

# WARZYN

ENGINEERING INC

Consulting Engineers • Civil • Structural • Geotechnical • Materials Testing • Soil Borings • Surveying

1409 EMIL STREET, P.O. BOX 9538, MADISON, WIS. 53715 • TEL. (608) 257-4848

December 12, 1979  
C 7606W

Mr. Carl Pedretti, Chairman  
Town of Onalaska  
Town Hall  
Route 2  
Onalaska, WI 54650

Re: Groundwater Monitoring  
Onalaska Sanitary Landfill

Dear Mr. Pedretti:

Please find attached the groundwater monitoring results for the third quarter of 1979. The samples were obtained on September 19, 1979 from the wells located in and adjacent to the landfill and the Cecil R. Miller home and garden wells.

### Groundwater Flow Directions

Horizontal groundwater flow directions were generally to the south and southwest with groundwater discharging into the Black River. The data indicate the existence of a groundwater high in the vicinity of Well No. 5. Based on the horizontal flow directions shown on Drawing C 7606-A19, the Miller wells are downgradient at the landfill.

Groundwater elevations have declined one to two feet since the previous monitoring period and are generally lower than most measurements observed since monitoring the site began. Well Nos. 2 and 2A have had additional sections of casing added to prevent their burial as landfilling progresses. As a result, the casing elevations are unknown and will require resurveying. We would anticipate a survey crew from Warzyn Engineering Inc., being present on-site in the spring to confirm final grade elevations of the landfill at which time Wells 2 and 2A could also be resurveyed.

Groundwater Quality

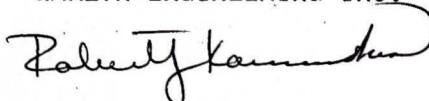
Analyses of the samples are shown in the attached laboratory report. Well Nos. 1 and 5 are located upgradient of the fill area and would be expected to reflect background water quality. Groundwater observation wells located within and downgradient of the landfill (2, 2A, 3A and 4) generally show elevated values with respect to specific conductance, chemical oxygen demand, chloride, iron and total hardness. The values observed in this monitoring period are within the range of previously reported values. An anomalously high chloride value of 76 mg/l reported in the June sampling period in Well No. 1 has decreased to more typical values of 5 mg/l during the present sampling period. With the exception of Well No. 4, chemical oxygen demand values are generally on the low side of previously observed concentrations. No trends were observed in the data with respect to pH, nitrate nitrogen, and sulfate.

Similar to previous reporting periods, the Miller home well shows higher values of conductivity, hardness and chloride compared to background water quality in Wells 1 and 5. The chloride concentration of 116 mg/l in the Miller home well represents the greatest concentration observed, including wells located within the fill area. Chloride concentrations in the garden well are typical of background water quality. A similar trend is observed for total hardness. For those few parameters tested in which drinking water standards apply, the Miller home and garden wells are within the drinking water standards.

Please do not hesitate to contact us if questions arise or further clarification is desired. For your convenience, a copy of this report is attached which can be forwarded by your office to Mr. Cecil Miller.

Very truly yours,

WARZYN ENGINEERING INC.



Robert J. Karnauskas  
Hydrogeologist

RJK/dmf

Encl: Groundwater Contour Map - September 19, 1979  
Analytical Laboratory Results

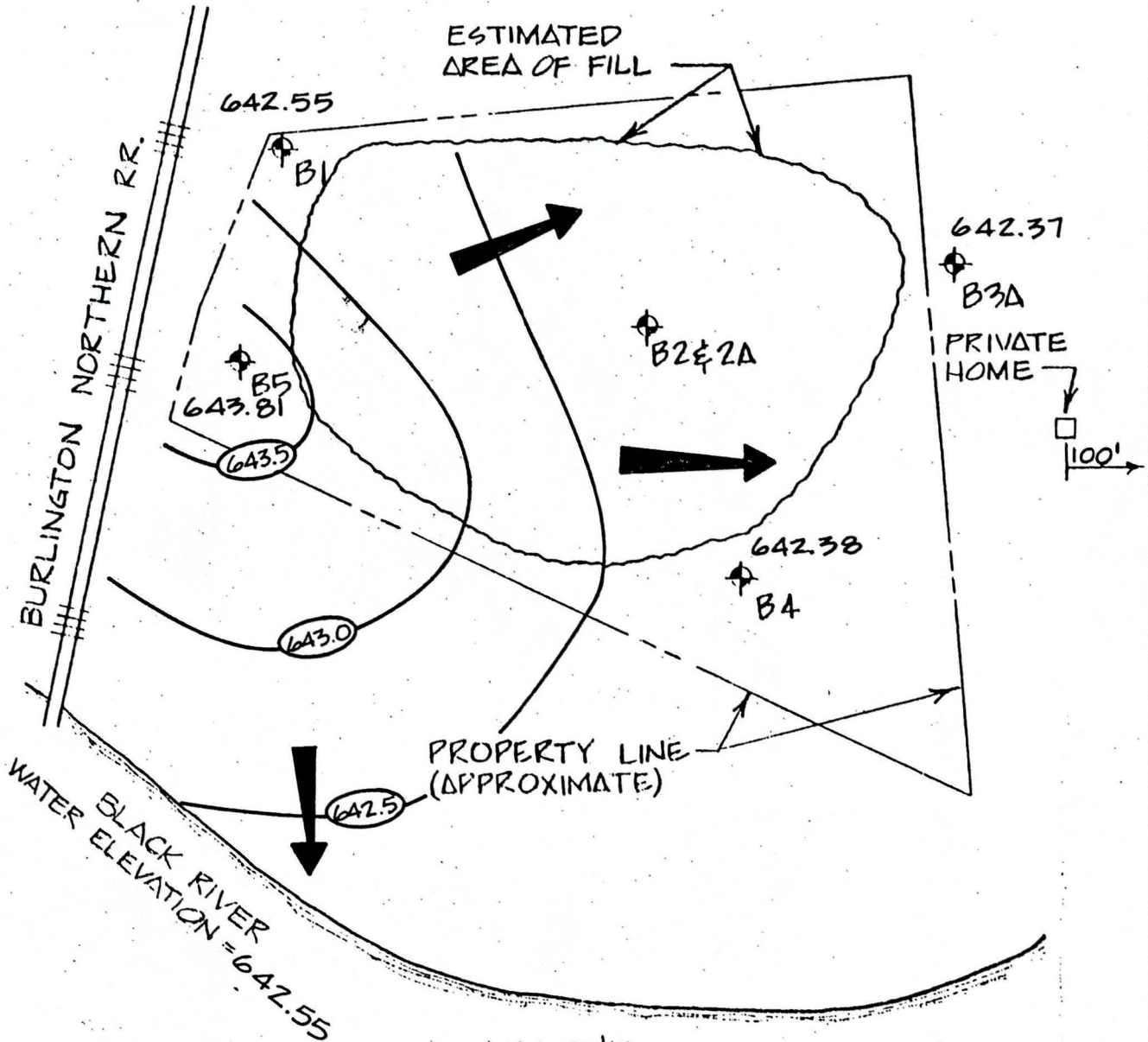
cc: Mr. Chuck Goebel, DNR, Madison, w/encl.  
Mr. Jim Boettcher, DNR, LaCrosse, w/encl.  
Mr. Jeff Miller, DNR, Eau Claire, w/encl.  
Mr. Gene Mitchell, DNR, Madison, w/encl.

**WARZYN****ENGINEERING INC****ANALYTICAL LABORATORY RESULTS**Project Onalaska Sanitary LandfillLocation Onalaska, WisconsinDate Received: 9/19/79Project No: C 7606WSheet 1 of 1Ckd PC App'd RJKDate Issued: 12/10/78

1409 EMIL STREET • P.O. BOX 9538, MADISON, WIS. 53715 • TEL. (608) 257-4848

Sample No.	Groundwater Elevation	pH Units	Conductivity umhos/cm	Chemical Oxygen Demand	Chloride	Total Hardness	Dissolved Iron	Nitrate Nitrogen	Sulfate
1	642.55'	6.95	295	25	<5	154	.15	.20	<1
2	637.22'	6.85	1270	49	62	392	.37	<.10	<1
2A	637.25'	6.85	1400	74	69	418	1.36	<.10	<1
3A	642.37'	7.15	605	12	15	310	.15	.25	<1
4	642.38'	6.85	490	271	10	210	13.5	.10	<1
5	643.81'	6.85	215	16	8	86	.17	.60	<1
Miller Home		7.70	995	12	116	488	<.05	<.10	3
Miller Garden		8.10	270	41	7	134	<.05	<.10	6

11 parameters are mg/l unless otherwise stated.



**LEGEND**

- GROUNDWATER CONTOUR
- DIRECTION OF HORIZONTAL GROUNDWATER FLOW
- GROUNDWATER MONITORING WELL, NUMBER & ELEVATION

**NORTH**  
 SCALE: 1" = 200'

**GROUNDWATER CONTOUR MAP**

9/19/79 DATA

**WARZYN**



**ENGINEERING INC**

ONALASKA SANITARY LANDFILL  
 ONALASKA, WISCONSIN

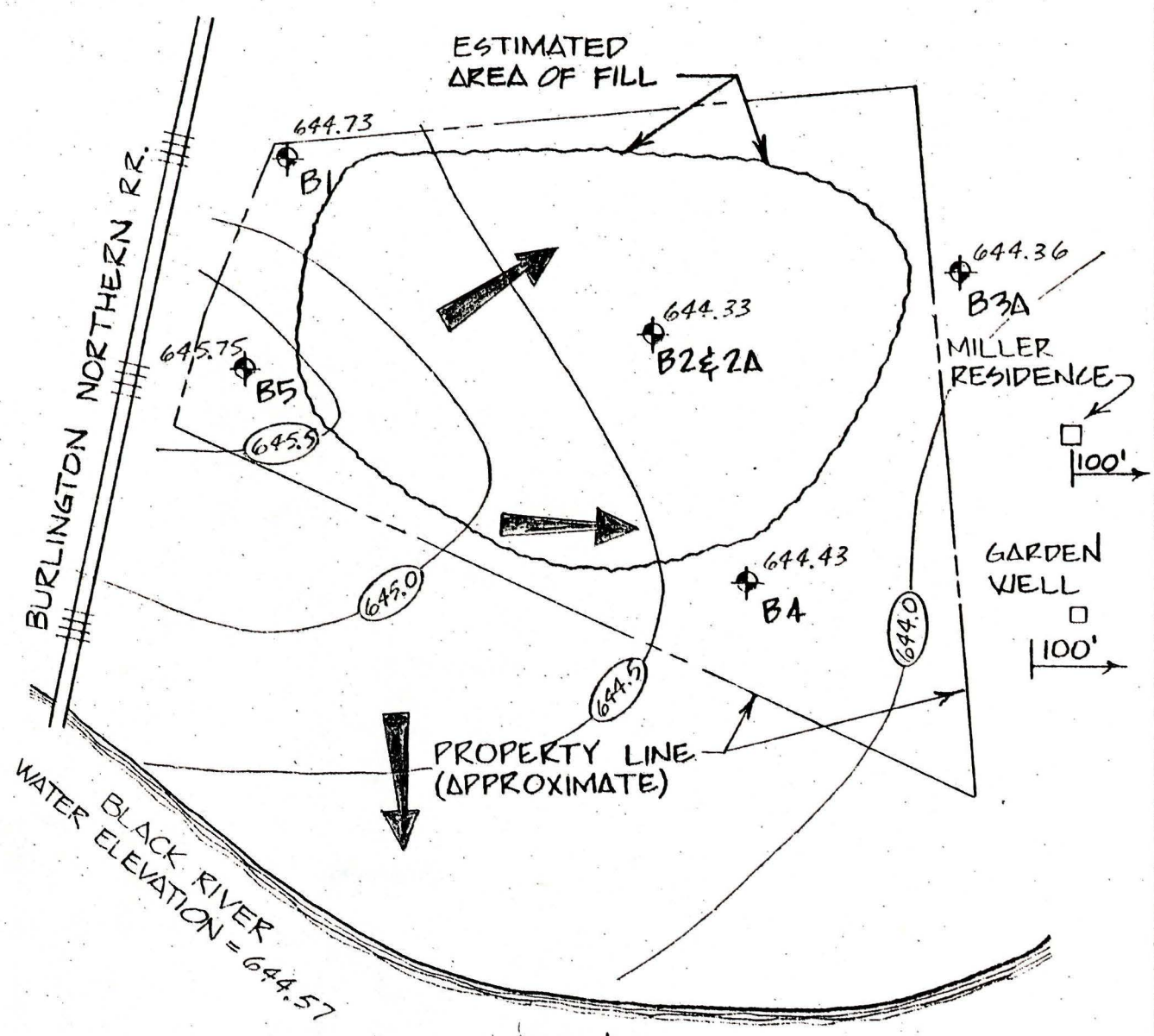
DWN TDH


CHK'D CLK




APP'D *Robert J. K...*


DATE 12/12/79

C71606-A19




  
 NORTH
   
 SCALE: 1" = 200'

- LEGEND**
-  GROUNDWATER CONTOUR
  -  DIRECTION OF HORIZONTAL GROUNDWATER FLOW
  -  GROUNDWATER MONITORING WELL, NUMBER & ELEVATION

 <b>WARZYN</b> <b>ENGINEERING INC</b>	<b>GROUNDWATER CONTOUR MAP</b> <b>6/14/79 DATA</b>		
	TOWN OF ONALASKA SANITARY LANDFILL ONALASKA, WISCONSIN		
DWN TDH	CHK'D CGK	APP'D <i>Robert J. Lambert</i>	DATE 8/10/79
			C7606-A18



## ANALYTICAL LABORATORY RESULTS

Project Onalaska Sanitary Landfill  
 Location Town of Onalaska, Wisconsin

Date Received: June 14, 1979  
 Project No: 7606 W  
 Sheet 1 of 1  
 Ckd PC App'd RJK  
 Date Issued: 7/31/79

1409 EMIL STREET • P.O. BOX 9538, MADISON, WIS. 53715 • TEL. (608) 257-4848

Sample No.	Groundwater Elevation	pH	Conductivity umhos/cm	Chemical Oxygen Demand	Chloride	Total Hardness	Dissolved Iron	Nitrate	Sulfate
1	644.73'	6.4	345	24	75.5	164	0.33	1.3	28.6
2	644.33'	6.7	1200	54	47.5	364	0.23	1.0	1.5
2A	644.69'	6.5	1320	52	88.0	544	0.23	0.85	1.5
3A	644.36'	6.7	765	16	16.5	380	0.25	0.60	1.5
4	644.43'	6.4	470	148	7.8	220	0.65	1.7	1.5
5	645.75'	6.3	265	<10	5.0	128	0.25	1.7	1.5
Miller Home	-	6.9	705	<10	35.0	345	0.45	1.6	1.7
Miller Garden	-	7.4	500	<10	4.5	236	0.25	1.0	3.7
Sport Club	-	6.7	260	<10	3.5	136	0.25	1.0	11.2
Staff Gage Black River	644.57	-	-	-	-	-	-	-	-

All parameters are mg/l unless otherwise stated.