HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
Five Centerpointe Dr., Suite 240
Lake Oswego, Oregon 97035
FAX 503.620.6918
503.620.7284

J-5144-02

September 5, 1996

Willamette Seed Company
PO Box 791
Albany, Oregon 97321

Attn: Mr. Bob Lowry

Re: Quarterly Monitoring Report (May 1996 through July 1996)
Shedd, Oregon

Dear Mr. Lowry:

This letter summarizes the results of our groundwater monitoring activities for the quarter of May through July 1996 in Shedd, Oregon (Figures 1 and 2). Our work was performed in general accordance with the Groundwater Monitoring Plan (September 15, 1994) for the Shedd area. Changes to the plan that were adopted for 1996 (as approved by DEQ) were documented in the November 1995 through January 1996 quarterly report.

This letter discusses the following:

- Measurement of groundwater elevations in eight onsite monitoring wells;
- Groundwater sampling and field parameter measurements from eight groundwater monitoring wells and one domestic well located on the Willamette Seed Company facility and seven domestic wells located off of the Willamette Seed site;
- Analysis of groundwater samples for nitrate/nitrite concentrations; and
- Quality assurance/quality control (QA/QC).

Groundwater Flow Directions in Shallow and Deep Aquifers

On July 25, 1996, we measured groundwater levels in monitoring wells MW-1 through MW-8 on the Willamette Seed Company site (Table 1). Monitoring wells MW-1 through

MW-4 are completed in a shallow water table aquifer, and monitoring wells MW-5 through MW-8 are completed in the underlying semi-confined aquifer. Based on the analytical results, it appeared that MW-7 and MW-8 may have been mixed up in the field, as described below in *Groundwater Chemical Analysis*. Therefore, on August 13, we resampled MW-7 and MW-8, and remeasured water levels in MW-1 through MW-8.

Based on the water level measurements collected on August 13, the groundwater table measured in the shallow aquifer was about 3 to 5 feet below the ground surface. The potentiometric surface of the deeper semi-confined aquifer was about 12 to 15 feet below the ground surface.

Relative groundwater elevations indicated that the horizontal component of the groundwater gradient was to the west-northwest in the shallow aquifer (Figure 2), and to the southwest in the deep aquifer (Figure 3). Compared with the previous quarter, the gradient direction appears to be slightly more westerly in the shallow aquifer, and more southerly in the deep aquifer. These changes in the gradient may be due to increased pumping of water from the Willamette Seed well and/or other local wells to meet increased demands during dry, hot weather.

Groundwater Sampling and Field Parameter Measurement

On July 25, 1996, we purged and sampled the eight monitoring wells (MW-1 through MW-8) and eight domestic wells (including one located on the Willamette Seed, and seven domestic wells located off of the site) following the field methods described in Attachment A. The locations of the monitoring and domestic wells are shown on Figure 2. The results of the July 25 sampling suggested that monitoring wells MW-7 and MW-8 were mixed up in the field, as described below in *Groundwater Chemical Analysis*. Therefore, we resampled MW-7 and MW-8 on August 13, 1996. Throughout the purging process during both sampling episodes, field parameters were measured in each well. The results of the field parameter measurements are summarized in Table 2.

The pH and temperature measurements collected during this quarter were generally consistent among the groundwater samples from the monitoring wells (MW-1 through MW-8) and the domestic wells (Willamette Seed, OSW-1 through OSW-8, excluding OSW-5). However, in general, the specific conductance measurements from the onsite wells are notably higher than those from the offsite wells.

Temperature measurements were generally a few degrees higher in all of the monitoring wells and domestic wells than in the last quarter. This is consistent with seasonal temperature variations in the area.

Groundwater Chemical Analysis

Groundwater samples were submitted to North Creek Analytical of Beaverton, Oregon, for chemical analysis. Samples from all of the monitoring and domestic wells were analyzed for nitrate/nitrite concentration using EPA Method 300. The nitrate/nitrite analysis is considered by DEQ to be essentially equivalent to the analysis for nitrate only, because nitrite concentrations are generally insignificant. The analytical results are presented in Table 3 and shown on Figure 4.

The analytical results from the sampling conducted on July 25, as documented in the laboratory reports, suggest that the samples from MW-7 and MW-8 were mislabeled in the field. The nitrate/nitrite concentration for MW-7 was reported as 180 mg/L, compared with 28 mg/L the previous quarter. The nitrate/nitrite concentration for MW-8 was reported as 45 mg/L, as compared with 240 mg/L the previous quarter. Upon discussion with the field personnel, it seems likely that the sample labels for MW-7 and MW-8 were switched in the field by mistake. Therefore, we resampled MW-7 and MW-8 on August 13, 1996. The results of resampling the two wells confirmed the likelihood that the samples were mixed up during the July 25, 1996, sampling. The analytical results shown in Table 3 include data from both sampling events conducted this quarter. Figure 4 shows data from the July 25 sampling for all wells except MW-7 and MW-8. The data shown for MW-7 and MW-8 reflect the results of the August 13 sampling. Copies of the laboratory reports for both sampling episodes are included in Attachment B.

Excluding the data from July 25, 1996, for MW-7 and MW-8, nitrate/nitrite concentrations ranged from 40 to 170 mg/L in the wells located on the Willamette Seed site. Nitrate/nitrite concentrations in the offsite domestic wells ranged from 0.18 mg/L to 9.2 mg/L. The Federal Drinking Water Maximum Contaminant Level (MCL) for nitrate is 10 mg/L.

Quality Assurance/Quality Control (QA/QC)

To assess the quality of the analytical results, we collected and analyzed a duplicate sample (MW-9). In addition, the laboratory performs a number of analyses to assess the quality of the data. The purposes and results of each of these analyses are discussed in Attachment A. All data were acceptable for their intended use.

If you have any questions concerning this project, please feel free to call.

Sincerely,

HART CROWSER, INC.

GREGORY E. KUPILLAS, R.G.
Project Manager

HERBERT F. CLOUGH, P.E.
Senior Associate

Attachments: Table 1 - Well Casing and Groundwater Elevations
Table 2 - Groundwater Field Parameter Measurements
Table 3 - Nitrate/Nitrite Concentrations
Figure 1 - Site Location Map
Figure 2 - Site Plan - August 1996 Shallow Aquifer Groundwater Elevations
Figure 3 - Site Plan - August 1996 Deep Aquifer Groundwater Elevations
Figure 4 - Site Plan - July/August 1996 Nitrate/Nitrite Concentrations
Attachment A - Groundwater Sampling and QA/QC Procedures
Attachment B - Laboratory Analyses Test Documentation

Table 1 - Well Casing and Groundwater Elevations
Willamette Seed Company
Shedd, Oregon

Well Designation	MW-1		MW-2		MW-3		MW-4	
Top of Casing	96.83		97.17		97.81		98.95	
Date	DTW	Elevation	DTW	Elevation	DTW	Elevation	DTW	Elevation
26-Jan-95	2.52	94.31	1.60	95.57	2.30	95.51	2.79	96.16
25-Apr-95	1.80	95.03	1.51	95.66	2.22	95.59	1.68	97.27
27-Jul-95	6.13	90.70	4.03	93.14	5.33	92.48	3.34	95.61
8-Nov-95	4.82	92.01	3.49	93.68	4.79	93.02	2.80	96.15
25-Jan-96	1.21	95.62	0.66	96.51	1.66	96.15	1.11	97.84
30-Apr-96	2.60	94.23	1.43	95.74	2.07	95.74	2.10	96.85
25-Jul-96	2.93	93.90	2.70	94.47	4.38	93.43	2.25	96.70
13-Aug-96	5.16	91.67	3.95	93.22	5.34	92.47	3.25	95.70

Well Designation	MW-5		MW-6		MW-7		MW-8	
Top of Casing	96.90		97.34		99.11		98.05	
Date	DTW	Elevation	DTW	Elevation	DTW	Elevation	DTW	Elevation
26-Jan-95	2.86	94.04	3.56	93.78	5.00	94.11	4.10	93.95
25-Apr-95	3.15	93.75	3.38	93.96	5.29	93.82	4.30	93.75
27-Jul-95	12.15	84.75	11.86	85.48	14.44	84.67	13.42	84.63
8-Nov-95	12.76	84.14	12.59	84.75	15.16	83.95	14.03	84.02
25-Jan-96	1.92	94.98	2.29	95.05	4.14	94.97	3.10	94.95
30-Apr-96	6.45	90.45	5.22	92.12	8.58	90.53	10.70	87.35
25-Jul-96	9.89	87.01	9.85	87.49	12.78	86.33	11.44	86.61
13-Aug-96	12.27	84.63	11.84	85.50	14.84	84.27	13.73	84.32

Notes:
1. Top of Casing = Top of Casing Elevation in Feet.
2. DTW = Depth to Water in Feet.
3. Elevation = Groundwater Elevation in Feet.

Table 2 - Groundwater Field Parameter Measurements
Willamette Seed Company
Shedd, Oregon

Well Designation	Date	Ranges of Parameters Measured		
		pH	Specific Conductance (µmhos)	Temperature (°C)
MW-1	26-Jan-95	6.5 - 6.7	700	12.4 - 13.5
	25-Apr-95	5.6 - 5.7	1300 - 1400	12.4 - 12.9
	27-Jul-95	8.5 - 8.8	840 - 920	17.8
	8-Nov-95	5.5 - 5.8	800	16.7 - 17.2
	25-Jan-96	6.8 - 7.4	1360 - 1410	11.4 - 12.3
	30-Apr-96	8.1 - 9.9	990 - 1060	13.0
	25-Jul-96	5.2 - 5.5	810 - 830	18.3 - 19.4
MW-2	26-Jan-95	5.8 - 6.0	940 - 970	11.1 - 11.5
	25-Apr-95	4.2 - 4.5	1300	12.0 - 12.5
	27-Jul-95	8.0 - 8.2	790 - 840	16.7 - 18.3
	8-Nov-95	4.2 - 5.5	960 - 1010	16.1
	25-Jan-96	6.6 - 7.8	1000 - 1300	10.2 - 10.7
	30-Apr-96	6.5 - 6.8	780 - 830	12.6 - 13.7
	25-Jul-96	5.6 - 5.7	550 - 610	18.6 - 19.4
MW-3	26-Jan-95	6.0 - 6.5	4600 - 5200	13.0 - 13.2
	25-Apr-95	4.5	1100	12.9 - 13.1
	27-Jul-95	8.2 - 8.3	1700 - 2000	16.1 - 17.8
	8-Nov-95	5.2 - 5.8	1130 - 1980	17.2
	25-Jan-96	7.0 - 7.4	800 - 1200	12.8 - 13.6
	30-Apr-96	7.1 - 7.2	810 - 870	12.9 - 13.0
	25-Jul-96	6.3 - 6.9	980 - 1140	17.4 - 17.5
MW-4	26-Jan-95	6.2 - 6.5	920 - 1200	13.0 - 13.5
	25-Apr-95	6.1 - 6.3	2300 - 2500	13.3 - 13.7
	27-Jul-95	8.3 - 8.4	500 - 510	17.8 - 19.4
	8-Nov-95	5.5 - 5.8	1090 - 1200	17.2 - 17.8
	25-Jan-96	6.9 - 7.2	1880 - 2100	11.7 - 12.8
	30-Apr-96	6.6 - 6.9	1670 - 1950	13.5 - 14.1
	25-Jul-96	5.7 - 5.8	520 - 640	17.0 - 19.2
MW-5	26-Jan-95	6.5 - 6.7	750 - 900	14.1 - 14.5
	25-Apr-95	6.4 - 6.5	1300-1800	14.2 - 14.3
	27-Jul-95	8.4	1100 - 1200	15.6 - 16.1
	8-Nov-95	5.6 - 5.9	2800 - 3800	15.0
	25-Jan-96	6.4 - 7.3	1690 - 1870	12.8 - 13.6
	30-Apr-96	7.1 - 7.8	1090 - 1310	14.7 - 15.2
	25-Jul-96	6.2 - 6.5	1020 - 1090	14.9 - 15.1
MW-6	26-Jan-95	6.4 - 6.8	980 - 1010	14.2 - 15.1
	25-Apr-95	5.9 - 6.7	190	14.2 - 14.5
	27-Jul-95	7.6 - 8.3	1300	15.0 - 15.6
	8-Nov-95	5.7 - 7.6	1400 - 1500	15.0
	25-Jan-96	8.8	1900	13.1
	30-Apr-96	6.5 - 6.7	1220 - 1460	14.6 - 14.8
	25-Jul-96	6.1 - 6.5	1030 - 1090	15.2

Table 2 - Groundwater Field Parameter Measurements
Willamette Seed Company
Shedd, Oregon

Well Designation	Date	Ranges of Parameters Measured		
		pH	Specific Conductance (µmhos)	Temperature (°C)
MW-7	26-Jan-95	6.4 - 6.9	620 - 660	14.0 - 14.4
	25-Apr-95	7.3 - 7.6	700 - 800	14.4 - 15.1
	27-Jul-95	8.4 - 8.5	640 - 720	15.5 - 16.1
	8-Nov-95	6.3 - 7.0	700 - 710	15.0 - 15.6
	25-Jan-96	6.6 - 7.4	960	13.3 - 14.0
	30-Apr-96	6.7 - 7.1	530 - 680	14.7 - 15.1
	25-Jul-96	6.7 - 6.9	650 - 660	15.5 - 15.7
	13-Aug-96	7.5 - 7.8	840 - 850	16.4 - 16.6
MW-8	26-Jan-95	6.4 - 6.7	1170 - 1240	14.1 - 15.2
	25-Apr-95	7.0 - 7.3	2200 - 2500	14.6 - 14.7
	27-Jul-95	8.4	1600 - 1900	15.6
	8-Nov-95	5.9 - 6.3	1730 - 1740	15.6
	25-Jan-96	6.4 - 7.1	2400 - 2600	13.7 - 14.2
	30-Apr-96	6.5 - 7.3	1950 - 2600	14.6
	25-Jul-96	6.5 - 7.3	1950 - 2600	14.6
	13-Aug-96	7.5 - 7.7	1670 - 2000	15.9 - 16.5
Willamette Seed	26-Jan-95	9.2	1240 - 1280	24.5 - 25.7
	25-Apr-95	7.5	1310 - 1320	14.9 - 15.6
	27-Jul-95	7.8	1050 - 1180	16.7 - 17.2
	8-Nov-95	7.8 - 7.9	1180 - 1190	15.0 - 15.6
	25-Jan-96	6.3 - 8.8	1580 - 1620	12.9 - 13.3
	30-Apr-96	7.9 - 8.1	710 - 820	NM
	25-Jul-96	6.7 - 7.4	960 - 1110	19.8 - 23.0
OSW-1	26-Jan-95	9.4 - 9.5	480 - 500	23.5 - 24.5
	25-Apr-95	8.1	470 - 490	13.2
	27-Jul-95	8.0 - 8.1	410 - 460	14.4
	8-Nov-95	8.6	470-480	13.8 - 14.4
	25-Jan-96	8.8 - 9.1	560 - 580	11.7 - 12.0
	30-Apr-96	8.5 - 8.6	370 - 430	NM
	25-Jul-96	8.0 - 8.1	370 - 390	14.5 - 15.4
OSW-2	26-Jan-95	9.1	570	18.9 - 25.8
	25-Apr-95	7.4 - 7.5	740 - 750	13.7 - 13.8
	27-Jul-95	7.8	550 - 560	15.0 - 15.6
	8-Nov-95	8.1 - 8.2	550	14.4
	25-Jan-96	6.9 - 8.8	750 - 790	12.5 - 12.8
	30-Apr-96	7.7 - 7.9	550 - 600	14.5 - 15.3
	25-Jul-96	7.4	450 - 470	15.4 - 16.8

Table 2 - Groundwater Field Parameter Measurements
Willamette Seed Company
Shedd, Oregon

Well Designation	Date	Ranges of Parameters Measured		
		pH	Specific Conductance (µmhos)	Temperature (°C)
OSW-3	26-Jan-95	8.1 - 8.5	610 - 620	13.4 - 13.8
	25-Apr-95	6.8 - 7.1	820 - 840	13.4 - 13.5
	27-Jul-95	7.9	660 - 680	14.4 - 15.0
	8-Nov-95	7.8	710	13.8
	25-Jan-96	5.5 - 6.3	860 - 900	12.1 - 12.4
	30-Apr-96	7.5 - 7.8	600 - 690	13.6 - 14.3
	25-Jul-96	7.4 - 7.7	550 - 590	14.1 - 14.4
OSW-4	26-Jan-95	9.1 - 9.5	470 - 540	15.7 - 23.9
	25-Apr-95	7.6 - 7.7	570 - 640	13.6 - 14.4
	27-Jul-95	7.9 - 8.1	540 - 550	17.2 - 20.0
	8-Nov-95	7.6 - 7.8	540 - 560	13.8
	25-Jan-96	6.7 - 6.8	680 - 700	7.7 - 11.8
	30-Apr-96	8.1	440 - 480	NM
	25-Jul-96	7.3 - 7.6	390 - 440	16.5 - 20.0
OSW-5	26-Jan-95	9.1 - 9.5	500 - 510	23.4 - 24.1
	25-Apr-95	7.6 - 7.8	570 - 600	13.0 - 13.2
	27-Jul-95	7.9 - 8.0	430 - 470	14.4
	8-Nov-95	8.2 - 8.4	490	13.8
OSW-6	26-Jan-95	9.3	570 - 580	26.7 - 27.2
	25-Apr-95	7.7 - 7.8	640 - 660	15.5 - 15.6
	27-Jul-95	7.9	520	16.1 - 18.3
	8-Nov-95	7.7	610 - 660	15.6 - 16.1
	25-Jan-96	6.6 - 6.8	690 - 700	14.0 - 14.3
	30-Apr-96	7.8 - 8.0	460 - 470	NM
	25-Jul-96	7.3	450 - 480	15.6 - 16.1
OSW-7	26-Jan-95	8.8 - 8.9	490 - 510	13.9 - 15.5
	25-Apr-95	6.2 - 6.7	580 - 620	13.9
	27-Jul-95	7.9 - 8.6	490 - 520	15.0
	8-Nov-95	7.3 - 7.6	480 - 530	13.8
	25-Jan-96	5.9 - 6.2	680 - 730	7.8 - 12.2
	30-Apr-96	7.8 - 8.0	490 - 540	13.0 - 14.1
	25-Jul-96	7.2 - 7.3	450 - 500	14.9 - 18.1
OSW-8	25-Jan-96	5.1 - 6.5	630 - 690	12.9 - 13.3
	30-Apr-96	7.8	450 - 460	15.1 - 16.7
	25-Jul-96	7.4 - 7.6	370 - 410	16.0 - 17.1

Note:
NM = Parameter not measured due to faulty equipment.

Table 3 - Nitrate/Nitrite Concentrations
Willamette Seed Company
Shedd, Oregon

	Nitrate/Nitrite Concentrations in mg/L								
Date	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	Willamette Seed
26-Jan-95	99	130	71	180	120	130	32	180	74
25-Apr-95	94	84	94	210	92	120	24	160	62
27-Jul-95	88	76	250	55	110	140	38	190	67
8-Nov-95	65	110	230	130	110	120	33	180	72
25-Jan-96	97	76	140	210	120	130	27	230	74
30-Apr-96	75	92	100	220	110	130	28	240	65
25-Jul-96	73	53	150	70	110	140	180*	45*	130
13-Aug-96	NS	NS	NS	NS	NS	NS	40	170	NS

Date	OSW-1	OSW-2	OSW-3	OSW-4	OSW-5	OSW-6	OSW-7	OSW-8
26-Jan-95	2.0	<0.13	4.2	2.0	3.9	8.7	7.0	NS
25-Apr-95	<0.10	0.19	8.0	1.8	3.2	5.4	6.9	NS
27-Jul-95	0.59	2.0	8.2	1.8	2.7	7.8	7.2	NS
8-Nov-95	<0.10	<0.10	6.5	2.1	3.7	12	8.6	NS
25-Jan-96	0.95	0.10	4.2	2.0	NS	6.8	9.8	1.3
30-Apr-96	0.21	0.20	7.3	2.1	NS	3.3	8.6	1.7
25-Jul-96	0.18	1.6	4.9	2.0	NS	7.9	9.2	1.5

Notes:

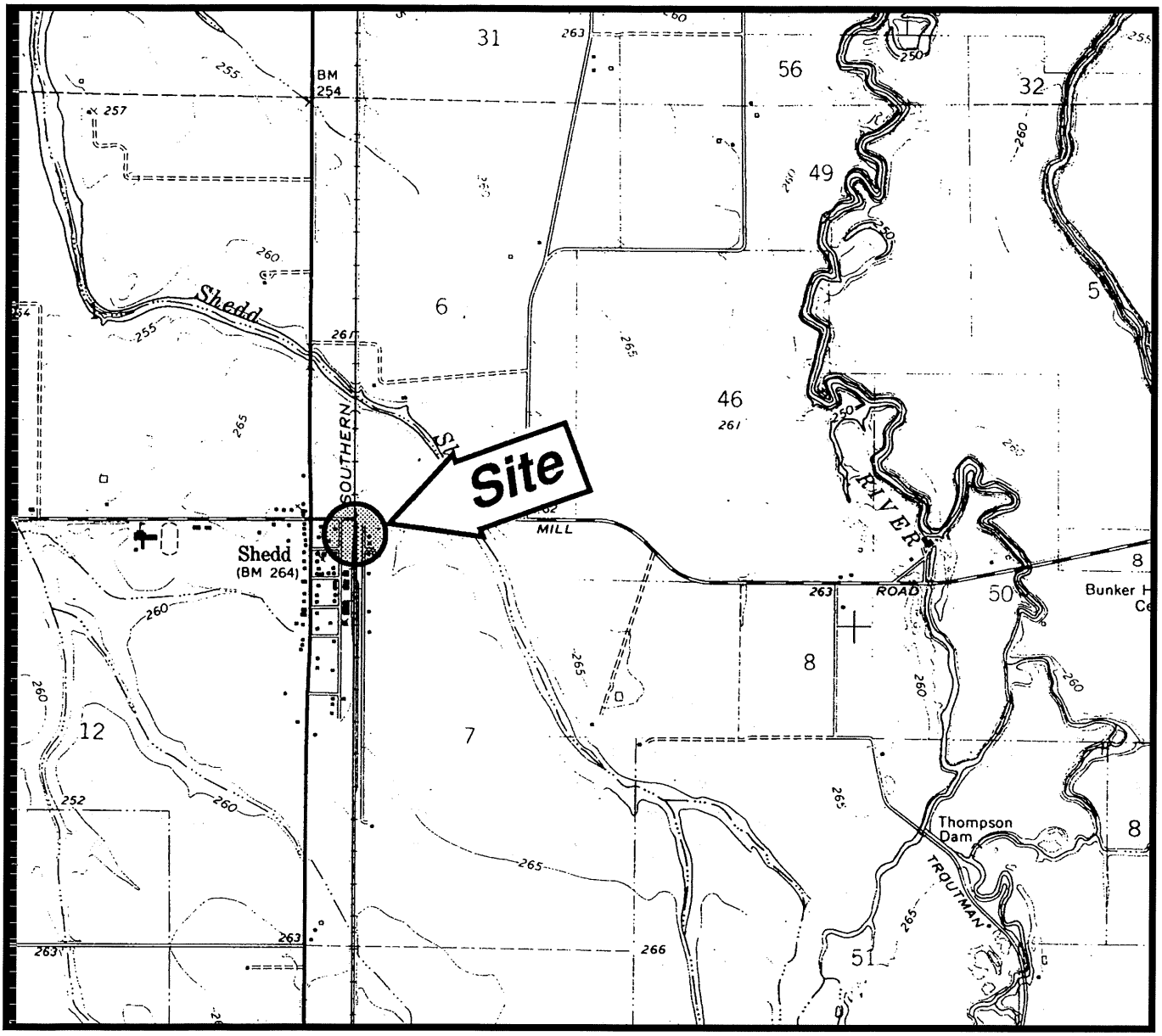
1. Nitrate/Nitrite by EPA Method 300.0.

NS = Not Sampled.

* Based on results of August 13, 1996 sampling, it appears that samples MW-7 and MW-8 were mislabeled in the field.

Site Location Map

Willamette Seed Company, Shedd, Oregon



Base map prepared from the USGS 7.5-minute quadrangle of Halsey, Oregon, dated 1969.

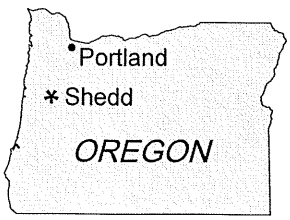
SCALE 1 : 24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

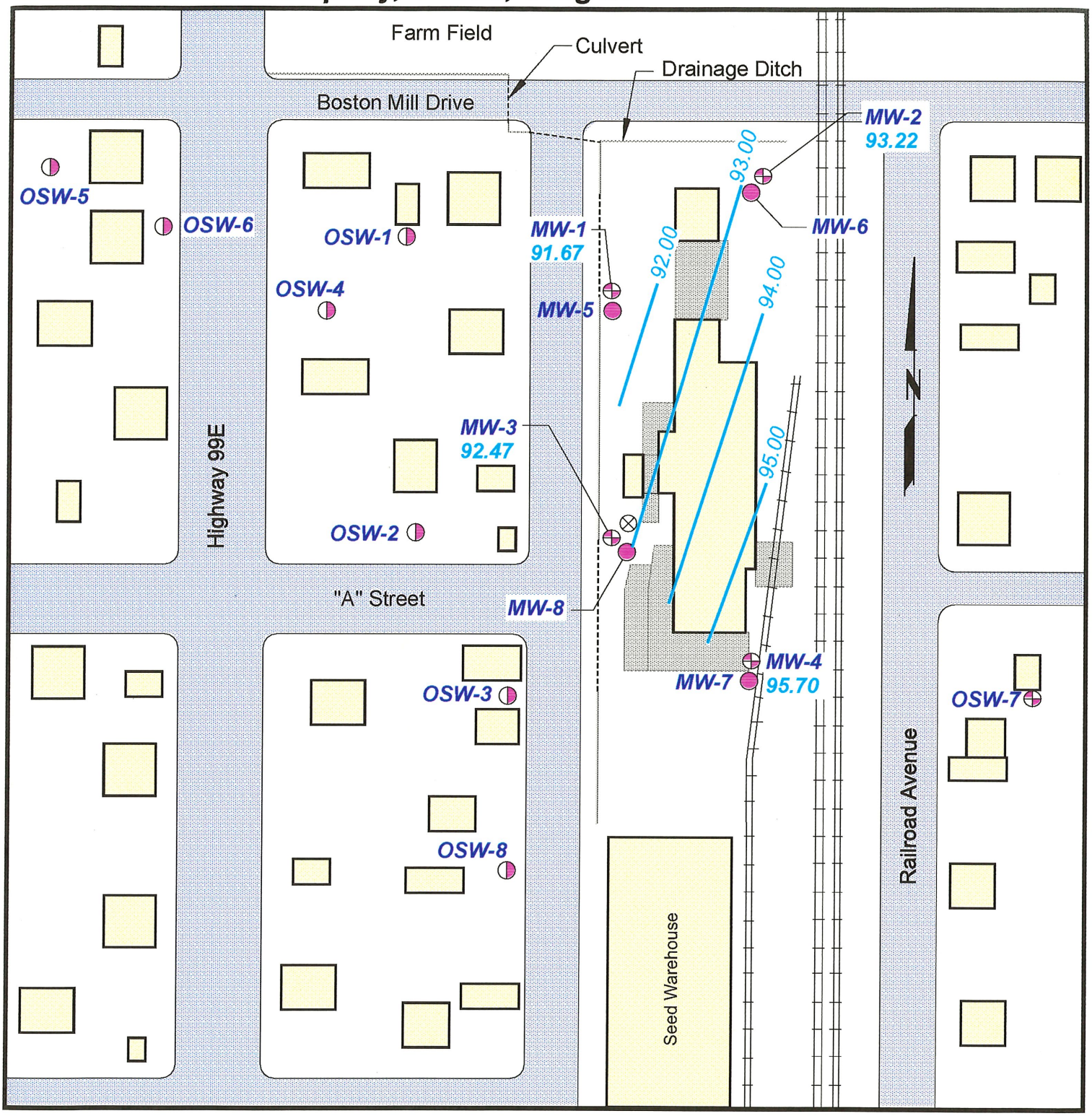


HARTCROWSER

J-5144-02 8/96

Figure 1

Site Plan - August 1996 Shallow Aquifer Groundwater Elevations
Willamette Seed Company, Shedd, Oregon



Legend:

- ⊗ Site Water Supply Well
- MW-4 / 95.70 — Shallow Groundwater Monitoring Well Location and Designation; Relative Groundwater Elevation in Feet
- MW-5 — Deep Groundwater Monitoring Well location and Designation
- OSW-2 — Offsite Residential Monitoring Well location and Designation
- 92.00 —— Relative Groundwater Level Contour in Feet

0 50 100 200

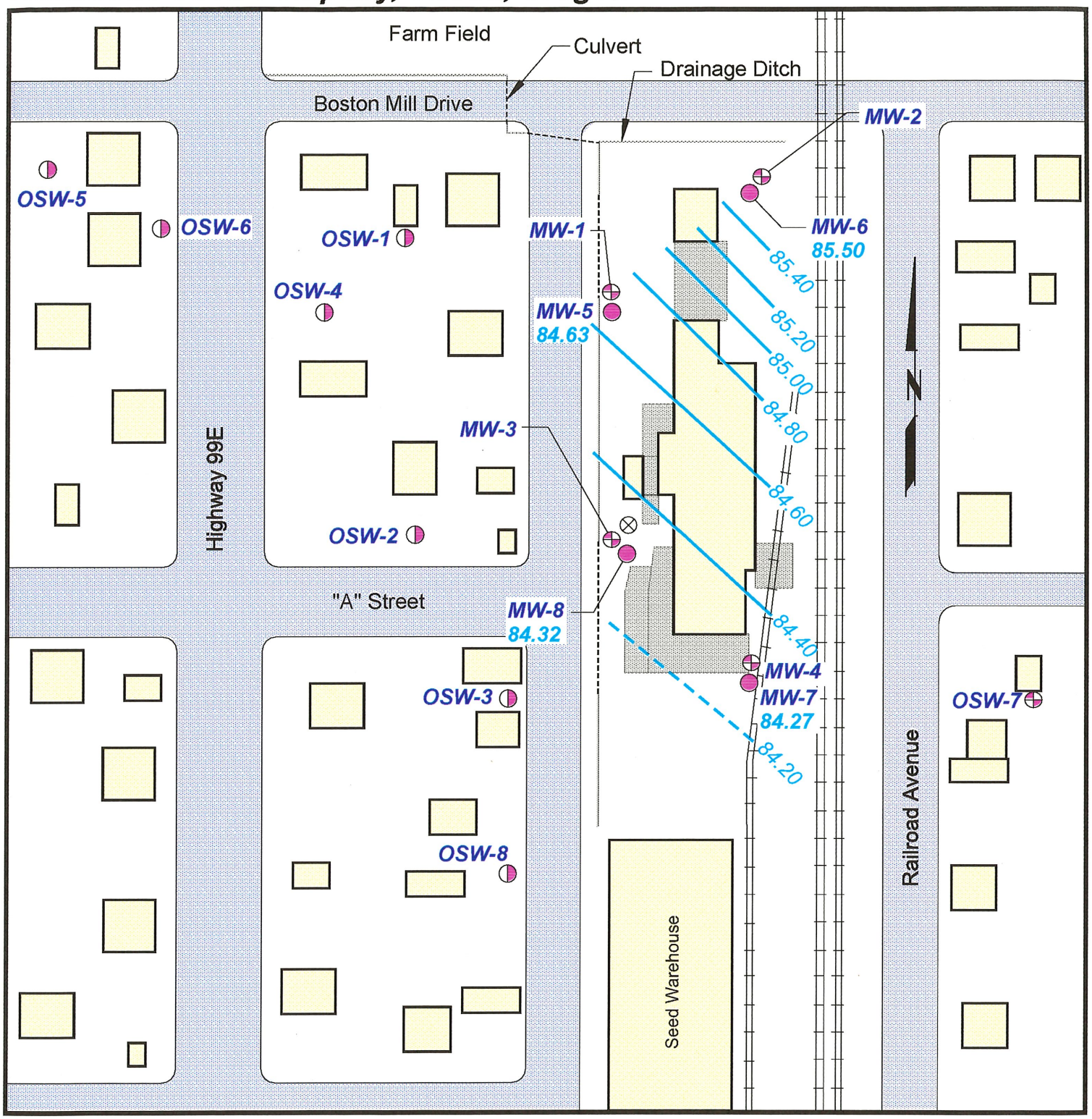
Approximate Scale in Feet

HARTCROWSER

J-5144-02 8/96

Figure 2

Site Plan - August 1[illegible]6 Deep Aquifer Groundwater Elevations
Willamette Seed Company, Shedd, Oregon



Legend:

- ⊗ Site Water Supply Well
- MW-4 ⊕ Shallow Groundwater Monitoring Well Location and Designation
- MW-5 84.63 ● Deep Groundwater Monitoring Well location and Designation, Relative Groundwater Elevation in Feet
- OSW-2 ◑ Offsite Residential Monitoring Well location and Designation
- 84.20 —— Relative Groundwater Level Contour in Feet

0 50 100 200

Approximate Scale in Feet

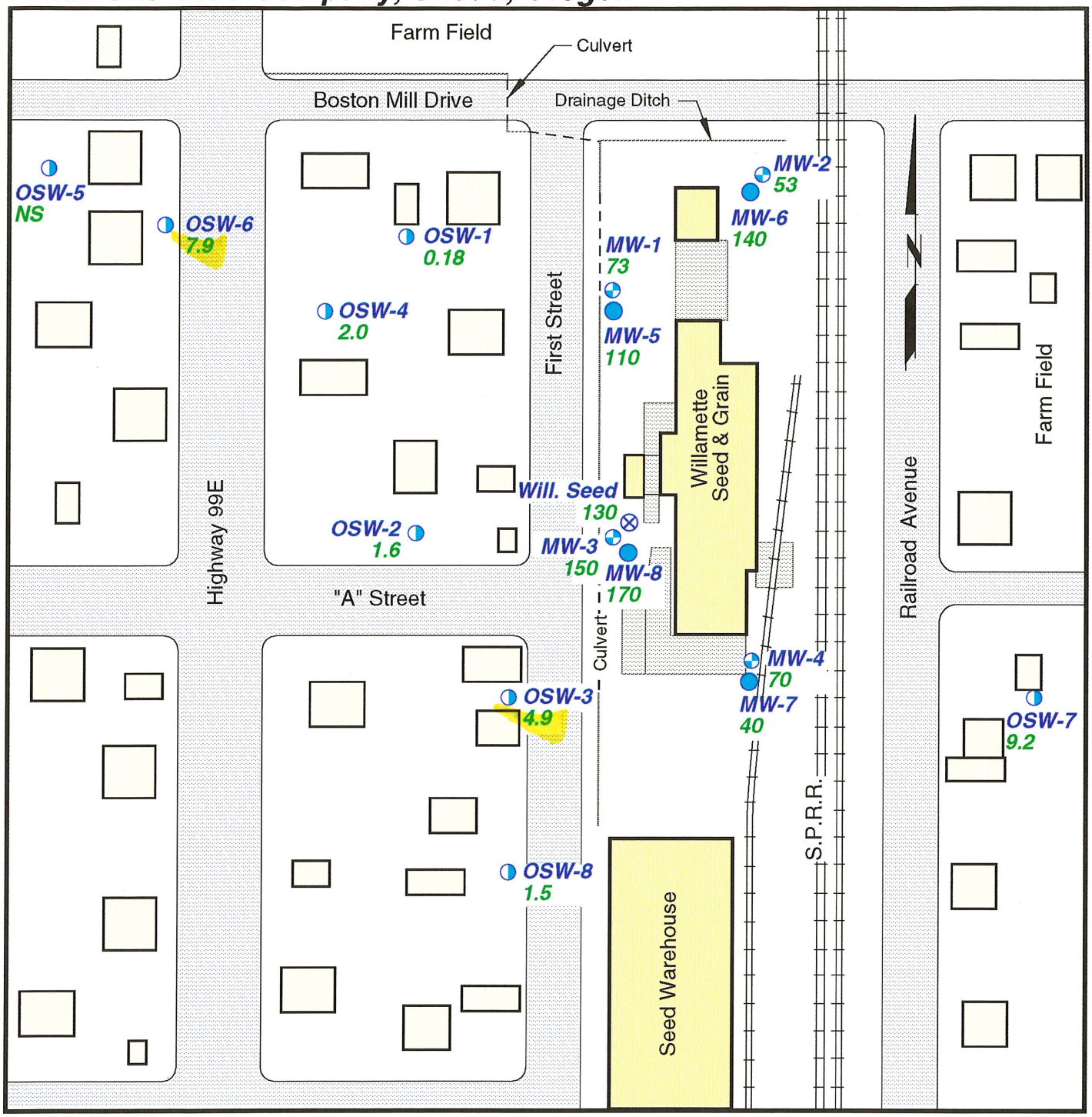
HARTCROWSER

J-5144-02 8/96

Figure 3

Site Plan - July/August 1996 Nitrate/Nitrite Concentrations

Willamette Seed Company, Shedd, Oregon



Legend:

- ⊗ Site Water Supply Well
- MW-1 ◔ Shallow Groundwater Monitoring Well Location and Designation
- MW-5 ● Deep Groundwater Monitoring Well Location and Designation
- OSW-3 ◑ 4.9 Offsite Residential Monitoring Well Location and Designation Nitrate/Nitrite-Nitrogen Concentration in mg/L (ppm)

0 50 100 200

Approximate Scale in Feet

HARTCROWSER

J-5144-02 8/96

Figure 4

ATTACHMENT A
GROUNDWATER SAMPLING AND QA/QC PROCEDURES

ATTACHMENT A
GROUNDWATER SAMPLING AND QA/QC PROCEDURES

This attachment presents the procedures that Hart Crowser used to complete the field and analytical work for this project. The procedures discussed include groundwater sampling and quality assurance/quality control (QA/QC).

Groundwater Sampling Procedures

Static Water Level Measurements

Water levels in the groundwater monitoring wells located on the fertilizer facility (MW-1 through MW-8) were measured to the nearest 0.01 foot using an electronic probe. The measurements were referenced to the top of the well casings.

Well Purging

Monitoring Wells MW-1 through MW-8. After the groundwater levels were measured, each well was purged using a thoroughly decontaminated stainless steel bailer. Purging was considered complete after three well volumes of groundwater had been removed or the well was bailed dry. We monitored field parameters (pH, temperature, and electroconductivity) following removal of each well volume. Field parameters had stabilized within ten percent of previous measurements after removal of three well volumes. We documented observations made during purging in our field notes.

Purge water was disposed of in the fertilizer facilities runoff collection system. Water that is collected in this system is pumped to a holding tank and eventually transported offsite for delivery to a nearby field irrigation system.

Domestic Wells with Access Through the Well Head. All domestic wells except residential wells OSW-4, OSW-6, and OSW-7, and the domestic well at the fertilizer facility ("Willamette Seed") were accessible through the well head.

The purging procedure for the domestic wells with access through the well head involved collecting an initial sample from the well for measurement of field parameters (pH, temperature, and electroconductivity). The sample was collected through a length of new, clean, PVC tubing inserted into the access port in the well head. An initial water sample was withdrawn through the tubing using a peristaltic pump and the field parameters were measured and recorded. Then a nearby tap connected to the well was opened and allowed to run until the well pump had cycled on and off one time. A second groundwater sample was then collected from the well using the peristaltic sampling pump for measurement of field parameters. This procedure was repeated until field parameters had stabilized to within ten

percent of the previous set of measurements. In general, field parameters stabilized after collecting three sets of parameter measurements.

Domestic Wells with No Access Through the Well Head. Wells OSW-4 and OSW-7 are both old driven wells with no access. Well OSW-6 may be accessible, but the well head is buried and is not currently accessible. The Willamette Seed well could not be sampled because sample tubing could not be inserted into the well head as tubing inside the well had broken off during a previous round of sampling. The "purging" procedures used for the inaccessible wells are described below.

An outside tap was opened and the water was allowed to run for about one minute to clear the lines. A sample was collected from the tap for measurements of field parameters. The tap was then allowed to run for another four minutes before collecting another sample for the measurement of field parameters. This procedure was repeated until three or four sets of field parameter measurements were taken. Generally, field parameters had stabilized to within ten percent of the previous measurements after performing the "purging" process three or four times.

Groundwater Sample Collection

Monitoring Wells MW-1 through MW-8. Groundwater samples were obtained using the same stainless steel bailer used to purge the well. If the well was purged dry, it was allowed to recover to at least 80 percent of its original volume before sampling was accomplished.

Domestic Wells with Access Through the Well Head. Following completion of purging procedures as described above, the groundwater sample was withdrawn directly from the well into the sample container using the peristaltic pump.

Domestic Wells with No Access Through the Well Head. Following completion of the "purging" procedures as described above, the groundwater sample was collected directly from the tap.

Sample Storage and Shipment

Sample containers were provided by the laboratory ready for sample collection, including the required sulfuric acid preservative. The samples of groundwater were placed in an ice chest cooled to a temperature of 4° C for transport to the analytical laboratory under chain of custody. Samples were delivered to the laboratory within 24 hours of collection.

Field Parameter Measurements

Electrical conductivity, temperature, and pH were measured periodically during the purging procedure as described above. Field parameters were measured in one-liter sample aliquots

to reduce the potential for interference from aboveground ambient conditions. Results of these measurements were included in our field notes.

The field parameters were measured using the following equipment:

- Oakton pocket temperature probe;
- Oakton pocket conductivity/TDS testers (one probe each for 10 to 1990 mS and 100 to 19900 mS ranges); and
- Oakton pocket pH meter.

A portion of the groundwater sample was placed in a one-liter container. Each probe was placed in the water sample and was left long enough to obtain a stable reading.

Any peculiarities observed in the measurements, such as unusual drifting of readings, were noted in our field notes and measurements were repeated.

Decontamination Procedures

This section describes the decontamination procedures used on sampling equipment before it was taken to the site and between sampling locations. Sampling equipment requiring decontamination included only the stainless steel bailer. The bailer rope was replaced with new, clean rope after each sampling. All tubing used for the peristaltic pump was discarded after each sampling and replaced with clean unused tubing.

The stainless steel bailer was cleaned before field use and between each sample collection according to the following procedures:

1. Detergent and tap water wash.
2. Tap water rinse.
3. Distilled-deionized water rinse.

All water generated from the decontamination procedures was disposed of in the fertilizer facilities runoff collection system.

Quality Assurance/Quality Control

Field QA/QC. QA/QC was practiced throughout field activities. As discussed above, sampling equipment was disposable or decontaminated between each sampling event. The PVC rope used on the bailer was replaced between each purging or sampling event to

minimize cross contamination. All laboratory containers were marked with identifying information to prevent sample mix-up. Chain of custody was maintained and documented at all times.

We collected one duplicate groundwater sample (MW-9) from monitoring well MW-3 for analysis. This sample served as a check on laboratory quality as well as the potential variability of the sample matrix. The nitrate/nitrite concentration in MW-3 was 150 mg/L compared with 150 mg/L in its duplicate (MW-9).

Laboratory QA/QC. Additional QA/QC checks were conducted by the analytical laboratory. These included analysis of method blanks, laboratory duplicates, and laboratory control samples. Acceptability or control limits for analyses were statistically derived by the laboratory in accordance with EPA guidelines. In reviewing the QA/QC information, we found the chemical data suitable for our intended purpose.

A laboratory, or method blank, is a sample prepared in the laboratory along with the actual samples and analyzed for the same parameters at the same time. It is used to assess if detected contaminants may have been the result of contamination of the samples in the laboratory. We reviewed the method blank results in the laboratory reports and found no target compounds detected at the reporting limits noted on the data sheets.

In a separate analysis, a laboratory duplicate is prepared by splitting a sample from one of the field samples and analyzed for the constituent of interest. This is compared to the field sample to assess the precision of the analytical method. This comparison is normally expressed by the relative percent difference (RPD) between the field sample and the laboratory duplicate. We reviewed the laboratory duplicate and RPD results in the laboratory report and found the recoveries and RPDs to be within the established QC limits.

In a laboratory control sample, a known concentration of the constituent of interest is measured. The analysis assesses the accuracy of a chemical measurement by comparing the measured value to the actual value. We reviewed the QA/QC data in the attached laboratory reports and found all laboratory control sample recoveries to be within the established control limits.

ATTACHMENT B
LABORATORY ANALYSES TEST DOCUMENTATION

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

HART CROWSER INC.

AUG 01 1996

Portland Office

July 30, 1996

Hart Crowser, Inc.
Five Centerpointe Drive
Suite 240
Lake Oswego, OR 97035

Attention: Greg Kupillas

RE: JOB # 5144-02
P.O.#
PROJECT - SHEDD, OR

Enclosed are test results for your samples received in this lab on Jul. 25, 1996. For your reference, these analyses have been assigned our NCA # P607359.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Philip Nerenberg
Laboratory Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
BOTHELL ▪ (206) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

Nitrate/Nitrite-Nitrogen per EPA 300.0
Results In mg/L (ppm)

Client: Hart Crowser, Inc.
Project: SHEDD, OR

NCA Project #: P607359
Matrix: water
Sampled: 07/25/96
Received: 07/25/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
MW-1	P607359-1	Nitrate/Nitrite-N	73	0.10	07/25/96	07/26/96
MW-2	P607359-2	Nitrate/Nitrite-N	53	0.10	07/25/96	07/26/96
MW-3	P607359-3	Nitrate/Nitrite-N	150	0.10	07/25/96	07/26/96
MW-4	P607359-4	Nitrate/Nitrite-N	70	0.10	07/25/96	07/26/96
MW-5	P607359-5	Nitrate/Nitrite-N	110	0.10	07/25/96	07/26/96
MW-6	P607359-6	Nitrate/Nitrite-N	140	0.10	07/25/96	07/26/96
MW-7	P607359-7	Nitrate/Nitrite-N	180	0.10	07/25/96	07/26/96
MW-8	P607359-8	Nitrate/Nitrite-N	45	0.10	07/25/96	07/26/96
OSW-1	P607359-9	Nitrate/Nitrite-N	0.18	0.10	07/25/96	07/25/96
OSW-2	P607359-10	Nitrate/Nitrite-N	1.6	0.10	07/25/96	07/25/96
OSW-3	P607359-11	Nitrate/Nitrite-N	4.9	0.10	07/25/96	07/25/96
OSW-4	P607359-12	Nitrate/Nitrite-N	2.0	0.10	07/25/96	07/25/96
OSW-6	P607359-13	Nitrate/Nitrite-N	7.9	0.10	07/25/96	07/25/96
OSW-7	P607359-14	Nitrate/Nitrite-N	9.2	0.10	07/25/96	07/25/96
OSW-8	P607359-15	Nitrate/Nitrite-N	1.5	0.10	07/25/96	07/25/96
WILLAMETTE SEED	P607359-16	Nitrate/Nitrite-N	130	0.10	07/25/96	07/26/96
MW-9	P607359-17	Nitrate/Nitrite-N	150	0.10	07/25/96	07/26/96
RINSE	P607359-18	Nitrate/Nitrite-N	ND	0.10	07/25/96	07/25/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

July 30, 1996

Hart Crowser, Inc.
Five Centerpointe Drive
Suite 240
Lake Oswego, OR 97035

Attention: Greg Kupillas

Re: Quality Control Data
JOB # 5144-02
P.O.#
PROJECT - SHEDD, OR

NCA project number P607359.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
IELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Philip Nerenberg
Laboratory Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

BATCH QUALITY CONTROL RESULTS
Nitrate/Nitrite-Nitrogen per EPA 300.0

Client: Hart Crowser, Inc.
Project: SHEDD, OR

NCA Project #: P607359
Received: 07/25/96

METHOD BLANK
Batch # CK96071a
Results In mg/L (ppm)

Compound	Result	MRL
Nitrate/Nitrite-N	ND	0.10
Date Prepared	07/25/96	
Date Analyzed	07/25/96	

METHOD BLANK
Batch # CK96072a
Results In mg/L (ppm)

Compound	Result	MRL
Nitrate/Nitrite-N	ND	0.10
Date Prepared	07/25/96	
Date Analyzed	07/26/96	

DUPLICATE
Batch # CK96071a
Results In mg/L (ppm)

Duplicate ID P607359-11

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Nitrate/Nitrite-N	4.88	4.89	0.20	20

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

BATCH QUALITY CONTROL RESULTS
Nitrate/Nitrite-Nitrogen per EPA 300.0

Client: Hart Crowser, Inc.
Project: SHEDD, OR

NCA Project #: P607359
Received: 07/25/96

DUPLICATE
Batch # CK96072a **Duplicate ID P607359-1**
Results In mg/L (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Nitrate/Nitrite-N	72.7	73.0	0.41	20

MATRIX SPIKE
Batch # CK96071a **Spike ID P607359-11**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Nitrate/Nitrite-N (s)	1.30	4.88	5.45	-	75-125

(s) Unable to calculate spike recovery due to dilution.

MATRIX SPIKE
Batch # CK96072a **Spike ID P607359-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Nitrate/Nitrite-N	13.0	72.7	86.7	108	75-125

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Office
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

BATCH QUALITY CONTROL RESULTS
Nitrate/Nitrite-Nitrogen per EPA 300.0

Client:	Hart Crowser, Inc.	**NCA Project #:**	P607359
Project:	SHEDD, OR	**Received:**	07/25/96

LABORATORY CONTROL SAMPLE
Batch # CK96071a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Nitrate/Nitrite-N	2.00	1.95	98	90-110

LABORATORY CONTROL SAMPLE
Batch # CK96072a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Nitrate/Nitrite-N	2.00	2.00	100	90-110

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (20[illegible]9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

12°

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

CHAIN OF CUSTODY REPORT

Work Order # P607359

REPORT TO:	INVOICE TO:
ATTENTION: HART CROWSER / GREG KUPZLLAS	ATTENTION:
ADDRESS: FIVE CENTER POINTE DRIVE SUITE 240 LAKE OSWEGO OR 97035-8652	ADDRESS:
PHONE: 503-620-7284 FAX: 503-620-6918	P.O. NUMBER: NCA QUOTE #:
PROJECT NAME: SHEDD, OR	
PROJECT NUMBER: 5144-02	
SAMPLED BY: DOANN HAMILTON & STACY CALLISON	

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: 5 (Standard) | 3-4 | 2 | 1 | Same Day

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: 300 / NITRATE/NITRITE	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	MW-1	7/25/96 930		X	W	1	
2.	MW-2	925					
3.	MW-3	1225					
4.	MW-4	1040					
5.	MW-5	855					
6.	MW-6	956					
7.	MW-7	1110					
8.	MW-8	1250					
9.	OSW-1	1100					
10.	OSW-2	1030					

RELINQUISHED BY (Signature): Doan Hamilton	DATE: 7-25-96	RECEIVED BY (Signature): Sara McClung	DATE: 7-25-96
PRINT NAME: DOANN HAMILTON	FIRM: HART CROWSER TIME: 14:45	PRINT NAME: Sara McClung	FIRM: NCA TIME: 1445
RELINQUISHED BY (Signature):	DATE:	RECEIVED BY (Signature):	DATE:
PRINT NAME:	FIRM: TIME:	PRINT NAME:	FIRM: TIME:

ADDITIONAL REMARKS:

PAGE 1 OF 2

COC Rev 8, 1/96

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

CHAIN OF CUSTODY REPORT

Work Order # 960739

REPORT TO: HART CROWSER
ATTENTION: GREG KYRIZIAS
ADDRESS: FIVE CENTERPOINTE DRIVE SUITE 240
LAKE OSWEGO OR 97035-8652
PHONE: 503-620-7284 FAX: 503-620-0918

INVOICE TO:
ATTENTION:
ADDRESS:

P.O. NUMBER: NCA QUOTE #:

PROJECT NAME: SHEDD OR
PROJECT NUMBER: 5144-02
SAMPLED BY: DOANN HAMILTON & STACY CALLISON

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: 5 (Standard) | 3-4 | 2 | 1 | Same Day

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request: 300 NITRATE/NITRITE

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	OSW-3	7/25/96 905		W	1	
2.	OSW-4	1202				
3.	OSW-6	1221				
4.	OSW-7	821				
5.	OSW-8	1000				
6.	WILLAMETTE SEED	1310				
7.	MW-9	1225				
8.	RINSE	1300				
9.						
10.						

RELINQUISHED BY (Signature): DOANN HAMILTON DATE: 7-25-96
PRINT NAME: DOANN HAMILTON FIRM: HART CROWSER TIME: 14:45

RECEIVED BY (Signature): SARA MCCLURG DATE: 7-25-96
PRINT NAME: SARA MCCLURG FIRM: NCA TIME: 1445

RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Office:
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

August 22, 1996

HART CROWSER INC.
AUG 22 1996
Portland Office

Hart Crowser, Inc.
Five Centerpointe Drive
Suite 240
Lake Oswego, OR 97035

HART CROWSER INC.
AUG 23 1996
Portland Office

Attention: Greg Kupillas

RE: JOB # 5144-02
P.O.#
PROJECT - WILLAMETTE SEED, SHEDD, OR

Enclosed are test results for your samples received in this lab on Aug. 13, 1996. For your reference, these analyses have been assigned our NCA # P608245.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Philip Nerenberg
Laboratory Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

Nitrate/Nitrite-Nitrogen per EPA 300.0

Results In mg/L (ppm)

Client: Hart Crowser, Inc.
Project: WILLAMETTE SEED, SHEDD, OR

NCA Project #: P608245
Matrix: water
Sampled: 08/13/96
Received: 08/13/96

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
MW-7	P608245-1	Nitrate/Nitrite-N	40	0.10	08/13/96	08/13/96
MW-8	P608245-2	Nitrate/Nitrite-N	170	0.10	08/13/96	08/13/96

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

August 22, 1996

Hart Crowser, Inc.
Five Centerpointe Drive
Suite 240
Lake Oswego, OR 97035

Attention: Greg Kupillas

Re: Quality Control Data
JOB # 5144-02
P.O.#
PROJECT - WILLAMETTE SEED, SHEDD, OR

NCA project number P608245.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Philip Nerenberg
Laboratory Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Office:
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

BATCH QUALITY CONTROL RESULTS
Nitrate/Nitrite-Nitrogen per EPA 300.0

Client: Hart Crowser, Inc.
Project: WILLAMETTE SEED, SHEDD, OR

NCA Project #: P608245
Received: 08/13/96

METHOD BLANK
Batch # CK96079a
Results In mg/L (ppm)

Compound	Result	MRL
Nitrate/Nitrite-N	ND	0.10
Date Prepared	08/13/96	
Date Analyzed	08/13/96	

DUPLICATE
Batch # CK96079a **Duplicate ID P608248-1**
Results In mg/L (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Nitrate/Nitrite-N (ap)	ND	ND	-	20

(ap) RPD is not reported for sample concentrations less than 5 times the MRL.

MATRIX SPIKE
Batch # CK96079a **Spike ID P608248-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Nitrate/Nitrite-N	1.30	ND	1.52	117	75-125

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

Offices:
BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Correspondence to: 18939 - 120th Ave. NE, #101, Bothell, WA 98011

BATCH QUALITY CONTROL RESULTS
Nitrate/Nitrite-Nitrogen per EPA 300.0

Client: Hart Crowser, Inc.
Project: WILLAMETTE SEED, SHEDD, OR

NCA Project #: P608245
Received: 08/13/96

LABORATORY CONTROL SAMPLE
Batch # CK96079a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Nitrate/Nitrite-N	2.00	1.93	97	90-110

Sample Custody Record

DATE 8/13/96 PAGE 1 OF 1

P608245 6°

HARTCROWSER

Hart Crowser, Inc.
Five Centerpointe Drive, Suite 240
Lake Oswego, Oregon 97035

JOB NUMBER 5144-02 LAB NUMBER

PROJECT MANAGER Greg Kupillas

PROJECT NAME Willamette Seed, Shedd, OR

SAMPLED BY: Stacey Callison

LAB NO.	SAMPLE	TIME	STATION	MATRIX	TESTING: Nitrate/Nitrite	NO. OF CONTAINERS	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS
1	MW-7	8/13/96 1100		water	X	1	
2	MW-8	8/13/96 1140		water	X	1	

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Stacey W. Callison	8/13/96	Sara McClurg	8/13/96
SIGNATURE		SIGNATURE	
Stacey W. Callison	TIME	Sara McClurg	TIME
PRINTED NAME		PRINTED NAME	
HC	1405	NCA	1405
COMPANY		COMPANY	

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE		SIGNATURE	
	TIME		TIME
PRINTED NAME		PRINTED NAME	
COMPANY		COMPANY	

TOTAL NUMBER OF CONTAINERS 2

METHOD OF SHIPMENT hand

SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS

DISTRIBUTION:

1. PROVIDE WHITE AND YELLOW COPIES TO LABORATORY
2. RETURN PINK COPY TO PROJECT MANAGER
3. LABORATORY TO FILL IN SAMPLE NUMBER AND SIGN FOR RECEIPT
4. LABORATORY TO RETURN WHITE COPY TO HART CROWSER