WASHINGTON RANKING METHOD

ROUTE SCORES SUMMARY AND RANKING CALCULATION SHEET

Site name: Tiger Oil Corp - N. 1st ST Region: CRO

City, county: Yakima, Yakima

This site was ranked on August 12, 1991, based on quintile values from 259 assessed/scored sites.

Pathway	Route Score(s)	Quintile Group number(s)
SW-HH	1.2	1
Air-HH	4.0	1
GW-HH	65.8	5
Sed-HH	-	
SW-En	2.3	1
Air-En	3.0	2
Sed-En		

Priority scores:

$\frac{H^2 + 2M + L}{8}$ $\frac{25 + 2 + 1}{8} = 28/8 = 3.5 = 4$

$\frac{H^2 + 2L}{7}$ $\frac{4 + 2}{7} = 6/7 = 1$

Use the matrix presented to the right, along with the two priority scores, to determine the site ranking. N/A refers to where there is no applicable pathway.

Human Health \ Environment	5	4	3	2	1	N/A
5	1	1	1	1	1	1
4	1	2	2	2	(3)	4
3	1	2	3	4	4	5
2	2	3	4	4	5	5
1	2	3	4	5	5	5
N/A	3	4	5	5	5	5

DRAFT / (FINAL)

Matrix ("bin") Ranking: 3, or _____ No Further Action

CONFIDENCE LEVEL: The relative position of this site within this bin is:

____ almost into the next higher bin.
__X__ right in the middle, unlikely to ever change.
____ almost into the next lower bin.

rev. 8/91

WORKSHEET 1
SUMMARY SCORE SHEET

Site Name: Tiger Oil Corporation - North First Street

Site Location: (City, County, or Section/Township/Range)
SE¼SE¼ Section 12 T13N R18E
Yakima, Washington (Yakima County)

Site Description: (Include management areas, compounds of concern, and quantities)

The site is an active retail gasoline station. Domestic well contamination was observed by neighbors from 1980 to 1982. Testing of equipment revealed leakage from the distribution system at the site. A total estimated 12,000 to 22,000 gallons of leaded and unleaded gasoline and diesel was released from the facility. Recovery of free product was attempted but resulted in approximately 40 gallons recovered. Benzene, ethylbenzene, toluene, xylene, napthalene and other aromatic compounds continue to be detected in groundwater. Lead has been detected in groundwater and at higher levels in soil.

Special Considerations: (Include limitations in site file data, data which cannot be accomodated in the model, but which are important in evaluating the risk associated with the site)

ROUTE SCORES:

Ground Water/Human:	~~5.5~~ 6.5 / 1.2	Overall Rank: 3
Surface Water/Human:	~~1.1~~	
Air/Human:	4.0 / 3.0	
Air/Environmental:	~~3.8~~ 2.3	
Surface Water/Environmental:	2.9	

WORKSHEET 2
ROUTE DOCUMENTATION

SURFACE WATER ROUTE

List substances to be considered for scoring. Source: 2

1. BENZENE
2. TOLUENE
3. ETHYL BENZENE
4. XYLENE
5. LEAD

Explain basis for choice of substances to be used in scoring.

LEADED AND UNLEADED GASOLINE AND DIESEL LEAKED FROM UST LINES FROM 1980-82. THE FIVE COMPOUNDS LISTED ARE THE CONSTITUENTS PRESENTING THE GREATEST HEALTH AND ENVIRONMENTAL CONCERN

List management units to be considered in scoring: Source: 2

1. SPILL AREA

Explain basis for choice of unit used in scoring.

SPILL TO SUBSURFACE IS DOCUMENTED, INCLUDING GROUNDWATER CONTAMINATION.

AIR ROUTE

List substances to be considered for scoring. Source: 2

1. BENZENE
2. TOLUENE
3. ETHYLBENZENE
4. XYLENE
5. LEAD

Explain basis for choice of substances to be used in scoring.

LEADED AND UNLEADED GASOLINE AND DIESEL LEAKED FROM UST LINES FROM 1980-82. THE FIVE COMPOUNDS LISTED ARE THE CONSTITUENTS PRESENTING THE GREATEST HEALTH AND ENVIRONMENTAL CONCERN.

List management units to be considered in scoring: Source: 2

1. SPILL AREA

Explain basis for choice of unit used in scoring.

SPILL TO SUBSURFACE IS DOCUMENTED, INCLUDING GROUNDWATER CONTAMINATION.

WORKSHEET 2 (CONTINUED)
ROUTE DOCUMENTATION

GROUND WATER ROUTE

List substances to be considered for scoring. Source: 2

1. BENZENE 5. LEAD
2. TOLUENE
3. ETHYL BENZENE
4. XYLENE

Explain basis for choice of substances to be used in scoring.

LEADED AND UNLEADED GASOLINE AND DIESEL LEAKED FROM UST LINES FROM 1980-82. THE FIVE COMPOUNDS LISTED ARE THE CONSTITUENTS PRESENTING THE GREATEST HEALTH AND ENVIRONMENTAL CONCERN.

List management units to be considered in scoring: Source: 2

1. SPILL AREA

Explain basis for choice of unit used in scoring.

SPILL TO SUBSURFACE IS DOCUMENTED, INCLUDING GROUNDWATER CONTAMINATION.

WORKSHEET 3
SUBSTANCE CHARACTERISTIC WORKSHEET
FOR MULTIPLE UNIT/SUBSTANCE SITES

	Combination 1	Combination 2	Combination 3
Unit: Substance: AIR ROUTE Human Toxicity/Mobility Value: Environmental Toxicity/ Mobility Value: Containment Value:			
Air Human Subscore: Air Environmental Score:			
SURFACE WATER ROUTE Human Toxicity Value: Environmental Toxicity Value: Containment Value:			
Surface Water Human Subscore: Surface Water Environmental Subscore:			
GROUND WATER ROUTE Human Toxicity/Mobility Value: Containment Value:			
Ground Water Subscore:			

WORKSHEET 4
SURFACE WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Std. (µg/l)	Value	Chronic Toxicity mg/kg/day	Value	Acute Toxicity mg/kg-bw	Value	Carcinogenicity Potency WOE	Factor	Value
1. BENZENE	1. 5 (MCL)	1. 8	1. X	1. —	1. 3306 LD_{50} ORAL RAT	3	A	.029	5
2. TOLUENE	2. 2000 (RMCL)	2. 2	2. .3 RfD ORAL	2. 1	2. 5000 LD_{50} ORAL RAT	3	D	X	—
3. ETHYLBENZENE	3. 700 (RMCL)	3. 4	3. .1 RfD ORAL	3. 1	3. 3500 LD_{50} ORAL RAT	3	D	X	—
4. XYLENE	4. X	4. —	4. X	4. —	4. 4300 LD_{50} ORAL RAT	3 (10)	X	—	—
5. LEAD	5. 5 (MCL)	5. 8	5. .0005 RfD ORAL	5. 5	5. X	—	B2	ND	—
6.									

Source: 3, 4
Highest Value: 8 10
+2 Bonus Points?: 2
Value: 10 V

1.2 Environmental Toxicity

3

Source: 3,4,5 Value: 6

Substance	Acute Criteria (µg/L)	Non-human mammalian acute toxicity (mg/kg)	Value
1. BENZENE	5300 LOEL	1. 3306 LD_{50} ORAL RAT	1. 2
2. TOLUENE	17,500 LOEL	2. 5000 LD_{50} ORAL RAT	2. 2
3. ETHYLBENZENE	32,000 LOEL	3. 3500 LD_{50} ORAL RAT	3. 2
4. XYLENE	X	4. 4300 LD_{50} ORAL RAT	4. 2 3
5. LEAD	82 LOEL	5. X	5. 6
6.			

1.3 Substance Quantity

Source: 1 Value: 5

Explain basis: 12,000 - 22,000 GALLONS GASOLINE AND DIESEL LEAKED. SOURCE 1, PAGE 13

2.0 MIGRATION POTENTIAL

2.1 Containment

PAGE 10 Source: 2 Value: 0

Explain basis: SPILL IN SUBSURFACE ONLY, LEAKING UST

2.2 Surface Soil Permeability: SANDY GRAVEL, HIGH — PAGE 11 Source: 2 Value: 1

2.3 Total Annual Precipitation: 7.2 INCHES — PAGE 11 Source: 2 Value: 1

2.4 Maximum 2-Year 24-Hr Precipitation: 1.0 — PAGE 11 Source: 2 Value: 1

2.5 Flood Plain: IN 500-YEAR FLOOD PLAIN — PAGE 11 Source: 2 Value: 1

2.6 Terrain Slope: LESS THAN 2% — PAGE 11 Source: 2 Value: 1

WORKSHEET 4 (CONTINUED)
SURFACE WATER ROUTE

3.0 TARGETS

3.1 Distance to Surface Water: 2000 FEET TO YAKIMA RIVER PAGE 15 DIRECTLY OVERLAND ESTIMATED AT .5 MILE Source: 1 Value: 4

3.2 Population Served within 2 miles: √ 0 PUBLIC + 0 DOMESTIC Source: 7,8 Value: 0

3.3 Area Irrigated by Sources within 2 miles: .75 √ 1 Source: 7 Value: 1

3.4 Distance to Fishery Resource: .5 MILE TO YAKIMA RIVER Source: 1 Value: 6

3.5 Distance to Sensitive Environment: .5 MILE Source: 1 Value: 6

List: YAKIMA RIVER .5 MILE
MILLER PARK 1 MILE

4.0 RELEASE

Explain basis: NONE DOCUMENTED Source: ___ Value: 0

WORKSHEET 5
AIR ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Introduction - please review before scoring

1.2 Human Toxicity

Substance	Air Std. µg/m³	Value	Chronic Toxicity mg/kg/day	Value	Acute Toxicity mg/kg-bw	Value	Carcinogenicity WOE	Potency Factor	Value
1. BENZENE	1. .12	1. 10	1. X	—	1. LC_{50} 10,000 PPM	5	A	.029	5
2. TOLUENE	2. 1248.6	2. 1	2. 2 (RFD)	1	2. X	—	D	X	—
3. ETHYLBENZENE	3. 1248.6	3. 4	3. 136 NOAEL	1	3. X	—	D	4	—
4. XYLENE	4. X	4. 7	4. X	—	4. X	—	X	—	—
5. LEAD	5. 50 PEL	5. 7 10	5. ND	—	5. X	—	B2	ND	—
6.									

Source: 3
Highest Value: 10
+2 Bonus Points?: 2
Toxicity Value: 12

1.3 Mobility

1.3.1 Gaseous Mobility mm Hg at 25°C 1-4 5. at 970°C assume 0 at 20°C
Vapor Pressure: 1.9 1 2.29 3.10 4.7 5.1
Value: 1.4 2.4 3.4 4.3 5.1
Source: 3, 6

1.3.2 Particulate Mobility
Soil Type: N.A, SPILL IN SUBSURFACE
Erodibility: ____
Climatic Factor: ____
Particulate Mobility Potential Value: ____
Source: ____

1.4 Final Human Health Toxicity/Mobility Matrix: TOXICITY — 12, MOBILITY — 4
Value: 24

1.5 Environmental Toxicity/Mobility

Substance	Non-human mammalian Acute Toxicity	Value	Mobility	Value
1. BENZENE	1. 10,000 PPM	1. 5 3	4	10 6
2. TOLUENE	2. X	2. —		
3. ETHYLBENZENE	3. X	3. —		5
4. XYLENE	4. 2212 LC_{50}	4. 5 3	4	10
5. LEAD	5 X	5. —		
6.				

Environmental Toxicity Mobility Matrix: 6
Source: 3 Value: 10

1.6 Substance Quantity: 12,000 - 22,000 GALLONS GASOLINE LEAKED, SOURCE 1, PAGE 13
Source: 1 Value: 5

WORKSHEET 5 (CONTINUED)
AIR ROUTE

2.0 MIGRATION POTENTIAL

2.1 Containment: E. LEAK FROM UST SUBSURFACE ONLY — Source: 2 Value: 0

3.0 TARGETS

3.1 Nearest Population: OPERATING GAS STATION - PUBLIC EXPOSED ONSITE LESS 100 FEET — Source: 1 Value: 10

3.2 Nearest Sensitive Environment: 2000 FEET — Source: 1 Value: 5

List: YAKIMA RIVER 2000 FEET
MILLER PARK 1 MILE

3.3 Population within 1/2 mile: 810 — PAGE 13 Source: 2 Value: 28

4.0 RELEASE: NONE DOCUMENTED — Source: ___ Value: 0

WORKSHEET 6
GROUND WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Std. mg/l	Value	Chronic Toxicity mg/kg/day	Value	Acute Toxicity mg/kg-day	Value	Carcinogenicity WOE	Potency Factor	Value
1. BENZENE	1. 5 (MCL)	1. 8	1. X	—	1. 3306 LD_{50} ORAL RAT	3	A	.029	5
2. TOLUENE	2. 2000 (DMCL)	2. 2	2. .3 RFD ORAL	1	2. 5000 LD_{50} ORAL RAT	3	D	X	—
3. ETHYLBENZENE	3. 700 (DMCL)	3. 4	3. .1 RFD ORAL	1	3. 3500 LD_{50} ORAL RAT	3	D	X	—
4. XYLENE	4. X	4. 7 2	4. X	— 1	4. 4300 LD_{50} ORAL RAT	3 10	X	—	—
5. LEAD	5. 5 (DMCL	5. 8	5. .0005 RFD ORAL	5 0	5. X	—	B2	ND	—

Source: 3, 4
Highest Value: 8 10
+2 Bonus Points?: 2
Value: 10 12

1.2 Mobility

Substance: SOLUBILITY mg/l 1. 1780 2. 515 3. 152 4. ~200
VALUES 1. 3 2. 2 3. 2 4. 2 5. 2
FOR LEAD K = .1-1 → VALUE = 2

Source: 3,4 Value: 3

Source: 1 Value: 5

1.3 Substance Quantity

Explain basis: 12,000 - 22,000 GALLONS GASOLINE AND DIESEL LEAKED SOURCE 1 PAGE 13.

2.0 MIGRATION POTENTIAL

Source: 1 Value: 10

2.1 Containment

Explain basis: E, SPILL

Source: 9 Value: 1

2.2 Net Precipitation: 1.7 INCH

Source: 2 Value: 4

2.3 Subsurface Hydraulic Conductivity: GREATER THAN 10^{-3} CM/SEC P.11

Source: 2 Value: 8

2.4 Vertical Depth to Ground Water: 0, GROUNDWATER CONTAMINATED P.11

3.0 TARGETS

Source: 1 Value: 4

3.1 Ground Water Usage: PUBLIC AND PRIVATE - ALTERNATE AVAILABLE

Source: 1,7 Value: 5

3.2 Distance to Nearest Drinking Water Well: LESS THAN 600 FEET

Source: 7,8 Value: 48

3.3 Population Served with 2 miles: $\sqrt{2279}$ PUBLIC + 36 DOMESTIC = $\sqrt{2315}$

Source: 7 Value: 33

3.4 Area Irrigated by Wells within 2 miles: .75 $\sqrt{1920}$

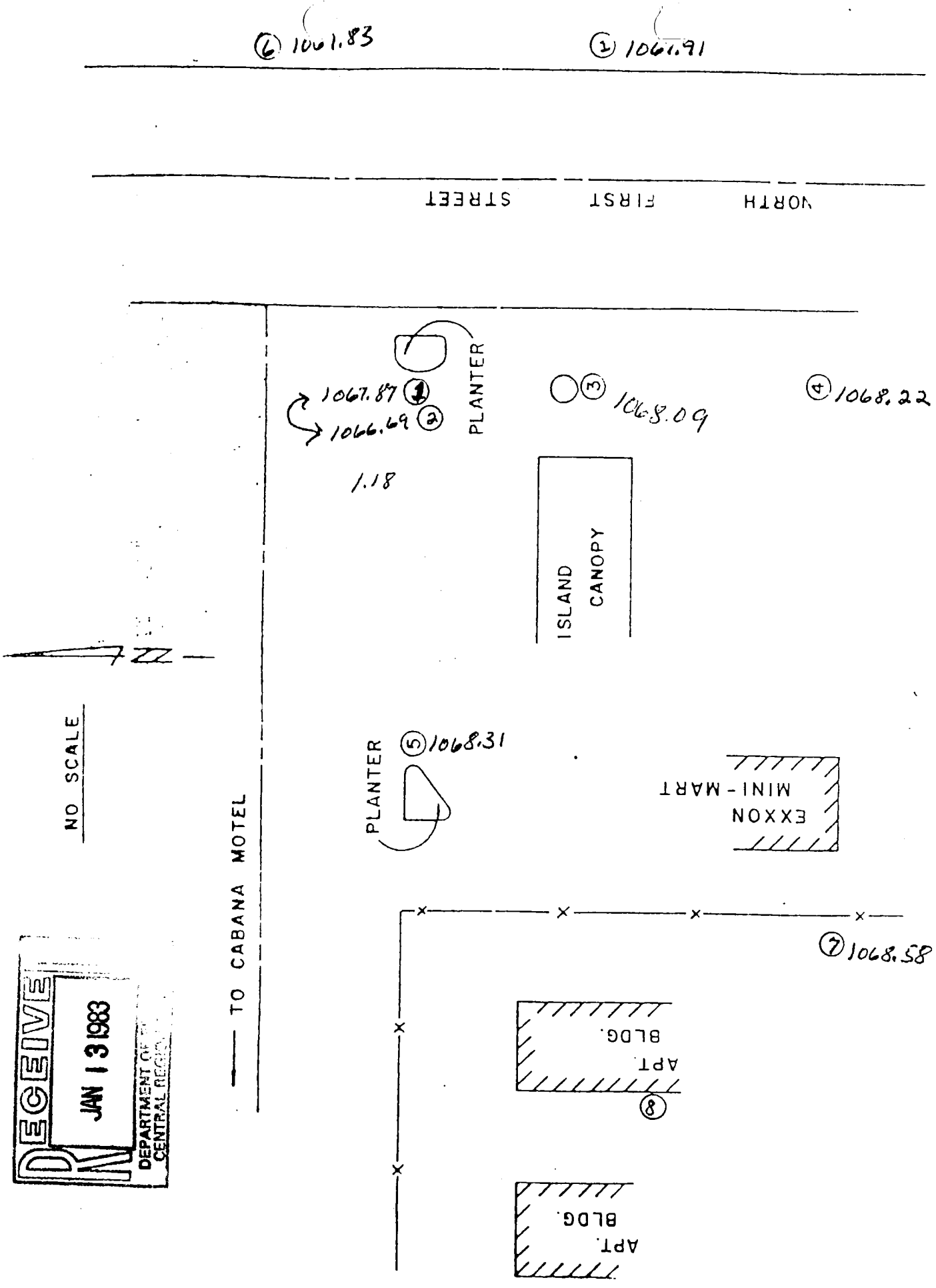
4.0 RELEASE

Source: 1 Value: 5

Explain basis: BTEX, LEAD, NAPTHALENE DETECTED IN GROUND WATER

WORKSHEET 7
SOURCES USED IN SCORING

1. CONTAMINATION OF GROUNDWATER BY GASOLINE AND DIESEL FUEL AT A SITE IN YAKIMA, R.J. WAGNER AND J.C. EBBERT, U.S. DEPARTMENT OF INTERIOR, GEOLOGICAL SURVEY, PRELIMINARY DRAFT, 1990.
2. DATA COLLECTION SUMMARY SHEET, SAIC, 1991.
3. WASHINGTON DEPT OF HEALTH GUIDE TO PHYSICO-CHEMICAL, TOXICOLOGICAL AND REGULATORY VALUES FOR PRIORITY POLLUTANTS, MONA KIMBELL ET AL, DRAFT, JULY, 1990.
4. REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES, U.S. DEPARTMENT OF HUMAN AND HEALTH SERVICES, DORIS V. SWEET, EDITOR, APRIL, 1987.
5. QUALITY CRITERIA FOR WATER 1986, U S EPA
6. SOIL VAPOR SURVEY BOOT CAMP, COURSE NOTES, GARY ROBBINS, UNIVERSITY OF CONNECTICUT, 1990.
7. RECORDED WATER RIGHTS OF THE DEPARTMENT OF ECOLOGY, 1990.
8. PUBLIC WATER SUPPLY LISTING, STATE OF WASHINGTON DEPT. OF HEALTH, 1989.
9. WASHINGTON CLIMATE, COOPERATIVE EXTENSION SERVICE, WSU.
10.


⑥ 1061.83
① 1061.91
NORTH FIRST STREET
WEEKS, DEITZEN & SKALA
ACCOUNT NO 82068
PLANTER
1067.87 ①
1066.69 ②
1.18
③ 1068.09
④ 1068.22
ISLAND CANOPY
NO SCALE
TO CABANA MOTEL
PLANTER
⑤ 1068.31
EXXON MINI-MART
⑦ 1068.58
APT. BLDG.
⑧
APT. BLDG.
RECEIVED
JAN 13 1983
DEPARTMENT OF
CENTRAL RECORDS

C.E.S.

WAT ASOLINE DATA

WATER/GASOLINE LEVEL DATA

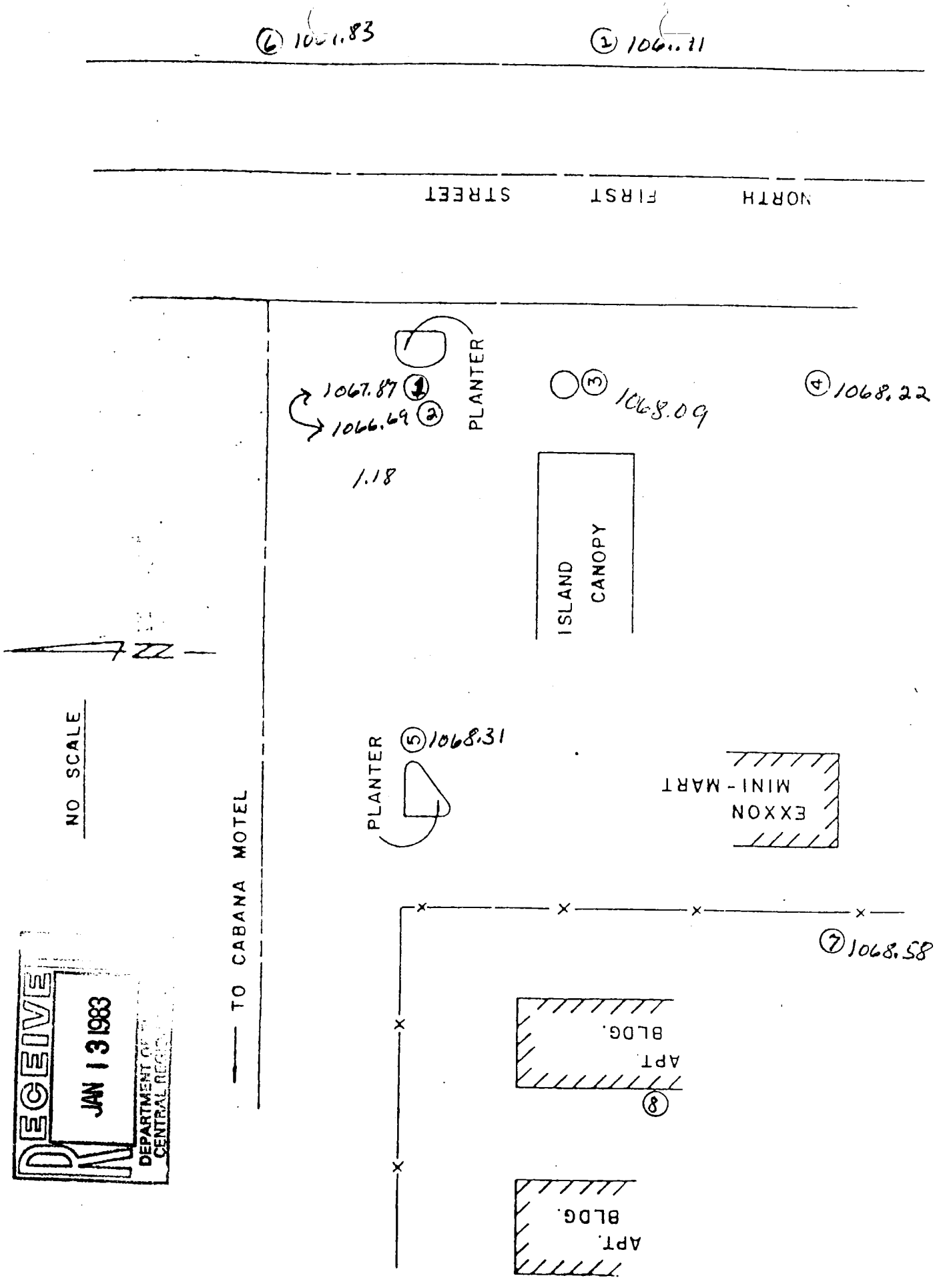
TIGER OIL
N. 1ST

372-01

DATE: 10-12-[illegible]

WELL NO.	E_R	E_C	D_W (DATUM)	E_W	T	W_T	E_A	COMMENTS
1		1078.45	10.54	1067.91			1067.91	
2		1080.19	12.71	1067.49	6"	.38	1067.87	
3		1084.52	16.					
4		1081.70 -	13.48	1068.22			1068.22	
5		1079.60	11.29	1068.31			1068.31	
6		1080.71	13.42	1067.29	8½	.54	1067.83	
7		1078.89	10.31	1068.58			1068.58	
8		1078.78						
9								
10								
11								
12								
R-WELL		1082.04	15.92	1066.12	9"	.57	1066.69	
D-WELL								

NOTES:
E_R = MONUMENT RIM ELEVATION
E_C = CASING RIM ELEVATION
D_W = DEPTH TO WATER (DATUM IN PARENTHESES)
E_A = ACTUAL HYDROSTATIC LEVEL = $E_W + W_T$
E_W = WATER ELEVATION = E_R OR $E_C - D_W$
T = GASOLINE THICKNESS
W_T = EQUIV. WATER HEIGHT [illegible]


WEEKS, DEITZEN & SKALA
ACCOUNT NO 82068
NORTH FIRST STREET
⑥ 1067.83
① 1067.71
PLANTER
1067.87 ①
1066.69 ②
1.18
③ 1068.09
④ 1068.22
ISLAND CANOPY
NO SCALE
TO CABANA MOTEL
PLANTER
⑤ 1068.31
EXXON MINI-MART
⑦ 1068.58
APT. BLDG. ⑧
APT. BLDG.
RECEIVED
JAN 13 1983
DEPARTMENT OF CENTRAL REGION