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Technical Memo

To:	Faro Mine Closure Office	**Date:**	February 13, 2006
cc:		**From:**	Dan Mackie, Christoph Wels
Subject:	Loading to North Fork Rose Creek at S-Cluster Area	**Project #:**	1CD003.073 Task 20e

Review of S-cluster water quality data by RGC in 2004 indicated significant increases of sulphate and zinc concentrations over time. While certain aspects of concentration changes were anomalous (e.g., non-ideal breakthrough curves) it was concluded that contaminated seepage was moving through this area and that further studies should be completed to improve characterisation.

Results of field programs in 2004 and 2005 have provided significantly improvements to the understanding of geology and contaminant distribution in this area.

This memo presents an assessment of possible loading to the North Fork Rose Creek (NFRC) in the vicinity of the S-cluster monitoring wells, including a review of historical data for the S-cluster and X2 NFRC monitoring station, located down-gradient of the S-cluster. Comments are provided regarding potential influences on capture efficiency should an interception system be designed for this area.

Background

The geologic conceptual model for the S-cluster area has been updated based on the combined geologic data from the 2004 and 2005 SRK field programs and installation of the S-cluster wells. Figure 1 is a location map for the site. Figure 2 is a cross-section showing the presence of two interpreted aquifer units:

1. Shallow aquifer – localised to shallow component of SRK05-SP-04b only – interpreted as deposits related to pre-mining creek alignment
2. Deep aquifer – identified in majority of deep monitoring locations – combination of granular deposits overlying bedrock and weathered bedrock

While two aquifers are present along the line of cross-section, uncertainty exists regarding aquifer separation off-section, particularly up-gradient in closer proximity to the waste rock dumps.

Water quality data for the NFRC in the vicinity of the S-cluster wells includes:

- Historic data for the five S-cluster wells
- Historic data for X2
- Data from the SRK05-SP wells from 2005
- Data from an individual flow and water quality survey completed in August, 2005 along the NFRC between the rock drain and X2 (NFRC_SC stations on Figure 1)

Figures 3 and 4 present available zinc and sulphate concentration data for the S-cluster groundwater monitoring wells and X2 surface water station, respectively.

As shown on Figure 3, both sulphate and zinc concentrations at the S-cluster show increasing trends.

- Sulphate concentrations have shown a gradual increase since start of monitoring in 1989 (early data not shown here).
- Zinc shows a significant "breakthrough" (i.e., increase) in three of the five S-cluster monitoring wells beginning in 2001. Data from 2004 and 2005 suggest zinc concentrations may be levelling off

Concentrations of both sulphate and zinc are generally highest in S1A, S2A and S3. S1A and S2A are completed in weathered bedrock and overlying materials interpreted to be part of the deep aquifer system. S3, interpreted to be part of the shallow system, also shows higher relative concentrations and may indicate either connection between S3 and SRK05-SP-4b or that the deep aquifer is thicker than believed based on available drill logs. All drill logs for the S-cluster wells indicate a predominance of till.

Figure 4 presents data for station X2, a North Fork Rose Creek monitoring station located downstream of the S-cluster monitoring wells. Trends for the NFRC do not show the same "breakthrough" as observed in the groundwater monitoring wells, but do provide insight into possible connection between the NFRC and underlying groundwater system.

- Sulphate (analysis changed from total sulphates to dissolved sulphates in 2002) shows annual variation, with highest concentrations in the fall and winter and lowest concentrations in the late spring.

- This annual sulphate trend suggests loading during baseflow conditions and dilution during freshet conditions.

- Overall, sulphate concentrations suggest a slow increase over time.

- Total zinc concentrations do not suggest an increase over the period of record. The highest concentrations were recorded in 2000, prior to the significant zinc breakthrough at the S-cluster in 2001. Variation in total zinc concentrations may not indicate effects of groundwater, but the effects of particulates in surface waters.

- Dissolved zinc concentrations may suggest an overall increase in early 2002. Prior to 2002, zinc concentrations are typically recorded as "<0.01", presumably representing the limit of detection at the time. After 2002 dissolved zinc concentrations are typically greater than 0.01.

2005 Seepage Investigation Water Quality

The 2005 seepage investigation included installation of additional groundwater monitoring wells and shallow drivepoints along the bank of the NFRC, as well as NFRC discharge measurements. Locations of monitoring wells and NFRC discharge measurement points are shown on Figure 1.

Water samples were taken in September, 2005 from all groundwater monitoring locations and in August 2005 at each of the NFRC discharge measurement points.

Table 1 summarises zinc and sulphate data for the September groundwater sampling event, as well as S-cluster data from a May 5, 2005 sampling event for comparison. Note that sulphate and zinc concentrations in the newly installed (slightly upgradient) SP series of wells are generally similar to the S-series of wells located some distance downgradient, suggesting that seepage concentrations are approaching steady-state in this area. However, additional monitoring will be required to confirm this preliminary conclusion.

Table 1: Groundwater Quality for May and September, 2005

Monitoring Well		S1A	S1B	S2A	S2B	S3	SP1-A	SP1-B	SP-2	SP3-A	SP3-B	SP-4A	SP-4B	SP5
5/5/2005	Conductivity	n/a	n/a	n/a	n/a	n/a	Monitoring wells not installed at this time							
	SO4	4550	403	1860	1760	4610								
	Zn-D	113	0.067	127	8.65	158								
9/12/2005	Conductivity	5600	1430	5440	3660	5850	1130	1170	359	512	537	750	6190	5720
	SO4	4070	703	3910	2510	4360	383	309	45.4	245	261	158	4680	4170
	Zn-D	118	0.051	178	1.19	165	1.63	0.144	0.161	1.04	0.628	1.10	277	153

Conductivity recorded in uS/cm
Sulphate and zinc recorded in mg/L
Zn-D = Dissolved Zinc

Figures 5 through 8 are concentration contour maps for zinc and sulphate by aquifer. Uncertainty exists regarding the location of sides and leading edge of the contaminant plume. Concentrations interpreted to be higher than background were observed in all monitoring wells intersecting the water table, providing improvement on contaminant delineation, but no defined boundaries.

Two monitoring wells intersected permafrost: SRK05-SP-6 and shallow sections of SRK05-SP-5. Shallow permafrost was also identified in multiple test pits completed in 2004. Based on the distribution of permafrost and observed concentrations, it is believed that parts of the groundwater system in this area may be deflected around permafrost.

Contamination of the shallow aquifer is interpreted to be constrained laterally within the permeable materials of the small pre-mining creek alignment. The deep aquifer was separated into two sub-units: high concentration zone and low concentration zone (shown on figures 6 and 8). The high concentration zone is delineated on the east by the greater than two order of magnitude change in concentration between monitoring wells SRK05-SP-5 and SRK05-SP-4a. Identification of the high contaminated zone west margin is uncertain as there are no monitoring wells in this direction. The hillslope northwest of the S-cluster is anticipated to show contamination, but is not considered part of the high concentration plume.

Table 2 summarises average concentrations for the shallow and deep aquifers.

Table 2: Average Groundwater Quality

	Aquifer	Zn-D (mg/L)			SO4 (mg/L)			
		avg	max	min	avg	max	min	n
5/5/2005	Shallow	56	158	0.07	2258	4610	403	3
	Deep	120	127	113	3205	4550	1860	2
9/12/2005	Shallow	111	277	0.05	3063	4680	703	4
	Deep	50	178	0.14	1506	4170	45	9

In general, maximum and average groundwater concentrations are somewhat higher in the shallow aquifer than the deep aquifer (less than one order of magnitude difference). Lowest concentrations are also found in the shallow aquifer and is suggested here to indicate a relatively confined contaminant plume in the shallow aquifer and a more dispersed contaminant plume in the deeper aquifer.

Water quality data for shallow drivepoints is not available, but river-aquifer gradients suggest downwards flow from the river to the aquifer in the immediate vicinity of the S-cluster wells. Vertical gradients are moderate (about 0.01 to 0.5) and may even change direction depending on the season.
Table 3 summarises discharge and water quality results for the August NFRC survey event.

Table 3: NFRC August Water Quality and Discharge

Station	Lab Conductivity (uS/cm)	SO4 (mg/L)	Zn-T (mg/L)	Zn-D (mg/L)	August Discharge (m3/s)	December Discharge* (m3/s)
NFRC 20/21 – August	n/a	n/a	n/a	n/a	1.114	--
NFRC 20/21 – December	n/a	n/a	n/a	n/a	--	n/a
NFRC_SC-1 – August	180	10.8	0.0070	0.0063	1.656	--
NFRC_SC-1 – December	260	18.0	0.0100	0.0111	--	n/a
NFRC_SC-2 – August	180	10.8	0.0074	0.0079	1.346	--
NFRC_SC-2 – December	259	18.3	0.0114	0.0122	--	0.385
NFRC_SC-3 – August	184	12.7	0.0183	0.0158	1.496	--
NFRC_SC-3 – December	263	21.8	0.0535	0.0566	--	0.505
NFRC_SC-4 – August	186	13.5	0.0185	0.0168	1.510	--
NFRC_SC-4 – December	271	25.4	0.0595	0.0610	--	0.553
NFRC 22/23 (X2) – August	185	15.1	0.023	0.018	1.538	--
NFRC 22/23 (X2) – December	n/a	n/a	n/a	n/a	--	n/a
Average Shallow Groundwater*	4283	3063	n/a	111	--	--
Average Deep Groundwater*	2358	1506	n/a	50	--	--

**Average groundwater concentration values taken from September 12, 2005 data*
**December discharge values calculated as average of repeat measurements*

Geochemical data for NFRC 22/23 was from a sample collected on August 22, 2005. Geochemical data for the other NFRC discharge measurement stations was collected on August 10, 2005. Groundwater geochemistry results are from samples collected on September 12, 2005.

Repeat dischage measurements were completed during both the August and December surveys to assess measurement error. During August, a double measurement was completed at NFRC 22/23 indicating measurement error at this location on the order of 0.050 m^3/s. Repeat discharge measurements were not conducted at other stations, but error was estimated by Ken Nordin of Laberge Environmental Services (field hydrology contractor) to be on the order of 1-3%. As part of the December survey, repeat measurements were completed at all flow measurement stations. Results indicate flow measurements varied between 2 – 14%.

Comparison of concentrations and flows indicates:

- In August, dissolved zinc concentrations in creek water increase by about three times from NFRC_SC-1 to X2
- In December, zinc concentrations increased by approximately 5 times between SC-1 and SC-4
- Discharge rate and the direction of flow changes (i.e. gains versus losses) varies along the creek length:
    - o Discharge rates between SC-2 and SC-4 have been observed to vary over time, but consistently indicate that the stream is gaining between SC-2 and SC-4 (Table 4).

Table 4: Discharge over time for SC-2 and SC-4

Date	SC-2 Discharge (L/s)	SC-4 Discharge (L/s)	Increase (L/s)
July, 2005	1,447	1,540	93
August, 2005	1,346	1,510	164
December, 2005	385	553	168

- A decrease in discharge was recorded between stations NFRC_SC-1 and SC-2 (in both July and August) indicating the NFRC is losing water immediately upstream of the S-cluster area. Discharge measurements at SC-1 were not possible in December due to ice conditions.
- Variations between individual discharge locations suggest the S-cluster area is located in an area of transitional stream-aquifer connection.

- Zinc concentrations in creek water are approximately 5 orders of magnitude less than average deep and shallow groundwater.
- Dilute concentrations in the NFRC relative to the S-cluster groundwater may indicate groundwater input from other, non-contaminated portions of the watershed for this area.

Groundwater flux was calculated based on available hydraulic head and geology data. Calculations used:

- Areas for each flux calculation was based on average aquifer thickness and width
- Average hydraulic conductivity (K) was determined from the results of 2004 and 2005 hydraulic testing
- Hydraulic gradients were estimated based on a straight line extending through the cross section line on Figure 1 to the NFRC along the trend of maximum observed concentrations. These gradients are believed to be representative of average gradients in the area and represent the gradient along the primary plume orientation

Table 5 summarises groundwater flux for the shallow and deep aquifers. Flux for the high concentration and low concentration zones of the deep aquifer are shown separately.

Table 5: Estimated Groundwater Flux

	Average Area (m2)	Gradient	Min K (m/s)	Ave K (m/s)	Max K (m/s)	Min Flux (L/s)	Ave Flux (L/s)	Max Flux (L/s)
Shallow Aquifer	75	0.05	1.8E-6	1.9E-5	1.1E-4	6.6E-3	7.0E-2	4.1E-1
Deep Aquifer – high concentration	90	0.03	1.8E-5	1.8E-4	6.8E-4	4.9E-2	4.9E-1	1.8E+0
Deep Aquifer – low concentration	595	0.01	4.0E-5	2.9D-4	3.0E-3	2.4E-1	1.7E+0	1.8E+1

Based on the average estimates, total flux from the deep aquifer is more than one order of magnitude greater than flux from the shallow aquifer.

Loading Estimates

Loading calculations were completed for the S-cluster area to allow assessment of potential zinc loading to the NFRC. Estimates were related to calculated loads in groundwater and the NFRC based on the August and December, 2005 surveys. Tables 6 and 7 list calculated loads based on the results of these surveys.

Estimates of groundwater load were determined using the flux values presented in Table 5 and transmissivity-weighted concentration data. Average loading values were determined using transmissivity-weighted concentration data to account for some of the heterogeneity in the system. Maximum and minimum values used maximum and minimum concentration values for the respective aquifer or aquifer zone. Table 6 summarises results. Table 7 summarises NFRC loads based on water quality and dischage measurements for the August and December surveys.

Table 6: Estimated Groundwater Loads

SO_4	Observed SO_4 Concentrations (mg/L)			SO_4 Load (tonnes/yr)		
	High	T-wtd Average*	Low	High	T-wtd Average*	Low
Shallow Aquifer	4,680	4,346	703	61	9	0.1
Deep Aquifer – high concentration	4,170	4,108	3,910	240	62	6
Deep Aquifer – low concentration	383	83	45	210	5	0.3
Total Loads				511	76	6.4
Zn	Observed Zn Concentrations (mg/L)			Zn Load (tonnes/yr)		
	High	T-wtd Average*	Low	High	T-wtd Average*	Low
Shallow Aquifer	277	111	0.051	3.5	0.2	$1x10^{-5}$
Deep Aquifer – high concentration	178	133	118	10	2.0	0.18
Deep Aquifer – low concentration	1.63	0.264	0.144	0.9	0.01	$1x10^{-3}$
Total Loads				14.4	2.21	~0.18

Table 7: Observed NFRC Loads

Flow Station	Q (m^3/s)	Change from Upstream Station (m^3/s)	SO4 Concentration Zn-D (mg/L)	SO4 Load (tonnes/yr)	Zn Concentration Zn-D (mg/L)	Zn Load (tonnes/yr)
NFRC SC_1 – August	1.656	0.542*	10.8	564	0.0063	0.31
NFRC SC_1 – December	n/a	n/a	18.0	n/a	0.0111	n/a
NFRC SC_2 - August	1.346	-0.310	10.8	459	0.0079	0.35
NFRC SC_2 - December	0.385	n/a	18.3	222	0.0122	0.15
NFRC SC_3 - August	1.496	0.150	12.7	600	0.0158	0.76
NFRC SC_3 - December	0.505	0.120	21.8	347	0.0566	0.90
NFRC SC_4 - August	1.510	0.014	13.5	643	0.0168	0.79
NFRC SC_4 - December	0.553	0.048	25.4	443	0.0610	1.06
NFRC 22/23 (X2) - August	1.538	0.018	15.1	733	0.018	0.88
NFRC 22/23 (X2) - December	n/a	n/a	n/a	n/a	n/a	n/a

- Change at NFRC SC-1 calculated from NFRC 20/21 located upstream of the rock drain
- All NFRC water quality data from August 10 sampling event, with exception of X2, which is from August 22

Note that zinc and sulphate concentrations in the NFRC are already significantly elevated upstream of the influence of the S-cluster seepage area (i.e. at station NFRC SC_1 during the August event). The source of zinc and sulphate loading to the NFRC upstream of the S-cluster area is uncertain but maybe related to WRD seepage from areas upgradient of the rock drain (including Zone 2 area). In this memo, we focus on the incremental loading to the NFRC along the S-cluster reach, i.e. between stations NFRC SC_1 and SC_4).

Comparison of the August and December survey results indicates differences, due, in some part, to seasonal changes in the hydrologic/hydrogeologic systems. Differences in zinc sulphate concentrations between the two sampling events indicate that sulphate loads decrease from August to December, while zinc loads increase over that time period. While the mechanisms that cause these different temporal variations are not completely understood, the observed change in loading may be a result of decreased inputs from the larger overall area with high sulphate concentrations and continued input from the local S-cluster area.

Loading to the NFRC was estimated for four scenarios to provide constraint on estimated parameters and assessment of worst case conditions:

1. Required concentrations to obtain observed concentrations based on the observed increase in creek discharge between SC-2 and SC-4;

2. Required groundwater concentrations to obtain observed creek concentrations based on shallow groundwater flux alone;

3. Estimated creek concentrations based on total shallow and deep groundwater flux and observed concentrations;
4. The required flux of "unimpacted" groundwater combined with shallow flux and concentration to obtain observed creek concentrations.

Table 8 summarises results of these scenarios. Bold numbers represent model input.

Table 8: Scenario Results

Scenario	Description	Groundwater Flux (L/s)	Inferred Seepage Concentrations (mg/L)	
			SO4	Zn
1a	Observed increase in discharge (August)	**164**	36	0.09
1b	Observed increase in discharge (December)	**168**	63	0.11
2	Shallow seepage only	**0.07**	100,358	416
3	Total seepage	**2.29**	3,053	12.6
4	Shallow seepage	**0.07**	**4,346**	**221**
	Plus unimpacted groundwater	67	**100**	**0**

Results of these simple analyses suggest that under current observed conditions at the S-cluster area and the assumed total groundwater flux, groundwater with sulphate concentrations of 36 mg/L and zinc concentrations of 0.09 mg/L could be discharging to the creek. This assumes that the observed increase in NFRC load comes completely from contamination observed at the S-cluster area.

Results of scenario 2 suggests that if the observed load in the NFRC was from shallow groundwater only, seepage sulphate concentrations would have to be significantly greater than observed, and seepage zinc concentrations approximately twice the amount of the average of observed concentrations.

The results of scenario 3, representing a diluted combination of deep and shallow groundwater, indicate that observed combined concentrations in shallow and deep groundwater could lead to the observed creek concentrations.

Results of scenario 4 indicate that only 67 L/s of clean groundwater would be required to mix with groundwater under observed concentrations to obtain observed creek concentrations.

The results of scenarios 3 and 4 also suggest that, if the interpreted sulphate concentration distribution for the deep aquifer shown in figure 6 is reasonable, additional loading from the deep aquifer to the NFRC could be occurring downstream of the S-cluster.

Based on these results, annual loading estimates are provided:

Annual load based on current observed zinc load at NFRC SC-4:

0.8 – 1.0 tonnes/yr

Potential maximum annual zinc load at NFRC SC-4 based on maximum observed concentrations:

14 tonnes/yr

Conclusions

Based on the results of these analyses, the following conclusions can be made:

1. Contour maps shown on figures 5 through 8 are reasonably representative and contaminated groundwater is discharging to the creek.

2. Groundwater with a total zinc concentration of approximately 12 mg/L could be discharging to the creek.

3. Diluted shallow seepage alone, or a combination of shallow and deep seepage could be causing the observed increase in creek concentrations.

Of all the possibilities, it seems most reasonable that diluted shallow contamination is likely the primary cause for the observed creek concentrations. Dilution could occur from groundwater additions from areas other than the S-cluster area (such as the south side of the NFRC) and/or re-introduction of relatively dilute creek water that was lost from the creek up-gradient of the S-cluster.

Based on improved understanding of the area geology, it seems unlikely that the deeper aquifer is contributing as significantly to the observed creek loads. While this may be the case, it should be pointed out that creek load does appear to increase slightly between NFRC_SC-4 and X2, suggesting that further groundwater discharge to the creek is occurring.

Concentrations in the NFRC have not shown as significant an increase as in groundwater. Drivepoint gradients suggest a vertically downwards gradient in the immediate vicinity of the S-cluster wells, which may suggest that the leading edge of the contaminant plume is underneath the creek but not fully discharging to the creek. If this is not the case, and if groundwater is not being diluted significantly from upstream sources, loading to the creek could become significantly greater in the future.

Preliminary Assessment of Capture Efficiency

It is anticipated that capture efficiency in the NFRC area will be most significantly affected by the presence of heterogeneous lithology and, possibly, boundary effects.

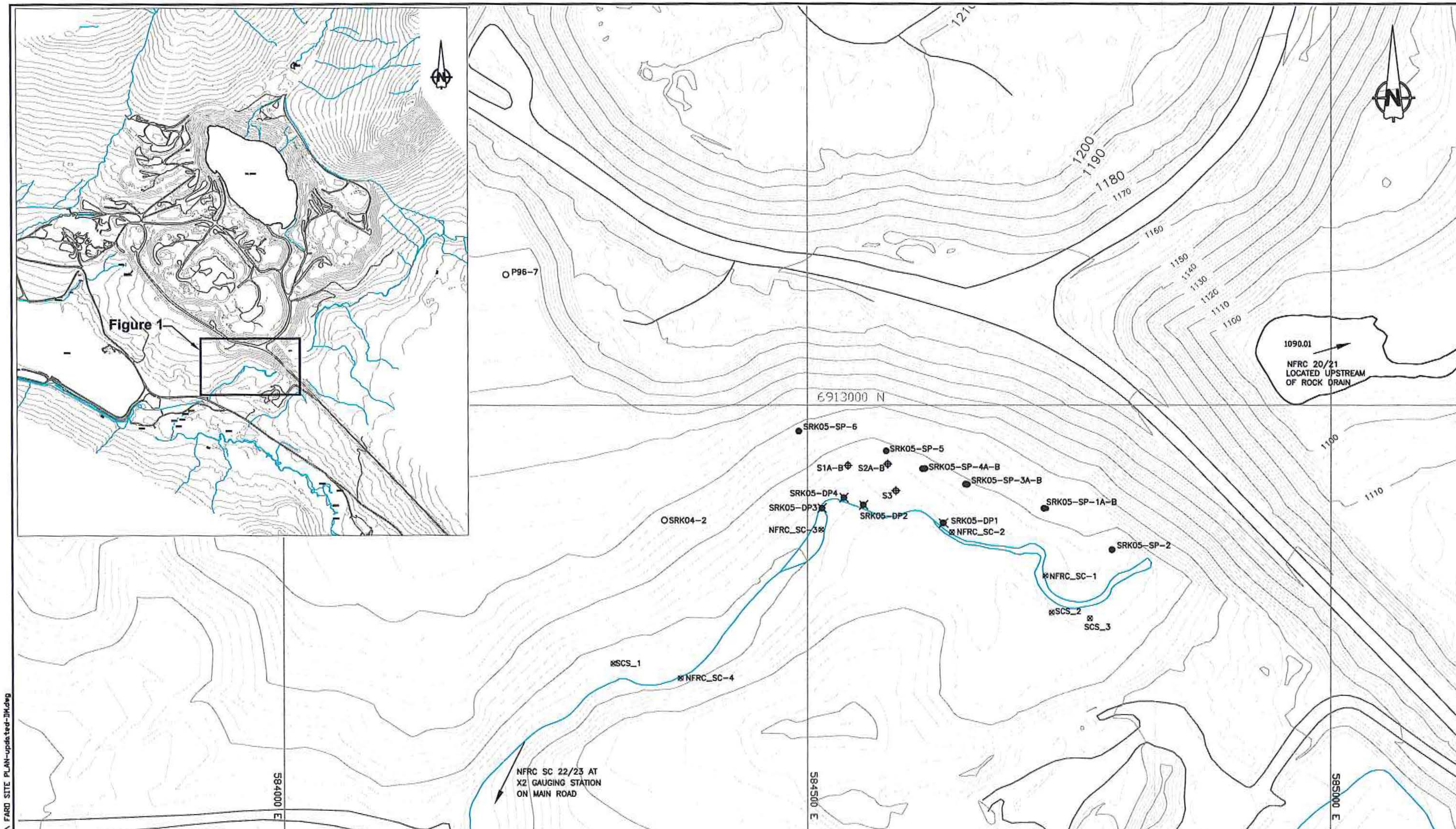
Assuming pumping wells are placed along a line passing through, or above, the area of the S-cluster wells, laterally heterogeneous stratification of lithologic types can be assumed. Pumping wells completed into coarser-grained components of the deeper aquifer unit will likely be more efficient from an operational perspective than wells completed in heterogeneous materials or thinner productive units.

It is believed that geologic heterogeneity can be accommodated by the proper design of pumping wells. However, the installation of deep trenches along the transect (backfilled with permeable rock fill) may be required to improve system performance and capture efficiency. Monitoring wells should be placed between pumping wells to allow assessment of pumping well effectiveness. A test well should be installed prior to design of a capture system.

Boundary effects, such as the bedrock surface and possibly the NFRC, could have the potential to effect capture efficiency.

- If the NFRC acts as a recharge boundary to pumping wells, available drawdown could be limited, possibly restricting actual drawdown to less than required for contaminant capture. If the NFRC is perched in the area of the pumping wells, this would likely not occur.
- If the bedrock surface acts as a lateral impermeable boundary, drawdown will likely be greater than anticipated, which could lead to significant pump cycling, increased equipment wear and more frequent replacement. These effects could be accommodated by use of automatically-controlled, variable speed pumps to maintain the required drawdown.

Considering the complex hydrogeological conditions in this area, it is recommended that adequate contingency measures be put in place to allow for future improvements to any initial design of a seepage interception system based on system performance. Potential upgrades would include (i) additional pumping wells, (ii) shallow/deep rock drains and/or slurry walls.



LEGEND

- ● 2005 Groundwater Monitoring Well
- ○ Other Groundwater Monitoring Well
- Shallow Drivepoint
- NFRC Monitoring Station (NFRC_SC-4 = FLOW/SAMPLING) (SCS_1 = SURFACE SEEP)
- S-Cluster Monitoring Well

50 0 100 200 300 feet

25 0 50 100 150 Metres

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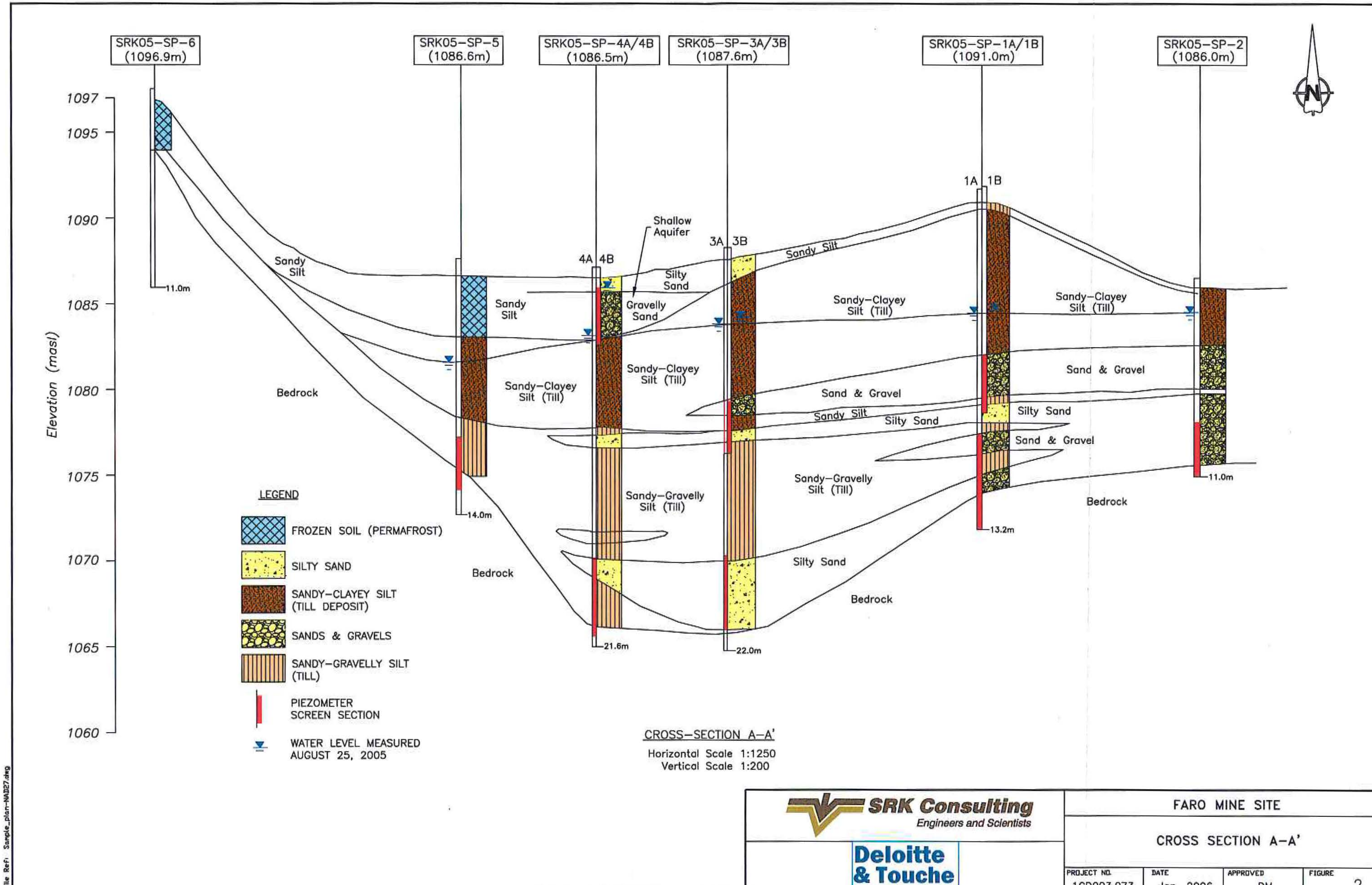
TASK 20E – CONTINUED SEEPAGE INVESTIGATION

MONITORING STATION LOCATION MAP

PROJECT NO.	DATE	APPROVED	FIGURE
1CD003.073	Feb. 2006	DM	1

File Ref: 2006 Acad drawings\ FARO SITE PLAN-updated-DM.dwg



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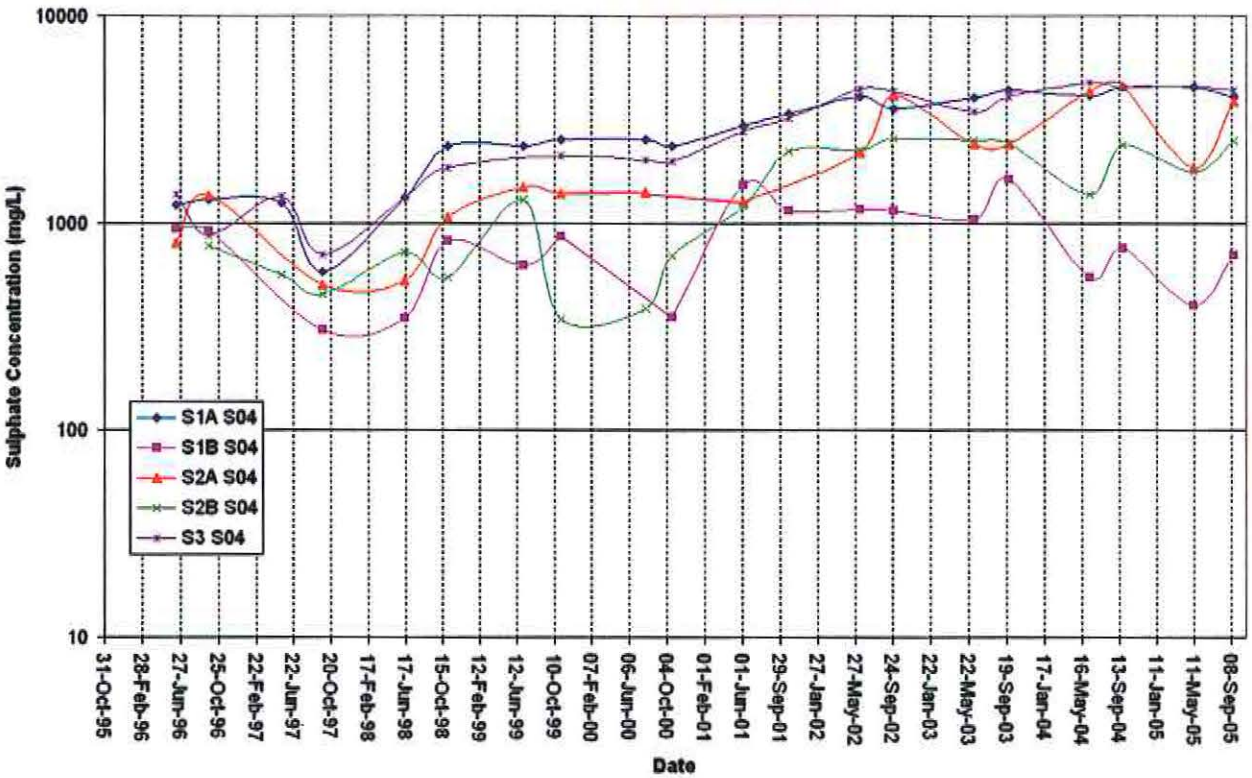
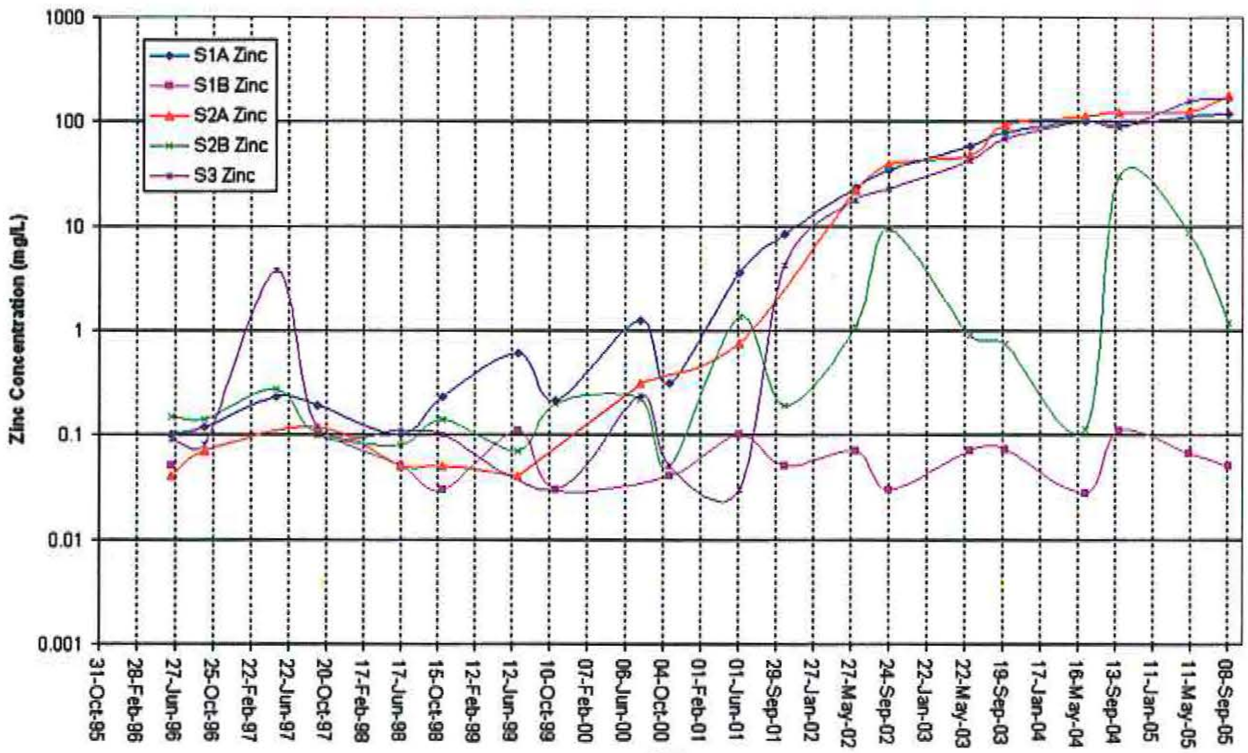
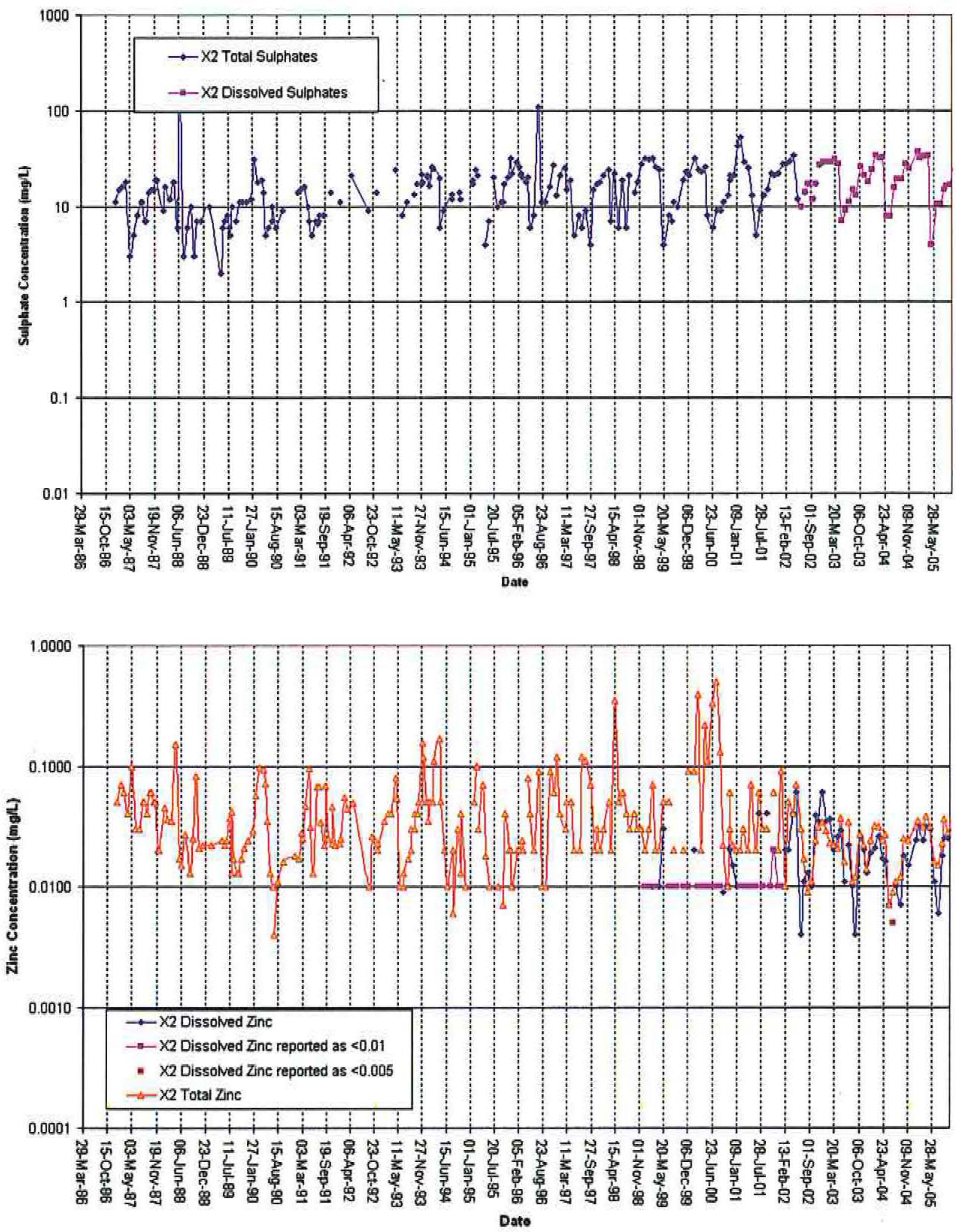




SRK Consulting Engineers and Scientists	Faro Seepage Investigation			
	Concentrations of Sulphate and Zinc at the S-cluster			
Faro Mine Closure Office	PROJECT: 1CD003.073	DATE: Jan 2006	APPROVED:	FIGURE: 3



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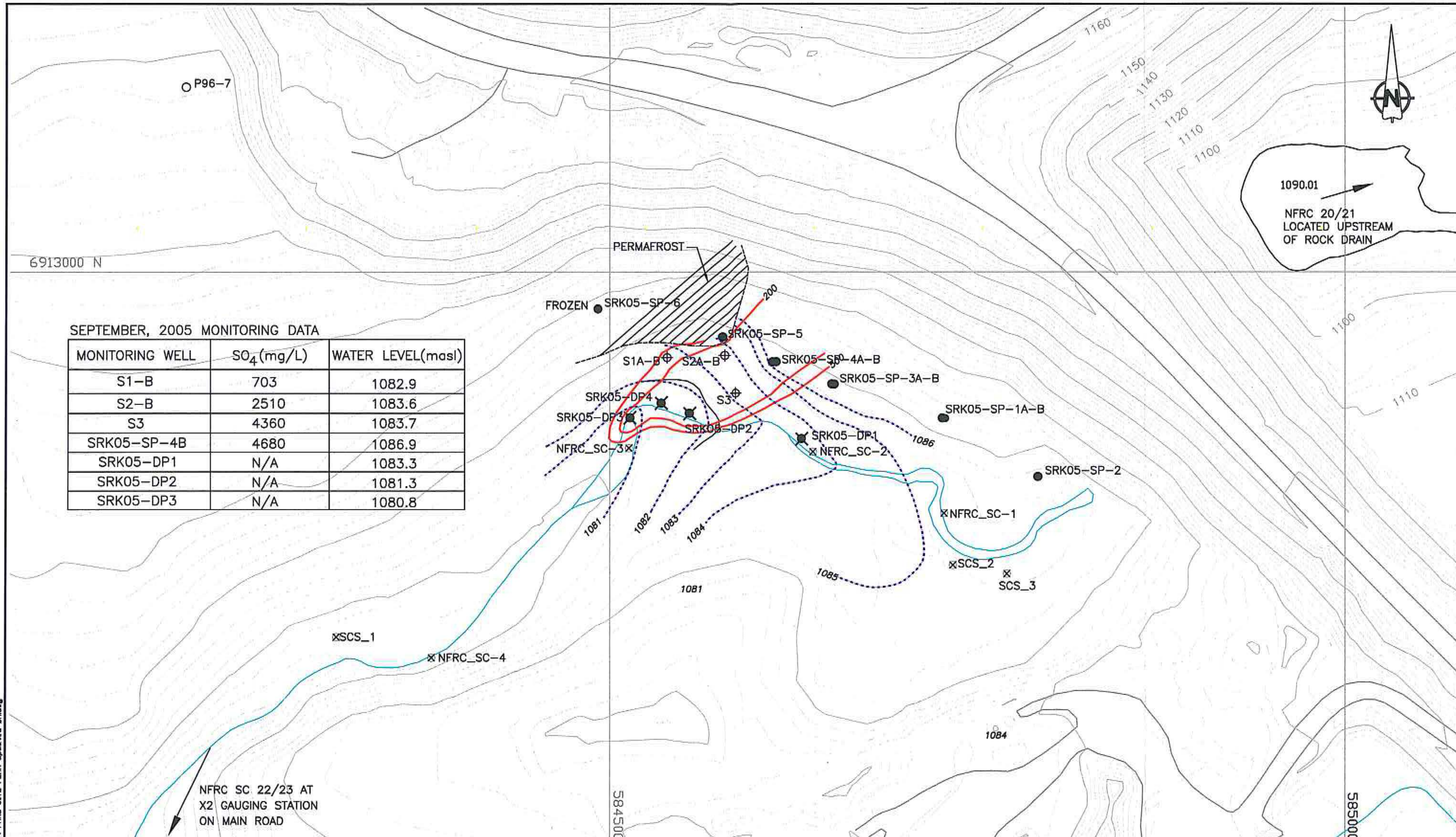
Faro Seepage Investigation

Concentrations of Sulphate and Zinc at X2

PROJECT:	DATE:	APPROVED:	FIGURE:
1CD003.073	Feb 2006		4



SEPTEMBER, 2005 MONITORING DATA

MONITORING WELL	SO_4(mg/L)	WATER LEVEL(masl)
S1-B	703	1082.9
S2-B	2510	1083.6
S3	4360	1083.7
SRK05-SP-4B	4680	1086.9
SRK05-DP1	N/A	1083.3
SRK05-DP2	N/A	1081.3
SRK05-DP3	N/A	1080.8

LEGEND

- 2005 Groundwater Monitoring Well
- Other Groundwater Monitoring Well
- Shallow Drivepoint
- NFRC Monitoring Station (NFRC_SC-4 = FLOW/SAMPLING) (SCS_1 = SURFACE SEEP)

Concentration Contour
Hydraulic head Contour

50 0 100 200 300 feet

25 0 50 100 150 Metres

File Ref: 2006 Acad drawings\ FARO SITE PLAN-updated-DM.dwg

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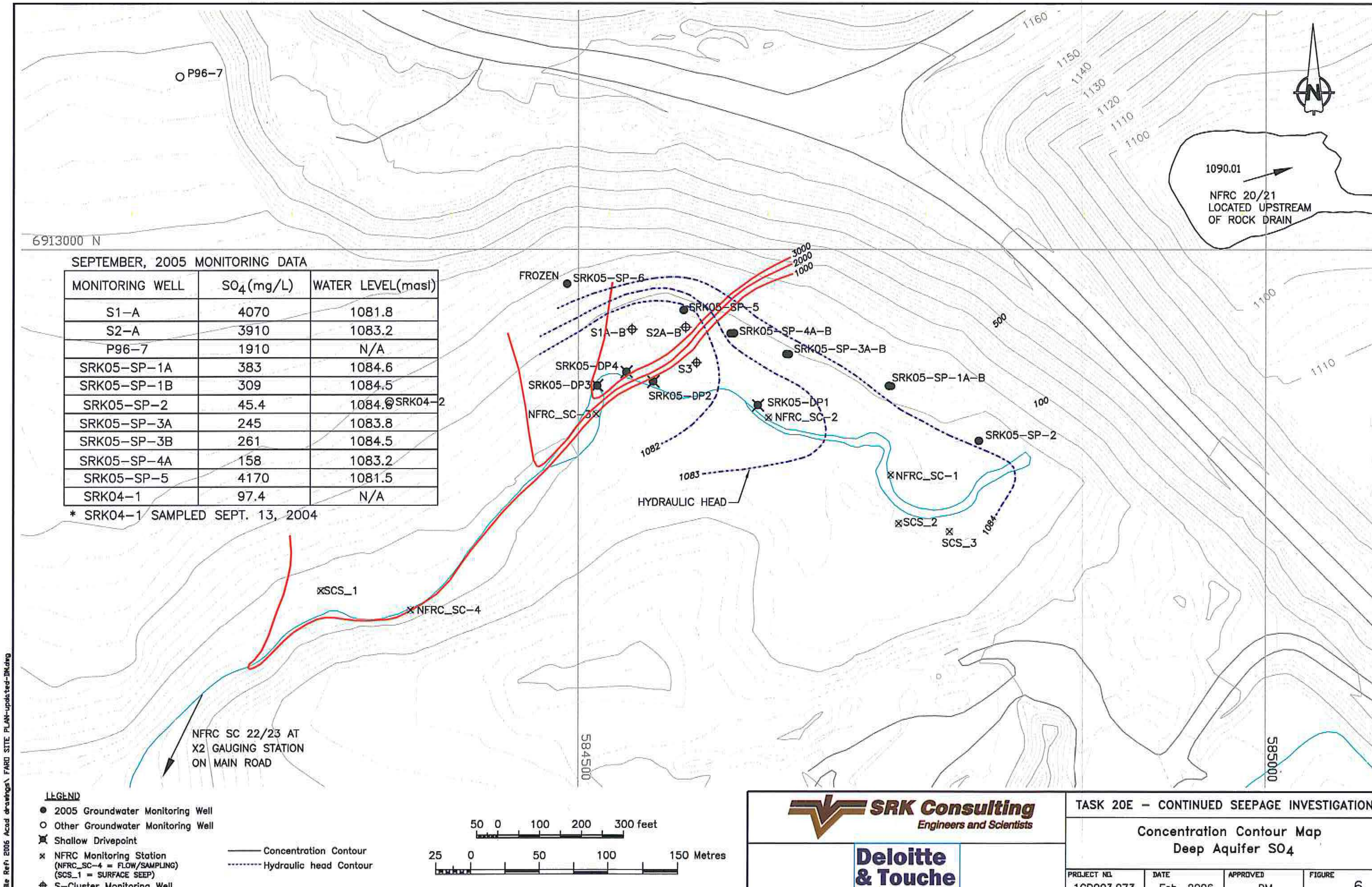
TASK 20E – CONTINUED SEEPAGE INVESTIGATION

Concentration Contour Map
Shallow Aquifer SO_4

PROJECT NO.	DATE	APPROVED	FIGURE
1CD003.073	Feb. 2006	DM	5



SEPTEMBER, 2005 MONITORING DATA

MONITORING WELL	SO_4(mg/L)	WATER LEVEL(masl)
S1-A	4070	1081.8
S2-A	3910	1083.2
P96-7	1910	N/A
SRK05-SP-1A	383	1084.6
SRK05-SP-1B	309	1084.5
SRK05-SP-2	45.4	1084.6
SRK05-SP-3A	245	1083.8
SRK05-SP-3B	261	1084.5
SRK05-SP-4A	158	1083.2
SRK05-SP-5	4170	1081.5
SRK04-1	97.4	N/A

* SRK04-1 SAMPLED SEPT. 13, 2004

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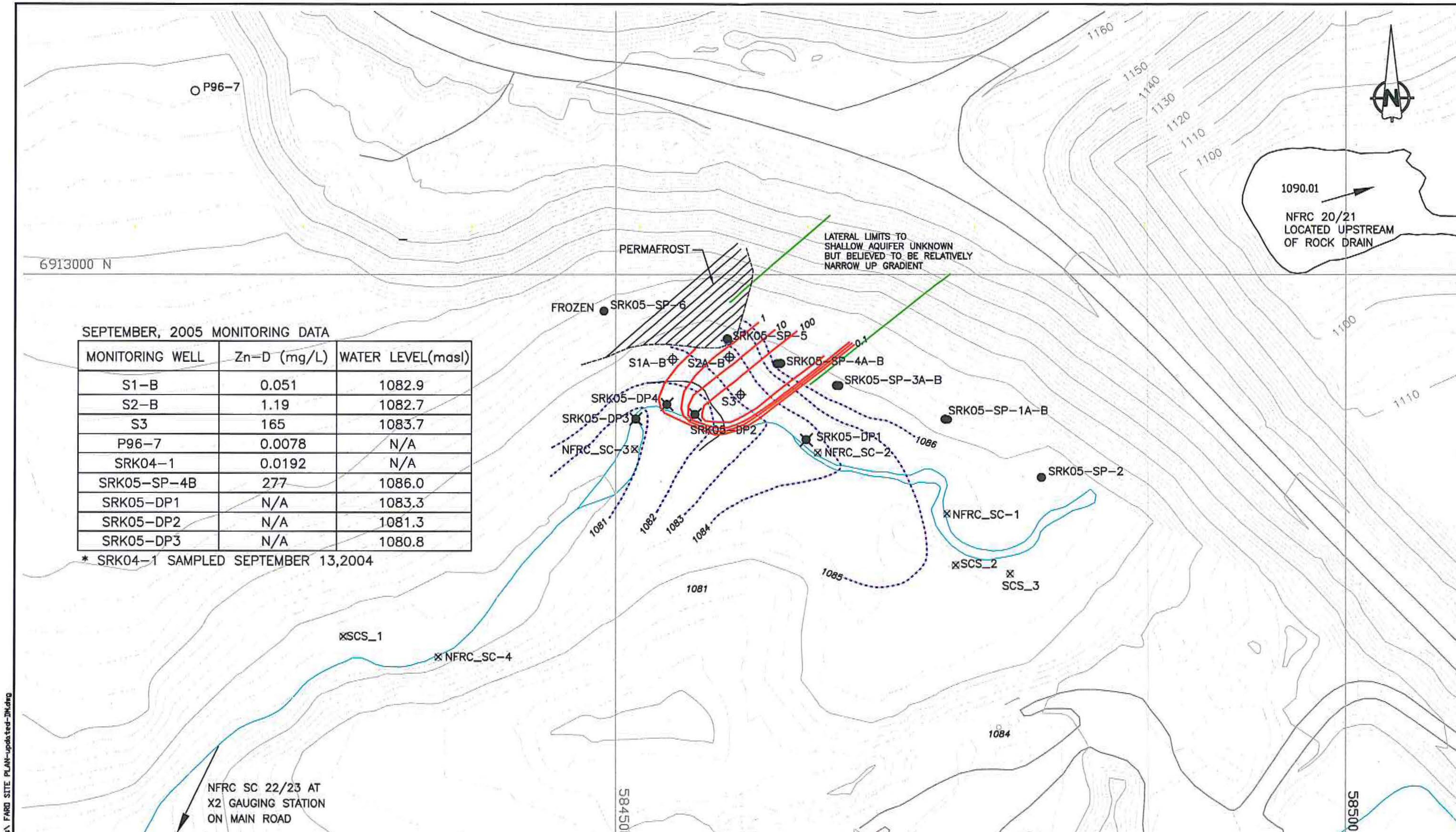
TASK 20E – CONTINUED SEEPAGE INVESTIGATION

Concentration Contour Map
Deep Aquifer SO_4

PROJECT NO.	DATE	APPROVED	FIGURE
1CD003.073	Feb. 2006	DM	6



SEPTEMBER, 2005 MONITORING DATA

MONITORING WELL	Zn-D (mg/L)	WATER LEVEL(masl)
S1-B	0.051	1082.9
S2-B	1.19	1082.7
S3	165	1083.7
P96-7	0.0078	N/A
SRK04-1	0.0192	N/A
SRK05-SP-4B	277	1086.0
SRK05-DP1	N/A	1083.3
SRK05-DP2	N/A	1081.3
SRK05-DP3	N/A	1080.8

* SRK04-1 SAMPLED SEPTEMBER 13,2004

File Ref: 2006 Acad drawings\ FARO SITE PLAN-updated-DM.dwg

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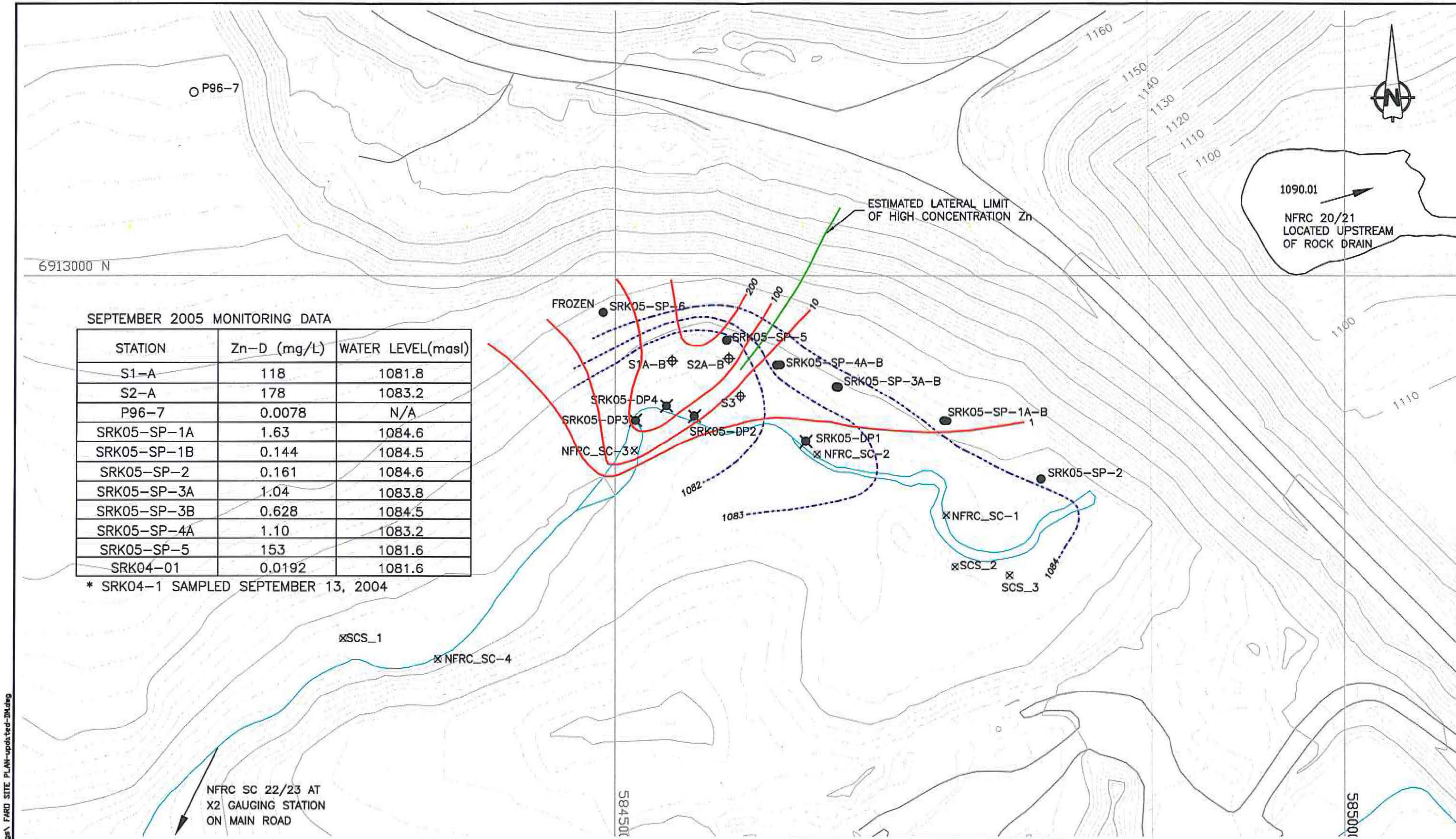
TASK 20E – CONTINUED SEEPAGE INVESTIGATION

Concentration Contour Map
Shallow Aquifer Zinc

PROJECT NO.	DATE	APPROVED	FIGURE
1CD003.073	Feb. 2006	DM	7



SEPTEMBER 2005 MONITORING DATA

STATION	Zn-D (mg/L)	WATER LEVEL(masl)
S1-A	118	1081.8
S2-A	178	1083.2
P96-7	0.0078	N/A
SRK05-SP-1A	1.63	1084.6
SRK05-SP-1B	0.144	1084.5
SRK05-SP-2	0.161	1084.6
SRK05-SP-3A	1.04	1083.8
SRK05-SP-3B	0.628	1084.5
SRK05-SP-4A	1.10	1083.2
SRK05-SP-5	153	1081.6
SRK04-01	0.0192	1081.6

* SRK04-1 SAMPLED SEPTEMBER 13, 2004

LEGEND

- 2005 Groundwater Monitoring Well
- Other Groundwater Monitoring Well
- Shallow Drivepoint
- NFRC Monitoring Station (NFRC_SC-4 = FLOW/SAMPLING) (SCS_1 = SURFACE SEEP)
- S-Cluster Monitoring Well

Concentration Contour
Hydraulic head Contour

50 0 100 200 300 feet

25 0 50 100 150 Metres

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TASK 20E – CONTINUED SEEPAGE INVESTIGATION

Concentration Contour Map
Deep Aquifer Zinc

PROJECT NO.	DATE	APPROVED	FIGURE
1CD003.073	Feb. 2006	DM	8

File Ref: 2006 Acad drawings\ FARO SITE PLAN-updated-DM.dwg