EMCSF
21.3 V3

FLUORIDE SUMMARY

Offplant Area
Eastern Michaud Flats Superfund Site

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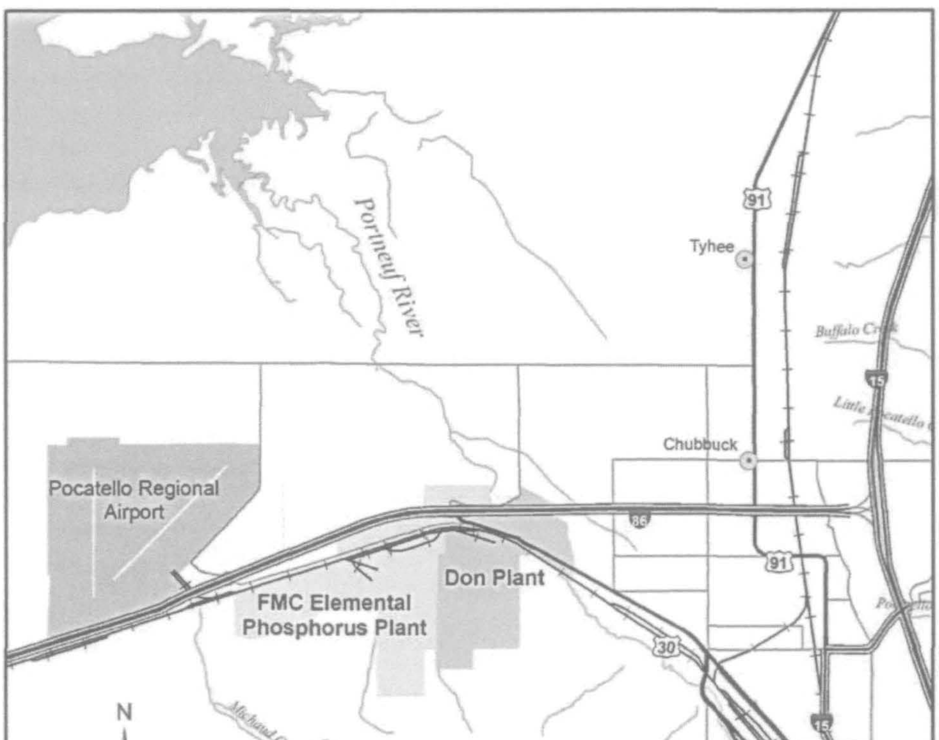
AOAC	Association of Official Analytical Chemists
AWQC	Ambient Water Quality Criteria
COPCs	Chemicals of Potential Concern
CSM	Conceptual Site Model
DH	Di-hydrate
E&E	Ecology and Environment
EMF	Eastern Michaud Flats
EPA	United States Environmental Protection Agency
EPCs	Exposure Point Concentrations
ERA	Ecological Risk Assessment
FS	Feasibility Study
HH	Hemi-hydrate
Hi-vol	High Volume
HQ	Hazard Quotient
IDEQ	Idaho Department of Environmental Quality
LEL	Lowest Effects-Level
Lo-Vol	Low Volume
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
NOAELS	No-Observable-Adverse-Effects-Levels
NPL	National Priorities List
NWI	National Wetland Inventory
OME	Ontario Ministry of the Environment
ppm	Parts-per-Million
RBC	Risk Based Concentration
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
TSP	Total Suspended Particles
UCL	Upper Confidence Limit
TRVs	Toxicity Reference Values

1.0 Introduction

This report provides a summary of studies and associated data and findings related to fluoride in the Offplant Area of the Eastern Michaud Flats (EMF) Superfund Site (Site), located near Pocatello, Idaho.

The Site includes the Simplot Don Plant and adjacent Simplot-owned land (the Simplot Plant Area), the former area of operation of the FMC Elemental Phosphorus Plant and adjacent FMC-owned land (the FMC Plant Area), and land surrounding the Simplot and FMC Plant Areas that may have been impacted by releases from the two facilities (Offplant Area; see Figure 1-1).

Figure 1-1 EMF Superfund Site Location Map



The EMF Site was placed on the National Priorities List (NPL) in 1991. The Remedial Investigation (RI) Report was completed in 1996 (Bechtel, 1996), the Feasibility Study (FS) Reports for each of the Site areas were completed in 1997 (Bechtel, 1997, MFG, 1997a, 1997b) and EPA issued the Record of Decision in 1998 (EPA, 1998). Remedial design/remedial action (RD/RA) consent decrees that included actions in the Offplant Area were signed by both Simplot and FMC, however, they were not signed by the Environmental Protection Agency (EPA) due to challenges by the Shoshone-Bannock Tribes. Currently Simplot is in the process of implementing an RD/RA consent decree for the Simplot Plant Area (signed in 2002) and FMC is performing a supplemental RI/FS. No actions have been taken in the Offplant Area.

Recently a series of meetings have been held between the EPA, Idaho Department of Environmental Quality (IDEQ), Shoshone-Bannock Tribes, Simplot and FMC to identify and resolve issues associated with the Offplant Area. These include EPA concerns with fluoride, particularly with the Ecological Risk Assessment (ERA), which was prepared by Ecology & Environment (E&E), on behalf of EPA, in 1995.

This report has been prepared to provide a summary of historical summaries and associated data and findings to help develop a common understanding of existing information related to fluoride in the Offplant Area. A re-evaluation of ecological risks using both RI data and additional data collected since 1995 will be performed as the next step to determine whether changes in risk assessment methodology and knowledge since 1995 alters the fundamental findings of the ERA or raises new issues. That re-evaluation will provide the basis for scoping of any future sampling needed to fill data gaps.

2.0 Background Information

2.1 Don Plant Process and Fluoride Balance

The Don Plant uses the wet process of phosphoric acid production. Phosphate ore is reacted with sulfuric acid to form phosphoric acid and gypsum. In general, there are two methods to make phosphoric acid by the wet process: Hemi-hydrate (HH) and Di-hydrate (DH). The name of the method determines the quantity of water associated with the gypsum produced. In the HH process, the gypsum has ½ mole of water attached to the gypsum, while the DH process has 2 moles of water attached.

The wet process used at the Don Plant is the DH method. The DH method has many advantages, including no phosphate rock quality limitations, high on-line time, low operating temperature, and use of wet rock. Some disadvantages are relatively weak product acid, high consequent downstream energy requirements (steam for concentrating), and phosphate losses co-crystallized within the gypsum.

Phosphate ore is in the form of a fluoro-apatite and has the following general chemical formula:

- **$(Ca, Na_2, Mg)_{10} (PO_4)_{6-x} (CO3)_x F_y (F, OH)_{2-y}$**

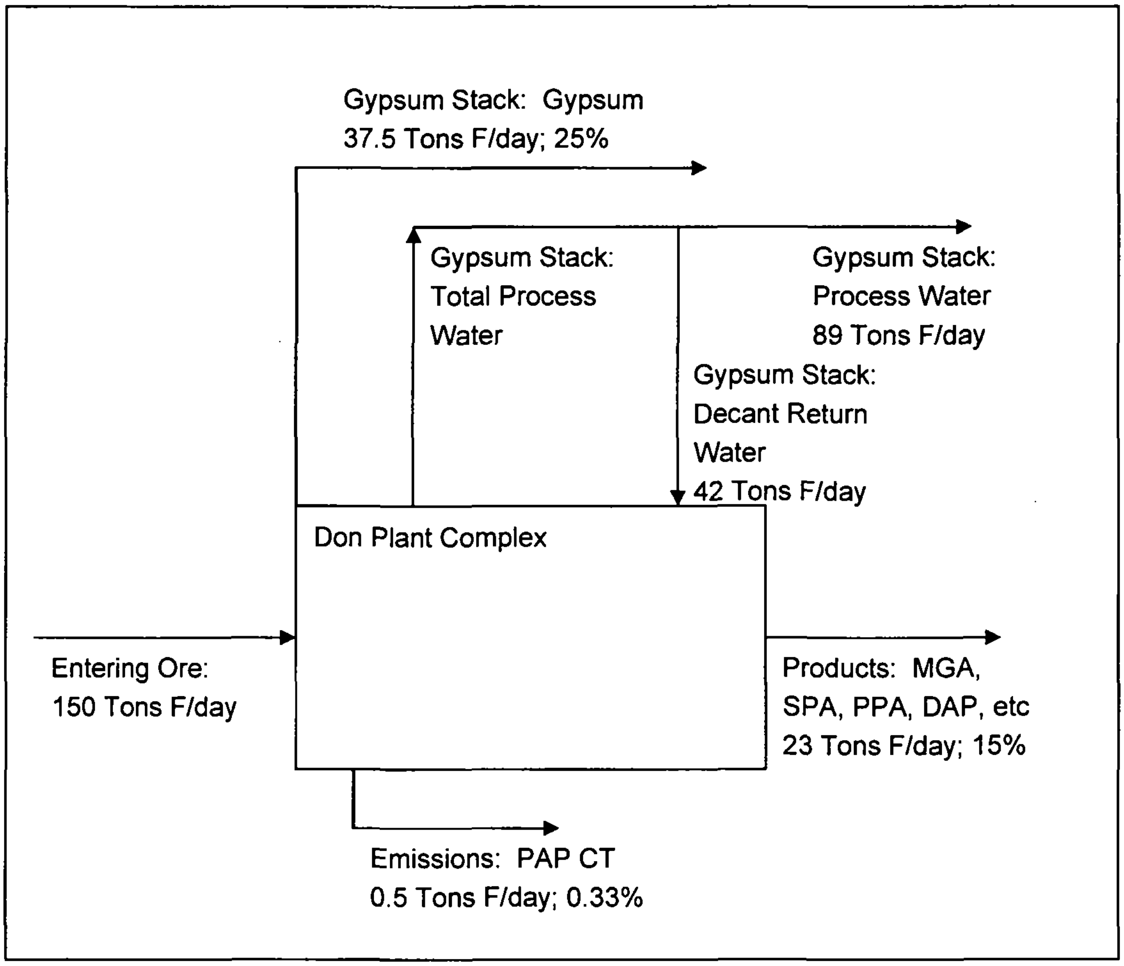
Where x & y are various values depending on the ore quality & impurity content. Don Plant ore contains approximately 3.1% fluoride by weight. The simplified reaction chemistry is

- **$Ca_3(PO_4)_2 (s) + 3 H_2SO_4 (l) + 6 H_2O (l) \rightarrow 2 H_3PO_4 (l) + 3 CaSO_4 * 2 H_2O (s)$**
  Phosphate Ore + Sulfuric Acid + Water → Phosphoric Acid + Gypsum di-hydrate

As described above, fluoride is contained in the incoming phosphate ore. Based on an average dry ore input to the Don Plant process of 4,829 tons per day and average fluoride content of 3.1%, it is estimated that 150 tons of fluoride are input to the process per day. The general fate of the fluoride entering the process is shown on Figure 2-1. The majority reports to the gypsum stack (a total of 126.5 tons per day). A small portion (0.003 tons per day) is estimated to be emitted to the air from the stack and 0.002 tons per day is estimated to migrate away from the stack in groundwater. There are no other migration pathways from the stack and therefore it is estimated that the vast majority of the fluoride that reports to the stack is either retained in the solid gypsum or precipitates in the underlying soils.

Approximately 23 tons of fluoride is estimated to report to products and 0.5 tons per day emitted from the process into the air, primarily from the reclaim cooling towers in the Phosphoric Acid Plant. More information on emissions is provided in Section 2.2.

Figure 2-1 Don Plant Fluoride Balance



2.2 Don Plant Fluoride Emissions

A detailed emission inventory was developed for the Don Plant during the Superfund RI. The inventory for fluoride is provided in Appendix A. As shown, the majority of Don Plant fluoride emissions (approximately 90%) are from the reclaim cooling towers in the Phosphoric Acid Plant.

Under the Clean Air Act, Simplot routinely performs emissions testing. Table 2-1 shows the estimated annual fluoride emissions for the period 2002 to 2007. The results confirm that the reclaim cooling towers continue to be the primary emission point for fluoride from the process.

Table 2-1 Don Plant Annual Fluoride Emissions 2002 – 2007

Facility		Granulation I	Granulation II	Granulation III	400 Phos. Acid	Super Phos. Acid	Cooling Towers	Total (tons/yr)
Year								
2002								
	lb/hr	0.1	2.22	0.2	0.08	0.005	16.99	
	hours	6198	5682	4514	8366	8400	8400	
	tons/yr	0.31	6.31	0.45	0.33	0.02	71.36	78.78
2003								
	lb/hr	0.04	0.19	0.62	0.28	0.035	9.21	
	hours	5945	6236	3848	8246	8400	8400	
	tons/yr	0.12	0.59	1.19	1.15	0.15	38.68	41.89
2004								
	lb/hr	0.15	0.1	3.52	0.27	0.001	28.51	
	hours	6360	6011	4518	8463	8400	8400	
	tons/yr	0.48	0.30	7.95	1.14	0.00	119.74	129.62
2005								
	lb/hr	0.11	0.11	0.25	0.31	0.003	26.53	
	hours	6470	6349	4648	8500	8400	8400	
	tons/yr	0.36	0.35	0.58	1.32	0.01	111.43	114.04
2006								
	lb/hr	0.24	0.08	0.25	0.17	0.003	22.3	
	hours	6444	6126	6126	8689	8400	8400	
	tons/yr	0.77	0.25	0.77	0.74	0.01	93.66	96.20
2007								
	lb/hr	0.06	0.04	0.24	0.084	0.015	35.5	
	hours	6352	6050	6050	8591	8400	8400	
	tons/yr	0.19	0.12	0.73	0.36	0.06	149.10	150.56

2.3 Regulatory History

The State of Idaho has regulated fluoride emissions from the Don Plant for more than three decades. Initial regulations governing fluoride emissions from phosphate fertilizer plants were put in place in 1972. These regulations specified a total fluoride emission rate (per ton of P_2O_5 input) for the facility and required source specific permit limits for the following sources: wet phosphoric acid plants, super phosphoric acid production, diammonium phosphate production and triple super phosphate (mono calcium phosphate) production. The purpose of the rules was to:[1]

> "...prevent the emission of fluorides such that the accumulation of fluorine in feed and forage for livestock does not exceed the safe limits specified below."

[1] IDAPA 58.01.01.750.

The rules also provided for a program of fluoride sampling of potential grazing areas and alfalfa growing areas.

The rules also established an air quality standard for fluoride:[2]

> "Primary and secondary air quality standards are those concentrations in the ambient air which result in a total fluoride content in vegetation used for feed and forage of no more than:..."

The rule then specifies numerical values for an annual standard, bimonthly standard, and a monthly standard which are intended to prevent fluorosis in livestock. The Idaho fluoride in forage standard was based on work performed by J.W. Suttie from the University of Wisconsin. The standards adopted by the State of Idaho in 1972 were set out by Dr. Suttie in an article published in the Air Pollution Control Association Journal in 1969 titled "Air Quality Standards for the Protection of Farm Animals from Fluorides". The article concluded that an annual standard of 40 ppm fluoride in forage would be appropriate to protect domestic livestock (cattle being the most susceptible) from chronic effects (loss of milk production and severe dental fluorosis). Further since developing teeth may be adversely influenced by short periods of higher exposure, it was concluded that the standard should contain a provision that limits both the extent and duration of time that higher concentrations may be tolerated even though they are balanced by lower values at other months. To this end, limits of 60 ppm for two consecutive months and 80 ppm for one month were established.

The Don Plant has had specific State of Idaho issued permit limits and requirements for fluoride emissions at least since 1980.[3] The 1980 permit contained emission limits for: calciners, wet phosphoric acid plants, monoammonium phosphate plant, diammonium phosphate plant, and triple super phosphate plant. Over the years, additional limits and requirements have been placed by the State of Idaho in air permits for the Don Plant. As an example, the Don Plant took over the fluoride forage annual study, which for a number of years was performed by the State of Idaho.

The current air permit for the Don Plant (Tier I – Title V permit) also incorporates standards put in place by EPA under National Emission Standards for Hazardous Air Pollutants programs.[4] EPA issued a final rule in 1999 that regulates emissions of hydrogen fluoride from phosphoric acid manufacturing and phosphate fertilizers production.

[2] IDAPA 58.01.01.577.06
[3] Limits may have existed in permits issued before 1980; the earliest permit in Simplot's records is 1980.
[4] 40 CFR 63.600 and 40 CFR 63.620.

2.4 Fluoride Studies and Evaluations

A variety of studies and evaluations have been performed since the early 1970s to quantity emissions of fluoride from the Don Plant and to measure and assess the effects on the surrounding environment. The principal of these are:

Superfund RI: An extensive study including collection of air samples daily for one year at seven locations and analysis for a large suite of inorganic compounds including particulate and gaseous fluoride. A detailed emission inventory was developed and dispersion modeling performed. In addition, soil, vegetation, small mammals, groundwater, surface water, and sediment samples were collected throughout the area to support human health and ecological risk assessments. The pertinent investigations and findings are summarized in Section 3.

Ongoing Emissions Monitoring: As required by the current air permit, Simplot performs stack testing of the principal emission points for fluoride on a routine basis.

Forage Vegetation Sampling: As required by the current air permit, Simplot collects samples of forage vegetation at a minimum of 15 (and up to 17) locations, biweekly during the growing season and analyses them for total fluoride. See Section 4 for details.

Fluoride Deposition Modeling: To support development of the current forage sampling program, Simplot performed fluoride deposition modeling in 2004 (MFG, 2004). This was used to assess the effect of on-going emissions on fluoride levels in forage vegetation and to support development of the current monitoring plan. See Section 5 for details.

3.0 Remedial Investigation Findings for Fluoride

This section provides a summary of the portions of the RI that are pertinent to Offplant Area fluoride issues. Overall, the investigation was extensive, entailing collection of air, soil, vegetation, small mammals, groundwater, surface water and sediments throughout the Site (primarily within 3 miles from the Don Plant and FMC facilities, but with additional sampling beyond that distance to identify background levels and reference conditions).

3.1 Air

3.1.1 Source Inventory

A detailed emission inventory was developed, including stack and fugitive emissions from the Simplot and FMC facilities and from the BAPCO operation. The fluoride emission inventory is provided in Appendix A. As shown, the largest sources of fluoride at the Don Plant are the reclaim cooling towers (approximately 90% of the total emissions). This is still the case, as shown by the results of on-going stack testing (see Section 2.2). Fugitive emissions are relatively minor compared with stack emissions.

3.1.2 Air Monitoring

Over 3,600 air quality samples were collected from October 2, 1993 through October 31, 1994, as part of the RI. The purpose of the air monitoring program was to characterize impacts on ambient air quality by air emissions from the Simplot and FMC facilities (FMC was operating at the time), and to obtain data to evaluate an atmospheric dispersion model of emissions from the facilities.

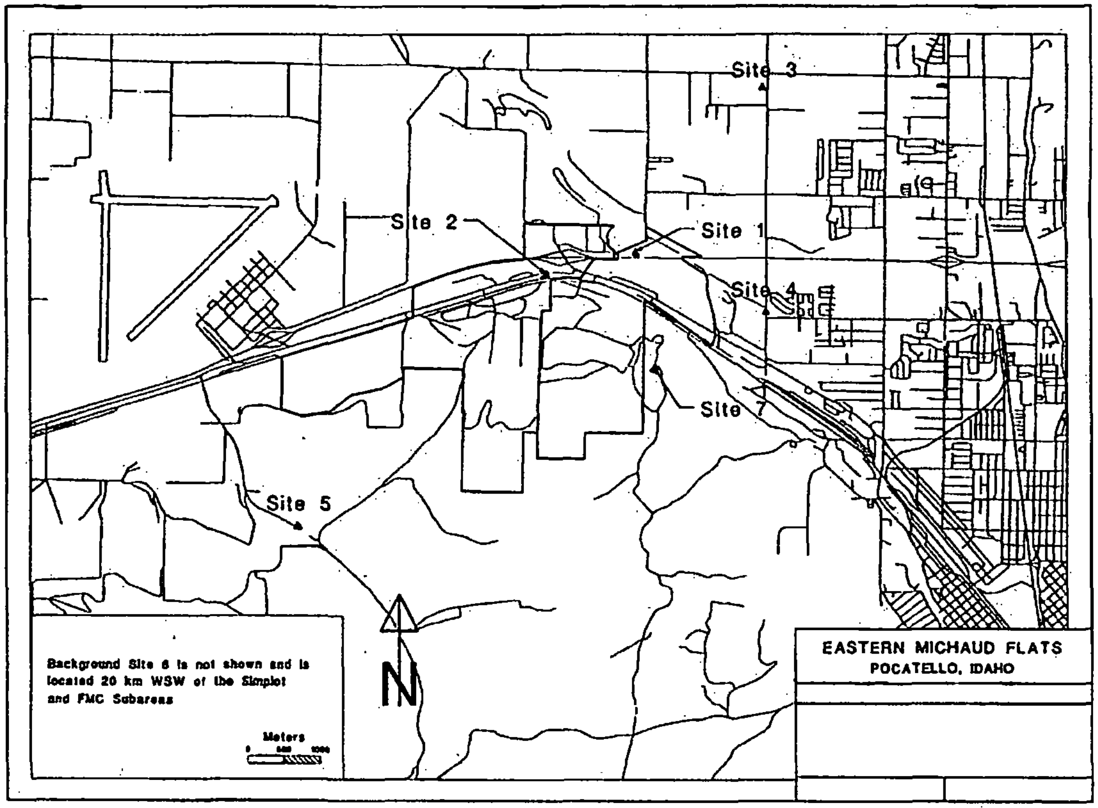
Ambient air samples were collected at seven sites (see Figure 3-1). Three "perimeter" sites (Sites 1, 2, 7) were located near the fenceline of the active facilities. Sites 3, 4, and 5, referred to as "community" sites, were located between one to three miles in the prevailing downwind direction from the operation areas. Site 6, the background site, was located twelve miles from the EMF facilities in an area that is predominantly upwind from the facilities. Continuous meteorological measurements were made at heights of 10 meters at Site 7 and approximately 19 meters at Site 1.

Sample types included:

- Particulate matter less than 10 micrometers diameter (PM10) collected with high-volume (hi- vol) samplers
- Total suspended particulate (TSP) collected with hi-vol samplers
- Continuous low-volume (lo-vol) sampling for total suspended particulate collected with lo-vol samplers

- Crystalline silica (through April 30, 1994)
- Gaseous/particulate fluorides (through April 30, 1994)

Figure 3-1 Remedial Investigation Air Monitoring Locations



Samples were analyzed for a range of parameters, including metals, radionuclides, silica and gaseous and particulate fluoride.

Particulate fluorides were analyzed on two types of samplers: (1) TSP filters and (2) NIOSH method 7902, which uses 37-mm filters. Detection levels for particulate fluoride in TSP blanks were 1.3 μg/m3, whereas the NIOSH sample blanks had a detection level of about 50 μg/m3. Low levels of particulate fluorides (i.e., 1–7 μg/m3) were detected at all sites on TSP filters, whereas particulate fluorides were detected only occasionally on the 37-mm NIOSH cassettes and at comparatively higher concentrations (i.e., 50–200 μ g/m3) when compared with co-located TSP samples.

Gaseous fluoride samples were collected at four sites (Sites 1, 2, 6, and 7). The detection limit for gaseous fluorides was 0.1 μg/m3. Gaseous fluoride concentrations detected during the monitoring program ranged from not detected to a maximum concentration of 8.7 μg/m3 at Site 7 on March 21, 1994.

Total fluoride concentrations were calculated as the sum of gaseous fluoride concentrations and particulate fluoride concentrations. Concentrations of total fluorides ranged from not detected to a maximum concentration of 13.1 μg/m3 at Site 1 on March 19, 1994.

3.1.3 Air Dispersion Modeling

A detailed dispersion modeling effort was performed using the emission inventory, meteorological data, and the ambient air monitoring data described above. Atmospheric dispersion modeling provides Site-specific characterization information that monitoring data alone cannot provide. Modeling techniques permit estimation of constituent concentrations in ambient air over a wide area and on all days within the study period. Consequently, modeled estimates of constituent concentrations can be made for areas where monitoring stations were not placed. The resulting model provided the means to reliably predict the levels of Site-related constituents in air across the EMF Site study area.

The model calculated the impact on average annual air quality from typical emissions from the FMC and Simplot facilities, as well as from the facility operated by BAPCO on land within to the FMC Plant Area. BAPCO conducted asphalt batching, coke drying, and slag crushing and storage operations at this facility. BAPCO terminated these operations at this facility on March 31, 1995 and vacated the site by the second quarter of 1996. Several general findings of the modeling study provide a useful context for the discussion of impacts and sources in the Offplant Area:

- The isopleths exhibit, to varying degrees, a pattern similar to the shape of butterfly wings, with decreasing concentrations (or activities) spreading outwards from the common northern boundary of the industrial operations area of the FMC and Simplot plants. This pattern is typically elongated along the northwest axis, particularly for constituents that were emitted predominantly from point sources (i.e., cadmium, polonium-210, and total fluorides).

- The highest predicted average annual concentrations (or activities) for PM_{10}, TSP, total fluorides, metals and radionuclides occurred in an area within the FMC and Simplot Plant Areas, either between the fenceline of the industrial operations area and Highway 30 or along the right-of-way of Interstate 86 north of BAPCO. These points of maximum impact – as well as much of the area of elevated levels – occurred at undeveloped and unoccupied land. The highest predicted average annual constituent concentration (or activity) occurred at one of four model grid positions within this area, depending upon the specific constituent. Beyond these points of maximum predicted effects, predicted elevated constituent levels generally coincided with land that is owned by either FMC or Simplot.

- Air model predictions of ambient air quality were found to correlate well with monitoring data. The highest predicted annual concentrations when compared to the highest average concentrations recorded within the monitoring network were within the performance criteria specified by the EPA to judge model performance for 15 of the 18 constituents. The highest average annual, as well as the average annual predicted constituent levels at most monitoring sites (after addition of background levels) were within a factor of two of observed levels for PM10, TSP, total fluorides, arsenic, cadmium, lead-210, polonium-210, and uranium-234, -235, and -238. The average annual model predicted concentrations (or activities) of beryllium, radium-226 and -228, and thorium-232 were below detection levels, which was consistent with monitoring observations.

Table 3-1 lists the top 20 EMF sources that contributed total fluoride emissions at Sites 3, 4, 5, and 6.

Table 3-1 Modeled Source Contribution to Air Concentrations (Remedial Investigation)

	Site 1		Site 2		Site 3		Site 4	
Rank	***SrcName***	***(%)***	***SrcName***	***(%)***	***SrcName***	***(%)***	***SrcName***	***(%)***
1	gran1mg	9.54	orehand	17.41	h2ontwr	14.05	h2ontwr	20.66
2	spa	7.01	rdore	8.11	h2owtwr	13.82	h2oetwr	18.97
3	gran2tps	6.32	calc1	6.75	h2oetwr	13.21	h2owtwr	18.37
4	cv1_1	5.75	propbldg	5.89	cv2_1	5.48	gran3	3.21
5	calc2	4.71	calc2	5.21	cv1_1	5.34	gran2tgs	2.98
6	calc1	4.63	spa	4.69	gran2tgs	4.96	oversize	2.87
7	oversize	3.77	dischbh	4.41	gran3	3.92	cv1_1	2.75
8	dischbh	3.59	gran2tgs	4.22	gran1mg	3.41	cv2_1	2.47
9	gran3	3.59	grn2load	3.73	calc1	2.61	gran1mg	2.32
10	cv2_1	3.5	cv1_1	3.58	calc2	2.55	calc2	1.74
11	propbldg	2.82	furnace	2.94	oversize	2.25	calc1	1.73
12	h2ontwr	2.68	gran1mg	2.69	slag3	1.89	spa	1.66
13	grn1plnt	2.11	grn1load	2.56	dischbh	1.8	dischbh	1.26
14	orehand	2.09	grn1plnt	2.2	propbldg	1.65	slagpile	1.21
15	slagpile	2.06	slag3	1.67	spa	1.59	ngyppond	1.1
16	slag3	1.89	h2oetwr	1.4	slagpile	1.31	propbldg	1.07
17	h2oetwr	1.79	h2owtwr	1.38	furnace	1.1	slag3	1.02
18	gran1dry	1.75	dustsilo	1.35	cs1_1	1.09	mgyppond	0.88
19	h2owtwr	1.66	h2ontwr	1.28	cs1_2	1.08	orehand	0.7
20	furnace	1.64	ngyppond	1.23	orehand	1	furnace	0.67
Sum (%)	Top 20	72.9	Top 20	82.7	Top 20	84.1	Top 20	87.6
Conc ug/m3	All	0.48	All	1.6	All	0.18	All	0.39

	Site 5		Site 6		Site 7	
Rank	SrcName	(%)	SrcName	(%)	SrcName	(%)
1	h2owtwr	11.61	h2oetwr	16.3	h2oetwr	18.73
2	h2oetwr	11.22	h2owtwr	15.92	h2owtwr	18.18
3	h2ontwr	10.43	h2ontwr	13.49	h2ontwr	17.91
4	oversize	4.99	oversize	3.97	cv2_1	5.9
5	cv1_1	4.47	cv1_1	3.76	gran2tgs	4.08
6	gran1mg	1.2	cv2_1	3.45	cv1_1	3.76
7	cv2_1	3.81	gran2tgs	3.11	gran3	3.4
8	slagpile	3.23	gran3	2.8	oversize	2.3
9	calc2	3.22	gran1mg	2.77	mgyppond	2.21
10	slag3	3.19	calc2	2.6	gran1mg	2.08
11	calc1	3.17	calc1	2.57	calc1	1.65
12	gran2tgs	3.05	slag3	2.26	calc2	1.63
13	gran23	2.65	slagpile	218	dischbh	1.32
14	dischbh	2.13	dischbh	1.76	propbldg	1.05
15	rdpile	1.83	spa	1.62	ngyppond	0.95
16	propbldg	1.82	propbldg	1.54	spa	0.79
17	spa	1.56	rdpile	1.2	spagpile	0.78
18	furnace	1.28	furnace	1.06	cs1_1	0.69
19	rdpond	1.15	orehand	0.84	cs1_2	0.69
20	orehand	0.96	sunpond	0.73	cs2_1	0.65
Sum (%)	Top 20	80	Top 20	83.9	Top 20	88.7
Conc ug/m3	All	0.15	All	0.03	All	1.52

Notes: Percentages provided are the total EMF source contributions including BAPCO. Background and regional sources are not included.

Explanation:

calc1	FMC calciner #1	grn2load	Simplot Granulation #2 Loading
calc2	FMC calciner #2	h2oetwr	Simplot H2O Reclaim CT East
cs1_1	FMC calciner 1,1	h2ontwr	Simplot H2O Reclaim CT North
cs1_2	FMC calciner 1,2	h2owtwr	Simplot H2O Reclaim CT West
cs2_1	FMC calciner 2,1	mgyppond	Simplot M Gypsum Pond
cv1_1	FMC 1,1 Cooler Split	mngyppond	Simplot N Gypsum Pond
cv2_1	FMC 2,1 Cooler	orehand	FMC Ore Handling
dischbh	FMC Discharge Baghouses	oversize	FMC Oversized Ore
dustsilo	FMC Dust Silo Baghouse	propbldg	FMC Proportioning Bldg.
furnace	FMC Furnace Bldg.	rdore	FMC Roads Centered on Ore
gran1dry	Simplot Granulation #1 Dryer	rdpile	FMC Roads Centered on Slag Pile
gran1mg	Simplot Granulation #1 Rec./Gran	rdpond	FMC Roads Centered on Pond Area
gran2tgs	Simplot Granulation #2 TGS	slag3	BAPCO Slag 3
gran3	Simplot Granulation #3	slagpile	FMC Slag Pile
grn1load	Simplot Granulation #1 Loading	spa	Simplot SPA
grn1plnt	Simplot Granulation #1 Plant	sunpond	FMC Solar Drying Pond

For Site 3, the top 20 sources were predicted to be responsible for 84.1% of the predicted average annual total fluoride concentration at 0.18 ug/m^3. Point source emissions from the Simplot north, west and east water reclaim towers accounted for 41.1%; and point source emissions from the FMC numbers 1 and 2 calciners number 1 cooling vent accounted for 10.8%.

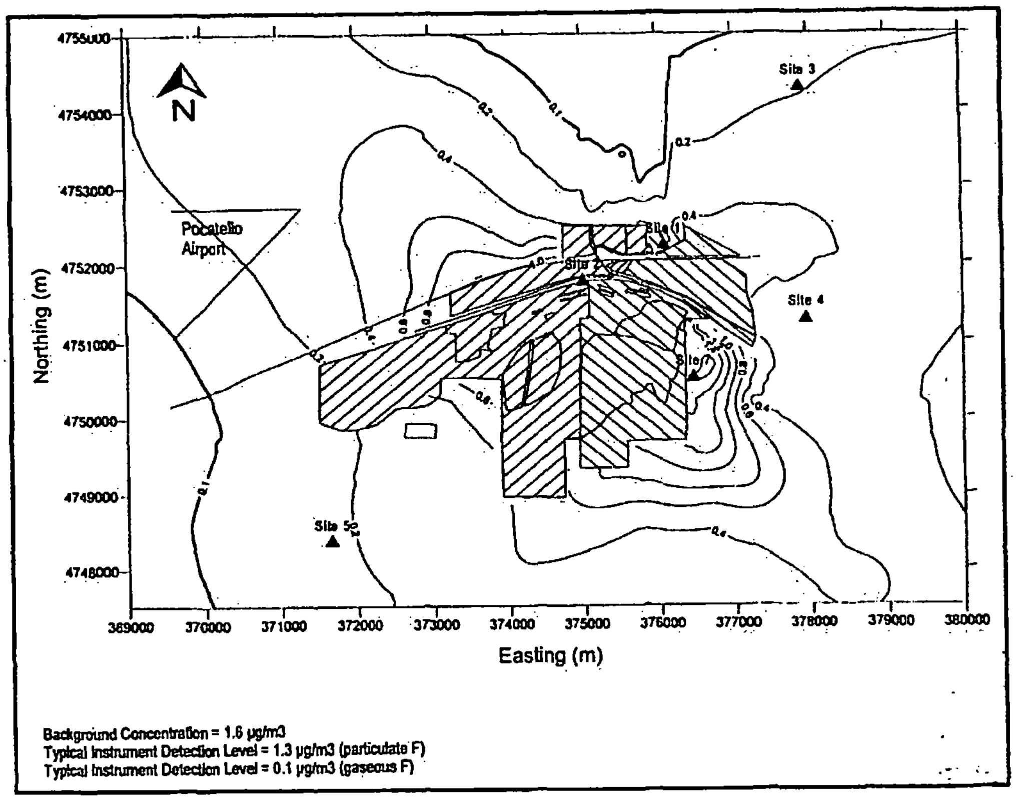
For Site 4, the top 20 sources were predicted to be responsible for 87.6% of the predicted average annual total fluoride concentration at 0.39 ug/m^3. Point source emissions from the Simplot north, west and east water reclaim towers accounted for 58%; point source emissions from the Simplot granulation 3 unit for 3.2%; and point source emissions from the Simplot "Granulation #2 TGS" unit accounted for 3%.

For Site 5, the top 20 sources were predicted to be responsible for 80% of the predicted average annual total fluoride concentration of 0.15 ug/m^3. Point source emissions from the Simplot north, west and east water reclaim towers accounted for 33.3% of this predicted concentration; fugitive emissions from the FMC oversized ore pile accounted for 5%; and point source emissions from the FMC #1 calciner #1 cooler vent accounted for 4.5%

EMF emission impacts at Site 6 were predicted to be 0.03 ug/m^3, which is well below both the EPA screening level (8.3 ug/m^3) and the instrument detection level (0.1 ug/m^3).

Total fluoride was predicted to occur above the instrument detection level over a large part of the modeling domain, as shown in Figure 3-2. However, the predicted concentrations were well below the EPA screening level. Predicted fluoride concentrations are overstated in elevated terrain, such as at Site 7.

Figure 3-2 Modeled Fluoride Concentrations in Air (Remedial Investigation)



3.2 Soils

Soil samples were collected from undisturbed areas along transects to three miles from the facilities. The measured fluoride concentrations in surface and subsurface soils in the Offplant Area are shown in Tables 3-2 and 3-3, respectively. The surface soil data are also shown on Figure 3-3. As shown, concentrations are highest to the north of the Simplot and FMC facilities and to the southwest of the FMC facility and decrease rapidly with distance from the facilities.

Table 3-2 Fluoride Concentrations in Surface Soil (Remedial Investigation)

Station ID	Concentration (mg/kg)	Station ID	Concentration (mg/kg)	Station ID	Concentration (mg/kg)
000-1C	2340	125-3A	443	248-4A	400
000-1D	940	130-3B	395	270-2A	593
000-2A	1290	135-2A	575	270-2B	530
000-2B	575	135-2B	515	270-2C	1900
000-2C	458	135-2C	300	270-3A	470
000-3A	438	135-3A	288	270-3B	420
000-3B	305	135-3B	355	293-1B01	7540
023-1C	1590	158-2B	418	293-1B04	4040
023-1D	1280	158-2C	353	293-1C	1130
023-2A	528	158-3A	360	293-1D	1900
023-2B	708	158-3B	450	293-2A	450
023-2C	468	158-4A	378	293-2B	708
023-3A	368	180-2B	433	293-2C	363
023-3B	448	180-2C	348	293-3A	370
045-1C	2820	180-3A	345	293-3B	480
045-1D	765	180-3B	390	315-1B	1740
045-2A	1300	180-4A	380	315-1C	568
045-2B	510	203-3A	555	315-1D	745
045-2C	793	203-3B	573	315-2A	513
045-3A	510	203-4A	561	315-2B	540
045-3B	475	205-3A	541	315-2C	259
068-2A	913	205-3B	732	315-3A	423
068-2B	685	205-4A	430	315-3B	352
068-2C	490	225-2A	1590	315-3B01	338
068-3A	670	225-2B	1680	315-3B02	450
068-3B	618	225-2C	438	315-3B03	450
090-2B	575	225-3A	1160	315-3B04	400
090-2C	495	225-3B	1150	338-2B	1720
090-3A	405	230-3A	668	338-1D	1150
090-3B	468	230-3B	681	338-2A	653
113-2A	1020	230-4A	597	338-1C	820
113-2B	733	240-3A	589	338-2C	540
113-3A	443	240-3B	538	338-3A	725
120-2C	445	248-3B	463	338-3B	1300

Figure 3-3 Fluoride Concentrations in Surface Soil (Remedial Investigation)

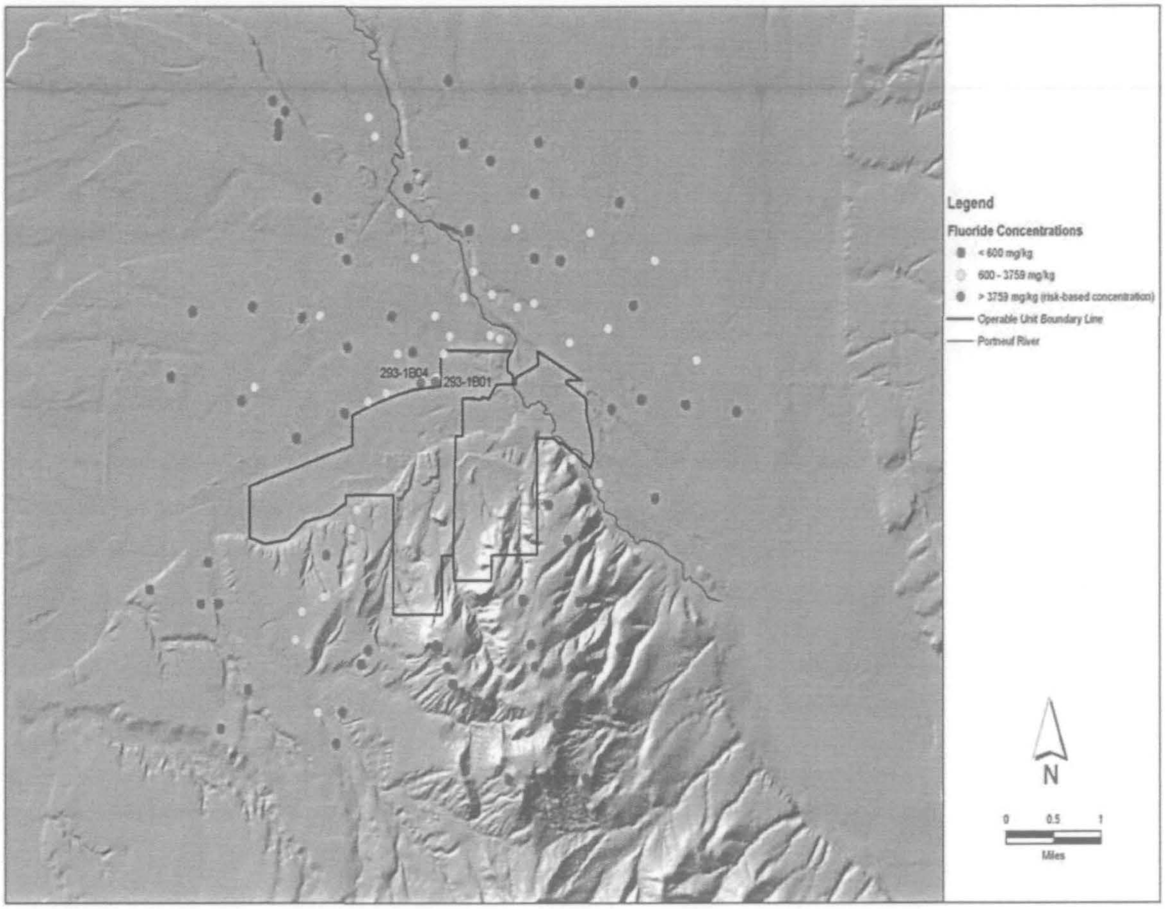


Table 3-3 Fluoride Concentrations in Subsurface Soil (Remedial Investigation)

Station ID	Concentration (mg/kg)	Station ID	Concentration (mg/kg)	Station ID	Concentration (mg/kg)
000-1C	403	130-3B	358	248-3B	425
000-2A	445	135-2A	438	248-4A	338
000-2B	408	135-2B	415	270-2A	343
000-2C	455	135-2C	455	270-3B	540
000-3A	383	135-3B	445	293-1B01	773
000-3B	360	158-2B	400	293-1C	423
023-2A	380	158-2C	483	293-1D	433
023-2B	463	158-3B	398	293-2A	358
023-2C	363	158-4A	443	293-2B	518
023-3A	390	180-3A	423	293-2C	257
023-3B	510	203-3A	391	293-3B	460
045-2A	448	203-3B	486	315-1B	458
045-2B	358	203-4A	401	315-1D	523
045-3A	413	205-3A	441	315-2A	395
045-3B	395	205-3B	567	315-2C	190
068-2A	388	205-4A	420	315-3A	510
068-2B	363	225-2A	438	315-3B	339
068-2C	237	225-2B	383	315-3B01	350
068-3A	360	225-2C	848	315-3B02	360
068-3B	393	225-3A	448	315-3B03	510
090-3A	333	225-3B	458	315-3B04	380
090-3B	360	230-3A	420	338-1D	423
113-2A	455	230-3B	516	338-2A	420
113-3A	315	230-4A	440	338-2C	888
120-2C	388	240-3A	477	338-3A	605
125-3A	403	240-3B	415	338-3B	1230

3.3 Groundwater

Groundwater from the Simplot and FMC Plant Areas discharges to the Portneuf River via springs and channel underflow in the reach between The Spring at Batiste Road and Batiste springs. A potentiometric map, showing general groundwater flow paths is provided as Figure 3-4.

Figure 3-4 Groundwater Potentiometric Map

Figure 3-5 shows the maximum fluoride concentration measured at each well in the Simplot Plant Area during the RI monitoring. As shown, concentrations were high in well 318 (immediately downgradient of the then-unlined East Overflow Pond) and were also elevated in well 320, to the north of the facility. At all other locations, concentrations were below the 4 mg/L maximum contaminant level (MCL). The unlined East Overflow Pond was taken out of use in 1994. As shown in Figure 3-6, fluoride concentrations in well 318 dropped from greater than 1,000 mg/L to around 10 mg/L by 2000. Fluoride was included to the analyte list in the routine quarterly sampling in 2000. As shown on Figure 3-7, the fluoride concentration in well 318 was the only one above the 4 mg/L MCL. Fluoride concentrations at Batiste Spring (where Site-affected groundwater discharges to the Portneuf River) have ranged from 0.3 to 0.6 mg/L (see Figure 3-8) within the range of background levels (0.4 to 0.8 mg/L). The data show that that transport of fluoride is not significant, with rapid attenuation away from sources attributed to the high calcium content of local soils and the low solubility of calcium fluoride. An example of this is provided in the fluoride balance shown in Section 2.2; although approximately 23 tons of fluoride reports to the gypsum stack per day, less than 0.002 tons per day is estimated to transport in groundwater immediately downgradient (see Appendix B).

Figure 3-5 Fluoride Concentrations in Groundwater (Remedial Investigation)

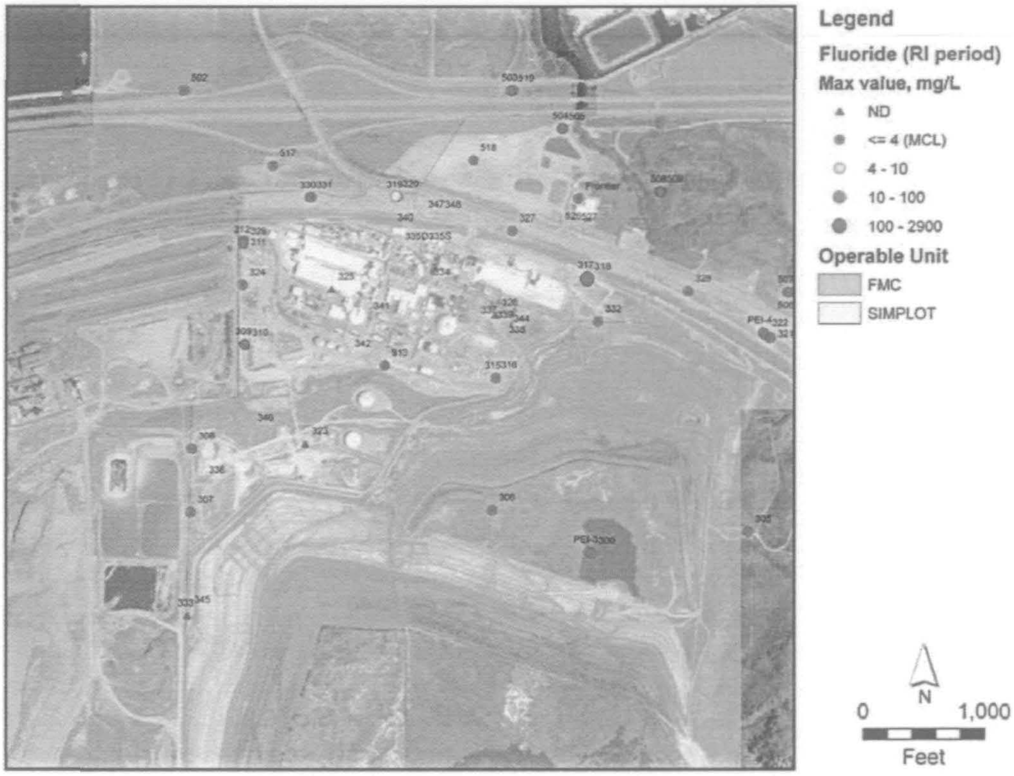


Figure 3-6 Fluoride Concentrations in Well 318

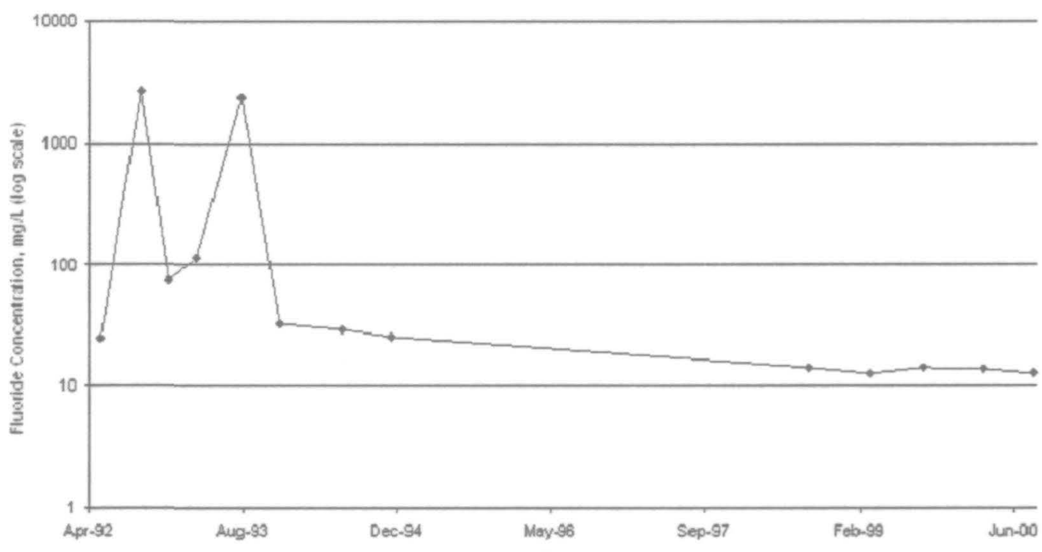


Figure 3-7 Fluoride Concentrations in Groundwater (2000)

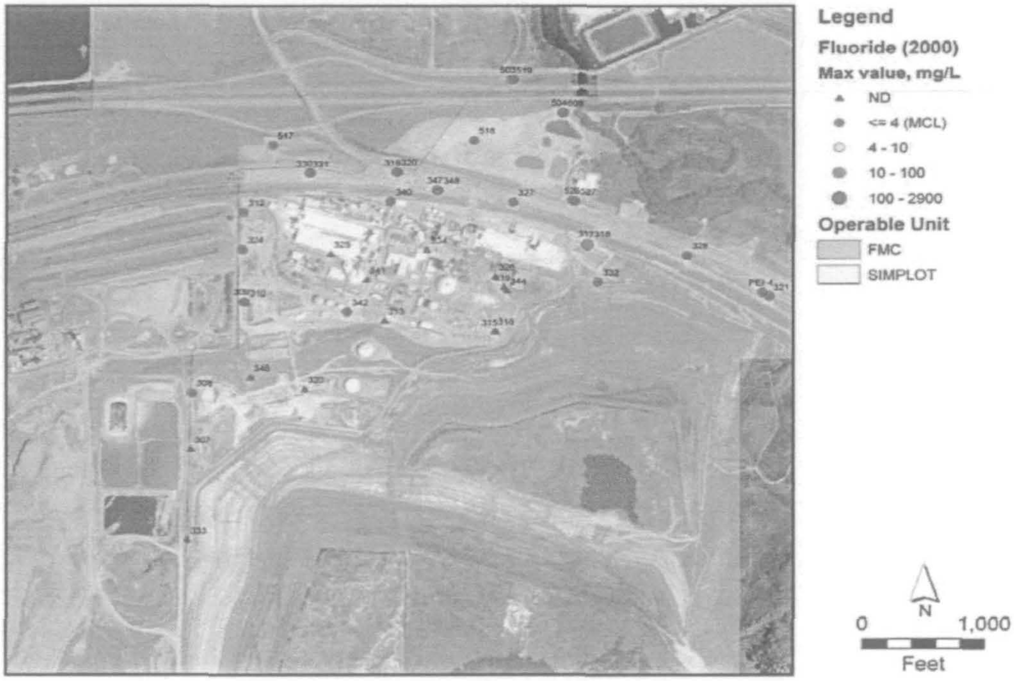
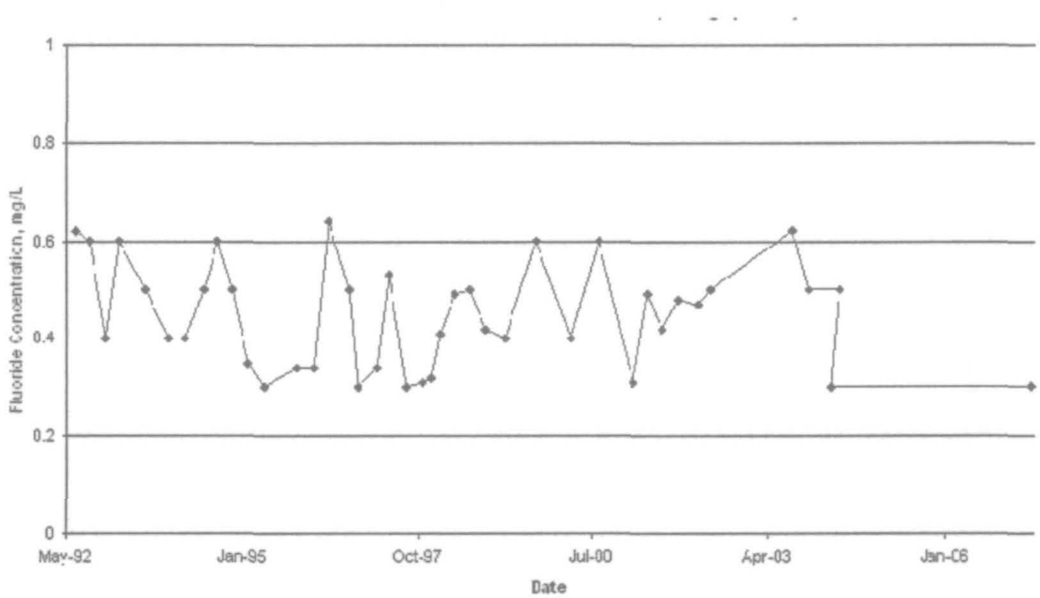


Figure 3-8 Fluoride Concentrations in Batiste Spring



3.4 Surface Water/Sediments

No significant transport pathway from the EMF Site to the Portneuf River was identified for fluoride by the RI. Extensive surface water and sediment sampling performed found no evidence of impacts from the EMF Site (see Tables 3-4 and 3-5 for surface water and sediment data, respectively, and Figures 3-9 and 3-10 for plots of these data). Sediments were sampled upstream and downstream of the Site.

Table 3-4 Fluoride Concentrations in Portneuf River Water Surface Samples (Remedial Investigation)

Sample ID	Concentration (mg/L)
OSW1	0.5
O210W01	0.4
O302W01	0.4
O304W01	0.3
OSW10	0.5
O210W10	0.3
O302W10	0.3
O304W10	0.3
OSW11	0.53
O210W11	0.5
O302W11	0.6
O304W11	0.6
OSW12	0.4
O210W12	0.3
O302W12	0.3
O304W12	0.4
O304W12E	0.4
OSW13	0.316
O210W13	0.3
O302W13	0.3
O304W13	0.4
OSW14	0.7
O210W14	0.5
O302W14	0.6
O304W14	0.4
OSW15	0.5
O210W15	0.5
O302W15	0.4
O304W15	0.5
OSW16	0.5
O210W16	0.3
O302W16A	0.3
O304W16	0.2
OSW17	0.7
O210W17	0.7
O304W17	0.5
O307W17A	0.4
O307W17D	0.4
O307W17E	0.4
O307W17F	0.3
O307W17G	0.3
O307W17H	0.3
O307W17I	0.3
O307W17J	0.3
O210W18	0.3
OSW19	0.386
O210W19	0.3
O302W19	0.2
O304W19	0.3
OSW2	0.72
O210W02	0.7
O302W02	0.7
O304W02	0.8
OSW20	0.386
O210W20A	0.3
O210W20A	0.3
O302W20	0.2
O304W20	0.3
OSW21	0.382
O210W21	0.3
O304W21	0.3
OSW22	0.356
O210W22	0.3
O302W22	0.2
O304W22	0.3
OSW23	0.332
O210W23	0.3
O302W23	0.3
O304W23A	0.3
OSW24	0.301
O302W24	0.2
O304W24	0.3
OSW25	0.303
O210W25	0.3
O302W25	0.2
O304W25	0.3
OSW3	0.5
O210W03A	0.4
O302W03	0.4
O304W03A	0.4
OSW4	0.8
O210W04	0.7
O302W04	0.7
O304W04	0.8
OSW5	0.6
O210W05	0.5
O302W05	0.5
O304W05	0.4
O304W05E	0.6
O304W05F	0.5
OSW6	0.6
O210W06	0.5
O302W06	0.5
O304W06	0.6
OSW7	0.6
O210W07	0.5
O302W07	0.5
O304W07	0.5
O304W07E	0.4
OSW8	0.5
O210W08	0.4
O302W08	0.4
O304W08	0.3
OSW9	0.42
O210W09	0.3

Sample ID	Concentration (mg/L)
O302W17	0.7

Sample ID	Concentration (mg/L)
O210W24	0.3

Sample ID	Concentration (mg/L)
O302W09A	0.4
O304W09	0.4

Table 3-5 Fluoride Concentrations in Portneuf River Sediment Samples (Remedial Investigation)

Sample ID	Concentration (mg/kg)	Location
SD01	443	Downstream of outfall
SD02	75.3	Downstream of outfall
SD03	220	Downstream of outfall
SD04	121	Downstream of outfall
SD05	265	Downstream of outfall
SD07	206	Downstream of outfall
SD08	237	Downstream of outfall
SD09	222	Downstream of outfall
SD10	420	Downstream of outfall
SD11	155	Downstream of outfall
SD12	189	Downstream of outfall
SD13	800	Downstream of outfall
SD14	89	Downstream of outfall
SD15	333	Downstream of outfall
SD16	273	Downstream of outfall
SD17	3080	Outfall location
SD17A	7760	Outfall location
SD17B	310	Outfall location
SD17C	230	Outfall location
SD18	240	Upstream of outfall
SD19	338	Upstream of outfall
SD20	149	Upstream of outfall
SD21	198	Upstream of outfall
SD22	500	Upstream of outfall
SD23	1300	Upstream of outfall
SD24	241	Upstream of outfall
SD25	193	Upstream of outfall
SDA1	460	Upstream of outfall
SDA2	390	Upstream of outfall
SDB1	505	Upstream of outfall
SDC1	550	Upstream of outfall
SDC2	410	Upstream of outfall
SDC4	340	Upstream of outfall

Figure 3-9 Fluoride Concentrations in Portneuf River Water (Remedial Investigation)

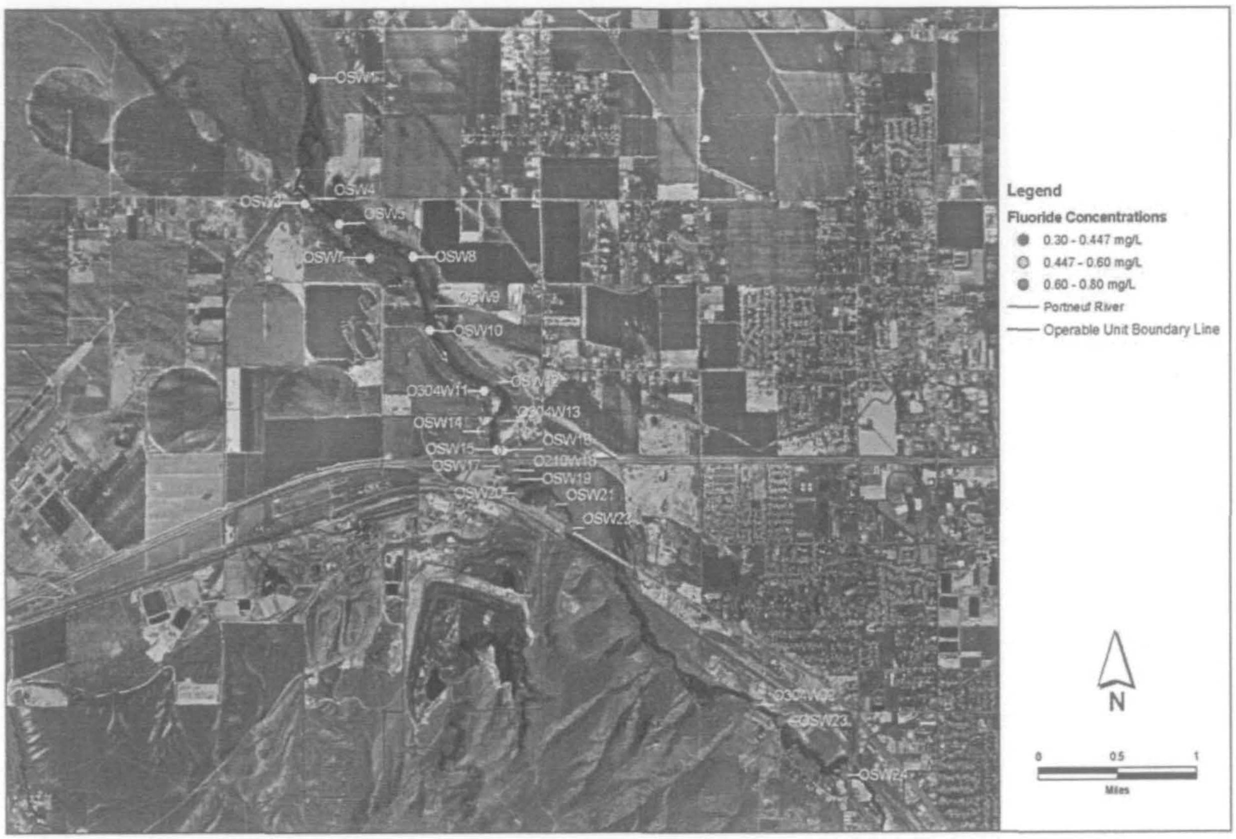
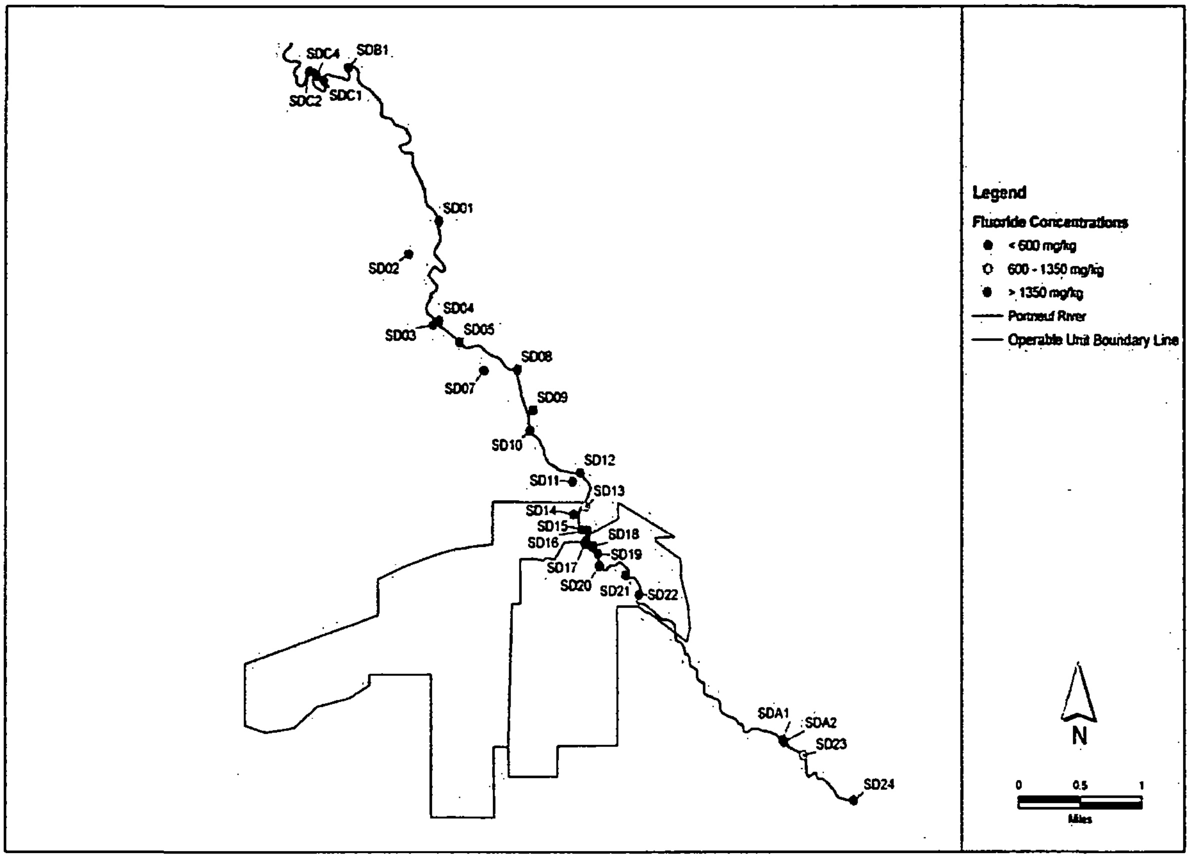


Figure 3-10 Fluoride Concentrations in Portneuf River Sediments (Remedial Investigation)



3.5 Ecological Assessment Sampling

As part of the Ecological Assessment Sampling effort of the RI, co-located samples of soil, sagebrush (*Artemesia tridentata*; leaves and petioles), thickspike wheatgrass (*Elymus lanceolatus*; leaves and stems), and small mammals (deer mouse; *Peromyscus maniculatus*; whole body and femur) were collected in sagebrush-steppe habitats, and co-located samples of soil and shrubs (Russian olive; *Elaeagnus angustifolia*; fruit) were collected in riparian habitats. Sagebrush samples were submitted as washed and unwashed. The samples were analyzed for cadmium, fluoride, and zinc. Results for samples collected in areas potentially affected by the EMF facilities (Bannock Hills SW sagebrush steppe, Michaud Flats sagebrush steppe, and Portneuf River riparian sites) were compared with results for samples from reference locations (Ferry Butte sagebrush steppe and Snake River riparian sites).

In addition, two separate investigations were conducted to assess the potential impacts of Site-related constituents detected in sediment samples. The first investigation focused on the Portneuf River delta located near the river's confluence with the American Falls reservoir. Concentrations measured in the Portneuf River sediment samples were compared to concentrations measured in samples collected from upstream locations, the nearby Snake River, and to ecological criteria. The second investigation involved the collection and analysis of additional sediment samples from the Portneuf River, both upstream and downstream from the IWW ditch outfall (see Section 3.4 for concentration data). Upstream samples were compared to downstream samples and to ecological criteria. Also, laboratory toxicity tests were conducted to assess whether constituents present in these samples could adversely impact aquatic ecological receptors.

Appendix C identifies Ecological Assessment sampling locations and Table 3-6 summarizes the additional fluoride results obtained during this sampling effort. Refer to Section 3.7 for a summary of the ERA.

Table 3-6 Summary of Ecological Assessment Sampling - Average Fluoride Results

Media		Sagebrush Steep Sampling Sites						Riparian Sampling Sites[1,2]			
		Bannock Hills		Michaud Flats		Ferry Butte (ref site)		Portneuf River		Snake River (ref site)	
		n	Fl (mg/kg)	n	Fl (mg/kg)	n	Fl (mg/kg)	n	Fl (mg/kg)	n	Fl (mg/kg)
Surface Soil		10	1454.0	10	1792.5	10	363.4	20	1072.0	20	244.5
Vegetation	Thickspike Wheatgrass	10	62.1	10	22.5	10	12.2	–	–	–	–
	Sagebrush (Unwashed)	20	74.2	20	51.6	20	<24	–	–	–	–
	Sagebrush (Washed)	20	<52.4*	20	<73.0*	20	<31.0*	–	–	–	–
	Russian Olive Fruit	–	–	–	–	–	–	20	<24*	20	<23.8*
Small Mammals	Deer mouse - whole body	10	128.5	10	90.9	10	6.8	–	–	–	–
	Deer mouse - femur	10	297.3	10	633.3	10	130.4	–	–	–	–
Surface Sediment		–	–	–	–	–	–	20	345.2	20	246.5

Notes:

Average fluoride concentrations in mg/kg; n= number of sampled locations.

* concentrations were below detection limit

(1) Sediments at IWW Ditch Outfall (and upstream/downstream Portneuf River sites) were also sampled for invertebrate toxicity tests, but are not included on this table.

(2) Includes both river channel and mudflat sites

Adapted from Appendix B in E&E, 1995. Ecological Risk Assessment, Eastern Michaud Flats Superfund Site, Pocatello, Idaho. Prepared for Environmental Protection Agency.

3.6 Human Health Risk Assessment

The human health risk assessment did not identify risks in the Offplant Area due to fluoride. Measured concentrations in air were below levels of concern. For soils fluoride was measured at a level about the Risk-Based Concentration (RBC) in just two of the 107 surface samples collected (see Figure 3-3). The locations of the samples were adjacent to the northern boundary of the FMC Plant Area in the Interstate 86 right-of-way, next to the area used by the City of Pocatello for sewage sludge application. In addition, samples collected at a depth of two feet at these locations contained concentrations of fluoride ranging from 405 to 773 mg/kg, demonstrating that the vertical extent is also limited.

3.7 Ecological Risk Assessment

This section provides a summary of the ERA prepared by E&E on behalf of EPA in 1995, especially as the results pertain to fluoride in the Offplant Area. The objective of the ERA was to evaluate the potential for risks to the natural environment from Site-related contamination. The ERA included problem formulation, ecological data acquisition and review, exposure assessment, ecological effects assessment, and risk characterization. The first phase of the ERA included problem formulation and identification of Chemicals of Potential Concern (COPCs) based on data collected as part of the RI efforts. The second phase of the ERA included additional ecological assessment sampling, which focused on COPCs of greatest ecological concern, and quantitative exposure assessment and risk characterization.

3.7.1 Site Description

The evaluation focused on the Michaud Flats and Bannock Hills, and the riverine/wetland habitats of the Portneuf River to where it discharges to the Fort Hall Bottoms area of the American Falls Reservoir (Appendix C; Figure 1-1).

3.7.2 Ecosystems Evaluated

The upland habitat of the Michaud Flats is dominated by sagebrush steppe communities and cultivated agricultural areas at lower elevations. Juniper woodlands and cliff/cave/canyon communities occur at higher elevations in the foothills of the Bannock Range. Groundwater discharges to numerous springs on the Michaud Flats. Well-developed aquatic wetland and riparian communities are also present in the vicinity of the Site. The Portneuf River, its associated wetlands and the Fort Hall Bottoms area are designated as wetlands by the National Wetland Inventory (NWI).

Wildlife typical of sagebrush steppe are abundant in the Site area and include small mammals such as the deer mouse (*Peromyscus maniculatus*), large herbivores such as the mule deer (*Odocoileus hemionus*), carnivores such as the coyote (*Canis latrans*), raptors such as the red-tailed hawk (*Buteo jamaicensis*), gallinaceous game birds such as the sage grouse (*Centrocercus urophasianus*), and numerous species of songbirds. The bald eagle (*Haliaeetus leucocephalus*) was the only species listed as threatened or endangered at the time of the evaluation (it was delisted in 2007). Common species of migratory birds that use the riverine and wetland ecosystems of the Portneuf River and American Falls Reservoir include waterfowl such as ducks, geese, and swans; colonial buds such as pelicans, herons, shorebirds, and gulls; and raptors.

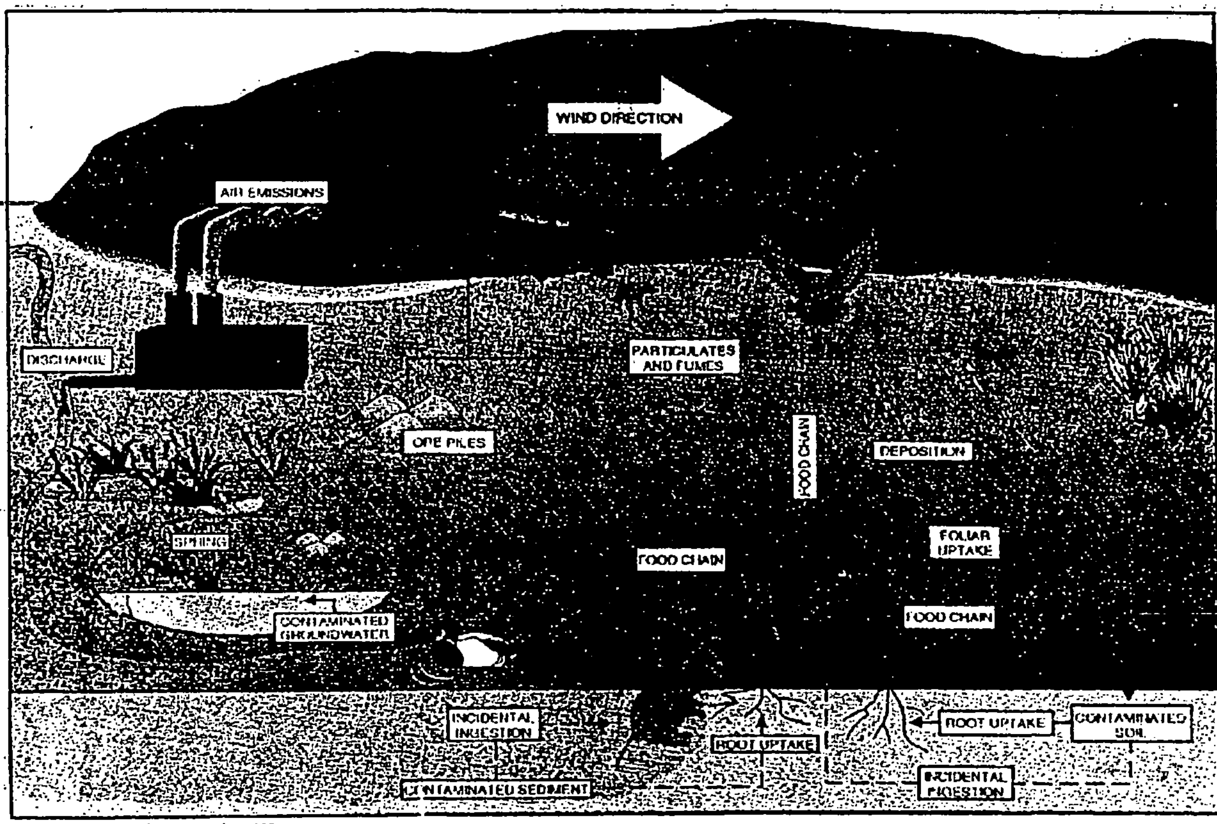
3.7.3 Conceptual Site Model

A graphical conceptual Site model (CSM) presented potential exposure pathways for ecological receptors (Figure 3-11). Sources and release mechanisms of COPCs were identified as

- air deposition to surface water, soil and vegetation;
- groundwater migration to surface water discharge points at springs or within channel of Portneuf River;
- surface water discharge at outfall or surface runoff to Portneuf River; and
- deposition of surface water contaminants to sediment.

Potential exposure routes to ecological receptors included direct ingestion of surface water, soil, and sediment; plant uptake from sediment and soil; inhalation of particulates and fumes; and indirect exposures via the food chain.

Figure 3-11 Ecological Conceptual Site Model



SOURCE: Ecology and Environment, Inc. 1995

3.7.4 Ecological Data

The risk evaluation was based on environmental data collected from 1992 to 1994 during the RI, and additional samples collected in 1994 to further support the ERA in accordance with an Ecological Assessment Work Plan (E&E, 1994). The RI sample results were used to identify COPCs, and a subset of those COPCs, those of greatest potential ecological significance, were identified and investigated further in the secondary phase of the ERA. Refer to Sections 3.1 to 3.5 in this report for a summary of the fluoride results from the RI and Ecological Assessment Sampling.

The specific objectives of the Ecological Assessment Sampling were to collect data to allow Site-specific estimates of bioavailability, uptake, food-chain transfer, and media toxicity of COPCs. The studies were designed to fill several data gaps, including:

- Concentration and bioavailability of COPCs in soil and sediment;
- COPC concentrations in vegetation and small mammals; and
- Toxicity to aquatic biota of sediment from the Portneuf River.

Additional studies were identified to fill data gaps, but these additional studies were not performed as they were not deemed necessary to complete the ERA and make conclusions about the potential for risk from Site-related contaminants.

An evaluation of RI data usability was performed by comparing quantitation limits to ecological risk-based criteria. Although the detection limits of some of the chemical analyses exceeded the available criteria, the detection limits were considered suitable for use in the risk evaluation and adequate to evaluate severe effects. An evaluation of data usability of the ecological sampling results was also performed in accordance with EPA guidance. Any J-flagged (estimated) results were used, but R-flagged (rejected) results were excluded from the evaluation. In most cases the quantitation levels of the analyses were suitable for use in the risk evaluation, with two exceptions: Russian olive fruit and washed sagebrush foliage. The laboratory's MDL was approximately five times greater than the requested quantitation limit of 10 mg/kg for both sample types, and fluoride was reported as not detected in the samples. Consequently, for the use in the ERA, fluoride concentrations were assigned as one-half of the MDL for the washed sagebrush foliage samples and the Russian olive samples.

3.7.5 Chemicals of Potential Concern (COPCs)

COPCs were identified by comparing concentration results obtained during RI sampling to local background concentrations and derived risk-based standards based on potential toxicity to plants, wildlife, and aquatic life. The screening criteria for fluoride are listed on Table 3-7.

Table 3-7 Fluoride Screening Criteria used in Ecological Risk Assessment[1]

Media	Background	Ecological Concern Levels	Source	Fluoride Criteria
Soil	Off-Site shallow subsurface borings	Phytotoxicity guidelines	Kabata-Pendias and Pendias 1992[2]	200/500 mg/kg
Surface Water	Upstream surface water; upgradient groundwater	EPA Ambient Water Quality Criteria	EPA 1986, 1994	NA
		Derived criteria	Various authors[3]	2.63 mg/L
Sediment	Upstream sediments	Ontario Ministry of Environment Sediment Quality Guidelines	Persaud *et al.* 1993	NA

Notes:

(1) Screening criteria were compared to RI (1992-1994) data to guide additional Ecological Assessment Sampling.

(2) Lower/upper phytotoxicity reference value

(3) EA Engineering, Science and Technology, Inc., 1993 for barium; Eisler 1990 for boron; Diamond *et. al.* 1992 for cobalt; Camargo and Tarazano 1991 for fluoride; Schweiger 1957 for manganese; EPA AQUIRE database for molybdenum, sodium, vanadium; Peterson and Nebeker 1992 for dissolved selenium; IAEA 1992 and NCRP 1991 for radionuclides - refer to E&E 1995 for full citations

Adapted from Table 2-4 in E&E, 1995. Ecological Risk Assessment, Eastern Michaud Flats Superfund Site, Pocatello, Idaho. Prepared for Environmental Protection Agency.

Surface water results were screened using EPA Ambient Water Quality Criteria (AWQCs) or applicable derived literature values (Table 3-7). Surface water concentrations were also compared to maximum background levels measured at upstream locations (i.e., upgradient of and adjacent to City of Pocatello). Groundwater background results were also used to identify COPCs for surface water, since groundwater seeps provide significant flow for springs and the Portneuf River.

Sediments were screened using Canadian sediment quality guidelines (Ontario Ministry of the Environment [OME]) derived for the Great Lakes Region as a tool to identify sediment COPCs at the Site (Persaud et al. 1993). The lowest-effects-level (LEL), or level of contamination that has no effect on the majority of sediment dwelling organisms, was used as the screening criteria. Sediment concentrations were also compared to maximum background levels measured at upstream locations.

Offplant soils were screened using international phytotoxicity standards from Kabata-Pendias and Pendias (1992) for metals. Phytotoxicity values were considered protective of other terrestrial organisms because the values were generally below No-Observable-Adverse-Effects-Levels (NOAELs) for wildlife. Soil concentrations were also compared to background levels developed in the RI.

3.7.6 Ecological Assessment Sampling Results

Soil and Tissue Fluoride Concentrations

Additional data collected during Ecological Assessment Sampling (and summarized in Section 3.5) provided supplemental information about concentrations of COPCs, including fluoride, in tissue and soils.

In summary, fluoride levels in surface soils were found to be greater near the FMC and Simplot facilities than at reference sites in both sagebrush steppe habitat and riparian habitats. Fluoride was elevated in both washed and unwashed vegetation at the Bannock Hills and Michaud Flats sampling locations when compared to concentrations from reference areas. No comparisons of washed sagebrush concentrations were available for fluoride at any location due to elevated detection limits. Fluoride concentration of whole body small mammal tissues were elevated at both the Bannock Hills and Michaud Flats sites. Fluoride in mouse femurs was also elevated in the Offplant Area sampling locations versus the reference area.

Portneuf River Delta Sediment Study

Additional sediment samples were collected from the Portneuf River and Snake River deltas during the October 1994 Portneuf River delta study. The complete data set for the study is presented in Appendix B of the ERA. Based on comparison to background levels, reference Site concentrations, and ecological benchmarks, the study concluded that only cadmium was a COPC in sediments. The results of SEM/AVS studies on the sediments indicated that cadmium is not bioavailable.

IWW Ditch Outfall Sediment Toxicity Tests

Toxicity tests were conducted with Portneuf River sediment collected near the IWW ditch outfall. This was a small drainage ditch transporting noncontact cooling waters above ground about 500 m from the FMC facility aeration device to an underground pipe, and was eventually discharged into the Portneuf River. Maximum water flow in the ditch was less than 10 cubic feet per second. Seasonally, the ditch had lush annual and perennial vegetation growing along its margins.

Two benthic invertebrate species, amphipod *Hyallela azteca* and the midge *Chironomus tentans*, were tested in 10 day exposures to contaminated and uncontaminated control sediment. Neither species' growth or survival was adversely affected. No toxicity to the organisms was observed, even though cadmium levels in sediment near the outfall were greater than those in Portneuf River delta sediment. Previous studies of benthic life in the Portneuf River have also indicated that impacts of the Site are negligible. The toxicological studies suggest that cadmium is not bioavailable and the likelihood of adverse effects of cadmium on benthic life in the Portneuf River was considered low.

3.7.7 Exposure Assessment

An exposure assessment was performed to estimate potential rates of exposure from COPCs to terrestrial, riparian, and aquatic ecological receptors of concern. The potential Site related exposure of terrestrial plants and wildlife to cadmium, fluoride, and zinc and exposure of aquatic and semi-aquatic birds and mammals to cadmium in river delta sediment was quantitatively evaluated.

Exposure Receptors and Scenarios

The following terrestrial receptors of concern in sagebrush steppe habitat were selected for evaluation as assessment endpoint species:

- shrubs (big sagebrush),
- grasses (thickspike wheatgrass);
- mammalian carnivores (coyote),
- small mammals (deer mouse),
- large herbivorous mammals (mule deer),
- upland game birds (sage grouse),
- raptors (red-tailed hawk), and
- songbirds (horned lark).

The following riparian receptors of concern were selected for evaluation as assessment endpoint species:

- shrubs (Russian olive);
- songbirds (cedar waxwing).

The following river delta habitat receptors of concern were selected for evaluation as assessment endpoint species:

- waterfowl (mallard),

- shorebirds (spotted sandpiper), and
- semi-aquatic herbivorous mammals (muskrat).

The measurement endpoint species identified were selections of individual representative species from each functional group listed above. Thickspike wheatgrass, sagebrush, Russian olive, deer mouse, sage grouse, mule deer, red-tailed hawk, coyote, cedar waxwing and horned lark were selected as the measurement endpoint species for terrestrial habitats. For aquatic habitats, the mallard, spotted sandpiper, and muskrat were selected as the measurement endpoint species. Both the assessment and measurement endpoints are described in more detail in the ERA.

Table 3-8 shows the exposure scenarios used in the terrestrial portion of the risk assessment. Pathways of exposure included root and foliar uptake for plant receptors and incidental soil ingestion and food ingestion (small mammals or plant tissues) for vertebrate receptors.

Table 3-8 Exposure Scenarios used in Ecological Risk Assessment

Assessment Endpoint Species/ Functional Group	Measurement Endpoint Species	Exposure Media	Potentially Important Exposure Routes
Sagebrush Steppe Habitat			
Shrubs	Big sagebrush	Soil	Root uptake
		Air	Foliar uptake
Grasses	Thickspike wheatgrass	Soil	Root uptake
		Air	Foliar uptake
Mammalian Carnivores	Coyote	Soil	Incidental ingestion
		Small mammals	Dietary
Upland Game Birds	Sage grouse	Soil	Incidental ingestion
		Sagebrush foliage and forbs	Dietary
Raptors	Red-tailed hawk	Soil	Incidental ingestion
		Small mammals	Dietary
Songbirds	Horned lark	Soil	Incidental ingestion
		Seeds of grasses and shrubs	Dietary
Small Mammals	Deer mouse	Soil	Incidental ingestion
		Seeds, foliage of grasses and shrubs	Dietary

Assessment Endpoint Species/ Functional Group	Measurement Endpoint Species	Exposure Media	Potentially Important Exposure Routes
Large herbivorous mammals	Mule deer	Soil	Incidental ingestion
		Foliage of grasses and shrubs	Dietary
Riparian Habitat			
Shrubs	Russian olive	Soil	Root uptake
		Air	Foliar uptake
Songbirds	Cedar waxwing	Soil	Incidental ingestion
		Russian olive fruit	Dietary

Adapted from Table 4-1 in E&E, 1995. Ecological Risk Assessment, Eastern Michaud Flats Superfund Site, Pocatello, Idaho. Prepared for Environmental Protection Agency.

Exposure Area

Each sampling location was treated as a separate exposure area. In addition, the background sampling locations (Ferry Butte and Snake River) were also evaluated separately so as to allow evaluation of incremental Site-related risks compared to background risks for the COPCs, each of which occurs naturally at detectable concentrations.

Exposure Point Concentrations (EPCs)

The exposure media sampled during the Site investigations include sediment, surface soil, sagebrush, thickspike wheatgrass, deer mice, and Russian olive fruit. Exposure point concentrations (EPCs) were calculated for each available exposure media using the 95th upper confidence limit (UCL) of the mean for normally and lognormally (following natural log transformation) distributed datasets. For non-parametric datasets, the 75th percentiles of the data were used as the EPC. Refer to Appendix C in the ERA for more details. EPCs for fluoride are listed on Table 3-9.

Table 3-9 Exposure Point Concentrations (EPCs) of Fluoride in Sagebrush Steppe and Riparian Habitats

Exposure Medium	Location	Fluoride EPC (mg/kg)
Surface soil	Ferry Butte[a]	381
	Michaud Flats	2,207
	Bannock Hills SW	1,585
	Snake riparian[a]	264
	Portneuf riparian	1,860[b]
Sagebrush (unwashed)	Ferry Butte[a]	12.1
	Michaud Flats	60.8
	Bannock Hills SW	85.7
Sagebrush (washed)	Ferry Butte[a]	NA
	Michaud Flats	NA
	Bannock Hills SW	NA
Thickspike Wheatgrass (stems and leaves)	Ferry Butte[a]	12.2[c]
	Michaud Flats	38.1[d]
	Bannock Hills SW	86.9[e]
Russian Olive (fruit)	Snake riparian[a]	11.9[c]
	Portneuf riparian	12.0[c]
Deer mouse (whole body)	Ferry Butte[a]	6.8[c]
	Michaud Flats	108
	Bannock Hills SW	144
Deer mouse (femur)	Ferry Butte[a]	214[b]
	Michaud Flats	761
	Bannock Hills SW	524[b]

Notes:

(a) Background/reference location

(b) 95% UCL of lognormal distribution

(c) one half detection limit

(d) Average of detected concentrations

(e) Third quartile of 75th percentile used because the 10 detected values were not normally or lognormally distributed

COPC = Contaminants of Potential Concern

NA = Not available

UCL = Upper Confidence Limit

EPC = Exposure Point Concentration

Adapted from Table 4-3 in E&E, 1995. Ecological Risk Assessment Eastern Michaud Flats Superfund Site, Pocatello, Idaho. Prepared for Environmental Protection Agency.

If no Site-specific data were available for wildlife food items, then dietary concentrations were (1) taken from other published studies at the Site, (2) calculated by multiplying the

COPC concentration in the affected media by a BAF, or (3) arrived at using conservative assumptions.

Calculating Exposure Estimates

Exposure was calculated using standard exposure calculations. Total exposure was assumed to be the sum of exposure from diet and exposure from incidental ingestion of soil or sediment. Cumulative exposure estimates were derived based on Site-specific contaminant data and exposure parameters published in literature, such as dietary composition, home range, exposure duration, ingestion rate, and body weight. Both dietary exposure routes and incidental ingestion of contaminated media were quantitatively assessed. The parameters used to estimate total exposure are provided in Table 3-10.

Table 3-10 Exposure Parameters used in the Ecological Risk Assessment

Assessment Endpoint Species/ Functional Group	Measurement Endpoint Species	Percent of Diet					Home Range (acres)[c]	Exposure Duration[d]	Ingestion Rate (kg/day)[e]	Body Weight (kg)[f]
		Shrubs	Forbs	Insects	Small Mammals	Soil[b]				
Upland Game Birds	Sage grouse	74	26	0	0	9	890[g]; 2.47	1	0.105	2.47
Raptors	Red-tailed hawk	0	0	0	100	2	4374	1	0.06	1.056
Songbirds	Horned lark	0	80	20	0	2	2	1	0.0075	0.031
Small mammals	Deer mouse	21.5	42.8	35.7	0	2	0.32	1	0.0035	0.021
Large mammalian herbivores	Mule deer	75	25	0	0	2	90	0.5	2.25	87.2
Mammalian carnivores	Coyote	0	0	0	100	2	6968	1	0.59	13.6
Riparian songbirds	Cedar waxwing	100	0	0	0	2	0.23	1	0.0076	0.032

Notes:

[a]890 acres is the distance traveled between summer and winter range. 2.47 acres is the size of the breeding range.

[a] Martin *et al.* (1951) for mule deer, horned lark, cedar waxwing, and sage grouse; EPA (1993) for red-tailed hawk and deer mouse.

[b] Beyer *et al.* (1994) for grouse, hawk and mouse; 2 percent assumed for other receptors.

[c] Burt and Grossenheider (1976) *for mule deer;* Connelly (1998) *for sage grouse;* EPA (1993) *for red-tailed hawk and deer mouse;* DeGraaf and Rudis (1986) for horned lark and cedar waxwing; Laundre and Keller (1984) for coyote.

[d] Fraction of time spent in area, 0 to 1 (unitless), based on year-round or migratory presence.

[e] See Table 4-7 in ERA for calculation, based on Nagy (1987) as presented in ERA (1993)

[f] Burt and Grossenheider (1976) for mule deer; Dunning (1993) for sage grouse, horned lark, and cedar waxwing; EPA (1993) for red-tailed hawk and deer mouse; Godin (1977) for coyote.

[g] Larger number indicates distance traveled between summer and winter range (Connelly 1988); smaller number is size of breeding range (Connelly 1981).

Adapted from Table 4-5 E&E, 1995. Ecological Risk Assessment, Eastern Michaud Flats Superfund Site, Pocatello, Idaho. Prepared for Environmental Protection Agency; refer to this doc for full citations.

3.7.8 Ecological Effects Assessment

Toxicity reference values (TRVs) are the intake rates used to estimate risk. TRVs for each major group of measurement receptors were identified and uncertainty factors and body weight scaling was used to estimate chronic NOAEL TRVs specific to each receptor. Toxicity benchmarks were adjusted to estimate species-specific wildlife TRVs using the approach described by Opresko et al. (1994), where dose equivalency for organisms of varying body size was estimated by adjusting for differences in body size between test species and endpoint species. Other sources of uncertainty regarding the derivation of wildlife TRVs, such as differences in bioavailability between different forms of chemicals, and varying toxicity to sensitive wildlife species, was also discussed in the ERA. The fluoride TRVs used in the ERA are presented along with the endpoints that they represent on Table 3-11. A critical value of 2,000 mg/kg fluoride in bone was also identified as a risk-predictor for small mammals.

Table 3-11 Fluoride TRVs used in the Ecological Risk Assessment

Assessment Endpoint Species/ Functional Group	Measurement Endpoint Species	Estimated Fluoride TRV (mg/kg BW/day)[a]
Shrubs	Big sagebrush	50
Grasses	Thickspike wheatgrass	50
Upland Game Birds	Sage grouse	3.28
Raptors	Red-tailed hawk	4.37
Songbirds	Horned lark	14.9
Small mammals	Deer mouse	46.3
Large mammalian herbivores	Mule deer	2.94
Mammalian carnivores	Coyote	5.38
Riparian songbirds	Cedar waxwing	13.9

Notes:

a -Estimated wildlife TRVs based on toxicity benchmarks from test receptors, adjusted using body weight scaling factors.

Plant TRVs based on Kabata-Pendias and Pendias 1992 (Lowest excessive or toxic concentration for vegetation; TRV = 50 mg/kg)

Bird TRVs based on Pattee et al. 1988 (test receptor = screech owl; endpoint = reproduction; TRV = 7.8 mg/kg BW/day)

Mammal TRVs based on Shupe et al. 1987 (test receptor = mink; endpoint = bone structure; TRV = 12.8 mg/kg BW/day)

Adapted from Table 5-5 in E&E, 1995. Ecological Risk Assessment, Eastern Michaud Flats Superfund Site, Pocatello, Idaho. Prepared for Environmental Protection Agency; refer to this doc for full citations

3.7.9 Risk Characterization

For each receptor, the potential ecological risks of each COPC were estimated by calculating a hazard quotient (HQ), which is defined as the total estimated exposure received through all relevant pathways divided by the TRV. An HQ greater than 1 indicates a potential risk of adverse chronic effects resulting from exposure. If risks of adverse effects arising from total exposure were identified, the risks of exposure through individual pathways were examined to partition and evaluate the potential sources of risk. For example, the percentages of total risk due to exposure through dietary ingestion and exposure through incidental soil ingestion were calculated for terrestrial wildlife with HQs greater than 1.

The calculated HQs for fluoride-related risks to terrestrial receptors are presented on Table 3-12.

Table 3-12 Fluoride Hazard Quotients in Sagebrush Steppe and Riparian Habitats

Measurement Endpoint Species	Location	EE (mg/kg)	TRV (mg/kg)	HQ	Diet %	Soil %
Sagebrush Steppe						
Sagebrush (washed)	Ferry Butte[a]	NA	50	NA	—	—
	Michaud Flats	NA	50	NA	—	—
	Bannock Hills SW	NA	50	NA	—	—
Sagebrush (unwashed)	Ferry Butte[a]	12.1	50	0.24	—	—
	Michaud Flats	60.8	50	1.22	—	—
	Bannock Hills SW	85.7	50	1.71	—	—
Thickspike Wheatgrass	Ferry Butte[a]	12.2	50	0.24	—	—
	Michaud Flats	38.1	50	0.76	—	—
	Bannock Hills SW	86.9	50	1.74	—	—
Coyote	Ferry Butte[a]	0.625	5.38	0.12	—	—
	Michaud Flats	6.6	5.38	1.23	71.1	28.9
	Bannock Hills SW	7.61	5.38	1.41	81.9	18.1
Deer Mouse	Ferry Butte[a]	3.3	46.3	0.07	—	—
	Michaud Flats	14.5	46.3	0.31	—	—
	Bannock Hills SW	19.7	46.3	0.43	—	—
Mule Deer	Ferry Butte[a]	0.255[a]	2.94	0.09	—	—
	Michaud Flats	1.28	2.94	0.44	—	—
	Bannock Hills SW	1.52	2.94	0.52	—	—
Horned Lark	Ferry Butte[a]	4.8	14.9	0.32	—	—
	Michaud Flats	19.9	14.9	1.34	46.3	53.7
	Bannock Hills SW	28.7	14.9	1.93	73.2	26.8
Red-Tailed Hawk	Ferry Butte[a]	0.819	4.37	0.19	—	—
	Michaud Flats	8.64	4.37	1.98	71.1	28.9
	Bannock Hills SW	9.97	4.37	2.28	81.8	18.2
Sage Grouse	Ferry Butte[a]	1.9	3.28	0.58	—	—
	Michaud Flats	10.8	3.28	3.29	21.6	78.4
	Bannock Hills SW	9.72	3.2	2.96	37.7	62.3
Riparian						
Russian Olive	Snake River[a]	11.9	50	0.24	—	—
	Portneuf River	12.0	50	0.24	—	—
Cedar Waxwing	Snake River[a]	4.08	13.9	0.29	—	—
	Portneuf River	11.69	13.9	0.84	—	—

Notes:
[a] Background/reference location
EE = Estimated exposure
HQ = Hazard Quotient
TRV = Toxicity reference value
Shaded cell = HQ>1, potential risk identified

Adapted from Tables 6-1 and 6-2 in E&E, 1995. Ecological Risk Assessment, Eastern Michaud Flats Superfund Site, Pocatello, Idaho. Prepared for Environmental Protection Agency.

For terrestrial plants, HQs greater than 1 were calculated for fluoride for sagebrush (Michaud Flats and Bannock Hills) and thickspike wheatgrass (Bannock Hills only). Fluoride was shown to have an HQ greater than 1 in the sagebrush steppe habitat for wildlife receptors. Among the mammalian receptors, fluoride was predicted to pose a potential risk to the coyote at the Michaud Flats and Bannock Hills sampling locations. Risks to birds from fluoride in the sagebrush steppe habitat were predicted for the horned lark, red-tailed hawk and sage grouse receptors. Fluoride hazard quotients for the receptors noted above were all less than 2 for the terrestrial plants, coyote, horned lark and red-tailed hawk (Michaud Flats only). HQs greater than 2 were calculated for the red-tailed hawk (HQ = 2.28 at Bannock Hills) and sage grouse (HQ = 3.29 at Michaud Flats; HQ = 2.96 at Bannock Hills).

Common species of raptors likely to occur in the area, such as the red-tailed hawk, were found to be at risk primarily through dietary exposure. Songbirds, such as the horned lark, were found to be at risk from the combined effect of dietary exposure and incidental ingestion of soil. Common species of upland game birds, such as the sage grouse, were found to be at risk primarily through incidental ingestion of soil. Common species of carnivorous mammals likely to occur at the Site, such as the coyote, were found to be at risk primarily through dietary exposure. Common species of shrubs and grasses such as sagebrush and thickspike wheatgrass were found to be at risk from exposure through root uptake or foliar absorption of fluoride. The ERA also provided an analysis of potential risk to sensitive species, compared to the measurement endpoint species modeled in the exposure assessment. It was assumed that sensitive species, if they occurred in the area, would have a similar level of potential risk.

Concentrations of fluoride in deer mouse femurs at all locations were lower than the 2,000 mg/kg critical value, indicating that accumulation of fluoride to toxic levels in deer mouse tissues is not occurring at the EMF Site.

No risks of adverse effects were identified for any of the background locations. The incremental risks due to the Site were calculated by subtracting background HQs from the total HQ, for each of the endpoint species found to be at risk from total exposure (Table 3-12). HQs calculated in this manner are all greater than 1, indicating that exposure at background levels of COPCs does not account for a meaningful fraction of the total risks.

Table 3-12 Adjusted Hazard Quotients for Mammals and Birds in Sagebrush Steppe Habitat - Fluoride

Measurement Endpoint Species	Location	EE_{adj} (mg/kg/d)	TRV (mg/kg/d)	HQ_{adj}
Coyote	Michaud Flats	6.6	5.38	1.23
	Bannock Hills SW	7.61	5.38	1.41
Horned Lark	Michaud Flats	15.8	14.9	1.06
	Bannock Hills SW	19.4	14.9	1.30
Red-Tailed Hawk	Michaud Flats	8.64	4.37	1.98
	Bannock Hills SW	9.97	4.37	2.28
Sage Grouse	Michaud Flats	13.1	3.28	3.99
	Bannock Hills SW	13.4	3.28	4.09

Key:
EE_{adj} = Estimated exposure adjusted as described in text.
HQ_{adj} = Hazard quotient, equal to EE_{adj}/TRV.
TRV = Toxicity reference value.
Shaded cell = HQ>1, potential risk identified

Adapted from Table 6-5 in E&E, 1995. Ecological Risk Assessment, Eastern Michaud Flats Superfund Site, Pocatello, Idaho. Prepared for Environmental Protection Agency.

No risks of adverse effects from cadmium were identified for any of the measurement endpoint species in the river delta habitat.

3.7.10 ERA Conclusions

The ERA provided an estimation of risks and discussed the ecological significance of the identified risks in terms of the spatial, temporal, and biological scale of potential adverse effects on Site ecosystems. Potential risks of adverse effects of fluoride on resident plant and wildlife species of the sagebrush steppe ecosystem were identified. Potential Site-related risks were not identified for cadmium or zinc in any of the habitats affected by the Site. Concentrations of COPCs are much reduced in the terrestrial food chain compared with their concentrations in soil. In addition, it is likely that soil contamination at the Site is confined to the surficial soil horizon, where it is not readily accessible to plant roots. The estimated risks of fluoride are only marginally above the threshold for toxic effects, and by inference the species at risk may be marginally but not severely affected. Because the potential risks were quantified for effects on individual organisms using conservative assumptions to account for uncertainty, and because the upland species most likely to be impacted occur commonly throughout the region, widespread or significant ecological effects at the population and community levels are not expected.

The aquatic investigations concluded that fluoride is not present at levels significantly above background or levels of concern. Therefore, potential risks of adverse effects of sediment contamination on benthic life are expected to be minimal.

Confidence in the results of the risk assessment is considered to be high. Maximal use was made of Site-specific exposure data, thereby reducing a major source of uncertainty. Exposure estimates for plants and wildlife were based on statistically designed sampling; hence, the modeled exposure estimates have a high degree of reliability. Toxicity testing and chemical analysis of sediments provides adequate information to evaluate potential impacts of contaminants to the Portneuf River, which were judged to be minimal. In general, the risk assessment is more likely to overestimate rather than underestimate the risks of adverse effects of the Site because of the conservative nature of the assumptions used.

The ERA discussed potential uncertainties and limitations of the evaluation. Principal uncertainties and limitations of the risk assessment are related to selection of a limited number of COPCs and endpoint species for evaluation, some deficiencies of the fluoride analyses, assumptions used to derive exposure estimates and toxicity reference values, the limited field verification of risks, and interpretation of the broader ecological significance of the hazard quotients.

4.0 Forage Vegetation Sampling Program

Requirements for the monitoring are set out in the Tier I Permit (No 077-00006, 12/3/99; IDAPA 58.01.01.322.01, 3/19/99 IDAPA 58.01.01.322.07, 5/1/94) as follows:

> "Monitoring of ambient fluoride in vegetation shall be conducted outside the Don-Siding Complex at fifteen (15) different locations during the growing season."

Monitoring has been performed annually during the growing season with a report submitted to DEQ.

4.1 Sampling Program 1976 – 1996

The scope of this program included sampling of vegetation not used for feed or forage and sampling locations varied from year to year. Initially the sampling was performed by IDEQ. A dataset covering this period and containing 3,600 records is provided in Appendix C. In general, concentrations are more variable and often higher than measured by the current program, however, no information is available on sampling or analytical methods, and while relative concentrations may provide some information, caution should be used when interpreting absolute concentration values.

Overall, the data support the finding that fluoride levels reduce rapidly with distance from the facilities. They also support the selection of the ERA Bannock Hills sampling location in the RI (see Section 3.5) as being in an area of high impact. In 1996, IDEQ issued letter stating Simplot was in compliance with standard; non-forage vegetation sampling was discontinued and a more systematic program was followed, as described below.

4.2 Sampling Program 1997 – 2004

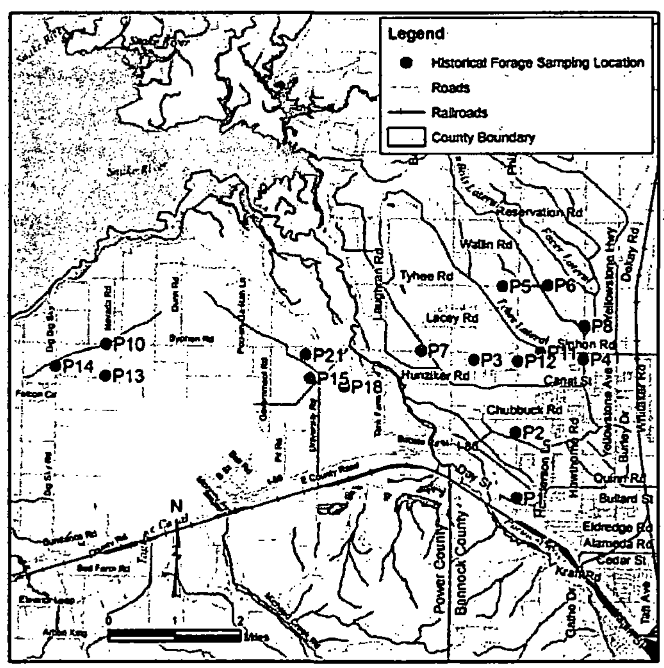
From 1997 – 2004 forage vegetation samples were collected at a minimum of 15 locations (and up to 17 locations). The locations are described on Table 4-1 and are shown on Figure 4-1.

Table 4-1 Forage Vegetation Sampling Locations 1997-2004

Site	Owner	Location
(b) (6) [redacted]	(b) (6) [redacted]	Philbin Rd., between I86 and Hwy. 30
		Philbin Rd., between Chubbuck Rd. & I86
		West Lacey Rd.
		Near SW corner Hawthorne Rd. & Siphon Rd.
		N. of Tyhee Rd. between Philbin & Rio Vista Rds.

Site	Owner	Location
(b) (6) [redacted]		Near NW corner Philbin & Tyhee Rds.
		Near SE corner Siphon & Axel Rds., now at 15480 W. Siphon Rd.
		Near SE corner Hawthorne & Tyhee Rds., now at 12388 N. Hawthorne Rd.
		S.of Siphon Rd. between Truckersville and Taghee Rds. [3mi NW]
		N.of Siphon Rd. between Philbin & Hawthorne Rds.
(b) (6) [redacted]		E. of Philbin Rd., between Siphon & Chubbuck Rds.
		[S. of P10]
		2016 Truckersville Rd. [4mi NW]
		E. of Taghee Rd., [S. of P21]
		1877 Tank Farm Rd. [1.3mi NW]
		SE corner Taghee & Siphon Rds.
		[2000 only] 1 mi WNW, N. of I86

Figure 4-1 Forage Vegetation Sampling Locations 1997-2004



Above-ground forage samples were collected twice per month during the growing season (early June through late September), typically resulting in eight samples per location per year. Samples were not collected at a particular location if the average height of forage was less than two inches. Samples were analyzed for total fluoride using a potentiometric method outlined by the Association of Official Analytical Chemists (Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC), Edit K. Helrick, 15th Edition, pages 51-56, 1990).

Fluoride concentrations measured in forage from 1997 through 2004 are shown in Table 4-2. Annual average concentrations measured at each location are listed in Table 4-3 and the average concentration for the entire monitoring period is shown on Figure 4-2. Maximum monthly and bimonthly average concentrations are shown on Tables 4-4 and 4-5, respectively.

Table 4-2 Average Annual Fluoride Concentrations Measured in Forage 1997 through 2004

Location	1997	1998	1999	2000	2001	2002	2003	2004
P1 - N	20.0	33.2	35.0	36.0	40.0	39.9	32.3	25.0
P1 - S					**46.4**	**41.1**	33.5	21.9
P1-W							31.0	25.0
P2 - S					39.9	**55.0**		
P2 - N	20.0	21.0	**42.0**	**44.0**	33.9	**45.9**	39.3	28.1
P2-W							37.8	25.3
P3 - S					15.4	14.6	31.1	16.3
P3 - N	15.0	13.0	23.0	18.0	15.1	14.1	22.8	15.4
P4	15.0	21.0	26.0	23.0	17.8	19.6	20.5	14.6
P5 - E					8.1	11.4	12.1	10.1
P5 - W	6.0	12.0	14.0	12.0	7.6	11.5	14.4	12.9
P6 - E					13.6	13.8		13.9
P6 - W	7.0	13.0	14.0	13.0	12.3	8.0	10.6	9.0
P6 - by home							14.9	
P7	10.0	12.0	18.0	14.0	11.8	8.9	11.5	9.9
P8	10.0	10.0	19.0	13.0	9.0	8.9	15.3	6.6
P10	13.0	23.0	20.0	20.0				
P11	14.0	18.0	32.0	26.0	15.0	11.5	15.4	15.0
P12	18.0	14.0	22.0	17.0	13.1	8.6	25.1	25.1
P13	13.5	22.9	18.7	20.8				
P14	8.3	16.4	13.0	12.1				
P15	13.9	35.3	23.0	18.9				
P18	20.3	30.3	30.5	23.8				
P21	12.3	15.0	15.8	12.0				
P22				38.8				
Count	**16**	**16**	**16**	**17**	**15**	**15**	**16**	**16**

Note: Concentrations in ppm
Bold values greater than 40 ppm standard

Figure 4-2 Average Fluoride Concentration Measured in Forage 1997 through 2004

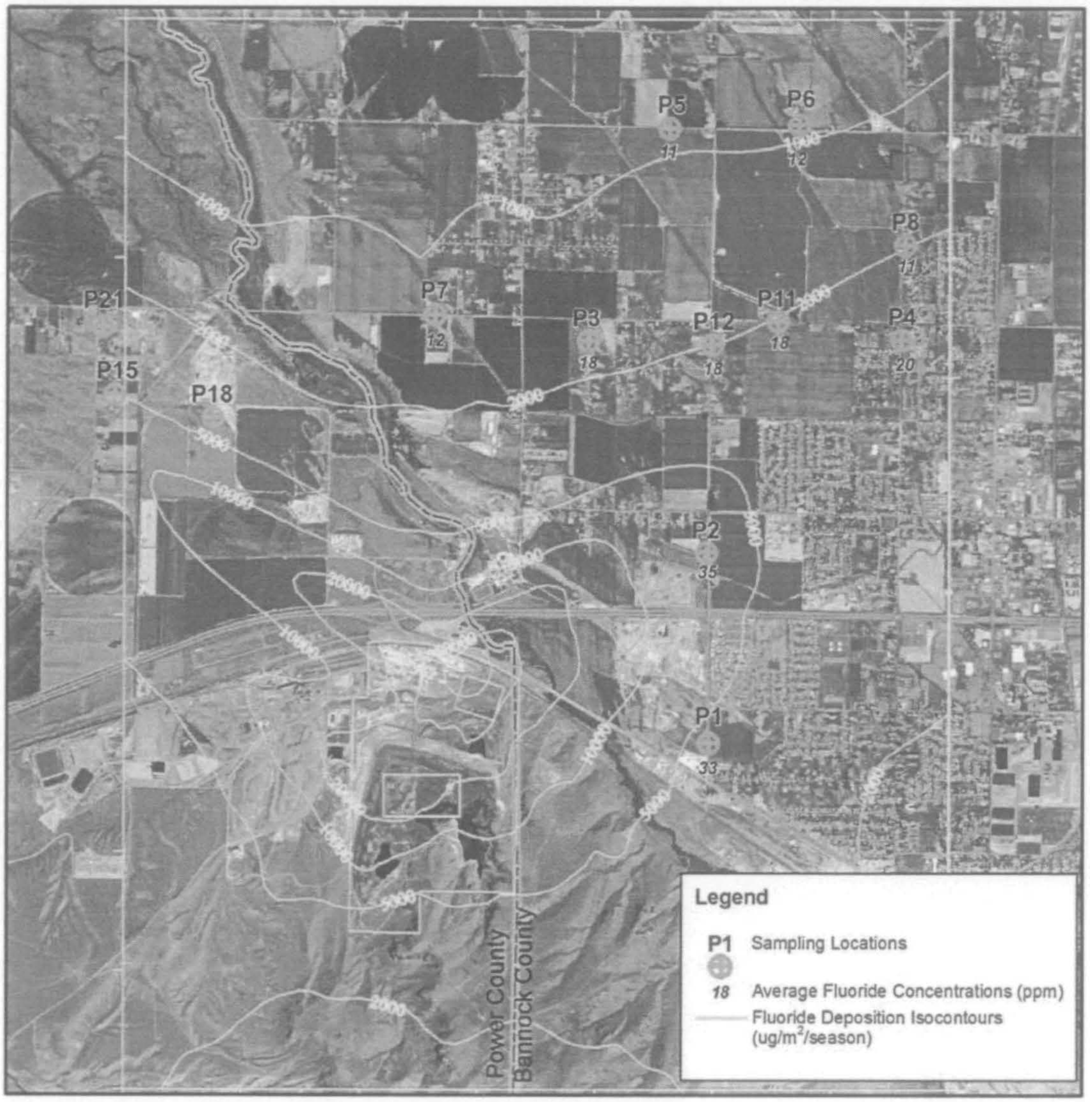


Table 4-3 Maximum Monthly Fluoride Concentrations Measured in Forage 1997 through 2004

Location	1997	1998	1999	2000	2001	2002	2003	2004
P1 - N	26.8	59.0	47.0	43.7	48.0	61.5	36.5	25.5
P1 - S					54.0	62.0	38.0	21.9
P1-W							35.5	27.0
P2 - S					44.5	**80.5**		25.3
P2 - N	23.4	31.5	63.3	62.5	36.5	65.0	46.5	30.5
P2-W							54.5	20.5
P3 - S					18.5	22.8	54.0	23.5
P3 - N	16.0	21.5	25.7	19.0	17.5	22.8	29.0	20.5
P4					25.5	39.0	28.5	15.5
P5 - E	18.5	31.0	29.0	31.0	9.5	23.0	13.5	14.0
P5 - W	8.0	21.5	14.8	14.5	8.3	19.5	19.0	17.5
P6 - E					20.0	22.5		15.0
P6 - W	10.0	24.0	16.0	16.5	22.0	12.3	13.0	10.5
P6 - by home							15.5	
P7	13.0	21.5	19.7	15.0	12.5	13.5	16.5	12.5
P8	13.0	11.0	23.5	14.5	13.5	13.5	26.0	8.0
P10	13.5	31.0	27.5	26.0				17.5
P11	16.5	25.5	38.5	28.0	20.0	21.0	22.0	29.0
P12	19.5	25.0	26.0	20.3	14.7	13.0	37.5	
P13	16.0	30.0	26.5	23.0				
P14	13.0	35.0	15.0	14.0				
P15	15.8	48.5	27.5	28.5				
P18	34.0	35.0	42.5	27.8				
P21	25.0	32.0	21.8					
P22				61.0				

Note: Concentrations in ppm

Monthly concentrations were calculated for each month by averaging. Table shows highest monthly average concentrations in any given year.

Bold values greater than 80 ppm standard

Table 4-4 Maximum Bimonthly Fluoride Concentrations Measured in Forage 1997 through 2004

Location	1997	1998	1999	2000	2001	2002	2003	2004
P1 - N	12.8	50.5	22.5	29.8	32.0	43.0	33.3	25.3
P1 - S					38.8	46.3	36.3	21.0
P1-W							33.3	26.3
P2 - S					33.7	**68.5**		
P2 - N	15.0	26.3	25.5	50.0	33.8	58.3	40.8	29.7
P2-W							41.5	24.8
P3 - S					17.0	11.3	40.0	21.1
P3 - N	14.7	18.3	20.3	18.3	15.8	12.3	26.0	18.8
P4					21.0	24.3	25.0	15.2
P5 - E	13.3	23.8	23.3	24.8	7.8	13.8	13.5	13.3
P5 - W	6.0	15.8	13.0	11.3	7.0	13.3	15.8	14.0

Location	1997	1998	1999	2000	2001	2002	2003	2004
P6 - E					16.3	15.0		14.6
P6 - W	7.5	17.5	13.3	14.3	15.3	7.0	11.5	9.8
P6 - by home							15.3	
P7	11.8	15.8	16.0	13.5	11.8	8.5	14.5	12.3
P8	7.0	11.0	18.8	13.0	8.8	8.5	22.4	8.0
P10	11.5	30.5	19.5	23.3				16.7
P11	13.8	22.3	25.5	25.8	17.5	12.8	19.8	28.0
P12	17.5	17.3	17.8	15.0	12.0	8.3	33.4	
P13	11.0	29.5	20.0	22.3				
P14	10.5	26.3	11.3	12.8				
P15	11.4	41.8	23.3	21.3				
P18	28.3	35.0	30.3	22.3				
P21	17.3	18.4	11.3					
P22				44.5				
Count	**16**	**16**	**16**	**16**	**15**	**15**	**16**	**16**

Note: Concentrations in ppm

Bimonthly concentrations were calculated for each 2-month period (June/July, July/August, August/September) by averaging. Table shows highest bimonthly average calculations in any given year.

Bold values greater than 60ppm standard

The highest fluoride concentrations in forage were measured at locations P-1 and P-2, which are located approximately 1.2 miles from the Don Plant to the east/northeast. Concentrations in forage were shown to reduce with distance from the Don Plant. For example, the average fluoride concentration from all samples collected at location P-2 from 1997 through 2004 was 35 ppm. At location P-4, which is approximately 2.7 miles from the plant in the same general direction, the average concentration was 18 ppm, approximately half that at P-2. Farther from the facility average concentrations were lower (for example 11 and 12 ppm at P-5 and P-6, respectively, approximately 3.3 miles from the plant).

A comparison of the measured concentrations to the regulatory standards (see Tables 4-3 through 4-5) shows that annual average concentrations have exceeded the 40 ppm standard only at P-1 and P-2 in the years 1999 through 2002 (at P-1 in 2001 and 2002, and at P-2 in 1999, 2000 and 2002). Conversely, the monthly average and bimonthly average concentrations have exceeded 80 and 60 ppm, respectively only at P-2 in 2002.

4.3 2005 to Present

To support monitoring efforts, the area around the Simplot Don Plant was been divided into four general target areas based on predicted deposition patterns and previous forage data (*Fluoride in Forage Sampling Plan*, NewFields, 2005). Area 1 is the closest to the Don Plant and Areas 2, 3, and 4 are progressively further from the facility. For each year, 15 locations were sampled biweekly from June through September. For the 2005 through 2007 monitoring seasons, five sampling sites were located in Area 1, five in Area 2, three in Area 3, and two in Area 4. Sampling locations from previous years were sampled in subsequent seasons if possible. Between the 2005 and 2007 sampling seasons, development led to a change in sampling location at three sites (Site # 3 became Site # 3A; Site # 7 became Site # 7A, and Site # 65 became Site # 65A). In each case, the new site was close to the previous one, with similar forage and irrigation practices.

Average concentrations were calculated each season on a monthly, bimonthly, and annual basis and compared to the standards (80, 60, and 40 parts-per-million (ppm), respectively). If the average concentration was less than or equal to the standard, then compliance with the standard was satisfied. If the average concentration was greater than the standard, then the standard was exceeded and Simplot was required to notify affected farmers or landowners in accordance with the *Fluoride in Forage Notification Plan* (Appendix D of the *Fluoride in Forage Sampling Plan*).

New sampling procedures were in effect beginning in 2005 per the *Fluoride in Forage Sampling Plan*. These new procedures included sampling from areas farthest from the plant first, cleaning shears after each sampling location, sampling along two randomly selected 100-foot transect directions, and shipment of samples using standard chain of custody procedures. Sampling protocols are described in detail in the *Fluoride in Forage Sampling Plan* (Newfields, 2005).

Three figures are attached depicting the annual average fluoride concentrations at each sampling site for 2005, 2006, and 2007 as portrayed in the annual reports for each of those sampling seasons. Sampling results for the 2005 through 2007 growing seasons are summarized in the attached table and charts (Appendix E).

4.4 2005 Results

No monitoring locations exceeded fluoride standards during the 2005 growing season. The highest annual average fluoride concentration was at Area 1, Site # 9, at 40.0 ppm. The plant vigor of the pasture grass at this site during the season was generally green to yellow-green and healthy. The site with the lowest annual average fluoride concentration was Area 3, Site # 72, at 13.5 ppm. The plant vigor of the pasture grass at this site during the season was generally green and healthy. Refer to Appendix E for details.

4.5 2006 Results

The only site that exceeded fluoride standards during the 2006 growing season was Area 1, Site # 9. The monthly standard of 80 ppm was exceeded twice during the season for the two consecutive sampling events occurring July 27 and August 10 (108 ppm) and the two events occurring August 10 and August 24 (117 ppm). The bi-monthly standard of 60 ppm was exceeded for Area 1, Site # 9 for the four consecutive sampling events occurring between June 29 and August 10 (85.8 ppm), July 13 and August 24 (94.3 ppm), July 27 and September 7 (90.3), and August 10 and September 21 (92.3). The annual standard of 40 ppm was exceeded (72.0 ppm).

The plant vigor of the pasture grass at Site # 9 during the season ranged from good to fair, and at times stressed. Simplot worked with the landowner on ways of improving crop health and irrigation management. Simplot cut the pasture grass for the landowner on September 6, 2006, and also made voluntary improvements to the sprinkler irrigation system on this property to return this property to a former condition.

All other monitoring locations met the fluoride in forage standards. The site with the lowest annual average fluoride concentration was Area 3, Site # 72, at 12.2 ppm. The plant vigor of the pasture grass at this site during the season was generally green and healthy. Refer to Appendix E for details.

4.6 2007 Results

The only site that exceeded fluoride standards during the 2007 growing season was Area 1, Site # 3A. The monthly standard of 80 ppm was exceeded one time during the season (for sampling events July 12 and July 26 at 84.0 ppm). The bi-monthly standard of 60 ppm was exceeded three times during the season for the four consecutive sampling events occurring between June 14 and July 26 (65.5 ppm), June 28 and August 9 (68.0 ppm), and July 12 and August 23 (61.3 ppm). The annual standard of 40 ppm was exceeded (48.8 ppm).

The plant vigor of the pasture grass at Site # 3A during the season ranged from good to fair, and at times stressed. It was often coated by a white, powdery residue thought to originate from the cement plant located directly across Philbin Road. Again, Simplot worked with the landowner on ways of improving crop health and irrigation management, making voluntary improvements to the sprinkler irrigation system on this property.

All other monitoring locations met the fluoride in forage standards. The site with the lowest annual average fluoride concentration was Area 3, Site #72, at 13.1 ppm. The plant vigor of the pasture grass at this site during the season was generally green and healthy. Refer to Appendix E for details.

4.7 General Conclusions

As shown in the charts in Appendix E, many sites showed a slight upward trend in fluoride concentration in mid-summer (usually peaking in July or August) and then declining slightly thereafter. This trend is more evident in sites with higher fluoride concentrations. Trends are barely visible in sites farther from the plant (such as Area 3) where fluoride concentrations are generally lower.

It has been observed during field sampling that some sites show spikes in fluoride concentrations during or immediately following periods of crop stress generally associated with poor irrigation practices. For example, in 2005 Area 1 # 3 was cut in mid-June, and the field did not recover immediately following that cutting, due to lack of irrigation. The fluoride concentration spiked to 62 ppm in late July, just before the site was observed to be recovering in early August, due to improved irrigation management.

Generally, the highest annual average fluoride concentrations have been present in Areas 1 and 2, which are the areas closest to the Don Plant. However, within these areas, the sites with the highest concentrations were not necessarily those that are the closest to the plant. For example, Site # 9 has generally had high fluoride concentrations relative to other sites in Area 1, but this site is not the closest to the plant within Area 1. In 2006, when Site # 9 exceeded annual fluoride standards (72.0 ppm), the annual average fluoride at the sites immediately upwind and downwind (Area 1 # 7 and Area 2 # 12) were only 23.7 ppm and 25.5 ppm, respectively.

5.0 Fluoride Air Deposition Modeling

Fluoride air deposition modeling was performed in 2004 to support the development of a forage sampling plan by identifying areas outside Simplot property associated with the Don Plant where the highest deposition of fluoride may occur. The modeling report (MFG, 2004) is included as Appendix F.

Fluoride emission sources at the Don Plant do not vary seasonally, because production and operations are relatively constant through the year. Fluoride is emitted in both gaseous and particulate forms, and estimates of these ratios for each source were inputs to the model. Two emission scenarios were evaluated: actual emissions (calculated from source tests conducted from 1999 to 2003) and allowable emissions based on state and federal permit limits. These scenarios bounded likely deposition fluxes and allow the modeling to assess whether the spatial patterns change as different sources become more influential.

The modeling output was presented as a series of maps. Total fluoride deposition isocontours were presented for actual and allowable emissions for the following time periods:

- Maximum fluoride annual deposition;
- Maximum growing season deposition;
- Maximum monthly deposition in the growing season; and
- Maximum bi-monthly deposition in the growing season.

In addition, contours showing the ratio of deposition rates for actual and allowable were presented for the annual and growing season time periods. Finally, spatial growing season deposition estimates were presented for wet fluoride deposition (occurring during precipitation events as soluble fluoride) and dry deposition (not precipitation events).

5.1 Deposition Modeling Results and Relationship with Forage Fluoride Data

The principal findings of the deposition modeling with respect to spatial distribution of fluoride deposition are:

- The predicted contour patterns of total fluoride deposition are similar for the different averaging periods: annual, growing season, monthly, and bi-monthly (Appendix F).
- Deposition patterns reflect the influence of the prevailing winds with higher deposition fluxes predicted to the northwest and northeast ("butterfly pattern").

- Deposition fluxes reduce rapidly with distance from the facility. For example, for the scenario of growing season/actual emissions estimated deposition rates are approximately 7,000 μg/m^2/season half a mile due north of the facility, reducing to 3,000 μg/m^2/season a mile north of the facility and 1,000 μg/m^2/season two miles north of the facility.

- The deposition patterns for allowable and actual emissions were similar, such that the emission assumption will not affect design of a forage monitoring program.

An analysis was performed to evaluate if there is a correlation between fluoride concentrations measured in forage vegetation and modeled fluoride deposition rates. As noted above, the modeling was based on meteorological data for 1999 through 2003. Forage concentrations from this period were analyzed to provide a dataset comparable to the modeling period. Forage data were analyzed to generate the following parameters at each sampling location:

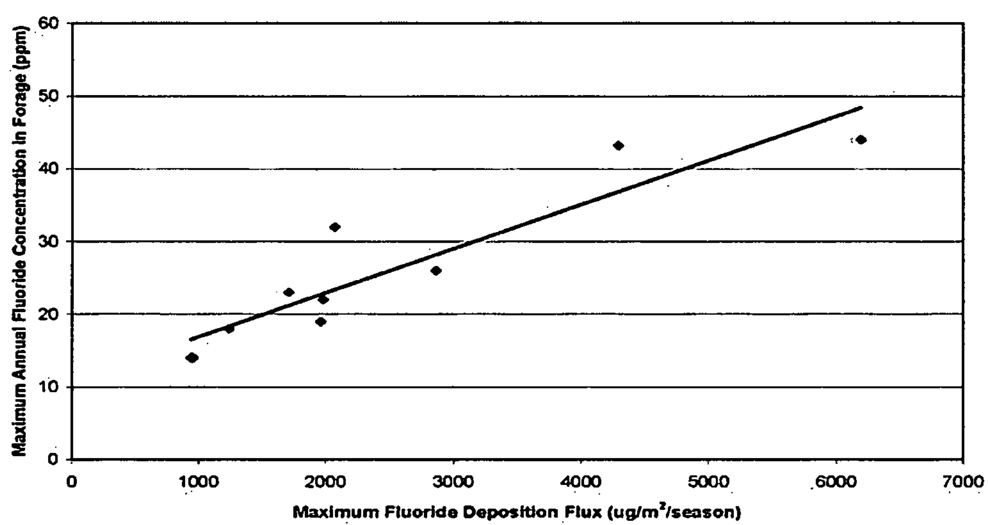
- Maximum annual average concentration;

- Maximum monthly average concentration; and

- Maximum bimonthly average concentration.

Graphical representations of the forage concentrations relationship to modeled deposition rates are shown in Figures 5-1 through 5-3.

Figure 5-1 Fluoride Concentrations Measured in Forage Versus Modeled Deposition Flux (Maximum Annual Average Scenario)



A linear regression analysis was performed for each dataset. Principal output parameters from these analyses are shown in Appendix G. As shown the Correlation Coefficient was 0.92 for the annual scenario, and 0.90 for both the monthly and bimonthly scenarios. The Correlation Coefficient indicates the degree of linearity between two variables. The closer the value is to one, the stronger the linear relationship between the two (i.e., the better the correlation). Values close to zero suggest no correlation between the two variables.

These analyses show that measured fluoride concentrations in forage vegetation are strongly correlated with modeled deposition flux estimates for all the scenarios analyzed. The model therefore provides a useful tool in evaluation of fluoride levels in forage vegetation, including in areas that are not sampled.

5.2 Factors Affecting Fluoride Concentrations in Vegetation

Fluoride is known to enter leaf tissue by diffusion through leaf stomata, to settle on the outer surface of the leaf through particulate deposition, and be taken up by the plant through root absorption. The fluoride concentration is subsequently affected by the plant biomass. For example, well fertilized and watered vegetation will have a greater biomass resulting in a lower fluoride concentration for a given fluoride input. Greater precipitation during a wet season would have the same effect. Thus, even for a constant input of fluoride into the plant, the fluoride concentration within the plant mass will vary during the growing season due to the effects of precipitation, watering and fertilization.

The literature and Site-specific data support the concept that fluoride enters vegetation primarily through the leaves rather than uptake from the soil. Numerous studies have been performed to study the entry pathways of fluoride and its subsequent distribution within the plant. The general finding is that there is negligible contribution to leaf fluoride content by uptake through the roots (e.g., Weinstein, 1977 and Miller, 1993).

The strong correlation between fluoride concentration and modeled deposition fluxes from ongoing facility emissions demonstrate that it is the effect of ongoing emissions that dominate the fluoride concentrations in forage vegetation. Extensive soil sampling was conducted as part of the RI. The investigation identified the local soils as having a high pH and high calcium concentrations. In addition, fluoride concentrations in groundwater impacted by various facility sources were low, even when the sources had high fluoride concentrations. These data contributed to the finding that fluoride has very low mobility in soils and tends to be associated with calcium forming an insoluble precipitate. The practical effect of this would be that soil pore concentrations of fluoride (and therefore potential for plant uptake via roots) will be low even if soil concentrations are elevated.

The basic Site conceptual model uses a relatively constant rate of fluoride emissions to the air from the Don Plant. Wind direction and speed are the major factors affecting where the fluoride contacts forage. Concentrations of fluoride in forage are also significantly affected by the plant biomass, which is strongly influenced by meteorological factors (primarily precipitation) and agricultural factors (primarily irrigation, fertilizer use and harvesting frequency). In summary:

- Fluoride levels in vegetation are primarily affected by deposition of on-going emissions.

- Fluoride levels in soil appear to have a minor effect, most likely due to the high level of calcium in the soils and associated low pore water solubility.

- Other factors that affect levels are climate (rainfall, temperature) and irrigation practices.

6.0 Conclusions

Based on the studies described in this document, it is concluded that fluoride has been extensively characterized at the Site, including facility emission sources, dispersion and deposition patterns, and effect on levels in soil and vegetation.

- Emissions sources at the Don Plant are well understood and characterized and are monitored on an on-going basis under the Clean Air Act.

- Monitoring of soils and vegetation demonstrate that fluoride levels decrease rapidly with distance from the Don Plant. This is supported by air dispersion and deposition modeling.

- Sampling to support the Superfund ecological risk assessment was performed in areas of high measured and predicted fluoride levels. The ecological risk assessment found marginal but not actionable risks.

- Sampling to support the human health risk assessment included extensive characterization of air and soils. The assessment found that fluoride levels were below levels of concern in the Offplant Area.

EPA has raised concerns over the ecological risk assessment findings, primarily related to changes in the risk assessment process, perceived uncertainties related to data quality, and whether Site conditions have changed since the sampling was completed in 1994. To address these issues, a phased approach has been proposed:

Phase 1 – Recalculate ecological risks due to fluoride based on currently accepted practices, such as incorporation of both NOAEL and LOAEL TRVs and reconsideration of the use of body weight scaling factors, and updates to wildlife exposure parameters. Simplot will prepare a technical memorandum outlining the updated risk calculations and approaches and associated uncertainties. This will set the basis for scoping of additional sampling to update the ecological risk assessment.

Phase 2 - Develop a sampling and analysis plan to support updating of the ecological risk assessment for fluoride. Sampling will focus on the area of greatest impact (within a mile of the facilities). The plan will identify the data to be collected, the species to be evaluated, and how risks will be calculated.

Phase 3 – Implement the sampling and analysis plan.

Phase 4 – Submit a revised ecological risk assessment for fluoride.

7.0 References

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Appendix A
Remedial Investigation EMF Fluoride Emission Inventory

Emissions Calculations for FMC Corporation - Fluorides
Based on TSP particle size

	Material Type	Tons/Hr	Tons/Yr	Operations Hour/ Day	Operations Day/ Year	Emission Factor	Units	Source	Capture Efficiency	Uncontrolled or Fugitive Emissions Max. Daily Fluoride (lbs/day)	Uncontrolled or Fugitive Emissions Avg. Annual Fluoride (Tons/yr)	Control Efficiency	(Foot-notes)	Controlled Emissions Max. Daily Fluoride (lbs/day)	Controlled Emissions Avg. Annual Fluoride (Tons/yr)	Fugitive Emissions Max. Daily Fluoride (g/s)	Fugitive Emissions Avg. Annual Fluoride (g/s)	Controlled Emissions Max. Daily Fluoride (g/s)	Controlled Emissions Avg. Annual Fluoride (g/s)
POINT SOURCES																			
East Shale Baghouse	Ore			23	243	2.82E-03	lb/hr	SET 2.16% Fluoride in TSP fraction Chester, 1994	97.50%	0.17	0.02	99.00%		0.06	0.01	8.72E-04	5.81E-04	3.40E-04	2.26E-04
B7A => B6		104	580,000	23	243														
B4 => B6		11	60,000	23	243														
Middle Shale Baghouse	Ore			23	243	1.37E-02	(lb/hr)	SET 2.16% Fluoride in TSP fraction Chester, 1994	97.50%	0.81	0.10	99.00%		0.31	0.04	4.23E-03	2.81E-03	1.65E-03	1.10E-03
C325 => C326																			
C326 => Screens V2010		258	1,440,000	23	243														
B6 => Screens V2010		122	680,000	23	243														
Screen V2010		379	2,120,000	23	243														
Medium (0.5-3") => G2012		97	540,000	23	243														
V2010 (undersize) => B8		379	2,120,000	23	243														
Crusher G2012		97	540,000	23	243														
G2012 => B7		97	540,000	23	243														
B7 => B7A		104	580,000	23	243														
West Shale Baghouse	Ore			23	243	3.68E-03	lb/hr	SET 2.16% Fluoride in TSP fraction Chester, 1994	97.50%	0.22	0.03	99.00%		0.08	0.01	1.14E-03	7.59E-04	4.45E-04	2.96E-04
B8 => B9		276	1,540,000	23	243														
B9 => Cont. pile		45	250,000	23	243														
B9 => B10		231	1,290,000	23	243														
B10 => C327		231	1,290,000	23	243														
Calciner 1,1	Briquettes	118	770,000	24	273	0.21	(lb/hr)	SET 12/91 (controlled Fl)	0.00%	5.13	0.70	99.90%	(1, 2)	5.13	0.70	2.69E-02	2.01E-02	2.69E-02	2.01E-02
Calciner 1,2	Briquettes	118	770,000	24	273	0.21	(lb/hr)	SET 12/91 (controlled Fl)	0.00%	5.13	0.70	99.90%	(1, 2)	5.13	0.70	2.69E-02	2.01E-02	2.69E-02	2.01E-02
Calciner 2,1	Briquettes	118	770,000	24	273	0.21	(lb/hr)	SET 12/91 (controlled Fl)	0.00%	5.13	0.70	99.90%	(1, 2)	5.13	0.70	2.69E-02	2.01E-02	2.69E-02	2.01E-02
Calciner 2,2	Briquettes	118	770,000	24	273	0.21	(lb/hr)	SET 12/91 (controlled Fl)	0.00%	5.13	0.70	99.90%	(1, 2)	5.13	0.70	2.69E-02	2.01E-02	2.69E-02	2.01E-02
1,1 Cooler Split	Nodules	101	660,000	24	273	0.9	(lb/hr)	SET 8/87	99.00%	0.22	2.98E-02	0.00%	(1)	21.60	2.95	1.15E-03	8.57E-04	1.13E-01	8.48E-02
1,2 Cooler Split	Nodules	101	660,000	24	273	0.1	(lb/hr)	SET 9/87	99.00%	0.02	3.31E-03	0.00%	(1)	2.40	0.33	1.27E-04	9.52E-05	1.26E-02	9.42E-03
2,1 Cooler	Nodules	102	670,000	24	273	1.4	(lb/hr)	SET 7/87	99.00%	0.34	4.63E-02	0.00%	(1)	33.60	4.59	1.78E-03	1.33E-03	1.76E-01	1.32E-01
2,2 Cooler	Nodules	102	670,000	24	273	0.1	(lb/hr)	SET 7/87	99.00%	2.42E-02	3.31E-03	0.00%	(1)	2.40	0.33	1.27E-04	9.52E-05	1.26E-02	9.42E-03
Discharge North Baghouse	Nodules			24	273	2.85E-02	lb/hr	SET 2.1% Fluoride in TSP fraction Chester, 1994	95.00%	3.60	0.49	99.00%		0.68	0.09	1.89E-02	1.41E-02	3.59E-03	2.68E-03
#1 Cooler Grate => C178		101	660,000																
C178 => C179		0	66,000																
C178 => C180		91	594,000																
Discharge South Baghouse	Nodules			24	273	2.85E-02	lb/hr	SET 2.1% Fluoride in TSP fraction Chester, 1994	95.00%	3.60	0.49	99.00%		0.68	0.09	1.89E-02	1.41E-02	3.59E-03	2.68E-03
#2 Cooler Grate => C267		102	670,000																
C267 => C268		102	670,000																
C268 => C179		0	67,000																
C268 => C180		92	603,000																
East Nodule Baghouse	Nodules			24	308	5.19E-02	(lb/hr)	SET 2.1% Fluoride in TSP fraction Chester, 1994	97.50%	3.20	0.49	99.00%	(1,2)	1.25	0.19	1.68E-02	1.42E-02	6.54E-03	5.52E-03
C180 => C12		162	1,200,000																
C180 => C184 (sample line)																			
C184 => C184B (sample line)																			
Silica elev. => Silica slide		13	98,000																
Silica Slide => Silica bin		13	98,000																
West Nodule Baghouse	Nodules			24	308	3.95E-02	(lb/hr)	SET 2.1% Fluoride in TSP fraction Chester, 1994	97.50%	2.43	3.74E-01	99.00%	(1,2)	0.95	0.15	1.28E-02	1.08E-02	4.97E-03	4.20E-03
Collects from top of bins																			
C12 => 3 Nodule bins		162	1,200,000																
Nodule Stockpile Baghouse	Nodules			0	110	1.87E-02	(lb/hr)	SET 2.1% Fluoride in TSP fraction Chester, 1994	99.00%	0.00	2.49E-02	99.00%	(1,2,3)	0.00	0.02	0.00	7.17E-04	0.00	7.10E-04
C179 => C122		0	133,000																
C122 => C213		0	133,000																
C213 => #2 stockpile ladder		0	45,000																
C213 => C213A		0	44,000																
C213 => C213B		0	44,000																
C213A => #1 stockpile ladder		0	44,000																
C213B => #2 stockpile ladder		0	44,000																
C215 => C216		0	133,000																
C216 => Shaker Screen(V22)		0	133,000																
V22 => C218 => C219																			
C219 => Fines stockpile ladder		0	13,300																
Ladder => fines stockpile		0	13,300																
C190 => C180		0	119,700																

Emissions Calculations for FMC Corporation - Fluorides
Based on TSP particle size

	Material Type	Tons/Hr	Tons/Yr	Operations Hour/ Day	Operations Day/ Year	Emission Factor Units	Source	Capture Efficiency	Uncontrolled or Fugitive Emissions Max. Daily Fluoride (lbs/day)	Uncontrolled or Fugitive Emissions Avg. Annual Fluoride (Tons/yr)	Control Efficiency	(Foot-notes)	Controlled Emissions Max. Daily Fluoride (lbs/day)	Controlled Emissions Avg. Annual Fluoride (Tons/yr)	Fugitive Emissions Max. Daily Fluoride (g/s)	Fugitive Emissions Avg. Annual Fluoride (g/s)	Controlled Emissions Max. Daily Fluoride (g/s)	Controlled Emissions Avg. Annual Fluoride (g/s)
Dust Silo Baghouse	Coke, Silica			24	308	5.32E-02 (lb/hr)	SET 0.11% Fluoride in TSP fraction Chester, 1994	97.50%	3.27	5.04E-01	99.00%	(1,2)	1.28	0.20	1.72E-02	1.45E-02	6.70E-03	5.65E-03
Dust Silo => Dust elev.	Nodules	4	30,000															
Dust elev. => Screw conv.		4	30,000															
Screw conv. => C5		4	30,000															
6 Coke bins => C13		23	171,000															
1 Silica bin => C13		13	98,000															
3 Nodule bins => C13		162	1,200,000															
C13 => C14		199	1,470,000															
East Burden Baghouse	Burden			24	308	2.62E-02 (lb/hr)	SET 2.1% Fluoride in TSP fraction Chester, 1994	97.50%	1.61	2.48E-01	99.00%	(1,2)	0.63	0.10	8.46E-03	7.14E-03	3.30E-03	2.78E-03
West Burden Baghouse	Burden			0	308	2.04E-02 (lb/hr)	SET 2.1% Fluoride in TSP fraction Chester, 1994	97.50%	0.00	1.93E-01	99.00%	(1,2,3)	0.00	0.08	0.00	5.55E-03	0.00	2.16E-03
C14 => Chute		0	1,470,000															
Chute => Movable belt C15		0	1,470,000															
C15 => Bins		0	1,470,000															
Furnace #1																		
#1 Tap Hood Vent (fugitives)				15.25	197.14	1.00 (lb/hr)	SET 10/93	97.50%	0.38	0.04		(1, 2)			2.00E-03	1.08E-03		
#1 Tap Hood Vent (point)				15.25	197.14	0.0374 (lb/hr)							0.57	5.62E-02			2.99E-03	1.62E-03
#1 Furnace PRV				0.06	0.93	14.46 (lb/hr)	footnote a: 2.2% Fluoride/TSP 40% Volatilization	100.00%	0.00	0.00	0.00%	(a)	0.88	4.08E-04	0	0	4.62E-03	1.17E-05
#1 Furn. CO Flare				1.70	25.70	0.14 (lb/hr)	footnote a: 2.2% Fluoride/TSP 40% Volatilization	100.00%	0.00	0.00	0.00%	(a)	0.24	3.12E-03	0	0	1.28E-03	8.99E-05
Furnace #2																		
#2 Tap Hood Vent (fugitives)				15.25	197.14	1.00 (lb/hr)	SET 10/93	97.50%	0.38	0.04		(1, 2)			2.00E-03	1.08E-03		
#2 Tap Hood Vent (point)				15.25	197.14	0.0374 (lb/hr)							0.57	5.62E-02			2.99E-03	1.62E-03
#2 Furnace PRV				0.05	0.75	14.46 (lb/hr)	footnote a: 2.2% Fluoride/TSP 40% Volatilization	100.00%	0.00	0.00	0.00%	(a)	0.70	2.61E-04	0	0	3.67E-03	7.50E-06
#2 Furn. CO Flare				1.40	21.80	0.14 (lb/hr)	footnote a: 2.2% Fluoride/TSP 40% Volatilization	100.00%	0.00	0.00	0.00%	(a)	0.20	2.18E-03	0	0	1.05E-03	6.28E-05
Furnace #3																		
#3 Tap Hood Vent (fugitives)				15.25	197.14	1.00 (lb/hr)	SET 10/93	97.50%	0.38	0.04		(1, 2)			2.00E-03	1.08E-03		
#3 Tap Hood Vent (point)				15.25	197.14	0.0374 (lb/hr)							0.57	5.62E-02			2.99E-03	1.62E-03
#3 Furnace PRV				0.08	1.23	14.46 (lb/hr)	footnote a: 2.2% Fluoride/TSP 40% Volatilization	100.00%	0.00	0.00	0.00%	(a)	1.17	7.16E-04	0	0	6.13E-03	2.06E-05
#3 Furn. CO Flare				0.90	13.30	0.14 (lb/hr)	footnote a: 2.2% Fluoride/TSP 40% Volatilization	100.00%	0.00	0.00	0.00%	(a)	0.13	8.56E-04	0	0	6.76E-04	2.46E-05
Furnace #4																		
#4 Tap Hood Vent (fugitives)				15.25	197.14	1.00 (lb/hr)	SET 10/93	97.50%	0.38	0.04		(1, 2)			2.00E-03	1.08E-03		
#4 Tap Hood Vent (point)				15.25	197.14	0.0374 (lb/hr)							0.57	5.62E-02			2.99E-03	1.62E-03
#4 Furnace PRV				0.06	0.10	14.46 (lb/hr)	footnote a: 2.2% Fluoride/TSP 40% Volatilization	100.00%	0.00	0.00	0.00%	(a)	0.89	4.38E-05	0	0	4.68E-03	1.26E-06
#4 Furn. CO Flare				2.10	31.50	0.14 (lb/hr)	footnote a: 2.2% Fluoride/TSP 40% Volatilization	100.00%	0.00	0.00	0.00%	(a)	0.30	4.73E-03	0	0	1.58E-03	1.36E-04
CO Flare Pit	CO	145,000	293,960,000	24	364	0 (lb/hr)		100.00%	0.00	0.00	0.00%		0.00	0.00	0.00	0.00	0.00	0.00
Secondary Condenser Flare	CO	580,000	485,880,000	24	364	0 (lb/hr)		100.00%	0.00	0.00	0.00%		0.00	0.00	0	0	0	0
							Total point source emissions		41.53	5.99			93.23	12.20				

Footnotes:
(a) "Control Technology Evaluation of FMC Pocatello Elemental Phosphorus Manufacturing Plant," EQM, Inc. and EHP and Associates, Inc., August 1992.
(1) All source emission tests (SET) were performed by FMC or estimated from a performed study at the facility.
Daily emissions are calculated by: SET lbs/hr * hrs/day
(2) Capture and Control efficiencies provided by FMC:
(3) Daily values set to zero to reflect normal plant operation conditions.

Emissions Calculations for FMC Corporation - Fluorides
Based on TSP particle size

	Material Type	Tons/Hr	Tons/Yr	Operations Hour/Day	Operations Day/Year	Emission Factor Units	Source	Capture Efficiency	Uncontrolled or Fugitive Emissions Max. Daily Fluoride (lbs/day)	Uncontrolled or Fugitive Emissions Avg. Annual Fluoride (Tons/yr)	Control Efficiency	(Foot-notes)	Controlled Emissions Max. Daily Fluoride (lbs/day)	Controlled Emissions Avg. Annual Fluoride (Tons/yr)	Fugitive Emissions Max. Daily Fluoride (g/s)	Fugitive Emissions Avg. Annual Fluoride (g/s)	Controlled Emissions Max. Daily Fluoride (g/s)	Controlled Emissions Avg. Annual Fluoride (g/s)
AREA SOURCES																		
Calciner Pond 1C				24	365	0.45 (ton/yr)	SET 1986 estimated					(1)	2.47	0.45			1.29E-02	1.29E-02
Calciner Pond 2C				24	365	0.45 (ton/yr)	SET 1986 estimated					(1)	2.47	0.45			1.29E-02	1.29E-02
Calciner Pond 3C				24	365	0.45 (ton/yr)	SET 1986 estimated					(1)	2.47	0.45			1.29E-02	1.29E-02
Calciner Pond 4C				24	365	0.45 (ton/yr)	SET 1986 estimated					(1)	2.47	0.45			1.29E-02	1.29E-02
Solar Drying Pond				24	365	0.45 (ton/yr)	SET 1986 estimated					(1)	2.47	0.45			1.29E-02	1.29E-02
Ore Receiving	Ore																	
Rail Car => Und. Hopper		0	1,440,000	12	150	1.16E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	3.35E-02	0.00%	(2)	0.00	3.35E-02			0.00E+00	9.62E-04
Hopper => Pan Feeders		0	1,440,000	12	150	1.16E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	8.36E-03	99.00%	(2)	0.00E+00	8.36E-05			0.00E+00	2.41E-06
Pan Feeders => C317		0	1,440,000	12	150	1.16E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	8.36E-03	99.00%	(2)	0.00E+00	8.36E-05			0.00E+00	2.41E-06
C317 => C2		0	1,440,000	12	150	1.16E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	8.36E-03	99.00%	(2)	0.00E+00	8.36E-05			0.00E+00	2.41E-06
Fines Reclaim													0.00E+00	5.97E-04				
Fines recycle hopper		0	30,000	24	100	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	1.99E-04	0.00%	(2)	0.00E+00	1.99E-04			0.00E+00	5.73E-06
F11 => B12		0	30,000	24	100	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	1.99E-04	0.00%	(2)	0.00E+00	1.99E-04			0.00E+00	5.73E-06
B12 => B7A		0	30,000	24	100	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	1.99E-04	0.00%	(2)	0.00E+00	1.99E-04			0.00E+00	5.73E-06
Briquetting Building	Ore																	
C5 => Screen V5		0	100,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	6.64E-04	95.00%	(2)	0.00E+00	3.32E-05			0.00E+00	9.55E-07
V5 (to briquetting)		0	90,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	5.97E-04	95.00%	(2)	0.00E+00	2.99E-05			0.00E+00	8.59E-07
V5 (oversize) => C37		0	10,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	6.64E-05	95.00%	(2)	0.00E+00	3.32E-06			0.00E+00	9.55E-08
C37 => Rock bins		0	10,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	6.64E-05	95.00%	(2)	0.00E+00	3.32E-06			0.00E+00	9.55E-08
C6 => Shale Bins (1-8)		207	1,530,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.07	1.02E-02	95.00%	(2)	3.30E-03	5.08E-04			1.73E-05	1.46E-05
C84 => Miller Bin #1		0	5,000	24	1	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	3.32E-05	95.00%	(2)	0.00E+00	1.66E-06			0.00E+00	4.77E-08
C84 => Miller Bin #2		0	5,000	24	1	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	3.32E-05	95.00%	(2)	0.00E+00	1.66E-06			0.00E+00	4.77E-08
Shale Bin (SB) #1 => C16 => C7		0	0	0	0	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	0.00	95.00%	(2)	0.00	0.00			0.00	0.00
SB #1 & 2 => C38 => C7		0	0	0	0	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	0.00	95.00%	(2)	0.00	0.00			0.00	0.00
SB #3 & 4 => C28 => C7		0	100,000	24	24	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	6.64E-04	95.00%	(2)	0.00E+00	3.32E-05			0.00E+00	9.55E-07
SB #5 & 6 => C38N => C7N		175	1,330,000	24	316	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.06	8.83E-03	95.00%	(2)	2.79E-03	4.41E-04			1.47E-05	1.27E-05
SB #7 & 8 => C28N => C7N		0	100,000	24	24	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	6.64E-04	95.00%	(2)	0.00E+00	3.32E-05			0.00E+00	9.55E-07
C7 & C7N => C50 => C52		175	1,530,000	24	364	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.06	1.02E-02	95.00%	(2)	2.79E-03	5.08E-04			1.46E-05	1.46E-05
C52 => C53 => C55		201	1,760,000	24	364	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.06	1.17E-02	95.00%	(2)	3.21E-03	5.84E-04			1.68E-05	1.68E-05
C55 => C55A => C223		201	1,760,000	24	364	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.06	1.17E-02	95.00%	(2)	3.21E-03	5.84E-04			1.68E-05	1.68E-05
C223 => Miller Bin (MB) #1 or #2		201	1,760,000	24	364	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.06	1.17E-02	95.00%	(2)	3.21E-03	5.84E-04			1.68E-05	1.68E-05
MB #1 => C58 => Briquette Press (BP) #1		0	290,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	1.92E-03	95.00%	(2)	0.00E+00	9.62E-05			0.00E+00	2.77E-06
MB #1 => C59 => BP #2		39	290,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.01	1.92E-03	95.00%	(2)	6.25E-04	9.62E-05			3.28E-06	2.77E-06
MB #1 => BP #3		39	290,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.01	1.92E-03	95.00%	(2)	6.25E-04	9.62E-05			3.28E-06	2.77E-06
MB #1 => C57 => C210 => BP #4		0	290,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	1.92E-03	95.00%	(2)	0.00E+00	9.62E-05			0.00E+00	2.77E-06
MB #2 => C224 => BP #5		41	300,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.01	1.99E-03	95.00%	(2)	6.46E-04	9.96E-05			3.39E-06	2.86E-06
MB #2 => C301 => BP #6		41	300,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.01	1.99E-03	95.00%	(2)	6.46E-04	9.96E-05			3.39E-06	2.86E-06
BP #1 => C61 => C165 => C166		0	580,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	3.85E-03	95.00%	(2)	0.00E+00	1.92E-04			0.00E+00	5.54E-06
BP #2 => C63 => C165 => C166		78	580,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.02	3.85E-03	95.00%	(2)	1.25E-03	1.92E-04			6.56E-06	5.54E-06
BP #3 => C196 => C166		78	580,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.02	3.85E-03	95.00%	(2)	1.25E-03	1.92E-04			6.56E-06	5.54E-06
BP #4 => C221 => C212 => C166		0	580,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	3.85E-03	95.00%	(2)	0.00E+00	1.92E-04			0.00E+00	5.54E-06
C166 => C167		118	870,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.77E-03	95.00%	(2)	1.87E-03	2.89E-04			9.84E-06	8.31E-06
C167 => C254		118	87,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.77E-04	95.00%	(2)	1.87E-03	2.89E-05			9.84E-06	8.31E-07
BP #5 => C220 => C221		41	300,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.01	1.99E-03	95.00%	(2)	6.46E-04	9.96E-05			3.39E-06	2.86E-06
BP #6 => C300 => C221		41	300,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.01	1.99E-03	95.00%	(2)	6.46E-04	9.96E-05			3.39E-06	2.86E-06
C221 => C222 => C167		0	0	0	0	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	0.00	95.00%	(2)	0.00	0.00			0.00	0.00
C221 => C302		120	890,000	24	308	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.91E-03	95.00%	(2)	1.92E-03	2.95E-04			1.01E-05	8.50E-06
C169 => C52 or C198		26	225,000	24	364	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.01	1.49E-03	95.00%	(2)	4.10E-04	7.47E-05			2.15E-06	2.15E-06
C198 => C73 => SB #4 or 5		0	5,000	24	1	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.00	3.32E-05	95.00%	(2)	0.00E+00	1.66E-06			0.00E+00	4.77E-08
Calcining Process Flow	Briquettes																	
C303 => Grizzly screen #1		136	890,000	24	273	1.33E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		0.04	5.91E-03	30.00%	(2)	3.03E-02	4.14E-03			1.59E-04	1.19E-04
Grizzly screen #1		136	890,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.91E-03	30.00%	(2)	3.03E-02	4.14E-03			1.59E-04	1.19E-04
Grizzly screen => feeder (F303)		118	770,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.11E-03	30.00%	(2)	2.62E-02	3.58E-03			1.38E-04	1.03E-04
F303 => #1 Calcining Grate		118	770,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.11E-03	30.00%	(2)	2.62E-02	3.58E-03			1.38E-04	1.03E-04
C254 => C255		133	870,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.77E-03	30.00%	(2)	2.96E-02	4.04E-03			1.55E-04	1.16E-04
C255 => C256		133	870,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.77E-03	30.00%	(2)	2.96E-02	4.04E-03			1.55E-04	1.16E-04
C302 -> C303		136	890,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.91E-03	30.00%	(2)	3.03E-02	4.14E-03			1.59E-04	1.19E-04
C256 => Grizzly screen #2		133	870,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.77E-03	30.00%	(2)	2.96E-02	4.04E-03			1.55E-04	1.16E-04
Grizzly screen #2		133	870,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.77E-03	30.00%	(2)	2.96E-02	4.04E-03			1.55E-04	1.16E-04
Griz. briquettes => Feeder C258		118	770,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.11E-03	30.00%	(2)	2.62E-02	3.58E-03			1.38E-04	1.03E-04
C258 => #2 Calcining Grate		118	770,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		0.04	5.11E-03	30.00%	(2)	2.62E-02	3.58E-03			1.38E-04	1.03E-04
C199 => C183 fines		18	120,000	24	273	1.33E-05 (lb/ton)	SET 2.2% Fluoride in TSP fraction Chester, 1994		5.83E-03	7.96E-04	30.00%	(2)	4.08E-03	5.58E-04			2.14E-05	1.60E-05
Fines Handling @ Calciners																		
Calc. 1 ventilation sys. fines => C182		0.31	2,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		9.32E-05	1.27E-05	30.00%	(2)	6.53E-05	8.91E-06			3.43E-07	2.56E-07
C182 => C183		0.31	2,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		9.32E-05	1.27E-05	30.00%	(2)	6.53E-05	8.91E-06			3.43E-07	2.56E-07
Grizzly screen fines => C199		18.32	120,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		5.59E-03	7.64E-04	30.00%	(2)	3.92E-03	5.35E-04			2.06E-05	1.54E-05
Calc.1 ventilation sys => C168		0.46	3,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		1.40E-04	1.91E-05	30.00%	(2)	9.79E-05	1.34E-05			5.14E-07	3.84E-07

Emissions Calculations for FMC Corporation - Fluorides

Based on TSP particle size

	Material Type	Tons/Hr	Tons/Yr	Operations Hour/ Day	Operations Day/ Year	Emission Factor Units	Source	Capture Efficiency	Uncontrolled or Fugitive Emissions Max. Daily Fluoride (lbs/day)	Uncontrolled or Fugitive Emissions Avg. Annual Fluoride (Tons/yr)	Control Efficiency	(Foot-notes)	Controlled Emissions Max. Daily Fluoride (lbs/day)	Controlled Emissions Avg. Annual Fluoride (Tons/yr)	Fugitive Emissions Max. Daily Fluoride (g/s)	Fugitive Emissions Avg. Annual Fluoride (g/s)	Controlled Emissions Max. Daily Fluoride (g/s)	Controlled Emissions Avg. Annual Fluoride (g/s)
C168 => C183		0.46	3,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		1.40E-04	1.91E-05	30.00%	(2)	9.79E-05	1.34E-05			5.14E-07	3.84E-07
C183 => C177		19.08	125,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		5.83E-03	7.95E-04	30.00%	(2)	4.08E-03	5.57E-04			2.14E-05	1.60E-05
C177 => C169		35.10	230,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		1.07E-02	1.46E-03	30.00%	(2)	7.51E-03	1.02E-03			3.94E-05	2.95E-05
Calc 2 fines => C259		0.76	5,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		2.33E-04	3.18E-05	30.00%	(2)	1.63E-04	2.23E-05			8.57E-07	6.41E-07
C259 => C260		16.03	105,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		4.89E-03	6.68E-04	30.00%	(2)	3.43E-03	4.68E-04			1.80E-05	1.35E-05
C260 => C261		16.03	105,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		4.89E-03	6.68E-04	30.00%	(2)	3.43E-03	4.68E-04			1.80E-05	1.35E-05
C261 => C262		16.03	105,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		4.89E-03	6.68E-04	30.00%	(2)	3.43E-03	4.68E-04			1.80E-05	1.35E-05
C262 => C169		16.03	105,000	24	273	1.27E-05 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		4.89E-03	6.68E-04	30.00%	(2)	3.43E-03	4.68E-04			1.80E-05	1.35E-05
Rock Handling @ Calciners																		
C172 => Screen V19		0.00	10,000	24	2	3.20E-04 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		0.00	1.60E-03	30.00%	(2)	0.00	1.12E-03			0.00E+00	3.22E-05
Screen V19		0.00	10,000	24	2	3.20E-04 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		0.00	1.60E-03	30.00%	(2)	0.00	1.12E-03			0.00E+00	3.22E-05
V19 fines => C177		0.00	1,000	24	2	3.20E-04 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		0.00	1.60E-04	30.00%	(2)	0.00	1.12E-04			0.00E+00	3.22E-06
V19 large rock => C173		0.00	9,000	24	2	3.20E-04 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		0.00	1.44E-03	30.00%	(2)	0.00	1.01E-03			0.00E+00	2.90E-05
C175 => Oversize pile		0.00	9,000	24	2	3.20E-04 (lb/ton)	SET 2.1% Fluoride in TSP fraction Chester, 1994		0.00	1.44E-03	0.00%	(2)	0.00	1.44E-03			0.00E+00	4.14E-05
Slag Pit																		
Hot Slag Tapping	Hot Slag	126	1,100,000	24	365	1.60E-04 (lb/ton)	SET: 9/93		0.48	0.09	0.00%	(2)	0.48	0.09			0.00	0.00
Slag Cooling w/IWW	Hot Slag	126	1,100,000	24	365	1.29E-03 (lb/ton)	SET: 9/93		3.89	0.71	0.00%	(2)	3.89	0.71			0.02	0.02
Hot Slag Excavation	Hot Slag	126	1,100,000	24	365	6.76E-05 (lb/ton)	SET: 9/93		0.20	0.04	0.00%	(2)	0.20	0.04			0.00	0.00
Hot Slag Loading	Hot Slag	126	1,100,000	24	365	2.70E-04 (lb/ton)	SET: 9/93		0.81	0.15	0.00%	(2)	0.81	0.15			0.00	0.00
Cold Slag Dumping	Cold Slag	224	326.335	4	365	1.87E-03 (lb/ton)	SET: 9/93		1.67	0.31	0.00%	(2)	1.67	0.31			0.01	0.01
							Total fugitive source emissions		8.17	1.53			19.77	3.63			0.10	0.10

Footnotes:

(1) Based on best available data provided by FMC.

(2) Material Transfer using the equation:

Emission factor (lb/ton) = k * 0.0032 * ((u/5)^1.3)/((m/2)^1.4)

k = 0.74 for TSP particle size; u = 10 mph for mean wind speed; m = % moisture in material

Summation of Area Source Emissions		PM10		TSP		Fluoride	
		Max.	Ann.	Max.	Ann.	Max.	Ann.
Model Source/Inventory Source	type	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)
Calciner #1	area	6.70	1.02	26.37	3.83	10.37	1.42
Calciner 1,1	fug	2.12	0.29	10.58	1.44	5.13	7.00E-01
Calciner 1,2	fug	2.12	0.29	10.58	1.44	5.13	7.00E-01
Calcining Process Flow	area						
C303 => Grizzly screen #1	area	0.66	0.09	1.40	0.19	0.03	4.14E-03
Grizzly screen #1	area	0.66	0.09	1.40	0.19	0.03	4.14E-03
Grizzly screen => feeder (C303)	area	0.57	0.08	1.21	0.17	0.03	3.58E-03
C303 => #1 Calcining Grate	area	0.57	0.08	1.21	0.17	0.03	3.58E-03
Rock Handling @ Calciners	area						
C172 => Screen V19	area	0.00	2.55E-02	0.00	5.39E-02	0.00	1.12E-03
Screen V19	area	0.00	2.55E-02	0.00	5.39E-02	0.00	1.12E-03
V19 fines => C177	area	0.00	2.55E-03	0.00	5.39E-03	0.00	1.12E-04
V19 large rock => C173	area	0.00	2.29E-02	0.00	4.85E-02	0.00	1.01E-03
C175 => Oversize pile	area	0.00	3.28E-02	0.00	6.92E-02	0.00	1.44E-03
Calciner #2	area	8.62	1.18	30.44	4.15	10.46	1.43
Calciner 2,1	fug	2.12	0.29	10.58	1.44	5.13	0.70
Calciner 2,2	fug	2.12	0.29	10.58	1.44	5.13	0.70
Calcining Process Flow	area						
C254 => C255	area	0.65	0.09	1.37	0.19	0.03	4.04E-03
C255 => C256	area	0.65	0.09	1.37	0.19	0.03	4.04E-03
C302 -> C303	area	0.66	0.09	1.40	0.19	0.03	4.14E-03
C256 => Grizzly screen #2	area	0.65	0.09	1.37	0.19	0.03	4.04E-03
Grizzly screen #2	area	0.65	0.09	1.37	0.19	0.03	4.04E-03
Griz. briquettes => Feeder C258	area	0.57	0.08	1.21	0.17	0.03	3.58E-03
C258 => #2 Calcining Grate	area	0.57	0.08	1.21	0.17	0.03	3.58E-03
Cooler #1	area	1.63	0.22	6.86	0.94	0.26	3.58E-02
1,1 Cooler Split	fug	0.53	0.07	2.66	0.36	0.22	2.98E-02
1,2 Cooler Split	fug	0.65	0.09	3.25	0.44	2.42E-02	3.31E-03
Fines Handling @ Calciners	area						
C199 => C183 fines	area	8.91E-02	1.22E-02	1.88E-01	2.57E-02	4.08E-03	5.58E-04
Calc. 1 ventilation sys. fines => C182	area	1.49E-03	2.03E-04	3.14E-03	4.29E-04	6.53E-05	8.91E-06
C182 => C183	area	1.49E-03	2.03E-04	3.14E-03	4.29E-04	6.53E-05	8.91E-06
Grizzly screen fines => C199	area	8.91E-02	1.22E-02	1.88E-01	2.57E-02	3.92E-03	5.35E-04
Calc.1 ventilation sys => C168	area	2.23E-03	3.04E-04	4.71E-03	6.43E-04	9.79E-05	1.34E-05
C168 => C183	area	2.23E-03	3.04E-04	4.71E-03	6.43E-04	9.79E-05	1.34E-05
C183 => C177	area	9.29E-02	1.27E-02	1.96E-01	2.68E-02	4.08E-03	5.57E-04
C177 => C169	area	1.71E-01	2.33E-02	3.61E-01	4.93E-02	7.51E-03	1.02E-03
Cooler #2	area	1.23	0.17	5.24	0.72	0.38	0.05
2,1 Cooler	fug	0.37	0.05	1.83	0.25	0.34	4.63E-02
2,2 Cooler	fug	0.55	0.07	2.74	0.37	2.42E-02	3.31E-03
Fines Handling @ Calciners							
Calc 2 fines => C259	area	3.71E-03	5.07E-04	7.85E-03	1.07E-03	1.63E-04	2.23E-05
C259 => C261	area	7.80E-02	1.06E-02	0.16	2.25E-02	3.43E-03	4.68E-04
C260 => C261	area	7.80E-02	1.06E-02	0.16	2.25E-02	3.43E-03	4.68E-04
C261 => C262	area	7.80E-02	1.06E-02	0.16	2.25E-02	3.43E-03	4.68E-04
C262 => C169	area	7.80E-02	1.06E-02	0.16	2.25E-02	3.43E-03	4.68E-04
Discharge Baghouses	area	176.51	24.09	346.11	47.24	7.19	0.98
Discharge North Baghouse		88.26	12.05	173.05	23.62	3.60	0.49
#1 Cooler Grate => C178	fug						
C178 => C179	fug						
C178 => C180	fug						
Discharge South Baghouse		88.26	12.05	173.05	23.62	3.60	0.49
#2 Cooler Grate => C267	fug						
C267 => C268	fug						
C268 => C179	fug						
C268 => C180	fug						
Ore Receiving	area	0.00	0.74	0.00	1.56	0.00	3.37E-02
Rail Car => Und. Hopper	area	0.00	0.73	0.00	1.54E+00	0.00	3.35E-02
Hopper => Pan Feeders	area	0.00	1.83E-03	0.00	3.86E-03	0.00	8.36E-05
Pan Feeders => C317	area	0.00	1.83E-03	0.00	3.86E-03	0.00	8.36E-05
C317 => C2	area	0.00	1.83E-03	0.00	3.86E-03	0.00	8.36E-05
Silica Handling	area	5.64	1.03	11.92	2.18		
Dumping silica => (Abv. Grd.) Hopper	area	4.93	0.90	10.43	1.90		
Abv Grd. Hopper => Silica Conveyor	area	0.35	0.06	0.75	0.14		
Silica Conveyor => Silica elev.	area	0.35	0.06	0.75	0.14		
Coke Handling	area	232.14	42.75	533.93	98.33		
Truck => Hopper or Ground	area	0.00	7.00	0.00	16.10		
Railcar bottom => Und. hopper	area	232.14	35.75	533.93	82.23		
Slag Pit	area	120.50	21.99	415.66	75.86	3.71E-02	3.71E-02
Hot Slag Tapping	area	4.55	0.83	35.56	6.49	2.53E-03	2.53E-03
Slag Cooling w/water	area	77.45	14.14	289.92	52.91	2.04E-02	2.04E-02
Hot Slag Excavation	area	3.25	0.59	14.95	2.73	1.07E-03	1.07E-03
Hot Slag Loading	area	28.45	5.19	62.38	11.39	4.27E-03	4.27E-03
Cold Slag Dumping	area	6.80	1.24	12.85	2.35	8.78E-03	8.78E-03
Proportioning Bldg.	area	99.14	15.27	375.38	57.81	5.63	0.87
East Nodule Baghouse	fug	30.77	4.74	153.85	23.69	3.20	0.49
West Nodule Baghouse	fug	23.38	3.60	116.92	18.01	2.43	0.37
Coke Handling Baghouse	fug	44.98	6.93	104.62	16.11	0.00	0.00

Summation of Area Source Emissions		PM10		TSP		Fluoride	
		Max.	Ann.	Max.	Ann.	Max.	Ann.
Model Source/Inventory Source	type	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)
Furnace Bldg.	area	38.76	8.67	153.27	34.52	3.13	0.59
East Burden Baghouse	fug	27.69	4.26	110.77	17.06	1.61	0.25
West Burden Baghouse	fug	0.00	3.32	0.00	13.27	0.00	0.19
#1 Tap Hood & Sump Vent	fug	2.77	0.27	10.62	1.05	0.38	0.04
#1 Furnace PRV	fug	0.00	0.00	0.00	0.00	0.00	0.00
#1 Furn. CO Flare	fug	0.00	0.00	0.00	0.00	0.00	0.00
#2 Tap Hood & Sump Vent	fug	2.77	0.27	10.62	1.05	0.38	0.04
#2 Furnace PRV	fug	0.00	0.00	0.00	0.00	0.00	0.00
#2 Furn. CO Flare	fug	0.00	0.00	0.00	0.00	0.00	0.00
#3 Tap Hood & Sump Vent	fug	2.77	0.27	10.62	1.05	0.38	0.04
#3 Furnace PRV	fug	0.00	0.00	0.00	0.00	0.00	0.00
#3 Furn. CO Flare	fug	0.00	0.00	0.00	0.00	0.00	0.00
#4 Tap Hood & Sump Vent	fug	2.77	0.27	10.62	1.05	0.38	0.04
#4 Furnace PRV	fug	0.00	0.00	0.00	0.00	0.00	0.00
#4 Furn. CO Flare	fug	0.00	0.00	0.00	0.00	0.00	0.00
Briquetting Building	area	0.67	0.13	1.43	0.27	0.03	5.59E-03
C5 => Screen V5	area	0.00	7.24E-04	0.00	1.53E-03	0.00	3.32E-05
V5 (to briquetting)	area	0.00	6.52E-04	0.00	1.38E-03	0.00	2.99E-05
V5 (oversize) => C37	area	0.00	7.24E-05	0.00	1.53E-04	0.00	3.32E-06
C37 => Rock bins	area	0.00	7.24E-05	0.00	1.53E-04	0.00	3.32E-06
C6 => Shale Bins (1-8)	area	0.07	1.11E-02	0.15	2.34E-02	3.30E-03	5.08E-04
C84 => Miller Bin #1	area	0.00	3.62E-05	0.00	7.66E-05	0.00	1.66E-06
C84 => Miller Bin #2	area	0.00	3.62E-05	0.00	7.66E-05	0.00	1.66E-06
Shale Bin (SB) #1 => C16 => C7	area	0.00	0.00	0.00	0.00	0.00	0.00
SB #1 & 2 => C38 => C7	area	0.00	0.00	0.00	0.00	0.00	0.00
SB #3 & 4 => C28 => C7	area	0.00	7.24E-04	0.00	1.53E-03	0.00	3.32E-05
SB #5 & 6 => C38N => C7N	area	0.06	9.63E-03	0.13	2.04E-02	2.79E-03	4.41E-04
SB #7 & 8 => C28N => C7N	area	0.00	7.24E-04	0.00	1.53E-03	0.00	3.32E-05
C7 & C7N => C50 => C52	area	0.06	1.11E-02	0.13	2.34E-02	2.79E-03	5.08E-04
C52 => C53 => C55	area	0.07	1.27E-02	0.15	2.70E-02	3.21E-03	5.84E-04
C55 => C55A => C223	area	0.07	1.27E-02	0.15	2.70E-02	3.21E-03	5.84E-04
C223 => Miller Bin (MB) #1 or #2	area	0.07	1.27E-02	0.15	2.70E-02	3.21E-03	5.84E-04
MB #1 => C58 => Briquette Press (BP) #1	area	0.00	2.10E-03	0.00	4.44E-03	0.00	9.62E-05
MB #1 => C59 => BP #2	area	0.01	2.10E-03	0.03	4.44E-03	6.25E-04	9.62E-05
MB #1 => BP #3	area	0.01	2.10E-03	0.03	4.44E-03	6.25E-04	9.62E-05
MB #1 => C57 => C210 => BP #4	area	0.00	2.10E-03	0.00	4.44E-03	0.00	9.62E-05
MB #2 => C224 => BP #5	area	0.01	2.17E-03	0.03	4.59E-03	6.46E-04	9.96E-05
MB #2 => C301 => BP #6	area	0.01	2.17E-03	0.03	4.59E-03	6.46E-04	9.96E-05
BP #1 => C61 => C165 => C166	area	0.00	4.20E-03	0.00	8.88E-03	0.00	1.92E-04
BP #2 => C63 => C165 => C166	area	0.03	4.20E-03	0.06	8.88E-03	1.25E-03	1.92E-04
BP #3 => C196 => C166	area	0.03	4.20E-03	0.06	8.88E-03	1.25E-03	1.92E-04
BP #4 => C221 => C212 => C166	area	0.00	4.20E-03	0.00	8.88E-03	0.00	1.92E-04
C166 => C167	area	0.04	6.30E-03	0.09	1.33E-02	1.87E-03	2.89E-04
C167 => C254	area	0.04	6.30E-03	0.09	1.33E-02	1.87E-03	2.89E-05
BP #5 => C220 => C221	area	0.01	2.17E-03	0.03	4.59E-03	6.46E-04	9.96E-05
BP #6 => C300 => C221	area	0.01	2.17E-03	0.03	4.59E-03	6.46E-04	9.96E-05
C221 => C222 => C167	area	0.00	0.00	0.00	0.00	0.00	0.00
C221 => C302	area	0.04	6.45E-03	0.09	1.36E-02	1.92E-03	2.95E-04
C169 => C52 or C198	area	0.01	1.63E-03	0.02	3.45E-03	4.10E-04	7.47E-05
C198 => C73 => SB #4 or 5	area	0.00	3.62E-05	0.00	7.66E-05	0.00	1.66E-06
Roads Centered on Slag Pit	area	49.21	6.84	20.32	2.73	0.27	0.04
Roads Centered on Slag Pile	area	165.10	18.67	280.83	29.30	5.87	0.61
Roads Centered on Ore Pile	area	62.27	6.47	135.97	14.04	2.94	0.30
Roads Centered on Pond Area	area	83.59	9.19	160.67	16.88	3.36	0.35
Ore Handling	area	85.55	11.11	170.25	22.11	3.69	0.48
East Shale Baghouse (Fines reclaim to B7A->)	fug	0.00	1.30E-02	0.00	2.76E-02	0.00	5.97E-04
East Shale Baghouse	fug	3.91	0.48	7.67	0.93	1.66E-01	2.02E-02
Middle Shale Baghouse	fug	18.95	2.30	37.15	4.51	0.81	0.10
West Shale Baghouse	fug	5.11	0.62	10.03	1.22	0.22	0.03
Main Shale Pile	stockpiles	50.55	6.75	101.36	13.53	2.20	0.29
Raw Ore Contingency	stockpiles	6.07	0.82	12.13	1.63	0.26	3.54E-02
Crushed Ore Contingency	stockpiles	0.96	0.13	1.92	0.26	4.15E-02	5.68E-03
Silica and Nodule Stockpiles	area	64.71	3.35	130.99	7.46	2.28	0.12
Nodule Stockpile Baghouse	area	0.00	0.24	0.00	1.20	0.00	2.49E-02
Silica Stockpile	area	10.59	0.85	21.41	1.72	0.00	0.00
Nodule Stockpile	area	0.35	5.98E-02	0.70	1.03E-01	1.46E-02	1.97E-03
Nodule Fines Stockpile	area	53.76	2.20	108.87	4.44	2.26	9.40E-02

J.R. Simplot Company Emission Inventories

Emission Calculations for J.R. Simplot - Fluorides

	Material Type	Tons/Hr	Tons/Yr	Operations Hour/ Day	Operations Day/ Year	Emission Factor Units	Source	Capture Efficiency	Point Fugitive Emissions Uncontrolled Area Emissions Max. Daily Fluorides (lbs/day)	Point Fugitive Emissions Uncontrolled Area Emissions Avg. Annual Fluorides (Tons/yr)	Control Efficiency	Controlled Emissions Max. Daily Fluorides (lbs/day)	Controlled Emissions Avg. Annual Fluorides (Tons/yr)	(Foot-notes)	Fugitive Emissions Max. Daily Fluorides (g/s)	Fugitive Emissions Avg. Annual Fluorides (g/s)	Controlled Emissions Max. Daily Fluorides (g/s)	Controlled Emissions Avg. Annual Fluorides (g/s)
POINT SOURCES																		
#100 Calciner Ent. Scrubber	Ore			24	0	0.38 (lb/hr)	Permited Emission @ 3% Fluoride	99.5%	0.00	0.00	99.8%	9.00	0.00	(1,3)	0.00	0.00	4.72E-02	0.00
#400 Phosphoric Acid Plant D-M Scrubber				24	339	0.20 (lb/hr)	SET 1993, Estimated Operations	99.5%	0.24	0.04	90.0%	4.80	0.81	(1, 2, 3)	1.27E-03	1.18E-03	2.52E-02	2.34E-02
Granulation #1 Reactor/Granulator				24	296	0.66 (lb/hr)	SET 1993, Estimated Operations	99.5%	0.035	0.01	90.0%	15.84	2.34	(1, 2, 3)	1.85E-04	1.50E-04	8.32E-02	6.74E-02
Granulation #1 Dryer	MAP			24	296	0.13 (lb/hr)	SET 1993, Estimated Operations	99.5%	0.58	0.09	95.0%	3.12	0.46	(1, 2, 3)	3.03E-03	2.46E-03	1.64E-02	1.33E-02
Granulation #1 Baghouse				24	296	0.04 (lb/hr)	SET 1993, Estimated Operations	99.5%	0.68	0.10	99.9%	0.96	0.14	(1, 3)	3.55E-03	2.88E-03	5.04E-03	4.09E-03
Granulation #2 Tail Gas Scrubber (TGS)				24	261	1.68 (lb/hr)	SET 1993, Estimated Operations	99.5%	0.08	0.01	95.0%	40.32	5.26	(1, 2, 3)	4.36E-04	3.12E-04	2.12E-01	1.51E-01
Granulation #2 Baghouses	DAP			24	261	0.02 (lb/hr)	SET 1993, Estimated Operations	99.5%	0.34	0.04	99.9%	0.48	0.06	(1, 3)	1.77E-03	1.27E-03	2.52E-03	1.80E-03
Granulation #3	TSP			24	221	2.07 (lb/hr)	Proportioned to Granulation #2 TGS by PM	99.5%	11.02	1.22	95.0%	49.68	5.49	(1, 2, 3)	5.79E-02	3.50E-02	2.61E-01	1.58E-01
Super Phosphoric Acid Plant																		
SPA vacuum evaporators				24	343	0.185 (lb/hr)	Background Information Document	100.0%	0.00	0.00	0.00%	4.44	0.76	(4)	0.00	0.00	2.33E-02	2.19E-02
SPA pipe reactor																		
H2O Reclaim Cooling Tower North				24	339	8.38 (lb/hr)	SET 1993, Estimated Operations	100.0%	0.00	0.00	0.00%	201.12	34.09	(5)	0.00	0.00	1.06	0.98
H2O Reclaim Cooling Tower East				24	339	12.57 (lb/hr)	SET 1993, Estimated Operations	100.0%	0.00	0.00	0.00%	301.68	51.13	(5)	0.00	0.00	1.58	1.47
H2O Reclaim Cooling Tower West				24	339	12.57 (lb/hr)	SET 1993, Estimated Operations	100.0%	0.00	0.00	0.00%	301.68	51.13	(5)	0.00	0.00	1.58	1.47
Tank Farm Scrubber	Gypsum	250		24	339	0.07 (lb/hr)	Proportioned from #4 Phos Acid					1.68	0.28				8.82E-03	8.19E-03
Footnotes:							Total point source Fluoride emissions		13.85	1.50		934.80	151.98				4.91	4.37

(1) Source Emission Test (SET) performed by J.R. Simplot or estimated from a performed study at the facility. Daily emissions calculated by: SET lb/hr*hrs/day.

(2) Control efficiency given by J.R. Simplot.

(3) Process fugitive emission rates have been locked in to avoid conflicting with results from subsequent stack testing. Capture and control values are base on 1992 SIP inventory data.

(4) Final Guideline Document: Control of Fluoride Emissions from Existing Phosphate Fertilizer Plants, EPA-450/2-77-005, March 1977.
0.005 lb of F/ton P2O5 for total emissions from an uncontrolled plant. Section 5.2.2.2

(5) The emission rate was measured at one cooling cell (3.62 lb/hr of TSP). There are a total of eight cells between the three cooling towers.
North cooling tower contains two cells, East and West cooling towers contain three cells each.

	Material Type	Tons/Hr	Tons/Yr	Hour/ Day	Day/ Year	Emission Factor Units	Source	Capture Efficiency	Max. Daily Fluorides (lbs/day)	Avg. Annual Fluorides (Tons/yr)	Control Efficiency	Controlled Max. Daily (lbs/day)	Controlled Avg. Annual (Tons/yr)	(Foot-notes)	Fugitive Max. Daily (g/s)	Fugitive Avg. Annual (g/s)	Controlled Max. Daily (g/s)	Controlled Avg. Annual (g/s)
AREA SOURCES																		
#400 Phosphoric Acid Plant																		
Gyp Precip. => Gyp Stockpile	Gypsum	250	1,490,924	24	330	0.00 (lb/ton)	Gypsum transported in a wet slurry form.		0.00	0.00	100.0%	0.00	0.00				0.00	0.00
Granulation #3																		
Bucket => Hopper	TSP	150		24	221	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.16	95.0%	0.07	7.96E-03				3.78E-04	2.29E-04
Hopper => Elevator		150		24	221	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.16	95.0%	0.07	7.96E-03				3.78E-04	2.29E-04
Elevator => Screens		150		24	221	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.16	95.0%	0.07	7.96E-03				3.78E-04	2.29E-04
Screens => Elevator		150		24	221	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.16	95.0%	0.07	7.96E-03				3.78E-04	2.29E-04
Elevator => Cross Belts		150		24	221	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.16	95.0%	0.07	7.96E-03				3.78E-04	2.29E-04
Cross Belts => Loadout		150		24	221	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.16	50.0%	0.72	7.96E-02				3.78E-03	2.29E-03
Granulation #1																		
Bucket => Hopper	MAP	150		24	296	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.21	95.0%	0.07	1.07E-02				3.78E-04	3.07E-04
Hopper => Elevator		150		24	296	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.21	95.0%	0.07	1.07E-02				3.78E-04	3.07E-04
Elevator => Screens		150		24	296	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.21	95.0%	0.07	1.07E-02				3.78E-04	3.07E-04
Elevator => Cross Belts		150		24	296	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.21	95.0%	0.07	1.07E-02				3.78E-04	3.07E-04
Cross Belts => Loadout		150		24	296	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.21	50.0%	0.72	1.07E-01				3.78E-03	3.07E-03
Granulation #2																		
Bucket => Hopper	DAP	150		24	261	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.19	95.0%	0.07	9.40E-03				3.78E-04	2.70E-04
Hopper => Elevator		150		24	261	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.19	95.0%	0.07	9.40E-03				3.78E-04	2.70E-04
Elevator => Screens		150		24	261	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.19	95.0%	0.07	9.40E-03				3.78E-04	2.70E-04
Elevator => Cross Belts		150		24	261	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.19	95.0%	0.07	9.40E-03				3.78E-04	2.70E-04
Cross Belts => Loadout		150		24	261	0.0004 (lb/ton)	AP-42 TB 6.8-1 (Loading) X 0.02 (2% F)		1.44	0.19	50.0%	0.72	9.40E-02				3.78E-03	2.70E-03
							Total fugitive source Fluoride emissions		23.04	2.96		3.10	0.40					
Gypsum Pond				24	365	6.08 (lb/day)	AP-42 TB 5.11-1 Assuming 90% is gypsum pile emission. and 38 acres of liquid surface area		6.08	1.11	0.00%	6.08	1.11	(1)			3.19E-02	3.19E-02
Gypsum Stack						6900.00 (mg/Kg)	fluoride found by the nitric acid extraction method											
				24	120	1.60 (lb/day)			1.60	0.10	0.00%	1.60	0.10				8.42E-03	2.77E-03
Footnotes:							Total stockpile Fluoride emissions		7.68	1.21		7.68	1.21				4.03E-02	3.47E-02

(1) The emission factor of 1.6 lb/acre/day is multiplied by 38 acres of gypsum pond. Assuming 90% is gypsum pile emission. The other 10% is cooling tower emissions.

Summation of Area Source Emissions		PM10		TSP		Fluoride	
		Max.	Ann.	Max.	Ann.	Max.	Ann.
Model Source/Inventory Source	type	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)
#400 Phos Acid Plant	area	0.16	2.71E-02	0.19	3.22E-02	0.24	4.09E-02
#400 Phosphoric Acid Plant D-M Scrubber and POLYCON	fug	0.16	2.71E-02	0.19	3.22E-02	0.24	4.09E-02
Gyp Precip. => Gyp Stockpile	fug	0.00	0.00	0.00	0.00	0.00	0.00
Granulation #1 Plant	area	52.81	7.82	64.40	9.53	1.29	0.19
MAP reactor/granulator Venturi Scrubber #1	fug	1.44	0.21	28.87	4.27	0.04	0.01
MAP Dryer Venturi Scrubber #2	fug	23.68	3.50	1.76	0.26	0.58	0.09
MAP Baghouse	fug	27.69	4.10	33.77	5.00	0.68	0.10
Granulation #1 Plant Loading	area	7.56	1.12	50.40	7.46	1.01	0.15
Bucket => Hopper	area	0.54	0.08	3.60	0.53	0.07	1.07E-02
Hopper => Elevator	area	0.54	0.08	3.60	0.53	0.07	1.07E-02
Elevator => Screens	area	0.54	0.08	3.60	0.53	0.07	1.07E-02
Screens => Cross belt	area	0.54	0.08	3.60	0.53	0.07	1.07E-02
Cross Belts => Loadout	area	5.40	0.80	36.00	5.33	0.72	0.11
Granulation #2 Plant	area	17.25	2.25	21.03	2.74	0.42	0.05
DAP reactor/granulator Venturi Scrubber	fug	3.40	0.44	4.15	0.54	0.08	0.01
DAP Cooler Baghouse	fug	13.85	1.81	16.88	2.20	0.34	0.04
Granulation #2 Plant Loading	area	7.56	0.99	50.40	6.58	1.01	0.13
Bucket => Hopper	area	0.54	0.07	3.60	0.47	0.07	9.40E-03
Hopper => Elevator	area	0.54	0.07	3.60	0.47	0.07	9.40E-03
Elevator => Screens	area	0.54	0.07	3.60	0.47	0.07	9.40E-03
Screens => Cross belt	area	0.54	0.07	3.60	0.47	0.07	9.40E-03
Cross Belts => Loadout	area	5.40	0.70	36.00	4.70	0.72	9.40E-02
Ammo-Sulfate	area	0.97	0.16	1.19	0.19		
Ammonium Sulfate Reactor/Dryer Venturi Scrubber	fug	0.55	0.09	0.68	0.11		
Ammonium Sulfate Cooler Cyclone	fug	0.42	0.07	0.51	0.08		
Ammo-Sulfate Loading	area	7.02	1.14	46.80	7.61		
Storage Conv. => Storage	area	0.54	0.09	3.60	0.59		
FE Loader => Hopper	area	0.54	0.09	3.60	0.59		
Hopper => Bucket Elev.	area	0.54	0.09	3.60	0.59		
Bucket Elev. => Loadout	area	5.40	0.88	36.00	5.85		
Granulation #3 Loading	Area	8.10	0.90	54.00	5.97	1.08	0.12
Bucket => Hopper	Area	0.54	0.06	3.60	0.40	0.07	7.96E-03
Hopper => Elevator	Area	0.54	0.06	3.60	0.40	0.07	7.96E-03
Elevator => Screens	Area	0.54	0.06	3.60	0.40	0.07	7.96E-03
Screens => Elevator	Area	0.54	0.06	3.60	0.40	0.07	7.96E-03
Elevator => Cross belt	Area	0.54	0.06	3.60	0.40	0.07	7.96E-03
Cross belt => Truck/Railcar	Area	5.40	0.60	36.00	3.98	0.72	7.96E-02
TSP Roads	line	6.69	0.41	2.51	0.16		
Main Gate => Triple	line	0.34	4.30E-02	0.12	1.45E-02		
Triple => Main Gate	line	0.16	1.95E-02	0.11	1.42E-02		
Main Gate => GRI + Airco + Gran & Sulfuric Traffic	line	6.19	0.35	2.28	0.13		
Cooling Tower Roads	line	9.29	0.53	3.42	0.19		
Airco + Gran & Sulfuric Traffic	line	9.29	0.53	3.42	0.19		
AIRCO Roads	line	9.93	0.54	3.65	0.20		
Airco Trucks Entering + Gran & Sulfuric Traffic	line	4.96	0.27	1.16	0.06		
Airco Trucks Leaving + Gran & Sulfuric Traffic	line	4.96	0.27	2.49	0.13		
Sulfuric Acid Roads	line	4.61	0.24	1.68	0.09		
NSI => Ammo2 load=> Main Gate	line	1.53	0.08	0.55	0.03		
NSI => Ammo1 load=> Main Gate	line	2.52	0.13	0.95	0.05		
NSI => Ammo SO4=> Main Gate	line	0.56	0.04	0.18	0.01		
Granulation Roads	line	4.66	0.24	1.69	0.09		
Ammo2 load => Main Gate + NSI=>Ammo2 load	line	1.41	0.07	0.52	0.03		
Ammo1 load => Main Gate + NSI=>Ammo1 load	line	2.69	0.13	0.99	0.05		
Ammo SO4 => Main Gate + NIS=> Ammo SO4	line	0.56	0.04	0.18	0.01		
EWI => gypsum stack	line	26.51	1.22	58.91	2.71		
GRI => gypsum stack	line	25.57	1.18	56.82	2.62		
GRI => Met Monitoring Site	line	4.70	0.22	10.44	0.48		
gypsum stack =>1	line	0.94	0.04	2.09	0.10		
GRI => Met Monitoring Site	line	4.70	0.22	10.44	0.48		
1 => 2	line	0.94	0.04	2.09	0.10		
GRI => Met Monitoring Site	line	4.70	0.22	10.44	0.48		
2 => 3	line	0.94	0.04	2.09	0.10		
GRI => Met Monitoring Site	line	4.70	0.22	10.44	0.48		
3 => Met Tower	line	0.94	0.04	2.09	0.10		
GRI => Met Monitoring Site	line	4.70	0.22	10.44	0.48		
North Gyp Stack	line	36.99	2.63	77.50	5.46	0.53	0.03
Gypsum	line	110.96	7.90	232.50	16.38	1.60	0.10
South Gyp Stack 1	line	36.99	2.63	77.50	5.46	0.53	0.03
Gypsum	line	110.96	7.90	232.50	16.38	1.60	0.10
South Gyp Stack 2	line	36.99	2.63	77.50	5.46	0.53	0.03
Gypsum	line	110.96	7.90	232.50	16.38	1.60	0.10
N Gyp Pond	area	0.00	0.00	0.00	0.00	2.03	0.37
Gypsum Pond	area					6.08	1.11
M Gyp Pond	area	0.00	0.00	0.00	0.00	2.03	0.37
Gypsum Pond	area					6.08	1.11
S Gyp Pond	area	0.00	0.00	0.00	0.00	2.03	0.37
Gypsum Pond	area					6.08	1.11

BAPCO Emission Inventories

Emissions Calculations for Bannock Paving Co. Particulate Metals

SOURCES	Cr in PM10	Data Source/ Confidence	Chromium Daily (g/s)	Chromium Annual (g/s)	Pb in PM10	Data Source/ Confidence	Lead Daily (g/s)	Lead Annual (g/s)
ke Dryer Scrubber (pt)	0.0282%	B/1	1.29E-06	1.19E-07	0.0026%	B/1	1.21E-07	1.11E-08
ke Dryer Scrubber (fug)	0.0282%	B/1	4.53E-06	4.18E-07	0.0026%	B/1	4.23E-07	3.90E-08
Coke Dryer Baghouse (pt)	0.0282%	B/1	3.06E-07	4.10E-08	0.0026%	B/1	2.86E-08	3.83E-09
Coke Dryer Baghouse (fug)	0.0282%	B/1	8.06E-07	1.08E-07	0.0026%	B/1	7.53E-08	1.01E-08
Drum mixer Baghouse (pt)		F	0.00	0.00		F	0.00	0.00
Drum mixer Baghouse (fug)		F	0.00	0.00		F	0.00	0.00
Slag Crushing	0.080%	B/1	1.75E-03	5.64E-04	0.016%	B/1	3.49E-04	1.12E-04
Coke Plant	0.0282%	B/1	1.03E-04	7.28E-05	0.0026%	B/1	9.61E-06	6.80E-06
Asphalt Plant		F	0.00	0.00		F	0.00	0.00
Unpaved Roads	0.0845%	B/1	5.24E-04	2.26E-04	0.0000%	B/1	0.00	0.00
Paved Roads	0.0414%	B/1	7.78E-05	4.48E-05	0.0076%	B/1	1.44E-05	8.27E-06
Asphalt Hot Plant		F	0.00	0.00		F	0.00	0.00
Coke Plant Stockpile	0.0282%	B/1	2.02E-05	9.09E-06	0.0026%	B/1	1.89E-06	8.49E-07
Slag Crusher	0.080%	B/1	1.72E-04	7.92E-05	0.016%	B/1	3.43E-05	1.58E-05
Totals		Total (g/s)	2.66E-03	9.96E-04		Total (g/s)	4.10E-04	1.44E-04
		Total (lb/dy, ton/yr)	0.51	0.03		Total (lb/dy, ton/yr)	0.08	5.01E-03
		Point	3.04E-04	5.56E-06		Point	0.00	0.00
		Fugitive	1.02E-03	1.83E-05		Fugitive	0.00	0.00
		Area	3.54E-01	2.21E-02		Area	6.84E-02	4.14E-03
		Roads	1.15E-01	9.40E-03		Roads	2.73E-03	2.87E-04
		Stockpiles	3.67E-02	3.07E-03		Stockpiles	6.90E-03	5.78E-04

SOURCES	Ni in PM10	Data Source/ Confidence	Nickel Daily (g/s)	Nickel Annual (g/s)	Si in PM10	Data Source/ Confidence	Silica Daily (g/s)	Silica Annual (g/s)
ke Dryer Scrubber (pt)	0.0146%	B/1	6.67E-07	6.15E-08	2.2960%	B/1	1.05E-04	9.68E-06
ke Dryer Scrubber (fug)	0.0146%	B/1	2.34E-06	2.16E-07	2.2960%	B/1	3.68E-04	3.40E-05
Coke Dryer Baghouse (pt)	0.0146%	B/1	1.58E-07	2.12E-08	2.2960%	B/1	2.49E-05	3.33E-06
Coke Dryer Baghouse (fug)	0.0146%	B/1	4.17E-07	5.58E-08	2.2960%	B/1	6.55E-05	8.77E-06
Drum mixer Baghouse (pt)		F	0.00	0.00		F	0.00	0.00
Drum mixer Baghouse (fug)		F	0.00	0.00		F	0.00	0.00
Slag Crushing	0.013%	B/1	2.95E-04	9.50E-05	20.42%	B/1	0.45	0.14
Coke Plant	0.0146%	B/1	5.32E-05	3.76E-05	2.2960%	B/1	8.37E-03	5.92E-03
Asphalt Plant		F	0.00	0.00		F	0.00	0.00
Unpaved Roads	0.0136%	B/1	8.44E-05	3.63E-05	16.85%	B/1	0.10	0.04
Paved Roads	0.0086%	B/1	1.62E-05	9.32E-06	18.55%	B/1	0.03	0.02
Asphalt Hot Plant		F	0.00	0.00		F	0.00	0.00
Coke Plant Stockpile	0.0146%	B/1	1.04E-05	4.70E-06	2.2960%	B/1	1.64E-03	7.39E-04
Slag Crusher	0.013%	B/1	2.90E-05	1.34E-05	20.42%	B/1	4.40E-02	2.02E-02
Totals		Total (g/s)	4.92E-04	1.97E-04		Total (g/s)	0.64	0.24
		Total (lb/dy, ton/yr)	0.09	6.84E-03		Total (lb/dy, ton/yr)	122.28	8.21
		Point	1.57E-04	2.88E-06		Point	0.02	0.00
		Fugitive	5.25E-04	9.44E-06		Fugitive	0.08	0.00
		Area	6.64E-02	4.61E-03		Area	86.93	5.21
		Roads	1.92E-02	1.59E-03		Roads	26.55	2.26
		Stockpiles	7.52E-03	6.28E-04		Stockpiles	8.70	0.73

SOURCES	Phosphorus in PM10	Data Source/ Confidence	Phosphorus Daily (g/s)	Phosphorus Annual (g/s)	Fluoride in TSP	Data Source/ Confidence	Fluoride Daily (g/s)	Fluoride Annu (g/
ke Dryer Scrubber (pt)	0.1639%	B/1	7.49E-06	6.91E-07	NE	B/1	0.00	0.0
ke Dryer Scrubber (fug)	0.1639%	B/1	2.63E-05	2.42E-06	NE	B/1	0.00	0.0
Coke Dryer Baghouse (pt)	0.1639%	B/1	1.78E-06	2.38E-07	NE	B/1	0.00	0.0
Coke Dryer Baghouse (fug)	0.1639%	B/1	4.68E-06	6.26E-07	NE	B/1	0.00	0.0
Drum mixer Baghouse (pt)		F	0.00	0.00		F	0.00	0.0
Drum mixer Baghouse (fug)		F	0.00	0.00		F	0.00	0.0
Slag Crushing	2.09%	B/1	4.59E-02	1.48E-02	2.09%	B/1	1.00E-01	3.22E-0
Coke Plant	0.1639%	B/1	5.97E-04	4.22E-04	NE	B/1	0.00	0.0
Asphalt Plant		F	0.00	0.00		F	0.00	0.0
Unpaved Roads	1.25%	B/1	7.77E-03	3.34E-03	2.09%	D/3	2.88E-02	1.24E-0
Paved Roads	1.16%	B/1	2.17E-03	1.25E-03	2.09%	D/3	4.50E-03	2.56E-0
Asphalt Hot Plant		F	0.00	0.00		F	0.00	0.0
Coke Plant Stockpile	0.1639%	B/1	1.17E-04	5.28E-05	NE	B/1	0.00	0.0
Slag Crusher	2.09%	B/1	4.51E-03	2.07E-03	2.09%	B/1	9.44E-03	4.31E-0
Totals		Total (g/s)	6.11E-02	2.19E-02		Total (g/s)	1.43E-01	5.14E-0
		Total (lb/dy, ton/yr)	11.64	0.76		Total (lb/dy, ton/yr)	27.20	1.7
		Point	0.00	0.00		Point	0.00	0.0
		Fugitive	0.01	0.00		Fugitive	0.00	0.0
		Area	8.85	0.53		Area	19.06	1.1
		Roads	1.89	0.16		Roads	6.35	0.5
		Stockpiles	0.88	0.07		Stockpiles	1.80	0.1

	Chromium		Lead		Nickel		Silica		Phosphorus		Fluoride	
Slag 1	2.02E-04	9.19E-05	2.52E-05	1.18E-05	3.39E-05	1.55E-05	4.95E-02	2.29E-02	4.45E-03	2.05E-03	1.11E-02	5.04E-03
g 2	1.42E-04	6.45E-05	1.33E-05	6.34E-06	2.39E-05	1.09E-05	3.43E-02	1.59E-02	2.89E-03	1.33E-03	7.85E-03	3.55E-03
g 3	1.84E-03	6.02E-04	3.52E-04	1.14E-04	3.10E-04	1.02E-04	4.68E-01	1.53E-01	4.73E-02	1.54E-02	1.05E-01	3.43E-02
Coke 1	1.06E-04	4.77E-05	3.94E-06	2.03E-06	2.48E-05	1.12E-05	2.16E-02	1.00E-02	1.54E-03	7.09E-04	4.76E-03	2.14E-03
Coke 2	1.94E-04	1.12E-04	1.22E-05	8.03E-06	7.03E-05	4.44E-05	2.87E-02	1.53E-02	2.05E-03	1.08E-03	4.76E-03	2.14E-03
Asphalt 1	8.60E-05	3.86E-05	2.05E-06	1.18E-06	1.44E-05	6.52E-06	1.99E-02	9.29E-03	1.42E-03	6.56E-04	4.76E-03	2.14E-03
Asphalt 2	8.60E-05	3.86E-05	2.05E-06	1.18E-06	1.44E-05	6.52E-06	1.99E-02	9.29E-03	1.42E-03	6.56E-04	4.76E-03	2.14E-03

Appendix B
Calculated Fluoride Flux in Groundwater Downgradient of the Gypsum Stack

Table 2 Estimated groundwater flow rate of all stack-affected groundwater.

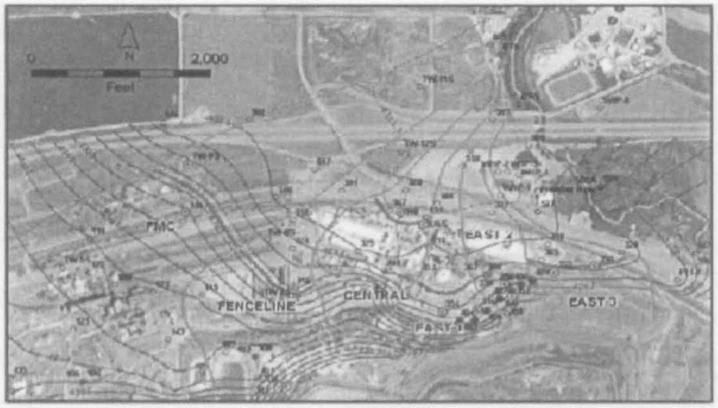
METHOD:
The rate of flow of stack affected groundwater from the site is calculated as follows:

Qx = Kx * ix * Ax

where:
- Qx = Groundwater flow rate for region x
- Kx = Average hydraulic conductivity for region x
- ix = Average hydraulic gradient in region x
- Ax = Cross sectional flow area for region x

The calculation involves the following steps:
1. The full extent of stack affected groundwater flow is divided into contiguous regions (see figures below).
2. The cross sectional area for each region is calculated using the hydrogeologic model developed in ARCGis.
3. The specific hydraulic properties (K and i) of each region are estimated from available information.

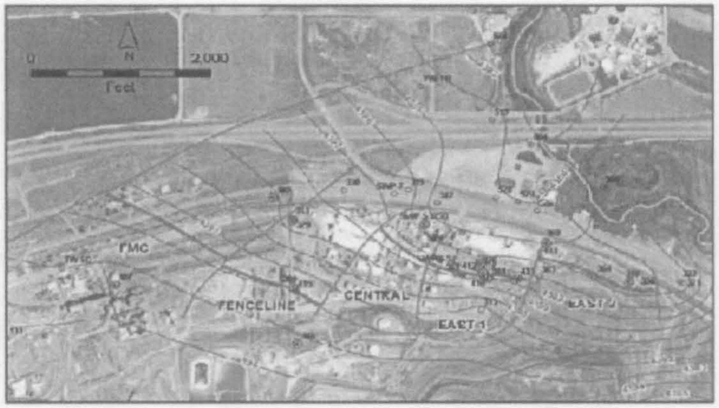
Upper Zone Flow:



	Width (ft)	Average Thickness (ft)	Area (sf)	L min	L max	L avg	delta h	Average Gradient (ft/ft)	Kmin (ft/day)	Kmax (ft/day)	Kav (ft/day)	Q (cfd)	Q (gpm)	
East Plant Area 1														
High K	714	17.0	12,172	343	452	398	1.5	0.0038	118	735	627	28,799	150	
Low K	285	2.1	600			398	1.5	0.0038			63	143	1	
													150	
East Plant Area 2*														
High K	494	9.9	4,894	228	242	235	2.0	0.0085	186	593	612	25,490	132	*used entire thickness (UZ+LZ) to calc K from T
Low K	494		940	228	242	235	2.0	0.0085			612	4,896	25	
													158	
East Plant Area 3*														
High K	1184	15.6	18,482	202	581	392	1.0	0.0026	26.2	82.3	120	5,665	29	*used entire thickness (UZ+LZ) to calc K from T
Low K	775	7.7	5,971	202	581	392	1	0.0026			120	1,830	10	
													39	
Central Plant Area														
Central Plant Area, west of plume	315	18.1	5,686	570	806	688	1	0.0007	307	307	307	1,269	7	
Central Plant Area, within plume	241	14.1	3,391	458	570	514	1	0.0010	307	307	307	1,013	5	
Central Plant Area, east of plume*	196	17.9	3,518	357	458	408	1	0.0012	307	307	307	1,325	7	*used entire thickness (UZ+LZ) to calc K from T
													19	
Fenceline Area	1116	24.3	27,086	98	172	135	1	0.0074	33	83	58	11,577	60	*used entire thickness (UZ+LZ) to calc K from T
FMC Area*	1829	39.8	72,712	447	561	504	1	0.0020	197	501	445.7	64,301	334	

Simplot Subtotal UZ Flow 760

Lower Zone Flow:



used 95% UCL of Transmissivity from tests on 412, 413 and

	Width (ft)	Average Thickness (ft)	Area (sf)	L min	L max	L avg	delta h	Average Gradient (ft/ft)	Kmin (ft/day)	Kmax (ft/day)	Kav (ft/day)	Q (cfd)	Q (gpm)
East Plant Area 1													
High K zone	1160	77.2	89563	94	174	134	1	0.0075	15	224	122.5	81,877	425
Low K zone	1160	35.5	41213	94	174	134	1	0.0075			12	3,691	19
Total												85,567	444
East Plant Area 2													
High K zone	1406	29.8	41,831	303	580	442	1.5	0.0034	81	581	359.16	51,044	265
Low K zone	1406	16.0	22,551	303	580	442	1.5	0.0034			36	2,758	14
Total													279
Central Plant Area													
High K zone	695	56.3	39,098	174	297	236	1	0.0042			34.1	5,661	29
Low K zone	695	76.6	53,226	174	297	236	1	0.0042			3.4	768	4
Total													33
Fenceline Area													
High K zone	486	65.2	31,672	218	283	251	1	0.0040	7	133	80.9	10,229	53
Low K zone													
Total													
FMC Area													
High K zone	1575	18.5	29,110	362	746	554	1	0.0018	374	921	849	45,662	237
UZ and LZ	1575	57.0	89,819										
Total													

95% UCL of

calc K from

Simplot Subtotal LZ Flow 1,048

Total Simplot Flow 1,808

Total FMC Flow -

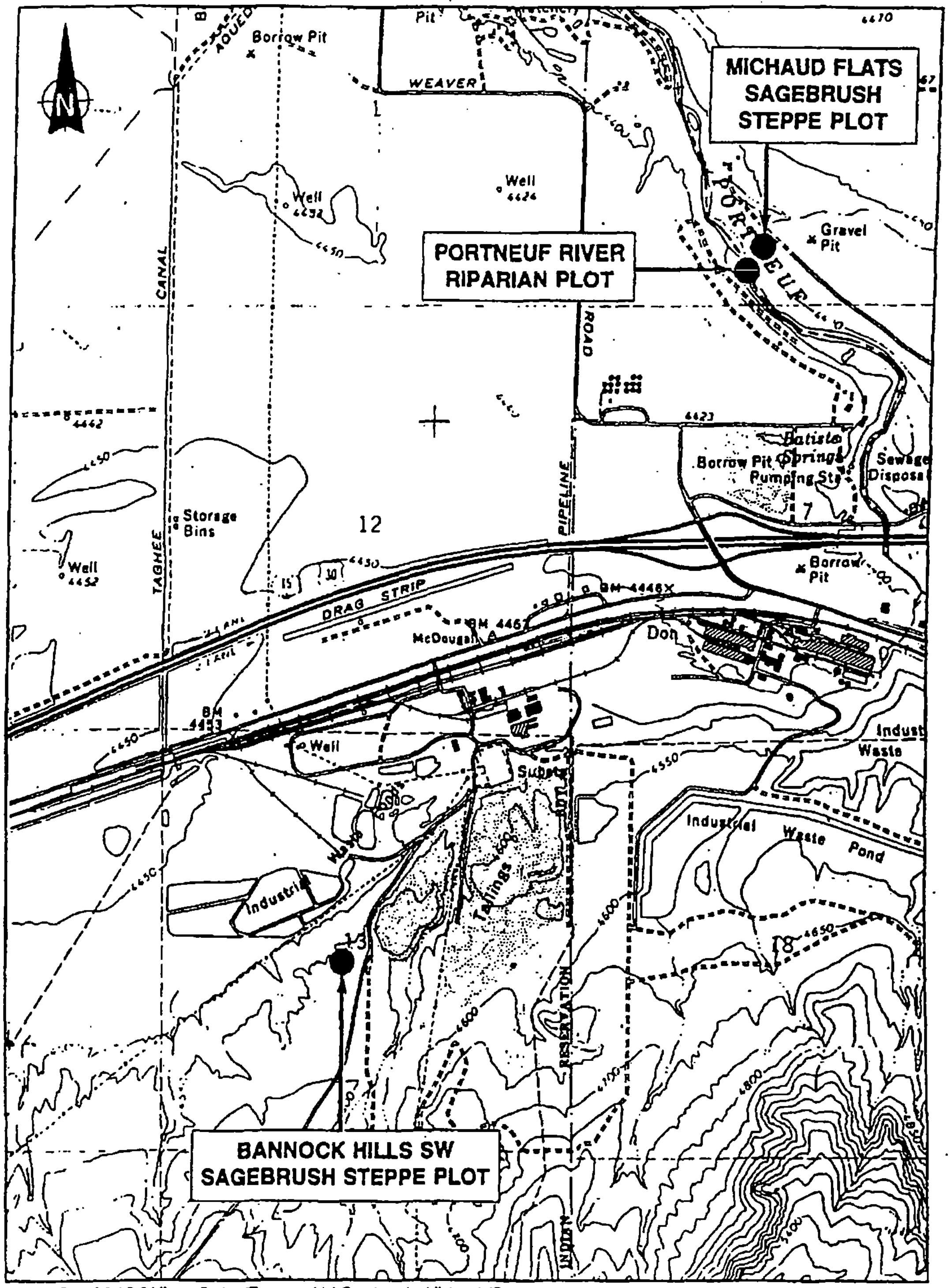
Total Affected Flow 1,808

Fluoride *(data over all collection years)*

	Q (gpm)	Mean F (mg/L)	F Load (kg/day)	Fraction of Total Load	
Upper Zone East Plant Area 1					
	150	0.769	0.629	13.2%	
Upper Zone East Plant Area 2					
	158	0.111111	0.095	2.0%	
Upper Zone East Plant Area 3					
	39	0.242	0.051	1.1%	excluded 318
Upper Zone Central Plant Area					
	19	0.010	0.190	4.0%	
Upper Zone West Plant Area					
	60	0.384	0.126	2.6%	
Upper Zone FMC					
	334	1.064	1.934	40.5%	
Lower Zone East Plant Area 1					
	444	0.170	0.411	8.6%	
Lower Zone East Plant Area 2					
	279	0.099	0.150	3.1%	
Lower Zone Central Plant Area					
	33	0.800	0.145	3.0%	
Lower Zone Fenceline Plant Area					
	53	0.456	0.132	2.8%	
Lower Zone FMC Plant Area					
	237	0.705	0.910	19.1%	
TOTAL	1,808	0.485	4.774	100.0%	

10.50 lb/day

Appendix C
Ecological Assessment Sampling Locations



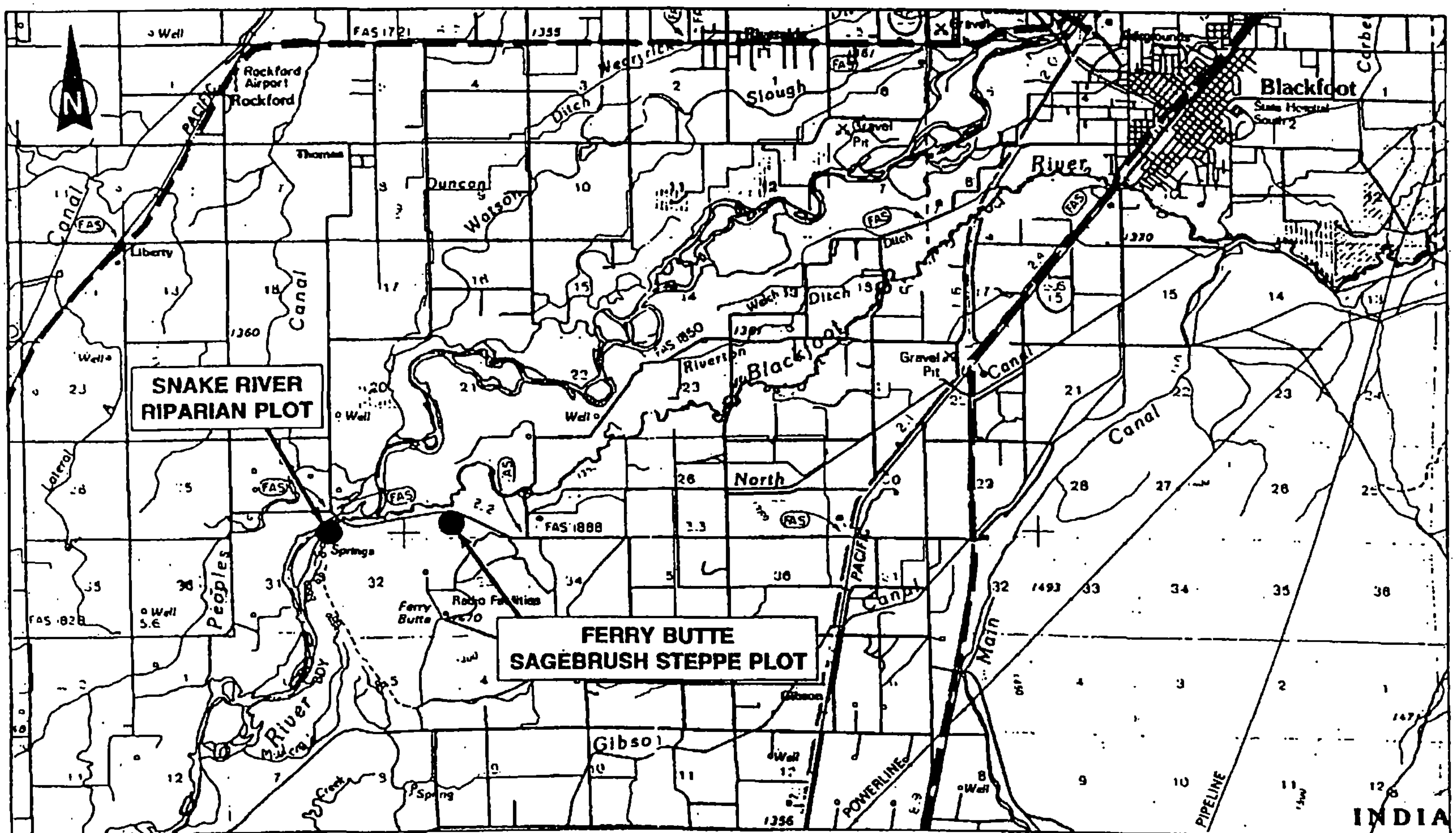
SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangle: Michaud, ID 1971, Photoinspected 1974.

SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure B-2 POTENTIALLY IMPACTED TERRESTRIAL SAMPLING POINTS



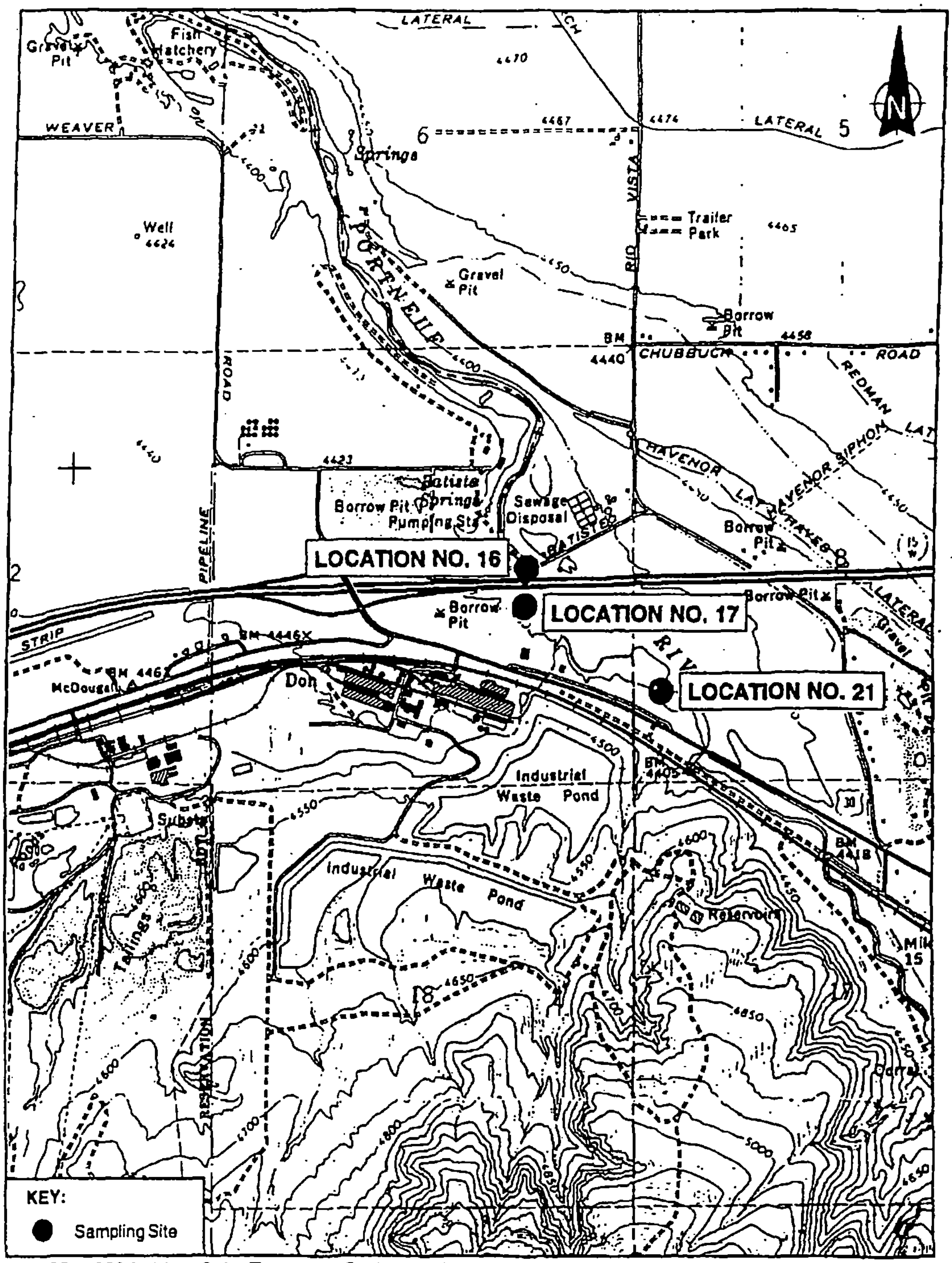
SOURCE: USGS 30 x 60 Minute Series (Topographic) Quadrangle: Blackfoot, ID 1991.

SCALE 1:100,000

0 1 2 3 4 Miles

0 1 2 3 4 Kilometers

Figure B-3 TERRESTRIAL SAMPLING REFERENCE PLOTS



SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangle: Michaud, ID 1971, Photoinspected 1974.

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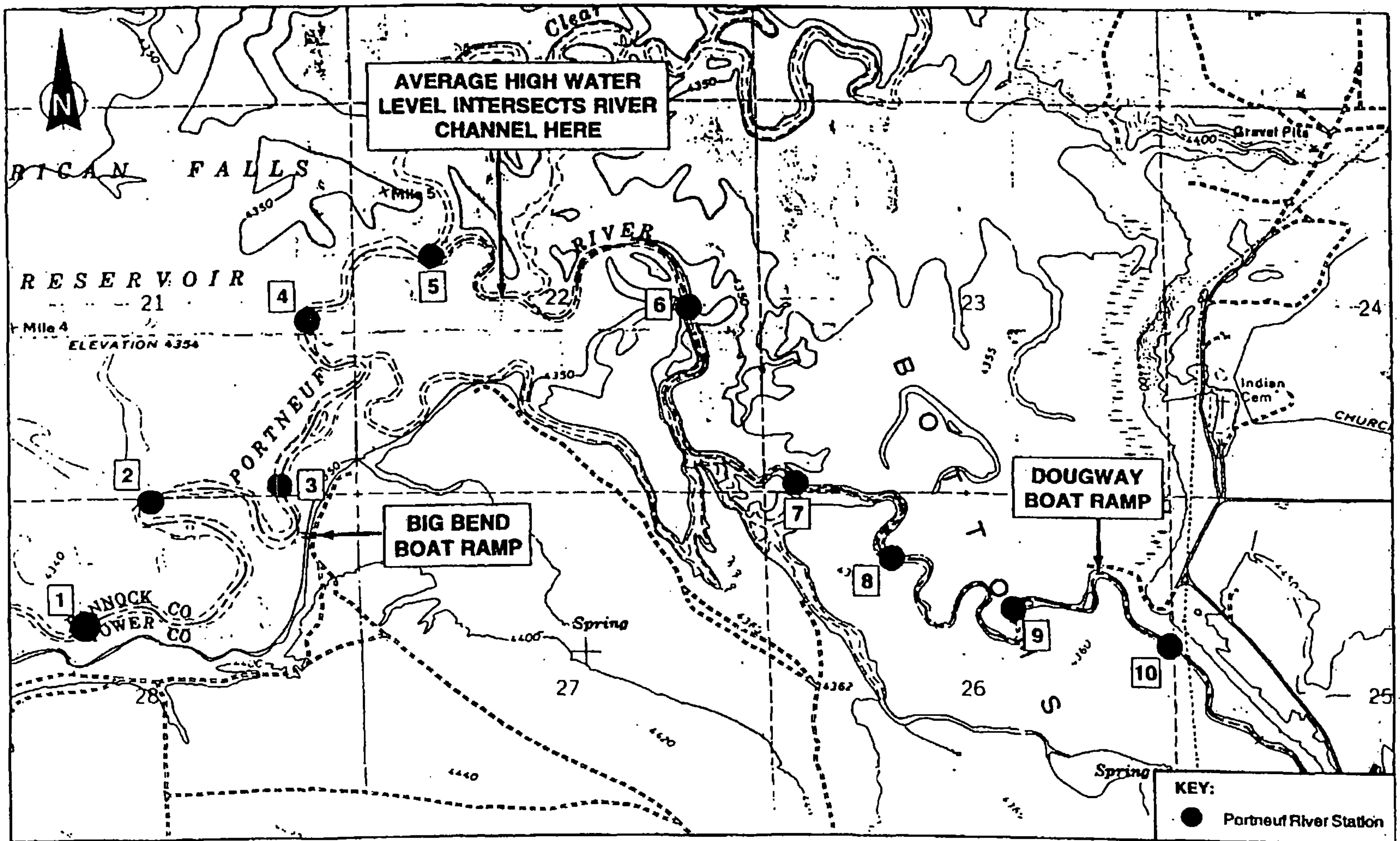
SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure B-4 PORTNEUF RIVER SAMPLING SITES



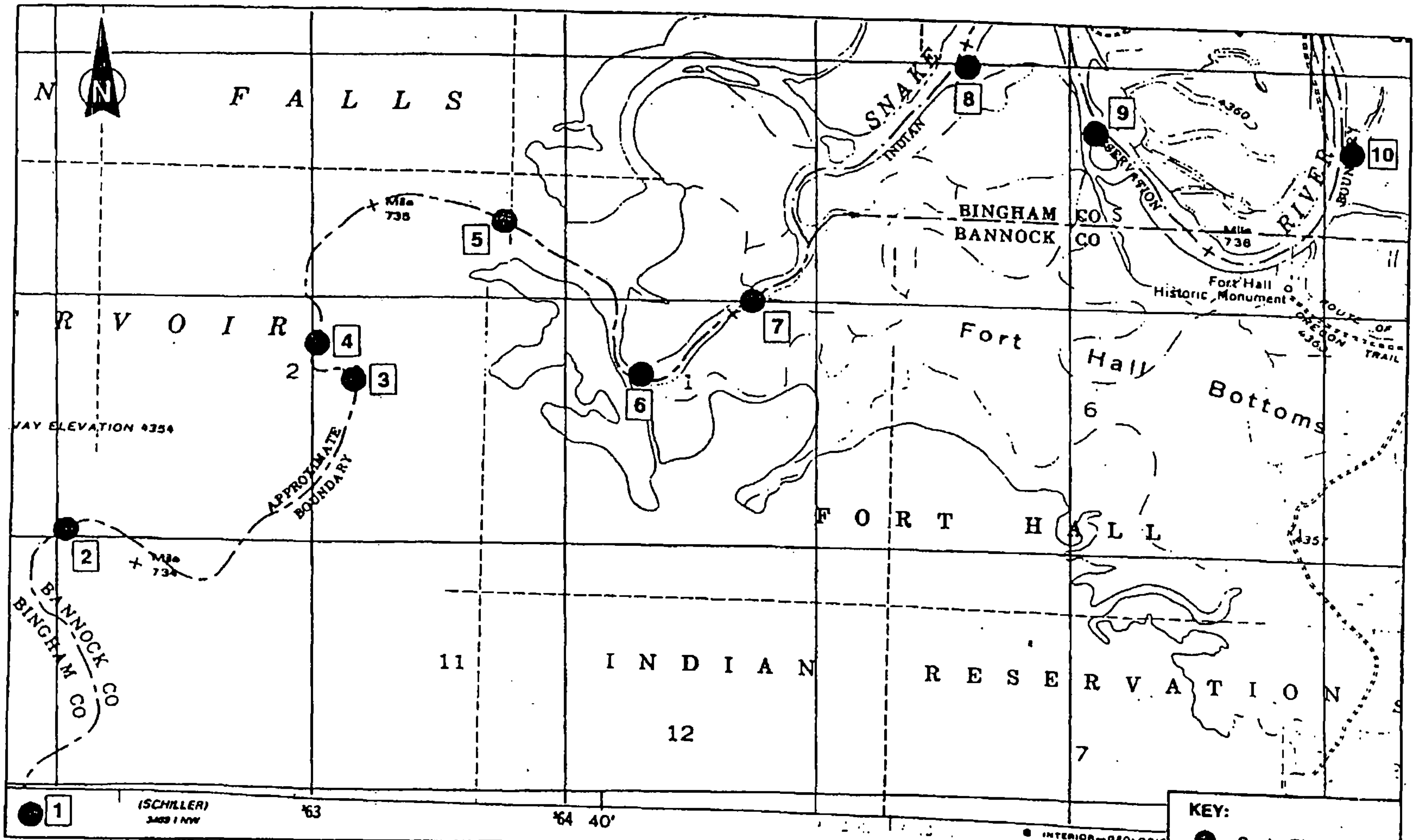
SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangle: Michaud, ID 1971, Photoinspected 1974

SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure B-5 PORTNEUF RIVER DELTA SAMPLING SITES



SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangle: Springfield, ID 1955, Photoinspected 1974.

SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure B-6 SNAKE RIVER DELTA SAMPLING SITES

Appendix D
Pre-1996 Vegetation Sampling Data

08/28/08 S:\GIS\arcprj2\0442-002-900-Simplot-EMF\plt\FI_DataSumm\VegLocs.mxd

[illegible]

DO PRINTCO

0 ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1	A1.4	19760608	Fluoride-A	34.0	ppm
2	A1.4	19760723	Fluoride-A	10.0	ppm
3	A1.4	19760913	Fluoride-A	18.0	ppm
4	A1.9	19820608	Fluoride-G	18.0	ppm
5	A1.9	19820817	Fluoride-G	19.0	ppm
6	A1.9	19820916	Fluoride-G	38.0	ppm
7	A1.9	19830426	Fluoride-G	98.0	ppm
8	A1.9	19830426	Fluoride-G	57.0	ppm
9	A1.9	19830608	Fluoride-G	33.0	ppm
10	A1.9	19830815	Fluoride-G	22.0	ppm
11	A1.9	19830921	Fluoride-G	32.0	ppm
12	A1.9	19850610	Fluoride-G	19.0	ppm
13	A1.9	19850724	Fluoride-G	23.4	ppm
14	A1.9	19850916	Fluoride-G	11.3	ppm
15	A1.9	19860611	Fluoride-G	10.9	ppm
16	A1.9	19860731	Fluoride-G	32.6	ppm
17	A1.9	19860916	Fluoride-G	54.3	ppm
18	A1.9	19870420	Fluoride-G	46.7	ppm
19	A1.9	19870603	Fluoride-G	11.6	ppm
20	A1.9	19870728	Fluoride-G	30.7	ppm
21	A1.9	19870915	Fluoride-G	23.6	ppm
22	A1.9	19880412	Fluoride-G	52.5	ppm
23	A1.9	19880607	Fluoride-G	31.5	ppm
24	A1.9	19880725	Fluoride-G	26.4	ppm
25	A1.9	19880914	Fluoride-G	75.8	ppm
26	A1.9	19890605	Fluoride-G	7.0	ppm
27	A1.9	19890801	Fluoride-G	20.0	ppm
28	A1.9	19890912	Fluoride-G	50.0	ppm
29	A1.9	19900410	Fluoride-G	42.0	ppm
30	A1.9	19900606	Fluoride-G	12.0	ppm
31	A1.9	19900801	Fluoride-G	99.0	ppm
32	A1.9	19900917	Fluoride-G	23.0	ppm
33	A1.9	19910610	Fluoride-G	12.0	ppm
34	A1.9	19910724	Fluoride-G	17.0	ppm
35	A2.0	19900606	Fluoride-A	17.0	ppm
36	A2.0	19900801	Fluoride-A	18.0	ppm
37	A2.0	19900917	Fluoride-A	20.0	ppm
38	A2.0	19910610	Fluoride-A	12.0	ppm
39	A2.0	19910724	Fluoride-A	15.0	ppm
40	A2.8	19770614	Fluoride-A	9.0	ppm
41	A2.8	19770725	Fluoride-A	14.0	ppm
42	A2.8	19770915	Fluoride-A	23.0	ppm
43	A2.8	19780731	Fluoride-A	6.0	ppm
44	A2.8	19850610	Fluoride-A	40.0	ppm
45	A2.8	19850724	Fluoride-A	16.8	ppm
46	A2.8	19850916	Fluoride-A	5.8	ppm
47	A2.8	19860611	Fluoride-A	6.3	ppm
48	A2.8	19860731	Fluoride-A	7.7	ppm
49	A2.8	19860916	Fluoride-A	9.6	ppm
50	A2.8	19870603	Fluoride-A	3.8	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
51	A2.8	19870728	Fluoride-A	7.5	ppm
52	A2.8	19870915	Fluoride-A	9.4	ppm
53	A2.8	19880607	Fluoride-A	7.9	ppm
54	A2.8	19880725	Fluoride-A	9.5	ppm
55	A2.8	19880914	Fluoride-A	16.4	ppm
56	A2.9	19820608	Fluoride-A	9.0	ppm
57	A2.9	19820817	Fluoride-A	10.0	ppm
58	A3.0	19850610	Fluoride-A	48.0	ppm
59	A3.0	19850724	Fluoride-A	14.4	ppm
60	A3.0	19850916	Fluoride-A	0.7	ppm
61	A3.0	19860611	Fluoride-A	16.9	ppm
62	A3.0	19860731	Fluoride-A	3.8	ppm
63	A3.0	19860916	Fluoride-A	5.6	ppm
64	A3.0	19870603	Fluoride-A	3.8	ppm
65	A3.0	19870728	Fluoride-A	11.3	ppm
66	A3.0	19870915	Fluoride-A	11.3	ppm
67	A3.0	19880607	Fluoride-A	15.8	ppm
68	A3.0	19880725	Fluoride-A	3.8	ppm
69	A3.0	19890605	Fluoride-A	8.0	ppm
70	A3.0	19890912	Fluoride-A	25.0	ppm
71	A3.0	19900606	Fluoride-A	3.0	ppm
72	A3.0	19900801	Fluoride-A	4.0	ppm
73	A3.0	19900917	Fluoride-A	9.0	ppm
74	A3.0	19910610	Fluoride-A	7.0	ppm
75	A3.0	19910724	Fluoride-A	11.0	ppm
76	A3.2	19770614	Fluoride-A	16.0	ppm
77	A3.2	19770915	Fluoride-A	29.0	ppm
78	A3.2	19900606	Fluoride-A	4.0	ppm
79	A3.2	19900801	Fluoride-A	4.0	ppm
80	A3.2	19900917	Fluoride-A	8.0	ppm
81	A3.2	19910610	Fluoride-A	10.0	ppm
82	A3.2	19910724	Fluoride-A	10.0	ppm
83	AB1.0	19770614	Fluoride-G	27.0	ppm
84	AB1.0	19770915	Fluoride-G	177.0	ppm
85	AB1.0	19780606	Fluoride-G	34.0	ppm
86	AB1.0	19780808	Fluoride-G	91.0	ppm
87	AB1.0	19780901	Fluoride-G	137.0	ppm
88	AB1.2	19800608	Fluoride-A	19.0	ppm
89	AB1.2	19800813	Fluoride-A	45.0	ppm
90	AB1.2	19800915	Fluoride-A	42.0	ppm
91	AB1.2	19770614	Fluoride-G	19.0	ppm
92	AB1.2	19770915	Fluoride-G	54.0	ppm
93	AB1.2	19780606	Fluoride-G	29.0	ppm
94	AB1.2	19780808	Fluoride-G	78.0	ppm
95	AB1.2	19780901	Fluoride-G	79.0	ppm
96	AB1.2	19810616	Fluoride-G	23.0	ppm
97	AB1.2	19810805	Fluoride-G	40.0	ppm
98	AB1.3	19850610	Fluoride-G	21.0	ppm
99	AB1.3	19850724	Fluoride-G	91.8	ppm
100	AB1.3	19850916	Fluoride-G	101.3	ppm

Vegetative species:
analytical method?

1971-1992?

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
101	AB1.3	19860611	Fluoride-G	29.1	ppm
102	AB1.3	19860731	Fluoride-G	31.7	ppm
103	AB1.3	19860916	Fluoride-G	66.8	ppm
104	AB1.3	19870603	Fluoride-G	16.9	ppm
105	AB1.3	19870728	Fluoride-G	47.0	ppm
106	AB1.3	19870915	Fluoride-G	46.9	ppm
107	AB1.3	19880607	Fluoride-G	44.1	ppm
108	AB1.3	19880725	Fluoride-G	49.2	ppm
109	AB1.3	19880914	Fluoride-G	65.6	ppm
110	AB1.3	19890605	Fluoride-G	15.0	ppm
111	AB1.3	19890801	Fluoride-G	27.0	ppm
112	AB1.3	19890912	Fluoride-G	46.0	ppm
113	AB1.3	19900606	Fluoride-G	30.0	ppm
114	AB1.3	19900801	Fluoride-G	25.0	ppm
115	AB1.3	19900917	Fluoride-G	47.0	ppm
116	AB1.3	19910610	Fluoride-G	15.0	ppm
117	AB1.3	19910724	Fluoride-G	41.0	ppm
118	AB1.4	19800608	Fluoride-A	16.0	ppm
119	AB1.4	19800813	Fluoride-A	39.0	ppm
120	AB1.4	19800915	Fluoride-A	43.0	ppm
121	AB1.4	19820817	Fluoride-A	77.0	ppm
122	AB1.4	19770614	Fluoride-G	25.0	ppm
123	AB1.4	19770915	Fluoride-G	53.0	ppm
124	AB1.4	19780606	Fluoride-G	26.0	ppm
125	AB1.4	19780808	Fluoride-G	43.0	ppm
126	AB1.4	19780901	Fluoride-G	50.0	ppm
127	AB1.4	19810616	Fluoride-G	11.0	ppm
128	AB1.4	19810805	Fluoride-G	35.0	ppm
129	AB1.4	19810921	Fluoride-G	38.0	ppm
130	AB1.5	19820608	Fluoride-G	23.0	ppm
131	AB1.5	19820817	Fluoride-G	23.0	ppm
132	AB1.5	19820916	Fluoride-G	37.0	ppm
133	AB1.5	19830608	Fluoride-G	26.0	ppm
134	AB1.5	19850610	Fluoride-G	14.0	ppm
135	AB1.5	19850916	Fluoride-G	5.5	ppm
136	AB1.5	19860611	Fluoride-G	9.1	ppm
137	AB1.5	19860731	Fluoride-G	33.4	ppm
138	AB1.5	19870603	Fluoride-G	10.1	ppm
139	AB1.5	19870728	Fluoride-G	30.7	ppm
140	AB1.5	19880607	Fluoride-G	38.4	ppm
141	AB1.5	19880725	Fluoride-G	34.9	ppm
142	AB1.5	19880914	Fluoride-G	127.9	ppm
143	AB1.5	19890605	Fluoride-G	8.0	ppm
144	AB1.5	19890801	Fluoride-G	38.0	ppm
145	AB1.5	19890912	Fluoride-G	59.0	ppm
146	AB1.5	19900606	Fluoride-G	20.0	ppm
147	AB1.5	19900801	Fluoride-G	43.0	ppm
148	AB1.5	19900917	Fluoride-G	20.0	ppm
149	AB1.5	19910610	Fluoride-G	8.0	ppm
150	AB1.5	19910724	Fluoride-G	31.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
151	AB1.8	19820608	Fluoride-A	18.0	ppm
152	AB1.8	19820817	Fluoride-A	12.0	ppm
153	AB1.9	19780606	Fluoride-A	23.0	ppm
154	AB1.9	19780731	Fluoride-A	21.0	ppm
155	AB1.9	19790605	Fluoride-A	66.0	ppm
156	AB1.9	19790814	Fluoride-A	9.0	ppm
157	AB1.9	19800608	Fluoride-A	13.0	ppm
158	AB1.9	19800813	Fluoride-A	24.0	ppm
159	AB2.8	19810616	Fluoride-A	10.0	ppm
160	AB2.9	19790605	Fluoride-A	16.0	ppm
161	AB2.9	19790814	Fluoride-A	12.0	ppm
162	AB2.9	19800608	Fluoride-A	11.0	ppm
163	AB2.9	19800813	Fluoride-A	15.0	ppm
164	AB2.9	19800915	Fluoride-A	8.0	ppm
165	AB2.9	19820608	Fluoride-A	9.0	ppm
166	AB2.9	19820817	Fluoride-A	10.0	ppm
167	AB2.9	19820916	Fluoride-A	10.0	ppm
168	AB3.0	19810616	Fluoride-A	11.0	ppm
169	AB3.0	19810805	Fluoride-A	15.0	ppm
170	AB3.0	19810921	Fluoride-A	18.0	ppm
171	AB3.0	19820608	Fluoride-A	19.0	ppm
172	AB3.0	19820817	Fluoride-A	15.0	ppm
173	AB3.0	19820916	Fluoride-A	12.0	ppm
174	AB3.1	19820608	Fluoride-A	11.0	ppm
175	AB3.1	19820817	Fluoride-A	10.0	ppm
176	AB3.1	19820916	Fluoride-A	10.0	ppm
177	B0.7	19770614	Fluoride-G	101.0	ppm
178	B0.7	19770915	Fluoride-G	370.0	ppm
179	B0.7	19780606	Fluoride-G	76.0	ppm
180	B0.7	19780808	Fluoride-G	375.0	ppm
181	B0.7	19780901	Fluoride-G	163.0	ppm
182	B1.5	19830426	Fluoride-G	200.0	ppm
183	B1.5	19850610	Fluoride-G	12.0	ppm
184	B1.5	19850916	Fluoride-G	5.5	ppm
185	B1.5	19860611	Fluoride-G	10.9	ppm
186	B1.5	19860731	Fluoride-G	23.0	ppm
187	B1.5	19860916	Fluoride-G	31.3	ppm
188	B1.5	19870420	Fluoride-G	74.5	ppm
189	B1.5	19870603	Fluoride-G	6.4	ppm
190	B1.5	19870728	Fluoride-G	31.5	ppm
191	B1.5	19870915	Fluoride-G	26.3	ppm
192	B1.5	19880412	Fluoride-G	105.0	ppm
193	B1.5	19880607	Fluoride-G	33.5	ppm
194	B1.5	19880725	Fluoride-G	113.2	ppm
195	B1.5	19880914	Fluoride-G	153.0	ppm
196	B1.5	19890605	Fluoride-G	4.0	ppm
197	B1.5	19890801	Fluoride-G	35.0	ppm
198	B1.5	19890912	Fluoride-G	60.0	ppm
199	B1.5	19900410	Fluoride-G	52.0	ppm
200	B1.5	19900606	Fluoride-G	12.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
201	B1.5	19900801	Fluoride-G	32.0	ppm
202	B1.5	19900917	Fluoride-G	35.0	ppm
203	B1.5	19910610	Fluoride-G	5.0	ppm
204	B1.5	19910724	Fluoride-G	17.0	ppm
205	B1.6	19820817	Fluoride-G	51.0	ppm
206	B1.6	19830426	Fluoride-G	200.0	ppm
207	B1.6	19830608	Fluoride-G	31.0	ppm
208	B1.6	19830815	Fluoride-G	39.0	ppm
209	B1.6	19830921	Fluoride-G	16.0	ppm
210	B1.8	19830608	Fluoride-A	26.0	ppm
211	B1.8	19830815	Fluoride-A	25.0	ppm
212	B1.8	19850610	Fluoride-A	27.0	ppm
213	B1.8	19850724	Fluoride-A	26.4	ppm
214	B1.8	19860611	Fluoride-A	7.8	ppm
215	B1.8	19860731	Fluoride-A	38.4	ppm
216	B1.8	19860916	Fluoride-A	30.2	ppm
217	B1.9	19870603	Fluoride-A	7.6	ppm
218	B1.9	19870728	Fluoride-A	15.0	ppm
219	B1.9	19870915	Fluoride-A	18.8	ppm
220	B1.9	19880607	Fluoride-A	23.6	ppm
221	B1.9	19880725	Fluoride-A	11.4	ppm
222	B1.9	19880914	Fluoride-A	27.3	ppm
223	B1.9	19890605	Fluoride-A	23.0	ppm
224	B1.9	19890801	Fluoride-A	19.0	ppm
225	B1.9	19900606	Fluoride-A	12.0	ppm
226	B1.9	19900801	Fluoride-A	17.0	ppm
227	B1.9	19900917	Fluoride-A	12.0	ppm
228	B1.9	19910610	Fluoride-A	12.0	ppm
229	B1.9	19910724	Fluoride-A	14.0	ppm
230	B2.0	19760608	Fluoride-A	22.0	ppm
231	B2.0	19760723	Fluoride-A	13.0	ppm
232	B2.0	19760811	Fluoride-A	26.0	ppm
233	B2.0	19760913	Fluoride-A	23.0	ppm
234	B2.0	19770614	Fluoride-A	19.0	ppm
235	B2.0	19770915	Fluoride-A	38.0	ppm
236	B2.0	19780606	Fluoride-A	19.0	ppm
237	B2.0	19780731	Fluoride-A	14.0	ppm
238	B2.0	19830608	Fluoride-A	17.0	ppm
239	B2.0	19830815	Fluoride-A	18.0	ppm
240	B2.0	19830921	Fluoride-A	14.0	ppm
241	B2.0	19870603	Fluoride-A	7.6	ppm
242	B2.0	19870728	Fluoride-A	16.9	ppm
243	B2.0	19870915	Fluoride-A	15.0	ppm
244	B2.0	19880607	Fluoride-A	22.5	ppm
245	B2.0	19880725	Fluoride-A	10.3	ppm
246	B2.0	19880914	Fluoride-A	17.1	ppm
247	B2.0	19890605	Fluoride-A	21.0	ppm
248	B2.0	19890801	Fluoride-A	17.0	ppm
249	B2.0	19900606	Fluoride-A	4.0	ppm
250	B2.0	19900801	Fluoride-A	18.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
251	B2.0	19900917	Fluoride-A	18.0	ppm
252	B2.0	19910610	Fluoride-A	13.0	ppm
253	B2.0	19910724	Fluoride-A	12.0	ppm
254	BC1.3	19770614	Fluoride-G	27.0	ppm
255	BC1.3	19770915	Fluoride-G	72.0	ppm
256	BC1.3	19780407	Fluoride-G	158.0	ppm
257	BC1.3	19780606	Fluoride-G	66.0	ppm
258	BC1.3	19780808	Fluoride-G	52.0	ppm
259	BC1.3	19780901	Fluoride-G	83.0	ppm
260	BC1.3	19790427	Fluoride-G	195.0	ppm
261	BC1.3	19790605	Fluoride-G	27.0	ppm
262	BC1.3	19800608	Fluoride-G	25.0	ppm
263	BC1.3	19800813	Fluoride-G	39.0	ppm
264	BC1.3	19800915	Fluoride-G	25.0	ppm
265	BC1.3	19810616	Fluoride-G	24.0	ppm
266	BC1.3	19810805	Fluoride-G	63.0	ppm
267	BC1.3	19810921	Fluoride-G	68.0	ppm
268	BC1.8	19820916	Fluoride-A	31.0	ppm
269	BC2.1	19820608	Fluoride-A	14.0	ppm
270	BC2.1	19820817	Fluoride-A	16.0	ppm
271	BC2.1	19830608	Fluoride-A	24.0	ppm
272	BC2.1	19850610	Fluoride-A	65.0	ppm
273	BC2.1	19850724	Fluoride-A	14.8	ppm
274	BC2.1	19850916	Fluoride-A	15.7	ppm
275	BC2.1	19860611	Fluoride-A	6.0	ppm
276	BC2.1	19860731	Fluoride-A	10.4	ppm
277	BC2.1	19860916	Fluoride-A	24.9	ppm
278	BC2.2	19810616	Fluoride-A	14.0	ppm
279	BC2.2	19810805	Fluoride-A	18.0	ppm
280	BC2.2	19810921	Fluoride-A	16.0	ppm
281	BC2.3	19780731	Fluoride-A	27.0	ppm
282	BC2.3	19780901	Fluoride-A	16.0	ppm
283	BC2.4	19850610	Fluoride-A	63.0	ppm
284	BC2.4	19850724	Fluoride-A	16.5	ppm
285	BC2.4	19850916	Fluoride-A	17.7	ppm
286	BC2.4	19860916	Fluoride-A	9.4	ppm
287	BC2.4	19870603	Fluoride-A	11.4	ppm
288	BC2.4	19870728	Fluoride-A	30.0	ppm
289	BC2.4	19880607	Fluoride-A	23.6	ppm
290	BC2.4	19880725	Fluoride-A	21.0	ppm
291	BC2.4	19880914	Fluoride-A	20.0	ppm
292	BC2.4	19890605	Fluoride-A	17.0	ppm
293	BC2.4	19890801	Fluoride-A	23.0	ppm
294	BC2.4	19900606	Fluoride-A	12.0	ppm
295	BC2.4	19900801	Fluoride-A	27.0	ppm
296	BC2.4	19900917	Fluoride-A	51.0	ppm
297	BC2.4	19910610	Fluoride-A	18.0	ppm
298	BC2.4	19910724	Fluoride-A	14.0	ppm
299	BC3.1	19800608	Fluoride-A	8.0	ppm
300	BC3.1	19800813	Fluoride-A	12.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
301	BC3.1	19800915	Fluoride-A	9.0	ppm
302	BC3.1	19890605	Fluoride-A	11.0	ppm
303	BC3.1	19890912	Fluoride-A	17.0	ppm
304	BC3.1	19900606	Fluoride-A	16.0	ppm
305	BC3.1	19900917	Fluoride-A	14.0	ppm
306	BC3.1	19910610	Fluoride-A	7.0	ppm
307	BC3.1	19910724	Fluoride-A	9.0	ppm
308	BC3.2	19870603	Fluoride-A	13.3	ppm
309	BC3.2	19870728	Fluoride-A	11.3	ppm
310	BC3.3	19800608	Fluoride-A	9.0	ppm
311	BC3.3	19800813	Fluoride-A	16.0	ppm
312	BC3.3	19800915	Fluoride-A	9.0	ppm
313	BC3.3	19810616	Fluoride-A	11.0	ppm
314	BC3.3	19810805	Fluoride-A	13.0	ppm
315	BC3.3	19820608	Fluoride-A	11.0	ppm
316	BC3.3	19820817	Fluoride-A	12.0	ppm
317	BC3.3	19820916	Fluoride-A	13.0	ppm
318	BC3.4	19770614	Fluoride-A	10.0	ppm
319	BC3.4	19770725	Fluoride-A	11.0	ppm
320	BC3.4	19770915	Fluoride-A	28.0	ppm
321	BC3.4	19780606	Fluoride-A	10.0	ppm
322	BC3.4	19780731	Fluoride-A	18.0	ppm
323	BC3.4	19780901	Fluoride-A	21.0	ppm
324	BC3.4	19850610	Fluoride-A	53.0	ppm
325	BC3.4	19850724	Fluoride-A	9.2	ppm
326	BC3.4	19850916	Fluoride-A	3.6	ppm
327	BC3.4	19870603	Fluoride-A	3.8	ppm
328	BC3.4	19870728	Fluoride-A	15.0	ppm
329	BC3.4	19870915	Fluoride-A	15.0	ppm
330	BC3.4	19890605	Fluoride-A	11.0	ppm
331	BC3.4	19890801	Fluoride-A	12.0	ppm
332	BC3.4	19890912	Fluoride-A	12.0	ppm
333	BC3.4	19900606	Fluoride-A	7.0	ppm
334	BC3.4	19900801	Fluoride-A	12.0	ppm
335	BC3.4	19900917	Fluoride-A	17.0	ppm
336	BC3.4	19910610	Fluoride-A	18.0	ppm
337	BC3.4	19910724	Fluoride-A	12.0	ppm
338	C1.5	19790427	Fluoride-G	159.0	ppm
339	C1.5	19790605	Fluoride-G	19.0	ppm
340	C1.5	19800608	Fluoride-G	13.0	ppm
341	C1.5	19800813	Fluoride-G	33.0	ppm
342	C1.5	19800915	Fluoride-G	44.0	ppm
343	C1.5	19810616	Fluoride-G	26.0	ppm
344	C1.5	19810805	Fluoride-G	74.0	ppm
345	C1.5	19850610	Fluoride-G	26.0	ppm
346	C1.5	19850916	Fluoride-G	16.5	ppm
347	C1.5	19860611	Fluoride-G	7.2	ppm
348	C1.5	19860731	Fluoride-G	47.9	ppm
349	C1.5	19860916	Fluoride-G	85.6	ppm
350	C1.5	19870420	Fluoride-G	119.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
351	C1.5	19870603	Fluoride-G	21.8	ppm
352	C1.5	19870728	Fluoride-G	71.6	ppm
353	C1.5	19870915	Fluoride-G	26.3	ppm
354	C1.5	19880412	Fluoride-G	163.5	ppm
355	C1.5	19880607	Fluoride-G	16.2	ppm
356	C1.5	19880725	Fluoride-G	37.6	ppm
357	C1.5	19880914	Fluoride-G	98.3	ppm
358	C1.5	19890605	Fluoride-G	23.0	ppm
359	C1.5	19890801	Fluoride-G	57.0	ppm
360	C1.5	19890912	Fluoride-G	90.0	ppm
361	C1.5	19900410	Fluoride-G	100.0	ppm
362	C1.5	19900606	Fluoride-G	20.0	ppm
363	C1.5	19900801	Fluoride-G	27.0	ppm
364	C1.5	19900917	Fluoride-G	34.0	ppm
365	C1.5	19910610	Fluoride-G	50.0	ppm
366	C1.5	19910724	Fluoride-G	32.0	ppm
367	C1.6	19770614	Fluoride-A	19.0	ppm
368	C1.6	19770915	Fluoride-A	33.0	ppm
369	C1.6	19780606	Fluoride-A	33.0	ppm
370	C1.6	19780731	Fluoride-A	37.0	ppm
371	C1.6	19790605	Fluoride-A	58.0	ppm
372	C1.6	19790814	Fluoride-A	19.0	ppm
373	C1.6	19800608	Fluoride-A	21.0	ppm
374	C1.6	19800813	Fluoride-A	27.0	ppm
375	C1.6	19800915	Fluoride-A	24.0	ppm
376	C1.6	19810616	Fluoride-A	26.0	ppm
377	C1.6	19810805	Fluoride-A	17.0	ppm
378	C1.6	19810921	Fluoride-A	37.0	ppm
379	C1.6	19820817	Fluoride-G	26.0	ppm
380	C1.6	19820916	Fluoride-G	17.0	ppm
381	C1.6	19830608	Fluoride-G	24.0	ppm
382	C1.6	19830921	Fluoride-G	64.0	ppm
383	C1.7	19820608	Fluoride-A	16.0	ppm
384	C1.7	19820817	Fluoride-A	20.0	ppm
385	C1.7	19820916	Fluoride-A	38.0	ppm
386	C2.2	19750616	Fluoride-A	15.0	ppm
387	C2.2	19750729	Fluoride-A	26.0	ppm
388	C2.2	19750922	Fluoride-A	19.0	ppm
389	C2.2	19760608	Fluoride-A	18.0	ppm
390	C2.2	19760723	Fluoride-A	29.0	ppm
391	C2.2	19760811	Fluoride-A	26.0	ppm
392	C2.2	19760913	Fluoride-A	22.0	ppm
393	C2.2	19800608	Fluoride-A	13.0	ppm
394	C2.2	19800813	Fluoride-A	13.0	ppm
395	C2.2	19800915	Fluoride-A	7.0	ppm
396	C2.2	19810616	Fluoride-A	13.0	ppm
397	C2.2	19810805	Fluoride-A	22.0	ppm
398	C2.2	19810921	Fluoride-A	35.0	ppm
399	C2.2	19860611	Fluoride-A	12.0	ppm
400	C2.2	19860731	Fluoride-A	19.2	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
401	C2.2	19860916	Fluoride-A	24.6	ppm
402	C2.2	19870603	Fluoride-A	15.2	ppm
403	C2.2	19870728	Fluoride-A	16.9	ppm
404	C2.2	19870915	Fluoride-A	22.5	ppm
405	C2.2	19880607	Fluoride-A	19.7	ppm
406	C2.2	19880725	Fluoride-A	20.2	ppm
407	C2.2	19880914	Fluoride-A	21.8	ppm
408	C2.2	19890605	Fluoride-A	19.0	ppm
409	C2.2	19890801	Fluoride-A	19.0	ppm
410	C2.2	19890912	Fluoride-A	43.0	ppm
411	C2.2	19900606	Fluoride-A	26.0	ppm
412	C2.2	19900801	Fluoride-A	18.0	ppm
413	C2.2	19900917	Fluoride-A	46.0	ppm
414	C2.3	19820608	Fluoride-A	23.0	ppm
415	C2.3	19820817	Fluoride-A	31.0	ppm
416	C2.3	19820916	Fluoride-A	21.0	ppm
417	C2.3	19860611	Fluoride-A	12.0	ppm
418	C2.3	19860731	Fluoride-A	19.2	ppm
419	C2.3	19860916	Fluoride-A	30.2	ppm
420	C2.3	19870603	Fluoride-A	13.3	ppm
421	C2.3	19870728	Fluoride-A	11.3	ppm
422	C2.3	19880725	Fluoride-A	19.1	ppm
423	C2.3	19880914	Fluoride-A	23.7	ppm
424	C2.3	19890605	Fluoride-A	17.0	ppm
425	C2.3	19890801	Fluoride-A	21.0	ppm
426	C2.3	19890912	Fluoride-A	41.0	ppm
427	C2.3	19900606	Fluoride-A	29.0	ppm
428	C2.3	19900801	Fluoride-A	18.0	ppm
429	C2.3	19900917	Fluoride-A	35.0	ppm
430	C2.4	19770614	Fluoride-A	14.0	ppm
431	C2.4	19770915	Fluoride-A	26.0	ppm
432	C2.4	19780606	Fluoride-A	23.0	ppm
433	C2.4	19780731	Fluoride-A	23.0	ppm
434	C2.4	19780901	Fluoride-A	29.0	ppm
435	C2.4	19790605	Fluoride-A	22.0	ppm
436	C2.4	19790814	Fluoride-A	9.0	ppm
437	C2.4	19800813	Fluoride-A	26.0	ppm
438	C2.4	19800915	Fluoride-A	41.0	ppm
439	C2.4	19830608	Fluoride-A	17.0	ppm
440	C2.4	19830815	Fluoride-A	19.0	ppm
441	C2.4	19830921	Fluoride-A	19.0	ppm
442	C3.0	19780606	Fluoride-A	27.0	ppm
443	C3.0	19780731	Fluoride-A	37.0	ppm
444	C3.0	19780901	Fluoride-A	38.0	ppm
445	C3.3	19820916	Fluoride-A	15.0	ppm
446	C3.4	19750616	Fluoride-A	12.0	ppm
447	C3.4	19750818	Fluoride-A	5.0	ppm
448	C3.4	19890605	Fluoride-A	119.0	ppm
449	C3.4	19890912	Fluoride-A	18.0	ppm
450	C3.4	19910610	Fluoride-A	13.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
451	C3.4	19910724	Fluoride-A	10.0	ppm
452	CD2.4	19830608	Fluoride-A	22.0	ppm
453	CD2.4	19830815	Fluoride-A	84.0	ppm
454	CD2.4	19830921	Fluoride-A	26.0	ppm
455	CD2.4	19850610	Fluoride-A	48.0	ppm
456	CD2.4	19850724	Fluoride-A	22.1	ppm
457	CD2.4	19850916	Fluoride-A	18.6	ppm
458	CD2.4	19870603	Fluoride-A	9.5	ppm
459	CD2.4	19870728	Fluoride-A	11.3	ppm
460	CD2.4	19870915	Fluoride-A	30.0	ppm
461	CD2.4	19880607	Fluoride-A	11.8	ppm
462	CD2.4	19880725	Fluoride-A	7.6	ppm
463	CD2.4	19880914	Fluoride-A	25.5	ppm
464	CD2.4	19890605	Fluoride-A	9.0	ppm
465	CD2.4	19890801	Fluoride-A	15.0	ppm
466	CD2.4	19900606	Fluoride-A	21.0	ppm
467	CD2.4	19900801	Fluoride-A	16.0	ppm
468	CD2.4	19900917	Fluoride-A	32.0	ppm
469	CD2.4	19910610	Fluoride-A	8.0	ppm
470	CD2.4	19910724	Fluoride-A	8.0	ppm
471	CD2.5	19810616	Fluoride-A	23.0	ppm
472	CD2.5	19810805	Fluoride-A	15.0	ppm
473	CD2.5	19810921	Fluoride-A	36.0	ppm
474	CD2.5	19850610	Fluoride-A	25.0	ppm
475	CD2.5	19850724	Fluoride-A	20.2	ppm
476	CD2.5	19850916	Fluoride-A	16.7	ppm
477	CD2.5	19890605	Fluoride-A	22.0	ppm
478	CD2.5	19890801	Fluoride-A	21.0	ppm
479	CD2.5	19900606	Fluoride-A	21.0	ppm
480	CD2.5	19900801	Fluoride-A	28.0	ppm
481	CD2.6	19800608	Fluoride-A	11.0	ppm
482	CD2.6	19800813	Fluoride-A	20.0	ppm
483	CD3.0	19850610	Fluoride-A	24.0	ppm
484	CD3.0	19850724	Fluoride-A	20.6	ppm
485	CD3.0	19850916	Fluoride-A	14.7	ppm
486	CD3.0	19860611	Fluoride-A	4.1	ppm
487	CD3.0	19860731	Fluoride-A	11.5	ppm
488	CD3.0	19860916	Fluoride-A	11.3	ppm
489	CD3.0	19870603	Fluoride-A	15.2	ppm
490	CD3.0	19870728	Fluoride-A	9.4	ppm
491	CD3.0	19870915	Fluoride-A	45.0	ppm
492	CD3.0	19880607	Fluoride-A	13.8	ppm
493	CD3.0	19880914	Fluoride-A	25.5	ppm
494	CD3.0	19890605	Fluoride-A	14.0	ppm
495	CD3.0	19890801	Fluoride-A	15.0	ppm
496	CD3.0	19900606	Fluoride-A	20.0	ppm
497	D0.9	19770614	Fluoride-G	179.0	ppm
498	D0.9	19770915	Fluoride-G	1078.0	ppm
499	D0.9	19780606	Fluoride-G	154.0	ppm
500	D0.9	19780808	Fluoride-G	680.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
501	D0.9	19780901	Fluoride-G	311.0	ppm
502	D1.5	19770614	Fluoride-G	33.0	ppm
503	D1.5	19770915	Fluoride-G	71.0	ppm
504	D1.5	19780606	Fluoride-G	44.0	ppm
505	D1.5	19780808	Fluoride-G	75.0	ppm
506	D1.5	19780901	Fluoride-G	90.0	ppm
507	D1.6	19760913	Fluoride-A	27.0	ppm
508	D1.6	19850610	Fluoride-G	35.0	ppm
509	D1.6	19850916	Fluoride-G	47.8	ppm
510	D1.6	19860611	Fluoride-G	10.9	ppm
511	D1.6	19860731	Fluoride-G	61.4	ppm
512	D1.6	19860916	Fluoride-G	181.6	ppm
513	D1.6	19870603	Fluoride-G	50.6	ppm
514	D1.6	19870728	Fluoride-G	45.8	ppm
515	D1.6	19870915	Fluoride-G	63.8	ppm
516	D1.6	19880607	Fluoride-G	102.6	ppm
517	D1.6	19880725	Fluoride-G	225.9	ppm
518	D1.6	19880914	Fluoride-G	255.8	ppm
519	D1.6	19890605	Fluoride-G	33.0	ppm
520	D1.6	19890801	Fluoride-G	64.0	ppm
521	D1.6	19890912	Fluoride-G	127.0	ppm
522	D1.6	19900606	Fluoride-G	27.0	ppm
523	D1.6	19900801	Fluoride-G	102.0	ppm
524	D1.6	19900917	Fluoride-G	57.0	ppm
525	D1.6	19910610	Fluoride-G	31.0	ppm
526	D1.6	19910724	Fluoride-G	72.0	ppm
527	D1.7	19770614	Fluoride-A	27.0	ppm
528	D1.7	19770915	Fluoride-A	89.0	ppm
529	D1.7	19780606	Fluoride-A	35.0	ppm
530	D1.7	19780731	Fluoride-A	48.0	ppm
531	D1.7	19790605	Fluoride-A	24.0	ppm
532	D1.7	19790814	Fluoride-A	10.0	ppm
533	D1.7	19800608	Fluoride-A	31.0	ppm
534	D1.7	19800813	Fluoride-A	20.0	ppm
535	D1.7	19800915	Fluoride-A	24.0	ppm
536	D1.7	19810616	Fluoride-A	39.0	ppm
537	D1.7	19810805	Fluoride-A	26.0	ppm
538	D1.7	19810921	Fluoride-A	58.0	ppm
539	D1.8	19830608	Fluoride-A	34.0	ppm
540	D1.8	19850610	Fluoride-A	23.0	ppm
541	D1.8	19850724	Fluoride-A	46.8	ppm
542	D1.8	19850916	Fluoride-A	42.8	ppm
543	D1.8	19860611	Fluoride-A	17.6	ppm
544	D1.8	19860731	Fluoride-A	26.0	ppm
545	D1.8	19860916	Fluoride-A	55.9	ppm
546	D1.8	19870603	Fluoride-A	41.7	ppm
547	D1.8	19870915	Fluoride-A	56.6	ppm
548	D1.9	19850610	Fluoride-A	28.0	ppm
549	D1.9	19850724	Fluoride-A	43.0	ppm
550	D1.9	19850916	Fluoride-A	43.9	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
551	D1.9	19860611	Fluoride-A	20.6	ppm
552	D1.9	19860731	Fluoride-A	21.1	ppm
553	D1.9	19860916	Fluoride-A	54.7	ppm
554	D1.9	19870603	Fluoride-A	30.3	ppm
555	D1.9	19870915	Fluoride-A	50.6	ppm
556	D1.9	19770614	Fluoride-G	14.0	ppm
557	D1.9	19770915	Fluoride-G	71.0	ppm
558	D1.9	19780606	Fluoride-G	24.0	ppm
559	D1.9	19780808	Fluoride-G	35.0	ppm
560	D1.9	19780901	Fluoride-G	62.0	ppm
561	D2.2	19800608	Fluoride-A	26.0	ppm
562	D2.2	19800813	Fluoride-A	16.0	ppm
563	D2.2	19800915	Fluoride-A	13.0	ppm
564	D2.2	19820608	Fluoride-A	26.0	ppm
565	D2.2	19820817	Fluoride-A	25.0	ppm
566	D2.2	19820916	Fluoride-A	38.0	ppm
567	D2.3	19850610	Fluoride-A	26.0	ppm
568	D2.3	19850724	Fluoride-A	31.8	ppm
569	D2.3	19850916	Fluoride-A	24.0	ppm
570	D2.3	19860611	Fluoride-A	7.5	ppm
571	D2.3	19860731	Fluoride-A	16.9	ppm
572	D2.3	19860916	Fluoride-A	37.0	ppm
573	D2.3	19870603	Fluoride-A	11.4	ppm
574	D2.3	19870728	Fluoride-A	5.6	ppm
575	D2.3	19870915	Fluoride-A	43.1	ppm
576	D2.3	19880607	Fluoride-A	22.5	ppm
577	D2.3	19880725	Fluoride-A	36.2	ppm
578	D2.3	19880914	Fluoride-A	37.5	ppm
579	D2.3	19890605	Fluoride-A	19.0	ppm
580	D2.3	19890801	Fluoride-A	27.0	ppm
581	D2.3	19890912	Fluoride-A	49.0	ppm
582	D2.3	19900606	Fluoride-A	31.0	ppm
583	D2.3	19900801	Fluoride-A	31.0	ppm
584	D2.5	19890912	Fluoride-A	30.0	ppm
585	D2.6	19770614	Fluoride-A	18.0	ppm
586	D2.6	19770915	Fluoride-A	53.0	ppm
587	D2.6	19860611	Fluoride-A	9.4	ppm
588	D2.6	19860731	Fluoride-A	19.9	ppm
589	D2.6	19860916	Fluoride-A	33.6	ppm
590	D2.6	19880607	Fluoride-A	13.8	ppm
591	D2.6	19880914	Fluoride-A	30.9	ppm
592	D2.6	19880725	Fluoride-G	24.0	ppm
593	D2.8	19790605	Fluoride-A	44.0	ppm
594	D2.8	19790814	Fluoride-A	20.0	ppm
595	D2.8	19830608	Fluoride-A	31.0	ppm
596	D2.8	19830815	Fluoride-A	22.0	ppm
597	D2.8	19830921	Fluoride-A	23.0	ppm
598	D2.8	19890801	Fluoride-A	12.0	ppm
599	D2.8	19900606	Fluoride-A	16.0	ppm
600	D2.8	19900801	Fluoride-A	25.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
601	D2.8	19900917	Fluoride-A	24.0	ppm
602	D2.8	19910610	Fluoride-A	16.0	ppm
603	D2.8	19910724	Fluoride-A	17.0	ppm
604	DE1.8	19760608	Fluoride-A	77.0	ppm
605	DE1.9	19770614	Fluoride-A	20.0	ppm
606	DE2.0	19780606	Fluoride-A	38.0	ppm
607	DE2.8	19800608	Fluoride-A	30.0	ppm
608	DE2.8	19800813	Fluoride-A	29.0	ppm
609	DE2.8	19810616	Fluoride-A	29.0	ppm
610	DE2.8	19810805	Fluoride-A	26.0	ppm
611	DE2.8	19890605	Fluoride-A	10.0	ppm
612	DE2.8	19890912	Fluoride-A	18.0	ppm
613	DE2.9	19770614	Fluoride-A	16.0	ppm
614	DE2.9	19770725	Fluoride-A	27.0	ppm
615	DE2.9	19770915	Fluoride-A	53.0	ppm
616	DE2.9	19780606	Fluoride-A	53.0	ppm
617	DE2.9	19820608	Fluoride-A	21.0	ppm
618	DE2.9	19820817	Fluoride-A	37.0	ppm
619	DE2.9	19820916	Fluoride-A	30.0	ppm
620	DE3.2	19750616	Fluoride-A	27.0	ppm
621	DE3.2	19750729	Fluoride-A	15.0	ppm
622	DE3.2	19750818	Fluoride-A	21.0	ppm
623	DE3.2	19750922	Fluoride-A	26.0	ppm
624	DE3.2	19780731	Fluoride-A	41.0	ppm
625	DE3.2	19780901	Fluoride-A	98.0	ppm
626	E0.9	19780407	Fluoride-G	642.0	ppm
627	E1.3	19780407	Fluoride-G	225.0	ppm
628	E1.4	19770915	Fluoride-G	136.0	ppm
629	E1.4	19780606	Fluoride-G	92.0	ppm
630	E1.4	19780808	Fluoride-G	337.0	ppm
631	E1.4	19780901	Fluoride-G	335.0	ppm
632	E1.9	19830608	Fluoride-A	59.0	ppm
633	E1.9	19870603	Fluoride-A	41.7	ppm
634	E1.9	19870728	Fluoride-A	7.5	ppm
635	E1.9	19870915	Fluoride-A	100.1	ppm
636	E2.0	19750616	Fluoride-A	37.0	ppm
637	E2.0	19750818	Fluoride-A	69.0	ppm
638	E2.0	19750922	Fluoride-A	74.0	ppm
639	E2.0	19800608	Fluoride-A	60.0	ppm
640	E2.0	19800813	Fluoride-A	43.0	ppm
641	E2.0	19810616	Fluoride-G	83.0	ppm
642	E2.0	19810805	Fluoride-G	58.0	ppm
643	E2.0	19810921	Fluoride-G	62.0	ppm
644	E2.0	19890605	Fluoride-G	25.0	ppm
645	E2.0	19890801	Fluoride-G	123.0	ppm
646	E2.0	19890912	Fluoride-G	136.0	ppm
647	E2.0	19900606	Fluoride-G	32.0	ppm
648	E2.0	19900801	Fluoride-G	104.0	ppm
649	E2.0	19900917	Fluoride-G	69.0	ppm
650	E2.0	19910610	Fluoride-G	5.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
651	E2.0	19910724	Fluoride-G	50.0	ppm
652	E2.6	19750616	Fluoride-A	47.0	ppm
653	E2.6	19750818	Fluoride-A	31.0	ppm
654	E2.6	19750922	Fluoride-A	30.0	ppm
655	E2.6	19760608	Fluoride-A	72.0	ppm
656	E2.6	19760723	Fluoride-A	23.0	ppm
657	E2.6	19760811	Fluoride-A	38.0	ppm
658	E2.6	19760913	Fluoride-A	41.0	ppm
659	E2.6	19770614	Fluoride-A	29.0	ppm
660	E2.6	19770915	Fluoride-A	83.0	ppm
661	E2.6	19780407	Fluoride-A	548.0	ppm
662	E2.6	19780606	Fluoride-A	33.0	ppm
663	E2.6	19780731	Fluoride-A	50.0	ppm
664	E2.6	19830608	Fluoride-A	25.0	ppm
665	E2.6	19830815	Fluoride-A	21.0	ppm
666	E2.6	19830921	Fluoride-A	35.0	ppm
667	E2.6	19850610	Fluoride-A	31.0	ppm
668	E2.6	19850724	Fluoride-A	20.5	ppm
669	E2.6	19850916	Fluoride-A	43.8	ppm
670	E2.6	19860611	Fluoride-A	11.3	ppm
671	E2.6	19860731	Fluoride-A	19.2	ppm
672	E2.6	19860916	Fluoride-A	124.0	ppm
673	E2.6	19880725	Fluoride-A	30.5	ppm
674	E2.6	19890605	Fluoride-A	23.0	ppm
675	E2.6	19890801	Fluoride-A	25.0	ppm
676	E2.6	19890912	Fluoride-A	56.0	ppm
677	E2.6	19900606	Fluoride-A	30.0	ppm
678	E2.6	19900801	Fluoride-A	29.0	ppm
679	E2.6	19900917	Fluoride-A	57.0	ppm
680	E2.6	19910610	Fluoride-A	23.0	ppm
681	E2.6	19910724	Fluoride-A	20.0	ppm
682	E2.7	19770614	Fluoride-G	13.0	ppm
683	E2.7	19770915	Fluoride-G	104.0	ppm
684	E2.7	19780808	Fluoride-G	44.0	ppm
685	E2.7	19780901	Fluoride-G	63.0	ppm
686	E3.2	19770614	Fluoride-A	21.0	ppm
687	E3.2	19770725	Fluoride-A	38.0	ppm
688	E3.2	19770915	Fluoride-A	28.0	ppm
689	E3.3	19800608	Fluoride-A	29.0	ppm
690	E3.3	19800813	Fluoride-A	21.0	ppm
691	E3.3	19800915	Fluoride-A	12.0	ppm
692	E3.6	19850610	Fluoride-A	23.0	ppm
693	E3.6	19850724	Fluoride-A	19.2	ppm
694	E3.6	19850916	Fluoride-A	27.9	ppm
695	E3.6	19860611	Fluoride-A	26.4	ppm
696	E3.6	19860731	Fluoride-A	11.5	ppm
697	E3.6	19860916	Fluoride-A	28.3	ppm
698	E3.6	19870603	Fluoride-A	15.2	ppm
699	E3.6	19870728	Fluoride-A	3.7	ppm
700	E3.6	19880607	Fluoride-A	9.1	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
701	E3.6	19880914	Fluoride-A	36.4	ppm
702	E3.6	19890605	Fluoride-A	13.0	ppm
703	E3.6	19890801	Fluoride-A	17.0	ppm
704	E3.6	19890912	Fluoride-A	41.0	ppm
705	E3.6	19900606	Fluoride-A	18.0	ppm
706	E3.6	19900801	Fluoride-A	25.0	ppm
707	E3.6	19900917	Fluoride-A	53.0	ppm
708	E3.6	19910610	Fluoride-A	6.0	ppm
709	EF1.3	19810616	Fluoride-G	152.0	ppm
710	EF1.3	19810805	Fluoride-G	106.0	ppm
711	EF1.4	19800608	Fluoride-A	110.0	ppm
712	EF1.4	19800813	Fluoride-A	140.0	ppm
713	EF1.4	19800915	Fluoride-A	165.0	ppm
714	EF1.4	19820608	Fluoride-A	61.0	ppm
715	EF1.4	19820817	Fluoride-A	126.0	ppm
716	EF1.4	19820916	Fluoride-A	15.0	ppm
717	EF1.4	19850610	Fluoride-G	157.0	ppm
718	EF1.4	19850724	Fluoride-G	139.4	ppm
719	EF1.4	19850916	Fluoride-G	128.6	ppm
720	EF1.4	19860611	Fluoride-G	96.5	ppm
721	EF1.4	19860731	Fluoride-G	34.5	ppm
722	EF1.4	19860916	Fluoride-G	191.6	ppm
723	EF1.4	19870420	Fluoride-G	621.9	ppm
724	EF1.4	19870603	Fluoride-G	93.8	ppm
725	EF1.4	19870728	Fluoride-G	75.7	ppm
726	EF1.4	19870915	Fluoride-G	261.4	ppm
727	EF1.4	19880412	Fluoride-G	618.8	ppm
728	EF1.4	19880607	Fluoride-G	80.8	ppm
729	EF1.4	19880725	Fluoride-G	529.0	ppm
730	EF1.4	19880914	Fluoride-G	429.4	ppm
731	EF1.4	19890605	Fluoride-G	28.0	ppm
732	EF1.4	19890801	Fluoride-G	56.0	ppm
733	EF1.4	19890912	Fluoride-G	239.0	ppm
734	EF1.4	19900410	Fluoride-G	1182.0	ppm
735	EF1.4	19900606	Fluoride-G	58.0	ppm
736	EF1.4	19900801	Fluoride-G	261.0	ppm
737	EF1.4	19900917	Fluoride-G	141.0	ppm
738	EF1.4	19910610	Fluoride-G	232.0	ppm
739	EF1.4	19910724	Fluoride-G	93.0	ppm
740	EF1.5	19770614	Fluoride-G	36.0	ppm
741	EF1.5	19770915	Fluoride-G	174.0	ppm
742	EF1.5	19780407	Fluoride-G	689.0	ppm
743	EF1.5	19780606	Fluoride-G	68.0	ppm
744	EF1.5	19780901	Fluoride-G	216.0	ppm
745	EF1.5	19850610	Fluoride-G	161.0	ppm
746	EF1.5	19850724	Fluoride-G	153.7	ppm
747	EF1.5	19850916	Fluoride-G	132.3	ppm
748	EF1.5	19860611	Fluoride-G	97.2	ppm
749	EF1.5	19860731	Fluoride-G	67.5	ppm
750	EF1.5	19860916	Fluoride-G	182.4	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
751	EF1.5	19870420	Fluoride-G	636.0	ppm
752	EF1.5	19870603	Fluoride-G	98.6	ppm
753	EF1.5	19870728	Fluoride-G	72.0	ppm
754	EF1.5	19870915	Fluoride-G	288.9	ppm
755	EF1.5	19880412	Fluoride-G	712.5	ppm
756	EF1.5	19880607	Fluoride-G	80.0	ppm
757	EF1.5	19880725	Fluoride-G	527.0	ppm
758	EF1.5	19880914	Fluoride-G	433.1	ppm
759	EF1.5	19890605	Fluoride-G	26.0	ppm
760	EF1.5	19890801	Fluoride-G	54.0	ppm
761	EF1.5	19890912	Fluoride-G	222.0	ppm
762	EF1.5	19900410	Fluoride-G	1168.0	ppm
763	EF1.5	19900606	Fluoride-G	61.0	ppm
764	EF1.5	19900801	Fluoride-G	242.0	ppm
765	EF1.5	19900917	Fluoride-G	166.0	ppm
766	EF1.5	19910610	Fluoride-G	227.0	ppm
767	EF1.5	19910724	Fluoride-G	96.0	ppm
768	EF1.7	19790605	Fluoride-A	162.0	ppm
769	EF1.7	19790814	Fluoride-A	60.0	ppm
770	EF1.7	19860611	Fluoride-A	51.0	ppm
771	EF1.7	19860731	Fluoride-A	21.9	ppm
772	EF1.7	19860916	Fluoride-A	61.2	ppm
773	EF1.7	19780407	Fluoride-G	221.0	ppm
774	EF1.8	19820608	Fluoride-A	58.0	ppm
775	EF1.8	19820817	Fluoride-A	44.0	ppm
776	EF1.8	19820916	Fluoride-A	12.0	ppm
777	EF1.8	19770614	Fluoride-G	23.0	ppm
778	EF1.8	19770915	Fluoride-G	93.0	ppm
779	EF1.8	19780407	Fluoride-G	525.0	ppm
780	EF1.8	19780606	Fluoride-G	43.0	ppm
781	EF1.8	19780808	Fluoride-G	209.0	ppm
782	EF1.8	19780901	Fluoride-G	183.0	ppm
783	EF2.3	19800608	Fluoride-A	31.0	ppm
784	EF2.3	19800813	Fluoride-A	27.0	ppm
785	EF2.3	19800915	Fluoride-A	26.0	ppm
786	EF2.3	19860611	Fluoride-A	47.2	ppm
787	EF2.3	19860731	Fluoride-A	21.1	ppm
788	EF2.3	19860916	Fluoride-A	41.5	ppm
789	EF2.3	19870728	Fluoride-A	7.5	ppm
790	EF2.3	19870915	Fluoride-A	30.8	ppm
791	EF2.3	19880607	Fluoride-A	25.6	ppm
792	EF2.3	19880725	Fluoride-A	53.4	ppm
793	EF2.3	19880914	Fluoride-A	81.2	ppm
794	EF2.3	19890605	Fluoride-A	38.0	ppm
795	EF2.3	19890801	Fluoride-A	33.0	ppm
796	EF2.3	19890912	Fluoride-A	79.0	ppm
797	EF2.3	19900606	Fluoride-A	54.0	ppm
798	EF2.3	19900801	Fluoride-A	41.0	ppm
799	EF2.3	19900917	Fluoride-A	45.0	ppm
800	EF2.3	19770915	Fluoride-G	185.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
801	EF2.3	19780606	Fluoride-G	56.0	ppm
802	EF2.3	19780808	Fluoride-G	203.0	ppm
803	EF2.3	19780901	Fluoride-G	325.0	ppm
804	EF2.4	19770614	Fluoride-A	39.0	ppm
805	EF2.4	19770915	Fluoride-A	25.0	ppm
806	EF2.4	19780606	Fluoride-A	46.0	ppm
807	EF2.4	19780731	Fluoride-A	44.0	ppm
808	EF2.4	19790605	Fluoride-A	51.0	ppm
809	EF2.4	19790814	Fluoride-A	41.0	ppm
810	EF2.4	19800608	Fluoride-A	40.0	ppm
811	EF2.4	19800813	Fluoride-A	54.0	ppm
812	EF2.4	19800915	Fluoride-A	81.0	ppm
813	EF3.3	19800608	Fluoride-A	24.0	ppm
814	EF3.3	19800813	Fluoride-A	21.0	ppm
815	EF3.3	19810616	Fluoride-G	37.0	ppm
816	EF3.3	19810805	Fluoride-G	38.0	ppm
817	EF3.3	19810921	Fluoride-G	36.0	ppm
818	EF3.5	19850610	Fluoride-A	25.0	ppm
819	EF3.5	19850724	Fluoride-A	29.8	ppm
820	EF3.5	19850916	Fluoride-A	38.3	ppm
821	EF3.5	19860611	Fluoride-A	37.8	ppm
822	EF3.5	19860731	Fluoride-A	15.3	ppm
823	EF3.5	19860916	Fluoride-A	52.0	ppm
824	EF3.5	19870603	Fluoride-A	18.2	ppm
825	EF3.5	19870728	Fluoride-A	7.5	ppm
826	EF3.5	19870915	Fluoride-A	24.0	ppm
827	EF3.5	19880607	Fluoride-A	43.7	ppm
828	EF3.5	19880725	Fluoride-A	28.6	ppm
829	EF3.5	19880914	Fluoride-A	48.4	ppm
830	EF3.5	19890605	Fluoride-A	19.0	ppm
831	EF3.5	19890801	Fluoride-A	15.0	ppm
832	EF3.5	19890912	Fluoride-A	52.0	ppm
833	EF3.5	19900606	Fluoride-A	54.0	ppm
834	EF3.5	19900801	Fluoride-A	27.0	ppm
835	EF3.5	19900917	Fluoride-A	37.0	ppm
836	EF3.5	19910610	Fluoride-A	19.0	ppm
837	EF3.5	19910724	Fluoride-A	17.0	ppm
838	F2.3	19850610	Fluoride-A	15.0	ppm
839	F2.3	19850724	Fluoride-A	23.4	ppm
840	F2.3	19850916	Fluoride-A	29.8	ppm
841	F2.3	19890605	Fluoride-A	27.0	ppm
842	F2.3	19890801	Fluoride-A	21.0	ppm
843	F2.3	19890912	Fluoride-A	56.0	ppm
844	F2.3	19900606	Fluoride-A	53.0	ppm
845	F2.3	19900801	Fluoride-A	40.0	ppm
846	F2.3	19900917	Fluoride-A	49.0	ppm
847	F2.3	19910610	Fluoride-A	13.0	ppm
848	F2.3	19910724	Fluoride-A	33.0	ppm
849	F2.3	19770614	Fluoride-A	14.0	ppm
850	FG1.7	19770614	Fluoride-G	22.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
851	FG1.7	19770915	Fluoride-G	116.0	ppm
852	FG1.7	19780606	Fluoride-G	45.0	ppm
853	FG1.7	19780808	Fluoride-G	173.0	ppm
854	FG1.7	19780901	Fluoride-G	135.0	ppm
855	FG1.7	19850610	Fluoride-G	56.0	ppm
856	FG1.7	19850724	Fluoride-G	34.0	ppm
857	FG1.7	19850916	Fluoride-G	90.0	ppm
858	FG1.7	19860611	Fluoride-G	31.7	ppm
859	FG1.7	19860731	Fluoride-G	47.8	ppm
860	FG1.7	19860916	Fluoride-G	100.2	ppm
861	FG1.7	19870420	Fluoride-G	159.4	ppm
862	FG1.7	19870603	Fluoride-G	52.5	ppm
863	FG1.7	19870728	Fluoride-G	62.2	ppm
864	FG1.7	19870915	Fluoride-G	85.9	ppm
865	FG1.7	19880412	Fluoride-G	262.5	ppm
866	FG1.7	19880607	Fluoride-G	48.5	ppm
867	FG1.7	19880725	Fluoride-G	147.6	ppm
868	FG1.7	19880914	Fluoride-G	255.8	ppm
869	FG1.7	19890605	Fluoride-G	51.0	ppm
870	FG1.7	19890801	Fluoride-G	107.0	ppm
871	FG1.7	19890912	Fluoride-G	243.0	ppm
872	FG1.7	19900410	Fluoride-G	322.0	ppm
873	FG1.7	19900606	Fluoride-G	112.0	ppm
874	FG1.7	19900801	Fluoride-G	215.0	ppm
875	FG1.7	19900917	Fluoride-G	139.0	ppm
876	FG1.7	19910610	Fluoride-G	22.0	ppm
877	FG1.7	19910724	Fluoride-G	55.0	ppm
878	FG2.3	19770614	Fluoride-A	19.0	ppm
879	FG2.3	19770725	Fluoride-A	32.0	ppm
880	FG2.3	19800608	Fluoride-A	23.0	ppm
881	FG2.3	19800813	Fluoride-A	29.0	ppm
882	FG2.3	19810616	Fluoride-G	46.0	ppm
883	FG2.3	19810805	Fluoride-G	41.0	ppm
884	FG2.3	19810921	Fluoride-G	36.0	ppm
885	FG2.6	19760608	Fluoride-A	25.0	ppm
886	FG2.6	19760811	Fluoride-A	19.0	ppm
887	FG2.6	19770614	Fluoride-A	23.0	ppm
888	FG2.6	19770725	Fluoride-A	33.0	ppm
889	FG2.6	19770915	Fluoride-A	27.0	ppm
890	FG2.8	19900606	Fluoride-A	41.0	ppm
891	FG2.8	19900801	Fluoride-A	23.0	ppm
892	FG2.8	19900917	Fluoride-A	18.0	ppm
893	FG2.8	19910610	Fluoride-A	23.0	ppm
894	FG2.8	19910724	Fluoride-A	15.0	ppm
895	FG3.0	19800608	Fluoride-A	13.0	ppm
896	FG3.0	19850610	Fluoride-A	49.0	ppm
897	FG3.0	19850724	Fluoride-A	29.3	ppm
898	FG3.0	19850916	Fluoride-A	43.1	ppm
899	FG3.0	19860611	Fluoride-A	4.9	ppm
900	FG3.0	19860731	Fluoride-A	14.2	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
901	FG3.0	19860916	Fluoride-A	25.1	ppm
902	FG3.0	19870603	Fluoride-A	11.4	ppm
903	FG3.0	19870728	Fluoride-A	7.5	ppm
904	FG3.0	19870915	Fluoride-A	15.8	ppm
905	FG3.0	19880607	Fluoride-A	10.2	ppm
906	FG3.0	19880725	Fluoride-A	40.1	ppm
907	FG3.0	19880914	Fluoride-A	23.7	ppm
908	FG3.0	19890605	Fluoride-A	15.0	ppm
909	FG3.0	19890801	Fluoride-A	18.0	ppm
910	FG3.1	19770614	Fluoride-A	23.0	ppm
911	FG3.1	19770725	Fluoride-A	29.0	ppm
912	FG3.1	19800608	Fluoride-A	16.0	ppm
913	FG3.1	19800813	Fluoride-A	21.0	ppm
914	FG3.1	19800915	Fluoride-A	18.0	ppm
915	FG3.1	19810616	Fluoride-A	28.0	ppm
916	FG3.1	19810805	Fluoride-A	21.0	ppm
917	FG3.1	19810921	Fluoride-A	28.0	ppm
918	FG3.1	19820608	Fluoride-A	23.0	ppm
919	FG3.1	19820817	Fluoride-A	23.0	ppm
920	FG3.1	19820916	Fluoride-A	23.0	ppm
921	FG3.1	19900606	Fluoride-A	21.0	ppm
922	FG3.1	19900801	Fluoride-A	31.0	ppm
923	FG3.1	19900917	Fluoride-A	28.0	ppm
924	FG3.1	19910610	Fluoride-A	4.0	ppm
925	G1.3	19770614	Fluoride-G	123.0	ppm
926	G1.3	19770915	Fluoride-G	1500.0	ppm
927	G1.3	19780407	Fluoride-G	3300.0	ppm
928	G1.3	19780606	Fluoride-G	150.0	ppm
929	G1.3	19780808	Fluoride-G	825.0	ppm
930	G1.3	19780901	Fluoride-G	1519.0	ppm
931	G2.2	19770614	Fluoride-G	16.0	ppm
932	G2.2	19770915	Fluoride-G	67.0	ppm
933	G2.2	19780407	Fluoride-G	130.0	ppm
934	G2.2	19780606	Fluoride-G	19.0	ppm
935	G2.2	19780808	Fluoride-G	92.0	ppm
936	G2.2	19780901	Fluoride-G	56.0	ppm
937	G2.2	19800608	Fluoride-G	10.0	ppm
938	G2.2	19800813	Fluoride-G	33.0	ppm
939	G2.2	19800915	Fluoride-G	28.0	ppm
940	G2.2	19810616	Fluoride-G	14.0	ppm
941	G2.2	19810805	Fluoride-G	41.0	ppm
942	G2.2	19810921	Fluoride-G	61.0	ppm
943	G2.8	19870603	Fluoride-A	11.4	ppm
944	G2.8	19870728	Fluoride-A	8.2	ppm
945	G2.8	19870915	Fluoride-A	28.1	ppm
946	G2.8	19880607	Fluoride-A	10.2	ppm
947	G2.8	19880725	Fluoride-A	50.0	ppm
948	G2.8	19880914	Fluoride-A	22.5	ppm
949	G2.8	19890605	Fluoride-A	17.0	ppm
950	G2.8	19890801	Fluoride-A	19.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
951	G2.8	19890912	Fluoride-A	34.0	ppm
952	G2.8	19900606	Fluoride-A	27.0	ppm
953	G2.8	19900801	Fluoride-A	28.0	ppm
954	G2.8	19900917	Fluoride-A	32.0	ppm
955	G2.8	19910610	Fluoride-A	15.0	ppm
956	G2.8	19910724	Fluoride-A	21.0	ppm
957	G2.9	19870603	Fluoride-A	16.1	ppm
958	G2.9	19870728	Fluoride-A	10.2	ppm
959	G2.9	19870915	Fluoride-A	26.3	ppm
960	G2.9	19880607	Fluoride-A	9.1	ppm
961	G2.9	19880725	Fluoride-A	48.8	ppm
962	G2.9	19880914	Fluoride-A	22.5	ppm
963	G2.9	19890605	Fluoride-A	18.0	ppm
964	G2.9	19890801	Fluoride-A	20.0	ppm
965	G2.9	19890912	Fluoride-A	35.0	ppm
966	G2.9	19900606	Fluoride-A	29.0	ppm
967	G2.9	19900801	Fluoride-A	28.0	ppm
968	G2.9	19900917	Fluoride-A	35.0	ppm
969	G2.9	19910610	Fluoride-A	14.0	ppm
970	G2.9	19910724	Fluoride-A	19.0	ppm
971	GH1.3	19870603	Fluoride-G	50.3	ppm
972	GH1.3	19870728	Fluoride-G	74.4	ppm
973	GH1.3	19870915	Fluoride-G	172.5	ppm
974	GH1.3	19880607	Fluoride-G	79.2	ppm
975	GH1.3	19880725	Fluoride-G	205.4	ppm
976	GH1.3	19880914	Fluoride-G	210.8	ppm
977	GH1.3	19890605	Fluoride-G	55.0	ppm
978	GH1.3	19890801	Fluoride-G	241.0	ppm
979	GH1.3	19890912	Fluoride-G	331.0	ppm
980	GH1.3	19900606	Fluoride-G	90.0	ppm
981	GH1.3	19900801	Fluoride-G	355.0	ppm
982	GH1.3	19900917	Fluoride-G	227.0	ppm
983	GH1.3	19910610	Fluoride-G	26.0	ppm
984	GH1.3	19910724	Fluoride-G	72.0	ppm
985	GH1.6	19770614	Fluoride-G	27.0	ppm
986	GH1.6	19770915	Fluoride-G	176.0	ppm
987	GH1.6	19780407	Fluoride-G	239.0	ppm
988	GH1.6	19780606	Fluoride-G	66.0	ppm
989	GH1.6	19780808	Fluoride-G	98.0	ppm
990	GH1.6	19780901	Fluoride-G	104.0	ppm
991	GH1.8	19770614	Fluoride-G	13.0	ppm
992	GH1.8	19770915	Fluoride-G	74.0	ppm
993	GH1.8	19780407	Fluoride-G	194.0	ppm
994	GH1.8	19780606	Fluoride-G	36.0	ppm
995	GH1.8	19780808	Fluoride-G	90.0	ppm
996	GH1.8	19780901	Fluoride-G	67.0	ppm
997	GH1.8	19800608	Fluoride-G	24.0	ppm
998	GH1.8	19800813	Fluoride-G	53.0	ppm
999	GH1.8	19800915	Fluoride-G	27.0	ppm
1000	GH1.8	19810616	Fluoride-G	14.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1001	GH1.8	19810805	Fluoride-G	41.0	ppm
1002	GH1.8	19810921	Fluoride-G	61.0	ppm
1003	GH1.8	19820608	Fluoride-G	38.0	ppm
1004	GH1.8	19820817	Fluoride-G	40.0	ppm
1005	GH1.8	19820916	Fluoride-G	43.0	ppm
1006	GH1.8	19830426	Fluoride-G	115.0	ppm
1007	GH1.8	19830426	Fluoride-G	115.0	ppm
1008	GH1.8	19830608	Fluoride-G	60.0	ppm
1009	GH1.8	19830815	Fluoride-G	36.0	ppm
1010	GH1.8	19830921	Fluoride-G	39.0	ppm
1011	GH1.8	19850610	Fluoride-G	34.0	ppm
1012	GH1.8	19850724	Fluoride-G	53.6	ppm
1013	GH1.8	19850916	Fluoride-G	34.9	ppm
1014	GH1.8	19860611	Fluoride-G	30.9	ppm
1015	GH1.8	19860731	Fluoride-G	44.1	ppm
1016	GH1.8	19860916	Fluoride-G	104.4	ppm
1017	GH1.8	19870420	Fluoride-G	116.7	ppm
1018	GH1.8	19870603	Fluoride-G	23.3	ppm
1019	GH1.8	19870728	Fluoride-G	30.0	ppm
1020	GH1.8	19870915	Fluoride-G	94.5	ppm
1021	GH1.8	19880412	Fluoride-G	56.3	ppm
1022	GH1.8	19880607	Fluoride-G	36.4	ppm
1023	GH1.8	19880725	Fluoride-G	115.1	ppm
1024	GH1.8	19880914	Fluoride-G	139.5	ppm
1025	GH1.8	19890605	Fluoride-G	17.0	ppm
1026	GH1.8	19890801	Fluoride-G	89.0	ppm
1027	GH1.8	19890912	Fluoride-G	121.0	ppm
1028	GH1.8	19900410	Fluoride-G	166.0	ppm
1029	GH1.8	19900606	Fluoride-G	46.0	ppm
1030	GH1.8	19900801	Fluoride-G	90.0	ppm
1031	GH1.8	19900917	Fluoride-G	159.0	ppm
1032	GH1.8	19910610	Fluoride-G	18.0	ppm
1033	GH1.8	19910724	Fluoride-G	68.0	ppm
1034	GH2.2	19750616	Fluoride-A	17.0	ppm
1035	GH2.2	19750729	Fluoride-A	25.0	ppm
1036	GH2.2	19750922	Fluoride-A	42.0	ppm
1037	GH2.2	19830608	Fluoride-A	21.0	ppm
1038	GH2.2	19830815	Fluoride-A	28.0	ppm
1039	GH2.2	19830921	Fluoride-A	16.0	ppm
1040	GH2.2	19850610	Fluoride-A	36.0	ppm
1041	GH2.2	19850724	Fluoride-A	33.2	ppm
1042	GH2.2	19850916	Fluoride-A	22.5	ppm
1043	GH2.2	19860611	Fluoride-A	23.7	ppm
1044	GH2.2	19860731	Fluoride-A	15.3	ppm
1045	GH2.2	19860916	Fluoride-A	41.8	ppm
1046	GH2.2	19870603	Fluoride-A	15.4	ppm
1047	GH2.2	19870728	Fluoride-A	16.4	ppm
1048	GH2.2	19870915	Fluoride-A	41.3	ppm
1049	GH2.2	19880607	Fluoride-A	13.8	ppm
1050	GH2.2	19880725	Fluoride-A	46.5	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1051	GH2.2	19880914	Fluoride-A	43.5	ppm
1052	GH2.2	19890605	Fluoride-A	25.0	ppm
1053	GH2.2	19890801	Fluoride-A	32.0	ppm
1054	GH2.2	19890912	Fluoride-A	57.0	ppm
1055	GH2.2	19900606	Fluoride-A	19.0	ppm
1056	GH2.2	19900801	Fluoride-A	39.0	ppm
1057	GH2.2	19900917	Fluoride-A	45.0	ppm
1058	GH2.2	19910610	Fluoride-A	14.0	ppm
1059	GH2.2	19910724	Fluoride-A	36.0	ppm
1060	GH2.3	19820608	Fluoride-A	26.0	ppm
1061	GH2.3	19820817	Fluoride-A	31.0	ppm
1062	GH2.3	19820916	Fluoride-A	33.0	ppm
1063	GH2.3	19850610	Fluoride-A	63.0	ppm
1064	GH2.3	19850724	Fluoride-A	37.1	ppm
1065	GH2.3	19850916	Fluoride-A	48.9	ppm
1066	GH2.3	19860611	Fluoride-A	41.9	ppm
1067	GH2.3	19860731	Fluoride-A	11.5	ppm
1068	GH2.3	19860916	Fluoride-A	39.7	ppm
1069	GH2.3	19770614	Fluoride-G	23.0	ppm
1070	GH2.3	19770915	Fluoride-G	42.0	ppm
1071	GH2.3	19780407	Fluoride-G	171.0	ppm
1072	GH2.3	19780606	Fluoride-G	43.0	ppm
1073	GH2.3	19780808	Fluoride-G	103.0	ppm
1074	GH2.3	19780901	Fluoride-G	59.0	ppm
1075	GH2.3	19800608	Fluoride-G	16.0	ppm
1076	GH2.3	19800813	Fluoride-G	27.0	ppm
1077	GH2.3	19800915	Fluoride-G	21.0	ppm
1078	GH2.3	19810616	Fluoride-G	21.0	ppm
1079	GH2.8	19750616	Fluoride-A	15.0	ppm
1080	GH2.8	19750729	Fluoride-A	22.0	ppm
1081	GH2.8	19750922	Fluoride-A	19.0	ppm
1082	H1.4	19730601	Fluoride-G	78.0	ppm
1083	H1.4	19730701	Fluoride-G	40.0	ppm
1084	H1.4	19730901	Fluoride-G	74.0	ppm
1085	H1.4	19740601	Fluoride-G	58.0	ppm
1086	H1.4	19740701	Fluoride-G	96.0	ppm
1087	H1.4	19740901	Fluoride-G	191.0	ppm
1088	H1.4	19750502	Fluoride-G	163.0	ppm
1089	H1.4	19750616	Fluoride-G	64.0	ppm
1090	H1.4	19750729	Fluoride-G	104.0	ppm
1091	H1.4	19750922	Fluoride-G	140.0	ppm
1092	H1.4	19760503	Fluoride-G	343.0	ppm
1093	H1.4	19760608	Fluoride-G	88.0	ppm
1094	H1.4	19760723	Fluoride-G	76.0	ppm
1095	H1.4	19760913	Fluoride-G	138.0	ppm
1096	H1.4	19770614	Fluoride-G	91.0	ppm
1097	H1.4	19770725	Fluoride-G	172.0	ppm
1098	H1.4	19770915	Fluoride-G	241.0	ppm
1099	H1.4	19780407	Fluoride-G	199.0	ppm
1100	H1.4	19780606	Fluoride-G	93.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1101	H1.4	19780808	Fluoride-G	255.0	ppm
1102	H1.4	19780901	Fluoride-G	96.0	ppm
1103	H1.4	19790427	Fluoride-G	226.0	ppm
1104	H1.4	19790605	Fluoride-G	201.0	ppm
1105	H1.4	19790814	Fluoride-G	216.0	ppm
1106	H1.4	19800608	Fluoride-G	58.0	ppm
1107	H1.4	19800813	Fluoride-G	112.0	ppm
1108	H1.4	19800915	Fluoride-G	90.0	ppm
1109	H1.4	19810616	Fluoride-G	50.0	ppm
1110	H1.4	19810805	Fluoride-G	128.0	ppm
1111	H1.4	19810921	Fluoride-G	160.0	ppm
1112	H1.4	19820608	Fluoride-G	95.0	ppm
1113	H1.4	19820817	Fluoride-G	92.0	ppm
1114	H1.4	19820916	Fluoride-G	124.0	ppm
1115	H1.4	19830426	Fluoride-G	255.0	ppm
1116	H1.4	19830426	Fluoride-G	256.0	ppm
1117	H1.4	19830608	Fluoride-G	70.0	ppm
1118	H1.4	19830815	Fluoride-G	115.0	ppm
1119	H1.4	19830921	Fluoride-G	83.0	ppm
1120	H1.4	19850610	Fluoride-G	133.0	ppm
1121	H1.4	19850724	Fluoride-G	228.8	ppm
1122	H1.4	19850916	Fluoride-G	24.8	ppm
1123	H1.4	19860611	Fluoride-G	71.0	ppm
1124	H1.4	19860731	Fluoride-G	110.3	ppm
1125	H1.4	19860916	Fluoride-G	243.2	ppm
1126	H1.4	19870420	Fluoride-G	300.7	ppm
1127	H1.4	19870603	Fluoride-G	148.9	ppm
1128	H1.4	19870728	Fluoride-G	167.3	ppm
1129	H1.4	19870915	Fluoride-G	258.4	ppm
1130	H1.4	19880412	Fluoride-G	225.0	ppm
1131	H1.4	19880607	Fluoride-G	135.3	ppm
1132	H1.4	19880725	Fluoride-G	283.7	ppm
1133	H1.4	19880914	Fluoride-G	303.8	ppm
1134	H1.4	19890605	Fluoride-G	305.0	ppm
1135	H1.4	19890801	Fluoride-G	447.0	ppm
1136	H1.4	19890912	Fluoride-G	480.0	ppm
1137	H1.4	19900410	Fluoride-G	506.0	ppm
1138	H1.4	19900606	Fluoride-G	201.0	ppm
1139	H1.4	19900801	Fluoride-G	417.0	ppm
1140	H1.4	19900917	Fluoride-G	308.0	ppm
1141	H1.4	19910610	Fluoride-G	92.0	ppm
1142	H1.4	19910724	Fluoride-G	188.0	ppm
1143	H2.6	19770614	Fluoride-G	12.0	ppm
1144	H2.6	19770915	Fluoride-G	51.0	ppm
1145	H2.6	19780407	Fluoride-G	120.0	ppm
1146	H2.6	19780606	Fluoride-G	25.0	ppm
1147	H2.6	19780808	Fluoride-G	86.0	ppm
1148	H2.6	19780901	Fluoride-G	59.0	ppm
1149	H2.6	19800608	Fluoride-G	21.0	ppm
1150	H2.6	19800813	Fluoride-G	43.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1151	H2.6	19800915	Fluoride-G	21.0	ppm
1152	H2.6	19810616	Fluoride-G	17.0	ppm
1153	H2.6	19810805	Fluoride-G	32.0	ppm
1154	H2.6	19810921	Fluoride-G	91.0	ppm
1155	H2.6	19820608	Fluoride-G	24.0	ppm
1156	H2.6	19820817	Fluoride-G	51.0	ppm
1157	H2.6	19820916	Fluoride-G	43.0	ppm
1158	H2.6	19830426	Fluoride-G	117.0	ppm
1159	H2.6	19830426	Fluoride-G	117.0	ppm
1160	H2.6	19830608	Fluoride-G	30.0	ppm
1161	H2.6	19830815	Fluoride-G	45.0	ppm
1162	H2.6	19830921	Fluoride-G	39.0	ppm
1163	H2.6	19850610	Fluoride-G	29.0	ppm
1164	H2.6	19850724	Fluoride-G	41.0	ppm
1165	H2.6	19850916	Fluoride-G	25.7	ppm
1166	H2.6	19860611	Fluoride-G	29.5	ppm
1167	H2.6	19860731	Fluoride-G	21.0	ppm
1168	H2.6	19860916	Fluoride-G	87.6	ppm
1169	H2.6	19870420	Fluoride-G	46.3	ppm
1170	H2.6	19870603	Fluoride-G	4.5	ppm
1171	H2.6	19870728	Fluoride-G	43.1	ppm
1172	H2.6	19870915	Fluoride-G	86.6	ppm
1173	H2.6	19880412	Fluoride-G	110.9	ppm
1174	H2.6	19880607	Fluoride-G	5.1	ppm
1175	H2.6	19880725	Fluoride-G	62.7	ppm
1176	H2.6	19880914	Fluoride-G	64.5	ppm
1177	H2.6	19890605	Fluoride-G	39.0	ppm
1178	H2.6	19890801	Fluoride-G	44.0	ppm
1179	H2.6	19890912	Fluoride-G	57.0	ppm
1180	H2.6	19900410	Fluoride-G	95.0	ppm
1181	H2.6	19900606	Fluoride-G	16.0	ppm
1182	H2.6	19900801	Fluoride-G	35.0	ppm
1183	H2.6	19900917	Fluoride-G	45.0	ppm
1184	H2.6	19910610	Fluoride-G	12.0	ppm
1185	H2.6	19910724	Fluoride-G	18.0	ppm
1186	HI1.5	19710601	Fluoride-G	19.0	ppm
1187	HI1.5	19710701	Fluoride-G	92.0	ppm
1188	HI1.5	19710901	Fluoride-G	64.0	ppm
1189	HI1.5	19720601	Fluoride-G	24.0	ppm
1190	HI1.5	19720701	Fluoride-G	23.0	ppm
1191	HI1.5	19720901	Fluoride-G	54.0	ppm
1192	HI1.5	19730601	Fluoride-G	22.0	ppm
1193	HI1.5	19730701	Fluoride-G	26.0	ppm
1194	HI1.5	19730901	Fluoride-G	35.0	ppm
1195	HI1.5	19740601	Fluoride-G	14.0	ppm
1196	HI1.5	19740701	Fluoride-G	84.0	ppm
1197	HI1.5	19740901	Fluoride-G	111.0	ppm
1198	HI1.5	19750502	Fluoride-G	103.0	ppm
1199	HI1.5	19750616	Fluoride-G	25.0	ppm
1200	HI1.5	19750729	Fluoride-G	54.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1201	HI1.5	19750922	Fluoride-G	56.0	ppm
1202	HI1.5	19760503	Fluoride-G	107.0	ppm
1203	HI1.5	19760608	Fluoride-G	39.0	ppm
1204	HI1.5	19760723	Fluoride-G	61.0	ppm
1205	HI1.5	19760913	Fluoride-G	53.0	ppm
1206	HI1.5	19770614	Fluoride-G	41.0	ppm
1207	HI1.5	19770725	Fluoride-G	76.0	ppm
1208	HI1.5	19770915	Fluoride-G	113.0	ppm
1209	HI1.5	19780407	Fluoride-G	115.0	ppm
1210	HI1.5	19780606	Fluoride-G	55.0	ppm
1211	HI1.5	19780808	Fluoride-G	117.0	ppm
1212	HI1.5	19780901	Fluoride-G	55.0	ppm
1213	HI1.5	19790427	Fluoride-G	108.0	ppm
1214	HI1.5	19790605	Fluoride-G	68.0	ppm
1215	HI1.5	19790814	Fluoride-G	93.0	ppm
1216	HI1.5	19800608	Fluoride-G	40.0	ppm
1217	HI1.5	19800813	Fluoride-G	63.0	ppm
1218	HI1.5	19800915	Fluoride-G	43.0	ppm
1219	HI1.5	19810616	Fluoride-G	14.0	ppm
1220	HI1.5	19810805	Fluoride-G	87.0	ppm
1221	HI1.5	19810921	Fluoride-G	91.0	ppm
1222	HI1.5	19830921	Fluoride-G	56.0	ppm
1223	HI1.6	19820608	Fluoride-G	62.0	ppm
1224	HI1.6	19820817	Fluoride-G	106.0	ppm
1225	HI1.6	19820916	Fluoride-G	92.0	ppm
1226	HI1.6	19830426	Fluoride-G	112.0	ppm
1227	HI1.6	19830426	Fluoride-G	112.0	ppm
1228	HI1.6	19830608	Fluoride-G	53.0	ppm
1229	HI1.6	19830815	Fluoride-G	72.0	ppm
1230	HI1.6	19850610	Fluoride-G	51.0	ppm
1231	HI1.6	19850724	Fluoride-G	112.6	ppm
1232	HI1.6	19850916	Fluoride-G	45.9	ppm
1233	HI1.6	19860611	Fluoride-G	63.3	ppm
1234	HI1.6	19860731	Fluoride-G	41.5	ppm
1235	HI1.6	19860916	Fluoride-G	110.0	ppm
1236	HI1.6	19870420	Fluoride-G	81.3	ppm
1237	HI1.6	19870603	Fluoride-G	70.5	ppm
1238	HI1.6	19870728	Fluoride-G	97.5	ppm
1239	HI1.6	19870915	Fluoride-G	153.8	ppm
1240	HI1.6	19880412	Fluoride-G	178.5	ppm
1241	HI1.6	19880607	Fluoride-G	55.3	ppm
1242	HI1.6	19880725	Fluoride-G	132.1	ppm
1243	HI1.6	19880914	Fluoride-G	196.5	ppm
1244	HI1.6	19890605	Fluoride-G	62.0	ppm
1245	HI1.6	19890801	Fluoride-G	200.0	ppm
1246	HI1.6	19890912	Fluoride-G	239.0	ppm
1247	HI1.6	19900410	Fluoride-G	166.0	ppm
1248	HI1.6	19900606	Fluoride-G	93.0	ppm
1249	HI1.6	19900801	Fluoride-G	102.0	ppm
1250	HI1.6	19900917	Fluoride-G	134.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1251	HI1.6	19910610	Fluoride-G	69.0	ppm
1252	HI1.6	19910724	Fluoride-G	138.0	ppm
1253	I1.6	19720601	Fluoride-G	20.0	ppm
1254	I1.6	19720701	Fluoride-G	28.0	ppm
1255	I1.6	19720901	Fluoride-G	37.0	ppm
1256	I1.6	19730601	Fluoride-G	16.0	ppm
1257	I1.6	19730701	Fluoride-G	11.0	ppm
1258	I1.6	19730901	Fluoride-G	25.0	ppm
1259	I1.6	19740601	Fluoride-G	11.0	ppm
1260	I1.6	19740701	Fluoride-G	53.0	ppm
1261	I1.6	19740901	Fluoride-G	65.0	ppm
1262	I1.6	19750502	Fluoride-G	62.0	ppm
1263	I1.6	19750616	Fluoride-G	20.0	ppm
1264	I1.6	19750729	Fluoride-G	48.0	ppm
1265	I1.6	19750922	Fluoride-G	57.0	ppm
1266	I1.6	19760503	Fluoride-G	71.0	ppm
1267	I1.6	19760608	Fluoride-G	38.0	ppm
1268	I1.6	19760723	Fluoride-G	51.0	ppm
1269	I1.6	19760913	Fluoride-G	47.0	ppm
1270	I1.6	19770614	Fluoride-G	25.0	ppm
1271	I1.6	19770725	Fluoride-G	60.0	ppm
1272	I1.6	19770915	Fluoride-G	100.0	ppm
1273	I1.6	19780407	Fluoride-G	97.0	ppm
1274	I1.6	19780606	Fluoride-G	62.0	ppm
1275	I1.6	19780808	Fluoride-G	109.0	ppm
1276	I1.6	19780901	Fluoride-G	46.0	ppm
1277	I1.6	19790427	Fluoride-G	64.0	ppm
1278	I1.6	19790605	Fluoride-G	111.0	ppm
1279	I1.6	19790814	Fluoride-G	113.0	ppm
1280	I1.6	19800608	Fluoride-G	26.0	ppm
1281	I1.6	19800813	Fluoride-G	52.0	ppm
1282	I1.6	19800915	Fluoride-G	42.0	ppm
1283	I1.6	19810616	Fluoride-G	14.0	ppm
1284	I1.6	19810805	Fluoride-G	48.0	ppm
1285	I1.6	19810921	Fluoride-G	66.0	ppm
1286	I1.6	19820608	Fluoride-G	36.0	ppm
1287	I1.6	19820817	Fluoride-G	67.0	ppm
1288	I1.6	19820916	Fluoride-G	60.0	ppm
1289	I1.6	19830426	Fluoride-G	76.0	ppm
1290	I1.6	19830426	Fluoride-G	76.0	ppm
1291	I1.6	19830608	Fluoride-G	49.0	ppm
1292	I1.6	19830815	Fluoride-G	43.0	ppm
1293	I1.6	19830921	Fluoride-G	36.0	ppm
1294	I1.6	19850610	Fluoride-G	38.0	ppm
1295	I1.6	19850724	Fluoride-G	66.1	ppm
1296	I1.6	19850916	Fluoride-G	40.4	ppm
1297	I1.6	19860611	Fluoride-G	66.0	ppm
1298	I1.6	19860731	Fluoride-G	57.0	ppm
1299	I1.6	19860916	Fluoride-G	84.7	ppm
1300	I1.6	19870420	Fluoride-G	38.8	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1301	I1.6	19870603	Fluoride-G	35.6	ppm
1302	I1.6	19870728	Fluoride-G	37.5	ppm
1303	I1.6	19870915	Fluoride-G	78.4	ppm
1304	I1.6	19880412	Fluoride-G	64.3	ppm
1305	I1.6	19880607	Fluoride-G	42.0	ppm
1306	I1.6	19880725	Fluoride-G	85.3	ppm
1307	I1.6	19880914	Fluoride-G	100.9	ppm
1308	I1.6	19890605	Fluoride-G	21.0	ppm
1309	I1.6	19890801	Fluoride-G	115.0	ppm
1310	I1.6	19890912	Fluoride-G	119.0	ppm
1311	I1.6	19900410	Fluoride-G	52.0	ppm
1312	I1.6	19900606	Fluoride-G	19.0	ppm
1313	I1.6	19900801	Fluoride-G	110.0	ppm
1314	I1.6	19900917	Fluoride-G	46.0	ppm
1315	I1.6	19910610	Fluoride-G	29.0	ppm
1316	I1.6	19910724	Fluoride-G	55.0	ppm
1317	I1.9	19710601	Fluoride-G	11.0	ppm
1318	I1.9	19710701	Fluoride-G	57.0	ppm
1319	I1.9	19710901	Fluoride-G	42.0	ppm
1320	I1.9	19720601	Fluoride-G	13.0	ppm
1321	I1.9	19720701	Fluoride-G	22.0	ppm
1322	I1.9	19720901	Fluoride-G	25.0	ppm
1323	I1.9	19730601	Fluoride-G	6.0	ppm
1324	I1.9	19730701	Fluoride-G	8.0	ppm
1325	I1.9	19730901	Fluoride-G	20.0	ppm
1326	I1.9	19740601	Fluoride-G	10.0	ppm
1327	I1.9	19740701	Fluoride-G	38.0	ppm
1328	I1.9	19740901	Fluoride-G	52.0	ppm
1329	I1.9	19750502	Fluoride-G	57.0	ppm
1330	I1.9	19750616	Fluoride-G	25.0	ppm
1331	I1.9	19750729	Fluoride-G	44.0	ppm
1332	I1.9	19750922	Fluoride-G	64.0	ppm
1333	I1.9	19760503	Fluoride-G	59.0	ppm
1334	I1.9	19760608	Fluoride-G	38.0	ppm
1335	I1.9	19760723	Fluoride-G	50.0	ppm
1336	I1.9	19760913	Fluoride-G	49.0	ppm
1337	I1.9	19770614	Fluoride-G	23.0	ppm
1338	I1.9	19770725	Fluoride-G	44.0	ppm
1339	I1.9	19770915	Fluoride-G	81.0	ppm
1340	I1.9	19780407	Fluoride-G	73.0	ppm
1341	I1.9	19780606	Fluoride-G	46.0	ppm
1342	I1.9	19780808	Fluoride-G	98.0	ppm
1343	I1.9	19780901	Fluoride-G	388.0	ppm
1344	I1.9	19790427	Fluoride-G	66.0	ppm
1345	I1.9	19790605	Fluoride-G	147.0	ppm
1346	I1.9	19790814	Fluoride-G	79.0	ppm
1347	I1.9	19800608	Fluoride-G	31.0	ppm
1348	I1.9	19800813	Fluoride-G	55.0	ppm
1349	I1.9	19800915	Fluoride-G	36.0	ppm
1350	I1.9	19810616	Fluoride-G	13.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1351	I1.9	19810805	Fluoride-G	29.0	ppm
1352	I1.9	19810921	Fluoride-G	10.0	ppm
1353	I1.9	19820608	Fluoride-G	37.0	ppm
1354	I1.9	19820817	Fluoride-G	61.0	ppm
1355	I1.9	19820916	Fluoride-G	50.0	ppm
1356	I1.9	19830426	Fluoride-G	56.0	ppm
1357	I1.9	19830608	Fluoride-G	45.0	ppm
1358	I1.9	19830815	Fluoride-G	33.0	ppm
1359	I1.9	19830921	Fluoride-G	41.0	ppm
1360	I1.9	19850610	Fluoride-G	25.0	ppm
1361	I1.9	19850724	Fluoride-G	50.1	ppm
1362	I1.9	19850916	Fluoride-G	38.5	ppm
1363	I1.9	19860611	Fluoride-G	40.4	ppm
1364	I1.9	19860731	Fluoride-G	33.1	ppm
1365	I1.9	19860916	Fluoride-G	60.2	ppm
1366	I1.9	19870603	Fluoride-G	21.8	ppm
1367	I1.9	19870728	Fluoride-G	48.8	ppm
1368	I1.9	19870915	Fluoride-G	63.0	ppm
1369	I1.9	19880607	Fluoride-G	26.3	ppm
1370	I1.9	19880725	Fluoride-G	58.1	ppm
1371	I1.9	19880914	Fluoride-G	71.3	ppm
1372	I1.9	19890605	Fluoride-G	38.0	ppm
1373	I1.9	19890801	Fluoride-G	78.0	ppm
1374	I1.9	19890912	Fluoride-G	99.0	ppm
1375	IJ1.8	19710601	Fluoride-G	12.0	ppm
1376	IJ1.8	19710701	Fluoride-G	66.0	ppm
1377	IJ1.8	19710901	Fluoride-G	42.0	ppm
1378	IJ1.8	19720601	Fluoride-G	14.0	ppm
1379	IJ1.8	19720701	Fluoride-G	17.0	ppm
1380	IJ1.8	19720901	Fluoride-G	17.0	ppm
1381	IJ1.8	19730601	Fluoride-G	11.0	ppm
1382	IJ1.8	19730701	Fluoride-G	16.0	ppm
1383	IJ1.8	19730901	Fluoride-G	31.0	ppm
1384	IJ1.8	19740601	Fluoride-G	17.0	ppm
1385	IJ1.8	19740701	Fluoride-G	37.0	ppm
1386	IJ1.8	19740901	Fluoride-G	67.0	ppm
1387	IJ1.8	19750502	Fluoride-G	59.0	ppm
1388	IJ1.8	19750616	Fluoride-G	25.0	ppm
1389	IJ1.8	19750729	Fluoride-G	59.0	ppm
1390	IJ1.8	19750922	Fluoride-G	69.0	ppm
1391	IJ1.8	19760503	Fluoride-G	55.0	ppm
1392	IJ1.8	19760608	Fluoride-G	35.0	ppm
1393	IJ1.8	19760723	Fluoride-G	41.0	ppm
1394	IJ1.8	19760913	Fluoride-G	49.0	ppm
1395	IJ1.8	19770614	Fluoride-G	42.0	ppm
1396	IJ1.8	19770725	Fluoride-G	55.0	ppm
1397	IJ1.8	19770915	Fluoride-G	83.0	ppm
1398	IJ1.8	19780407	Fluoride-G	75.0	ppm
1399	IJ1.8	19780606	Fluoride-G	35.0	ppm
1400	IJ1.8	19780808	Fluoride-G	72.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1401	IJ1.8	19780901	Fluoride-G	21.0	ppm
1402	IJ1.8	19790427	Fluoride-G	53.0	ppm
1403	IJ1.8	19790605	Fluoride-G	43.0	ppm
1404	IJ1.8	19790814	Fluoride-G	74.0	ppm
1405	IJ1.8	19800608	Fluoride-G	26.0	ppm
1406	IJ1.8	19800813	Fluoride-G	42.0	ppm
1407	IJ1.8	19800915	Fluoride-G	29.0	ppm
1408	IJ1.8	19810616	Fluoride-G	13.0	ppm
1409	IJ1.8	19810805	Fluoride-G	31.0	ppm
1410	IJ1.8	19810921	Fluoride-G	48.0	ppm
1411	IJ1.8	19820608	Fluoride-G	41.0	ppm
1412	IJ1.8	19820817	Fluoride-G	52.0	ppm
1413	IJ1.8	19820916	Fluoride-G	56.0	ppm
1414	IJ1.8	19830426	Fluoride-G	70.0	ppm
1415	IJ1.8	19830426	Fluoride-G	70.0	ppm
1416	IJ1.8	19830608	Fluoride-G	46.0	ppm
1417	IJ1.8	19830815	Fluoride-G	35.0	ppm
1418	IJ1.8	19830921	Fluoride-G	33.0	ppm
1419	IJ1.8	19850610	Fluoride-G	36.0	ppm
1420	IJ1.8	19850724	Fluoride-G	85.8	ppm
1421	IJ1.8	19850916	Fluoride-G	33.1	ppm
1422	IJ1.8	19860611	Fluoride-G	57.6	ppm
1423	IJ1.8	19860731	Fluoride-G	33.1	ppm
1424	IJ1.8	19860916	Fluoride-G	92.0	ppm
1425	IJ1.8	19870420	Fluoride-G	40.8	ppm
1426	IJ1.8	19870603	Fluoride-G	41.6	ppm
1427	IJ1.8	19870728	Fluoride-G	45.0	ppm
1428	IJ1.8	19870915	Fluoride-G	75.8	ppm
1429	IJ1.8	19880412	Fluoride-G	67.5	ppm
1430	IJ1.8	19880607	Fluoride-G	37.6	ppm
1431	IJ1.8	19880725	Fluoride-G	65.1	ppm
1432	IJ1.8	19880914	Fluoride-G	97.5	ppm
1433	IJ1.8	19890605	Fluoride-G	35.0	ppm
1434	IJ1.8	19890801	Fluoride-G	86.0	ppm
1435	IJ1.8	19890912	Fluoride-G	106.0	ppm
1436	IJ1.8	19900410	Fluoride-G	73.0	ppm
1437	IJ1.8	19900606	Fluoride-G	27.0	ppm
1438	IJ1.8	19900801	Fluoride-G	42.0	ppm
1439	IJ1.8	19900917	Fluoride-G	44.0	ppm
1440	IJ1.8	19910610	Fluoride-G	17.0	ppm
1441	IJ1.8	19910724	Fluoride-G	54.0	ppm
1442	JK1.9	19710601	Fluoride-G	13.0	ppm
1443	JK1.9	19710701	Fluoride-G	46.0	ppm
1444	JK1.9	19710901	Fluoride-G	29.0	ppm
1445	JK1.9	19720601	Fluoride-G	10.0	ppm
1446	JK1.9	19720701	Fluoride-G	18.0	ppm
1447	JK1.9	19720901	Fluoride-G	34.0	ppm
1448	JK1.9	19730601	Fluoride-G	17.0	ppm
1449	JK1.9	19730701	Fluoride-G	21.0	ppm
1450	JK1.9	19730901	Fluoride-G	40.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1451	JK1.9	19740601	Fluoride-G	7.0	ppm
1452	JK1.9	19740701	Fluoride-G	54.0	ppm
1453	JK1.9	19740901	Fluoride-G	60.0	ppm
1454	JK1.9	19750502	Fluoride-G	44.0	ppm
1455	JK1.9	19750616	Fluoride-G	27.0	ppm
1456	JK1.9	19750729	Fluoride-G	58.0	ppm
1457	JK1.9	19750922	Fluoride-G	49.0	ppm
1458	JK1.9	19760503	Fluoride-G	63.0	ppm
1459	JK1.9	19760608	Fluoride-G	33.0	ppm
1460	JK1.9	19760723	Fluoride-G	35.0	ppm
1461	JK1.9	19760913	Fluoride-G	26.0	ppm
1462	JK1.9	19770614	Fluoride-G	23.0	ppm
1463	JK1.9	19770725	Fluoride-G	34.0	ppm
1464	JK1.9	19770915	Fluoride-G	55.0	ppm
1465	JK1.9	19780407	Fluoride-G	53.0	ppm
1466	JK1.9	19780606	Fluoride-G	56.0	ppm
1467	JK1.9	19780808	Fluoride-G	74.0	ppm
1468	JK1.9	19780901	Fluoride-G	40.0	ppm
1469	JK1.9	19790427	Fluoride-G	44.0	ppm
1470	JK1.9	19790605	Fluoride-G	50.0	ppm
1471	JK1.9	19790814	Fluoride-G	67.0	ppm
1472	JK1.9	19800608	Fluoride-G	22.0	ppm
1473	JK1.9	19800813	Fluoride-G	38.0	ppm
1474	JK1.9	19800915	Fluoride-G	22.0	ppm
1475	JK1.9	19810616	Fluoride-G	13.0	ppm
1476	JK1.9	19810805	Fluoride-G	29.0	ppm
1477	JK1.9	19810921	Fluoride-G	49.0	ppm
1478	JK1.9	19820608	Fluoride-G	39.0	ppm
1479	JK1.9	19820817	Fluoride-G	53.0	ppm
1480	JK1.9	19820916	Fluoride-G	49.0	ppm
1481	JK1.9	19830426	Fluoride-G	57.0	ppm
1482	JK1.9	19830426	Fluoride-G	57.0	ppm
1483	JK1.9	19830608	Fluoride-G	37.0	ppm
1484	JK1.9	19830815	Fluoride-G	21.0	ppm
1485	JK1.9	19830921	Fluoride-G	34.0	ppm
1486	JK1.9	19850610	Fluoride-G	23.0	ppm
1487	JK1.9	19850724	Fluoride-G	50.1	ppm
1488	JK1.9	19850916	Fluoride-G	25.7	ppm
1489	JK1.9	19860611	Fluoride-G	44.7	ppm
1490	JK1.9	19860731	Fluoride-G	29.4	ppm
1491	JK1.9	19860916	Fluoride-G	46.9	ppm
1492	JK1.9	19870420	Fluoride-G	35.0	ppm
1493	JK1.9	19870603	Fluoride-G	29.6	ppm
1494	JK1.9	19870728	Fluoride-G	24.4	ppm
1495	JK1.9	19870915	Fluoride-G	50.6	ppm
1496	JK1.9	19880412	Fluoride-G	48.8	ppm
1497	JK1.9	19880607	Fluoride-G	23.6	ppm
1498	JK1.9	19880725	Fluoride-G	27.9	ppm
1499	JK1.9	19880914	Fluoride-G	58.9	ppm
1500	JK1.9	19890605	Fluoride-G	34.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1501	JK1.9	19890801	Fluoride-G	44.0	ppm
1502	JK1.9	19890912	Fluoride-G	57.0	ppm
1503	JK1.9	19900410	Fluoride-G	43.0	ppm
1504	JK1.9	19900606	Fluoride-G	18.0	ppm
1505	JK1.9	19900801	Fluoride-G	49.0	ppm
1506	JK1.9	19900917	Fluoride-G	57.0	ppm
1507	JK1.9	19910610	Fluoride-G	20.0	ppm
1508	JK1.9	19910724	Fluoride-G	35.0	ppm
1509	K1.7	19710601	Fluoride-G	13.0	ppm
1510	K1.7	19710701	Fluoride-G	40.0	ppm
1511	K1.7	19710901	Fluoride-G	29.0	ppm
1512	K1.7	19720601	Fluoride-G	11.0	ppm
1513	K1.7	19720701	Fluoride-G	24.0	ppm
1514	K1.7	19720901	Fluoride-G	35.0	ppm
1515	K1.7	19730601	Fluoride-G	10.0	ppm
1516	K1.7	19730701	Fluoride-G	22.0	ppm
1517	K1.7	19730901	Fluoride-G	32.0	ppm
1518	K1.7	19740601	Fluoride-G	28.0	ppm
1519	K1.7	19740701	Fluoride-G	35.0	ppm
1520	K1.7	19740901	Fluoride-G	51.0	ppm
1521	K1.7	19750502	Fluoride-G	52.0	ppm
1522	K1.7	19750616	Fluoride-G	22.0	ppm
1523	K1.7	19750729	Fluoride-G	40.0	ppm
1524	K1.7	19750922	Fluoride-G	49.0	ppm
1525	K1.7	19760503	Fluoride-G	51.0	ppm
1526	K1.7	19760608	Fluoride-G	298.0	ppm
1527	K1.7	19760723	Fluoride-G	31.0	ppm
1528	K1.7	19760913	Fluoride-G	30.0	ppm
1529	K1.7	19770614	Fluoride-G	32.0	ppm
1530	K1.7	19770725	Fluoride-G	51.0	ppm
1531	K1.7	19770915	Fluoride-G	55.0	ppm
1532	K1.7	19780407	Fluoride-G	63.0	ppm
1533	K1.7	19780606	Fluoride-G	49.0	ppm
1534	K1.7	19780808	Fluoride-G	74.0	ppm
1535	K1.7	19780901	Fluoride-G	43.0	ppm
1536	K1.7	19790427	Fluoride-G	40.0	ppm
1537	K1.7	19790605	Fluoride-G	47.0	ppm
1538	K1.7	19790814	Fluoride-G	78.0	ppm
1539	K1.7	19800608	Fluoride-G	26.0	ppm
1540	K1.7	19800813	Fluoride-G	30.0	ppm
1541	K1.7	19800915	Fluoride-G	21.0	ppm
1542	K1.7	19810616	Fluoride-G	11.0	ppm
1543	K1.7	19810805	Fluoride-G	30.0	ppm
1544	K1.7	19810921	Fluoride-G	46.0	ppm
1545	K1.7	19820608	Fluoride-G	48.0	ppm
1546	K1.7	19820817	Fluoride-G	43.0	ppm
1547	K1.7	19830608	Fluoride-G	39.0	ppm
1548	K1.7	19830815	Fluoride-G	24.0	ppm
1549	K1.7	19830921	Fluoride-G	30.0	ppm
1550	K1.7	19850610	Fluoride-G	33.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1551	K1.7	19850724	Fluoride-G	57.2	ppm
1552	K1.7	19850916	Fluoride-G	33.1	ppm
1553	K1.7	19860611	Fluoride-G	40.0	ppm
1554	K1.7	19860731	Fluoride-G	33.1	ppm
1555	K1.7	19860916	Fluoride-G	53.0	ppm
1556	K1.7	19870420	Fluoride-G	29.8	ppm
1557	K1.7	19870603	Fluoride-G	26.6	ppm
1558	K1.7	19870728	Fluoride-G	30.0	ppm
1559	K1.7	19870915	Fluoride-G	49.1	ppm
1560	K1.7	19880412	Fluoride-G	55.9	ppm
1561	K1.7	19880607	Fluoride-G	12.6	ppm
1562	K1.7	19880725	Fluoride-G	26.0	ppm
1563	K1.7	19880914	Fluoride-G	66.8	ppm
1564	K1.7	19890605	Fluoride-G	38.0	ppm
1565	K1.7	19890801	Fluoride-G	61.0	ppm
1566	K1.7	19890912	Fluoride-G	67.0	ppm
1567	K1.7	19900410	Fluoride-G	55.0	ppm
1568	K1.7	19900606	Fluoride-G	11.0	ppm
1569	K1.7	19900801	Fluoride-G	65.0	ppm
1570	K1.7	19900917	Fluoride-G	36.0	ppm
1571	K1.7	19910610	Fluoride-G	22.0	ppm
1572	K1.7	19910724	Fluoride-G	31.0	ppm
1573	K1.8	19850610	Fluoride-G	31.0	ppm
1574	K1.8	19850724	Fluoride-G	62.6	ppm
1575	K1.8	19850916	Fluoride-G	31.2	ppm
1576	K1.8	19860611	Fluoride-G	38.1	ppm
1577	K1.8	19860731	Fluoride-G	33.1	ppm
1578	K1.8	19860916	Fluoride-G	52.0	ppm
1579	K1.8	19870603	Fluoride-G	25.5	ppm
1580	K1.8	19870728	Fluoride-G	18.8	ppm
1581	K1.8	19870915	Fluoride-G	49.5	ppm
1582	K1.8	19880607	Fluoride-G	11.8	ppm
1583	K1.8	19880725	Fluoride-G	29.8	ppm
1584	K1.8	19880914	Fluoride-G	64.1	ppm
1585	K1.8	19890605	Fluoride-G	37.0	ppm
1586	K1.8	19890801	Fluoride-G	62.0	ppm
1587	K1.8	19890912	Fluoride-G	77.0	ppm
1588	K1.8	19900606	Fluoride-G	9.0	ppm
1589	K1.8	19900801	Fluoride-G	65.0	ppm
1590	K1.8	19900917	Fluoride-G	39.0	ppm
1591	K1.8	19910610	Fluoride-G	19.0	ppm
1592	K1.8	19910724	Fluoride-G	34.0	ppm
1593	K2.3	19910610	Fluoride-G	17.0	ppm
1594	K2.3	19910724	Fluoride-G	38.0	ppm
1595	KL1.0	19770614	Fluoride-G	60.0	ppm
1596	KL1.0	19770725	Fluoride-G	132.0	ppm
1597	KL1.0	19770915	Fluoride-G	83.0	ppm
1598	KL1.0	19780407	Fluoride-G	149.0	ppm
1599	KL1.0	19780606	Fluoride-G	57.0	ppm
1600	KL1.0	19780808	Fluoride-G	176.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1601	KL1.0	19780901	Fluoride-G	113.0	ppm
1602	L1.3	19710601	Fluoride-G	21.0	ppm
1603	L1.3	19710701	Fluoride-G	84.0	ppm
1604	L1.3	19710901	Fluoride-G	84.0	ppm
1605	L1.3	19720601	Fluoride-G	35.0	ppm
1606	L1.3	19720701	Fluoride-G	45.0	ppm
1607	L1.3	19720901	Fluoride-G	45.0	ppm
1608	L1.3	19730601	Fluoride-G	33.0	ppm
1609	L1.3	19730701	Fluoride-G	41.0	ppm
1610	L1.3	19730901	Fluoride-G	45.0	ppm
1611	L1.3	19740601	Fluoride-G	14.0	ppm
1612	L1.3	19740701	Fluoride-G	73.0	ppm
1613	L1.3	19740901	Fluoride-G	142.0	ppm
1614	L1.3	19750502	Fluoride-G	86.0	ppm
1615	L1.3	19750729	Fluoride-G	83.0	ppm
1616	L1.3	19750922	Fluoride-G	105.0	ppm
1617	L1.3	19760503	Fluoride-G	85.0	ppm
1618	L1.3	19760608	Fluoride-G	51.0	ppm
1619	L1.3	19760723	Fluoride-G	67.0	ppm
1620	L1.3	19760913	Fluoride-G	68.0	ppm
1621	L1.3	19770614	Fluoride-G	38.0	ppm
1622	L1.3	19770725	Fluoride-G	60.0	ppm
1623	L1.3	19770915	Fluoride-G	105.0	ppm
1624	L1.3	19780407	Fluoride-G	98.0	ppm
1625	L1.3	19780606	Fluoride-G	43.0	ppm
1626	L1.3	19780808	Fluoride-G	96.0	ppm
1627	L1.3	19780901	Fluoride-G	38.0	ppm
1628	L1.3	19790427	Fluoride-G	58.0	ppm
1629	L1.3	19790605	Fluoride-G	55.0	ppm
1630	L1.3	19790814	Fluoride-G	100.0	ppm
1631	L1.3	19800608	Fluoride-G	35.0	ppm
1632	L1.3	19800813	Fluoride-G	47.0	ppm
1633	L1.3	19800915	Fluoride-G	46.0	ppm
1634	L1.3	19810616	Fluoride-G	15.0	ppm
1635	L1.3	19810805	Fluoride-G	46.0	ppm
1636	L1.3	19810921	Fluoride-G	91.0	ppm
1637	L1.3	19820608	Fluoride-G	64.0	ppm
1638	L1.3	19820817	Fluoride-G	102.0	ppm
1639	L1.3	19830608	Fluoride-G	39.0	ppm
1640	L1.3	19830815	Fluoride-G	52.0	ppm
1641	L1.3	19830921	Fluoride-G	51.0	ppm
1642	L1.3	19850610	Fluoride-G	36.0	ppm
1643	L1.3	19850724	Fluoride-G	125.1	ppm
1644	L1.3	19850916	Fluoride-G	80.9	ppm
1645	L1.3	19860611	Fluoride-G	88.6	ppm
1646	L1.3	19860731	Fluoride-G	74.6	ppm
1647	L1.3	19860916	Fluoride-G	117.0	ppm
1648	L1.3	19870420	Fluoride-G	101.0	ppm
1649	L1.3	19870603	Fluoride-G	53.6	ppm
1650	L1.3	19870728	Fluoride-G	79.9	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1651	L1.3	19870915	Fluoride-G	114.4	ppm
1652	L1.3	19880412	Fluoride-G	151.5	ppm
1653	L1.3	19880607	Fluoride-G	55.2	ppm
1654	L1.3	19880725	Fluoride-G	77.5	ppm
1655	L1.3	19880914	Fluoride-G	151.1	ppm
1656	L1.3	19890605	Fluoride-G	36.0	ppm
1657	L1.3	19890801	Fluoride-G	150.0	ppm
1658	L1.3	19890912	Fluoride-G	144.0	ppm
1659	L1.3	19900410	Fluoride-G	108.0	ppm
1660	L1.3	19900606	Fluoride-G	16.0	ppm
1661	L1.3	19900801	Fluoride-G	123.0	ppm
1662	L1.3	19900917	Fluoride-G	207.0	ppm
1663	L1.3	19910610	Fluoride-G	20.0	ppm
1664	L1.3	19910724	Fluoride-G	82.0	ppm
1665	L1.4	19850610	Fluoride-G	36.0	ppm
1666	L1.4	19850724	Fluoride-G	124.7	ppm
1667	L1.4	19850916	Fluoride-G	80.9	ppm
1668	L1.4	19860611	Fluoride-G	66.2	ppm
1669	L1.4	19860731	Fluoride-G	73.5	ppm
1670	L1.4	19860916	Fluoride-G	116.0	ppm
1671	L1.4	19870603	Fluoride-G	51.8	ppm
1672	L1.4	19870728	Fluoride-G	76.5	ppm
1673	L1.4	19870915	Fluoride-G	114.8	ppm
1674	L1.4	19880607	Fluoride-G	54.5	ppm
1675	L1.4	19880725	Fluoride-G	78.7	ppm
1676	L1.4	19880914	Fluoride-G	143.3	ppm
1677	L1.4	19890605	Fluoride-G	32.0	ppm
1678	L1.4	19890801	Fluoride-G	147.0	ppm
1679	L1.4	19890912	Fluoride-G	143.0	ppm
1680	L1.4	19900606	Fluoride-G	12.0	ppm
1681	L1.4	19900801	Fluoride-G	119.0	ppm
1682	L1.4	19900917	Fluoride-G	210.0	ppm
1683	L1.4	19910610	Fluoride-G	25.0	ppm
1684	L1.4	19910724	Fluoride-G	78.0	ppm
1685	LM2.6	19760503	Fluoride-G	33.0	ppm
1686	LM2.9	19770614	Fluoride-G	66.0	ppm
1687	LM2.9	19770915	Fluoride-G	41.0	ppm
1688	LM2.9	19780407	Fluoride-G	49.0	ppm
1689	LM2.9	19780606	Fluoride-G	8.0	ppm
1690	LM2.9	19780808	Fluoride-G	34.0	ppm
1691	LM2.9	19780901	Fluoride-G	69.0	ppm
1692	M1.0	19770614	Fluoride-G	112.0	ppm
1693	M1.0	19770725	Fluoride-G	143.0	ppm
1694	M1.0	19770915	Fluoride-G	109.0	ppm
1695	M1.0	19780407	Fluoride-G	64.0	ppm
1696	M1.0	19780606	Fluoride-G	26.0	ppm
1697	M1.0	19780808	Fluoride-G	98.0	ppm
1698	M1.0	19780901	Fluoride-G	88.0	ppm
1699	M1.4	19710601	Fluoride-G	23.0	ppm
1700	M1.4	19710701	Fluoride-G	79.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1701	M1.4	19710901	Fluoride-G	75.0	ppm
1702	M1.4	19720601	Fluoride-G	46.0	ppm
1703	M1.4	19720701	Fluoride-G	53.0	ppm
1704	M1.4	19720901	Fluoride-G	55.0	ppm
1705	M1.4	19730601	Fluoride-G	39.0	ppm
1706	M1.4	19730701	Fluoride-G	38.0	ppm
1707	M1.4	19730901	Fluoride-G	63.0	ppm
1708	M1.4	19740601	Fluoride-G	10.0	ppm
1709	M1.4	19740701	Fluoride-G	70.0	ppm
1710	M1.4	19740901	Fluoride-G	135.0	ppm
1711	M1.4	19750502	Fluoride-G	91.0	ppm
1712	M1.4	19750616	Fluoride-G	44.0	ppm
1713	M1.4	19750729	Fluoride-G	94.0	ppm
1714	M1.4	19750922	Fluoride-G	114.0	ppm
1715	M1.4	19760503	Fluoride-G	60.0	ppm
1716	M1.4	19760608	Fluoride-G	57.0	ppm
1717	M1.4	19760723	Fluoride-G	77.0	ppm
1718	M1.4	19760913	Fluoride-G	108.0	ppm
1719	M1.4	19770614	Fluoride-G	62.0	ppm
1720	M1.4	19770725	Fluoride-G	63.0	ppm
1721	M1.4	19770915	Fluoride-G	106.0	ppm
1722	M1.4	19780407	Fluoride-G	98.0	ppm
1723	M1.4	19780606	Fluoride-G	52.0	ppm
1724	M1.4	19780808	Fluoride-G	120.0	ppm
1725	M1.4	19780901	Fluoride-G	38.0	ppm
1726	M1.4	19790427	Fluoride-G	69.0	ppm
1727	M1.4	19790605	Fluoride-G	69.0	ppm
1728	M1.4	19790814	Fluoride-G	153.0	ppm
1729	M1.4	19800608	Fluoride-G	54.0	ppm
1730	M1.4	19800813	Fluoride-G	48.0	ppm
1731	M1.4	19800915	Fluoride-G	50.0	ppm
1732	M1.4	19810616	Fluoride-G	15.0	ppm
1733	M1.4	19810805	Fluoride-G	46.0	ppm
1734	M1.4	19810921	Fluoride-G	76.0	ppm
1735	M1.4	19820608	Fluoride-G	41.0	ppm
1736	M1.4	19820817	Fluoride-G	99.0	ppm
1737	M1.4	19830608	Fluoride-G	51.0	ppm
1738	M1.4	19830815	Fluoride-G	58.0	ppm
1739	M1.4	19830921	Fluoride-G	53.0	ppm
1740	M1.4	19850610	Fluoride-G	74.0	ppm
1741	M1.4	19850724	Fluoride-G	196.0	ppm
1742	M1.4	19850916	Fluoride-G	95.6	ppm
1743	M1.4	19860611	Fluoride-G	75.1	ppm
1744	M1.4	19860731	Fluoride-G	54.0	ppm
1745	M1.4	19860916	Fluoride-G	101.0	ppm
1746	M1.4	19870420	Fluoride-G	122.8	ppm
1747	M1.4	19870603	Fluoride-G	88.9	ppm
1748	M1.4	19870728	Fluoride-G	74.3	ppm
1749	M1.4	19870915	Fluoride-G	112.1	ppm
1750	M1.4	19880412	Fluoride-G	139.5	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1751	M1.4	19880607	Fluoride-G	84.7	ppm
1752	M1.4	19880725	Fluoride-G	92.2	ppm
1753	M1.4	19880914	Fluoride-G	134.6	ppm
1754	M1.4	19890605	Fluoride-G	62.0	ppm
1755	M1.4	19890801	Fluoride-G	156.0	ppm
1756	M1.4	19890912	Fluoride-G	184.0	ppm
1757	M1.4	19900410	Fluoride-G	146.0	ppm
1758	M1.4	19900606	Fluoride-G	37.0	ppm
1759	M1.4	19900801	Fluoride-G	62.0	ppm
1760	M1.4	19900917	Fluoride-G	169.0	ppm
1761	M1.4	19910610	Fluoride-G	29.0	ppm
1762	M1.4	19910724	Fluoride-G	72.0	ppm
1763	M2.1	19890605	Fluoride-G	11.0	ppm
1764	M2.1	19710601	Fluoride-G	17.0	ppm
1765	M2.1	19710701	Fluoride-G	66.0	ppm
1766	M2.1	19710901	Fluoride-G	58.0	ppm
1767	M2.1	19720601	Fluoride-G	32.0	ppm
1768	M2.1	19720701	Fluoride-G	40.0	ppm
1769	M2.1	19720901	Fluoride-G	46.0	ppm
1770	M2.1	19730601	Fluoride-G	19.0	ppm
1771	M2.1	19730701	Fluoride-G	18.0	ppm
1772	M2.1	19730901	Fluoride-G	40.0	ppm
1773	M2.1	19740601	Fluoride-G	9.0	ppm
1774	M2.1	19740701	Fluoride-G	58.0	ppm
1775	M2.1	19740901	Fluoride-G	105.0	ppm
1776	M2.1	19750502	Fluoride-G	79.0	ppm
1777	M2.1	19750616	Fluoride-G	30.0	ppm
1778	M2.1	19750729	Fluoride-G	64.0	ppm
1779	M2.1	19750922	Fluoride-G	83.0	ppm
1780	M2.1	19760503	Fluoride-G	86.0	ppm
1781	M2.5	19760608	Fluoride-G	14.0	ppm
1782	M2.5	19760723	Fluoride-G	18.0	ppm
1783	M2.5	19760913	Fluoride-G	13.0	ppm
1784	M2.5	19770614	Fluoride-G	15.0	ppm
1785	M2.5	19770725	Fluoride-G	30.0	ppm
1786	M2.5	19770915	Fluoride-G	51.0	ppm
1787	M2.5	19780606	Fluoride-G	21.0	ppm
1788	M2.5	19780808	Fluoride-G	33.0	ppm
1789	M2.5	19780901	Fluoride-G	30.0	ppm
1790	M2.5	19790427	Fluoride-G	47.0	ppm
1791	M2.5	19790605	Fluoride-G	25.0	ppm
1792	M2.5	19790814	Fluoride-G	96.0	ppm
1793	M2.5	19800608	Fluoride-G	15.0	ppm
1794	M2.5	19800813	Fluoride-G	14.0	ppm
1795	M2.5	19800915	Fluoride-G	11.0	ppm
1796	M2.5	19810616	Fluoride-G	10.0	ppm
1797	M2.5	19810805	Fluoride-G	20.0	ppm
1798	M2.5	19810921	Fluoride-G	38.0	ppm
1799	M2.5	19820608	Fluoride-G	20.0	ppm
1800	M2.5	19820817	Fluoride-G	33.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1801	M2.5	19820916	Fluoride-G	40.0	ppm
1802	M2.5	19830608	Fluoride-G	32.0	ppm
1803	M2.5	19830815	Fluoride-G	26.0	ppm
1804	M2.5	19830921	Fluoride-G	26.0	ppm
1805	M2.5	19850610	Fluoride-G	20.0	ppm
1806	M2.5	19850724	Fluoride-G	29.7	ppm
1807	M2.5	19850916	Fluoride-G	14.7	ppm
1808	M2.5	19860611	Fluoride-G	31.6	ppm
1809	M2.5	19860731	Fluoride-G	9.1	ppm
1810	M2.5	19860916	Fluoride-G	33.0	ppm
1811	M2.5	19870603	Fluoride-G	56.3	ppm
1812	M2.5	19870728	Fluoride-G	24.4	ppm
1813	M2.5	19870915	Fluoride-G	27.0	ppm
1814	M2.5	19880607	Fluoride-G	7.9	ppm
1815	M2.5	19880725	Fluoride-G	17.4	ppm
1816	M2.5	19880914	Fluoride-G	41.6	ppm
1817	M2.5	19890801	Fluoride-G	24.0	ppm
1818	M2.5	19890912	Fluoride-G	30.0	ppm
1819	M2.5	19900606	Fluoride-G	8.0	ppm
1820	M2.5	19900801	Fluoride-G	26.0	ppm
1821	M2.5	19900917	Fluoride-G	45.0	ppm
1822	M2.5	19910610	Fluoride-G	6.0	ppm
1823	M2.5	19910724	Fluoride-G	13.0	ppm
1824	MN1.6	19730601	Fluoride-G	20.0	ppm
1825	MN1.6	19730701	Fluoride-G	25.0	ppm
1826	MN1.6	19730901	Fluoride-G	34.0	ppm
1827	MN1.6	19740601	Fluoride-G	8.0	ppm
1828	MN1.6	19740701	Fluoride-G	64.0	ppm
1829	MN1.6	19740901	Fluoride-G	118.0	ppm
1830	MN1.6	19750502	Fluoride-G	74.0	ppm
1831	MN1.6	19750616	Fluoride-G	42.0	ppm
1832	MN1.6	19750729	Fluoride-G	96.0	ppm
1833	MN1.6	19750922	Fluoride-G	103.0	ppm
1834	MN1.6	19760503	Fluoride-G	86.0	ppm
1835	MN1.7	19760608	Fluoride-G	53.0	ppm
1836	MN1.7	19760723	Fluoride-G	69.0	ppm
1837	MN1.7	19760913	Fluoride-G	72.0	ppm
1838	MN1.7	19770614	Fluoride-G	51.0	ppm
1839	MN1.7	19770725	Fluoride-G	56.0	ppm
1840	MN1.7	19770915	Fluoride-G	113.0	ppm
1841	MN1.7	19780407	Fluoride-G	95.0	ppm
1842	MN1.7	19780606	Fluoride-G	48.0	ppm
1843	MN1.7	19780808	Fluoride-G	122.0	ppm
1844	MN1.7	19780901	Fluoride-G	69.0	ppm
1845	MN1.7	19790427	Fluoride-G	60.0	ppm
1846	MN1.7	19790605	Fluoride-G	49.0	ppm
1847	MN1.7	19790814	Fluoride-G	192.0	ppm
1848	MN2.0	19760608	Fluoride-G	36.0	ppm
1849	MN2.0	19760723	Fluoride-G	60.0	ppm
1850	MN2.0	19760913	Fluoride-G	71.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1851	MN2.0	19770614	Fluoride-G	38.0	ppm
1852	MN2.0	19770725	Fluoride-G	49.0	ppm
1853	MN2.0	19770915	Fluoride-G	97.0	ppm
1854	MN2.0	19780407	Fluoride-G	113.0	ppm
1855	MN2.0	19780606	Fluoride-G	39.0	ppm
1856	MN2.0	19780808	Fluoride-G	71.0	ppm
1857	MN2.0	19780901	Fluoride-G	30.0	ppm
1858	MN2.0	19790427	Fluoride-G	64.0	ppm
1859	MN2.0	19790605	Fluoride-G	53.0	ppm
1860	MN2.0	19790814	Fluoride-G	105.0	ppm
1861	MN2.0	19800608	Fluoride-G	29.0	ppm
1862	MN2.0	19800813	Fluoride-G	54.0	ppm
1863	MN2.0	19800915	Fluoride-G	48.0	ppm
1864	MN2.0	19810616	Fluoride-G	19.0	ppm
1865	MN2.0	19810805	Fluoride-G	28.0	ppm
1866	MN2.0	19810921	Fluoride-G	83.0	ppm
1867	MN2.0	19820608	Fluoride-G	39.0	ppm
1868	MN2.0	19820817	Fluoride-G	76.0	ppm
1869	MN2.0	19830608	Fluoride-G	32.0	ppm
1870	MN2.0	19830815	Fluoride-G	51.0	ppm
1871	MN2.0	19830921	Fluoride-G	47.0	ppm
1872	MN2.0	19850610	Fluoride-G	80.0	ppm
1873	MN2.0	19850724	Fluoride-G	164.3	ppm
1874	MN2.0	19850916	Fluoride-G	86.4	ppm
1875	MN2.0	19860611	Fluoride-G	52.9	ppm
1876	MN2.0	19860731	Fluoride-G	40.4	ppm
1877	MN2.0	19860916	Fluoride-G	90.0	ppm
1878	MN2.0	19870420	Fluoride-G	67.2	ppm
1879	MN2.0	19870603	Fluoride-G	10.5	ppm
1880	MN2.0	19870728	Fluoride-G	59.3	ppm
1881	MN2.0	19870915	Fluoride-G	11.8	ppm
1882	MN2.0	19880412	Fluoride-G	168.8	ppm
1883	MN2.0	19880607	Fluoride-G	81.6	ppm
1884	MN2.0	19880725	Fluoride-G	88.7	ppm
1885	MN2.0	19880914	Fluoride-G	115.9	ppm
1886	MN2.0	19890605	Fluoride-G	69.0	ppm
1887	MN2.0	19890801	Fluoride-G	103.0	ppm
1888	MN2.0	19890912	Fluoride-G	124.0	ppm
1889	MN2.0	19900410	Fluoride-G	74.0	ppm
1890	MN2.0	19900606	Fluoride-G	27.0	ppm
1891	MN2.0	19900801	Fluoride-G	41.0	ppm
1892	MN2.0	19900917	Fluoride-G	97.0	ppm
1893	MN2.0	19910610	Fluoride-G	21.0	ppm
1894	MN2.0	19910724	Fluoride-G	54.0	ppm
1895	MN2.1	19720701	Fluoride-G	40.0	ppm
1896	MN2.1	19730601	Fluoride-G	20.0	ppm
1897	MN2.1	19730701	Fluoride-G	27.0	ppm
1898	MN2.1	19730901	Fluoride-G	49.0	ppm
1899	MN2.1	19740601	Fluoride-G	17.0	ppm
1900	MN2.1	19740701	Fluoride-G	69.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1901	MN2.1	19740901	Fluoride-G	119.0	ppm
1902	MN2.1	19750502	Fluoride-G	89.0	ppm
1903	MN2.1	19750616	Fluoride-G	42.0	ppm
1904	MN2.1	19750729	Fluoride-G	82.0	ppm
1905	MN2.1	19750922	Fluoride-G	107.0	ppm
1906	MN2.1	19760503	Fluoride-G	100.0	ppm
1907	MN2.4	19760608	Fluoride-G	12.0	ppm
1908	MN2.4	19760723	Fluoride-G	16.0	ppm
1909	MN2.4	19760913	Fluoride-G	25.0	ppm
1910	MN2.4	19770614	Fluoride-G	14.0	ppm
1911	MN2.4	19770725	Fluoride-G	36.0	ppm
1912	MN2.4	19770915	Fluoride-G	60.0	ppm
1913	MN2.4	19780606	Fluoride-G	27.0	ppm
1914	MN2.4	19780808	Fluoride-G	60.0	ppm
1915	MN2.4	19780901	Fluoride-G	23.0	ppm
1916	MN2.4	19790605	Fluoride-G	11.0	ppm
1917	MN2.4	19790814	Fluoride-G	32.0	ppm
1918	MN2.4	19800608	Fluoride-G	16.0	ppm
1919	MN2.4	19800813	Fluoride-G	20.0	ppm
1920	MN2.4	19800915	Fluoride-G	15.0	ppm
1921	MN2.4	19810616	Fluoride-G	9.0	ppm
1922	MN2.4	19810805	Fluoride-G	19.0	ppm
1923	MN2.4	19810921	Fluoride-G	48.0	ppm
1924	MN2.4	19820608	Fluoride-G	43.0	ppm
1925	MN2.4	19820817	Fluoride-G	51.0	ppm
1926	MN2.4	19820916	Fluoride-G	70.0	ppm
1927	MN2.4	19830608	Fluoride-G	21.0	ppm
1928	MN2.4	19830815	Fluoride-G	26.0	ppm
1929	MN2.4	19830921	Fluoride-G	26.0	ppm
1930	MN2.4	19850610	Fluoride-G	15.0	ppm
1931	MN2.4	19850724	Fluoride-G	29.7	ppm
1932	MN2.4	19850916	Fluoride-G	7.4	ppm
1933	MN2.4	19860611	Fluoride-G	27.4	ppm
1934	MN2.4	19860731	Fluoride-G	11.0	ppm
1935	MN2.4	19870603	Fluoride-G	9.4	ppm
1936	MN2.4	19870728	Fluoride-G	16.9	ppm
1937	MN2.4	19870915	Fluoride-G	31.9	ppm
1938	MN2.4	19880607	Fluoride-G	3.9	ppm
1939	MN2.4	19880725	Fluoride-G	26.0	ppm
1940	MN2.4	19880914	Fluoride-G	60.8	ppm
1941	MN2.4	19890605	Fluoride-G	17.0	ppm
1942	MN2.4	19890801	Fluoride-G	29.0	ppm
1943	MN2.4	19890912	Fluoride-G	40.0	ppm
1944	MN2.4	19900606	Fluoride-G	8.0	ppm
1945	MN2.4	19900801	Fluoride-G	29.0	ppm
1946	MN2.4	19900917	Fluoride-G	55.0	ppm
1947	MN2.4	19910610	Fluoride-G	4.0	ppm
1948	MN2.4	19910724	Fluoride-G	21.0	ppm
1949	MN2.5	19860916	Fluoride-G	33.0	ppm
1950	MN2.6	19760503	Fluoride-G	155.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
1951	MN2.7	19760608	Fluoride-G	8.0	ppm
1952	MN2.7	19760723	Fluoride-G	14.0	ppm
1953	MN2.7	19760913	Fluoride-G	23.0	ppm
1954	MN2.7	19770614	Fluoride-G	20.0	ppm
1955	MN2.7	19770725	Fluoride-G	44.0	ppm
1956	MN2.7	19770915	Fluoride-G	34.0	ppm
1957	MN2.7	19780606	Fluoride-G	14.0	ppm
1958	MN2.7	19780808	Fluoride-G	33.0	ppm
1959	MN2.7	19780901	Fluoride-G	22.0	ppm
1960	MN2.7	19790427	Fluoride-G	34.0	ppm
1961	MN2.7	19790605	Fluoride-G	21.0	ppm
1962	MN2.7	19790814	Fluoride-G	39.0	ppm
1963	MN2.7	19800608	Fluoride-G	13.0	ppm
1964	MN2.7	19800813	Fluoride-G	12.0	ppm
1965	MN2.7	19800915	Fluoride-G	14.0	ppm
1966	MN2.7	19810616	Fluoride-G	12.0	ppm
1967	MN2.7	19810805	Fluoride-G	17.0	ppm
1968	MN2.7	19810921	Fluoride-G	33.0	ppm
1969	MN2.7	19820608	Fluoride-G	20.0	ppm
1970	MN2.7	19820817	Fluoride-G	43.0	ppm
1971	MN2.7	19820916	Fluoride-G	50.0	ppm
1972	MN2.7	19830608	Fluoride-G	37.0	ppm
1973	MN2.7	19830815	Fluoride-G	30.0	ppm
1974	MN2.7	19830921	Fluoride-G	33.0	ppm
1975	MN2.7	19850610	Fluoride-G	23.0	ppm
1976	MN2.7	19850724	Fluoride-G	35.6	ppm
1977	MN2.7	19850916	Fluoride-G	9.2	ppm
1978	MN2.7	19860611	Fluoride-G	21.8	ppm
1979	MN2.7	19860731	Fluoride-G	16.5	ppm
1980	MN2.7	19860916	Fluoride-G	35.0	ppm
1981	MN2.7	19870603	Fluoride-G	94.1	ppm
1982	MN2.7	19870728	Fluoride-G	20.6	ppm
1983	MN2.7	19870915	Fluoride-G	27.4	ppm
1984	MN2.7	19880607	Fluoride-G	2.0	ppm
1985	MN2.7	19880725	Fluoride-G	22.9	ppm
1986	MN2.7	19880914	Fluoride-G	43.9	ppm
1987	MN2.7	19890605	Fluoride-G	13.0	ppm
1988	MN2.7	19890801	Fluoride-G	27.0	ppm
1989	MN2.7	19890912	Fluoride-G	34.0	ppm
1990	MN2.7	19900606	Fluoride-G	11.0	ppm
1991	MN2.7	19900801	Fluoride-G	31.0	ppm
1992	MN2.7	19900917	Fluoride-G	41.0	ppm
1993	MN2.7	19910610	Fluoride-G	12.0	ppm
1994	MN2.7	19910724	Fluoride-G	21.0	ppm
1995	MN3.0	19770614	Fluoride-G	16.0	ppm
1996	MN3.0	19780407	Fluoride-G	52.0	ppm
1997	MN3.0	19780606	Fluoride-G	23.0	ppm
1998	MN3.0	19780808	Fluoride-G	35.0	ppm
1999	MN3.0	19780901	Fluoride-G	47.0	ppm
2000	NO0.9	19710601	Fluoride-G	49.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2001	NO0.9	19710701	Fluoride-G	96.0	ppm
2002	NO0.9	19710901	Fluoride-G	141.0	ppm
2003	NO0.9	19720601	Fluoride-G	50.0	ppm
2004	NO0.9	19720701	Fluoride-G	65.0	ppm
2005	NO0.9	19720901	Fluoride-G	91.0	ppm
2006	NO0.9	19730601	Fluoride-G	75.0	ppm
2007	NO0.9	19730701	Fluoride-G	91.0	ppm
2008	NO0.9	19730901	Fluoride-G	124.0	ppm
2009	NO0.9	19740601	Fluoride-G	21.0	ppm
2010	NO0.9	19740701	Fluoride-G	86.0	ppm
2011	NO0.9	19740901	Fluoride-G	234.0	ppm
2012	NO0.9	19750502	Fluoride-G	148.0	ppm
2013	NO0.9	19750616	Fluoride-G	66.0	ppm
2014	NO0.9	19750729	Fluoride-G	108.0	ppm
2015	NO0.9	19750922	Fluoride-G	153.0	ppm
2016	NO0.9	19760503	Fluoride-G	250.0	ppm
2017	NO1.3	19720601	Fluoride-G	42.0	ppm
2018	NO1.3	19720701	Fluoride-G	61.0	ppm
2019	NO1.3	19720901	Fluoride-G	78.0	ppm
2020	NO1.3	19730601	Fluoride-G	82.0	ppm
2021	NO1.3	19730701	Fluoride-G	34.0	ppm
2022	NO1.3	19730901	Fluoride-G	45.0	ppm
2023	NO1.3	19740601	Fluoride-G	14.0	ppm
2024	NO1.3	19740701	Fluoride-G	105.0	ppm
2025	NO1.3	19740901	Fluoride-G	219.0	ppm
2026	NO1.3	19750502	Fluoride-G	149.0	ppm
2027	NO1.3	19750616	Fluoride-G	47.0	ppm
2028	NO1.3	19750729	Fluoride-G	96.0	ppm
2029	NO1.3	19750922	Fluoride-G	109.0	ppm
2030	NO1.3	19760503	Fluoride-G	160.0	ppm
2031	NO1.5	19760608	Fluoride-G	103.0	ppm
2032	NO1.5	19760723	Fluoride-G	96.0	ppm
2033	NO1.5	19760913	Fluoride-G	121.0	ppm
2034	NO2.0	19760608	Fluoride-G	71.0	ppm
2035	NO2.0	19760723	Fluoride-G	68.0	ppm
2036	NO2.0	19760913	Fluoride-G	89.0	ppm
2037	N1.2	19710601	Fluoride-G	54.0	ppm
2038	N1.2	19710701	Fluoride-G	123.0	ppm
2039	N1.2	19710901	Fluoride-G	118.0	ppm
2040	N1.2	19720601	Fluoride-G	50.0	ppm
2041	N1.2	19720701	Fluoride-G	50.0	ppm
2042	N1.2	19720901	Fluoride-G	62.0	ppm
2043	N1.2	19730601	Fluoride-G	62.0	ppm
2044	N1.2	19730701	Fluoride-G	56.0	ppm
2045	N1.2	19730901	Fluoride-G	100.0	ppm
2046	N1.2	19740601	Fluoride-G	20.0	ppm
2047	N1.2	19740701	Fluoride-G	110.0	ppm
2048	N1.2	19740901	Fluoride-G	160.0	ppm
2049	N1.2	19750502	Fluoride-G	155.0	ppm
2050	N1.2	19750616	Fluoride-G	59.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2051	N1.2	19750729	Fluoride-G	150.0	ppm
2052	N1.2	19750922	Fluoride-G	163.0	ppm
2053	N1.2	19760503	Fluoride-G	177.0	ppm
2054	N1.5	19720601	Fluoride-G	43.0	ppm
2055	N1.5	19720701	Fluoride-G	58.0	ppm
2056	N1.5	19720901	Fluoride-G	62.0	ppm
2057	N1.5	19730601	Fluoride-G	72.0	ppm
2058	N1.5	19730701	Fluoride-G	51.0	ppm
2059	N1.5	19730901	Fluoride-G	73.0	ppm
2060	N1.5	19740601	Fluoride-G	14.0	ppm
2061	N1.5	19740701	Fluoride-G	23.0	ppm
2062	N1.5	19740901	Fluoride-G	144.0	ppm
2063	N1.5	19750502	Fluoride-G	87.0	ppm
2064	N1.5	19750616	Fluoride-G	44.0	ppm
2065	N1.5	19750729	Fluoride-G	66.0	ppm
2066	N1.5	19750922	Fluoride-G	109.0	ppm
2067	N1.5	19760503	Fluoride-G	104.0	ppm
2068	N1.5	19760608	Fluoride-G	51.0	ppm
2069	N1.5	19760723	Fluoride-G	56.0	ppm
2070	N1.5	19760913	Fluoride-G	83.0	ppm
2071	N1.5	19770614	Fluoride-G	53.0	ppm
2072	N1.5	19770725	Fluoride-G	53.0	ppm
2073	N1.5	19770915	Fluoride-G	83.0	ppm
2074	N1.5	19780407	Fluoride-G	156.0	ppm
2075	N1.5	19780606	Fluoride-G	47.0	ppm
2076	N1.5	19780808	Fluoride-G	112.0	ppm
2077	N1.5	19780901	Fluoride-G	79.0	ppm
2078	N1.5	19790427	Fluoride-G	98.0	ppm
2079	N1.5	19790605	Fluoride-G	40.0	ppm
2080	N1.5	19790814	Fluoride-G	108.0	ppm
2081	N1.5	19800608	Fluoride-G	36.0	ppm
2082	N1.5	19800813	Fluoride-G	51.0	ppm
2083	N1.5	19800915	Fluoride-G	48.0	ppm
2084	N1.5	19810616	Fluoride-G	27.0	ppm
2085	N1.5	19810805	Fluoride-G	51.0	ppm
2086	N1.5	19810921	Fluoride-G	98.0	ppm
2087	N1.5	19820608	Fluoride-G	54.0	ppm
2088	N1.5	19820817	Fluoride-G	79.0	ppm
2089	N1.5	19830608	Fluoride-G	51.0	ppm
2090	N1.5	19830815	Fluoride-G	85.0	ppm
2091	N1.5	19830921	Fluoride-G	59.0	ppm
2092	N1.5	19850610	Fluoride-G	79.0	ppm
2093	N1.5	19850724	Fluoride-G	188.1	ppm
2094	N1.5	19850916	Fluoride-G	128.6	ppm
2095	N1.5	19860611	Fluoride-G	67.9	ppm
2096	N1.5	19860731	Fluoride-G	49.6	ppm
2097	N1.5	19860916	Fluoride-G	109.0	ppm
2098	N1.5	19870420	Fluoride-G	117.5	ppm
2099	N1.5	19870603	Fluoride-G	57.0	ppm
2100	N1.5	19870728	Fluoride-G	84.8	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2101	N1.5	19870915	Fluoride-G	134.3	ppm
2102	N1.5	19880412	Fluoride-G	181.0	ppm
2103	N1.5	19880607	Fluoride-G	98.1	ppm
2104	N1.5	19880725	Fluoride-G	92.0	ppm
2105	N1.5	19880914	Fluoride-G	225.4	ppm
2106	N1.5	19890605	Fluoride-G	90.0	ppm
2107	N1.5	19890801	Fluoride-G	167.0	ppm
2108	N1.5	19890912	Fluoride-G	222.0	ppm
2109	N1.5	19900410	Fluoride-G	149.0	ppm
2110	N1.5	19900606	Fluoride-G	45.0	ppm
2111	N1.5	19900801	Fluoride-G	114.0	ppm
2112	N1.5	19900917	Fluoride-G	144.0	ppm
2113	N1.5	19910610	Fluoride-G	18.0	ppm
2114	N1.5	19910724	Fluoride-G	64.0	ppm
2115	N2.0	19760608	Fluoride-G	67.0	ppm
2116	N2.0	19760723	Fluoride-G	68.0	ppm
2117	N2.0	19760913	Fluoride-G	87.0	ppm
2118	N2.0	19770614	Fluoride-G	41.0	ppm
2119	N2.0	19770725	Fluoride-G	51.0	ppm
2120	N2.0	19770915	Fluoride-G	69.0	ppm
2121	N2.0	19780407	Fluoride-G	115.0	ppm
2122	N2.0	19780606	Fluoride-G	53.0	ppm
2123	N2.0	19780808	Fluoride-G	83.0	ppm
2124	N2.0	19780901	Fluoride-G	36.0	ppm
2125	N2.0	19790427	Fluoride-G	75.0	ppm
2126	N2.0	19790605	Fluoride-G	32.0	ppm
2127	N2.0	19800608	Fluoride-G	33.0	ppm
2128	N2.0	19800813	Fluoride-G	42.0	ppm
2129	N2.0	19800915	Fluoride-G	37.0	ppm
2130	N2.0	19810616	Fluoride-G	20.0	ppm
2131	N2.0	19810805	Fluoride-G	42.0	ppm
2132	N2.0	19810921	Fluoride-G	75.0	ppm
2133	N2.0	19820608	Fluoride-G	42.0	ppm
2134	N2.0	19820817	Fluoride-G	85.0	ppm
2135	N2.0	19830608	Fluoride-G	52.0	ppm
2136	N2.0	19830815	Fluoride-G	57.0	ppm
2137	N2.0	19830921	Fluoride-G	84.0	ppm
2138	N2.0	19850610	Fluoride-G	98.0	ppm
2139	N2.0	19850724	Fluoride-G	126.7	ppm
2140	N2.0	19850916	Fluoride-G	69.8	ppm
2141	N2.0	19860611	Fluoride-G	65.6	ppm
2142	N2.0	19860731	Fluoride-G	21.3	ppm
2143	N2.0	19860916	Fluoride-G	54.0	ppm
2144	N2.0	19870420	Fluoride-G	82.5	ppm
2145	N2.0	19870603	Fluoride-G	13.1	ppm
2146	N2.0	19870728	Fluoride-G	64.5	ppm
2147	N2.0	19870915	Fluoride-G	98.3	ppm
2148	N2.0	19880412	Fluoride-G	119.3	ppm
2149	N2.0	19880607	Fluoride-G	63.0	ppm
2150	N2.0	19880725	Fluoride-G	74.4	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2151	N2.0	19880914	Fluoride-G	104.3	ppm
2152	N2.0	19890605	Fluoride-G	64.0	ppm
2153	N2.0	19890801	Fluoride-G	131.0	ppm
2154	N2.0	19890912	Fluoride-G	129.0	ppm
2155	N2.0	19900410	Fluoride-G	103.0	ppm
2156	N2.0	19900606	Fluoride-G	45.0	ppm
2157	N2.0	19900801	Fluoride-G	66.0	ppm
2158	N2.0	19900917	Fluoride-G	83.0	ppm
2159	N2.0	19910610	Fluoride-G	17.0	ppm
2160	N2.0	19910724	Fluoride-G	47.0	ppm
2161	N2.8	19760608	Fluoride-G	8.0	ppm
2162	N2.8	19760723	Fluoride-G	9.0	ppm
2163	N2.8	19760913	Fluoride-G	23.0	ppm
2164	N3.0	19770614	Fluoride-G	8.0	ppm
2165	N3.0	19770725	Fluoride-G	22.0	ppm
2166	N3.0	19770915	Fluoride-G	88.0	ppm
2167	N3.0	19780407	Fluoride-G	90.0	ppm
2168	N3.0	19780606	Fluoride-G	11.0	ppm
2169	N3.0	19780808	Fluoride-G	42.0	ppm
2170	N3.0	19780901	Fluoride-G	24.0	ppm
2171	N3.0	19790427	Fluoride-G	38.0	ppm
2172	N3.0	19790605	Fluoride-G	18.0	ppm
2173	N3.0	19790814	Fluoride-G	26.0	ppm
2174	N3.0	19800608	Fluoride-G	16.0	ppm
2175	N3.0	19800813	Fluoride-G	12.0	ppm
2176	N3.0	19800915	Fluoride-G	13.0	ppm
2177	N3.0	19810616	Fluoride-G	11.0	ppm
2178	N3.0	19810805	Fluoride-G	17.0	ppm
2179	N3.0	19810921	Fluoride-G	45.0	ppm
2180	N3.0	19820608	Fluoride-G	18.0	ppm
2181	N3.0	19820817	Fluoride-G	53.0	ppm
2182	N3.0	19820916	Fluoride-G	44.0	ppm
2183	N3.0	19830608	Fluoride-G	22.0	ppm
2184	N3.0	19830815	Fluoride-G	21.0	ppm
2185	N3.0	19830921	Fluoride-G	34.0	ppm
2186	N3.0	19850610	Fluoride-G	19.0	ppm
2187	N3.0	19850724	Fluoride-G	15.8	ppm
2188	N3.0	19850916	Fluoride-G	3.7	ppm
2189	N3.0	19860611	Fluoride-G	15.0	ppm
2190	N3.0	19860731	Fluoride-G	7.3	ppm
2191	N3.0	19860916	Fluoride-G	23.0	ppm
2192	N3.0	19870420	Fluoride-G	82.5	ppm
2193	N3.0	19870603	Fluoride-G	66.0	ppm
2194	N3.0	19870728	Fluoride-G	20.6	ppm
2195	N3.0	19870915	Fluoride-G	38.3	ppm
2196	N3.0	19880412	Fluoride-G	49.9	ppm
2197	N3.0	19880607	Fluoride-G	5.9	ppm
2198	N3.0	19880725	Fluoride-G	24.7	ppm
2199	N3.0	19880914	Fluoride-G	32.6	ppm
2200	N3.0	19890605	Fluoride-G	8.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2201	N3.0	19890801	Fluoride-G	29.0	ppm
2202	N3.0	19890912	Fluoride-G	33.0	ppm
2203	N3.0	19900410	Fluoride-G	40.0	ppm
2204	N3.0	19900606	Fluoride-G	9.0	ppm
2205	N3.0	19900801	Fluoride-G	53.0	ppm
2206	N3.0	19900917	Fluoride-G	50.0	ppm
2207	N3.0	19910610	Fluoride-G	5.0	ppm
2208	N3.0	19910724	Fluoride-G	11.0	ppm
2209	NO1.4	19780407	Fluoride-G	101.0	ppm
2210	NO1.5	19770614	Fluoride-G	78.0	ppm
2211	NO1.5	19770725	Fluoride-G	95.0	ppm
2212	NO1.5	19770915	Fluoride-G	124.0	ppm
2213	NO1.5	19780407	Fluoride-G	175.0	ppm
2214	NO1.5	19780606	Fluoride-G	69.0	ppm
2215	NO1.5	19780808	Fluoride-G	198.0	ppm
2216	NO1.5	19780901	Fluoride-G	139.0	ppm
2217	NO1.5	19790427	Fluoride-G	109.0	ppm
2218	NO1.5	19790605	Fluoride-G	78.0	ppm
2219	NO1.5	19790814	Fluoride-G	116.0	ppm
2220	NO1.7	19710601	Fluoride-G	18.0	ppm
2221	NO1.7	19710701	Fluoride-G	71.0	ppm
2222	NO1.7	19710901	Fluoride-G	70.0	ppm
2223	NO1.7	19720601	Fluoride-G	43.0	ppm
2224	NO1.7	19720701	Fluoride-G	54.0	ppm
2225	NO1.7	19720901	Fluoride-G	70.0	ppm
2226	NO1.7	19730601	Fluoride-G	24.0	ppm
2227	NO1.7	19730701	Fluoride-G	35.0	ppm
2228	NO1.7	19730901	Fluoride-G	41.0	ppm
2229	NO1.7	19740601	Fluoride-G	22.0	ppm
2230	NO1.7	19740701	Fluoride-G	64.0	ppm
2231	NO1.7	19740901	Fluoride-G	154.0	ppm
2232	NO1.7	19750616	Fluoride-G	35.0	ppm
2233	NO1.7	19750729	Fluoride-G	76.0	ppm
2234	NO1.7	19750922	Fluoride-G	93.0	ppm
2235	NO1.7	19760503	Fluoride-G	149.0	ppm
2236	NO2.0	19770614	Fluoride-G	60.0	ppm
2237	NO2.0	19770725	Fluoride-G	53.0	ppm
2238	NO2.0	19780407	Fluoride-G	113.0	ppm
2239	NO2.0	19780606	Fluoride-G	66.0	ppm
2240	NO2.0	19780808	Fluoride-G	128.0	ppm
2241	NO2.0	19780901	Fluoride-G	70.0	ppm
2242	NO2.0	19790427	Fluoride-G	88.0	ppm
2243	NO2.0	19790605	Fluoride-G	57.0	ppm
2244	NO2.0	19790814	Fluoride-G	70.0	ppm
2245	NO2.2	19710601	Fluoride-G	10.0	ppm
2246	NO2.2	19710701	Fluoride-G	51.0	ppm
2247	NO2.2	19710901	Fluoride-G	64.0	ppm
2248	NO2.2	19720601	Fluoride-G	31.0	ppm
2249	NO2.2	19720701	Fluoride-G	35.0	ppm
2250	NO2.2	19720901	Fluoride-G	47.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2251	NO2.2	19730601	Fluoride-G	12.0	ppm
2252	NO2.2	19730701	Fluoride-G	22.0	ppm
2253	NO2.2	19730901	Fluoride-G	30.0	ppm
2254	NO2.2	19740601	Fluoride-G	7.0	ppm
2255	NO2.2	19740901	Fluoride-G	93.0	ppm
2256	NO2.2	19750616	Fluoride-G	32.0	ppm
2257	NO2.2	19750729	Fluoride-G	37.0	ppm
2258	NO2.2	19750922	Fluoride-G	69.0	ppm
2259	NO2.2	19760503	Fluoride-G	107.0	ppm
2260	NO2.2	19760608	Fluoride-G	29.0	ppm
2261	NO2.2	19760723	Fluoride-G	41.0	ppm
2262	NO2.2	19760913	Fluoride-G	79.0	ppm
2263	NO2.2	19770614	Fluoride-G	68.0	ppm
2264	NO2.2	19770725	Fluoride-G	83.0	ppm
2265	NO2.2	19770915	Fluoride-G	93.0	ppm
2266	NO2.2	19780606	Fluoride-G	23.0	ppm
2267	NO2.2	19780808	Fluoride-G	58.0	ppm
2268	NO2.2	19780901	Fluoride-G	32.0	ppm
2269	NO2.2	19790605	Fluoride-G	65.0	ppm
2270	NO2.2	19790814	Fluoride-G	83.0	ppm
2271	O1.4	19780606	Fluoride-A	88.0	ppm
2272	O1.4	19780731	Fluoride-A	168.0	ppm
2273	O1.4	19780901	Fluoride-A	84.0	ppm
2274	O1.4	19770614	Fluoride-G	82.0	ppm
2275	O1.4	19770725	Fluoride-G	72.0	ppm
2276	O1.4	19770915	Fluoride-G	121.0	ppm
2277	O1.4	19780407	Fluoride-G	140.0	ppm
2278	O1.4	19780606	Fluoride-G	88.0	ppm
2279	O1.4	19780808	Fluoride-G	168.0	ppm
2280	O1.4	19780901	Fluoride-G	84.0	ppm
2281	O1.4	19790427	Fluoride-G	111.0	ppm
2282	O1.4	19790605	Fluoride-G	58.0	ppm
2283	O1.4	19790814	Fluoride-G	110.0	ppm
2284	O1.4	19800608	Fluoride-G	38.0	ppm
2285	O1.4	19800813	Fluoride-G	61.0	ppm
2286	O1.4	19800915	Fluoride-G	58.0	ppm
2287	O1.4	19820608	Fluoride-G	49.0	ppm
2288	O1.4	19820817	Fluoride-G	96.0	ppm
2289	O1.4	19820916	Fluoride-G	90.0	ppm
2290	O1.4	19830426	Fluoride-G	198.0	ppm
2291	O1.4	19830426	Fluoride-G	198.0	ppm
2292	O1.4	19830608	Fluoride-G	85.0	ppm
2293	O1.4	19830815	Fluoride-G	97.0	ppm
2294	O1.4	19830921	Fluoride-G	95.0	ppm
2295	O1.4	19850610	Fluoride-G	79.0	ppm
2296	O1.4	19850916	Fluoride-G	11.0	ppm
2297	O1.4	19860611	Fluoride-G	26.3	ppm
2298	O1.4	19860731	Fluoride-G	51.0	ppm
2299	O1.4	19860916	Fluoride-G	94.0	ppm
2300	O1.4	19870420	Fluoride-G	168.2	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2301	01.4	19870603	Fluoride-G	66.0	ppm
2302	01.4	19870728	Fluoride-G	64.1	ppm
2303	01.4	19870915	Fluoride-G	102.4	ppm
2304	01.4	19880412	Fluoride-G	148.1	ppm
2305	01.4	19880607	Fluoride-G	86.7	ppm
2306	01.4	19880725	Fluoride-G	87.1	ppm
2307	01.4	19880914	Fluoride-G	129.4	ppm
2308	01.4	19890605	Fluoride-G	85.0	ppm
2309	01.4	19890801	Fluoride-G	44.0	ppm
2310	01.4	19890912	Fluoride-G	244.0	ppm
2311	01.4	19900410	Fluoride-G	159.0	ppm
2312	01.4	19900606	Fluoride-G	33.0	ppm
2313	01.4	19900801	Fluoride-G	64.0	ppm
2314	01.4	19900917	Fluoride-G	133.0	ppm
2315	01.4	19910610	Fluoride-G	12.0	ppm
2316	01.4	19910724	Fluoride-G	45.0	ppm
2317	02.0	19720601	Fluoride-G	53.0	ppm
2318	02.0	19720701	Fluoride-G	54.0	ppm
2319	02.0	19720901	Fluoride-G	55.0	ppm
2320	02.0	19730601	Fluoride-G	43.0	ppm
2321	02.0	19730701	Fluoride-G	66.0	ppm
2322	02.0	19730901	Fluoride-G	56.0	ppm
2323	02.0	19740601	Fluoride-G	30.0	ppm
2324	02.0	19740701	Fluoride-G	65.0	ppm
2325	02.0	19740901	Fluoride-G	148.0	ppm
2326	02.0	19750729	Fluoride-G	77.0	ppm
2327	02.0	19750922	Fluoride-G	71.0	ppm
2328	02.2	19780606	Fluoride-A	58.0	ppm
2329	02.2	19780731	Fluoride-A	152.0	ppm
2330	02.2	19780901	Fluoride-A	87.0	ppm
2331	02.2	19750502	Fluoride-G	170.0	ppm
2332	02.2	19750616	Fluoride-G	37.0	ppm
2333	02.2	19760503	Fluoride-G	156.0	ppm
2334	02.2	19760608	Fluoride-G	71.0	ppm
2335	02.2	19760723	Fluoride-G	55.0	ppm
2336	02.2	19760913	Fluoride-G	101.0	ppm
2337	02.2	19770614	Fluoride-G	57.0	ppm
2338	02.2	19770725	Fluoride-G	83.0	ppm
2339	02.2	19770915	Fluoride-G	100.0	ppm
2340	02.2	19780407	Fluoride-G	176.0	ppm
2341	02.2	19780606	Fluoride-G	58.0	ppm
2342	02.2	19780808	Fluoride-G	152.0	ppm
2343	02.2	19780901	Fluoride-G	87.0	ppm
2344	02.2	19790427	Fluoride-G	95.0	ppm
2345	02.2	19790814	Fluoride-G	138.0	ppm
2346	02.2	19800608	Fluoride-G	41.0	ppm
2347	02.2	19800813	Fluoride-G	63.0	ppm
2348	02.2	19800915	Fluoride-G	54.0	ppm
2349	02.2	19820608	Fluoride-G	40.0	ppm
2350	02.2	19820817	Fluoride-G	105.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2351	02.2	19820916	Fluoride-G	83.0	ppm
2352	02.2	19830608	Fluoride-G	66.0	ppm
2353	02.2	19830815	Fluoride-G	60.0	ppm
2354	02.2	19830921	Fluoride-G	62.0	ppm
2355	02.2	19860611	Fluoride-G	25.5	ppm
2356	02.2	19860916	Fluoride-G	74.0	ppm
2357	02.2	19870420	Fluoride-G	183.1	ppm
2358	02.2	19870603	Fluoride-G	18.0	ppm
2359	02.2	19870728	Fluoride-G	75.8	ppm
2360	02.2	19870915	Fluoride-G	87.8	ppm
2361	02.2	19880412	Fluoride-G	204.4	ppm
2362	02.2	19880607	Fluoride-G	102.8	ppm
2363	02.2	19880725	Fluoride-G	110.7	ppm
2364	02.2	19880914	Fluoride-G	185.3	ppm
2365	02.2	19890605	Fluoride-G	45.0	ppm
2366	02.2	19890801	Fluoride-G	59.0	ppm
2367	02.2	19890912	Fluoride-G	176.0	ppm
2368	02.2	19900410	Fluoride-G	71.0	ppm
2369	02.2	19900606	Fluoride-G	42.0	ppm
2370	02.2	19900801	Fluoride-G	100.0	ppm
2371	02.2	19900917	Fluoride-G	124.0	ppm
2372	02.2	19910610	Fluoride-G	28.0	ppm
2373	02.2	19910724	Fluoride-G	54.0	ppm
2374	02.5	19780606	Fluoride-A	16.0	ppm
2375	02.5	19780731	Fluoride-A	46.0	ppm
2376	02.5	19780901	Fluoride-A	36.0	ppm
2377	02.5	19770614	Fluoride-G	46.0	ppm
2378	02.5	19770725	Fluoride-G	38.0	ppm
2379	02.5	19770915	Fluoride-G	79.0	ppm
2380	02.5	19780407	Fluoride-G	98.0	ppm
2381	02.5	19780606	Fluoride-G	16.0	ppm
2382	02.5	19780808	Fluoride-G	46.0	ppm
2383	02.5	19780901	Fluoride-G	36.0	ppm
2384	02.5	19790427	Fluoride-G	83.0	ppm
2385	02.5	19790605	Fluoride-G	20.0	ppm
2386	02.5	19790814	Fluoride-G	27.0	ppm
2387	02.5	19800608	Fluoride-G	13.0	ppm
2388	02.5	19800813	Fluoride-G	15.0	ppm
2389	02.5	19800915	Fluoride-G	20.0	ppm
2390	02.5	19820608	Fluoride-G	15.0	ppm
2391	02.5	19820817	Fluoride-G	33.0	ppm
2392	02.5	19820916	Fluoride-G	56.0	ppm
2393	02.5	19830608	Fluoride-G	30.0	ppm
2394	02.5	19830815	Fluoride-G	33.0	ppm
2395	02.5	19830921	Fluoride-G	36.0	ppm
2396	02.5	19850610	Fluoride-G	15.0	ppm
2397	02.5	19850724	Fluoride-G	17.8	ppm
2398	02.5	19850916	Fluoride-G	117.6	ppm
2399	02.5	19860611	Fluoride-G	15.0	ppm
2400	02.5	19860731	Fluoride-G	14.7	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2401	O2.5	19860916	Fluoride-G	50.0	ppm
2402	O2.5	19870603	Fluoride-G	19.9	ppm
2403	O2.5	19870728	Fluoride-G	20.6	ppm
2404	O2.5	19870915	Fluoride-G	33.8	ppm
2405	O2.5	19880607	Fluoride-G	9.9	ppm
2406	O2.5	19880725	Fluoride-G	59.9	ppm
2407	O2.5	19880914	Fluoride-G	92.3	ppm
2408	O2.5	19890605	Fluoride-G	6.0	ppm
2409	O2.5	19890801	Fluoride-G	24.0	ppm
2410	O2.5	19890912	Fluoride-G	43.0	ppm
2411	O2.5	19900606	Fluoride-G	14.0	ppm
2412	O2.5	19900801	Fluoride-G	88.0	ppm
2413	O2.5	19900917	Fluoride-G	79.0	ppm
2414	O2.5	19910610	Fluoride-G	18.0	ppm
2415	O2.5	19910724	Fluoride-G	17.0	ppm
2416	OP1.5	19710601	Fluoride-G	36.0	ppm
2417	OP1.5	19710901	Fluoride-G	83.0	ppm
2418	OP1.5	19720601	Fluoride-G	41.0	ppm
2419	OP1.5	19720701	Fluoride-G	58.0	ppm
2420	OP1.5	19720901	Fluoride-G	67.0	ppm
2421	OP1.5	19730601	Fluoride-G	45.0	ppm
2422	OP1.5	19730701	Fluoride-G	90.0	ppm
2423	OP1.5	19730901	Fluoride-G	87.0	ppm
2424	OP1.5	19740601	Fluoride-G	25.0	ppm
2425	OP1.5	19740701	Fluoride-G	80.0	ppm
2426	OP1.5	19740901	Fluoride-G	180.0	ppm
2427	OP1.5	19750502	Fluoride-G	88.0	ppm
2428	OP1.5	19750616	Fluoride-G	42.0	ppm
2429	OP1.5	19750729	Fluoride-G	36.0	ppm
2430	OP1.5	19750922	Fluoride-G	94.0	ppm
2431	OP1.5	19760503	Fluoride-G	154.0	ppm
2432	OP1.5	19760608	Fluoride-G	94.0	ppm
2433	OP1.5	19760723	Fluoride-G	87.0	ppm
2434	OP1.5	19760913	Fluoride-G	134.0	ppm
2435	OP1.8	19780606	Fluoride-A	60.0	ppm
2436	OP1.8	19780731	Fluoride-A	143.0	ppm
2437	OP1.8	19770614	Fluoride-G	74.0	ppm
2438	OP1.8	19770725	Fluoride-G	55.0	ppm
2439	OP1.8	19770915	Fluoride-G	84.0	ppm
2440	OP1.8	19780407	Fluoride-G	124.0	ppm
2441	OP1.8	19780606	Fluoride-G	60.0	ppm
2442	OP1.8	19780808	Fluoride-G	143.0	ppm
2443	OP1.8	19790427	Fluoride-G	81.0	ppm
2444	OP1.8	19800608	Fluoride-G	37.0	ppm
2445	OP1.8	19800813	Fluoride-G	45.0	ppm
2446	OP1.8	19820608	Fluoride-G	64.0	ppm
2447	OP1.8	19820817	Fluoride-G	75.0	ppm
2448	OP1.8	19820916	Fluoride-G	70.0	ppm
2449	OP1.8	19830608	Fluoride-G	58.0	ppm
2450	OP1.8	19830815	Fluoride-G	71.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2451	OP1.8	19830921	Fluoride-G	75.0	ppm
2452	OP1.8	19860611	Fluoride-G	21.4	ppm
2453	OP1.8	19860731	Fluoride-G	14.7	ppm
2454	OP1.8	19860916	Fluoride-G	61.0	ppm
2455	OP1.8	19870728	Fluoride-G	54.9	ppm
2456	OP1.8	19880607	Fluoride-G	79.2	ppm
2457	OP1.8	19880725	Fluoride-G	70.5	ppm
2458	OP1.8	19880914	Fluoride-G	170.6	ppm
2459	OP1.8	19890605	Fluoride-G	29.0	ppm
2460	OP1.8	19890801	Fluoride-G	47.0	ppm
2461	OP1.8	19890912	Fluoride-G	92.0	ppm
2462	OP1.8	19900606	Fluoride-G	42.0	ppm
2463	OP1.8	19900801	Fluoride-G	79.0	ppm
2464	OP1.8	19900917	Fluoride-G	94.0	ppm
2465	OP1.8	19910610	Fluoride-G	22.0	ppm
2466	OP2.0	19760608	Fluoride-G	52.0	ppm
2467	OP2.0	19760723	Fluoride-G	53.0	ppm
2468	OP2.0	19760913	Fluoride-G	112.0	ppm
2469	OP2.5	19780606	Fluoride-A	53.0	ppm
2470	OP2.5	19760608	Fluoride-G	6.0	ppm
2471	OP2.5	19760723	Fluoride-G	16.0	ppm
2472	OP2.5	19760913	Fluoride-G	42.0	ppm
2473	OP2.5	19770614	Fluoride-G	19.0	ppm
2474	OP2.5	19770725	Fluoride-G	54.0	ppm
2475	OP2.5	19770915	Fluoride-G	121.0	ppm
2476	OP2.5	19780407	Fluoride-G	95.0	ppm
2477	OP2.5	19780606	Fluoride-G	53.0	ppm
2478	OP2.6	19710601	Fluoride-G	9.0	ppm
2479	OP2.6	19710701	Fluoride-G	25.0	ppm
2480	OP2.6	19710901	Fluoride-G	26.0	ppm
2481	OP2.6	19720601	Fluoride-G	13.0	ppm
2482	OP2.6	19720701	Fluoride-G	13.0	ppm
2483	OP2.6	19720901	Fluoride-G	28.0	ppm
2484	OP2.6	19730601	Fluoride-G	31.0	ppm
2485	OP2.6	19730701	Fluoride-G	55.0	ppm
2486	OP2.6	19730901	Fluoride-G	60.0	ppm
2487	OP2.6	19740601	Fluoride-G	7.0	ppm
2488	OP2.6	19740701	Fluoride-G	26.0	ppm
2489	OP2.6	19740901	Fluoride-G	59.0	ppm
2490	OP2.6	19750502	Fluoride-G	79.0	ppm
2491	OP2.6	19750616	Fluoride-G	20.0	ppm
2492	OP2.6	19750729	Fluoride-G	29.0	ppm
2493	OP2.6	19750922	Fluoride-G	39.0	ppm
2494	OP2.6	19760503	Fluoride-G	82.0	ppm
2495	OP2.7	19800608	Fluoride-A	16.0	ppm
2496	OP2.7	19800915	Fluoride-A	25.0	ppm
2497	OP2.7	19820608	Fluoride-A	21.0	ppm
2498	OP2.7	19820916	Fluoride-A	30.0	ppm
2499	OP2.7	19830608	Fluoride-A	36.0	ppm
2500	OP2.7	19830815	Fluoride-A	45.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2501	OP2.7	19850610	Fluoride-A	62.0	ppm
2502	OP2.7	19850724	Fluoride-A	21.5	ppm
2503	OP2.7	19850916	Fluoride-A	7.5	ppm
2504	OP2.7	19860611	Fluoride-A	22.6	ppm
2505	OP2.7	19860731	Fluoride-A	19.2	ppm
2506	OP2.7	19860916	Fluoride-A	25.1	ppm
2507	OP2.7	19910610	Fluoride-A	6.0	ppm
2508	OP2.7	19910724	Fluoride-A	21.0	ppm
2509	OP2.8	19890605	Fluoride-A	17.0	ppm
2510	OP2.8	19890801	Fluoride-A	24.0	ppm
2511	OP2.8	19890912	Fluoride-A	55.0	ppm
2512	OP2.8	19900606	Fluoride-A	25.0	ppm
2513	OP2.8	19900801	Fluoride-A	25.0	ppm
2514	OP2.8	19900917	Fluoride-A	41.0	ppm
2515	OP2.8	19910610	Fluoride-A	8.0	ppm
2516	OP2.8	19910724	Fluoride-A	21.0	ppm
2517	OP2.9	19780606	Fluoride-A	21.0	ppm
2518	OP2.9	19780731	Fluoride-A	56.0	ppm
2519	OP2.9	19780901	Fluoride-A	32.0	ppm
2520	OP2.9	19770614	Fluoride-G	32.0	ppm
2521	OP2.9	19770725	Fluoride-G	33.0	ppm
2522	OP2.9	19770915	Fluoride-G	43.0	ppm
2523	OP2.9	19780606	Fluoride-G	21.0	ppm
2524	OP2.9	19780808	Fluoride-G	56.0	ppm
2525	OP2.9	19780901	Fluoride-G	32.0	ppm
2526	OP2.9	19790427	Fluoride-G	67.0	ppm
2527	OP2.9	19790605	Fluoride-G	26.0	ppm
2528	OP2.9	19790814	Fluoride-G	138.0	ppm
2529	OP2.9	19800608	Fluoride-G	16.0	ppm
2530	OP2.9	19800813	Fluoride-G	19.0	ppm
2531	OP2.9	19800915	Fluoride-G	15.0	ppm
2532	OP2.9	19820608	Fluoride-G	25.0	ppm
2533	OP2.9	19820817	Fluoride-G	35.0	ppm
2534	OP2.9	19820916	Fluoride-G	44.0	ppm
2535	OP2.9	19830426	Fluoride-G	91.0	ppm
2536	OP2.9	19830426	Fluoride-G	91.0	ppm
2537	OP2.9	19830608	Fluoride-G	40.0	ppm
2538	OP2.9	19830815	Fluoride-G	50.0	ppm
2539	OP2.9	19830921	Fluoride-G	45.0	ppm
2540	OP2.9	19850610	Fluoride-G	24.0	ppm
2541	OP2.9	19850724	Fluoride-G	41.6	ppm
2542	OP2.9	19850916	Fluoride-G	12.9	ppm
2543	OP2.9	19860611	Fluoride-G	27.0	ppm
2544	OP2.9	19860731	Fluoride-G	34.9	ppm
2545	OP2.9	19860916	Fluoride-G	28.0	ppm
2546	OP2.9	19870420	Fluoride-G	38.2	ppm
2547	OP2.9	19870603	Fluoride-G	12.4	ppm
2548	OP2.9	19870728	Fluoride-G	22.5	ppm
2549	OP2.9	19870915	Fluoride-G	32.3	ppm
2550	OP2.9	19880412	Fluoride-G	60.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2551	OP2.9	19880607	Fluoride-G	17.7	ppm
2552	OP2.9	19880725	Fluoride-G	41.9	ppm
2553	OP2.9	19880914	Fluoride-G	52.5	ppm
2554	OP2.9	19890605	Fluoride-G	11.0	ppm
2555	OP2.9	19890801	Fluoride-G	26.0	ppm
2556	OP2.9	19890912	Fluoride-G	52.0	ppm
2557	OP2.9	19900410	Fluoride-G	27.0	ppm
2558	OP2.9	19900606	Fluoride-G	8.0	ppm
2559	OP2.9	19900801	Fluoride-G	24.0	ppm
2560	OP2.9	19900917	Fluoride-G	41.0	ppm
2561	OP2.9	19910610	Fluoride-G	37.0	ppm
2562	OP2.9	19910724	Fluoride-G	16.0	ppm
2563	OP3.2	19780606	Fluoride-A	20.0	ppm
2564	OP3.2	19780731	Fluoride-A	62.0	ppm
2565	OP3.2	19780901	Fluoride-A	32.0	ppm
2566	OP3.2	19760608	Fluoride-G	8.0	ppm
2567	OP3.2	19760723	Fluoride-G	16.0	ppm
2568	OP3.2	19760913	Fluoride-G	41.0	ppm
2569	OP3.2	19770614	Fluoride-G	27.0	ppm
2570	OP3.2	19770725	Fluoride-G	36.0	ppm
2571	OP3.2	19770915	Fluoride-G	46.0	ppm
2572	OP3.2	19780407	Fluoride-G	117.0	ppm
2573	OP3.2	19780606	Fluoride-G	20.0	ppm
2574	OP3.2	19780808	Fluoride-G	62.0	ppm
2575	OP3.2	19780901	Fluoride-G	32.0	ppm
2576	OP3.2	19790427	Fluoride-G	64.0	ppm
2577	OP3.2	19790605	Fluoride-G	42.0	ppm
2578	OP3.2	19790814	Fluoride-G	47.0	ppm
2579	OP3.2	19800608	Fluoride-G	23.0	ppm
2580	OP3.2	19800813	Fluoride-G	24.0	ppm
2581	OP3.2	19800915	Fluoride-G	24.0	ppm
2582	OP3.2	19820608	Fluoride-G	29.0	ppm
2583	OP3.2	19820817	Fluoride-G	50.0	ppm
2584	OP3.2	19820916	Fluoride-G	49.0	ppm
2585	OP3.2	19830426	Fluoride-G	87.0	ppm
2586	OP3.2	19830426	Fluoride-G	87.0	ppm
2587	OP3.2	19830608	Fluoride-G	53.0	ppm
2588	OP3.2	19830815	Fluoride-G	42.0	ppm
2589	OP3.2	19830921	Fluoride-G	34.0	ppm
2590	OP3.2	19850610	Fluoride-G	24.0	ppm
2591	OP3.2	19860611	Fluoride-G	15.0	ppm
2592	OP3.2	19860731	Fluoride-G	14.7	ppm
2593	OP3.2	19860916	Fluoride-G	41.0	ppm
2594	OP3.2	19870420	Fluoride-G	56.8	ppm
2595	OP3.2	19870603	Fluoride-G	21.0	ppm
2596	OP3.2	19870728	Fluoride-G	28.1	ppm
2597	OP3.2	19870915	Fluoride-G	48.0	ppm
2598	OP3.2	19880412	Fluoride-G	76.1	ppm
2599	OP3.2	19880607	Fluoride-G	9.9	ppm
2600	OP3.2	19880725	Fluoride-G	25.4	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2601	OP3.2	19880914	Fluoride-G	82.5	ppm
2602	OP3.2	19890605	Fluoride-G	18.0	ppm
2603	OP3.2	19890801	Fluoride-G	47.0	ppm
2604	OP3.2	19890912	Fluoride-G	80.0	ppm
2605	OP3.2	19900410	Fluoride-G	36.0	ppm
2606	OP3.2	19900606	Fluoride-G	10.0	ppm
2607	OP3.2	19900801	Fluoride-G	34.0	ppm
2608	OP3.2	19900917	Fluoride-G	36.0	ppm
2609	OP3.2	19910610	Fluoride-G	14.0	ppm
2610	OP3.2	19910724	Fluoride-G	31.0	ppm
2611	OP3.3	19820608	Fluoride-A	26.0	ppm
2612	OP3.3	19820817	Fluoride-A	22.0	ppm
2613	OP3.3	19820916	Fluoride-A	30.0	ppm
2614	OP3.3	19830608	Fluoride-A	39.0	ppm
2615	OP3.3	19900606	Fluoride-A	6.0	ppm
2616	OP3.3	19900801	Fluoride-A	14.0	ppm
2617	OP3.3	19900917	Fluoride-G	9.0	ppm
2618	OP3.5	19910610	Fluoride-A	6.0	ppm
2619	OP3.5	19910724	Fluoride-A	21.0	ppm
2620	P0.9	19780606	Fluoride-A	35.0	ppm
2621	P0.9	19780731	Fluoride-A	236.0	ppm
2622	P0.9	19780901	Fluoride-A	113.0	ppm
2623	P0.9	19770915	Fluoride-G	115.0	ppm
2624	P0.9	19780606	Fluoride-G	35.0	ppm
2625	P0.9	19780808	Fluoride-G	236.0	ppm
2626	P0.9	19780901	Fluoride-G	113.0	ppm
2627	P2.0	19710601	Fluoride-G	24.0	ppm
2628	P2.0	19710701	Fluoride-G	54.0	ppm
2629	P2.0	19710901	Fluoride-G	56.0	ppm
2630	P2.0	19720601	Fluoride-G	29.0	ppm
2631	P2.0	19720701	Fluoride-G	53.0	ppm
2632	P2.0	19720901	Fluoride-G	77.0	ppm
2633	P2.0	19730601	Fluoride-G	27.0	ppm
2634	P2.0	19730701	Fluoride-G	42.0	ppm
2635	P2.0	19730901	Fluoride-G	48.0	ppm
2636	P2.0	19740601	Fluoride-G	22.0	ppm
2637	P2.0	19740701	Fluoride-G	49.0	ppm
2638	P2.0	19740901	Fluoride-G	116.0	ppm
2639	P2.0	19750616	Fluoride-G	32.0	ppm
2640	P2.0	19760608	Fluoride-G	40.0	ppm
2641	P2.0	19760723	Fluoride-G	36.0	ppm
2642	P2.0	19760913	Fluoride-G	84.0	ppm
2643	P2.6	19870603	Fluoride-A	15.4	ppm
2644	P2.6	19880607	Fluoride-A	8.3	ppm
2645	P2.6	19880725	Fluoride-A	11.6	ppm
2646	P2.6	19880914	Fluoride-A	61.9	ppm
2647	P2.6	19890605	Fluoride-A	14.0	ppm
2648	P2.6	19890801	Fluoride-A	21.0	ppm
2649	P2.6	19890912	Fluoride-A	46.0	ppm
2650	P2.6	19900606	Fluoride-A	24.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2651	P2.6	19900801	Fluoride-A	21.0	ppm
2652	P2.6	19900917	Fluoride-A	30.0	ppm
2653	P3.0	19760608	Fluoride-G	7.0	ppm
2654	P3.0	19760723	Fluoride-G	16.0	ppm
2655	P3.0	19760913	Fluoride-G	42.0	ppm
2656	P3.1	19760503	Fluoride-G	87.0	ppm
2657	PQ1.5	19780606	Fluoride-A	39.0	ppm
2658	PQ1.5	19780731	Fluoride-A	78.0	ppm
2659	PQ1.5	19780901	Fluoride-A	120.0	ppm
2660	PQ1.5	19770915	Fluoride-G	137.0	ppm
2661	PQ1.5	19780606	Fluoride-G	39.0	ppm
2662	PQ1.5	19780808	Fluoride-G	78.0	ppm
2663	PQ1.5	19780901	Fluoride-G	120.0	ppm
2664	PQ1.5	19800608	Fluoride-G	11.0	ppm
2665	PQ1.5	19800813	Fluoride-G	41.0	ppm
2666	PQ1.5	19800915	Fluoride-G	29.0	ppm
2667	PQ1.5	19830426	Fluoride-G	132.0	ppm
2668	PQ1.5	19830426	Fluoride-G	132.0	ppm
2669	PQ1.5	19830608	Fluoride-G	67.0	ppm
2670	PQ1.5	19830815	Fluoride-G	55.0	ppm
2671	PQ1.5	19830921	Fluoride-G	77.0	ppm
2672	PQ1.5	19850610	Fluoride-G	28.0	ppm
2673	PQ1.5	19850724	Fluoride-G	33.7	ppm
2674	PQ1.5	19850916	Fluoride-G	18.4	ppm
2675	PQ1.5	19860611	Fluoride-G	18.9	ppm
2676	PQ1.5	19860731	Fluoride-G	22.1	ppm
2677	PQ1.5	19860916	Fluoride-G	65.0	ppm
2678	PQ1.5	19870420	Fluoride-G	107.1	ppm
2679	PQ1.5	19870603	Fluoride-G	37.5	ppm
2680	PQ1.5	19870728	Fluoride-G	37.5	ppm
2681	PQ1.5	19870915	Fluoride-G	59.6	ppm
2682	PQ1.5	19880412	Fluoride-G	114.8	ppm
2683	PQ1.5	19880607	Fluoride-G	43.3	ppm
2684	PQ1.5	19880725	Fluoride-G	50.8	ppm
2685	PQ1.5	19880914	Fluoride-G	146.6	ppm
2686	PQ1.5	19890605	Fluoride-G	13.0	ppm
2687	PQ1.5	19890801	Fluoride-G	32.0	ppm
2688	PQ1.5	19890912	Fluoride-G	122.0	ppm
2689	PQ1.5	19900410	Fluoride-G	49.0	ppm
2690	PQ1.5	19900606	Fluoride-G	37.0	ppm
2691	PQ1.5	19900801	Fluoride-G	64.0	ppm
2692	PQ1.5	19900917	Fluoride-G	98.0	ppm
2693	PQ1.5	19910610	Fluoride-G	15.0	ppm
2694	PQ1.5	19910724	Fluoride-G	32.0	ppm
2695	PQ1.6	19850724	Fluoride-G	37.6	ppm
2696	PQ1.6	19850916	Fluoride-G	7.4	ppm
2697	PQ1.6	19860611	Fluoride-G	23.6	ppm
2698	PQ1.6	19860731	Fluoride-G	36.8	ppm
2699	PQ1.6	19860916	Fluoride-G	66.0	ppm
2700	PQ1.6	19870420	Fluoride-G	110.3	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2701	PQ1.6	19870603	Fluoride-G	18.0	ppm
2702	PQ1.6	19870728	Fluoride-G	39.4	ppm
2703	PQ1.6	19870915	Fluoride-G	57.0	ppm
2704	PQ1.6	19880412	Fluoride-G	108.0	ppm
2705	PQ1.6	19880607	Fluoride-G	41.4	ppm
2706	PQ1.6	19880725	Fluoride-G	52.9	ppm
2707	PQ1.6	19880914	Fluoride-G	143.3	ppm
2708	PQ1.6	19890605	Fluoride-G	15.0	ppm
2709	PQ1.6	19890801	Fluoride-G	31.0	ppm
2710	PQ1.6	19890912	Fluoride-G	125.0	ppm
2711	PQ1.6	19900410	Fluoride-G	39.0	ppm
2712	PQ1.6	19900606	Fluoride-G	36.0	ppm
2713	PQ1.6	19900801	Fluoride-G	60.0	ppm
2714	PQ1.6	19900917	Fluoride-G	110.0	ppm
2715	PQ1.6	19910610	Fluoride-G	13.0	ppm
2716	PQ1.6	19910724	Fluoride-G	29.0	ppm
2717	PQ2.6	19850610	Fluoride-A	51.0	ppm
2718	PQ2.6	19850724	Fluoride-A	13.7	ppm
2719	PQ2.6	19850916	Fluoride-A	7.5	ppm
2720	PQ2.6	19860611	Fluoride-A	23.7	ppm
2721	PQ2.6	19860731	Fluoride-A	14.2	ppm
2722	PQ2.7	19780606	Fluoride-A	28.0	ppm
2723	PQ2.7	19780731	Fluoride-A	57.0	ppm
2724	PQ2.7	19780901	Fluoride-A	40.0	ppm
2725	PQ2.7	19760503	Fluoride-G	114.0	ppm
2726	PQ2.7	19770915	Fluoride-G	67.0	ppm
2727	PQ2.7	19780407	Fluoride-G	69.0	ppm
2728	PQ2.7	19780606	Fluoride-G	28.0	ppm
2729	PQ2.7	19780808	Fluoride-G	57.0	ppm
2730	PQ2.7	19780901	Fluoride-G	40.0	ppm
2731	PQ3.6	19860611	Fluoride-A	18.2	ppm
2732	PQ3.6	19860731	Fluoride-A	11.5	ppm
2733	PQ3.6	19860916	Fluoride-A	25.1	ppm
2734	PQ3.6	19870603	Fluoride-A	5.6	ppm
2735	PQ3.6	19870728	Fluoride-A	10.2	ppm
2736	PQ3.6	19870915	Fluoride-A	16.9	ppm
2737	PQ3.6	19880607	Fluoride-A	5.5	ppm
2738	PQ3.6	19880725	Fluoride-A	18.2	ppm
2739	PQ3.6	19880914	Fluoride-A	48.8	ppm
2740	Q0.9	19780606	Fluoride-A	53.0	ppm
2741	Q0.9	19780731	Fluoride-A	173.0	ppm
2742	Q0.9	19780901	Fluoride-A	115.0	ppm
2743	Q0.9	19770915	Fluoride-G	99.0	ppm
2744	Q0.9	19780407	Fluoride-G	275.0	ppm
2745	Q0.9	19780606	Fluoride-G	53.0	ppm
2746	Q0.9	19780808	Fluoride-G	173.0	ppm
2747	Q0.9	19780901	Fluoride-G	115.0	ppm
2748	Q1.5	19780606	Fluoride-A	32.0	ppm
2749	Q1.5	19780731	Fluoride-A	51.0	ppm
2750	Q1.5	19780901	Fluoride-A	56.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2751	Q1.5	19770614	Fluoride-G	19.0	ppm
2752	Q1.5	19770915	Fluoride-G	63.0	ppm
2753	Q1.5	19780407	Fluoride-G	101.0	ppm
2754	Q1.5	19780606	Fluoride-G	32.0	ppm
2755	Q1.5	19780808	Fluoride-G	51.0	ppm
2756	Q1.5	19780901	Fluoride-G	56.0	ppm
2757	Q2.0	19780606	Fluoride-A	23.0	ppm
2758	Q2.0	19780731	Fluoride-A	68.0	ppm
2759	Q2.0	19780901	Fluoride-A	59.0	ppm
2760	Q2.0	19710601	Fluoride-G	13.0	ppm
2761	Q2.0	19710701	Fluoride-G	24.0	ppm
2762	Q2.0	19710901	Fluoride-G	23.0	ppm
2763	Q2.0	19720601	Fluoride-G	42.0	ppm
2764	Q2.0	19720701	Fluoride-G	20.0	ppm
2765	Q2.0	19720901	Fluoride-G	37.0	ppm
2766	Q2.0	19730601	Fluoride-G	31.0	ppm
2767	Q2.0	19730701	Fluoride-G	39.0	ppm
2768	Q2.0	19730901	Fluoride-G	34.0	ppm
2769	Q2.0	19740601	Fluoride-G	31.0	ppm
2770	Q2.0	19740701	Fluoride-G	48.0	ppm
2771	Q2.0	19740901	Fluoride-G	99.0	ppm
2772	Q2.0	19770614	Fluoride-G	29.0	ppm
2773	Q2.0	19770915	Fluoride-G	65.0	ppm
2774	Q2.0	19780407	Fluoride-G	44.0	ppm
2775	Q2.0	19780606	Fluoride-G	23.0	ppm
2776	Q2.0	19780808	Fluoride-G	68.0	ppm
2777	Q2.0	19780901	Fluoride-G	59.0	ppm
2778	Q2.0	19800608	Fluoride-G	16.0	ppm
2779	Q2.0	19800813	Fluoride-G	26.0	ppm
2780	Q2.0	19800915	Fluoride-G	21.0	ppm
2781	Q2.0	19830426	Fluoride-G	98.0	ppm
2782	Q2.0	19830426	Fluoride-G	98.0	ppm
2783	Q2.0	19830608	Fluoride-G	37.0	ppm
2784	Q2.0	19830815	Fluoride-G	44.0	ppm
2785	Q2.0	19830921	Fluoride-G	63.0	ppm
2786	Q2.0	19850610	Fluoride-G	29.0	ppm
2787	Q2.0	19850724	Fluoride-G	41.6	ppm
2788	Q2.0	19850916	Fluoride-G	7.4	ppm
2789	Q2.0	19860611	Fluoride-G	22.5	ppm
2790	Q2.0	19860731	Fluoride-G	36.8	ppm
2791	Q2.0	19860916	Fluoride-G	40.0	ppm
2792	Q2.0	19870420	Fluoride-G	68.4	ppm
2793	Q2.0	19870603	Fluoride-G	14.3	ppm
2794	Q2.0	19870728	Fluoride-G	45.8	ppm
2795	Q2.0	19870915	Fluoride-G	86.3	ppm
2796	Q2.0	19880412	Fluoride-G	71.7	ppm
2797	Q2.0	19880607	Fluoride-G	31.9	ppm
2798	Q2.0	19880725	Fluoride-G	51.5	ppm
2799	Q2.0	19880914	Fluoride-G	78.0	ppm
2800	Q2.0	19890605	Fluoride-G	11.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2801	Q2.0	19890801	Fluoride-G	47.0	ppm
2802	Q2.0	19890912	Fluoride-G	100.0	ppm
2803	Q2.0	19900410	Fluoride-G	65.0	ppm
2804	Q2.0	19900606	Fluoride-G	14.0	ppm
2805	Q2.0	19900801	Fluoride-G	48.0	ppm
2806	Q2.0	19900917	Fluoride-G	96.0	ppm
2807	Q2.0	19910610	Fluoride-G	17.0	ppm
2808	Q2.0	19910724	Fluoride-G	21.0	ppm
2809	Q2.6	19780606	Fluoride-A	20.0	ppm
2810	Q2.6	19780731	Fluoride-A	32.0	ppm
2811	Q2.6	19780901	Fluoride-A	92.0	ppm
2812	Q2.6	19710601	Fluoride-G	9.0	ppm
2813	Q2.6	19710701	Fluoride-G	19.0	ppm
2814	Q2.6	19710901	Fluoride-G	28.0	ppm
2815	Q2.6	19720601	Fluoride-G	6.0	ppm
2816	Q2.6	19720701	Fluoride-G	20.0	ppm
2817	Q2.6	19720901	Fluoride-G	29.0	ppm
2818	Q2.6	19730601	Fluoride-G	20.0	ppm
2819	Q2.6	19730701	Fluoride-G	32.0	ppm
2820	Q2.6	19730901	Fluoride-G	36.0	ppm
2821	Q2.6	19740601	Fluoride-G	24.0	ppm
2822	Q2.6	19740701	Fluoride-G	72.0	ppm
2823	Q2.6	19740901	Fluoride-G	111.0	ppm
2824	Q2.6	19760503	Fluoride-G	99.0	ppm
2825	Q2.6	19770614	Fluoride-G	31.0	ppm
2826	Q2.6	19770915	Fluoride-G	56.0	ppm
2827	Q2.6	19780407	Fluoride-G	84.0	ppm
2828	Q2.6	19780606	Fluoride-G	20.0	ppm
2829	Q2.6	19780808	Fluoride-G	32.0	ppm
2830	Q2.6	19780901	Fluoride-G	92.0	ppm
2831	QR1.9	19780606	Fluoride-A	27.0	ppm
2832	QR1.9	19780731	Fluoride-A	53.0	ppm
2833	QR1.9	19780901	Fluoride-A	54.0	ppm
2834	QR1.9	19770614	Fluoride-G	5.0	ppm
2835	QR1.9	19770915	Fluoride-G	45.0	ppm
2836	QR1.9	19780407	Fluoride-G	76.0	ppm
2837	QR1.9	19780606	Fluoride-G	27.0	ppm
2838	QR1.9	19780808	Fluoride-G	53.0	ppm
2839	QR1.9	19780901	Fluoride-G	54.0	ppm
2840	QR1.9	19800608	Fluoride-G	10.0	ppm
2841	QR1.9	19800813	Fluoride-G	26.0	ppm
2842	QR1.9	19800915	Fluoride-G	23.0	ppm
2843	QR1.9	19830426	Fluoride-G	118.0	ppm
2844	QR1.9	19830608	Fluoride-G	25.0	ppm
2845	QR1.9	19830815	Fluoride-G	33.0	ppm
2846	QR1.9	19830921	Fluoride-G	26.0	ppm
2847	QR1.9	19850610	Fluoride-G	19.0	ppm
2848	QR1.9	19850724	Fluoride-G	25.7	ppm
2849	QR1.9	19850916	Fluoride-G	44.1	ppm
2850	QR1.9	19860611	Fluoride-G	11.3	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2851	QR1.9	19860731	Fluoride-G	16.5	ppm
2852	QR1.9	19860916	Fluoride-G	26.0	ppm
2853	QR1.9	19870603	Fluoride-G	30.0	ppm
2854	QR1.9	19870728	Fluoride-G	20.6	ppm
2855	QR1.9	19870915	Fluoride-G	15.0	ppm
2856	QR1.9	19880607	Fluoride-G	8.9	ppm
2857	QR1.9	19880725	Fluoride-G	21.5	ppm
2858	QR1.9	19880914	Fluoride-G	36.8	ppm
2859	QR1.9	19890605	Fluoride-G	15.0	ppm
2860	QR1.9	19890801	Fluoride-G	16.0	ppm
2861	QR1.9	19890912	Fluoride-G	25.0	ppm
2862	QR1.9	19900606	Fluoride-G	15.0	ppm
2863	QR1.9	19900801	Fluoride-G	17.0	ppm
2864	QR1.9	19900917	Fluoride-G	47.0	ppm
2865	QR1.9	19910610	Fluoride-G	7.0	ppm
2866	QR1.9	19910724	Fluoride-G	19.0	ppm
2867	QR2.7	19910610	Fluoride-A	10.0	ppm
2868	QR2.7	19910724	Fluoride-A	18.0	ppm
2869	R0.9	19780606	Fluoride-A	41.0	ppm
2870	R0.9	19780731	Fluoride-A	126.0	ppm
2871	R0.9	19780901	Fluoride-A	115.0	ppm
2872	R0.9	19710601	Fluoride-G	12.0	ppm
2873	R0.9	19710701	Fluoride-G	45.0	ppm
2874	R0.9	19710901	Fluoride-G	41.0	ppm
2875	R0.9	19720601	Fluoride-G	19.0	ppm
2876	R0.9	19720701	Fluoride-G	51.0	ppm
2877	R0.9	19720901	Fluoride-G	65.0	ppm
2878	R0.9	19730601	Fluoride-G	13.0	ppm
2879	R0.9	19730701	Fluoride-G	22.0	ppm
2880	R0.9	19730901	Fluoride-G	81.0	ppm
2881	R0.9	19740601	Fluoride-G	48.0	ppm
2882	R0.9	19740701	Fluoride-G	66.0	ppm
2883	R0.9	19740901	Fluoride-G	170.0	ppm
2884	R0.9	19770614	Fluoride-G	25.0	ppm
2885	R0.9	19770915	Fluoride-G	80.0	ppm
2886	R0.9	19780407	Fluoride-G	111.0	ppm
2887	R0.9	19780606	Fluoride-G	41.0	ppm
2888	R0.9	19780808	Fluoride-G	126.0	ppm
2889	R0.9	19780901	Fluoride-G	115.0	ppm
2890	R0.9	19800608	Fluoride-G	18.0	ppm
2891	R0.9	19800813	Fluoride-G	28.0	ppm
2892	R0.9	19800915	Fluoride-G	38.0	ppm
2893	R0.9	19830426	Fluoride-G	154.0	ppm
2894	R0.9	19830426	Fluoride-G	154.0	ppm
2895	R0.9	19830608	Fluoride-G	65.0	ppm
2896	R0.9	19830815	Fluoride-G	62.0	ppm
2897	R0.9	19830921	Fluoride-G	54.0	ppm
2898	R0.9	19850610	Fluoride-G	28.0	ppm
2899	R0.9	19850724	Fluoride-G	61.4	ppm
2900	R0.9	19850916	Fluoride-G	5.5	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2901	R0.9	19860611	Fluoride-G	22.5	ppm
2902	R0.9	19860731	Fluoride-G	22.1	ppm
2903	R0.9	19860916	Fluoride-G	146.0	ppm
2904	R0.9	19870420	Fluoride-G	227.8	ppm
2905	R0.9	19870603	Fluoride-G	13.5	ppm
2906	R0.9	19870728	Fluoride-G	100.9	ppm
2907	R0.9	19870915	Fluoride-G	33.8	ppm
2908	R0.9	19880412	Fluoride-G	223.2	ppm
2909	R0.9	19880607	Fluoride-G	92.6	ppm
2910	R0.9	19880725	Fluoride-G	165.3	ppm
2911	R0.9	19880914	Fluoride-G	669.4	ppm
2912	R0.9	19890605	Fluoride-G	40.0	ppm
2913	R0.9	19890801	Fluoride-G	63.0	ppm
2914	R0.9	19890912	Fluoride-G	159.0	ppm
2915	R0.9	19900410	Fluoride-G	184.0	ppm
2916	R0.9	19900606	Fluoride-G	58.0	ppm
2917	R0.9	19900801	Fluoride-G	93.0	ppm
2918	R0.9	19900917	Fluoride-G	113.0	ppm
2919	R0.9	19910610	Fluoride-G	12.0	ppm
2920	R0.9	19910724	Fluoride-G	60.0	ppm
2921	R1.3	19830608	Fluoride-G	27.0	ppm
2922	R1.4	19780606	Fluoride-A	28.0	ppm
2923	R1.4	19780731	Fluoride-A	57.0	ppm
2924	R1.4	19780901	Fluoride-A	72.0	ppm
2925	R1.4	19710601	Fluoride-G	6.0	ppm
2926	R1.4	19710701	Fluoride-G	15.0	ppm
2927	R1.4	19710901	Fluoride-G	25.0	ppm
2928	R1.4	19720601	Fluoride-G	15.0	ppm
2929	R1.4	19720701	Fluoride-G	15.0	ppm
2930	R1.4	19720901	Fluoride-G	28.0	ppm
2931	R1.4	19730701	Fluoride-G	25.0	ppm
2932	R1.4	19730901	Fluoride-G	32.0	ppm
2933	R1.4	19740601	Fluoride-G	22.0	ppm
2934	R1.4	19740701	Fluoride-G	33.0	ppm
2935	R1.4	19740901	Fluoride-G	49.0	ppm
2936	R1.4	19770614	Fluoride-G	14.0	ppm
2937	R1.4	19770915	Fluoride-G	46.0	ppm
2938	R1.4	19780407	Fluoride-G	71.0	ppm
2939	R1.4	19780606	Fluoride-G	28.0	ppm
2940	R1.4	19780808	Fluoride-G	57.0	ppm
2941	R1.4	19780901	Fluoride-G	72.0	ppm
2942	R1.4	19800608	Fluoride-G	22.0	ppm
2943	R1.4	19800813	Fluoride-G	19.0	ppm
2944	R1.4	19800915	Fluoride-G	16.0	ppm
2945	R1.4	19830426	Fluoride-G	83.0	ppm
2946	R1.4	19830426	Fluoride-G	83.0	ppm
2947	R1.4	19830608	Fluoride-G	39.0	ppm
2948	R1.4	19830921	Fluoride-G	44.0	ppm
2949	R1.4	19850610	Fluoride-G	23.0	ppm
2950	R1.4	19850724	Fluoride-G	27.7	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
2951	R1.4	19850916	Fluoride-G	27.6	ppm
2952	R1.4	19860611	Fluoride-G	12.8	ppm
2953	R1.4	19860731	Fluoride-G	22.1	ppm
2954	R1.4	19860916	Fluoride-G	37.0	ppm
2955	R1.4	19870420	Fluoride-G	54.7	ppm
2956	R1.4	19870603	Fluoride-G	5.6	ppm
2957	R1.4	19870728	Fluoride-G	24.4	ppm
2958	R1.4	19870915	Fluoride-G	23.3	ppm
2959	R1.4	19880412	Fluoride-G	51.2	ppm
2960	R1.4	19880607	Fluoride-G	18.3	ppm
2961	R1.4	19880725	Fluoride-G	31.7	ppm
2962	R1.4	19880914	Fluoride-G	51.8	ppm
2963	R1.4	19890605	Fluoride-G	11.0	ppm
2964	R1.4	19890801	Fluoride-G	27.0	ppm
2965	R1.4	19890912	Fluoride-G	41.0	ppm
2966	R1.4	19900410	Fluoride-G	32.0	ppm
2967	R1.4	19900606	Fluoride-G	10.0	ppm
2968	R1.4	19900801	Fluoride-G	24.0	ppm
2969	R1.4	19900917	Fluoride-G	47.0	ppm
2970	R1.4	19910610	Fluoride-G	14.0	ppm
2971	R1.4	19910724	Fluoride-G	30.0	ppm
2972	R2.1	19780606	Fluoride-A	19.0	ppm
2973	R2.1	19780731	Fluoride-A	57.0	ppm
2974	R2.1	19780901	Fluoride-A	25.0	ppm
2975	R2.1	19710601	Fluoride-G	6.0	ppm
2976	R2.1	19710701	Fluoride-G	17.0	ppm
2977	R2.1	19710901	Fluoride-G	22.0	ppm
2978	R2.1	19720601	Fluoride-G	15.0	ppm
2979	R2.1	19720701	Fluoride-G	27.0	ppm
2980	R2.1	19720901	Fluoride-G	25.0	ppm
2981	R2.1	19730601	Fluoride-G	10.0	ppm
2982	R2.1	19730701	Fluoride-G	23.0	ppm
2983	R2.1	19730901	Fluoride-G	33.0	ppm
2984	R2.1	19740601	Fluoride-G	17.0	ppm
2985	R2.1	19740701	Fluoride-G	27.0	ppm
2986	R2.1	19770614	Fluoride-G	10.0	ppm
2987	R2.1	19770915	Fluoride-G	37.0	ppm
2988	R2.1	19780407	Fluoride-G	37.0	ppm
2989	R2.1	19780606	Fluoride-G	19.0	ppm
2990	R2.1	19780808	Fluoride-G	57.0	ppm
2991	R2.1	19780901	Fluoride-G	25.0	ppm
2992	R2.1	19800608	Fluoride-G	17.0	ppm
2993	R2.1	19800813	Fluoride-G	13.0	ppm
2994	R2.1	19800915	Fluoride-G	15.0	ppm
2995	R2.1	19830426	Fluoride-G	70.0	ppm
2996	R2.1	19830426	Fluoride-G	70.0	ppm
2997	R2.1	19850610	Fluoride-G	23.0	ppm
2998	R2.1	19850724	Fluoride-G	19.8	ppm
2999	R2.1	19850916	Fluoride-G	16.5	ppm
3000	R2.1	19860611	Fluoride-G	18.8	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3001	R2.1	19860731	Fluoride-G	20.2	ppm
3002	R2.1	19860916	Fluoride-G	46.0	ppm
3003	R2.1	19870420	Fluoride-G	41.9	ppm
3004	R2.1	19870603	Fluoride-G	5.6	ppm
3005	R2.1	19870728	Fluoride-G	15.0	ppm
3006	R2.1	19870915	Fluoride-G	16.1	ppm
3007	R2.1	19880412	Fluoride-G	37.5	ppm
3008	R2.1	19880725	Fluoride-G	22.9	ppm
3009	R2.1	19880914	Fluoride-G	34.1	ppm
3010	R2.1	19890605	Fluoride-G	8.0	ppm
3011	R2.1	19890801	Fluoride-G	16.0	ppm
3012	R2.1	19890912	Fluoride-G	23.0	ppm
3013	R2.1	19900410	Fluoride-G	28.0	ppm
3014	R2.1	19900606	Fluoride-G	19.0	ppm
3015	R2.1	19900801	Fluoride-G	34.0	ppm
3016	R2.1	19900917	Fluoride-G	55.0	ppm
3017	R2.1	19910610	Fluoride-G	4.0	ppm
3018	R2.1	19910724	Fluoride-G	12.0	ppm
3019	S0.6	19780606	Fluoride-A	27.0	ppm
3020	S0.6	19780731	Fluoride-A	220.0	ppm
3021	S0.6	19780901	Fluoride-A	222.0	ppm
3022	S0.6	19770614	Fluoride-G	50.0	ppm
3023	S0.6	19770915	Fluoride-G	234.0	ppm
3024	S0.6	19780407	Fluoride-G	323.0	ppm
3025	S0.6	19780606	Fluoride-G	27.0	ppm
3026	S0.6	19780808	Fluoride-G	220.0	ppm
3027	S0.6	19780901	Fluoride-G	222.0	ppm
3028	S1.6	19780606	Fluoride-A	22.0	ppm
3029	S1.6	19780731	Fluoride-A	105.0	ppm
3030	S1.6	19780901	Fluoride-A	80.0	ppm
3031	S1.6	19770614	Fluoride-G	18.0	ppm
3032	S1.6	19770915	Fluoride-G	32.0	ppm
3033	S1.6	19780407	Fluoride-G	57.0	ppm
3034	S1.6	19780606	Fluoride-G	22.0	ppm
3035	S1.6	19780808	Fluoride-G	105.0	ppm
3036	S1.6	19780901	Fluoride-G	80.0	ppm
3037	U0.7	19780606	Fluoride-A	31.0	ppm
3038	U0.7	19780731	Fluoride-A	81.0	ppm
3039	U0.7	19780901	Fluoride-A	82.0	ppm
3040	U0.7	19770915	Fluoride-G	118.0	ppm
3041	U0.7	19780407	Fluoride-G	177.0	ppm
3042	U0.7	19780606	Fluoride-G	31.0	ppm
3043	U0.7	19780808	Fluoride-G	81.0	ppm
3044	U0.7	19780901	Fluoride-G	82.0	ppm
3045	UV1.1	19800608	Fluoride-G	17.0	ppm
3046	UV1.1	19800813	Fluoride-G	27.0	ppm
3047	UV1.1	19800915	Fluoride-G	29.0	ppm
3048	V1.4	19850610	Fluoride-A	28.0	ppm
3049	V1.4	19850724	Fluoride-A	35.2	ppm
3050	V1.4	19860611	Fluoride-A	12.7	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3051	V1.4	19860731	Fluoride-A	15.3	ppm
3052	V1.4	19870603	Fluoride-A	5.6	ppm
3053	V1.4	19870728	Fluoride-A	26.6	ppm
3054	V1.4	19870915	Fluoride-A	19.9	ppm
3055	V1.4	19880607	Fluoride-A	23.6	ppm
3056	V1.4	19880725	Fluoride-A	17.8	ppm
3057	V1.4	19880914	Fluoride-A	39.4	ppm
3058	V1.4	19890605	Fluoride-A	14.0	ppm
3059	V1.4	19890801	Fluoride-A	26.0	ppm
3060	V1.4	19890912	Fluoride-A	32.0	ppm
3061	V1.4	19900606	Fluoride-A	16.0	ppm
3062	V1.4	19900801	Fluoride-A	22.0	ppm
3063	V1.4	19900917	Fluoride-A	24.0	ppm
3064	V1.4	19910610	Fluoride-A	11.0	ppm
3065	V1.4	19910724	Fluoride-A	18.0	ppm
3066	V1.5	19890801	Fluoride-A	32.0	ppm
3067	V1.5	19890912	Fluoride-A	33.0	ppm
3068	V1.5	19900606	Fluoride-A	12.0	ppm
3069	V1.5	19900801	Fluoride-A	25.0	ppm
3070	V1.5	19900917	Fluoride-A	21.0	ppm
3071	V1.5	19910610	Fluoride-A	15.0	ppm
3072	V1.5	19910724	Fluoride-A	15.0	ppm
3073	VW1.3	19780606	Fluoride-A	16.0	ppm
3074	VW1.3	19780731	Fluoride-A	49.0	ppm
3075	VW1.3	19780901	Fluoride-A	89.0	ppm
3076	VW1.3	19770614	Fluoride-G	13.0	ppm
3077	VW1.3	19770915	Fluoride-G	27.0	ppm
3078	VW1.3	19780407	Fluoride-G	107.0	ppm
3079	VW1.3	19780606	Fluoride-G	16.0	ppm
3080	VW1.3	19780808	Fluoride-G	49.0	ppm
3081	VW1.3	19780901	Fluoride-G	89.0	ppm
3082	VW1.8	19860611	Fluoride-A	21.8	ppm
3083	VW1.8	19860731	Fluoride-A	8.8	ppm
3084	VW1.8	19870603	Fluoride-A	11.6	ppm
3085	VW1.8	19870915	Fluoride-A	15.0	ppm
3086	VW1.8	19910610	Fluoride-A	11.0	ppm
3087	VW1.8	19910724	Fluoride-A	18.0	ppm
3088	W1.0	19780606	Fluoride-A	82.0	ppm
3089	W1.0	19780731	Fluoride-A	65.0	ppm
3090	W1.0	19780901	Fluoride-A	83.0	ppm
3091	W1.0	19770614	Fluoride-G	18.0	ppm
3092	W1.0	19770915	Fluoride-G	77.0	ppm
3093	W1.0	19780606	Fluoride-G	82.0	ppm
3094	W1.0	19780808	Fluoride-G	65.0	ppm
3095	W1.0	19780901	Fluoride-G	83.0	ppm
3096	W2.0	19850610	Fluoride-A	27.0	ppm
3097	WX1.5	19780731	Fluoride-A	33.0	ppm
3098	WX1.5	19780901	Fluoride-A	72.0	ppm
3099	WX1.5	19770614	Fluoride-G	8.0	ppm
3100	WX1.5	19770915	Fluoride-G	33.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3101	WX1.5	19780407	Fluoride-G	190.0	ppm
3102	WX1.5	19780808	Fluoride-G	33.0	ppm
3103	WX1.5	19780901	Fluoride-G	72.0	ppm
3104	X1.4	19750616	Fluoride-A	12.0	ppm
3105	X1.4	19750729	Fluoride-A	21.0	ppm
3106	X1.4	19750922	Fluoride-A	31.0	ppm
3107	X1.5	19780606	Fluoride-A	21.0	ppm
3108	X1.5	19780731	Fluoride-A	53.0	ppm
3109	X1.5	19780901	Fluoride-A	68.0	ppm
3110	X1.5	19770614	Fluoride-G	20.0	ppm
3111	X1.5	19770915	Fluoride-G	47.0	ppm
3112	X1.5	19780407	Fluoride-G	185.0	ppm
3113	X1.5	19780606	Fluoride-G	21.0	ppm
3114	X1.5	19780808	Fluoride-G	53.0	ppm
3115	X1.5	19780901	Fluoride-G	68.0	ppm
3116	XA2.0	19780606	Fluoride-A	15.0	ppm
3117	XA2.0	19780731	Fluoride-A	39.0	ppm
3118	XA2.0	19780901	Fluoride-A	48.0	ppm
3119	XA2.0	19770614	Fluoride-G	10.0	ppm
3120	XA2.0	19770915	Fluoride-G	27.0	ppm
3121	XA2.0	19780407	Fluoride-G	74.0	ppm
3122	XA2.0	19780606	Fluoride-G	15.0	ppm
3123	XA2.0	19780808	Fluoride-G	39.0	ppm
3124	XA2.0	19780901	Fluoride-G	48.0	ppm
3125	P1	19921002	Fluoride-P	77.0	ppm
3126	P1	19920915	Fluoride-P	89.0	ppm
3127	P1	19920901	Fluoride-P	65.0	ppm
3128	P1	19920813	Fluoride-P	80.0	ppm
3129	P1	19920730	Fluoride-P	55.0	ppm
3130	P1	19920713	Fluoride-P	100.0	ppm
3131	P1	19920623	Fluoride-P	35.0	ppm
3132	P1	19920609	Fluoride-P	72.0	ppm
3133	P1	19911017	Fluoride-P	127.0	ppm
3134	P1	19911001	Fluoride-P	142.0	ppm
3135	P1	19910919	Fluoride-P	127.0	ppm
3136	P1	19910829	Fluoride-P	45.0	ppm
3137	P1	19910816	Fluoride-P	82.0	ppm
3138	P1	19910730	Fluoride-P	79.0	ppm
3139	P1	19910722	Fluoride-P	60.0	ppm
3140	P1	19910702	Fluoride-P	69.0	ppm
3141	P1	19910612	Fluoride-P	49.0	ppm
3142	P1	19900921	Fluoride-P	56.0	ppm
3143	P1	19900910	Fluoride-P	66.0	ppm
3144	P1	19900828	Fluoride-P	52.0	ppm
3145	P1	19900711	Fluoride-P	62.0	ppm
3146	P1	19900625	Fluoride-P	80.0	ppm
3147	P1	19900607	Fluoride-P	58.0	ppm
3148	P1	19900131	Fluoride-P	75.0	ppm
3149	P10	19921002	Fluoride-P	15.0	ppm
3150	P10	19920915	Fluoride-P	25.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3151	P10	19920901	Fluoride-P	15.0	ppm
3152	P10	19920813	Fluoride-P	30.0	ppm
3153	P10	19920730	Fluoride-P	17.0	ppm
3154	P10	19920713	Fluoride-P	22.0	ppm
3155	P10	19920623	Fluoride-P	10.0	ppm
3156	P10	19920609	Fluoride-P	17.0	ppm
3157	P10	19911017	Fluoride-P	18.0	ppm
3158	P10	19911001	Fluoride-P	33.0	ppm
3159	P10	19910919	Fluoride-P	57.0	ppm
3160	P10	19910829	Fluoride-P	14.0	ppm
3161	P10	19910816	Fluoride-P	15.0	ppm
3162	P10	19910730	Fluoride-P	19.0	ppm
3163	P10	19910722	Fluoride-P	17.0	ppm
3164	P10	19910702	Fluoride-P	8.0	ppm
3165	P10	19910612	Fluoride-P	13.0	ppm
3166	P10	19900921	Fluoride-P	12.0	ppm
3167	P10	19900828	Fluoride-P	22.0	ppm
3168	P10	19900816	Fluoride-P	59.0	ppm
3169	P10	19900711	Fluoride-P	36.0	ppm
3170	P10	19900625	Fluoride-P	38.0	ppm
3171	P10	19900607	Fluoride-P	10.0	ppm
3172	P10	19900131	Fluoride-P	40.0	ppm
3173	P11	19921002	Fluoride-P	43.0	ppm
3174	P11	19920915	Fluoride-P	52.0	ppm
3175	P11	19920901	Fluoride-P	25.0	ppm
3176	P11	19920813	Fluoride-P	67.0	ppm
3177	P11	19920730	Fluoride-P	15.0	ppm
3178	P11	19920713	Fluoride-P	12.0	ppm
3179	P11	19910829	Fluoride-P	10.0	ppm
3180	P11	19910816	Fluoride-P	10.0	ppm
3181	P11	19910730	Fluoride-P	22.0	ppm
3182	P11	19910722	Fluoride-P	17.0	ppm
3183	P11	19910702	Fluoride-P	22.0	ppm
3184	P11	19910612	Fluoride-P	20.0	ppm
3185	P11	19900921	Fluoride-P	8.0	ppm
3186	P11	19900910	Fluoride-P	20.0	ppm
3187	P11	19900828	Fluoride-P	22.0	ppm
3188	P11	19900711	Fluoride-P	28.0	ppm
3189	P11	19900625	Fluoride-P	30.0	ppm
3190	P11	19900607	Fluoride-P	20.0	ppm
3191	P11	19900131	Fluoride-P	27.0	ppm
3192	P12	19921002	Fluoride-A	20.0	ppm
3193	P12	19920915	Fluoride-A	33.0	ppm
3194	P12	19920901	Fluoride-A	17.0	ppm
3195	P12	19920813	Fluoride-A	32.0	ppm
3196	P12	19920730	Fluoride-A	20.0	ppm
3197	P12	19920713	Fluoride-A	12.0	ppm
3198	P12	19920623	Fluoride-A	12.0	ppm
3199	P12	19920609	Fluoride-A	23.0	ppm
3200	P12	19911017	Fluoride-A	37.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3201	P12	19911001	Fluoride-A	31.0	ppm
3202	P12	19910919	Fluoride-A	45.0	ppm
3203	P12	19910829	Fluoride-A	9.0	ppm
3204	P12	19910816	Fluoride-A	8.0	ppm
3205	P12	19910730	Fluoride-A	19.0	ppm
3206	P12	19910722	Fluoride-A	10.0	ppm
3207	P12	19910702	Fluoride-A	10.0	ppm
3208	P12	19910612	Fluoride-A	23.0	ppm
3209	P12	19900921	Fluoride-A	16.0	ppm
3210	P12	19900910	Fluoride-A	14.0	ppm
3211	P12	19900828	Fluoride-A	25.0	ppm
3212	P12	19900816	Fluoride-A	21.0	ppm
3213	P12	19900711	Fluoride-A	20.0	ppm
3214	P12	19900607	Fluoride-A	48.0	ppm
3215	P12	19900131	Fluoride-A	20.0	ppm
3216	P13	19921002	Fluoride-P	15.0	ppm
3217	P13	19920915	Fluoride-P	52.0	ppm
3218	P13	19920901	Fluoride-P	13.0	ppm
3219	P13	19920813	Fluoride-P	38.0	ppm
3220	P13	19920730	Fluoride-P	20.0	ppm
3221	P13	19920713	Fluoride-P	12.0	ppm
3222	P13	19920623	Fluoride-P	8.0	ppm
3223	P13	19920609	Fluoride-P	22.0	ppm
3224	P13	19911017	Fluoride-P	22.0	ppm
3225	P13	19911001	Fluoride-P	24.0	ppm
3226	P13	19910919	Fluoride-P	33.0	ppm
3227	P13	19910829	Fluoride-P	10.0	ppm
3228	P13	19910816	Fluoride-P	15.0	ppm
3229	P13	19910730	Fluoride-P	18.0	ppm
3230	P13	19910722	Fluoride-P	8.0	ppm
3231	P13	19910702	Fluoride-P	10.0	ppm
3232	P13	19910612	Fluoride-P	19.0	ppm
3233	P13	19900921	Fluoride-P	12.0	ppm
3234	P13	19900910	Fluoride-P	14.0	ppm
3235	P13	19900828	Fluoride-P	28.0	ppm
3236	P13	19900816	Fluoride-P	26.0	ppm
3237	P13	19900711	Fluoride-P	28.0	ppm
3238	P13	19900625	Fluoride-P	28.0	ppm
3239	P13	19900607	Fluoride-P	24.0	ppm
3240	P13	19900131	Fluoride-P	23.0	ppm
3241	P14	19921002	Fluoride-A	20.0	ppm
3242	P14	19920915	Fluoride-A	17.0	ppm
3243	P14	19920901	Fluoride-A	16.0	ppm
3244	P14	19920813	Fluoride-A	37.0	ppm
3245	P14	19920713	Fluoride-A	10.0	ppm
3246	P14	19920623	Fluoride-A	3.0	ppm
3247	P14	19920609	Fluoride-A	15.0	ppm
3248	P14	19911017	Fluoride-A	13.0	ppm
3249	P14	19910829	Fluoride-A	7.0	ppm
3250	P14	19910816	Fluoride-A	13.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3251	P14	19910730	Fluoride-A	20.0	ppm
3252	P14	19910722	Fluoride-A	10.0	ppm
3253	P14	19910702	Fluoride-A	4.0	ppm
3254	P14	19910612	Fluoride-A	11.0	ppm
3255	P14	19900921	Fluoride-A	8.0	ppm
3256	P14	19900910	Fluoride-A	11.0	ppm
3257	P14	19900828	Fluoride-A	21.0	ppm
3258	P14	19900816	Fluoride-A	13.0	ppm
3259	P14	19900711	Fluoride-A	17.0	ppm
3260	P14	19900607	Fluoride-A	18.0	ppm
3261	P14	19900131	Fluoride-A	11.0	ppm
3262	P15	19921002	Fluoride-P	27.0	ppm
3263	P15	19920915	Fluoride-P	30.0	ppm
3264	P15	19920901	Fluoride-P	18.0	ppm
3265	P15	19920813	Fluoride-P	38.0	ppm
3266	P15	19920730	Fluoride-P	17.0	ppm
3267	P15	19920713	Fluoride-P	12.0	ppm
3268	P15	19920623	Fluoride-P	8.0	ppm
3269	P15	19920609	Fluoride-P	18.0	ppm
3270	P15	19911017	Fluoride-P	10.0	ppm
3271	P15	19911001	Fluoride-P	32.0	ppm
3272	P15	19910919	Fluoride-P	42.0	ppm
3273	P15	19910829	Fluoride-P	23.0	ppm
3274	P15	19910816	Fluoride-P	18.0	ppm
3275	P15	19910730	Fluoride-P	24.0	ppm
3276	P15	19910722	Fluoride-P	17.0	ppm
3277	P15	19910702	Fluoride-P	11.0	ppm
3278	P15	19910612	Fluoride-P	19.0	ppm
3279	P15	19900921	Fluoride-P	10.0	ppm
3280	P15	19900910	Fluoride-P	16.0	ppm
3281	P15	19900828	Fluoride-P	20.0	ppm
3282	P15	19900816	Fluoride-P	35.0	ppm
3283	P15	19900711	Fluoride-P	66.0	ppm
3284	P15	19900625	Fluoride-P	32.0	ppm
3285	P15	19900607	Fluoride-P	26.0	ppm
3286	P15	19900131	Fluoride-P	29.0	ppm
3287	P17	19920915	Fluoride-P	15.0	ppm
3288	P17	19920901	Fluoride-P	15.0	ppm
3289	P17	19920813	Fluoride-P	27.0	ppm
3290	P17	19920730	Fluoride-P	10.0	ppm
3291	P17	19920713	Fluoride-P	13.0	ppm
3292	P17	19920623	Fluoride-P	15.0	ppm
3293	P17	19920609	Fluoride-P	23.0	ppm
3294	P17	19911001	Fluoride-P	22.0	ppm
3295	P17	19910919	Fluoride-P	24.0	ppm
3296	P17	19910829	Fluoride-P	8.0	ppm
3297	P17	19910730	Fluoride-P	15.0	ppm
3298	P17	19910722	Fluoride-P	10.0	ppm
3299	P17	19910702	Fluoride-P	10.0	ppm
3300	P17	19910612	Fluoride-P	15.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3301	P17	19900625	Fluoride-P	20.0	ppm
3302	P17	19900607	Fluoride-P	44.0	ppm
3303	P18	19921002	Fluoride-G	1228.0	ppm
3304	P18	19920915	Fluoride-G	1987.0	ppm
3305	P18	19920901	Fluoride-G	977.0	ppm
3306	P18	19920813	Fluoride-G	902.0	ppm
3307	P18	19920730	Fluoride-G	1152.0	ppm
3308	P18	19920713	Fluoride-G	468.0	ppm
3309	P18	19920623	Fluoride-G	618.0	ppm
3310	P18	19920609	Fluoride-G	860.0	ppm
3311	P18	19911017	Fluoride-G	434.0	ppm
3312	P18	19911001	Fluoride-G	322.0	ppm
3313	P18	19910919	Fluoride-G	322.0	ppm
3314	P18	19910829	Fluoride-G	175.0	ppm
3315	P18	19910816	Fluoride-G	290.0	ppm
3316	P18	19910730	Fluoride-G	237.0	ppm
3317	P18	19910722	Fluoride-G	183.0	ppm
3318	P18	19910702	Fluoride-G	160.0	ppm
3319	P18	19910612	Fluoride-G	134.0	ppm
3320	P18	19900921	Fluoride-G	300.0	ppm
3321	P18	19900910	Fluoride-G	360.0	ppm
3322	P18	19900828	Fluoride-G	400.0	ppm
3323	P18	19900816	Fluoride-G	355.0	ppm
3324	P18	19900711	Fluoride-G	400.0	ppm
3325	P18	19900625	Fluoride-G	440.0	ppm
3326	P18	19900607	Fluoride-G	380.0	ppm
3327	P18	19900131	Fluoride-G	375.0	ppm
3328	P18A	19921002	Fluoride-S	727.0	ppm
3329	P18A	19920915	Fluoride-S	485.0	ppm
3330	P18A	19920901	Fluoride-S	426.0	ppm
3331	P18A	19920813	Fluoride-S	317.0	ppm
3332	P18A	19920730	Fluoride-S	326.0	ppm
3333	P18A	19920713	Fluoride-S	326.0	ppm
3334	P18A	19920623	Fluoride-S	401.0	ppm
3335	P18A	19920609	Fluoride-S	434.0	ppm
3336	P18A	19911017	Fluoride-S	264.0	ppm
3337	P18A	19911001	Fluoride-S	150.0	ppm
3338	P18A	19910919	Fluoride-S	114.0	ppm
3339	P18A	19910829	Fluoride-S	31.0	ppm
3340	P18A	19910816	Fluoride-S	95.0	ppm
3341	P18A	19910730	Fluoride-S	128.0	ppm
3342	P18A	19910722	Fluoride-S	97.0	ppm
3343	P18A	19910702	Fluoride-S	77.0	ppm
3344	P18A	19910612	Fluoride-S	113.0	ppm
3345	P18A	19900921	Fluoride-S	154.0	ppm
3346	P18A	19900910	Fluoride-S	131.0	ppm
3347	P18A	19900828	Fluoride-S	280.0	ppm
3348	P18A	19900816	Fluoride-S	215.0	ppm
3349	P18A	19900711	Fluoride-S	320.0	ppm
3350	P18A	19900625	Fluoride-S	250.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3351	P18A	19900607	Fluoride-S	310.0	ppm
3352	P18A	19900131	Fluoride-S	320.0	ppm
3353	P19	19921002	Fluoride-G	351.0	ppm
3354	P19	19920915	Fluoride-G	434.0	ppm
3355	P19	19920901	Fluoride-G	226.0	ppm
3356	P19	19920813	Fluoride-G	384.0	ppm
3357	P19	19920730	Fluoride-G	351.0	ppm
3358	P19	19920713	Fluoride-G	167.0	ppm
3359	P19	19920623	Fluoride-G	217.0	ppm
3360	P19	19920609	Fluoride-G	367.0	ppm
3361	P19	19911001	Fluoride-G	175.0	ppm
3362	P19	19910919	Fluoride-G	150.0	ppm
3363	P19	19910829	Fluoride-G	54.0	ppm
3364	P19	19910816	Fluoride-G	130.0	ppm
3365	P19	19910730	Fluoride-G	113.0	ppm
3366	P19	19910722	Fluoride-G	80.0	ppm
3367	P19	19910702	Fluoride-G	69.0	ppm
3368	P19	19910612	Fluoride-G	94.0	ppm
3369	P19	19900921	Fluoride-G	80.0	ppm
3370	P19	19900910	Fluoride-G	80.0	ppm
3371	P19	19900828	Fluoride-G	72.0	ppm
3372	P19	19900816	Fluoride-G	112.0	ppm
3373	P19	19900711	Fluoride-G	170.0	ppm
3374	P19	19900625	Fluoride-G	84.0	ppm
3375	P19	19900607	Fluoride-G	68.0	ppm
3376	P19	19900131	Fluoride-G	122.0	ppm
3377	P19A	19921002	Fluoride-S	159.0	ppm
3378	P19A	19920915	Fluoride-S	142.0	ppm
3379	P19A	19920901	Fluoride-S	142.0	ppm
3380	P19A	19920813	Fluoride-S	175.0	ppm
3381	P19A	19920730	Fluoride-S	137.0	ppm
3382	P19A	19920713	Fluoride-S	117.0	ppm
3383	P19A	19920623	Fluoride-S	84.0	ppm
3384	P19A	19920609	Fluoride-S	200.0	ppm
3385	P19A	19911017	Fluoride-S	57.0	ppm
3386	P19A	19911001	Fluoride-S	69.0	ppm
3387	P19A	19910919	Fluoride-S	62.0	ppm
3388	P19A	19910829	Fluoride-S	17.0	ppm
3389	P19A	19910816	Fluoride-S	60.0	ppm
3390	P19A	19910730	Fluoride-S	71.0	ppm
3391	P19A	19910722	Fluoride-S	42.0	ppm
3392	P19A	19910702	Fluoride-S	55.0	ppm
3393	P19A	19910612	Fluoride-S	67.0	ppm
3394	P19A	19900921	Fluoride-S	70.0	ppm
3395	P19A	19900910	Fluoride-S	74.0	ppm
3396	P19A	19900828	Fluoride-S	95.0	ppm
3397	P19A	19900711	Fluoride-S	130.0	ppm
3398	P19A	19900625	Fluoride-S	74.0	ppm
3399	P19A	19900607	Fluoride-S	68.0	ppm
3400	P19A	19900131	Fluoride-S	100.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3401	P2	19921002	Fluoride-P	70.0	ppm
3402	P2	19920915	Fluoride-P	127.0	ppm
3403	P2	19920901	Fluoride-P	77.0	ppm
3404	P2	19920813	Fluoride-P	140.0	ppm
3405	P2	19920730	Fluoride-P	80.0	ppm
3406	P2	19920713	Fluoride-P	75.0	ppm
3407	P2	19920623	Fluoride-P	45.0	ppm
3408	P2	19920609	Fluoride-P	84.0	ppm
3409	P2	19911017	Fluoride-P	205.0	ppm
3410	P2	19911001	Fluoride-P	120.0	ppm
3411	P2	19910919	Fluoride-P	155.0	ppm
3412	P2	19910829	Fluoride-P	27.0	ppm
3413	P2	19910816	Fluoride-P	53.0	ppm
3414	P2	19910730	Fluoride-P	94.0	ppm
3415	P2	19910722	Fluoride-P	88.0	ppm
3416	P2	19910702	Fluoride-P	96.0	ppm
3417	P2	19910612	Fluoride-P	84.0	ppm
3418	P2	19900921	Fluoride-P	54.0	ppm
3419	P2	19900910	Fluoride-P	58.0	ppm
3420	P2	19900828	Fluoride-P	74.0	ppm
3421	P2	19900816	Fluoride-P	46.0	ppm
3422	P2	19900711	Fluoride-P	90.0	ppm
3423	P2	19900625	Fluoride-P	76.0	ppm
3424	P2	19900607	Fluoride-P	52.0	ppm
3425	P2	19900131	Fluoride-P	116.0	ppm
3426	P20	19921002	Fluoride-G	50.0	ppm
3427	P20	19920915	Fluoride-G	50.0	ppm
3428	P20	19920901	Fluoride-G	48.0	ppm
3429	P20	19920813	Fluoride-G	42.0	ppm
3430	P20	19920713	Fluoride-G	38.0	ppm
3431	P20	19920623	Fluoride-G	43.0	ppm
3432	P20	19920609	Fluoride-G	48.0	ppm
3433	P20	19911017	Fluoride-G	20.0	ppm
3434	P20	19911001	Fluoride-G	37.0	ppm
3435	P20	19910919	Fluoride-G	45.0	ppm
3436	P20	19910829	Fluoride-G	13.0	ppm
3437	P20	19910816	Fluoride-G	32.0	ppm
3438	P20	19910730	Fluoride-G	43.0	ppm
3439	P20	19910722	Fluoride-G	17.0	ppm
3440	P20	19910702	Fluoride-G	17.0	ppm
3441	P20	19910612	Fluoride-G	26.0	ppm
3442	P20	19900910	Fluoride-G	29.0	ppm
3443	P20	19900828	Fluoride-G	40.0	ppm
3444	P20	19900816	Fluoride-G	27.0	ppm
3445	P20	19900711	Fluoride-G	54.0	ppm
3446	P20	19900625	Fluoride-G	24.0	ppm
3447	P20	19900607	Fluoride-G	32.0	ppm
3448	P20	19900131	Fluoride-G	41.0	ppm
3449	P20A	19921002	Fluoride-S	13.0	ppm
3450	P20A	19920915	Fluoride-S	27.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3451	P20A	19920813	Fluoride-S	28.0	ppm
3452	P20A	19920713	Fluoride-S	20.0	ppm
3453	P20A	19920623	Fluoride-S	33.0	ppm
3454	P20A	19920609	Fluoride-S	33.0	ppm
3455	P20A	19911017	Fluoride-S	12.0	ppm
3456	P20A	19911001	Fluoride-S	27.0	ppm
3457	P20A	19910919	Fluoride-S	28.0	ppm
3458	P20A	19910829	Fluoride-S	8.0	ppm
3459	P20A	19910816	Fluoride-S	17.0	ppm
3460	P20A	19910730	Fluoride-S	30.0	ppm
3461	P20A	19910722	Fluoride-S	12.0	ppm
3462	P20A	19910702	Fluoride-S	13.0	ppm
3463	P20A	19910612	Fluoride-S	15.0	ppm
3464	P20A	19900921	Fluoride-S	22.0	ppm
3465	P20A	19900910	Fluoride-S	25.0	ppm
3466	P20A	19900828	Fluoride-S	27.0	ppm
3467	P20A	19900816	Fluoride-S	32.0	ppm
3468	P20A	19900711	Fluoride-S	54.0	ppm
3469	P20A	19900625	Fluoride-S	16.0	ppm
3470	P20A	19900607	Fluoride-S	26.0	ppm
3471	P20A	19900131	Fluoride-S	39.0	ppm
3472	P21	19921002	Fluoride-A	12.0	ppm
3473	P3	19921002	Fluoride-A	18.0	ppm
3474	P3	19920915	Fluoride-A	30.0	ppm
3475	P3	19920901	Fluoride-A	17.0	ppm
3476	P3	19920813	Fluoride-A	30.0	ppm
3477	P3	19920730	Fluoride-A	13.0	ppm
3478	P3	19920713	Fluoride-A	25.0	ppm
3479	P3	19920623	Fluoride-A	8.0	ppm
3480	P3	19920609	Fluoride-A	22.0	ppm
3481	P3	19911017	Fluoride-A	27.0	ppm
3482	P3	19911001	Fluoride-A	34.0	ppm
3483	P3	19910919	Fluoride-A	32.0	ppm
3484	P3	19910829	Fluoride-A	12.0	ppm
3485	P3	19910816	Fluoride-A	18.0	ppm
3486	P3	19910730	Fluoride-A	12.0	ppm
3487	P3	19910722	Fluoride-A	8.0	ppm
3488	P3	19910612	Fluoride-A	20.0	ppm
3489	P3	19900921	Fluoride-A	14.0	ppm
3490	P3	19900910	Fluoride-A	22.0	ppm
3491	P3	19900828	Fluoride-A	16.0	ppm
3492	P3	19900816	Fluoride-A	24.0	ppm
3493	P3	19900711	Fluoride-A	22.0	ppm
3494	P3	19900607	Fluoride-A	26.0	ppm
3495	P3	19900131	Fluoride-A	20.0	ppm
3496	P4	19921002	Fluoride-P	25.0	ppm
3497	P4	19920915	Fluoride-P	42.0	ppm
3498	P4	19920901	Fluoride-P	27.0	ppm
3499	P4	19920813	Fluoride-P	50.0	ppm
3500	P4	19920730	Fluoride-P	14.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3501	P4	19920713	Fluoride-P	27.0	ppm
3502	P4	19920623	Fluoride-P	20.0	ppm
3503	P4	19920609	Fluoride-P	23.0	ppm
3504	P4	19911017	Fluoride-P	53.0	ppm
3505	P4	19911001	Fluoride-P	33.0	ppm
3506	P4	19910919	Fluoride-P	33.0	ppm
3507	P4	19910829	Fluoride-P	14.0	ppm
3508	P4	19910816	Fluoride-P	20.0	ppm
3509	P4	19910730	Fluoride-P	19.0	ppm
3510	P4	19910722	Fluoride-P	27.0	ppm
3511	P4	19910702	Fluoride-P	15.0	ppm
3512	P4	19910612	Fluoride-P	23.0	ppm
3513	P4	19900921	Fluoride-P	14.0	ppm
3514	P4	19900910	Fluoride-P	21.0	ppm
3515	P4	19900828	Fluoride-P	19.0	ppm
3516	P4	19900816	Fluoride-P	25.0	ppm
3517	P4	19900711	Fluoride-P	36.0	ppm
3518	P4	19900625	Fluoride-P	28.0	ppm
3519	P4	19900607	Fluoride-P	28.0	ppm
3520	P4	19900131	Fluoride-P	31.0	ppm
3521	P5	19921002	Fluoride-A	10.0	ppm
3522	P5	19920915	Fluoride-A	17.0	ppm
3523	P5	19920901	Fluoride-A	13.0	ppm
3524	P5	19920813	Fluoride-A	30.0	ppm
3525	P5	19920730	Fluoride-A	12.0	ppm
3526	P5	19920713	Fluoride-A	23.0	ppm
3527	P5	19920623	Fluoride-A	8.0	ppm
3528	P5	19920609	Fluoride-A	15.0	ppm
3529	P5	19911017	Fluoride-A	13.0	ppm
3530	P5	19911001	Fluoride-A	27.0	ppm
3531	P5	19910919	Fluoride-A	33.0	ppm
3532	P5	19910829	Fluoride-A	8.0	ppm
3533	P5	19910816	Fluoride-A	10.0	ppm
3534	P6	19921002	Fluoride-P	10.0	ppm
3535	P6	19920915	Fluoride-P	23.0	ppm
3536	P6	19920901	Fluoride-P	13.0	ppm
3537	P6	19920813	Fluoride-P	33.0	ppm
3538	P6	19920730	Fluoride-P	8.0	ppm
3539	P6	19920713	Fluoride-P	23.0	ppm
3540	P6	19920623	Fluoride-P	8.0	ppm
3541	P6	19920609	Fluoride-P	18.0	ppm
3542	P6	19911017	Fluoride-P	30.0	ppm
3543	P6	19911001	Fluoride-P	32.0	ppm
3544	P6	19910919	Fluoride-P	33.0	ppm
3545	P6	19910829	Fluoride-P	10.0	ppm
3546	P6	19910816	Fluoride-P	14.0	ppm
3547	P6	19910730	Fluoride-P	19.0	ppm
3548	P6	19910722	Fluoride-P	8.0	ppm
3549	P6	19910702	Fluoride-P	23.0	ppm
3550	P6	19910612	Fluoride-P	15.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3551	P6	19900921	Fluoride-P	12.0	ppm
3552	P6	19900910	Fluoride-P	19.0	ppm
3553	P6	19900828	Fluoride-P	12.0	ppm
3554	P6	19900816	Fluoride-P	24.0	ppm
3555	P6	19900711	Fluoride-P	26.0	ppm
3556	P6	19900625	Fluoride-P	22.0	ppm
3557	P6	19900607	Fluoride-P	18.0	ppm
3558	P6	19900131	Fluoride-P	22.0	ppm
3559	P7	19921002	Fluoride-A	10.0	ppm
3560	P7	19920901	Fluoride-A	10.0	ppm
3561	P7	19910919	Fluoride-A	38.0	ppm
3562	P7	19910829	Fluoride-A	18.0	ppm
3563	P7	19910730	Fluoride-A	13.0	ppm
3564	P7	19910722	Fluoride-A	7.0	ppm
3565	P7	19910612	Fluoride-A	15.0	ppm
3566	P7	19900921	Fluoride-A	12.0	ppm
3567	P7	19900910	Fluoride-A	19.0	ppm
3568	P7	19900828	Fluoride-A	26.0	ppm
3569	P7	19900816	Fluoride-A	24.0	ppm
3570	P7	19900711	Fluoride-A	24.0	ppm
3571	P7	19900607	Fluoride-A	12.0	ppm
3572	P7	19900131	Fluoride-A	15.0	ppm
3573	P8	19921002	Fluoride-P	15.0	ppm
3574	P8	19920915	Fluoride-P	23.0	ppm
3575	P8	19920901	Fluoride-P	10.0	ppm
3576	P8	19920623	Fluoride-P	10.0	ppm
3577	P8	19920609	Fluoride-P	22.0	ppm
3578	P8	19911017	Fluoride-P	37.0	ppm
3579	P8	19911001	Fluoride-P	27.0	ppm
3580	P8	19910919	Fluoride-P	28.0	ppm
3581	P8	19910730	Fluoride-P	14.0	ppm
3582	P8	19910722	Fluoride-P	8.0	ppm
3583	P8	19910702	Fluoride-P	8.0	ppm
3584	P8	19910612	Fluoride-P	13.0	ppm
3585	P8	19900921	Fluoride-P	9.0	ppm
3586	P8	19900910	Fluoride-P	15.0	ppm
3587	P8	19900828	Fluoride-P	29.0	ppm
3588	P8	19900711	Fluoride-P	19.0	ppm
3589	P8	19900625	Fluoride-P	10.0	ppm
3590	P8	19900131	Fluoride-P	14.0	ppm
3591	P9	19921002	Fluoride-A	15.0	ppm
3592	P9	19920901	Fluoride-A	12.0	ppm
3593	P9	19920813	Fluoride-A	24.0	ppm
3594	P9	19920713	Fluoride-A	12.0	ppm
3595	P9	19920623	Fluoride-A	10.0	ppm
3596	P9	19920609	Fluoride-A	18.0	ppm
3597	P9	19911017	Fluoride-A	52.0	ppm
3598	P9	19911001	Fluoride-A	32.0	ppm
3599	P9	19910919	Fluoride-A	37.0	ppm
3600	P9	19910829	Fluoride-A	14.0	ppm

ID	STAID	SAMP DATE	CHEM NAME	CONC	UNITS
3601	P9	19910816	Fluoride-A	10.0	ppm
3602	P9	19910730	Fluoride-A	13.0	ppm
3603	P9	19910722	Fluoride-A	10.0	ppm
3604	P9	19910702	Fluoride-A	9.0	ppm
3605	P9	19910612	Fluoride-A	13.0	ppm
3606	P9	19900921	Fluoride-A	10.0	ppm
3607	P9	19900910	Fluoride-A	15.0	ppm
3608	P9	19900828	Fluoride-A	16.0	ppm
3609	P9	19900816	Fluoride-A	20.0	ppm
3610	P9	19900711	Fluoride-A	19.0	ppm
3611	P9	19900625	Fluoride-A	24.0	ppm
3612	P9	19900607	Fluoride-A	20.0	ppm
3613	P9	19900131	Fluoride-A	14.0	ppm
3614	END OF DAT	0		0.0	
0		0		0.0	

Appendix E
Forage Sampling Results Summaries 2005 – 2007

HDR | ONE COMPANY *Many Solutions*℠

Memo

To: Jonathan Witt, J.R. Simplot Company	
From: Corrie Hugaboom, HDR	Project: Fluoride in Forage, Pocatello
CC: Mike Murray, HDR	
Date: July 21, 2008	Job No: 85020

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Subject: Summary of 2005-2007 Fluoride in Forage Studies

The purpose of this memo is to summarize the fluoride in forage studies conducted in the vicinity of Simplot's Don Plant near Pocatello, Idaho, from 2005 through 2007.

Background

As part of its Tier I Operating Permit, Simplot conducts ambient fluoride monitoring in forage grown in the Don Plant Area. To support monitoring efforts, the area around the Simplot Don Plant has been divided into four general target areas based on predicted deposition patterns and previous forage data (*Fluoride in Forage Sampling Plan,* Newfields, 2005). Area 1 is the closest to the Don Plant and Areas 2, 3, and 4 are progressively further from the facility. For each year, 15 locations were sampled biweekly from June through September. For the 2005 through 2007 monitoring seasons, five sampling sites were located in Area 1, five in Area 2, three in Area 3, and two in Area 4. Sampling locations from previous years were sampled in subsequent seasons if possible. Between the 2005 and 2007 sampling seasons, development led to a change in sampling location at three sites (Site # 3 became Site # 3A; Site # 7 became Site # 7A, and Site # 65 became Site # 65A). In each case, the new site was close to the previous one, with similar forage and irrigation practices.

Average concentrations were calculated each season on a monthly, bimonthly, and annual basis and compared to the standards (80, 60, and 40 parts-per-million (ppm), respectively). If the average concentration was less than or equal to the standard, then compliance with the standard was satisfied. If the average concentration was greater than the standard, then the standard was exceeded and Simplot was required to notify affected farmers or landowners in accordance with the *Fluoride in Forage Notification Plan* (Appendix D of the *Fluoride in Forage Sampling Plan).*

New sampling procedures were in effect beginning in 2005 per the *Fluoride in Forage Sampling Plan*. These new procedures included sampling from areas farthest from the plant first, cleaning shears after each sampling location, sampling along two randomly selected 100-foot transect directions, and shipment of samples using standard chain of custody procedures. Sampling protocol are described in detail in the *Fluoride in Forage Sampling Plan* (Newfields, 2005).

Three figures are attached depicting the annual average fluoride concentrations at each sampling site for 2005, 2006, and 2007 as portrayed in the annual reports for each of those sampling seasons. Sampling results for the 2005 through 2007 growing seasons are summarized in the attached table and charts.

2005 Results

No monitoring locations exceeded fluoride standards during the 2005 growing season. The highest annual average fluoride concentration was at Area 1, Site # 9, at 40.0 ppm. The plant vigor of the pasture grass at this site during the season was generally green to yellow-green and healthy. The site with the lowest annual average fluoride concentration was Area 3, Site # 72, at 13.5 ppm. The plant vigor of the pasture grass at this site during the season was generally green and healthy.

2006 Results

The only site that exceeded fluoride standards during the 2006 growing season was Area 1, Site # 9. The monthly standard of 80 ppm was exceeded twice during the season for the two consecutive sampling events occurring July 27 and August 10 (108 ppm) and the two events occurring August 10 and August 24 (117 ppm). The bi-monthly standard of 60 ppm was exceeded for Area 1, Site # 9 for the four consecutive sampling events occurring between June 29 and August 10 (85.8 ppm), July 13 and August 24 (94.3 ppm), July 27 and September 7 (90.3), and August 10 and September 21 (92.3). The annual standard of 40 ppm was exceeded (72.0 ppm).

The plant vigor of the pasture grass at Site # 9 during the season ranged from good to fair, and at times stressed. Simplot worked with the landowner on ways of improving crop health and irrigation management. Simplot cut the pasture grass for the landowner on September 6, 2006, and also made voluntary improvements to the sprinkler irrigation system on this property.

All other monitoring locations met the fluoride in forage standards. The site with the lowest annual average fluoride concentration was Area 3, Site # 72, at 12.2 ppm. The plant vigor of the pasture grass at this site during the season was generally green and healthy.

2007 Results

The only site that exceeded fluoride standards during the 2007 growing season was Area 1, Site # 3A. The monthly standard of 80 ppm was exceeded one time during the season (for sampling events July 12 and July 26 at 84.0 ppm). The bi-monthly standard of 60 ppm was exceeded three times during the season for the four consecutive sampling events occurring between June 14 and July 26 (65.5 ppm), June 28 and August 9 (68.0 ppm), and July 12 and August 23 (61.3 ppm). The annual standard of 40 ppm was exceeded (48.8 ppm).

The plant vigor of the pasture grass at Site # 3A during the season ranged from good to fair, and at times stressed. It was often coated by a white, powdery residue thought to originate from the cement plant located directly across Philbin Road. Again, Simplot worked with the landowner on ways of improving crop health and irrigation management, making voluntary improvements to the sprinkler irrigation system on this property.

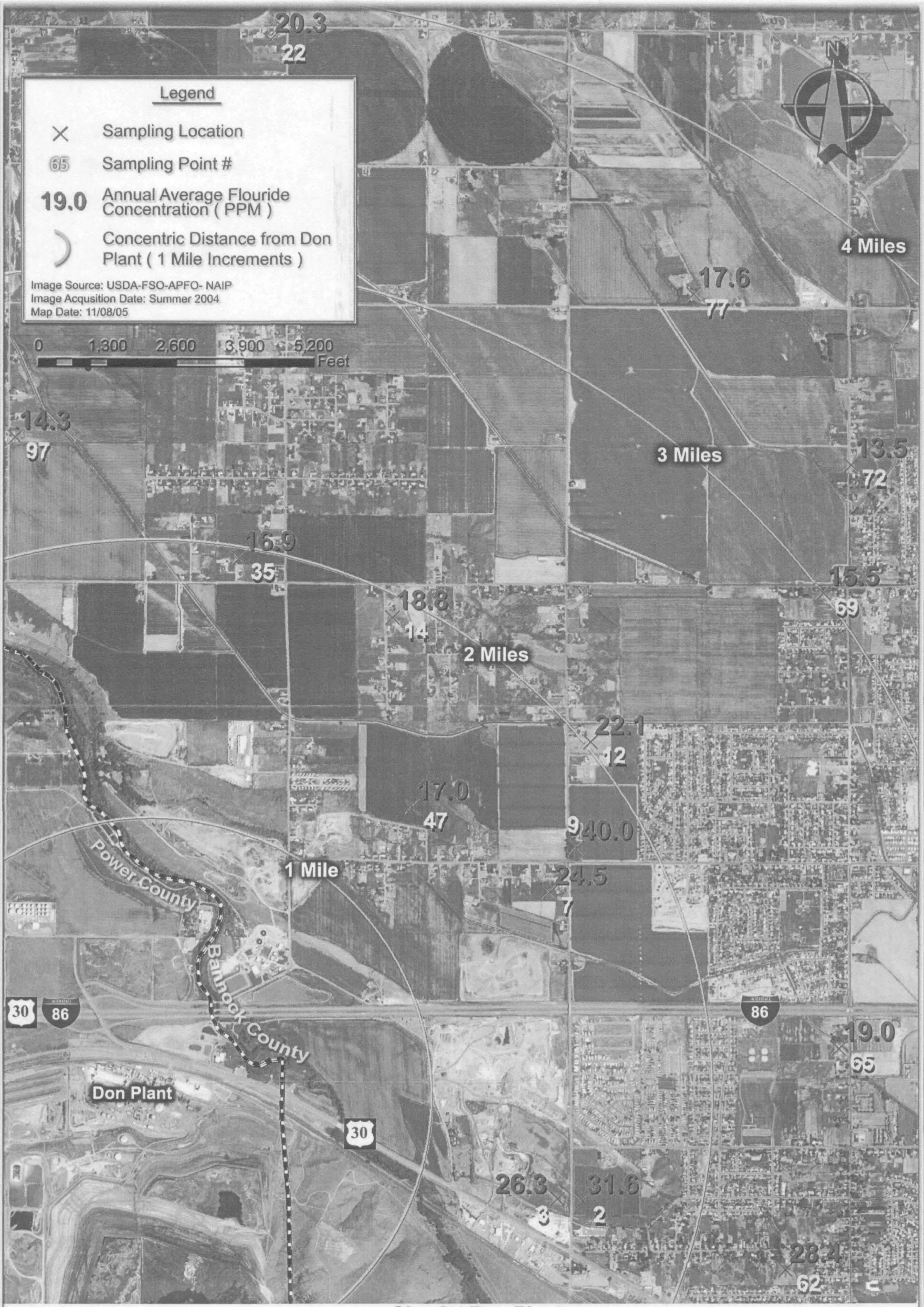
All other monitoring locations met the fluoride in forage standards. The site with the lowest annual average fluoride concentration was Area 3, Site #72, at 13.1 ppm. The plant vigor of the pasture grass at this site during the season was generally green and healthy.

General Conclusions

As shown in the attached charts, many sites showed a slight upward trend in fluoride concentration in mid-summer (usually peaking in July or August) and then declining slightly thereafter. This trend is more evident in sites with higher fluoride concentrations. Trends are barely visible in sites farther from the plant (such as Area 3) where fluoride concentrations are generally lower.

It has been observed during field sampling that some sites show spikes in fluoride concentrations during or immediately following periods of crop stress generally associated with poor irrigation practices. For example, in 2005 Area 1 # 3 was cut in mid-June, and the field did not recover immediately following that cutting, due to lack of irrigation. The fluoride concentration spiked to 62 ppm in late July, just before the site was observed to be recovering in early August, due to improved irrigation management.

Generally, the highest annual average fluoride concentrations have been present in Areas 1 and 2, which are the areas closest to the Don Plant. However, within these areas, the sites with the highest concentrations were not necessarily those that are the closest to the plant. For example, Site # 9 has generally had high fluoride concentrations relative to other sites in Area 1, but this site is not the closest to the plant within Area 1. In 2006, when Site # 9 exceeded annual fluoride standards (72.0 ppm), the annual average fluoride at the sites immediately upwind and downwind (Area 1 # 7 and Area 2 # 12) were only 23.7 ppm and 25.5 ppm, respectively.



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Simplot Don Plant

2005 Annual Forage Flouride Report

Simplot

Figure 1 - Sample Locations and Annual Flouride Concentrations

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Simplot Don Plant
2006 Annual Forage Flouride Report

Simplot

Figure 1 - Sample Locations and Annual Flouride Concentrations

HDR | ONE COMPANY *Many Solutions*

Simplot Don Plant
2007 Annual Forage Flouride Report

Simplot

Figure 1 - Sample Locations and Annual Flouride Concentrations

Sampling Area	Site #	Location (Owner)	Sampling Year	Forage Grown	Irrigation Method	Sampling Date	Fluoride (ppm, dry wt)	Monthly Averages	Bi-Monthly Averages	Yearly Averages
Area 1	Site # 2	(b) (6) [redacted]	2005	Alfalfa	Sprinkler	6/9/2005	14	20.5		
						6/23/2005	27	24.0	21.3	
						7/7/2005	21	22.0	23.5	
						7/21/2005	23	23.0	22.8	
						8/4/2005	23	23.5	24.0	26.3
						8/18/2005	24	25.0	27.8	
						9/1/2005	26	32.0	32.3	
						9/15/2005	38	39.5		
						9/29/2005	41			
			2006	Grass/Alfalfa	Sprinkler	6/15/2006	16	23.0		
						6/29/2006	30	32.0	29.5	
						7/13/2006	34	36.0	31.8	
						7/27/2006	38	31.5	36.5	
						8/10/2006	25	37.0	36.0	29.9
						8/24/2006	49	40.5	30.3	
						9/7/2006	32	23.5		
						9/21/2006	15			
			2007	Grass/Alfalfa	Sprinkler	6/14/2007	17	28.5		
						6/28/2007	40	43.5	29.5	
						7/12/2007	47	30.5	31.8	
						7/26/2007	14	20.0	26.8	
						8/9/2007	26	23.0	20.3	26.1
						8/23/2007	20	20.5	22.8	
						9/6/2007	21	22.5		
						9/20/2007	24			
Area 1	Site # 3	(b) (6) [redacted]	2005	Grass/Alfalfa	Flood	6/9/2005	14	14.0		
						6/23/2005	–	25.0	33.7	
						7/7/2005	25	43.5	38.0	
						7/21/2005	62	44.5	34.5	
						8/4/2005	27	25.5	37.3	31.6
						8/18/2005	24	30.0	30.0	
						9/1/2005	36	34.5	31.0	
						9/15/2005	33	33.0		
						9/29/2005	–			
			2006	Alfalfa/Oats	Flood	6/15/2006	18	22.0		
						6/29/2006	26	29.5	30.5	
						7/13/2006	33	39.0	34.5	
						7/27/2006	45	39.5	42.5	
						8/10/2006	34	46.0	47.8	35.5
						8/24/2006	58	56.0	40.5	
						9/7/2006	54	35.0		
						9/21/2006	16			
	Site # 3A	(b) (6) [redacted]	2007	Pasture Grass	Sprinkler	6/14/2007	31	47.0		
						6/28/2007	63	76.5	65.5	
						7/12/2007	90	84.0	68.0	
						7/26/2007	78	59.5	61.3	
						8/9/2007	41	38.5	44.8	48.8
						8/23/2007	36	30.0	32.0	
						9/6/2007	24	25.5		
						9/20/2007	27			
Area 1	Site # 7	(b) (6) [redacted]	2005	Alfalfa	Sprinkler	6/9/2005	14	17.5		
						6/23/2005	21	20.0	18.0	
						7/7/2005	19	19.0	23.7	
						7/21/2005	–	31.0	24.0	
						8/4/2005	31	26.5	25.7	24.5
						8/18/2005	22	23.0	26.3	
						9/1/2005	24	26.0	27.8	
						9/15/2005	28	32.5		
						9/29/2005	37			
			2006	Alfalfa	Sprinkler	6/15/2006	13	19.0		
						6/29/2006	25	25.0	19.3	
						7/13/2006	–	20.0	24.0	
						7/27/2006	20	23.5	28.0	
						8/10/2006	27	32.0	26.8	23.7
						8/24/2006	37	30.0	27.0	
						9/7/2006	23	22.0		
						9/21/2006	21			
	Site # 7A	(b) (6) [redacted]	2007	Grass/Alfalfa	Flood	6/14/2007	16	15.5		
						6/28/2007	15	29.0	21.8	
						7/12/2007	43	28.0	21.8	
						7/26/2007	13	14.5	22.3	
						8/9/2007	16	16.5	15.5	19.8
						8/23/2007	17	16.5	17.8	
						9/6/2007	16	19.0		
						9/20/2007	22			
Area 1	Site # 9	(b) (6) [redacted]	2005	Pasture Grass	Sprinkler	6/9/2005	15	15.5		
						6/23/2005	16	23.0	29.0	
						7/7/2005	30	42.5	37.0	
						7/21/2005	55	51.0	39.3	
						8/4/2005	47	36.0	52.3	40.0
						8/18/2005	25	53.5	47.8	
						9/1/2005	82	59.5	49.3	
						9/15/2005	37	45.0		
						9/29/2005	53			
			2006	Pasture Grass	Sprinkler	6/15/2006	14	32.0		
						6/29/2006	50	63.5	51.8	
						7/13/2006	77	71.5	85.8	
						7/27/2006	66	108.0	94.3	
						8/10/2006	150	117.0	90.3	72.0
						8/24/2006	84	72.5	92.3	
						9/7/2006	61	67.5		
						9/21/2006	74			
			2007	Pasture Grass	Sprinkler	6/14/2007	16	19.0		
						6/28/2007	22	31.0	29.8	
						7/12/2007	40	40.5	38.8	
						7/26/2007	41	46.5	42.8	
						8/9/2007	52	45.0	37.5	32.4
						8/23/2007	38	28.5	35.0	
						9/6/2007	19	25.0		
						9/20/2007	31			
Area 1	Site # 47	(b) (6) [redacted]	2005	Grass/Alfalfa	Sprinkler	6/9/2005	8.7	9.9		
						6/23/2005	11	13.0	12.4	
						7/7/2005	15	15.0	14.5	
						7/21/2005	15	16.0	16.8	
						8/4/2005	17	18.5	18.3	17.0
						8/18/2005	20	20.5	19.0	
						9/1/2005	21	19.5	21.5	
						9/15/2005	18	22.5		
						9/29/2005	27			
			2006	Grass/Alfalfa	Sprinkler	6/15/2006	12	16.0		
						6/29/2006	20	18.5	17.0	
						7/13/2006	17	18.0	18.8	
						7/27/2006	19	19.0	20.3	
						8/10/2006	19	22.5	20.0	18.1
						8/24/2006	26	21.0	19.3	
						9/7/2006	16	16.0		
						9/21/2006	16			
			2007	Grass/Alfalfa	Sprinkler	6/14/2007	12	11.5		
						6/28/2007	11	20.5	16.3	
						7/12/2007	30	21.0	18.8	
						7/26/2007	12	17.0	21.0	
						8/9/2007	22	21.0	17.3	17.4
						8/23/2007	20	17.5	18.5	
						9/6/2007	15	16.0		
						9/20/2007	17			

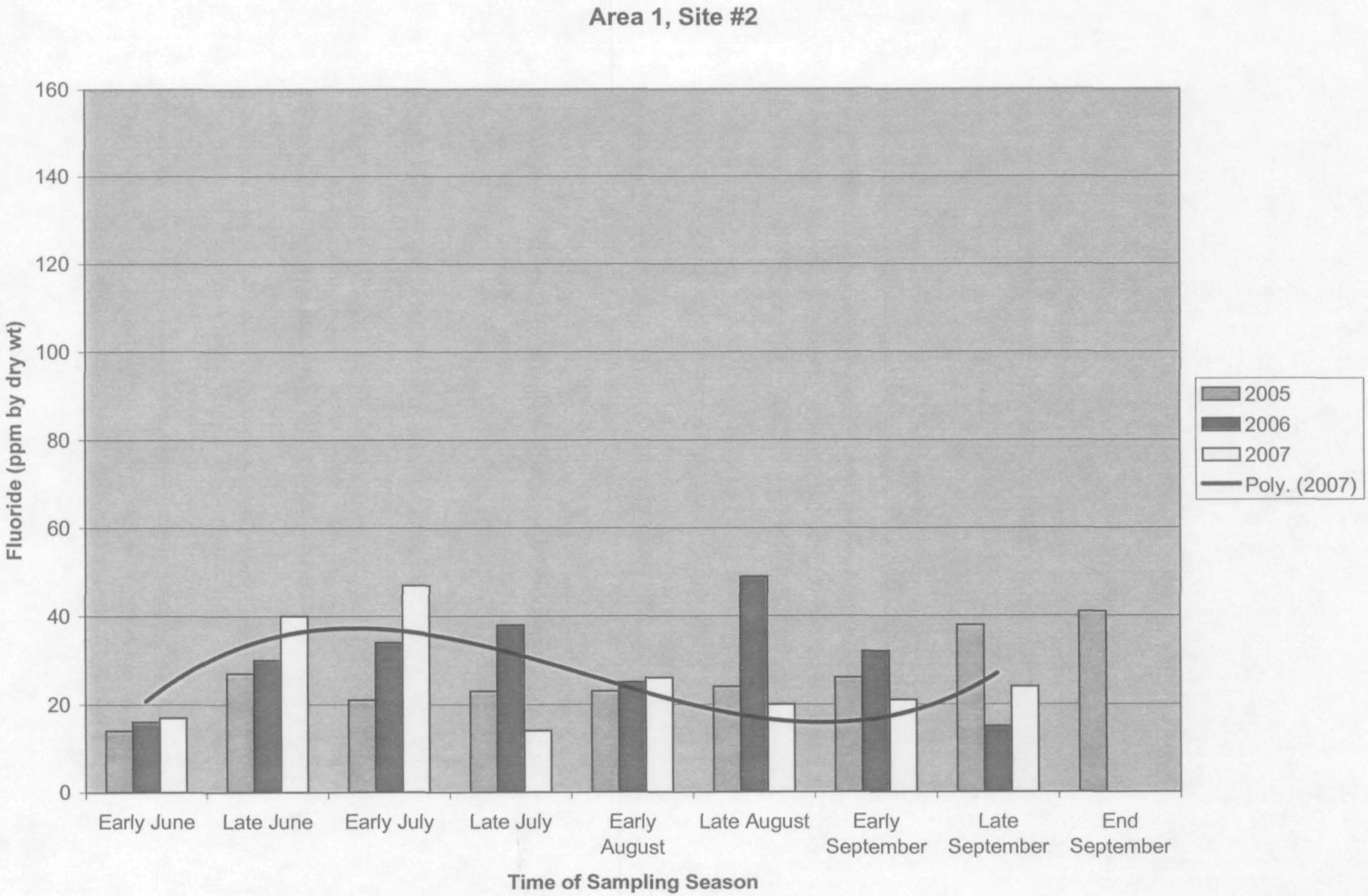
Sampling Area	Site #	Location (Owner)	Sampling Year	Forage Grown	Irrigation Method	Sampling Date	Fluoride (ppm, dry wt)	Monthly Averages	Bi-Monthly Averages	Yearly Averages
Area 2	Site # 12	(b) (6)	2005	Pasture Grass	Sprinkler	6/9/2005	ND	9.1	14.3	22.1
						6/23/2005	14	17.0	19.0	
						7/7/2005	20	19.5	18.5	
						7/21/2005	19	21.0	21.5	
						8/4/2005	23	17.5	26.0	
						8/18/2005	12	22.0	29.8	
						9/1/2005	32	34.5		
						9/15/2005	37	37.5		
						9/29/2005	38			
			2006	Pasture Grass	Sprinkler	6/15/2006	11	14.0	20.8	26.4
						6/29/2006	17	22.0	24.5	
						7/13/2006	27	27.5	30.8	
						7/27/2006	28	27.0	33.3	
						8/10/2006	26	34.0	32.0	
						8/24/2006	42	39.5		
						9/7/2006	37	30.0		
						9/21/2006	23			
			2007	Pasture Grass	Sprinkler	6/14/2007	13	18.0	25.0	22.0
						6/28/2007	23	34.5	26.3	
						7/12/2007	46	32.0	24.8	
						7/26/2007	18	18.0	16.8	
						8/9/2007	18	17.5	19.0	
						8/23/2007	17	15.5		
						9/6/2007	14	20.5		
						9/20/2007	27			
Area 2	Site # 14	(b) (6)	2005	Pasture Grass	Sprinkler	6/9/2005	ND	8.6	13.1	18.8
						6/23/2005	13	14.5	16.0	
						7/7/2005	16	17.5	18.8	
						7/21/2005	19	17.5	21.5	
						8/4/2005	16	20.0	22.3	
						8/18/2005	24	25.5	25.3	
						9/1/2005	27	24.5		
						9/15/2005	22	25.0		
						9/29/2005	28			
			2006	Pasture Grass	Sprinkler	6/15/2006	11	12.5	18.3	19.0
						6/29/2006	14	19.0	21.0	
						7/13/2006	24	24.0	23.3	
						7/27/2006	24	23.0	22.0	
						8/10/2006	22	22.5	19.8	
						8/24/2006	23	21.0		
						9/7/2006	19	17.0		
						9/21/2006	15			
			2007	Pasture Grass	Sprinkler	6/14/2007	15	17.0	19.0	17.6
						6/28/2007	19	22.0	20.0	
						7/12/2007	25	21.0	18.8	
						7/26/2007	17	18.0	15.5	
						8/9/2007	19	16.5	16.3	
						8/23/2007	14	13.0		
						9/6/2007	12	16.0		
						9/20/2007	20			
Area 2	Site # 62	(b) (6)	2005	Pasture Grass	Flood	6/9/2005	ND	13.6	21.8	28.4
						6/23/2005	23	24.5	30.3	
						7/7/2005	26	30.0	33.0	
						7/21/2005	34	36.0	34.5	
						8/4/2005	38	36.0	35.0	
						8/18/2005	34	33.0	34.0	
						9/1/2005	32	34.0		
						9/15/2005	36	36.0		
						9/29/2005	–			
			2006	Pasture Grass	Flood	6/15/2006	12	22.5	30.8	29.3
						6/29/2006	33	37.5	33.3	
						7/13/2006	42	39.0	35.5	
						7/27/2006	36	29.0	31.5	
						8/10/2006	22	32.0	27.8	
						8/24/2006	42	34.0		
						9/7/2006	26	23.5		
						9/21/2006	21			
			2007	Pasture Grass	Flood	6/14/2007	18	18.0	28.5	26.8
						6/28/2007	18	36.0	32.5	
						7/12/2007	54	39.0	33.0	
						7/26/2007	24	29.0	24.3	
						8/9/2007	34	27.0	25.0	
						8/23/2007	20	19.5		
						9/6/2007	19	23.0		
						9/20/2007	27			
Area 2	Site # 65	(b) (6)	2005	Pasture Grass	Flood	6/9/2005	ND	10.6	14.8	19.0
						6/23/2005	17	17.5	18.8	
						7/7/2005	18	19.0	20.0	
						7/21/2005	20	20.0	22.0	
						8/4/2005	20	21.0	22.5	
						8/18/2005	22	24.0	23.0	
						9/1/2005	26	24.0		
						9/15/2005	22	22.0		
						9/29/2005	22			
	Site # 65A	(b) (6)	2006	Pasture Grass	Flood	6/15/2006	14	19.5	26.3	25.3
						6/29/2006	25	26.5	28.8	
						7/13/2006	28	33.0	30.0	
						7/27/2006	38	31.0	29.3	
						8/10/2006	24	27.0	24.3	
						8/24/2006	30	27.5		
						9/7/2006	25	21.5		
						9/21/2006	18			
			2007	Pasture Grass	Flood	6/14/2007	15	18.0	24.8	20.8
						6/28/2007	21	34.5	25.0	
						7/12/2007	48	31.5	23.3	
						7/26/2007	15	15.5	14.5	
						8/9/2007	16	15.0	16.8	
						8/23/2007	14	13.5		
						9/6/2007	13	18.5		
						9/20/2007	24			
Area 2	Site # 69	(b) (6)	2005	Pasture Grass	Flood	6/9/2005	ND	8.1	11.6	15.5
						6/23/2005	12	13.5	13.8	
						7/7/2005	15	15.0	16.0	
						7/21/2005	15	14.0	17.0	
						8/4/2005	13	17.0	16.8	
						8/18/2005	21	20.0	20.0	
						9/1/2005	19	16.5		
						9/15/2005	14	20.0		
						9/29/2005	26			
			2006	Pasture Grass	Flood	6/15/2006	10	11.5	14.5	17.0
						6/29/2006	13	15.0	17.0	
						7/13/2006	17	17.5	19.3	
						7/27/2006	18	19.0	20.0	
						8/10/2006	20	21.0	19.5	
						8/24/2006	22	21.0		
						9/7/2006	20	18.0		
						9/21/2006	16			
			2007	Pasture Grass	Flood	6/14/2007	13	15.0	17.8	15.4
						6/28/2007	17	21.0	18.3	
						7/12/2007	25	20.5	17.0	
						7/26/2007	16	15.5	13.5	
						8/9/2007	15	13.5	13.0	
						8/23/2007	12	11.5		
						9/6/2007	11	12.5		
						9/20/2007	14			

Summary of Fluoride in Forage Sampling Data (2005 - 2007)

Sampling Area	Site #	Location (Owner)	Sampling Year	Forage Grown	Irrigation Method	Sampling Date	Fluoride (ppm, dry wt)	Monthly Averages								Bi-Monthly Averages						Yearly Averages
Area 3	Site # 35	(b) (6)	2005	Alfalfa	Sprinkler	6/9/2005	ND	8.6								11.8						
						6/23/2005	13		13.5								14.5					
						7/7/2005	14			15.0								16.0				
						7/21/2005	16				15.5								19.0			
						8/4/2005	15					17.0								19.8		16.9
						8/18/2005	19						22.5								22.5	
						9/1/2005	26							22.5								
						9/15/2005	19								22.5							
						9/29/2005	26															
			2006	Alfalfa	Sprinkler	6/15/2006	10	11.0								12.3						
						6/29/2006	12		12.5								14.5					
						7/13/2006	13			13.5								15.0				
						7/27/2006	14				16.5								16.3			
						8/10/2006	19					16.5								16.0		14.1
						8/24/2006	14						16.0									
						9/7/2006	18							15.5								
						9/21/2006	13															
			2007	Alfalfa	Sprinkler	6/14/2007	11	17.5								16.0						
						6/28/2007	24		20.5								17.5					
						7/12/2007	17			14.5								15.3				
						7/26/2007	12				14.5								14.0			
						8/9/2007	17					16.0								13.8		14.9
						8/23/2007	15						13.5									
						9/6/2007	12							11.5								
						9/20/2007	11															
Area 3	Site # 72	(b) (6)	2005	Pasture Grass	Flood	6/9/2005	ND	4.3								10.8						
						6/23/2005	–		14.0								13.7					
						7/7/2005	14			14.0								14.0				
						7/21/2005	14				13.5								14.8			
						8/4/2005	13					14.0								13.8		13.5
						8/18/2005	15						16.0								15.8	
						9/1/2005	17							13.5								
						9/15/2005	10								15.5							
						9/29/2005	21															
			2006	Pasture Grass	Flood	6/15/2006	9.7	10.9								12.4						
						6/29/2006	12		12.0								13.5					
						7/13/2006	12			14.0								14.0				
						7/27/2006	16				15.0								14.8			
						8/10/2006	14					14.0								14.0		13.2
						8/24/2006	14						14.5									
						9/7/2006	15							14.0								
						9/21/2006	13															
			2007	Pasture Grass	Flood	6/14/2007	11	12.5								13.3						
						6/28/2007	14		15.0								14.8					
						7/12/2007	16			14.0								14.3				
						7/26/2007	12				14.5								13.0			
						8/9/2007	17					14.5								13.0		13.1
						8/23/2007	12						11.5									
						9/6/2007	11							11.5								
						9/20/2007	12															
Area 3	Site # 97	(b) (6)	2005	Pasture Grass	Flood	6/9/2005	ND	7.6								10.6						
						6/23/2005	11		12.0								12.8					
						7/7/2005	13			13.5								14.3				
						7/21/2005	14				13.5								15.8			
						8/4/2005	13					15.0								15.5		14.3
						8/18/2005	17						18.0								18.3	
						9/1/2005	19							16.0								
						9/15/2005	13								18.5							
						9/29/2005	24															
			2006	Pasture Grass	Flood	6/15/2006	9.3	11.2								12.8						
						6/29/2006	13		13.0								15.0					
						7/13/2006	13			14.5								16.3				
						7/27/2006	16				17.0								18.0			
						8/10/2006	18					18.0								17.5		15.2
						8/24/2006	18						19.0									
						9/7/2006	20							17.0								
						9/21/2006	14															
			2007	Pasture Grass	Flood	6/14/2007	12	14.0								14.0						
						6/28/2007	16		15.5								15.3					
						7/12/2007	15			14.0								14.3				
						7/26/2007	13				15.0								13.5			
						8/9/2007	17					14.5								13.3		13.6
						8/23/2007	12						12.0									
						9/6/2007	12							12.0								
						9/20/2007	12															
Area 4	Site # 22	(b) (6)	2005	Pasture Grass	Sprinkler	6/9/2005	ND	10.6								13.6						
						6/23/2005	17		17.0								17.8					
						7/7/2005	17			16.5								18.3				
						7/21/2005	16				18.5								22.0			
						8/4/2005	21					20.0								24.5		20.3
						8/18/2005	19						25.5								26.8	
						9/1/2005	32							29.0								
						9/15/2005	26								28.0							
						9/29/2005	30															
			2006	Pasture Grass	Sprinkler	6/15/2006	12	13.5								17.0						
						6/29/2006	15		15.0								18.8					
						7/13/2006	15			20.5								20.3				
						7/27/2006	26				22.5								23.0			
						8/10/2006	19					20.0								20.8		18.9
						8/24/2006	21						23.5									
						9/7/2006	26							21.5								
						9/21/2006	17															
			2007	Pasture Grass	Sprinkler	6/14/2007	11	10.3								14.4						
						6/28/2007	9.5		13.3								19.9					
						7/12/2007	17			18.5								23.0				
						7/26/2007	20				26.5								23.8			
						8/9/2007	33					27.5								26.5		20.4
						8/23/2007	22						21.0									
						9/6/2007	20							25.5								
						9/20/2007	31															
Area 4	Site # 77	(b) (6)	2005	Pasture Grass	Sprinkler	6/9/2005	ND	8.6								12.1						
						6/23/2005	13		14.0								15.0					
						7/7/2005	15			15.5								15.5				
						7/21/2005	16				16.0								17.3			
						8/4/2005	16					15.5								20.0		17.6
						8/18/2005	15						18.5								23.5	
						9/1/2005	22							24.5								
						9/15/2005	27								28.5							
						9/29/2005	30															
			2006	Pasture Grass	Sprinkler	6/15/2006	12	13.5								14.3						
						6/29/2006	15		13.5								17.5					
						7/13/2006	12			15.0								19.0				
						7/27/2006	18				21.5								21.3			
						8/10/2006	25					23.0								20.5		17.4
						8/24/2006	21						21.0									
						9/7/2006	21							18.0								
						9/21/2006	15															
			2007	Pasture Grass	Sprinkler	6/14/2007	12	12.0								12.8						
						6/28/2007	12		13.5								17.3					
						7/12/2007	15			13.5								17.8				
						7/26/2007	12				21.0								17.0			
						8/9/2007	30					22.0								17.8		15.3
						8/23/2007	14						13.0									
						9/6/2007	12							13.5								
						9/20/2007	15															

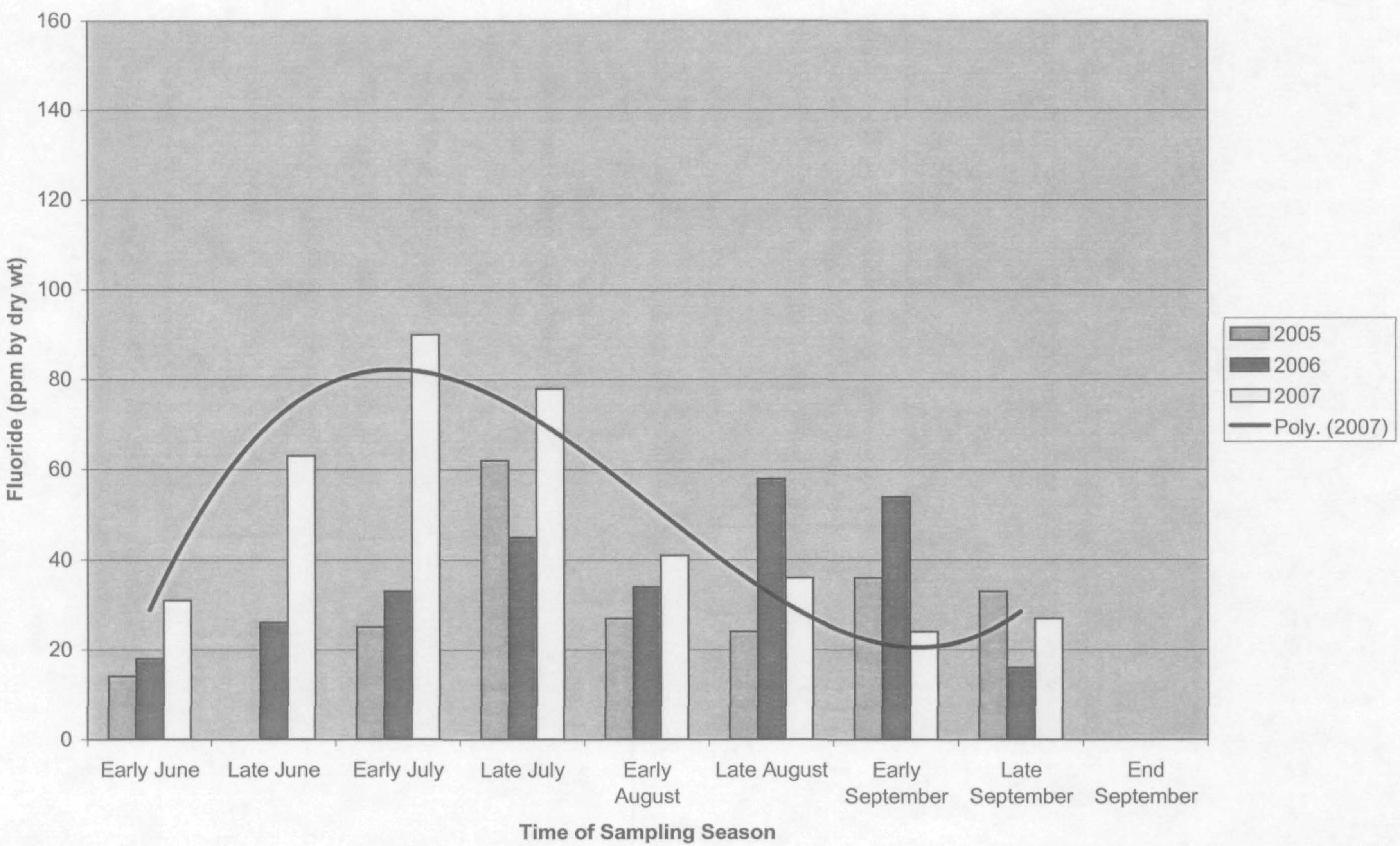
– Indicates no sample taken due to recent cutting; averages calculated that include a round where no sample was taken only include other values in set

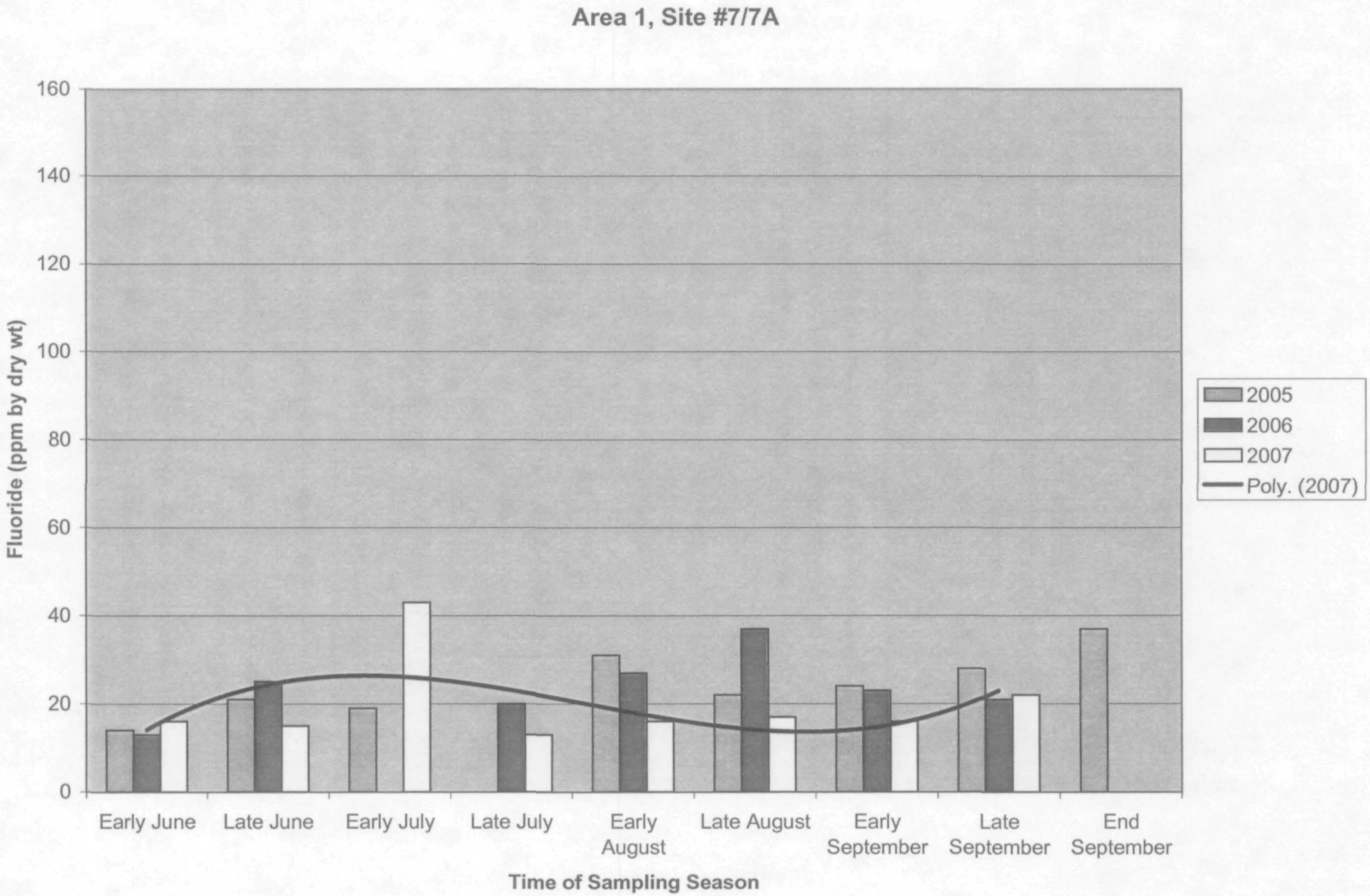
Averages calculated that include non-detects (ND) assume half the detection rate of 8.5 ppm, or 4.25 ppm



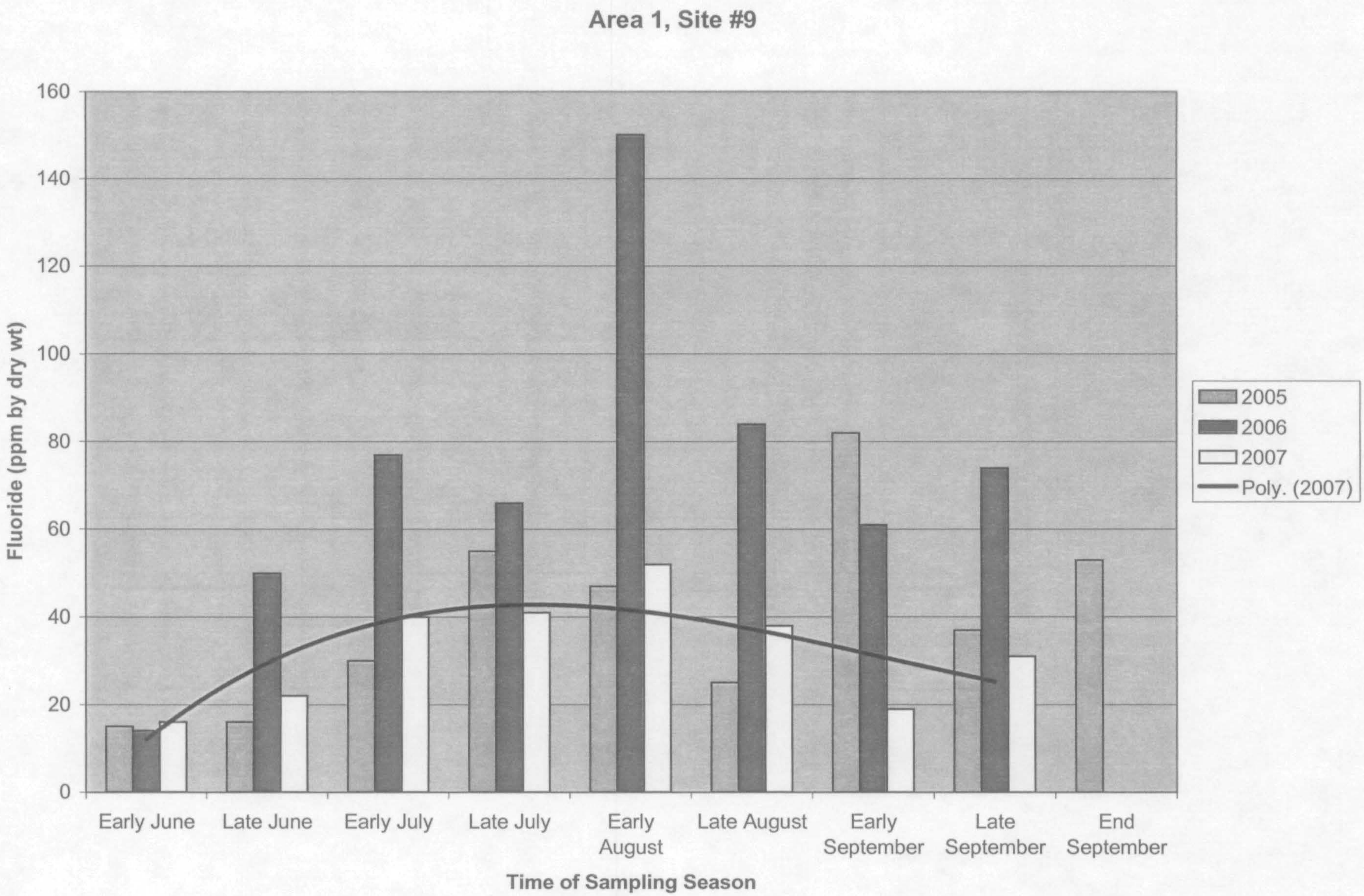
Area 1, Site #2
Fluoride (ppm by dry wt)
160
140
120
100
80
60
40
20
0
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)

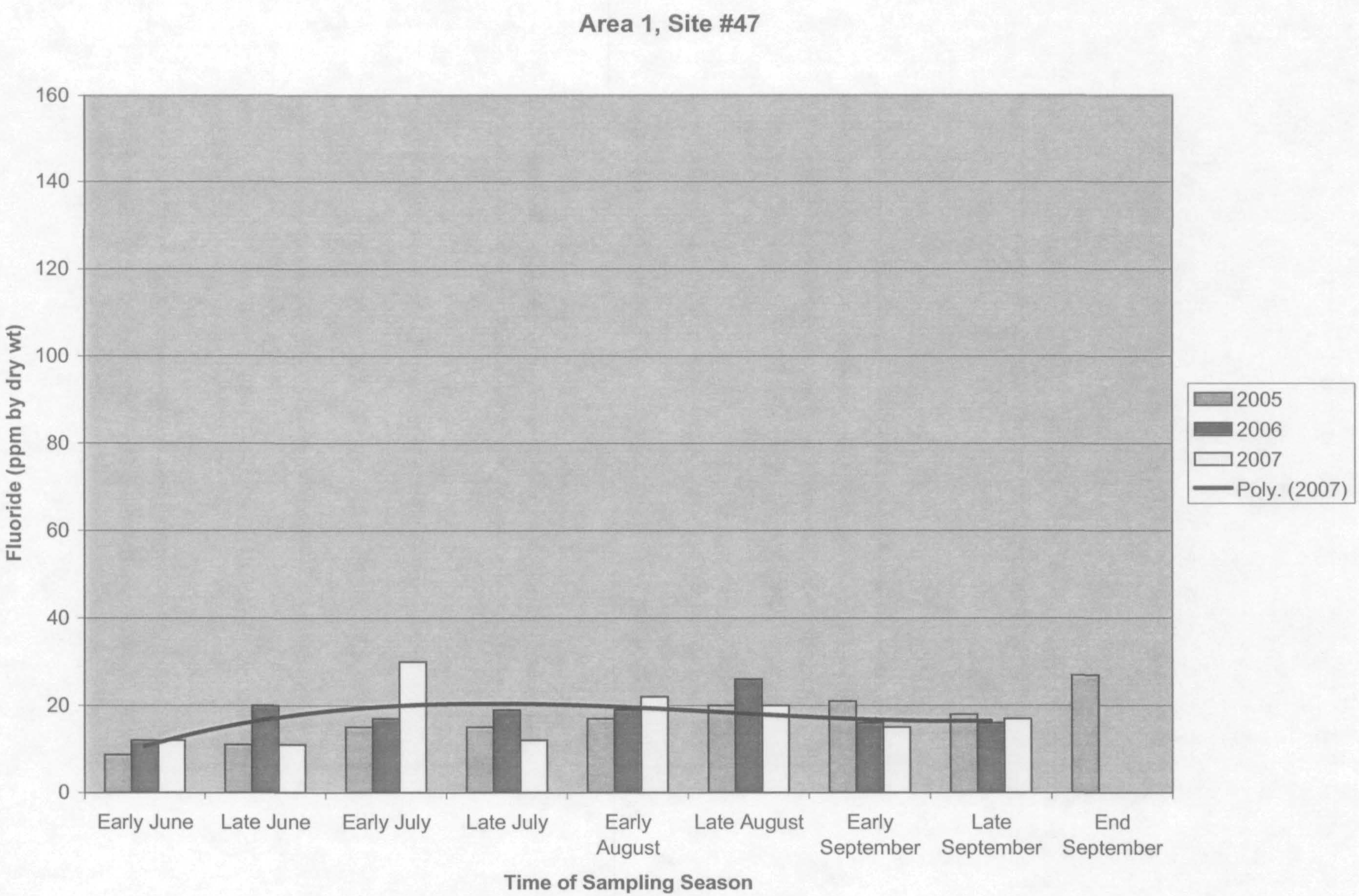
Area 1, Site #3/3A

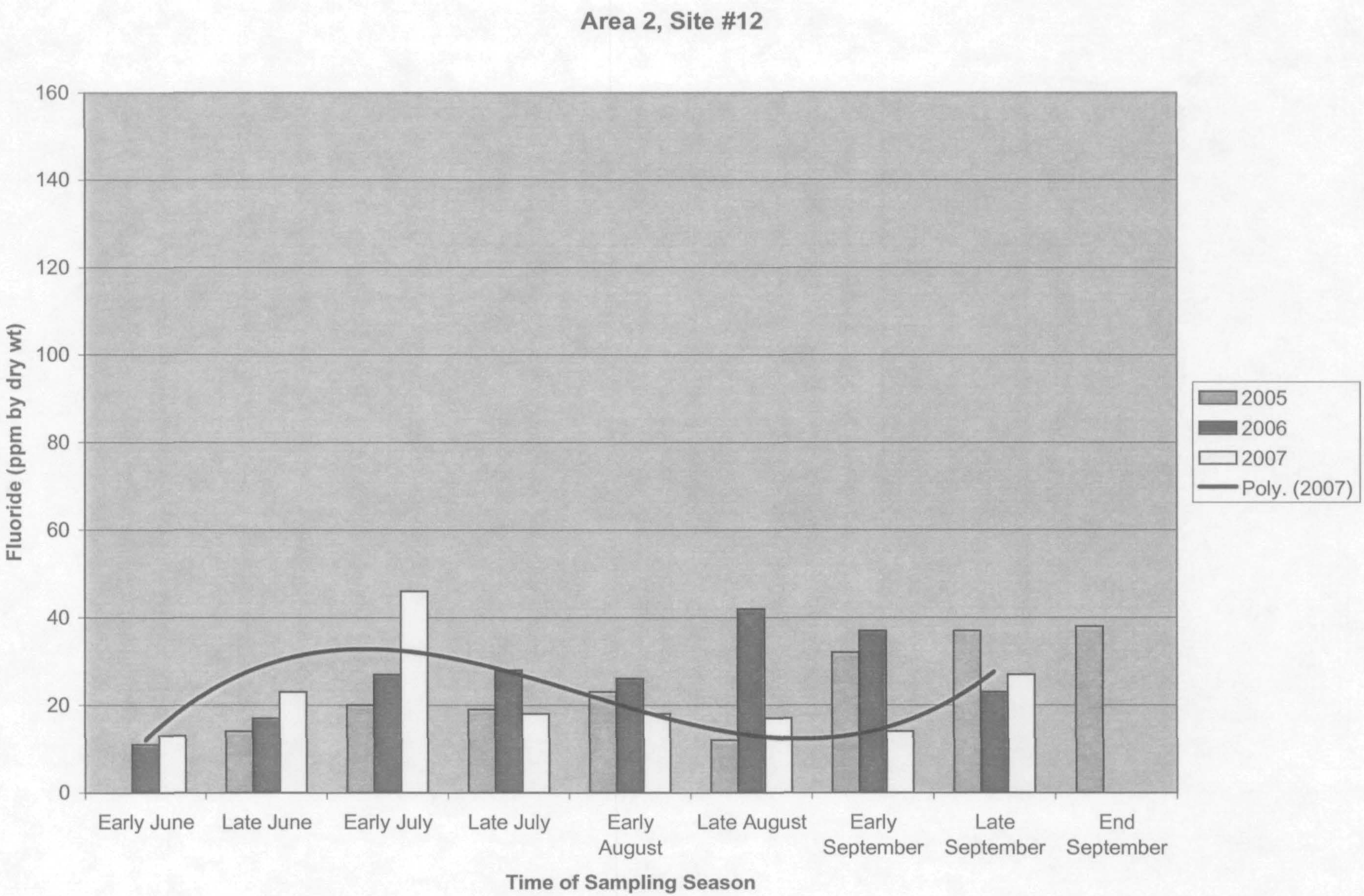


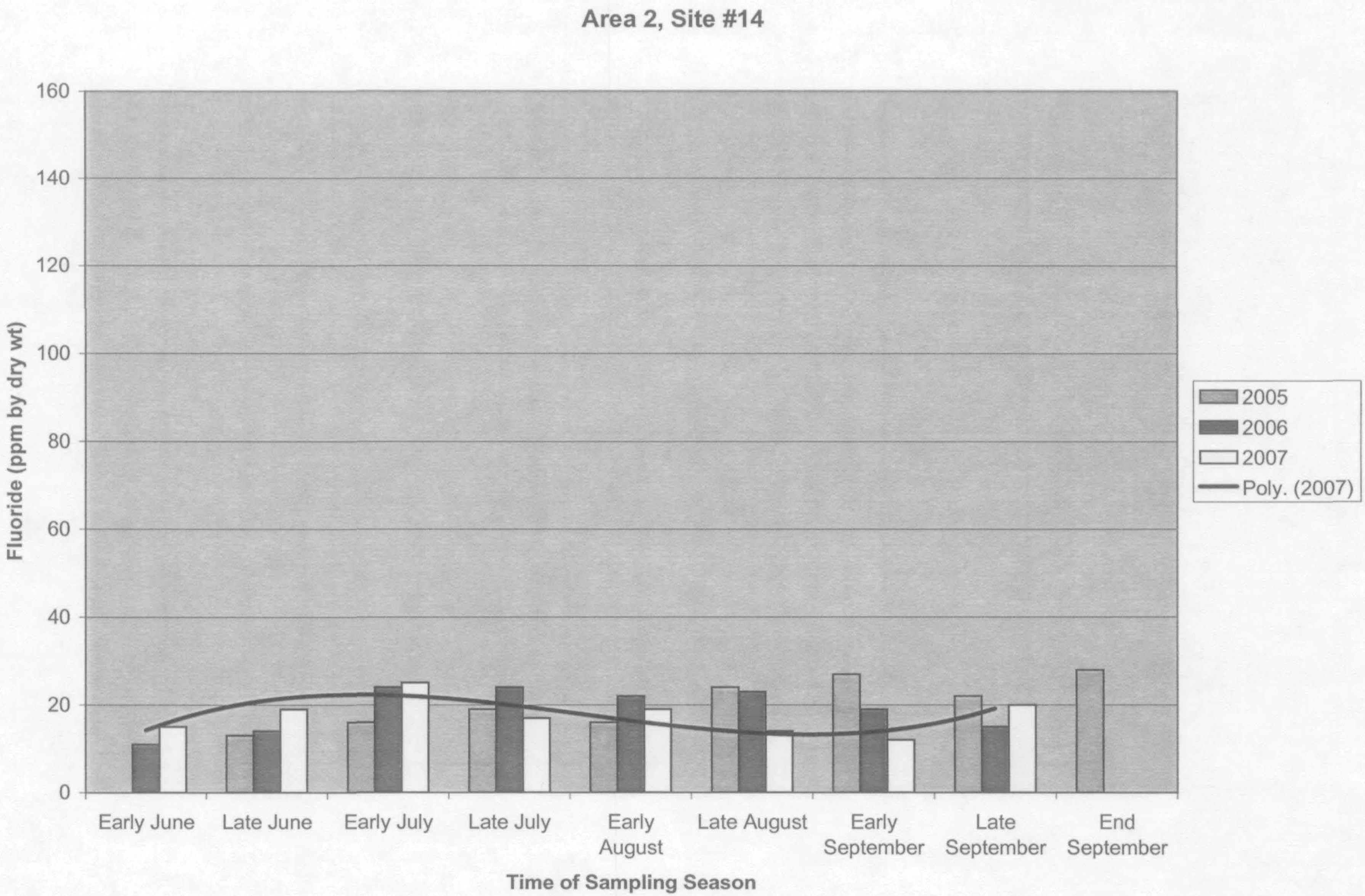


Area 1, Site #7/7A
160
140
120
100
80
60
40
20
0
Fluoride (ppm by dry wt)
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)

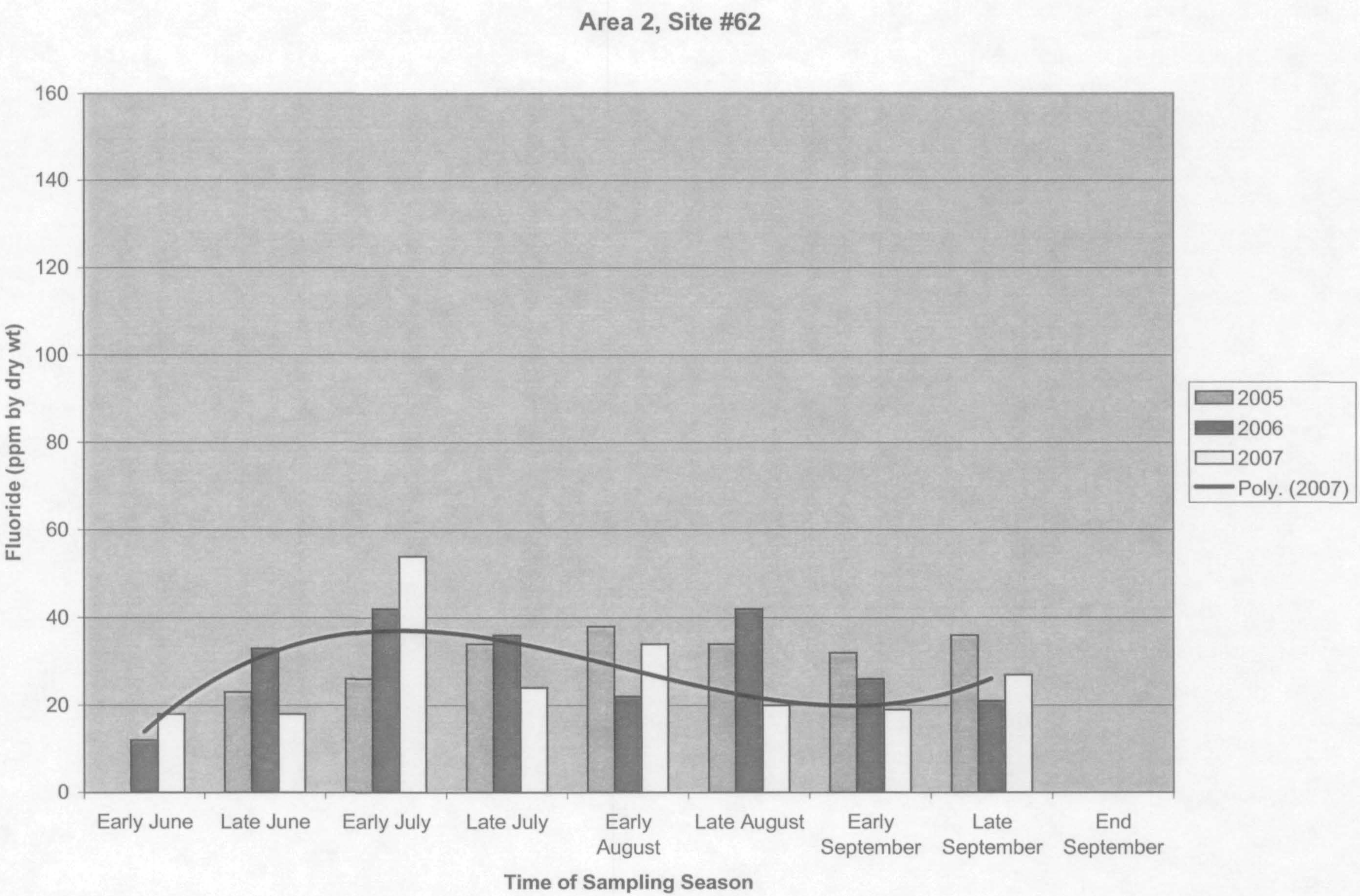

Area 1, Site #9
Fluoride (ppm by dry wt)
160
140
120
100
80
60
40
20
0
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)


Area 1, Site #47
Fluoride (ppm by dry wt)
160
140
120
100
80
60
40
20
0
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)

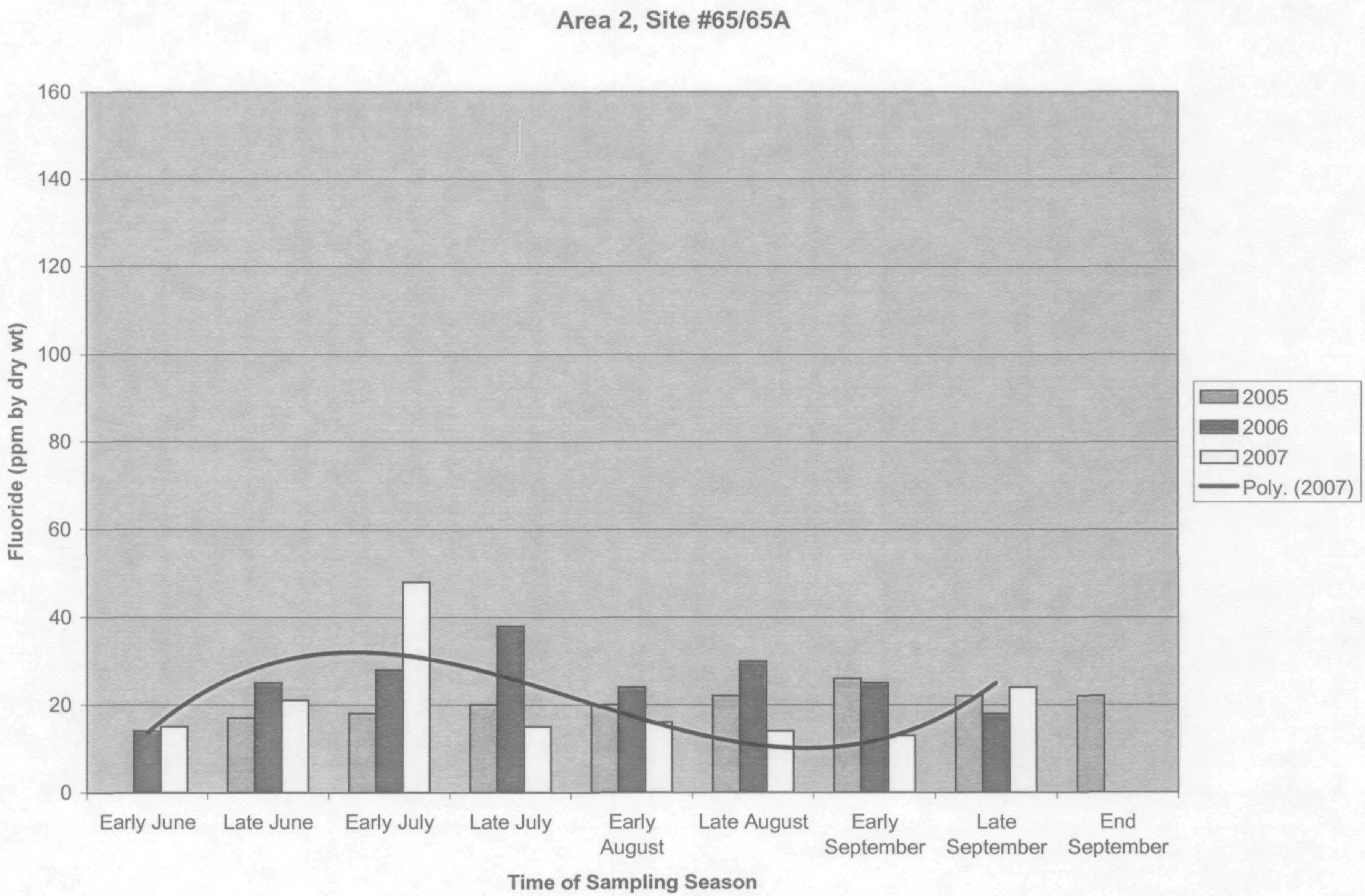

Area 2, Site #12
Fluoride (ppm by dry wt)
0
20
40
60
80
100
120
140
160
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)



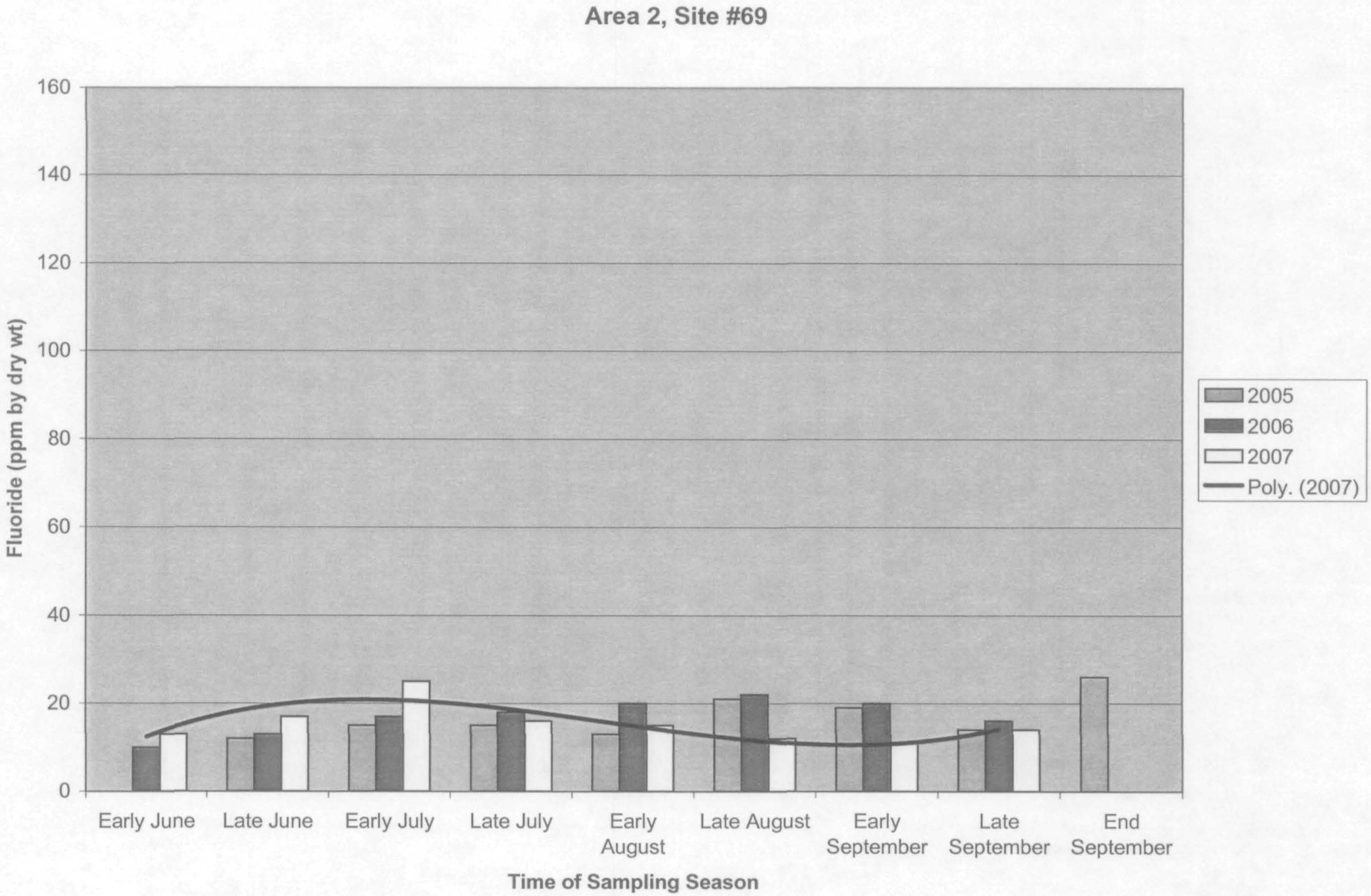
Area 2, Site #14
Fluoride (ppm by dry wt)
160
140
120
100
80
60
40
20
0
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)



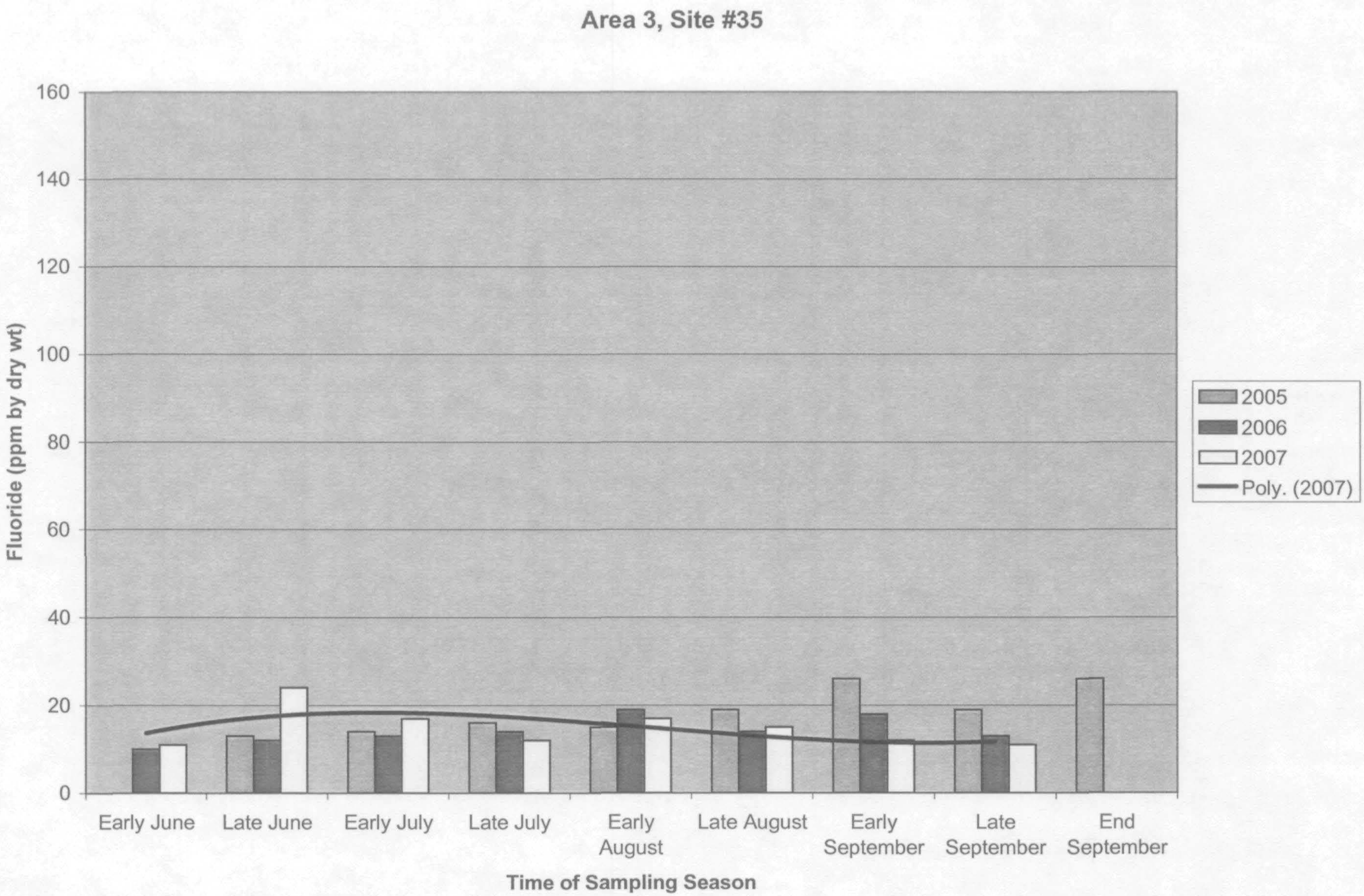
Area 2, Site #62
Fluoride (ppm by dry wt)
160
140
120
100
80
60
40
20
0
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)



Area 2, Site #65/65A
160
140
120
100
80
60
40
20
0
Fluoride (ppm by dry wt)
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)

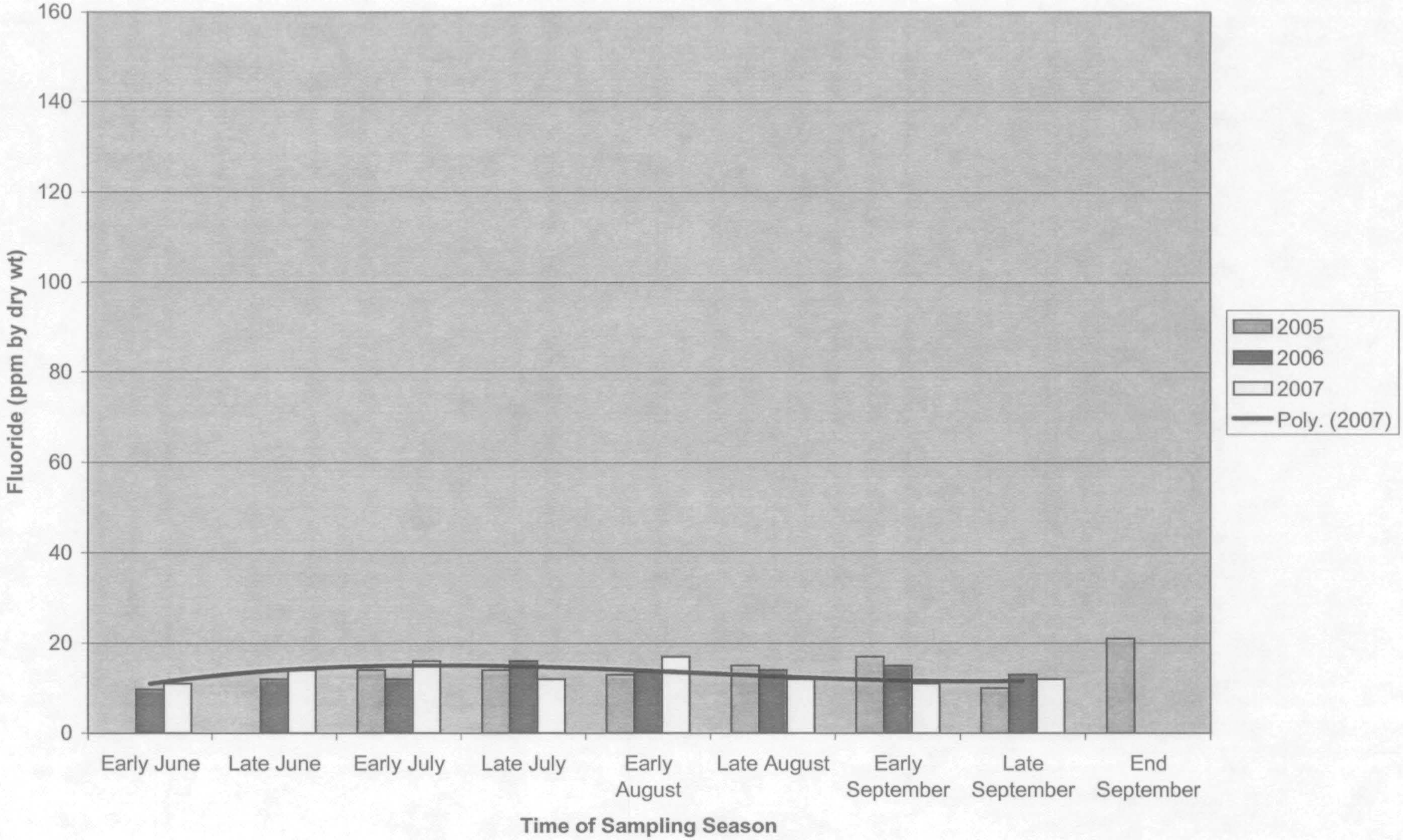


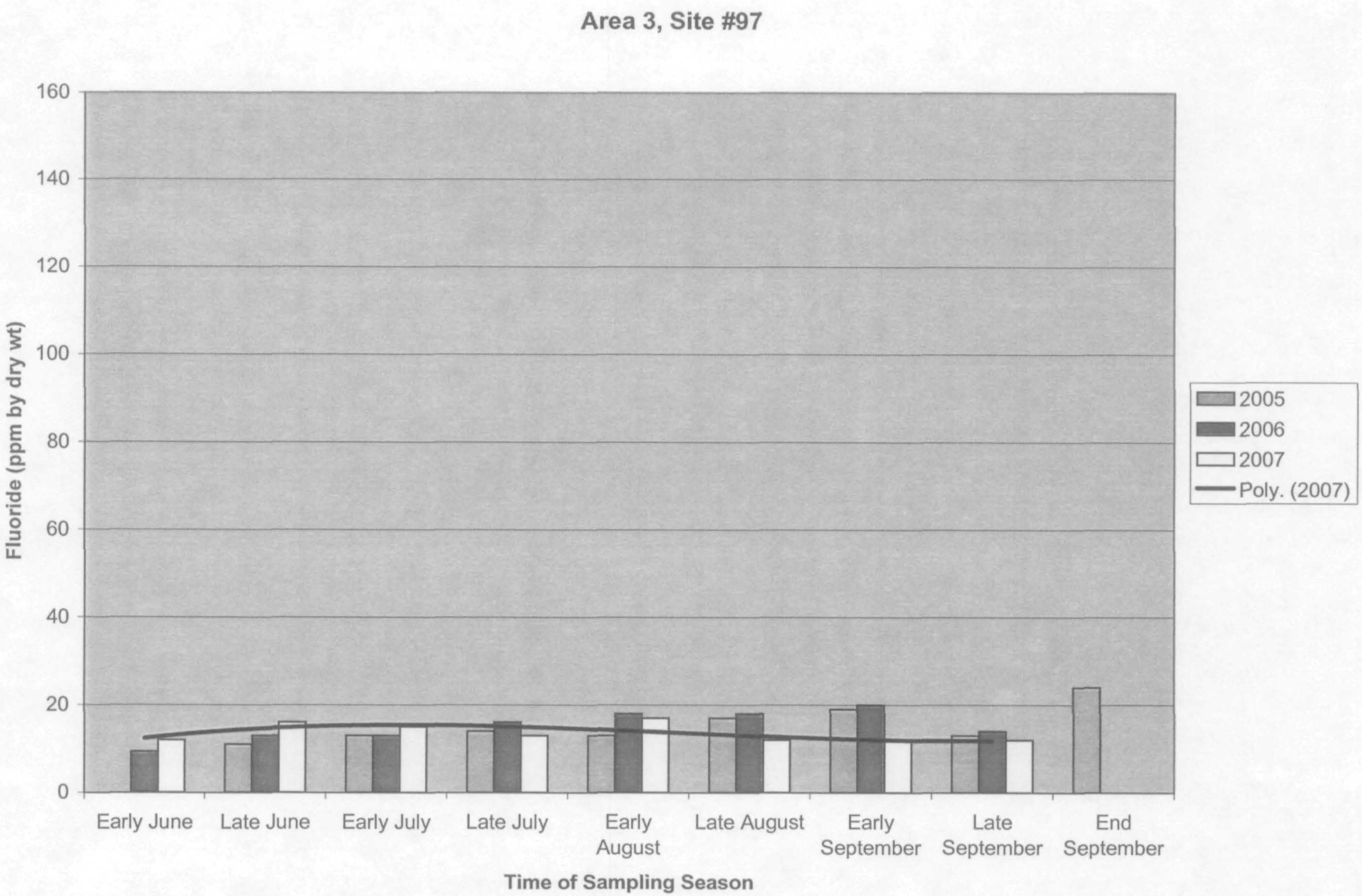
Area 2, Site #69
Fluoride (ppm by dry wt)
160
140
120
100
80
60
40
20
0
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)

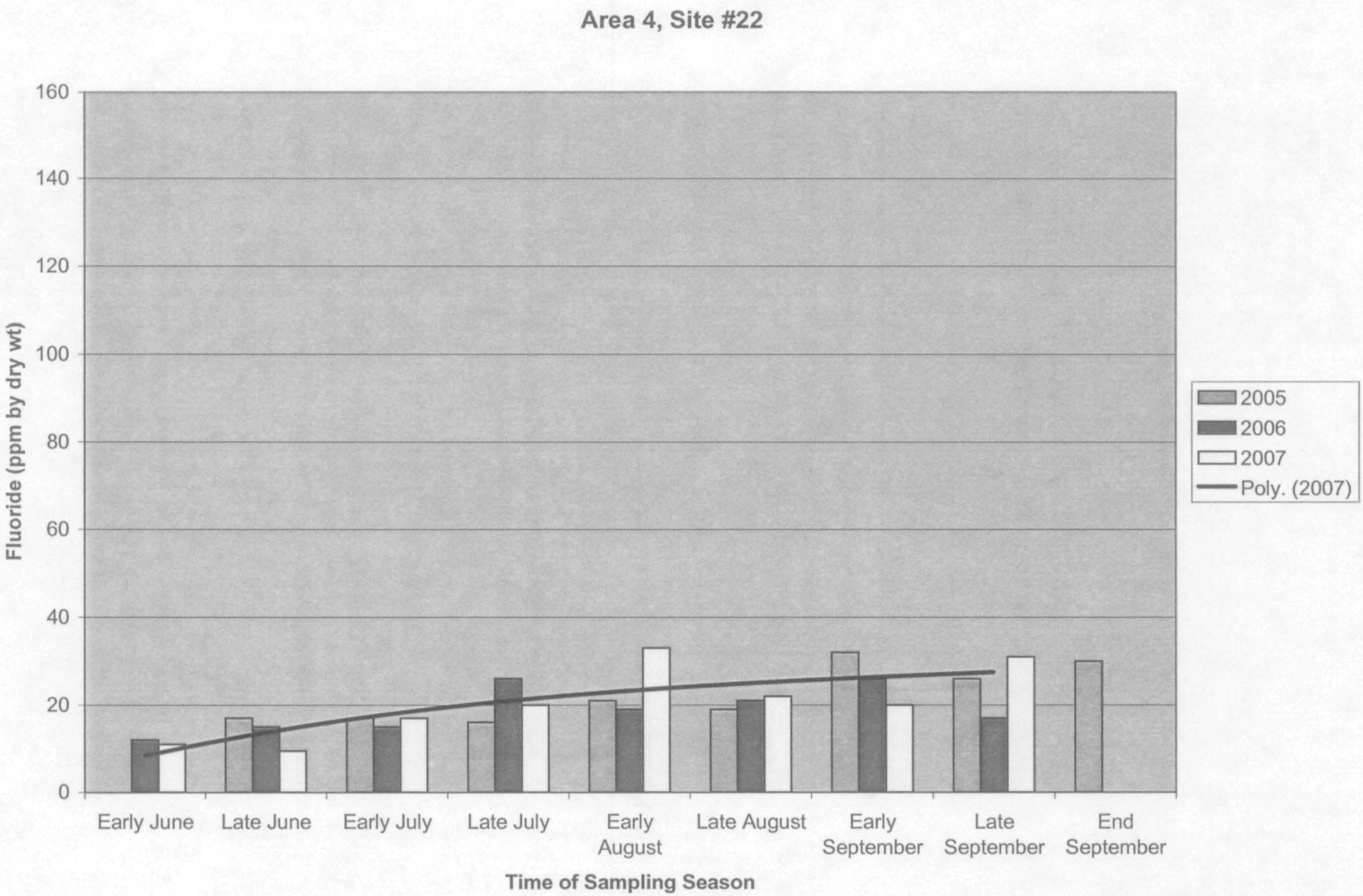


Area 3, Site #35
Fluoride (ppm by dry wt)
160
140
120
100
80
60
40
20
0
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)

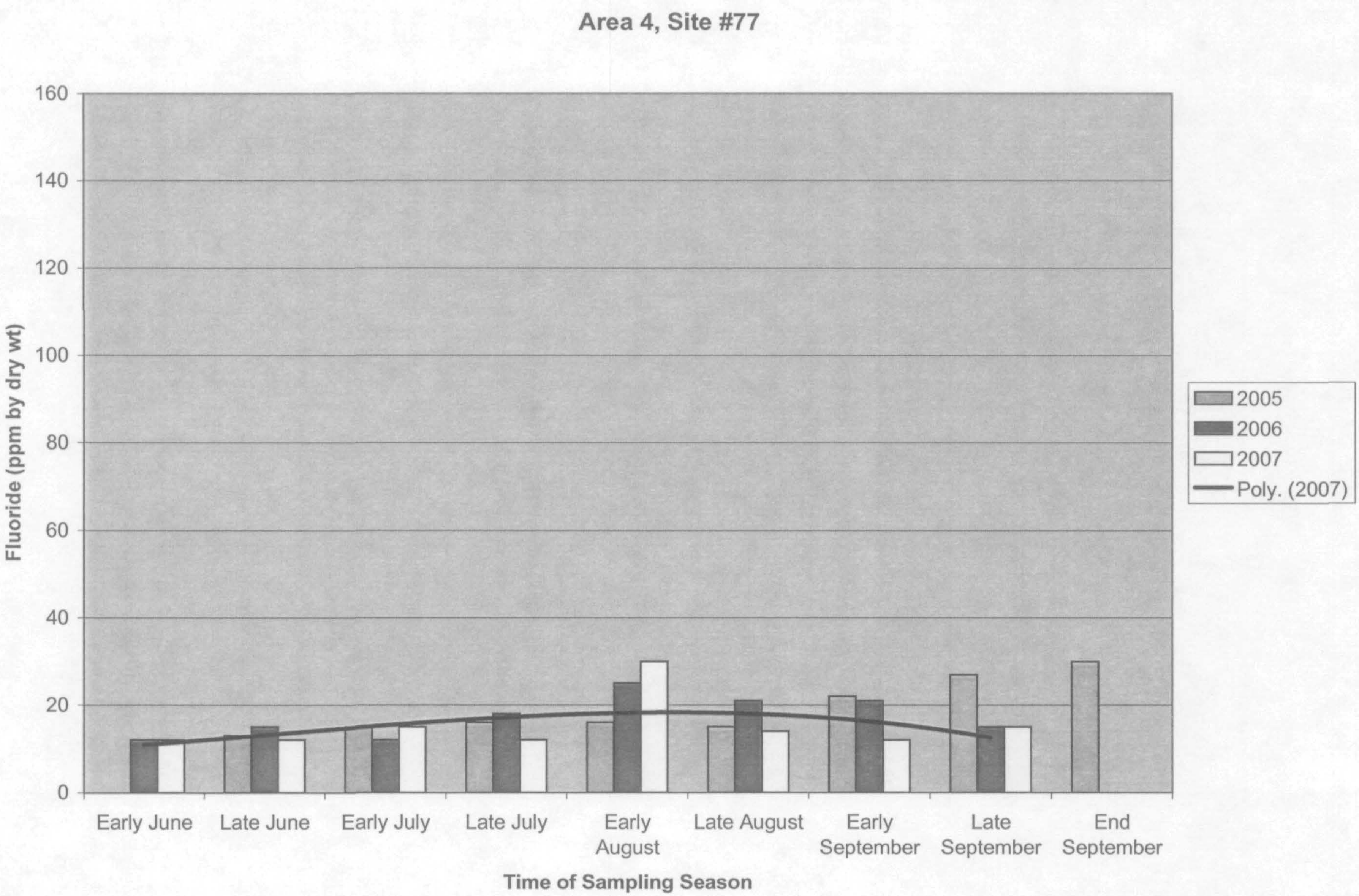
Area 3, Site #72




Area 3, Site #97
Fluoride (ppm by dry wt)
160
140
120
100
80
60
40
20
0
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)



Area 4, Site #22
Fluoride (ppm by dry wt)
160
140
120
100
80
60
40
20
0
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)


Area 4, Site #77
160
140
120
100
80
60
40
20
0
Fluoride (ppm by dry wt)
Early June
Late June
Early July
Late July
Early August
Late August
Early September
Late September
End September
Time of Sampling Season
2005
2006
2007
Poly. (2007)

Appendix F
Fluoride Deposition Model Report

Fluoride Deposition Modeling Report
Simplot Don Plant, Pocatello Idaho

Introduction

J. R. Simplot Company (Simplot) owns and operates the Don Plant, a fertilizer manufacturing facility near Pocatello, Idaho. The phosphate ore slurry used at the Don Plant contains fluoride and the facility has associated airborne emissions of fluoride that are regulated under federal and Idaho Department of Environmental Quality (DEQ) rules. Simplot routinely performs stack tests of permitted fluoride sources and has conducted fluoride in forage sampling at locations surrounding the Don Plant for many years. DEQ issued a Notice of Violation (NOV) to the Don Plant alleging Simplot was responsible for the forage fluoride vegetation exceedances reported by Simplot in 2002. In order to address the NOV, Simplot has agreed in Consent Order E-020021 with DEQ to perform fluoride deposition modeling to support future vegetation sampling studies.

MFG, Inc. (MFG) conducted a fluoride deposition modeling study to meet the modeling requirements included in the Consent Order and aid in the design of future fluoride in forage monitoring programs. According to the Consent Order, "the sampling points shall be selected based on the results of the ambient and deposition modeling analysis, a survey of land use in the area impacted by fluoride emissions from the Don Plant and shall be located outside the Don Plant." A modeling protocol was attached as Appendix A to the Consent Order. The *Protocol* described fluoride source emissions and release characteristics, discussed the selection of the dispersion model as well as model inputs and options, and presented the approach used to prepare the meteorological database.

This report will present the modeling techniques previously described in the *Protocol*. Following discussion of the characteristics of airborne fluoride sources at the Don Plant, the dispersion modeling techniques used in the analysis will be presented with an emphasis on details of the approach not included in the *Protocol*. The report will include a presentation of the deposition modeling results including predictions of monthly, bi-monthly, and average fluoride deposition fluxes during the growing season (May through September). Annual deposition fluxes will also be presented for the entire year. Such predictions will be presented both for fluoride emissions based on allowable state and federal permit limits and on estimates of actual fluoride emissions. Actual fluoride emissions are calculated from source tests conducted at the Don Plant during the last five years from 1999 to 2003.

Source Characterization

This section of the report describes the input parameters used to characterize airborne sources of fluoride at the Don Plant. The necessary data for dispersion modeling include fluoride emission rates, source locations, stack parameters for the point sources, and the physical dimensions for area sources. The models also use building locations and dimensions to account for building wake effects. Deposition estimates also depend on whether releases are gaseous or particle based.

Don Plant fluoride emissions. MFG performed two sets of dispersion model simulations using both allowable fluoride emissions listed in Table 1 and the estimates of actual emissions shown in Table 2 based on five years of stack tests from 1999-2003. Allowable fluoride emissions were based on the lower of either existing DEQ permit limits or federal MACT requirements. Locations for these sources are shown in Figure 1. Fluoride emissions at the Don Plant do not vary seasonally, because production and operations are relatively constant through the year. Monthly changes in meteorology and land use are thought to control deposition patterns, not seasonal variation of fluoride emissions. Predictions based on allowable emissions were used to provide estimates of potential maximum monthly, bi-monthly, and annual fluoride deposition. Such predictions likely over-estimate actual deposition fluxes. More realistic simulations based on average actual emissions were used to assess the most likely maximum monthly, bi-monthly, and long-term deposition from Don Plant airborne sources of fluoride.

The Reclaim Cooling Towers are the largest source of airborne fluoride and contribute to 86 percent and 88 percent of the Don Plant allowable and actual point source total emissions, respectively. Stack testing suggests total cooling tower fluoride emissions are about 19 lb/hr. Most other sources tested have emission rates less than 1.0 lb/hr. Fluoride is contained in the ore slurry and in the native soils of the Pocatello area. Consequently there are small sources of fluoride associated with fugitive dust emissions at the Don Plant and gaseous releases from the various doors, windows and small vents that allow air to circulate through the facility. These sources of fluoride are insignificant when compared to the sources of fluoride listed in Table 1 and are not included in the simulations.

Allowable permit limits for the Ammo #1 and Ammo #2 Plants are for the emission group. Allowable emissions for individual stacks in the simulations were apportioned according to the ratio of the stacks emissions to the plant-wide total using the stack test results in Table 2. For example allowable emissions from the Ammo #1 R/G scrubber were calculated from 1.5 lb/hr * 0.25/(0.25+0.03+0.03) or 1.2 lb/hr.

Gyp-Stack emissions. The Gypsum Pile and Pond (Gyp-Stack) fluoride emissions listed in Table 1 are based on a revised interpretation of current DEQ limits. In 1985-86 the Idaho Air Quality Bureau (predecessors to DEQ) and Simplot estimated emissions from the combination of the Gyp-Stack and conventional reclaim cooling systems (usually a pond but a cooling tower in the case of the Don Plant) to be 76.65 tons per year (TPY). This estimate was based on an EPA report *"Evaluation of Emissions and Control Techniques for Reducing Fluoride Emissions from Gypsum Stacks on the Phosphoric Acid Industry" (EPA-600/2-78-124, June 1978).* This emission estimate was for both the cooling portion and storage portion of the gypsum storage and water reclaim functions.

Later site specific information demonstrated that the estimate for the cooling of reclaim water by Reclaim Cooling Towers was significantly understated. The matter was corrected by assigning an emission estimate to the reclaiming water cooling system based on available stack test data. Simplot examined the previous emissions estimate of 76.65 TPY and concluded that a valid and reasonable estimate of fluoride emissions from the gypsum storage system would be 10 percent of the previously estimated total (7.67 TPY). Stated another way, 90 percent of the previous estimate was associated with the evaporative cooling of the pond water by cooling towers and 10 percent with the gypsum storage.

Stack parameters. Stack parameters for Don Plant fluoride sources are shown in Table 3. The stack heights, diameters and locations were based on the data recently assembled for the *Portneuf Valley Nonattainment Area PM_{10} SIP.*[1] Flow rates and stack temperatures were based on the averages from the stack tests during 1999 through 2003 to coincide with the fluoride emissions data in Table 2.

Flow rates for the Reclaim Cooling Towers were also calculated from stack test data from 1999-2003. However the flow rates have been combined for the common cells located on each of the three towers. MFG calculated an equivalent diameter for each tower based on the combined cross sectional area of the common cells, 2 cells for the north tower and 3 cells for the west and east towers. On each tower, the cooling tower cells are separated by less than a cell diameter and enhanced plume rise is expected due to plume merging. Based on the precedent contained in the EPA Model Clearinghouse database, EPA generally recommends combining similar sources when they are separated by less than a stack diameter from one another.[2] Note this same approach was followed for these sources in the dispersion model studies supporting the *Portneuf Valley Nonattainment Area PM_{10} SIP.*

As shown in Figure 1, MFG used a ground-based rectangular area source to characterize emissions from the Gyp-Stack. Emissions from this area source result primarily from volatilization of fluoride from the pond surface and the source is located over the pond area of the Gyp-Stack. The dimensions of the area source in simulations were 350 m-by-650 m, for an area of about 56 acres. The initial vertical dimension (variable "szinit") was set to 2.0 m to account for some expected initial mixing due to the dikes surrounding the pond. This area and basic source configuration were also used in the *Eastern Michaud Flats RI/FS.*

Building parameters. The location of buildings and structures within the Don Plant are shown in Figure 3. The heights of these structures are listed in Table 4. These data were prepared using building elevations and site plans provided by Simplot in previous studies. MFG also used these data for the *Power-Bannock County PM_{10} SIP*, the *Eastern Michaud Flats RI/FS*, permitting for the *300 Sulfuric Acid Plant Replacement Project,* permitting for the *Granulation No.3 Upgrade Project*, and for the *Portneuf Valley Nonattainment Area PM_{10} SIP.*

For the current study, MFG added the lower gypsum stack shown in Figure 1 due to the proximity of this relatively abrupt change in terrain to the Reclaim Cooling Towers. The lower gypsum stack was treated as a structure in order to examine terrain induced downwash on the Reclaim Cooling Tower plumes.

Gaseous vs. particle release. Deposition estimates from the proposed models discussed in the next portion of the report depend on whether the fluoride is released as a gas or is particle based. In addition to meteorology and the characteristics of the vegetation, gaseous deposition is related

1. EQ, 2003. Portneuf Valley PM_{10} Non-Attainment Area Air Emission Inventory Final Report: Volume I and Volume II. Prepared for Idaho Department of Environmental Quality, Pocatello Regional Office, by Environmental Quality Management, Inc, Cincinnati, Ohio, 45240. IDEQ Contract C179. February 2003. Note the *Portneuf Valley Nonattainment Area PM_{10} SIP* has not yet been formally approved.
2. Email from Herman Wong, EPA Regional 10, to Ken Richmond, MFG, Inc. July 9, 2004. The EPA Clearinghouse case number is 91-II-01.

to the properties of the gas and particle deposition depends on the particle size distribution. Prior to the implementation of the wet slurry system at the Don Plant, the majority of the fluoride emissions were released from fugitive dust sources associated with materials handling and the calcining process. The current wet process has reduced total plant fluoride emissions and changed the nature of the release.

At the Don Plant phosphate is extracted from the phosphate ore (fluoroapatite) by reacting the ore with sulfuric acid in a compartmented attack vessel. Phosphate is recovered as an acid-water based solution. Fluoride, also present in the ore will exist as either water soluble fluoride compounds or as "unreacted" ore. The reaction mass also includes significant quantities of calcium sulfate or gypsum, both dissolved and solid.

The unreacted ore and other insoluble particles are removed from the reaction mass by vacuum filtration. The solid fraction is slurried with process water and the thickened slurry is eventually delivered to the Gyp-Stack. These solids and the transport water contain various fluoride compounds and account for the Gyp-Stack emissions listed in Table 1.

The product acid retains a significant amount of soluble fluoride compounds. All dissolved fluoride compounds have a vapor pressure both for water and the fluorides. Whenever the product is heated either at ambient or reduced pressures, water is removed as vapor. With the water come representative vapor phase fluoride compounds including hydrogen fluoride (HF), silicon tetrafluoride (SiF_4) and fluorosilicic acid (H_2SiF_6).

If the heated vapors are cooled as in a condenser, the water and the several fluoride compounds enter the aqueous phase. If the gases are to be vented to the atmosphere directly they are treated by a water-based scrubbing system. In all cases the potential fluoride emissions are all derived from water soluble fluorides all of which are known to have fluoride vapor pressures.

Based on the rationale above and knowledge of the process, Simplot believes the majority of the fluoride is released as SiF_4 early in the process and as HF later in the process as silica becomes unavailable. Although historical stack testing can not directly verify this,[3] the amount of fluoride emitted can not be accounted for by fluoride contained in particulate mass (PM) emissions. The Reclaim Cooling Towers are the largest source of fluoride. Cooling tower PM and fluoride emissions averaged 5.38 lb/hr and 2.38 lb/hr, respectively, per cell during 1999-2003. The implied fluoride concentration of 442,380 ppm in the PM is not possible.

3. The stack testing method for fluoride does not distinguish between gaseous and particle fluoride. The fluoride analyses are preformed after the particle and impinger samples have been combined.

Dispersion Modeling Techniques

MFG applied the latest versions of EPA regulatory models to simulate fluoride emissions at the Don Plant. MFG applied similar modeling tools and meteorological data in the *Simplot SO_2 FIP to SIP*.[4] Based on comparisons with observations, these techniques were able to explain sulfur dioxide (SO_2) concentrations surrounding the Simplot/Astaris Industrial Complex and subsequently demonstrate attainment of the short-term SO_2 ambient standards. Although the current focus is fluoride deposition, many aspects of the *Simplot SO_2 FIP to SIP* study are relevant to simulation of fluoride sources. The modeling approach and data sets are described below.

Study domain. Figure 4 shows the study domain and displays the current forage monitoring sites, local terrain contours, and the location of meteorological sites. The fluoride monitoring sites are located in relatively flat terrain, and are located downwind in the prevailing direction generally northeast of the Don Plant. The study domain in Figure 4 was selected to focus on areas with livestock forage potentially impacted by the Don Plant emissions. Although livestock forage is limited in areas of complex terrain south of the facility, receptors in these areas were also included the study.

Dispersion model selection. MFG applied two dispersion models in the *Simplot SO_2 FIP to SIP*: AERMOD and ISCPRIME. These models will replace ISCST3, the current EPA *Guideline* model in the near future. MFG conducted a model performance evaluation for the *Simplot SO_2 FIP to SIP* and found the combination of these models out-performed ISCST3. Although the EPA has not formally adopted these models, both ISCPRIME and AERMOD are being used on a case-by-case basis for regulatory applications within EPA Region 10 and EPA has approved their application for sources of airborne emissions at the Don Plant.

EPA released a modified version of AERMOD called AERMOD-Prime (Version 02222).[5] This dispersion model incorporates the building downwash routines of ISCPRIME into AERMOD. Before this model was introduced, it was necessary to apply both AERMOD and ISCPRIME for sources in complex terrain subject to building downwash. AERMOD-Prime and previous versions of AERMOD do not contain algorithms to predict deposition fluxes. Although dry deposition and concentration are related, the Consent Order specifies that future vegetation sampling consider deposition flux modeling.

Recently the EPA released a "Beta-Version" of AERMOD-Prime with deposition (Version 04079, hereafter "AERMOD-Depo").[6] AERMOD-Depo contains the necessary routines to predict wet and dry deposition of both gases and particles. MFG selected this model for the current study since it combines the best features of the two models shown to perform well in the

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4. MFG, Inc, 2001. *Dispersion Modeling Assessment Simplot SO_2 FIP to SIP.* MFG, Inc., 19203 36th Ave. W, Suite 101, Lynnwood, WA 98036, November 27, 2001. Note the *SO_2 FIP to SIP* has not yet been formally approved.
5. EPA, 2002. *AERMOD: Description of Model Formulation (Version 02222)*, EPA 454/R-02-002d. October 31, 2002. Obtained from: http://www.epa.gov/scram001/7thconf/aermod/aermod_mfd.pdf.
6. EPA, 2004. *AERMOD Prime with Deposition (Version (04079): Draft AERMOD User's Guide Addendum and Science Document.* Obtained from: http://www.epa.gov/scram001/review/aermoddep/aer_addm.zip.

Simplot SO_2 FIP to SIP and has the necessary deposition algorithms required to comply with the Consent Order request for deposition modeling.

The state of this model's development is dynamic and changes are being made to the model by the EPA. The current version of AERMOD-Depo is undergoing testing at the EPA and an official version is expected to be released in the near future. Prior to application of the model, MFG consulted DEQ and EPA Region 10. Due to uncertainties concerning the future release date of an updated model and the pending Consent Order deadlines, DEQ and MFG mutually agreed that the current version of AERMOD-Depo (04079) should be used in the analysis. A description of AERMOD-Depo follows.

AERMOD-Depo. AERMOD, AERMOD-Prime, and AERMOD-Depo are the result of collaboration between the American Meteorological Society, EPA, and Argonne National Laboratory (ANL) to include more up-to-date diffusion, building downwash, and deposition routines in the EPA regulatory models. AERMOD-Depo incorporates dispersion and building downwash algorithms that:

- depart from the traditional Pasquill-Gifford dispersion curves used in ISCST3. Diffusion is based on boundary layer relationships for the lateral and vertical turbulence intensity that depend on the surface energy fluxes and the mixed layer height. These variables are varied in height according to similarity theory and predicted dispersion compares more favorably with observations for a larger variety of sources and meteorological conditions,

- can use local turbulence measurements directly for estimates of lateral and vertical diffusion when these data are available,

- feature a non-Gaussian or skewed vertical probability distribution function during convective conditions,

- allow for vertical inhomogeneity of the transport winds and diffusion parameters. Characterization of these variables is based on an average over the vertical depth of the plume rather than a single level of 10 m,

- more accurately simulate elevated plumes in complex terrain using a "divided streamline" approach, and

- include the effects of building downwash implicitly rather than using the wind tunnel based empirical algorithms of ISCST3. Importantly, these routines treat the geometry of upwind/downwind buildings and their relationship to the stack more precisely.

The deposition routines in AERMOD-Depo are similar to ISCST3, but are more recent versions based on the recommendations of ANL and scientific peer review of ISCST3. Features of the deposition algorithms include:

- Particle dry deposition algorithms are based on a resistance analog similar to the procedures contained in ISCST3, CALPUFF, and CMAQ. The dry deposition flux is calculated as the product of a deposition velocity and concentration. For the deposition velocity, AERMOD-Depo contains an optional simplification for PM_{10} sources that allows for situations when the particle size distribution is not well known.

- Gaseous dry deposition algorithms are also based on a resistance analog using a highly parameterized scheme similar to the subroutines in CMAQ. Predictions depend on many pollutant specific resistances as a function of vegetation (land use and season).

- Revised wet deposition routines are included for both particles and gases. The same algorithms are used for both rain and frozen precipitation. As with the dry deposition parameterization, the gaseous wet mechanism depends on several chemical dependent variables.

- Mass depletion from the plume to account for removal by dry mechanisms is based on the source depletion approach. This method is less sophisticated, but more computationally efficient than the modified surface depletion procedures in ISCST3.

- Mass depletion caused by wet deposition is treated in the same way as ISCST3.

Meteorological data preparation. MFG constructed a five year meteorological data set for AERMOD-Depo using the same basic methods and data sets used in *Simplot SO_2 FIP to SIP* and other recent permitting studies for the Don Plant. The five years selected were 1997 through 2001. The first three years were used in the *Simplot SO_2 FIP to SIP* and data from 1999 have been used for permitting studies at the Don Plant.[7] Five years of on-site data, although not required for regulatory modeling studies, are preferred if such data are available and have met quality assurance requirements. In our opinion the 1997 to 1999 data are suitable for the deposition modeling study.

MFG examined the twice-yearly audit reports for more recent data to establish whether construction of a five year (1997-2001) data set was possible based on the results of these audits. The data recovery for the five year data set is 99.4%. With the exception of the audit conducted in September 2000, the data used in the current analysis was collected from wind speed, wind direction and temperature sensors that passed all audit tests. The wind vane failed the linearity test for an easterly wind direction by a small margin[8] and was subsequently replaced during the September 2000 audit. The sensor was well within audit criteria for the other cardinal directions. Given the advantages of the using a continuous five year data set, MFG doesn't believe 6 months

7. The 1999 meteorological data were used for the *300 Sulfuric Acid Plant Replacement Project* and the *Granulation No.3 Upgrade Project*. The 1997 and 1998 data sets were collected with appropriate instrumentation, passed all audits, and had little missing data. DEQ rejected these data for New Source Review because the auditor did not use a torque watch to check the bearings of the anemometers. EPA approved the use of these data for the *Simplot SO_2 FIP to SIP* as it was the common practice of experienced auditors to rely on more qualitative tests to check for wear of the anemometer and wind vane bearings. Audits performed after 1998 have employed a torque watch.
8. The sensor recorded a deviation in an easterly wind direction of 3.5 degrees from the audit value. To pass the audit the sensor must be within 3 degrees.

of data in question should be invalidated for the current study based on the audit result for the wind vane.

The necessary meteorological data for AERMOD-Depo include local surface airways observations, on-site surface and upper level data (optional), a morning sounding, and precipitation data for wet deposition estimates. The user also must supply variables that describe the surface characteristics of the modeling domain. MFG prepared input files using the EPA meteorological preprocessor AERMET and the following data sets and procedures:

- MFG used on-site wind and temperature observations from Site 1 (shown in Figure 4). The 19-m Site 1 tower is located between the Don Plant and the majority of the potential forage monitoring sites.

- Surface airways observations including cloud cover and ceiling height data from Pocatello Airport were obtained from the National Climatic Data Center (NCDC) to supplement Simplot's on-site observations. Pocatello Airport hourly precipitation data from NCDC were also collected for wet deposition estimates.

- Additional meteorological variables and geophysical parameters are required by AERMET to estimate the surface energy fluxes and construct boundary layer profiles. Surface characteristics including the surface roughness length, albedo, and Bowen ratio were assigned using the guidance in *AERMET User's Guide* on a sector-by-sector and seasonal basis.[9] Land use surrounding the Don Plant was characterized by both cultivated and scrub categories. For the summer and fall seasons, Bowen ratios were assigned assuming "dry" conditions.

- AERMOD-Depo can use turbulence observations directly for estimates of lateral and vertical plume diffusion. The sigma-theta measurements available at Site 1 were used as input for estimation of lateral diffusion.

- AERMET requires a representative morning sounding for calculation of the convective mixed layer height. Unlike the use of this variable by ISCST3, the mixed layer height is an important scaling variable affecting diffusion estimates by AERMOD during daytime hours. The temperature lapse rate data also influence the inversion plume penetration algorithms. In the absence of a local morning sounding, MFG obtained the Boise soundings from the NCDC as input into AERMET. Boise soundings were also used to construct the AERMET data files in the *Simplot SO_2 FIP to SIP*.

Wind rose plots constructed from the data collected at Site 1 during 1997 through 2001 are shown in Figure 5 and Figure 6 for the full data set and for the growing season months of May through September, respectively. The average wind speed during the five year period is 3.8 m/s. Winds at Site 1 are bi-modal with prevailing winds from the west to southwest, and secondarily from the east-southeast to southeast. Most of the higher winds have a southerly component,

9. EPA, 1998. *Revised Draft User's Guide for the AERMOD Meteorological Preprocessor (AERMET).* EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, November 1998.

while the lowest wind speeds are typically from the north down the Snake River Valley. The wind rose for the growing season is very similar to the annual wind rose.

Receptor network. Figure 7 displays the receptor network for the dispersion modeling study. This same network was proposed in the *Protocol*. Receptors are located on a 250 m mesh size grid within a 5 km-by-9 km domain, at the current forage monitoring stations, along the Don Plant fenceline at 50 m intervals, and on a fine 50 m mesh size grid in areas near the fenceline. Receptors inside the Don Plant fenceline are excluded. The location of the fine receptor grid corresponds to regions of higher model predictions based on previous modeling studies at the Don Plant. Such studies suggested the higher predictions may occur along the northern boundary due to downwash effects and because this area is downwind in the prevailing directions, and in elevated terrain to the east-southeast of the Don Plant from the more buoyant point source plumes. The higher deposition fluxes predicted by this study also occurred in the same general locations and it was not necessary to add receptors to the network initially presented in the *Protocol*.

AERMAP for terrain elevations and scale heights. Terrain elevations at the receptors used in the model simulations were prepared using the latest version of the AERMOD-Depo terrain preprocessor AERMAP. In addition to receptor elevation, the complex terrain algorithms contained in AERMOD-Depo also depend on the calculation of terrain scale heights. Terrain scale heights are used by an algorithm in the model that determines whether a plume goes around or over a terrain object.

AERMAP was applied to prepare the necessary terrain data using the 1:24,000 scale Digital Elevation Model (DEM) data sets available on the Internet from the United States Geological Survey (USGS). The necessary data sets were selected to cover an area larger than the study domain, as required by AERMAP to include dominant nearby terrain features in the calculation of scale heights. The current version of AERMAP can not use the latest 10 m mesh size DEM data available from the USGS and it was necessary to use 30 m mesh size data.

BPIPPRIME. With the exception of the tall main stacks at Simplot's acid plants, building wake turbulence potentially affects dispersion and plume rise for most sources within the Don Plant. MFG applied BPIPPRIME to provide the wind direction specific building wake parameters required by AERMOD-Depo to simulate influences from nearby structures. BPIPPRIME applies EPA Good Engineering Practice stack height design guidance based on building locations, building heights, stack heights, and stack locations. The stack locations, building locations, and building heights are shown in Figure 2, Figure 3, and Table 4, respectively.

Application of AERMOD-Depo. AERMOD-Depo was used to simulate fluoride emissions from the Don Plant using regulatory default modeling options for rural conditions. Wet and dry depletion options were invoked as considerable mass was expected to be removed from the plumes due to the relatively high deposition velocities predicted for gaseous fluoride. The simulations assumed fluoride emissions are HF based on the arguments presented in the previous discussion. Some portion of the fluoride emissions is likely SiF_4, but this compound is also very water soluble and is expected to have similar deposition properties to HF.

The input properties for HF required by the deposition algorithm in AERMOD-Depo are listed in Table 5. The properties were selected based on the recommendations of the developers of the deposition algorithms for soluble gases like HF and hydrogen chloride.[10] The default reactivity factor ($f_0 = 0$) was used in the simulations. This default parameter forces uptake of HF by vegetation to behave more like sulfur dioxide than the less soluble and less reactive ozone.

In addition to the properties of the pollutant and meteorology, deposition velocities depend on the characteristics of the surface or vegetation. The associated vegetation deposition parameters for HF were conservatively based on the suggestions for AERMOD "Seasonal Category 1 (midsummer with lush vegetation)" to account for irrigation and other local farming practices used to encourage growth of alfalfa and grass used as forage. These parameters were assigned to the May through September months used to define the growing season. For annual deposition flux estimates, vegetation parameters are also required for the remainder of the year. Deposition parameters were be assigned based on "Seasonal Category 3 (late autumn after harvest, before snow)" for the October and November, "Seasonal Category 4 (winter with snow)" for December through February, and Seasonal Category 5 (transitional spring) for March and April.

Deposition Modeling Results

The AERMOD-Depo model was applied to simulate HF emissions from the Don Plant using five years of meteorological data. Two sets of simulations were performed to bound likely deposition fluxes and examine whether the spatial deposition patterns change as different sources become more influential. Maximum potential fluoride deposition was characterized based on allowable fluoride emission permit limits for the Don Plant. More likely deposition rates were predicted using averaged emissions from stack tests conducted from 1999 through 2003.

The Idaho fluoride in forage standards are shown in Table 6. It is beyond the scope of the current analysis to directly predict fluoride in forage as the uptake mechanisms are not well understood and depend on many variables including the practices of the farmers growing the forage. However, the forage standards infer that monthly, bi-monthly and annual averaging periods are important and the design of the forage monitoring program will consider deposition flux predictions using these averaging periods. The annual averaging period may be important in characterizing chronic uptake of fluoride deposited to soils, while the monthly and bi-monthly periods may be more representative of shorter-term uptake by the vegetation of fluoride deposited or removed by the plant stomata and cuticles. For, the latter MFG assumed the uptake of fluoride by vegetation primarily occurs during the growing season. Since soluble fluoride may also be taken up through the soil annual deposition fluxes were also calculated.

Post-processing. Monthly time series output from AERMOD-Depo at each receptor location was post-processed by a customized FORTRAN program written by MFG. The procedure was used to obtain the maximum monthly, maximum bi-monthly, maximum annual deposition flux at each receptor location during the five year simulation. The same program also summarized the monthly data using only the growing season months of May through September. MFG prepared contour plots of the annual, maximum monthly, maximum bi-monthly, and maximum growing

10. Wesley, M.L., Doskey, P.V., and J.D, Shannon, 2002. Deposition Parameterizations for the Industrial Source Complex (ISC) Model. http://www.epa.gov/scram001/guidance/review/aermoddep/driscdep.zip

seasonal average fluoride deposition flux at each receptor in the study domain. In order to distinguish between deposition mechanisms, MFG also prepared contour plots for wet, dry, and total fluoride deposition fluxes. Using the simulations from both allowable and actual fluoride emissions, MFG prepared 36 contour plots that can be used with other information to design the forage sampling program. The remainder of this section will present a representative number of the contour plots and discuss the results of the deposition modeling simulations.

Figure 8, Figure 9, Figure 10, and Figure 11 display contour plots of total (wet plus dry) fluoride deposition constructed from the maximum annual, maximum growing season, maximum monthly growing season, and maximum bi-monthly growing season predictions at each receptor in the five year simulations. These figures are based on the simulations that used allowable fluoride emissions from the Don Plant. The deposition units in each figure are micrograms per square meter ($\mu g/m^2$) per the averaging period of interest.

The predicted contour patterns of maximum wet plus dry fluoride deposition are similar for the different averaging periods: annual, growing season, monthly and bi-monthly. The "butter-fly" patterns predicted in the current simulations are similar to annual concentration predictions from our previous studies and reflect the influence of the prevailing winds (See Figure 5). The highest deposition fluxes occur along the northern fenceline and are caused by downwash of the cooling tower plumes. Deposition during downwash events is enhanced because the plumes are brought to the surface and because deposition velocities[11] are higher during windy conditions. Although there is a slight suggestion of higher deposition in the elevated terrain south of the plant, this effect is less than exhibited by concentration predictions. Winds from the north are usually light and can cause the plumes to impact complex terrain. However such conditions are infrequent and deposition velocities are lower under light winds.

Differences between simulations with allowable versus actual fluoride emissions. Figure 12 to Figure 15 display similar contour plots based on simulations using actual emissions derived from stacks test during 1999 to 2003. Fluoride deposition predictions for all averaging periods are lower because Don Plant actual emissions are lower than allowable emissions. However the spatial patterns are similar with only subtle differences near the Gyp-Stack. In order to examine the differences, Figure 16 shows the ratio of the maximum growing season deposition fluxes based on the two sets of simulations. This figure was constructed by dividing predictions with actual emissions by predictions with allowable emissions at each receptor location. For portions of the grid influenced by most of the Don Plant fluoride sources the ratio is close to the approximate ratio of actual to allowable emissions. As emissions from the Gyp-Stack become more influential the ratio approaches unity, because allowable and actual fluoride emissions from the Gyp-Stack are the same. The similarity between the predictions indicates design of the monitoring program should not be influenced by assumptions concerning which emissions should be used: allowable or a best estimate based on stack tests.

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11. The dry deposition flux is calculated as the product of a deposition velocity and ground level concentration. The dry deposition is high when both the concentration and deposition velocity are high. The deposition velocity depends on a number of complex relationships: meteorology, the reactivity of the pollutant, and characteristics of the depositing surface. In general higher deposition velocities are predicted when conditions are more turbulent.

Growing season versus annual deposition. Figure 17 shows the ratio of maximum growing season deposition to maximum annual fluoride deposition based on the simulations with actual emissions. A ratio of greater than 0.42 (5 months over 12 months) suggests deposition mechanisms are predicted to be enhanced during the growing season versus other periods of the year. The portion of the deposition velocity influenced by vegetation is higher during the growing season. However, meteorological influences and wet deposition mechanisms are often more important in AERMOD-Depo's parameterization. The results displayed in Figure 17 suggest growing season deposition contributes more than the other months close to the Don Plant and in the prevailing directions. These are also the areas where the highest fluoride deposition rates are predicted. North and south of the Don Plant ratios are less than 0.42 indicating non-vegetation related variables are more influential. Also the ratio becomes smaller as distance increases from the fluoride sources at the Don Plant. High deposition velocities result in mass removal and ultimately lower deposition rates as concentrations decrease downwind.

Wet versus dry deposition predictions. The deposition of fluoride and subsequent uptake by vegetation may be influenced by the deposition mechanism: wet deposition or dry deposition. Wet deposition occurs during precipitation events as soluble fluoride and HF is readily scavenged. Such events are usually short-term, especially in the growing season as most the precipitation in the Pocatello area occurs during thunderstorms at this time of the year. Exposure from dry deposition occurs over long periods and is more constant, especially in the prevailing wind directions.

Figure 18 and Figure 19 show maximum predicted growing season deposition fluxes broken down into contributions of the dry and wet mechanisms, respectively. Figure 20 presents the ratio of wet to dry deposition for the same set of simulations. A ratio of greater than 0.5 indicates wet deposition is more important than dry deposition. The simulations suggest dry deposition is more important then wet for most of the modeling domain, especially at the receptors where the total deposition is the highest near the Don Plant. However even in the growing season where precipitation events are rare, such events have the potential to be important and may contribute more than dry deposition in the off wind directions.

Table 1. Allowable Don Plant Fluoride Emissions

Source ID	Plant Name - Source Group	Source Description	Fluoride Emissions (a) (lb/hr)
AP001	Ammo #1	R/G Scrubber	1.5
AP002	Ammo #1	Dryer	
AP003	Ammo #1	Baghouse	
BP001	Ammo #2	TG Scrubber	1.5
BP002	Ammo #2	Cooler Baghouse	
CP001	Granulation #3	Main Stack	1.28
IP001	Phos. Acid Plant	Davy McKee	1.3
IP002	Phos. Acid Plant	Tank Farm Scrubber	0.5 (d)
JP006	Super Phos. Acid	Super Phos. Reactor (oxidizer)	0.37 (b)
PP001	Reclaim Cool Towers	R. Cooling Tower N (2 cells)	9.8
PP002	Reclaim Cool Towers	R. Cooling Tower E (3 cells)	14.7
PP003	Reclaim Cool Towers	R. Cooling Tower W (3 cells)	14.7
QF001	Gypsum Pile/Pond	Gypsum Pile/Pond	1.75 (c)

(a) Permitted allowable emissions for Ammo #1 and Ammo #2 are based on MACT lb/ton emission limits and an assumed throughput. Permit limits from DEQ permits are 7.8 lb/hr and 6.8 lb/hr for these sources.

(b) Allowable emissions based on 0.01 lb/ton of P_2O_5 and 885 TPD P_2O_5.

(c) The Gyp-Stack emission rate is based on 7.67 TPY or 1.75 lb/hr and 365.25 days per year. See the report for an explanation of this emissions rate.

(d) The Tank Farm Scrubber does not have a permit limit. The estimate of 0.5 lb/hr is the highest sample from the sources tests in 1995.

Table 2. Don Plant Fluoride Emissions from 1999-2003 Stack Tests

Source ID	Source	Average Fluoride Emissions (lb/hr)	Number of Samples	Average Annual Days of Operation	Fluoride Emissions (TPY)
AP001	Ammo #1 R/G Scrubber	0.25	15	340	1.00
AP002	Ammo #1 Dryer	0.03	15	340	0.12
AP003	Ammo #1 Baghouse	0.03	15	340	0.14
BP001	Ammo #2 TG Scrubber	1.05	14	340	4.26
BP002	Ammo #2 Cooler Baghouse	0.10	15	340	0.42
CP001	Granulation. #3 Main Stack	0.41	6 (a)	340	1.69
IP001	PAP Davy McKee	0.36	16	340	1.48
IP002	PAP TFS	0.45	3 (b)	340	1.83
JP006	SPA Oxidizer	0.01	9	340	0.06
PP001	R. Cooling Tower N (2 cells)	4.76	45 (c)	340	19.43
PP002	R. Cooling Tower E (3 cells)	7.14		340	29.15
PP003	R. Cooling Tower W (3 cells)	7.14		340	29.15
QF001	Gyp-Stack	1.75	(d)	365.25	7.67

(a) Stacks tests performed after June 2002 following the Granulation #3 Upgrade Project PTC issued on December 12, 2001.

(b) No stack tests are available during 1999-2003, stack tests are from 1995.

(c) All eight cells have been sampled. The averages shown are based on the average of the 45 samples multiplied by the number of cells in each tower.

(d) Emissions from the Gyp-Stack have not been measured; all simulations use the "corrected" permit limit. A discussion of this emission rate is provided in the body of the report.

Table 3. Stack Parameters

Source ID	Height (ft)	Diameter (ft)	Temperature (a) (°F)	Flow (a) (acfm)
AP001	98	2.92	172	23,835
AP002	98	3.92	141	35,407
AP003	98	2.50	145	12,601
BP001	150	6.00	139	68,735
BP002	60	3.00	132	35,816
CP001	175	6.00	139	65,640
IP001	179	6.00	98	106,515
IP002	115	3.50	85 (c)	25,125 (c)
JP006	47	1.46	72	2,189
PP001	38	28.28 (b)	84	963,164 (b)
PP002	35	34.64 (b)	84	1,444,747 (b)
PP003	38	34.64 (b)	84	1,444,747 (b)

(a) Stack parameters from 1999-2003 stack testing unless otherwise noted

(b) Cooling tower flow rates are based on the averages for 8 cells multiplied by the number of cells. The actual cooling tower cell diameters are 20 feet. For modeling purposes an equivalent diameter based on the combined cross sectional area is used to account for plume merging of adjacent cells.

(c) From 1995 stack tests.

Table 4. Building Heights

Label	Building	Ht(ft)	Label	Building	Ht(ft)
B1	Phos. Acid Plant	85.0	B53	Tank #57	20.0
B3	Pan Filter	85.0	B54	Tank #56	20.0
B5	Boiler Bldg	30.2	B55	Tech. Services	16.6
B7	Phos. Acid Control Room	96.1	B57	Safety Bldg	14.0
B8	Evaporator #11	100.0	B58	Foreman Office	9.3
B9	TSP	55.1	B59	Lunch & Change Room	12.0
B11	AP#1	77.1	B60	Machine Shop	20.0
B12	AP#2A	54.0	B61	Stores	30.0
B13	AP#2B	97.1	B62	Stores Bldg	19.0
B14	AP#1 Storage	53.1	B63	Stores Bldg	13.0
B15	AP#2 Storage	53.1	B64	Stores Bldg	11.0
B16	AS Dome	80.0	B65	Mobile Equip Shop	24.3
B17	AP Maintenance	7.5	B66	Lube Storage	11.5
B18	Super P2O5 West #1	30.2	B67	Compressor Bldg	32.0
B19	Super P2O5 East #1	30.2	B68	Compressor Bldg	19.0
B20	SPA E Cooling	44.9	B69	Ammonia Control Room	12.0
B21	AS	61.0	B70	Nitrogen Solutions Plant	15.0
B22	Ammosox tank	30.2	B71	NH3 Cooling Tower 1	38.0
B23	AS Loading	40.0	B72	NH3 Cooling Tower 2	62.0
B24	AP#1 Loading	75.5	B73	AIRCO Gases	30.0
B25	SPA W. Cooling	50.0	B74	Sulfuric Acid Office Shop	13.0
B26	#3 Bldg	35.0	B75	Slurry Storage Dome	82.0
B27	SPA Bldgs	30.2	B76	80' Thickener	28.0
B28	#4 Turbo-generator	50.0	B77	slurry storage Tanks	44.0
B29	Sulfur # 1 Tank	30.2	B78	slurry storage Tanks	44.0
B30	Sulfur #2 Tank	30.2	B79	slurry storage Tanks	44.0
B31	#4 Cooling	30.2	B80	slurry storage Tanks	44.0
B32	Tank #51	24.9	B81	Water Reclaim W.	20.0
B33	Tank #52	24.9	B82	Water Reclaim E.	20.0
B34	Tank #53	35.1	B83	N. TSP Maint Shop	13.0
B35	Cal Ore Silo #1	150.2	B84	North TSP Storage	32.0
B36	Cal Ore Silo #2	150.2	B85	Rubber Paint Tube Shops	27.0
B37	Cal Ore Silo #3	150.2	B86	Main Office Bldg	14.5
B38	Water Softener	40.0	B87	Tank #50	18.5
B39	Ammonia Tank	82.9	B88	Tank #19a	20.0
B40	Pilot Plant	18.0	B89	Tank #19b	18.5

Table 4. Building Heights (Continued)

Label	Building	Ht(ft)	Label	Building	Ht(ft)
B41	Ammonia Maintenance	18.0	B90	Tank No #	20.0
B42	#4 Boiler	40.0	B91	Tank #22	20.0
B43	Elect Indust. Shop	25.8	B92	Stores Bldg	19.0
B44	Motor Storage	25.8	B93	Sulf Unloading	10.3
B45	Req. Storage Bldg	21.3	B94	Refrig. Bldg	18.0
B46	Sulf Sto #6	35.0	B95	UN32 Tank #1	20.5
B47	Sulf Sto #5	35.0	B96	UN32 Tank #2	34.0
B48	Sulf Sto #4	34.5	B97	Maint Offices	34.0
B49	Insulators Shop	18.0	CN	N R. Cooling Tower	25.0
B50	Stores Bldg	27.0	CW	W R. Cooling Tower	25.0
B51	Tank #55	25.0	CE	E R. Cooling Tower	25.0
B52	Tank #54	21.5	TP	Tailings Pond	82.0

Table 5. Physicochemical Properties Assumed for HF

Variable	Value Used	Reference
D_a (cm^2/s)	0.30	Wesley, M.L., Doskey, P.V., and J.D, Shannon, 2002. Deposition Parameterizations for the Industrial Source Complex (ISC) Model. http://www.epa.gov/scram001/guidance/review/aermoddep/driscdep.zip
H (Pa-m^3/mol)	0.007	R. Sander, 1999. Compilation of Henry's Law Constants for Inorganic and Organic Species of Potential Interest in Environmental Chemistry (Version 3). http:/www.mpch-mainz.mpg.de/~sander/res/henry.html.
r_{cl} (s/cm)	10^5	Wesley et. al., 2002 (See above).
D_w (cm^2/s)	2.5×10^{-5}	EPA Online Assessment tools: http:/www.epa.gov/athens/learn2model/ part-two/onsite/estdiffusion.htm

Table 6. Idaho Fluoride in Forage Standards

Averaging Period	Standard, Total Fluoride in Vegetation used for Forage
Annual	40 ppm, dry basis -- annual arithmetic mean
Bi-monthly	60 ppm, dry basis -- monthly concentration for two consecutive months
Month	80 ppm, dry basis -- monthly concentration never to be exceeded

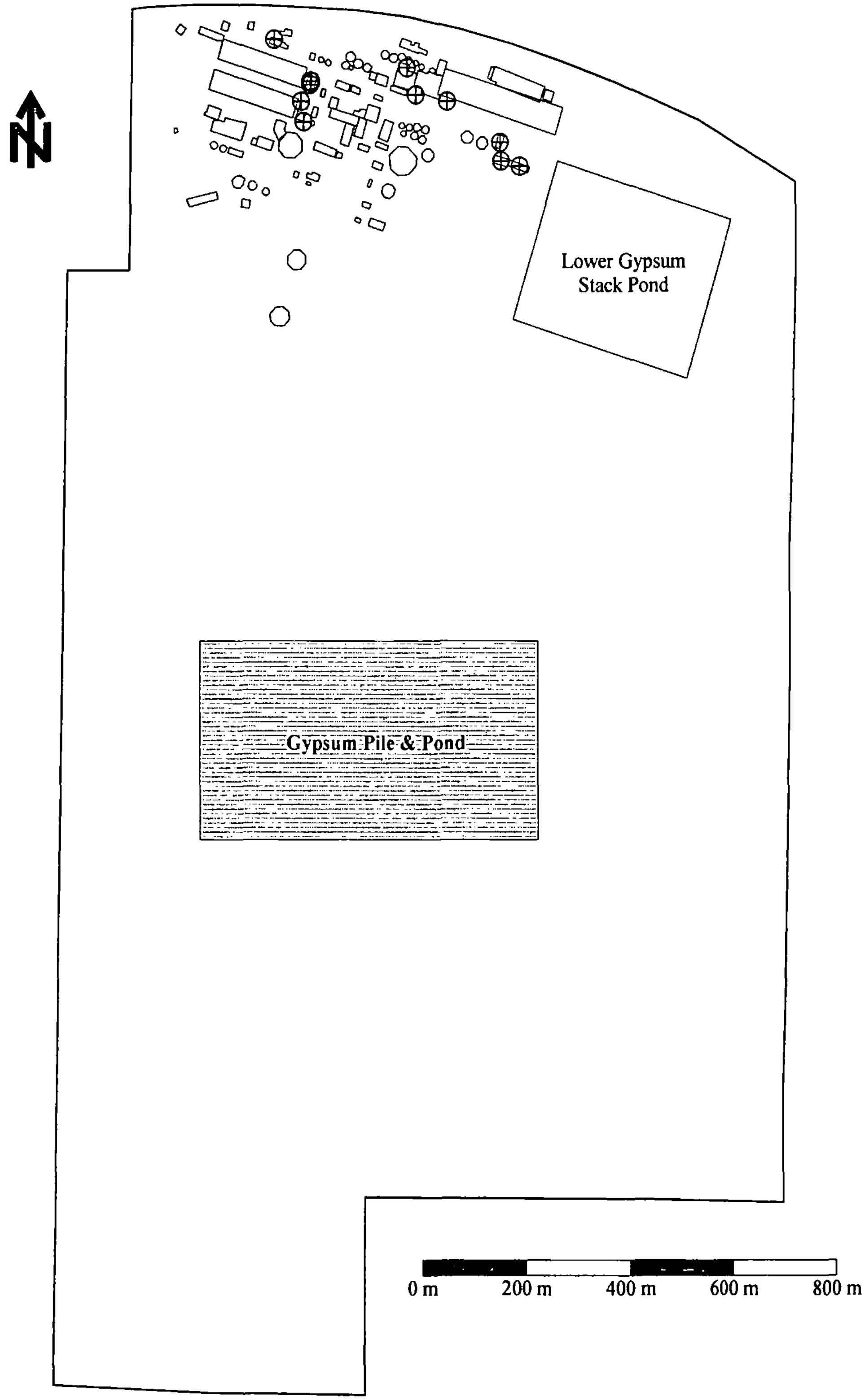

Figure 1. Don Plant Site Boundary, Buildings, and Fluoride Sources

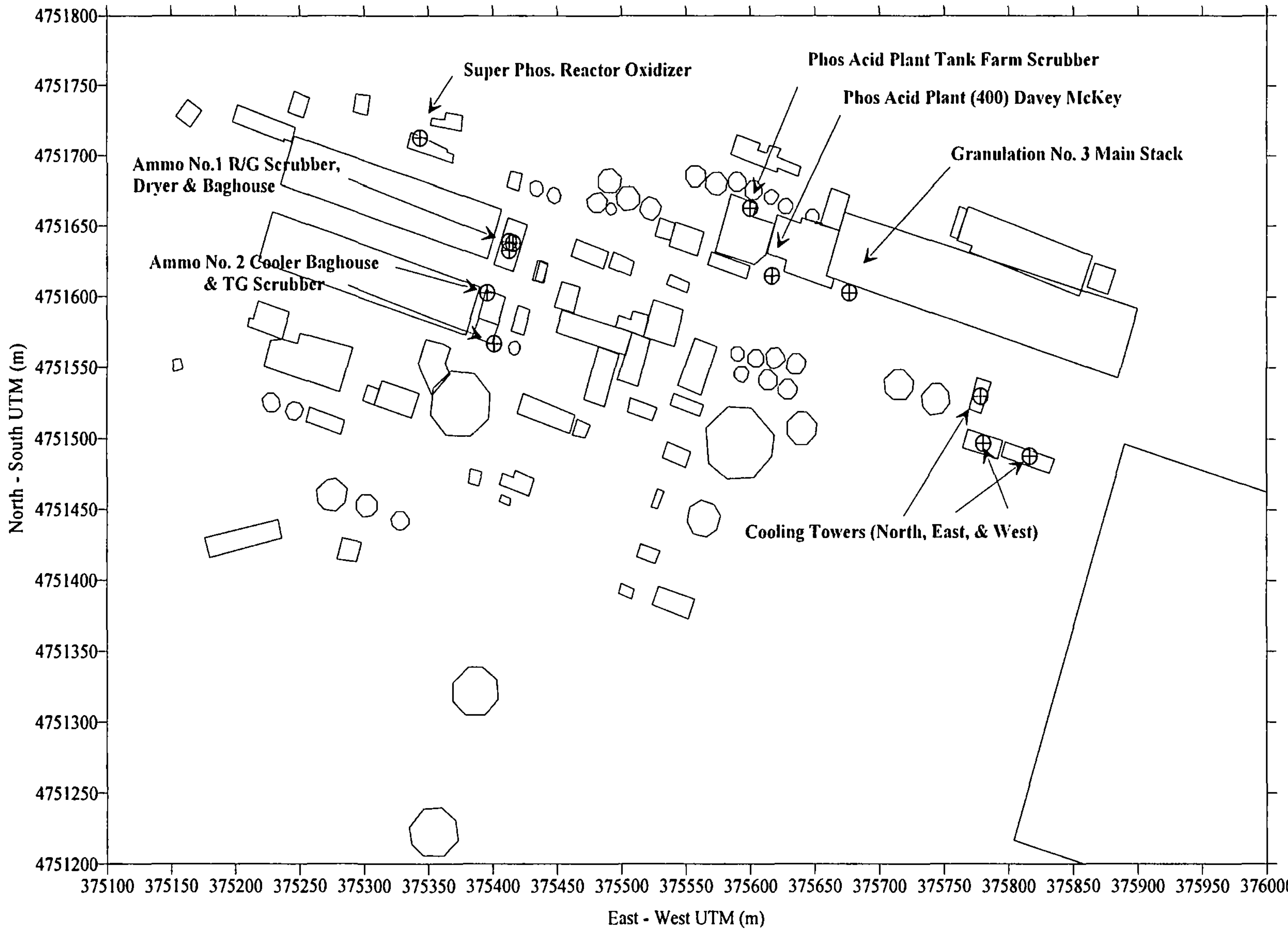

Figure 2. Fluoride Point Source Locations

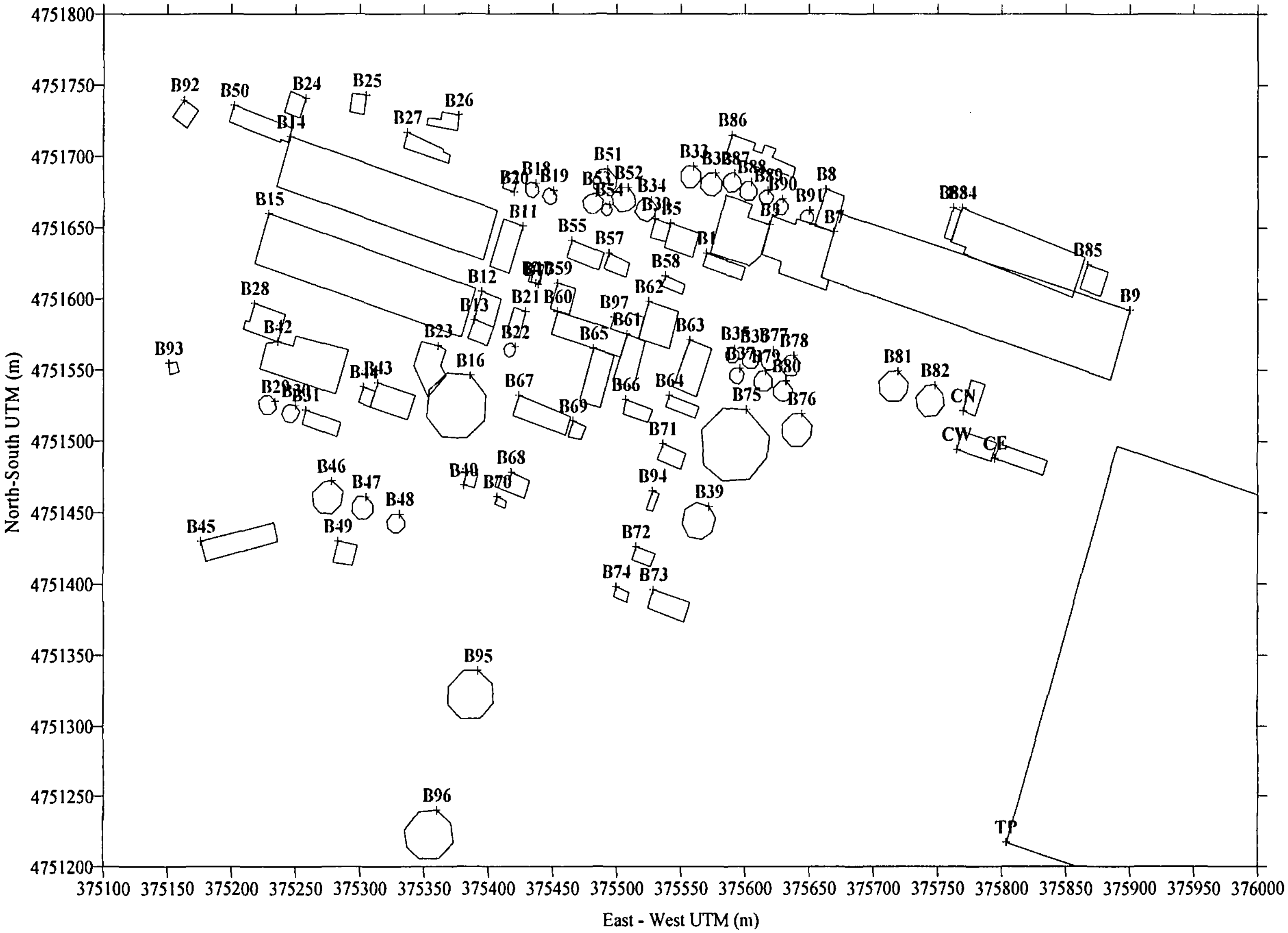

Figure 3. Building Locations

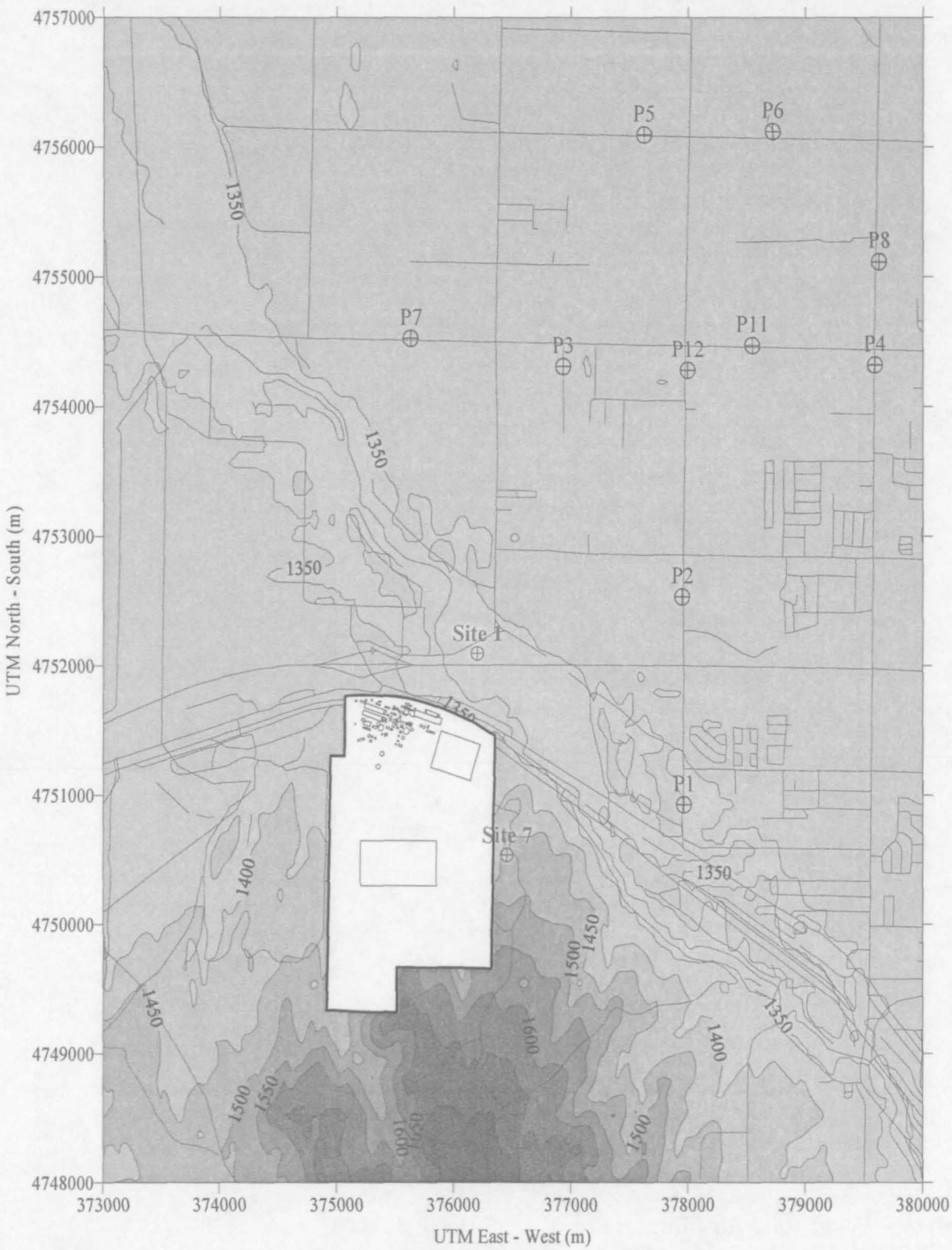

Figure 4. Study Area and Monitoring Sites (Terrain Contours in Meters)

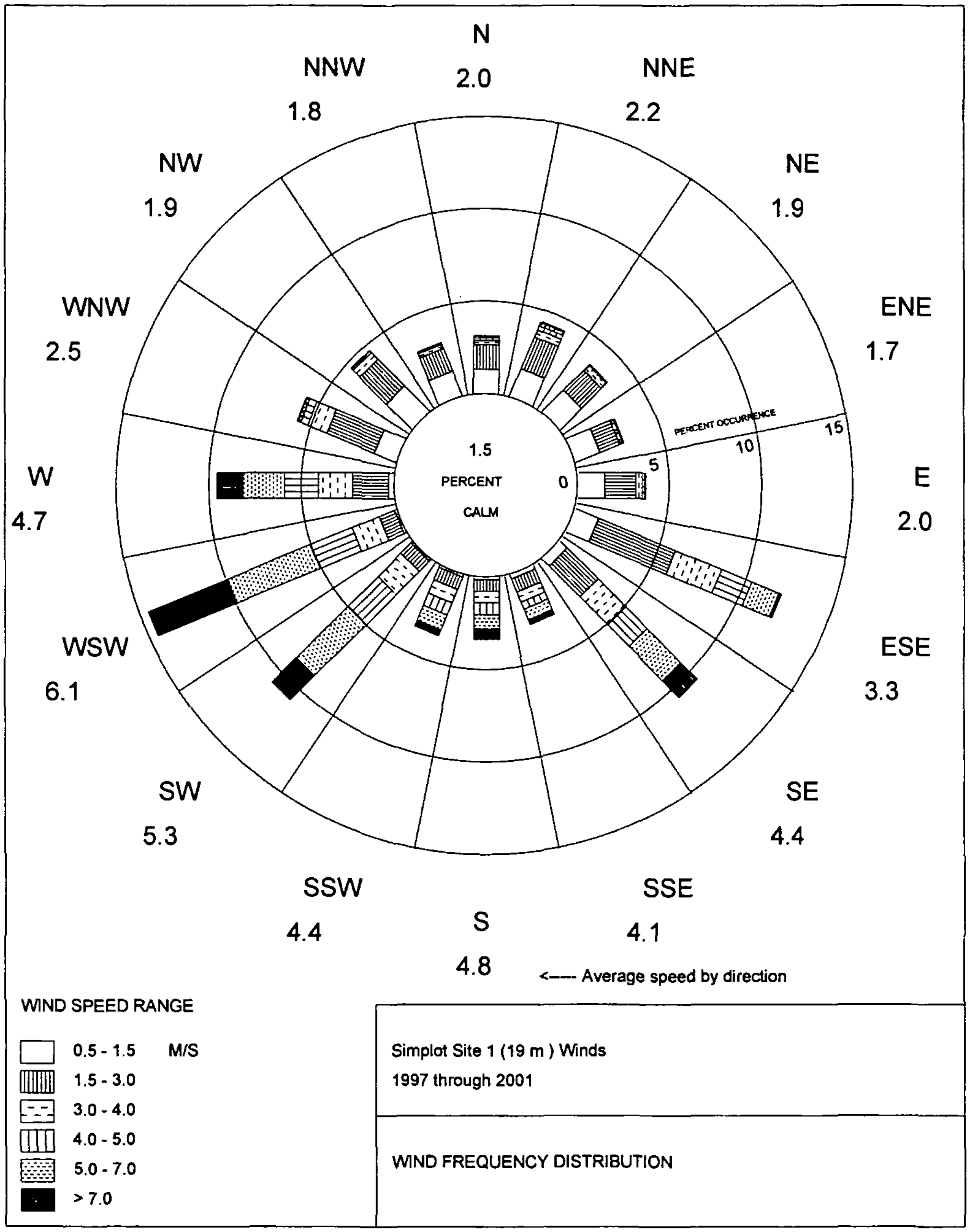

Figure 5. Wind Rose for Simplot Site 1, 1997 through 2001

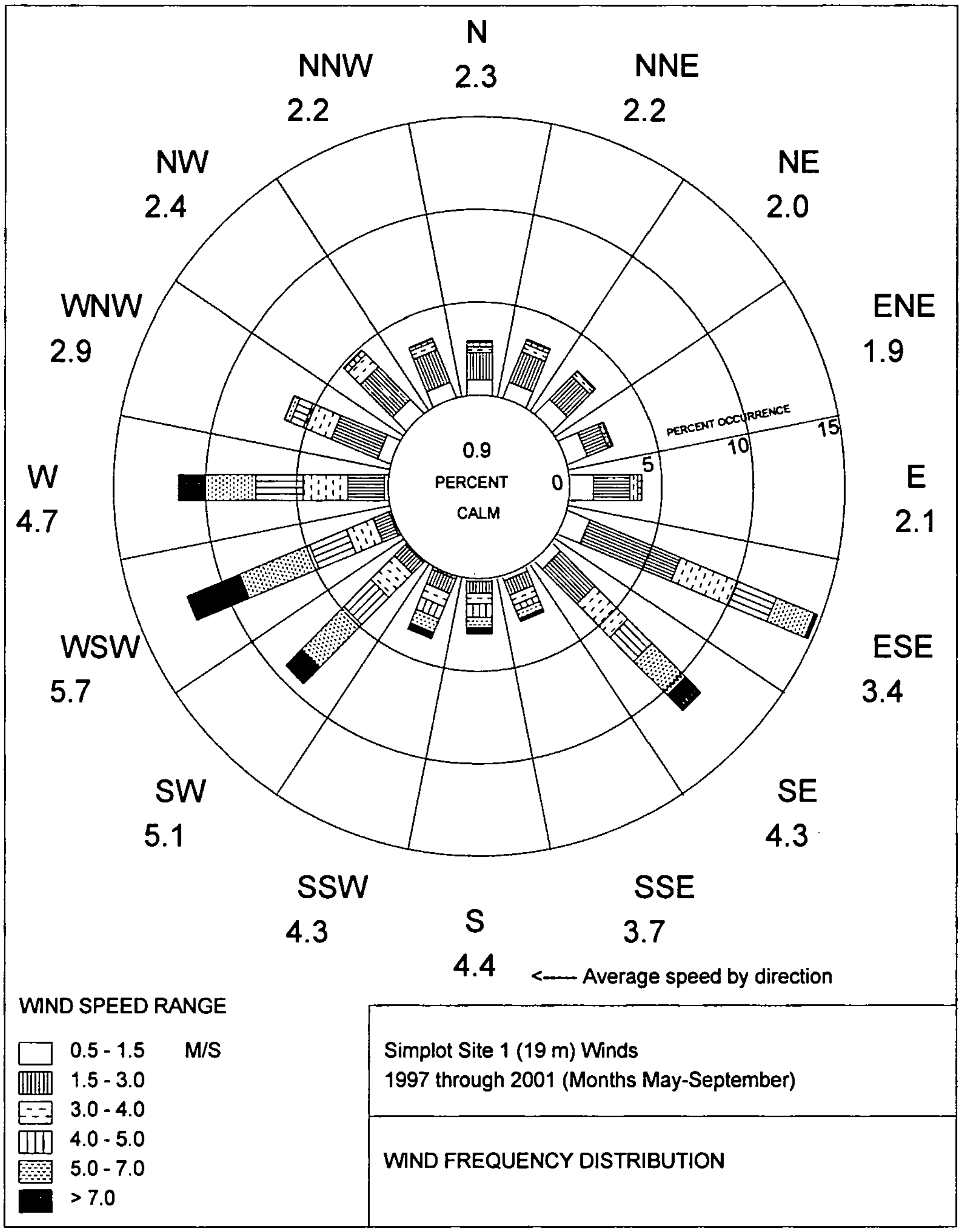

Figure 6. Wind Rose for Simplot Site 1, 1997 through 2001 (Growing Season)

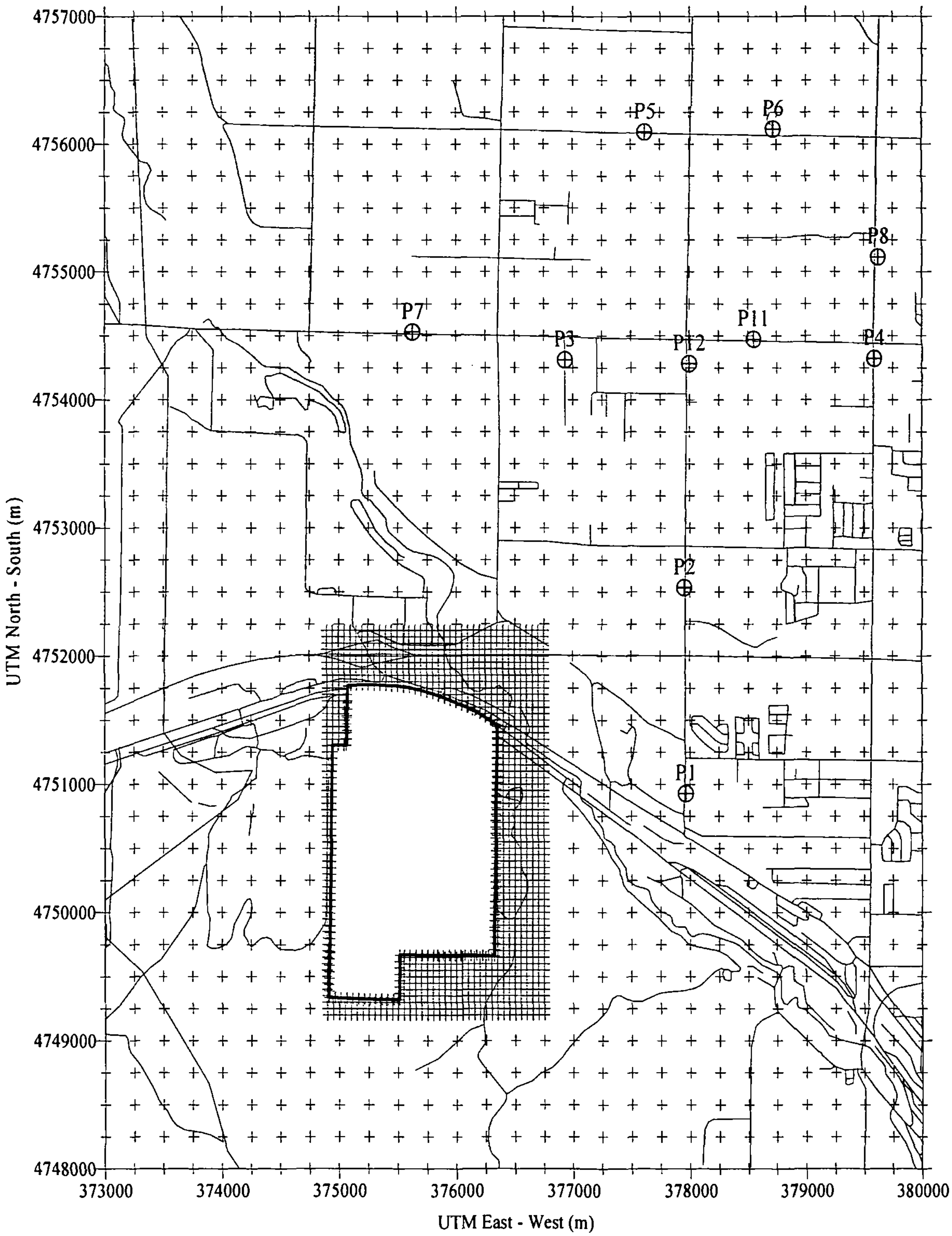

Figure 7. Receptor Locations

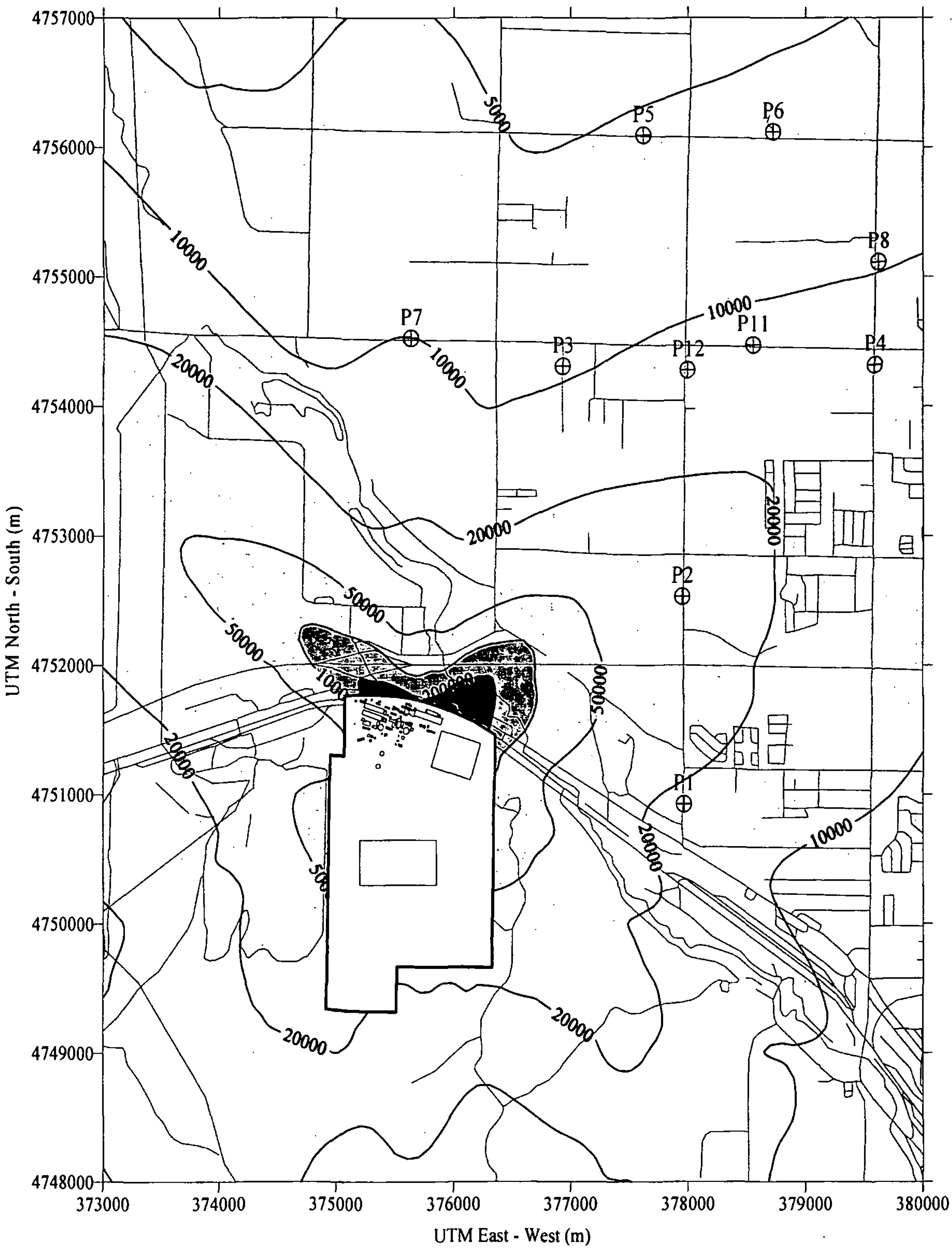

Figure 8. **Maximum Annual Wet + Dry HF Deposition, Allowable Emissions, 1997-2001 Meteorology, (Contours in $\mu g/m^2/year$)**

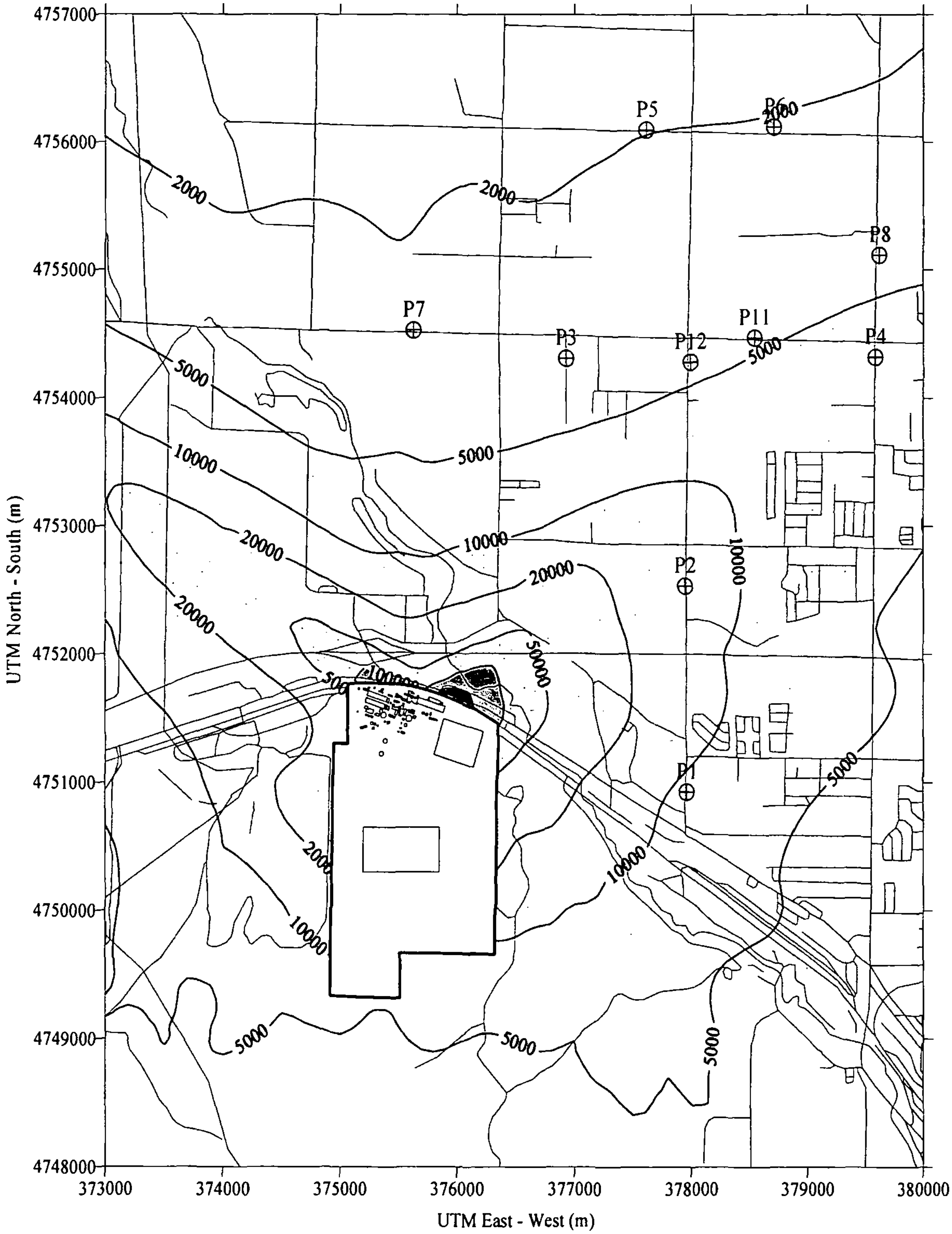

Figure 9. Maximum Growing Season Wet + Dry HF Deposition, Allowable Emissions, 1997-2001 Meteorology, (Contours in μg/m²/season)

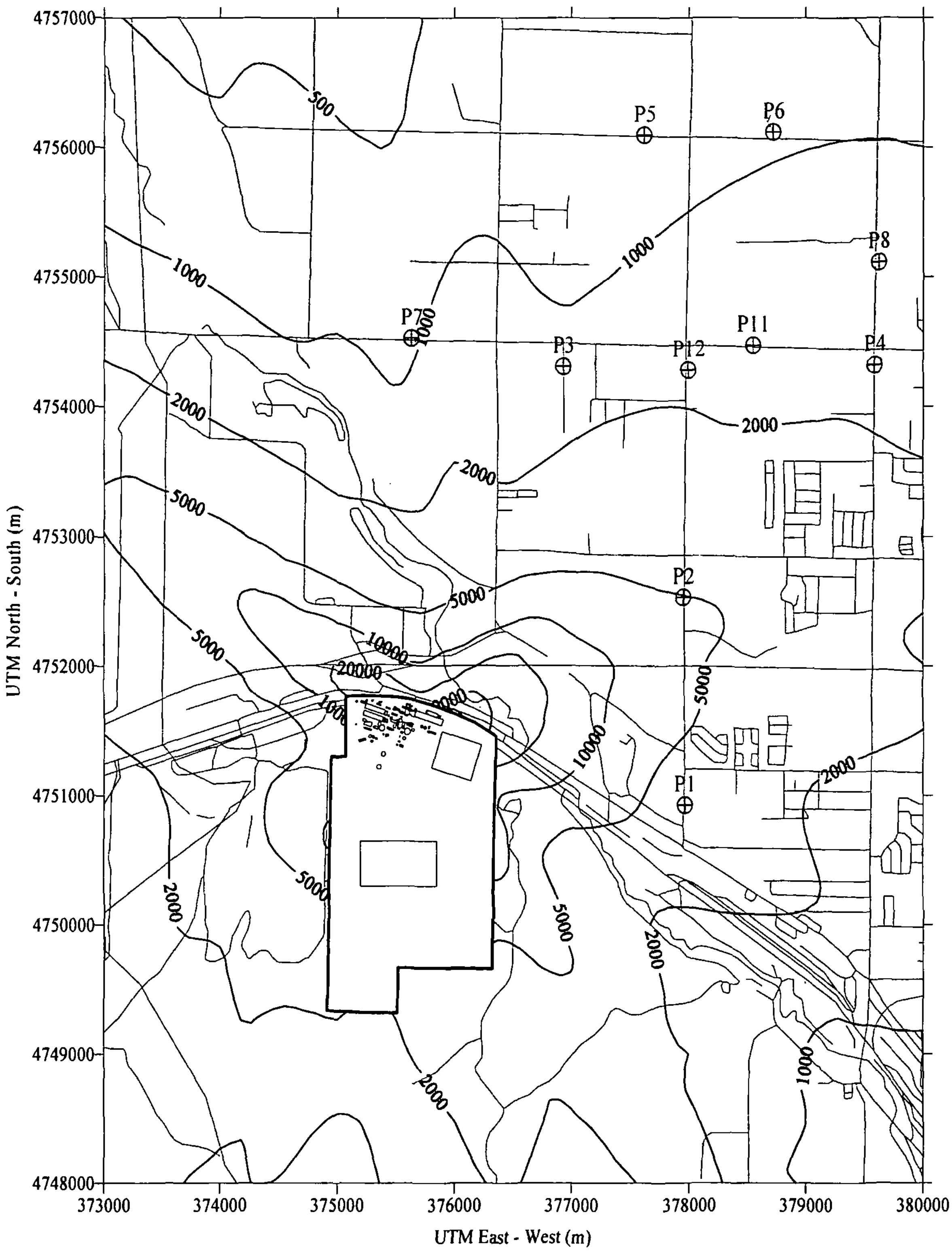

Figure 10. Maximum Monthly Growing Season Wet + Dry HF Deposition, Allowable Emissions, 1997-2001 Meteorology, (Contours in μg/m²/month)

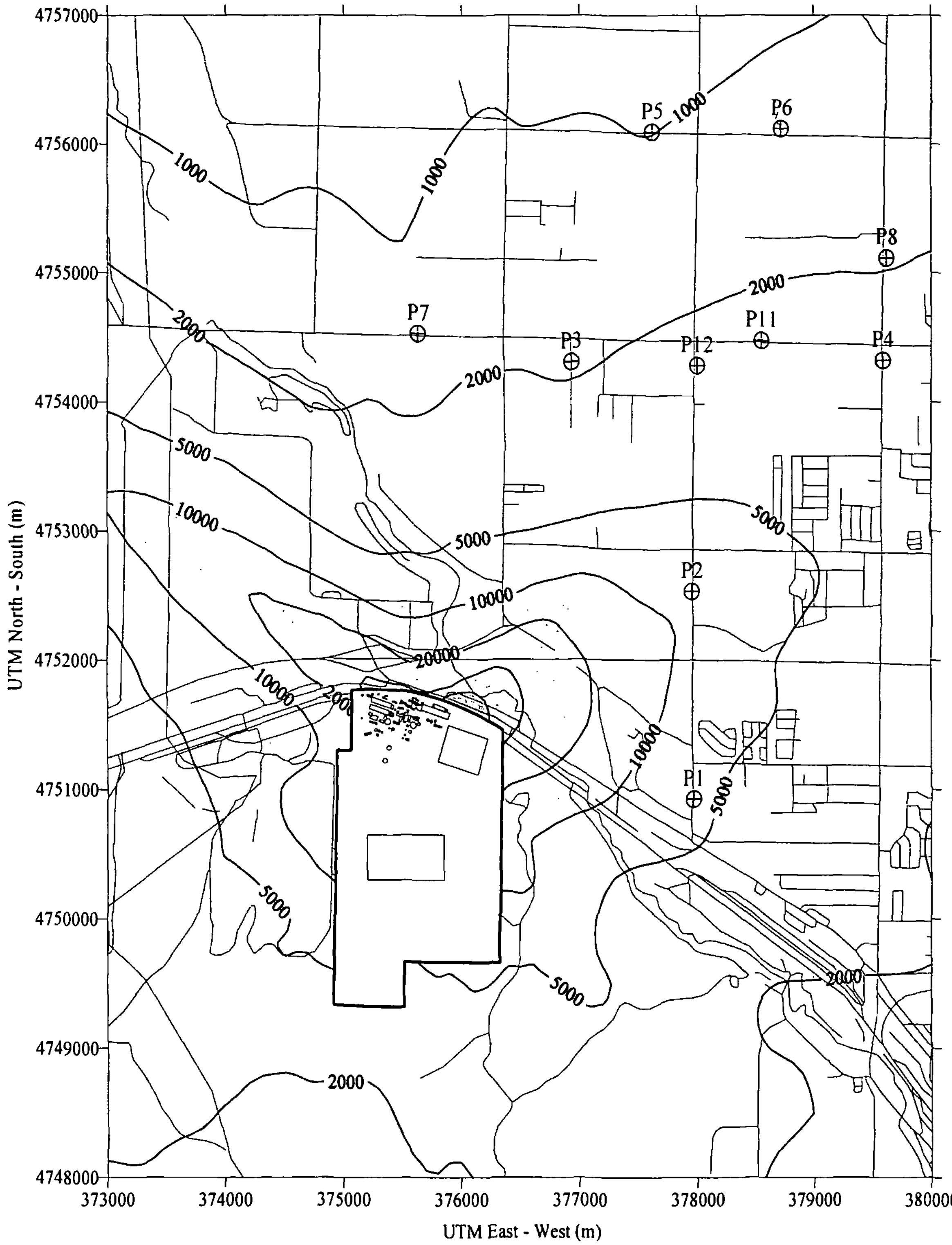

Figure 11. Maximum Bi-Monthly Growing Season Wet + Dry HF Deposition, Allowable Emissions, 1997-2001 Meteorology, (Contours in μg/m²/2-months)

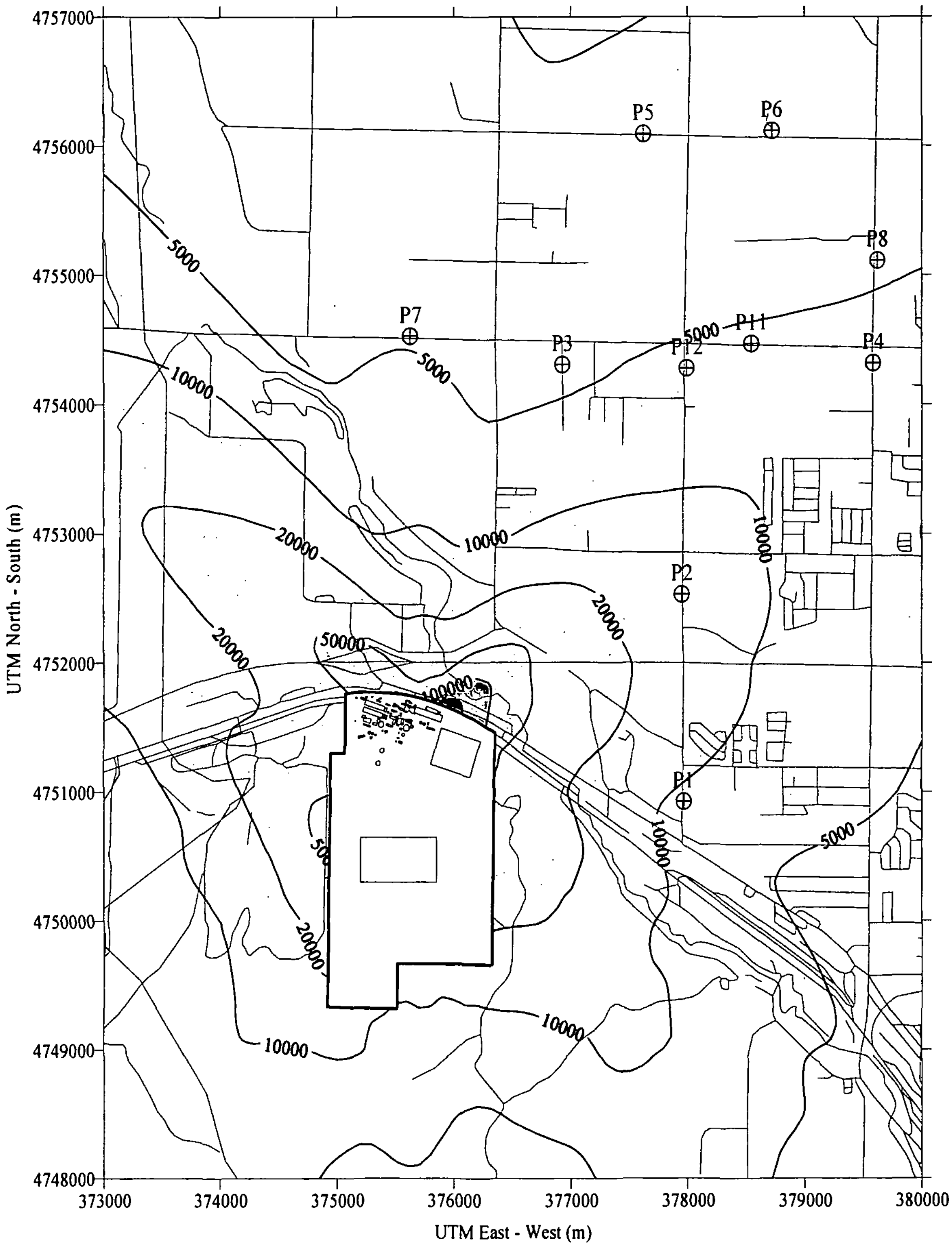

Figure 12. Maximum Annual Wet + Dry HF Deposition, Actual Emissions, 1997-2001 Meteorology, (Contours in $\mu g/m^2/year$)

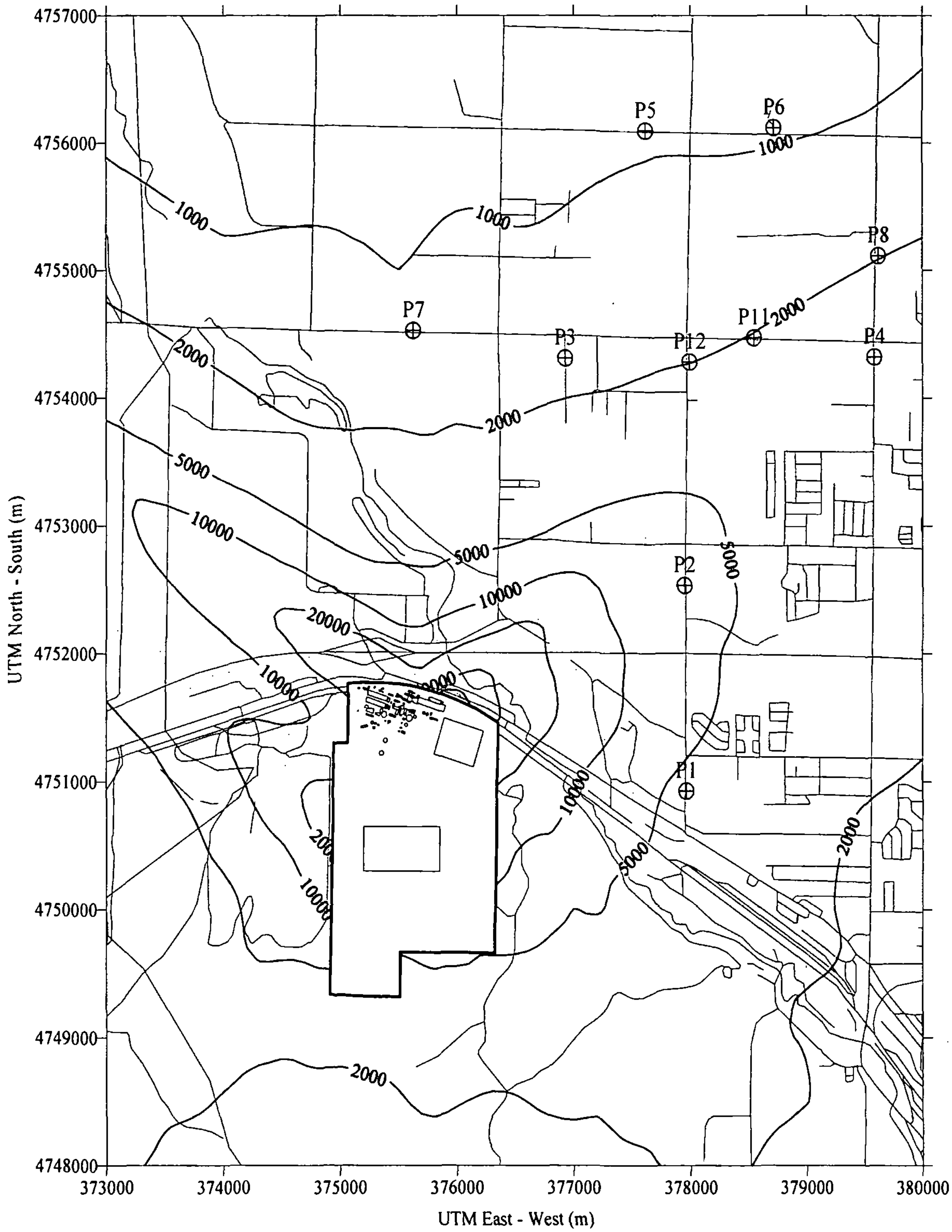

Figure 13. Maximum Growing Season Wet + Dry HF Deposition, Actual Emissions, 1997-2001 Meteorology, (Contours in μg/m²/season)

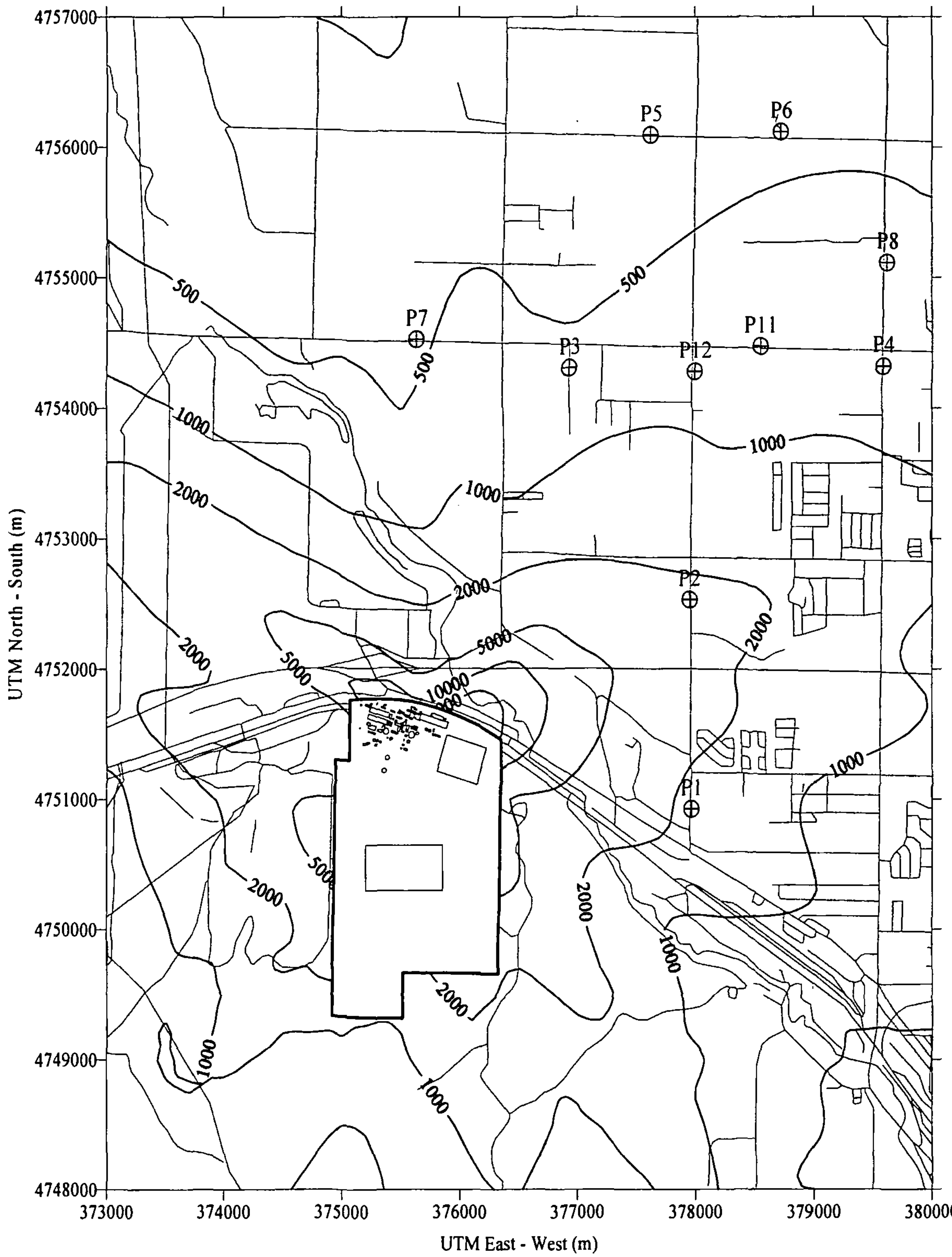

Figure 14. Maximum Monthly Growing Season Wet + Dry HF Deposition, Actual Emissions, 1997-2001 Meteorology, (Contours in $\mu g/m^2/month$)

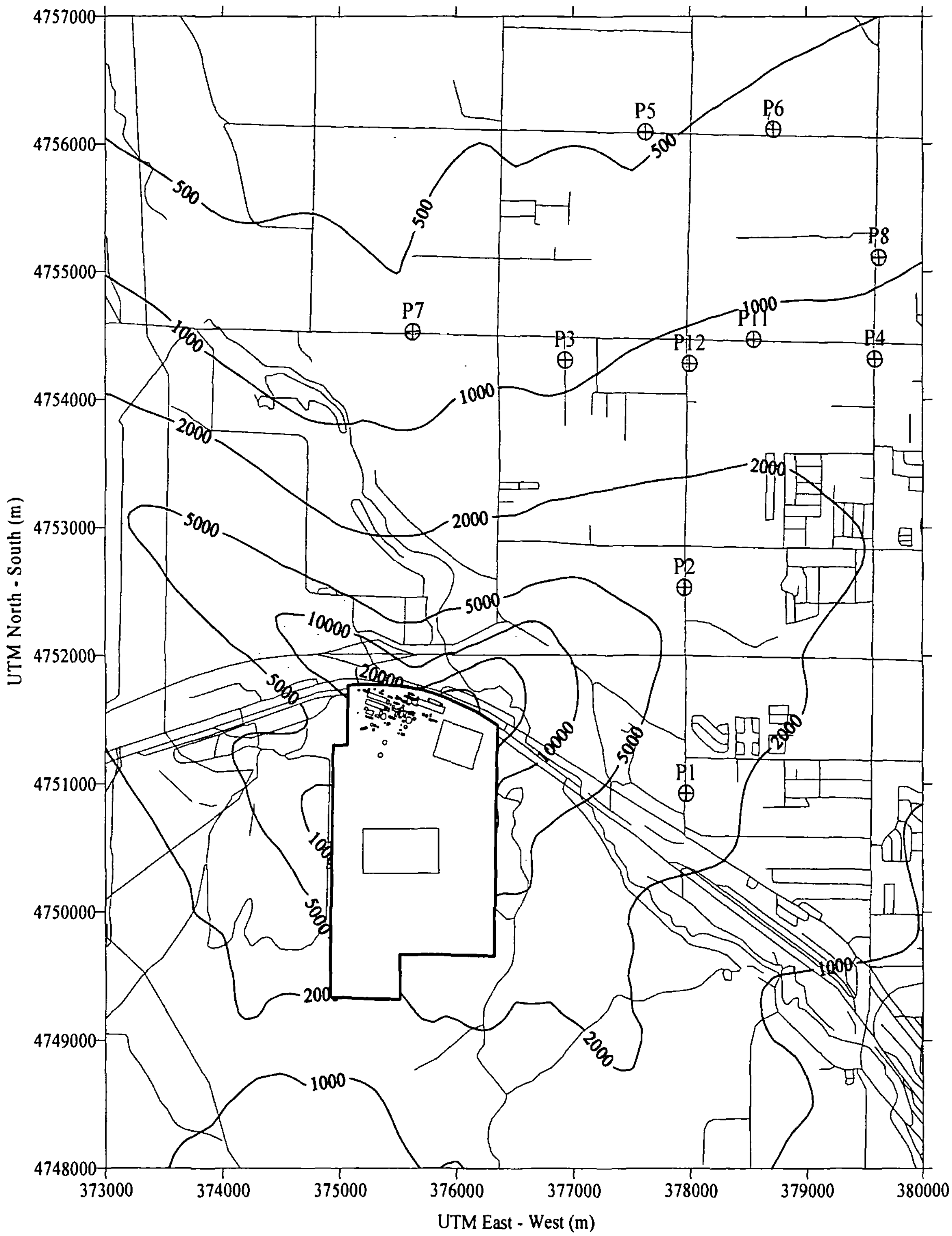

Figure 15. Maximum Bi-Monthly Growing Season Wet + Dry HF Deposition, Actual Emissions, 1997-2001 Meteorology, (Contours in $\mu g/m^2$/2-months)

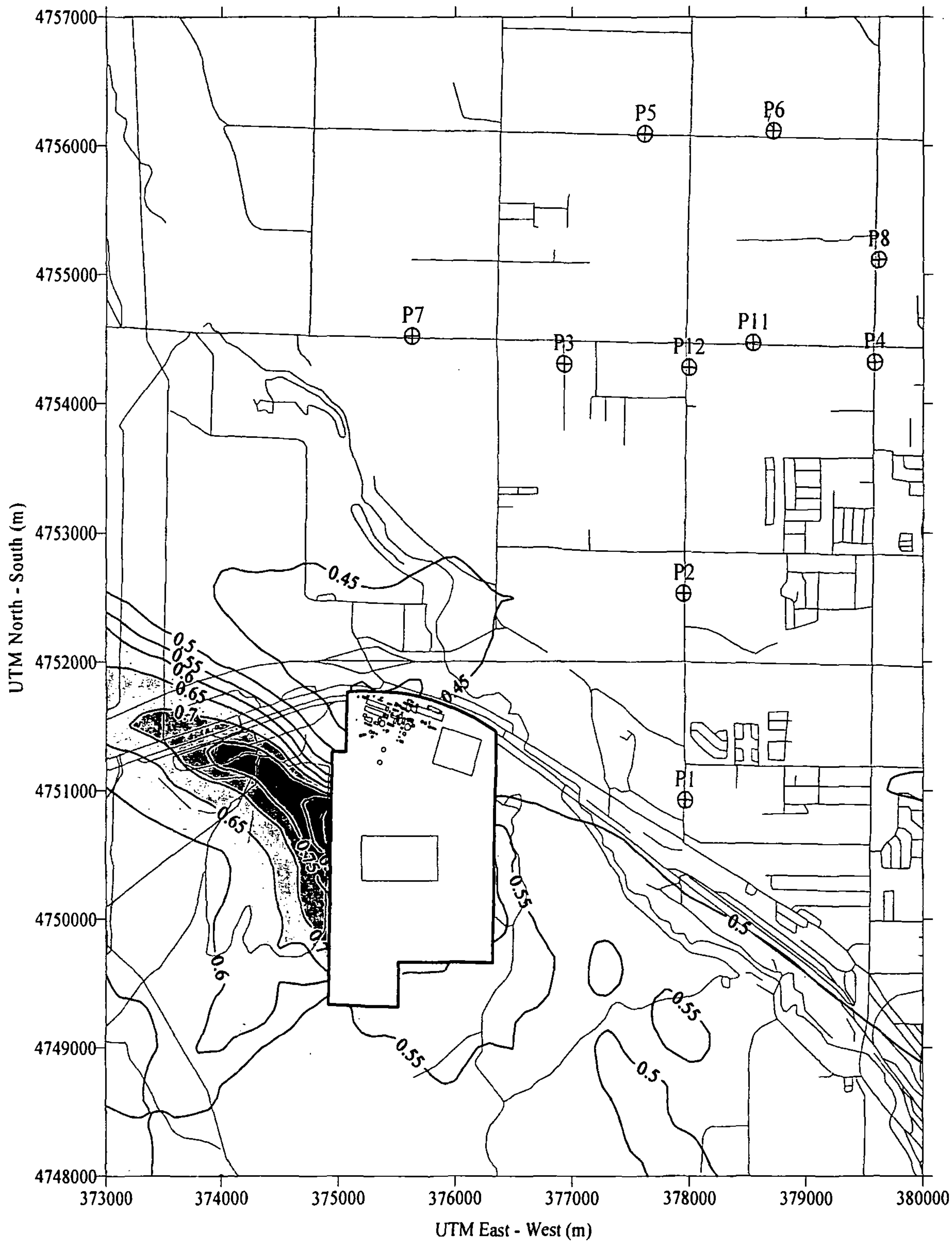

Figure 16. **Ratio of Maximum Growing Season Wet + Dry HF Deposition Based on <u>Actual to Allowable</u> Emissions, 1997-2001 Meteorology**

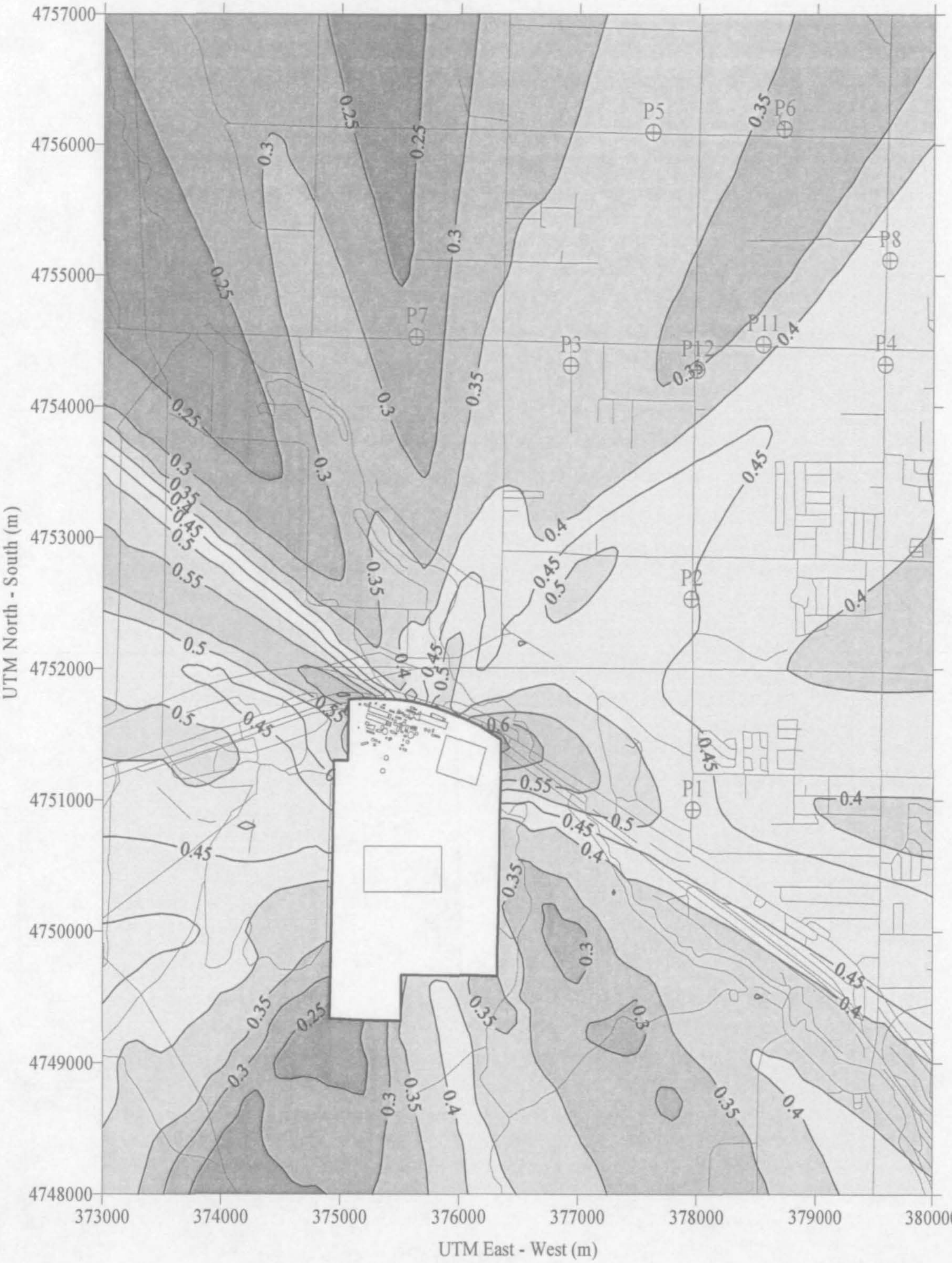

Figure 17. **Ratio of Maximum Growing Season to Annual Wet + Dry Deposition, Based on Actual Emissions, 1997-2001 Meteorology**

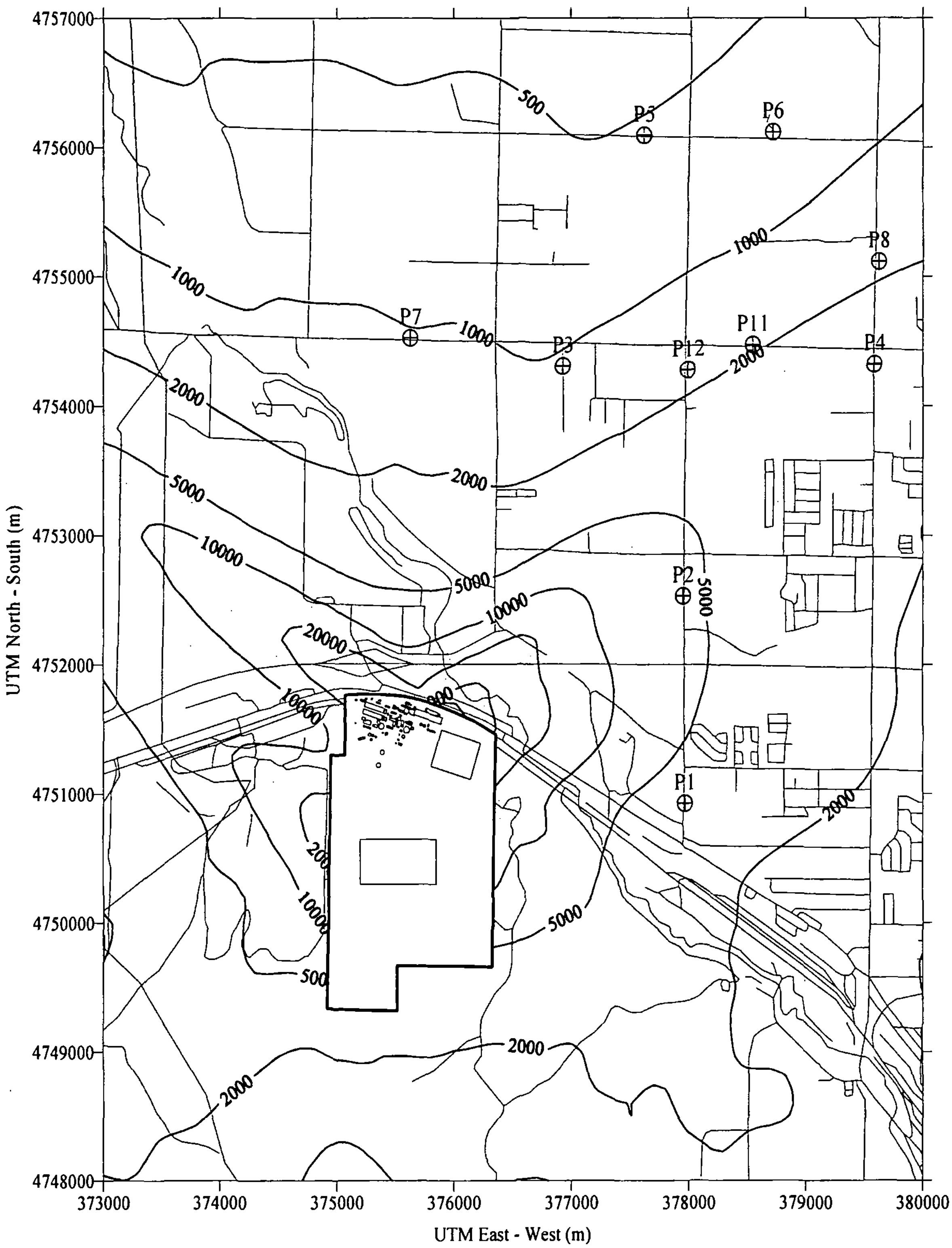

Figure 18. **Maximum Growing <u>Dry</u> HF Deposition, Actual Emissions, 1997-2001 Meteorology, (Contours in $\mu g/m^2$/season)**

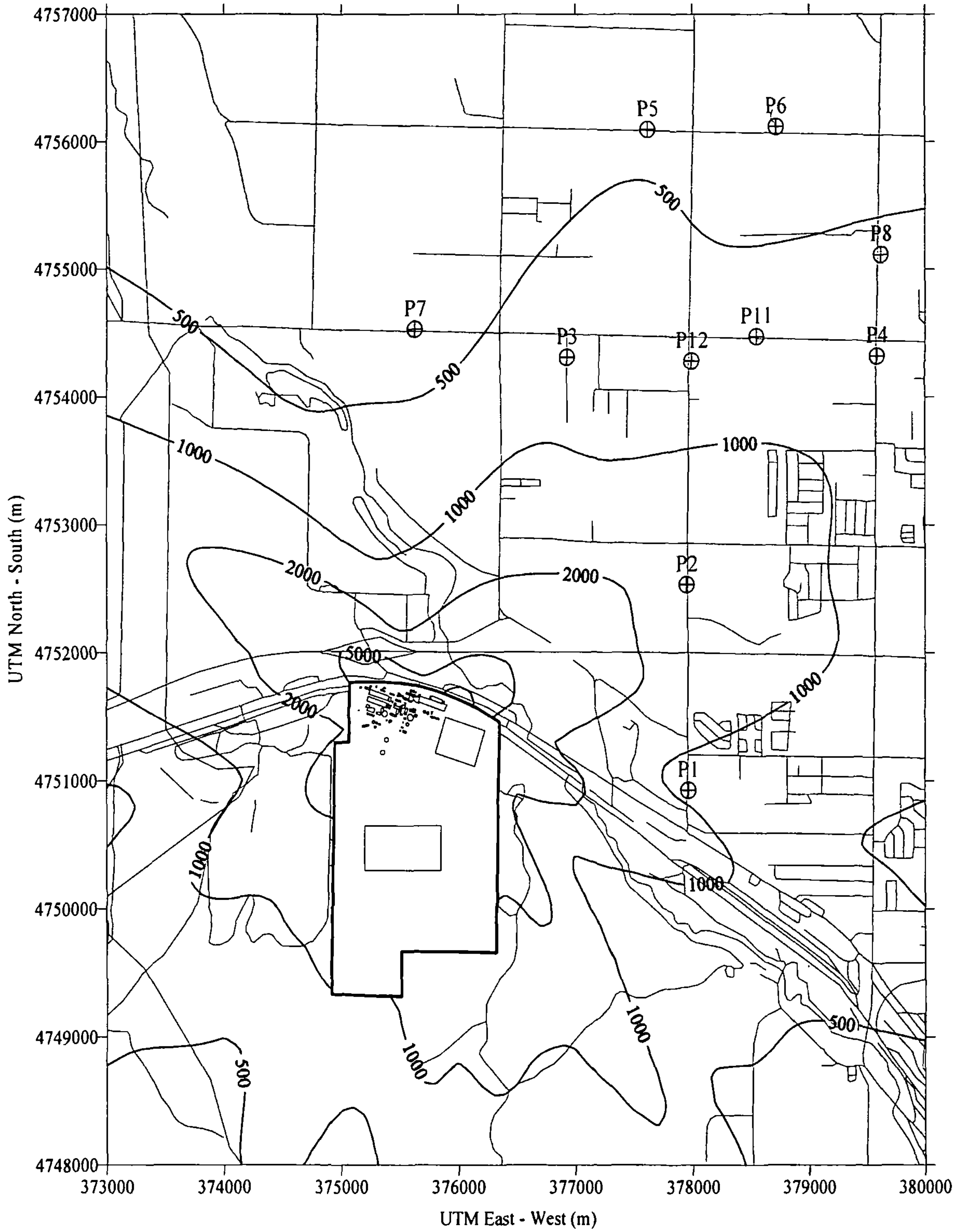

Figure 19. Maximum Growing Wet HF Deposition, Actual Emissions, 1997-2001 Meteorology, (Contours in $\mu g/m^2$/season)

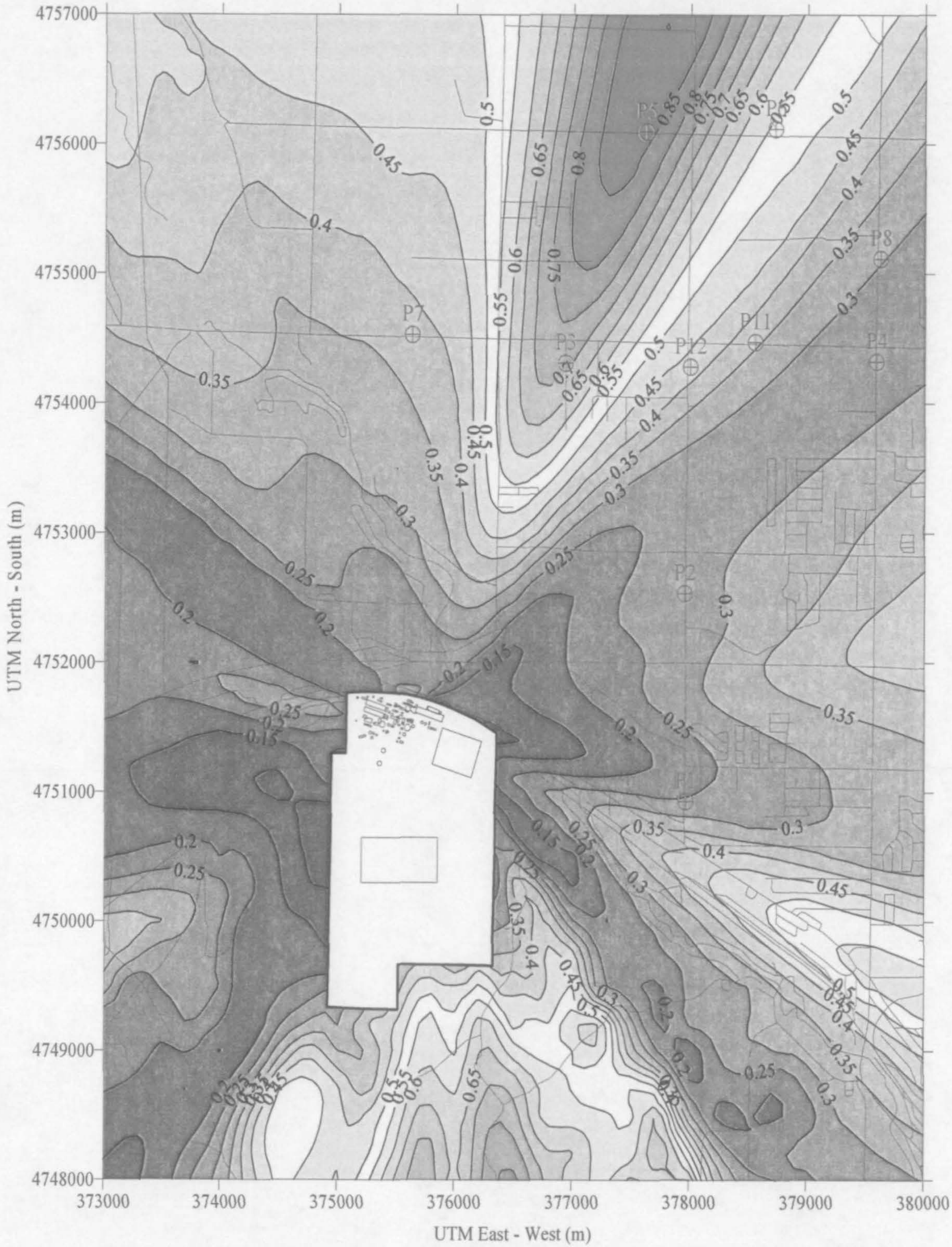

Figure 20. Ratio of Maximum Wet to Dry Growing Season Deposition, Based on Actual Emissions, 1997-2001 Meteorology

Appendix G
Regression Analysis Between Measured Fluoride Concentrations in Forage Vegetation and Modeled Fluoride Deposition Flux Estimates

Table G-1
Maximum Annual Data and Deposition Flux Estimates and Regression Output

Sampling Location	Maximum Annual Average Concentration 1997 through 2001	Estimated Total Fluoride Deposition Flux (Actual Emissions, Growing Season)
P1	43	4290
P2	44	6190
P3	23	1710
P4	26	2860
P5	14	940
P6	14	956
P7	18	1240
P8	19	1960
P11	32	2070
P12	22	1980

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.918135239
R Square	0.842972318
Adjusted R Square	0.823343858
Standard Error	4.602277313
Observations	10

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	909.6464889	909.6464889	42.94643	0.000177848
Residual	8	169.4476517	21.18095646		
Total	9	1079.094141			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	10.82366963	2.673264955	4.048857785	0.00369	4.659105598	16.988234	4.6591056	16.9882337
X Variable 1	0.006073351	0.000926755	6.553352666	0.000178	0.003936249	0.0082105	0.0039362	0.00821045

Table G-2
Maximum Monthly Forage Data and Deposition Flux Estimates and Regression Output

	Maximum Monthly Average Concentration 1997 through 2001	Estimated Max Monthly Fluoride Deposition Flux (Actual Emissions, Growing Season)
P1	62	1770
P2	81	2380
P3	54	570
P4	39	830
P5	31	321
P6	23	435
P7	20	414
P8	26	568
P11	39	753
P12	38	828

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.895856983
R Square	0.802559734
Adjusted R Square	0.7778797
Standard Error	9.043272094
Observations	10

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2659.394839	2659.394839	32.51858	0.000453069
Residual	8	654.2461614	81.78077017		
Total	9	3313.641			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	18.15589112	4.931979869	3.681258155	0.006208	6.782717788	29.529064	6.7827178	29.5290644
X Variable 1	0.025836181	0.004530671	5.702506811	0.000453	0.015388429	0.0362839	0.0153884	0.03628393

Table G-3
Maximum Bimonthly Forage Data and Deposition Flux Estimates and Regression Output

Sampling Location	Maximum Bimonthly Average Concentration 1997 through 2001	Bimonthly Fluoride Deposition Flux (Actual Emissions, Growing Season)
P1	46	275
P2	69	375
P3	40	86
P4	25	142
P5	25	46.2
P6	16	58.7
P7	16	64.7
P8	22	89
P11	26	112
P12	33	117

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.900152289
R Square	0.810274143
Adjusted R Square	0.786558411
Standard Error	7.443759473
Observations	10

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1893.128559	1893.128559	34.1661	0.000384876
Residual	8	443.2764408	55.4095551		
Total	9	2336.405			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	13.17635222	3.968265046	3.32043149	0.010533	4.025510697	22.327194	4.0255107	22.3271937
X Variable 1	0.136743174	0.023394186	5.845177745	0.000385	0.08279605	0.1906903	0.082796	0.1906903

Table G-4
Deposition Model Outputs

			Wet + Dry HF Dep Summary All Months						Wet + Dry HF Dep Summary Growing Season Months					
			Annual Max		Monthly Max		Bi-Monthly Max		Season Max		Monthly Max		Bi-Monthly Max	
Site	x(m)	y(m)	ug/m2/yr	(yr)	ug/m2/mon	(yrmn)	ug/m2/2mon	(yrmn)	ug/m2/seas	(yr)	ug/m2/mon	(yrmn)	ug/m2/2mon	(yrmn)
P1	377964	4750927	9.11E+03	1	1.96E+03	10	2.75E+03	9906	4.29E+03	99	1.77E+03	9905	2.75E+03	9906
P2	377950	4752534	1.37E+04	0	2.38E+03	5	3.77E+03	5	6.19E+03	0	2.38E+03	5	3.75E+03	6
P3	376929	4754310	4.43E+03	98	1.11E+03	9801	1.34E+03	9902	1.71E+03	98	5.77E+02	9805	8.60E+02	9709
P4	379586	4754322	6.65E+03	0	1.02E+03	9701	1.47E+03	9702	2.86E+03	0	8.30E+02	105	1.42E+03	106
P5	377619	4756095	2.51E+03	98	6.66E+02	9801	7.54E+02	9902	9.40E+02	98	3.21E+02	9805	4.62E+02	9709
P6	378719	4756119	2.83E+03	99	5.58E+02	9701	9.05E+02	9902	9.56E+02	98	4.35E+02	9805	5.87E+02	9806
P7	375626	4754529	4.81E+03	0	9.56E+02	10	1.40E+03	111	1.24E+03	1	4.14E+02	106	6.47E+02	107
P8	379621	4755116	4.45E+03	97	8.98E+02	9701	1.33E+03	9702	1.96E+03	0	5.68E+02	9805	8.90E+02	9806
P11	378547	4754474	5.39E+03	99	1.12E+03	9701	1.65E+03	9702	2.07E+03	0	7.53E+02	9805	1.12E+03	9806
P12	377994	4754283	5.66E+03	99	1.14E+03	9701	1.64E+03	9902	1.98E+03	97	8.28E+02	9805	1.17E+03	9806