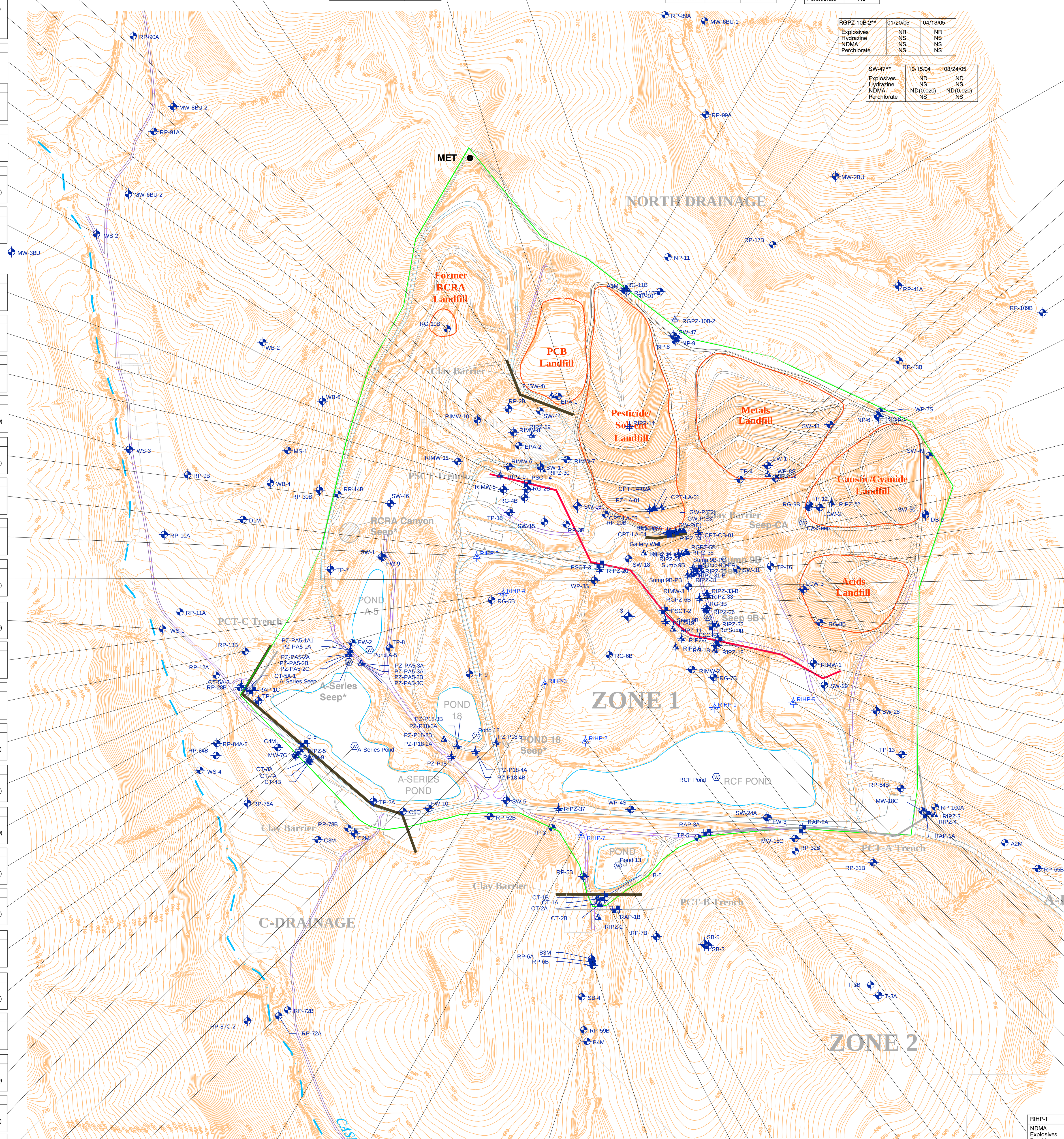

RG-10B**	11/04/04	03/31/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RIMW-8**	01/20/05	04/07/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	**0.074**	**0.34**
Perchlorate	NS	NS

SW-17	11/12/04	04/15/05
HMX	39 J/D	ND(6.8) /UD
Hydrazine	ND(1.0)	ND(1.0)
NDMA	**0.066**	**0.56**
Perchlorate	ND(20)	ND(20)
RDX	**6.8 J/JD**	**12 /D**

RIMW-10**	10/20/06
Explosives	ND
Hydrazine	NS
NDMA	NS
Perchlorate	NS

RIMW-6**	01/17/05	04/08/05
Explosives	NR	NR
Hydrazine	NS	NS
NDMA	NS	NS
Perchlorate	NS	NS

PSCT-4	11/15/04	04/12/05
Explosives	ND	ND
Hydrazine	ND(1.0)	ND(1.0)
NDMA	**1.9**	**1.9**
Perchlorate	**360 /D**	**21 /D**

WS-2**	10/25/04	03/28/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RG-2B*	03/24/05
Explosives	ND
Hydrazine	NS
NDMA	NS
Perchlorate	NS

RIMW-11**	10/20/06
Explosives	ND
Hydrazine	NS
NDMA	NS
Perchlorate	NS

RIMW-5**	01/20/05	04/07/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	NS	NS
Perchlorate	NS	NS

RG-4B**	11/09/04	03/21/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND	**0.54**
Perchlorate	NS	NS

WS-3**	10/25/04	03/28/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

SW-46**	10/15/04	04/06/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

PSCT-3**	10/20/04	04/11/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	**19 /D**	**15 /D**
Perchlorate	NS	NS

RIHP-5	02/15/07
NDMA	NR
Explosives	NR
Perchlorate	NR
Hydrazine	NR

WP-3S**	10/15/04	03/25/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

WS-1**	01/20/05	03/28/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RIHP-4	03/02/07
NDMA	NR
Explosives	NR
Perchlorate	NR
Hydrazine	NR

RP-13B**	04/23/99	06/30/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.0)	ND(2.0)
Perchlorate	NS	NS

RG-5B**	10/15/04	03/30/05
Explosives	NS	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RP-28B**	10/14/04	03/29/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RAP-1C**	10/19/04	04/12/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

Pond A-5**	11/03/04	04/08/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

WS-4**	11/03/04	04/05/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

C-5**	10/19/04	04/12/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020) /U	**0.017 /J**
Perchlorate	NS	NS

MW-7C**	10/14/04	03/29/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RP-76A**	11/23/99	06/30/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.0)	ND(2.0)
Perchlorate	NS	NS

RIMW-9**	01/19/05	03/28/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

A-Series Pond**	11/03/04	04/08/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

C3M**	12/09/99	07/05/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.0)	ND(2.0)
Perchlorate	NS	NS

Pond 18**	11/04/04	04/12/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020) /U	**0.18**
Perchlorate	NS	NS

PZ-P18-5	10/22/04	03/30/05
Explosives	ND	ND
Hydrazine	ND(1.0)	ND(1.0)
NDMA	**0.049**	**0.067**
Perchlorate	**78 /D**	ND(4.0) /U

RP-72A**	11/22/99	07/07/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(8.0)	ND(3.0)
Perchlorate	NS	NS

SW-44	10/22/04	04/01/05
13-Dinitrobenzene (EPA 8270)	0.57 /J	ND(10) /U
13-Dinitrobenzene (EPA 8330)	ND(5.0) /U	ND(5.0) /U
Hydrazine	ND(1.0)	ND(1.0)
NDMA	ND(0.020)	ND(0.020)
Perchlorate	ND(20) /UD	**27**

RIMW-7**	01/18/05	04/12/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	**0.89**	**0.83**
Perchlorate	NS	NS

RP-20B**	10/19/04	03/23/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RG-11B**	10/15/04	03/24/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	NR	NR
Perchlorate	NS	NS

MW-7BU**	11/16/99	07/11/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.0)	ND(3.0)
Perchlorate	NS	NS

RG-11B-2**	04/01/05
Explosives	ND
Hydrazine	NS
NDMA	**0.061**
Perchlorate	NS

RGPZ-10B-2**	01/20/05	04/13/05
Explosives	NR	NR
Hydrazine	NS	NS
NDMA	NS	NS
Perchlorate	NS	NS

SW-47**	10/15/04	03/24/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RP-17B**	11/18/99	07/11/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(3.0)	ND(2.0)
Perchlorate	NS	NS

TP-4**	12/07/99	07/19/00
Explosives	ND	ND
Hydrazine	ND(0.060)	ND(1.0)
NDMA	**0.053**	ND(0.020)
Perchlorate	NS	**58**

LCW-1**	01/11/99
Explosives	ND
Hydrazine	NS
NDMA	ND(3.0)
Perchlorate	NS

WP-8S	10/18/04	04/04/05
Explosives	ND	ND
Hydrazine	ND(1.0)	ND(1.0)
NDMA	ND(0.020) UJ/U	**0.042**
Perchlorate	**130 /D**	**130 /D**

WP-7S**	04/10/02	05/15/03
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.0)	ND(2.0)
Perchlorate	NS	NS

RP-109B*	11/15/99	07/12/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.0)	ND(2.0)
Perchlorate	NS	NS

Gallery Well	11/15/04	04/13/05
135-Trinitrobenz (EPA 8270)	ND(1000) UJ/U	ND(1500) /UD
135-Trinitrobenz (EPA 8330)	**2500 /D**	ND(420) /UD
13-Dinitrobenzene (EPA 8270)	**250 J/J**	ND(1500) /UD
13-Dinitrobenzene (EPA 8330)	ND(32) /UD	ND(420) /UD
2-Amino-46-DNT	170 /D	ND(420) /UD
2-Nitrotoluene	ND(32) /UD	**480 /D**
Hydrazine	ND(1.0)	ND(1.0)
NDMA	**24 /D**	**48 /D**
Perchlorate	**720 /D**	**190 /D**
RDX	**20000 /D**	**28000 /D**
Tetryl	3400 /D	24000 /D

RIPZ-8**	03/03/05	04/18/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	**3.3 /D**	**4.8 /D**
Perchlorate	NS	NS

RG-9B	10/27/04	03/29/05
Hydrazine	ND(1.0)	ND(1.0)
NDMA	**0.32**	**0.19**
Perchlorate	**390 /D**	**440 /D**
RDX	**16 /D**	ND(8.9) /UD

RGPZ-5B**	03/03/05	04/18/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	**97**	**19 /D**
Perchlorate	NS	NS

Sump 9B	11/08/04	04/14/05
13-Dinitrobenzene (EPA 8270)	**120 J/J**	ND(500) /UD
13-Dinitrobenzene (EPA 8330)	ND(38) /UD	ND(350) /UD
Hydrazine	ND(1.0)	ND(1000)
NDMA	**11 /D**	**2.7 J/D**
Perchlorate	**110 /D**	ND(40) /UD
RDX	**8800 J/D**	**4500 J/D**
Tetryl	1100 J/D	9900 J/D

SW-31	10/14/04	04/05/05
Hydrazine	ND(1.0)	ND(1.0)
NDMA	ND(0.020) UJ*/U	**0.035**
Perchlorate	**130 /D**	**120 /D**
Tetryl	6.8 /D	7.9 J*/D

RIMW-3**	03/03/05	04/18/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	2.0 /D	1.7 /D
Perchlorate	NS	NS

RGPZ-6B**	03/02/05	04/18/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.4) /UD	**13 /D**
Perchlorate	NS	NS

RG-3B	03/02/05	04/18/05
Hydrazine	ND(1.0)	ND(1.0)
NDMA	**19 /D**	**28 /D**
Perchlorate	ND(4.0) /U	**47 /D**
RDX	**250 J/D**	**1000 /D**
Tetryl	420 J/D	1700 /D

RG-8B	10/15/04	03/25/05
Explosives	ND	ND
Hydrazine	ND(1.0)	ND(1.0)
NDMA	**0.19**	**0.13**
Perchlorate	**110 /D**	**99**

Rd Sump**	05/05/99	11/23/99
Explosives	ND	NS
Hydrazine	NS	NS
NDMA	ND(30)	ND(20)
Perchlorate	NS	NS

RIMW-1**	01/19/05	03/31/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

PSCT-1	11/15/04	04/12/05
13-Dinitrobenzene (EPA 8270)	**40 J**	ND(10) /U
13-Dinitrobenzene (EPA 8330)	ND(5.0) /U	ND(5.7) /UD
26-Dinotortoluene (EPA 8270)	ND(2.0) /U	ND(2.0) /U
26-Dinotortoluene (EPA 8330)	5.3	ND(5.7) /UD
2-Amino-46-DNT	ND(5.0) /U	4.2 /JD
Hydrazine	ND(1.0)	ND(1.0)
NDMA	**0.052**	**0.20**
Perchlorate	**100 /D**	ND(40) /UD
RDX	**19**	**6.4 /D**
Tetryl	220	98 /D

SW-29**	10/15/04	03/30/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RG-1B**	10/20/04	03/23/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020) /U	**0.022**
Perchlorate	NS	NS

RIHP-6	05/24/07
NDMA	NR
Explosives	NR
Perchlorate	NR
Hydrazine	NR

RP-65B**	11/30/99	07/06/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.0)	ND(2.0)
Perchlorate	NS	NS

RP-100A**	10/21/04	03/29/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RP-103B**	11/30/99	06/28/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.0)	ND(2.0)
Perchlorate	NS	NS

RAP-1A**	10/22/04	03/30/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

MW-18C**	10/18/04	03/25/05
Explosives	NR	ND
Hydrazine	NS	NS
NDMA	NR	NR
Perchlorate	NS	NS

PSCT-2	10/29/04	04/11/05
Explosives	ND	ND
Hydrazine	ND(1.0)	**0.41 /J**
NDMA	**1.6 J***	**4.1 /D**
Perchlorate	**29 /D**	**73 /D**

RG-7B**	10/15/04	03/25/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020) /U	**0.019 /J**
Perchlorate	NS	NS

RIMW-2**	01/20/05	03/25/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	**0.081**	**0.023**
Perchlorate	NS	NS

RIHP-3	03/02/07
NDMA	NR
Explosives	NR
Perchlorate	NR
Hydrazine	NR

RIPZ-37**	10/20/06
Explosives	ND
Hydrazine	NS
NDMA	ND(3.0)
Perchlorate	NS

RIHP-7	06/04/07
Explosives	NS
Hydrazine	NS
NDMA	NS
Perchlorate	NS

RP-59B**	12/01/99	07/05/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(3.0)	ND(2.0)
Perchlorate	NS	NS

RP-75A**	11/18/99	06/29/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(3.0)	ND(3.0)
Perchlorate	NS	NS

B3M**	12/06/99	07/06/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(3.0)	ND(2.0)
Perchlorate	NS	NS

RP-75B**	11/18/99	06/29/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.0)	ND(2.0)
Perchlorate	NS	NS

Pond 13**	10/28/04	04/07/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RAP-1B**	10/20/04	04/08/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

B-5**	11/11/99	06/29/00
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(2.0)	ND(2.0)
Perchlorate	NS	NS

RIHP-1	01/08/07
NDMA	**0.010**
Explosives	NR
Perchlorate	NR
Hydrazine	NR

RCF Pond**	10/28/04	04/07/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RG-6B	10/29/04	03/29/05
HMX	ND(5.0) UJ/U	3.7 /JD
Hydrazine	ND(1.0)	ND(1.0)
NDMA	ND(0.020)	ND(0.020)
Perchlorate	ND(20) /UD	**31 /D**

RAP-3A**	10/22/04	04/12/05
Explosives	ND	ND
Hydrazine	NS	NS
NDMA	ND(0.020)	ND(0.020)
Perchlorate	NS	NS

RIHP-2	03/02/07
NDMA	NR
Explosives	NR
Perchlorate	NR
Hydrazine	NR

LEGEND

- Burial Trench
- Landfill Boundaries
- Facility and Zone 1 Boundary
- Perimeter Source Control Trench (PSCT)
- Plume Capture Collection Trench (PCT)
- Clay Barrier
- Creek
- Pond Outline
- MW-15C Upper HSU Monitoring Well
- GW-P(E) Upper HSU Piezometer
- RAP-2A Upper HSU Extraction Point
- POND18 Upper HSU Surface Water Sample
- SW-10 Upper HSU Other Sampling Point
- RIHP-1 Upper HSU Hydropunch
- MET Meteorological Station

B-30	10/17/96
1,2-DCB	580 J/B

Well Number
Date (Month/Day/Year)
Groundwater Concentrations in Micrograms Per Liter
Validation Qualifier/Laboratory Qualifier
Chemical

The two most current sampling events are posted.

List of chemical abbreviations and data qualifiers provided in text.

No results posted indicates no chemicals reported above detection limits.

Laboratory and Validation Qualifiers:

- "D" The sample or sample extract was diluted prior to analysis due to high levels of target analytes or matrix interferences.
- "B" The analyte was detected in an associated blank sample.
- "J" The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. For the inorganic methods, a "+" or "-" may be added to indicate high or low bias.
- "N" The analysis indicates the presence of an anlyte for which there is presumptive evidence to make a tentative identification.
- "NJ" The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated value represents an approximate concentration.
- "U" Compound was analyzed, but not detected above the listed sample quantitation limit.
- "UJ" The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is an estimate.
- "R" The result is rejected due to a serious deficiency in the analysis or associated quality control analysis.
- "*" Indicates that the qualifier was applied in response to a Level IV review finding.

The widths of the clay barriers, PSCT, and PCT trenches are exaggerated for presentation purposes.

Bold values indicate exceedences of MCL/PRGs.

ND Not detected, but sampled and analyzed
NR Not sampled/analyzed due to lack of water recovered from sampling location.
NS Not sampled

NOTES:

Topo map revised 1998, 2000, 2004. Topo with P/S landfill and borrow area revised 2000. (Foster-Wheeler).

Zone 1 boundary (green) is approximate and includes the area within the facility boundary.

** Sampling location was not analyzed for explosives by EPA Method 8330, but several explosive compounds were analyzed for by EPA 8270.

4088097619031.DWG 40.0

NO.	DATE	REVISIONS	BY	CHK

DRAWN: PCB
ENGINEER:
CHECKED: NAM
DATE: 1/2011
PROJECT NO: 4088097619
SCALE: 1"= 400'
APPROVED: WJF
DATE: 1/2011

Final Remedial Investigation Report

Casmalia Resources Superfund Site
Casmalia, California

Explosives, NDMA, Perchlorate, and Hydrazine in the Upper HSU Remedial Investigation Sampling

FIGURE G-20
SHEET: 1 OF 1
REVISION NUMBER: 0
DATE: January 2011