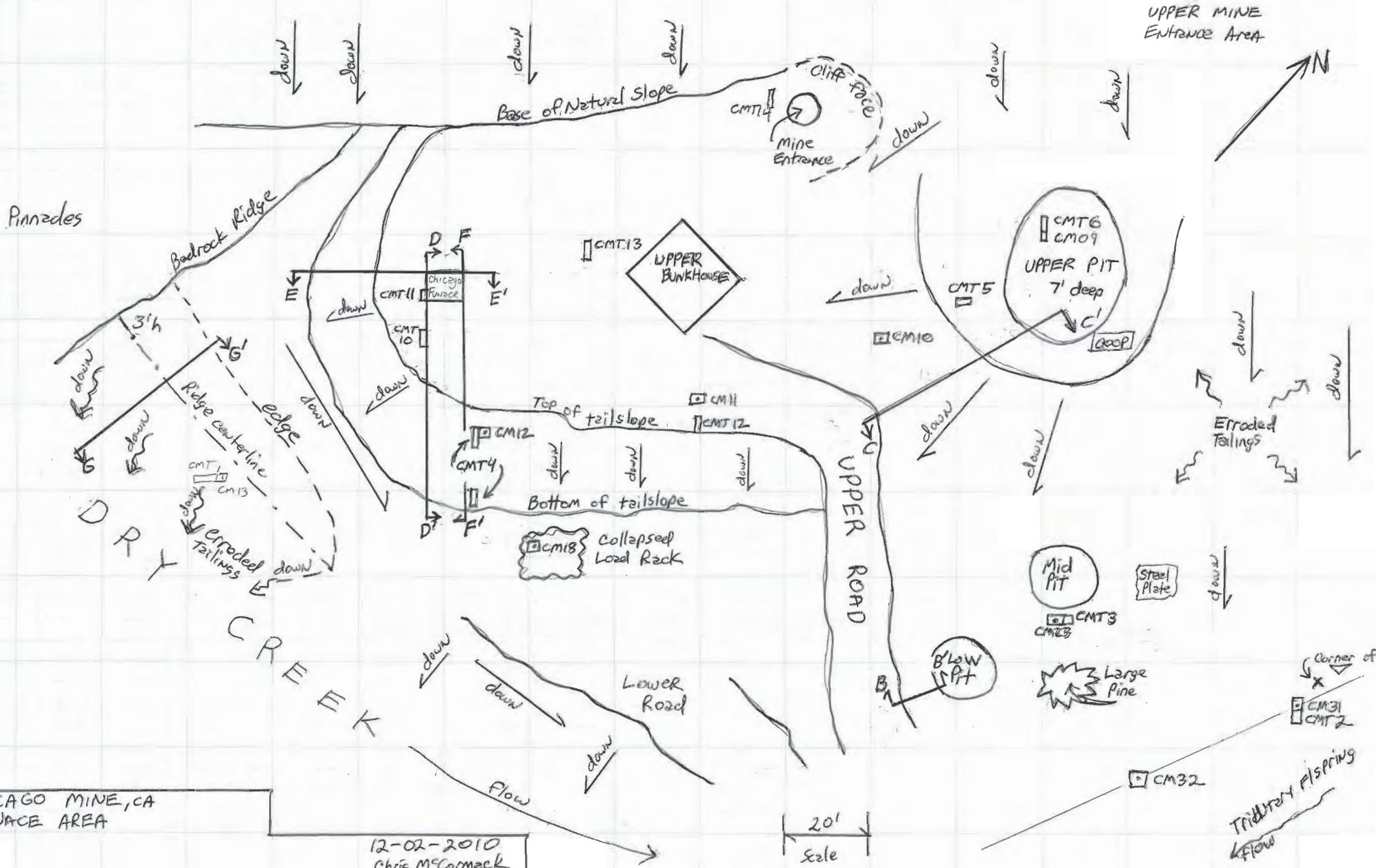
RESEARCH MINE, CA
FURNACE AREA

12-01-2010
CHRIS MCCORMACK
ECM



CHICAGO MINE, CA
EXPLORATION CUT

12-02-2010
Chris McCormack
ECM



CHICAGO MINE, CA
FURNACE AREA

12-02-2010
Chris McCormack
ECM

20'
Scale

UPPER MINE
ENTRANCE AREA



Pinnacles

Badrock Ridge

Base of Natural Slope

Cliff face

Mine Entrance

UPPER BUNKHOUSE

UPPER PIT
7' deep

Eroded Tailings

Collapsed Load Rack

UPPER ROAD

Mid Pit

Steel Plate

Blow Pit

Large Pine

Corner of

Tributary Flipping
Flow

DRY CREEK

Ridge center-line

Top of tail slope

Bottom of tail slope

Lower Road

Flow

3' h

edge

Flow

Flow

Flow

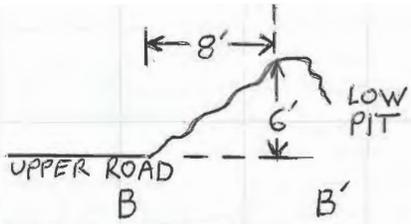
Flow

Flow

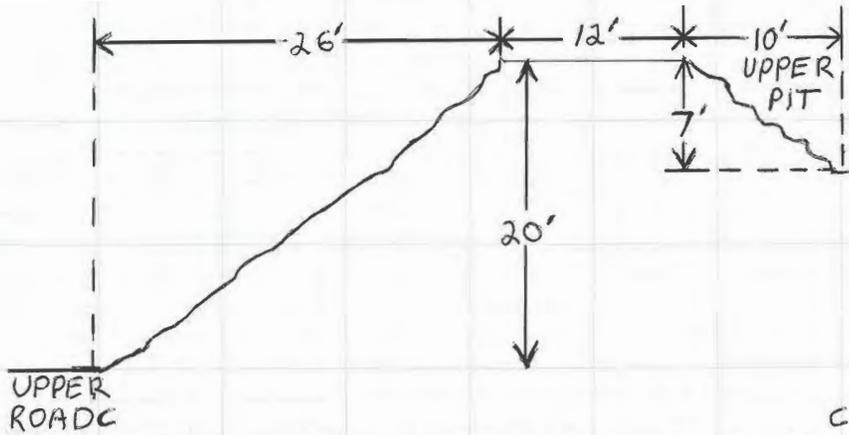
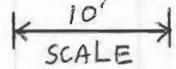
Flow

Flow

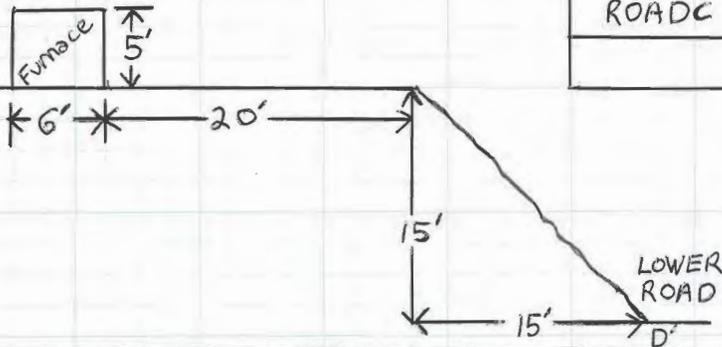
down



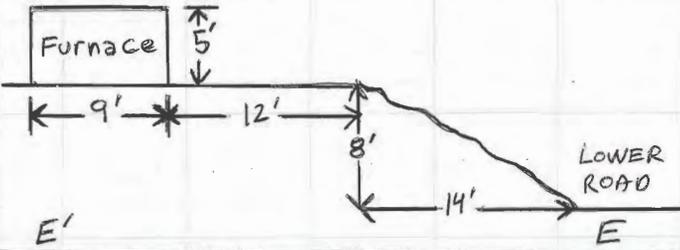
X-SECTION B-B'



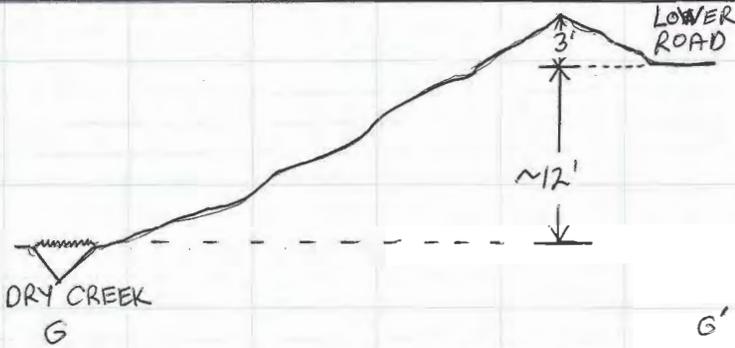
X-SECTION C-C'



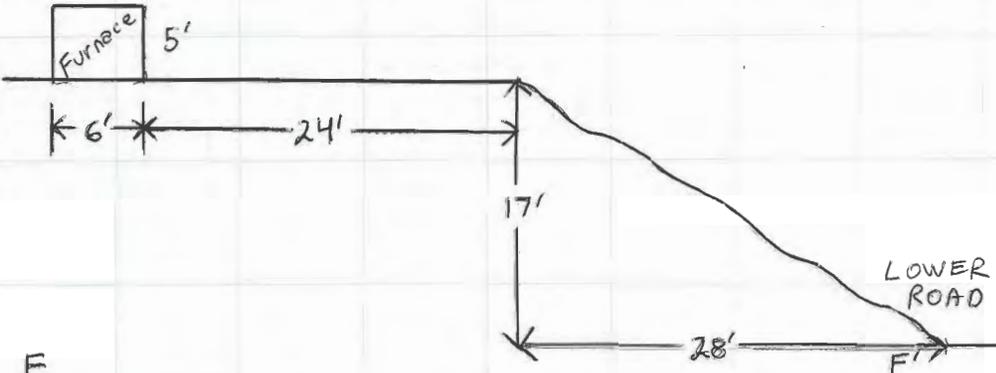
X-SECTION D-D'



X-SECTION E-E



X-SECTION G-G'



X-SECTION F-F'

CHICAGO MINE, CA
FURNACE AREA
X-SECTIONS

12-02-2010
Chris McCormack
ECM

CHICAGO VOLUME Estimates

Chris McE

Py. 1 of 2

Area A* - Surface Area not included in Area C - much smaller than shown on map because "c" is actually much larger. 1000 sq ft x 1' scrape = 40 cu yds.

Area B - 12,200 sq ft x 1' scrape = 460 cu yds.

Area C* - Using field Map - Broke down into 6 different ^{regions} ~~identities~~ - each with different profile.

① 1st region - 3 x 8' pyramidal prism - curve to SE - 90' long. western edge trails down slope to creek - surface deposits ~ 1' deep.

$$\text{prism} = \frac{3 \uparrow}{\leftarrow 8 \rightarrow} \times 90' = 1080 \text{ cu ft}$$

$$\text{Surface Area } 90' \times 12' \times 1' = 1080 \text{ cu ft}$$

$$\frac{2160 \text{ cu ft}}{26} = \underline{80 \text{ cu yds}}$$

② 2nd region - 110' x 100' area including "Furnace", "upper bunkhouse" and (measured 15' thick furnace) "Lower mine entrance." Assume Avg depth of 20' for Hi. Assume Avg depth of 12' for Lo

$$110 \times 100 \times 20' = \underline{8150 \text{ cu yds}}$$

$$110 \times 100 \times 12 = \underline{5000 \text{ cu yds}}$$

③ 3rd region - 100 x 40' Area (ave.) that runs in hourglass shape along old road to east of 1st region and curves to south of 2nd region. Assume 2' tallness

$$100 \times 40 \times 2 = \underline{300 \text{ cu yds}}$$

④ 4th region - 80' x 80' area that includes collapsed "Yard rock", "upper road" and "Lower Road". Slopes up and may have deep ^{wide} terraces towards upper road.

Assume Avg depth of 15' for Hi

Assume the depth of 5' for low

$$80 \times 80 \times 15 = \underline{3600 \text{ cu yds}}$$

$$80 \times 80 \times 5 = \underline{1200 \text{ cu yds}}$$

* = In these calculations Area C represents anything visibly determined to be mine waste (by ECM), including large portions of Area A. On Table 15, Figures 12b and 13b, ECM represented SAIC's interpretation of the aerial extent (and thus volume calculations) of Areas A and C.

CHICAGO VOLUME Estimates pg. 2 of 2

Chris MC

(E) 5th region

80' x 80' ^{Area} ~~region~~ that includes the "low pit" and "mid pit". This ~~area~~ ^{area} has very diverse topography as it moves in 3 out of pits on a moderate slope, with waste rock.

Assume Ave depth of 6' for Hi

Assume Ave depth of 2' for Lo

$$80 \times 80 \times 6 = \underline{1500 \text{ cu yds}}$$

$$80 \times 80 \times 2 = \underline{500 \text{ cu yds}}$$

(F) 6th region

80' x 100' area that includ a steep slope to the "upper mine entrance" and the "upper pit." Some deep waste at upper pit, slope up to mine entrance likely has shallow bedrock, (variable Hi/Lo)

Assume Ave depth of 20' for Hi

Assume Ave depth of 5' for Lo

$$80 \times 100 \times 20 = \underline{6000 \text{ cu yds}}$$

$$80 \times 100 \times 5 = \underline{1500 \text{ cu yds}}$$

TOTAL sq ft to subtrd from "Area A" = 35,500 sq ft.

$$\text{TOTAL Hi Area C} = \underline{19,700 \text{ cy}}$$

$$\text{TOTAL Lo Area C} = \underline{9580 \text{ cy}}$$

Area D

1560 sq ft - Hg contour

1' scrape = 60 cu yds.

Research Volume Estimates Pg. 1 of 2
Chris McCormick Field work - Fall 2010

Area

E

Hg contour - NW^{orn west} Area beyond "yellow-tails"
Steep slope w/ minor impact.
1' scrape x 18,600 sq ft = 688 cu yds.

F

Hg contour - W^{est} Area above branch Pds,
1' scrape x 5,160 sq ft = 200 cu yds.

G

Hg contour - E^{ast} Area on steep slope
- not Accessible -
1' scrape x 570 sq ft = 25 cu yds

H

Hg contour - "Central Research Mine Area"
1-3' scrape x 6,010 sq ft = 250-500 cu yds.

I

Elongate mine waste Area - west of "Central Research Mine Area"
21,000 sq ft - needs up to 12' (F?) excavation in
~6000 sq ft area @ load rock & "Yellow tails".
 $6,000 \times 12 = 2,670$ cu yds.
remaining area needs approx 1' scrape to clear "road waste"
 $15,000 \text{ sq ft} = 550$ cu yds.
TOTAL = Approx 3220 cu yds.

J

"Test Scrape" Area up steep slope F/ Area G. - road
Access, - [PMT-01] ~4,500 sq. ft. x 2' (Average) SCRAPE
~350 cu. yds.

V-2

Area

K

Hg. contour area around Scott furnaces
perimeter to SW of furnaces
approx 1' scrape in steep slopes - to 2' max
 $\sim 11,300 \text{ sq ft.} = 470 \text{ to } 840 \text{ cu yds}$

L

10,800 sq ft Area of which $\sim 4500 \text{ sq ft}$ is
needed to support furnaces - 13' + deep mine waste,
 $4500 \times 13 = 2,200 \text{ cu yds.}$
 $6300 \times 9 = 2100 - 2200 \text{ cu yds}$
 $6300 \times 5 = 1200 \text{ cu yds}$
Remainder of Area L needs 5-9' deep removal.

M

NW of Area N in "Central Research Mine Area"
2,160 sq ft Area w/ mine waste 6-12' deep
 $\sim 2160 \times 6 = \sim 500 \text{ cu yds}$
 $\sim 2160 \times 12 = \sim 1000 \text{ cu yds}$

N

9300 sq ft Area in center of "Central Research Mine Area".
5-10' deep mine waste = + steep slope to creek.
 $9300 \times 5 = \sim 1800 \text{ cu yds}$
 $9300 \times 10 = \sim 3500 \text{ cu yds}$