

November 29, 1972

State of  
Washington  
Department  
of Ecology



**Memo to:** Tom McCann  
John Glynn

**From:** Ronald C. Devitt

**Subject:** Survey of Cedar Hills Landfill Leachate,  
Issaquah and Mason Creeks

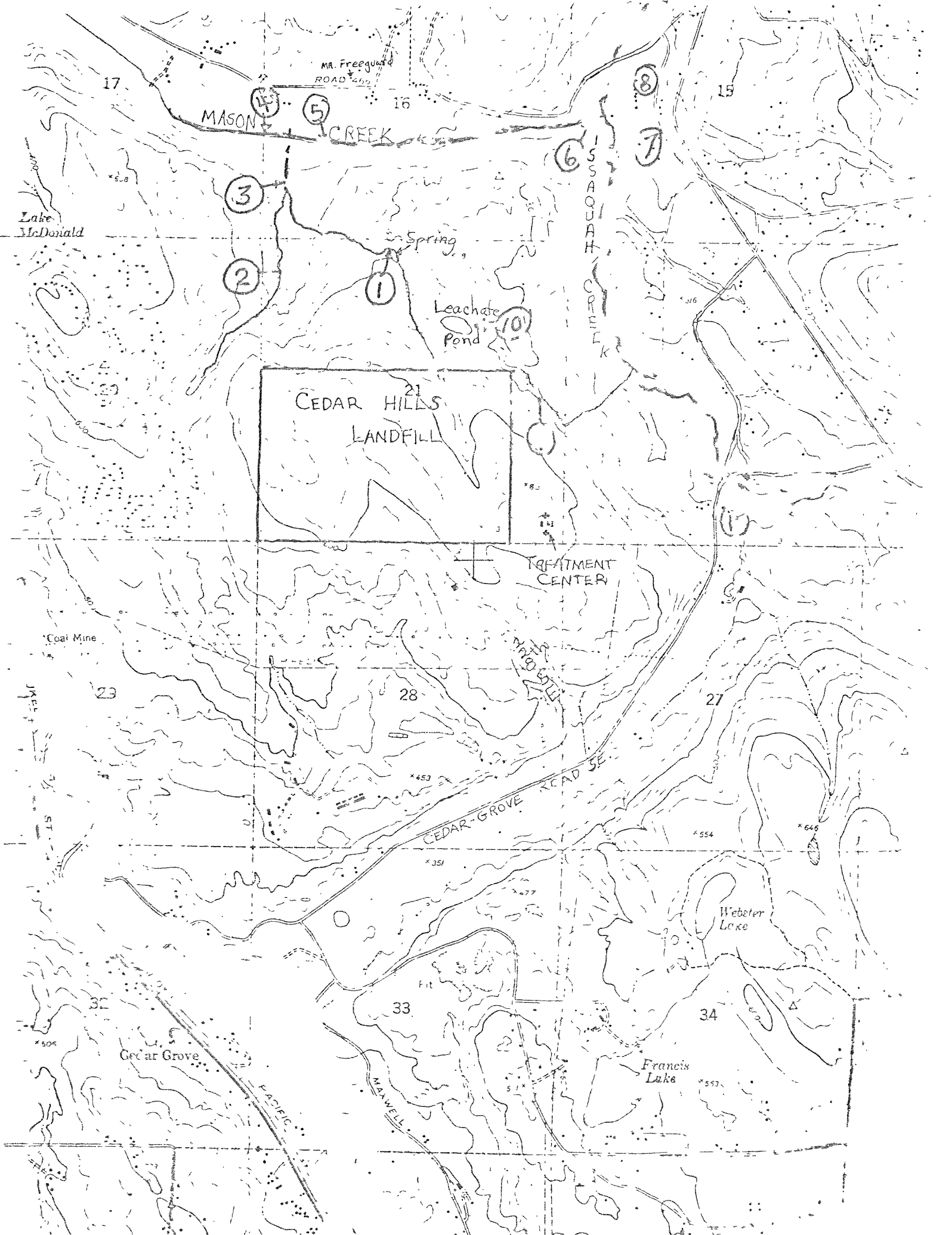
**Objective:** To chemically characterize the leachate from Cedar Hills landfill and determine if the water quality of Mason Creek or Issaquah Creek is being adversely affected.

On 10/31/72, John Glynn and I did preliminary sampling in the vicinity of Cedar Hills "sanitary landfill." Sampling sites were located as described in John's request (8/31/72). However, additional sampling locations are to be added, as we discussed in the field. It is hoped that the renumbering of stations as indicated on the attached map is not confusing.

We sampled the stations which will be henceforth referred to as: #1, #2, #3, #5, #8, #9, and #11. Station #4 was not sampled because there was no above ground flow to Mason Creek from Station #3. Station #10 was not sampled because there was no overflow from the leachate pond.

Following is a more detailed description of sampling sites:

- #1. Leachate from landfill - Drive on perimeter road of landfill until leachate pond is sighted. Park by lone conifer. Sample spring and ground water where it flows to creek bed.
- #2. Tributary - Drive on Road 466 to a sign saying "Freeguard." Walk up road past gun club. Follow old logging trail to creek (N 1/8 mile from gun club).
- #3. Combined flows from 1 and 2 at gun club.
- #4. Mason Creek upstream of confluence with #3.
- #5. Mason Creek downstream of confluence with #3.
- #6. Mason Creek before entering Issaquah Creek.
- #7. Issaquah Creek above Mason Creek.



17

MA. Frequent  
ROAD

MASON CREEK

15

Lake  
McDonald

Spring

Leachate  
Pond

ISAACIAH  
CREEK

21  
CEDAR HILLS  
LANDFILL

TREATMENT  
CENTER

Coal Mine

23

28

27

CEDAR GROVE ROAD SE

Webster  
Lake

Cedar Grove

33

34

Francis  
Lake

PACIFIC

MAXWELL

#8. Issaquah Creek below Mason Creek.

#9. Ground water near landfill. Drive past Cedar Hills Treatment Center and down the powerline maintenance road. Sample drainage at intersection with road.

#10. Runoff through leachate pond near lone conifer referred to in Station #1.

#11. Issaquah Creek between 156 St. Bridge and Cedar Grove Road Bridge.

## FIELD OBSERVATIONS

Time

1030

Station #9: Flow was low; drainage clear. No growth of sphaerolilus was observed.

T=6.3°C DO=6.5ppm Conductivity=120 µmhos/cm

1100

Station #10: No runoff was leaving the leachate pond above the ground.

1120

Station #1: The "Spring" was obviously contaminated by landfill leachate. The water was very malodorous. Aesthetics were poor. A spaerolilus-like growth was present. DO= 2.0 ppm Conductivity=1250 µmhos/cm

1235

Station #11: This station was intended to be the upstream control.

T=8.3°C DO=10.6ppm Conductivity=95 µmhos/cm

An insect sample was taken by disturbing approximately 1/3 m<sup>2</sup> of substrate. One third of the screen was picked. The following numbers of insects were obtained:

Mayflies	Heptageniidae	53
	Baetidae	4
Stoneflies		13
Caddisflies		12
Worms	Tubifex	2
	Other	<u>1</u>
Total		95
		<u>X 9</u>
		855 organisms/m <sup>2</sup>

The sample was collected mainly for historical data; however, the high number of stoneflies, caddisflies and mayflies and the low numbers of tubifex indicate a clean water situation. The high numbers of individuals indicate relatively fertile creek.

1330

Station #2: Flow was low; many leaves are in the stream. T=8.0C°, DO=10.3ppm Water was very clear.

1410

Station #3: Rust colored stain was apparent in creek bed T=9.0°C DO=7.4

1420

Following the drainage downstream the iron color was obvious. About 10 yds. below the intersection with the access road, the flow entered a pool with no above ground discharge. The dry creek bed continued and was stained red.

By using dye on the next sampling run, we may be able to determine if and where the drainage enters Mason Creek.

1445

Station #5: Mason Creek was clear, there was "duckweed" and filamentous green algae growing in abundance.

1510

Station #8: Comparing Issaquah Creek below Mason Creek to Station #11, the flow was greater, substrate larger and there were pool areas. Depth was also greater. T=8.5 DO=10.4

## LABORATORY DATA

Station	#1	#2	#3	#5	#8	#9	#11
Total coliform	120	740	2000	900	600	5500	1100
*pH	6.4	7.4	-	6.8	7.7	6.3	7.6
*Conductivity	1150	94	-	71	104	130	100
*COD	670	<5		<5	8	<5	<5
NO <sub>3</sub> -N(filtered)	.19	1.04	-	.99	.67	-	.69
NO <sub>2</sub> -N(filtered)	<.01	<.01	-	<.01	<.01	-	<.01
NO <sub>3</sub> -N(unfiltered)	1.04	ND	-	.02	.02	-	.02
*T.Kjeldahl-N (unfiltered)	2.02	.18	-	.06	.02	-	.04
Ortho-P(filtered)	<.01	<.01	-	.01	.01	-	.01
Total Phos.P(unfiltered)	.08	.01	-	.04	.03	-	.03
*Calcium	114	3.4	-	3.4	4.4	5.1	4.1
*Magnesium	37	3.4	-	2.0	3.9	3.4	3.6
*Iron	110	<0.1	-	0.4	0.1	0.5	0.2
*Hardness	440	22.5	-	16.7	27.1	26.7	25.0
*Chloride	221	7	-	5	5	19	16

Coliform = colonies/100 ml.

Conductivity =  $\mu$ mhos/cm

Remaining Values = ppm

\* = Possible parameters for detecting presence of leachate.

	TC	TIC	TOC (mg C/l)
Clear Cr. Trib ①	13	9	4
Issaquah Cr. d/s. landfill ②	16	11	5
Leachate Spr. ③	285	105	180
Mason Cr d/s landfill ④	10	7	3
Issaquah Cr. w/s landfill ⑤	15	12	3

①②③④⑤

11-30-72

ROUTING SLIP -- MEMO

To: \_\_\_\_\_ Subject: \_\_\_\_\_

From: \_\_\_\_\_ Date: \_\_\_\_\_

Message: \_\_\_\_\_

For:  Inf.  Action  Approval  Comment  Reply

DISCUSSION OF DATA

The leachate, when compared to the other drainages in the area, appear to have the following characteristics based on the first sampling:

Parameter	Factor
1. BOD	- lower
2. COD	- X 100
3. Conductivity	- X 50
4. NH <sub>3</sub> -N	- X 50
5. T.Kjeldahl-N	- X 50
6. Calcium	- X 20
7. Magnesium	- X 1
8. Iron	- X 2
9. Hardness	- X
10. Chlorides	- X



**PRELIMINARY CONCLUSIONS**

On the day of sampling, the combined tributary and leachate failed to flow above ground to Mason Creek.

By sampling stations 1-5 we should be able to show the effect of the leachate on the tributary (Station 2) and on Mason Creek when runoff increases during "wet-weather flow."

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

DATA SUMMARY

ORIGINAL TO: .....  
COPIES TO: .....  
LAB FILES: .....

*Felt pen =  
new station  
#5*

Source Cedar Hills' Pond

Collected By 1

Date Collected 1 31-76 Goal, Pro./Obj. 1

Log Number: 1243- #1 #9 #11 #2 #3 #5 #8

	#1	#9	#11	#2	#3	#5	#8	STORET
Station:	1	6A	6	135	1410	MASIN R	5	
pH	6.4	6.3	7.6	4		6.8	7.1	00403
Turbidity (JTU)								00070
Conductivity (umhos/cm)@25°C	115	130	100	14	-	11	101	00095
COD	6.16	2.5	2.5	3	-	2.5	8	00340
BOD (5 day)								00310
Total Coliform (Col./100ml)	120	2500	1100	740	2000	100	60	31504
Fecal Coliform (Col./100ml)								31616
NO3-N (Filtered)	.19	-	.69	1.04		.99	.67	00620
NO2-N (Filtered)	<.1	-	<.1	<.1	-	<.1	<.1	00615
NH3-N (Unfiltered)	0.04	-	.02	ND		<.1	<.1	00610
T. Kjeldahl-N (Unfiltered)	202	-	0.4	.8	-	.06	.02	00625
O-PO4-P (Filtered)	<.01	-	.01	<.1	-	.01	.01	00671
Total Phos.-P (Unfiltered)	.08	-	.03	.01	-	.04	.03	00665
Total Solids								00500
Total Non Vol. Solids								
Total Suspended Solids								00530
Total Sus. Non Vol. Solids								
CALCIUM	714.	5.1	41	2.4	-	3.4	40	
MAGNESIUM	37.	3.4	3.6	3.4	-	2.0	3.4	
Iron	110.	0.5	0.2	<.1	-	0.4	0.1	
TARDNESS	440.	16.1	250	225	-	16.7	2	
CHLORIDES	221.	19	6.	1		5	3	

Note: All results are in PPM unless otherwise specified. ND is "None Detected"  
Convert those marked with a \* to PPB (PPM X 10<sup>3</sup>) prior to entry into STORÉ

Summary By J. T. ... Date 1-2-77