Source Water Assessment

A Hydrogeologic Susceptibility and Vulnerability Assessment for Tophand Trailer Court, Anchorage, Alaska PWSID # 210566.001

DRINKING WATER PROTECTION PROGRAM REPORT 782

Alaska Department of Environmental Conservation

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The Drinking Water Protection Program is producing Source Water Assessments in compliance with the Safe Drinking Water Act Amendments of 1996. Each assessment includes a delineation of the source water area, an inventory of potential and existing contaminant sources that may impact the water, a risk ranking for each of these contaminants, and an evaluation of the potential vulnerability of these drinking water sources.

These assessments are intended to provide public water systems owners/operators, communities, and local governments with the best available information that may be used to protect the quality of their drinking water. The assessments combine information obtained from various sources, including the U.S. Environmental Protection Agency, Alaska Department of Environmental Conservation (ADEC), public water system owners/operators, and other public information sources. The results of this assessment are subject to change if additional data becomes available. If you have any additional information that may affect the results of this assessment, please contact the Program Coordinator of DWPP, (907) 269-7521.

CONTENTS

TABLES

APPENDICES

Source Water Assessment for Tophand Trailer Court Source of Public Drinking Water, Anchorage, Alaska

Drinking Water Protection Program
Alaska Department of Environmental Conservation

EXECUTIVE SUMMARY

The public water system for Tophand Trailer Court is a Class A (community) water system consisting of one well in the Anchorage area. Identified potential and existing sources of contaminants for Tophand Trailer Court include: sewer lines, residential areas, recreational trails, roads, motor vehicle storage yards, firehouses, funeral homes, medical facilities, and various commercial activities. These identified potential and existing sources of contamination are considered sources of bacteria and viruses, nitrates and/or nitrites, volatile organic chemicals, heavy metals, synthetic organic chemicals and other organic chemicals. Overall, Tophand Trailer Court received a vulnerability rating of, **Medium** for bacteria and viruses, nitrate/nitrites, inorganic chemicals and synthetic organic chemicals and **High** for volatile organic chemicals and other organic chemicals.

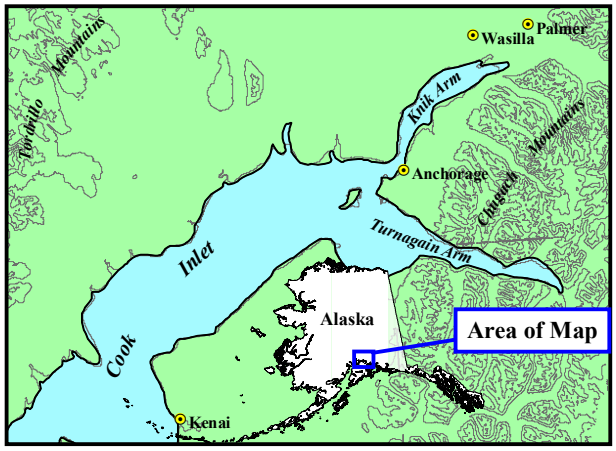

Figure 1. Index map showing the location of Anchorage, Alaska

INTRODUCTION

The Alaska Department of Environmental Conservation (ADEC) is completing source water assessments for all public drinking water sources in the State of Alaska. The purpose of this assessment is to provide public water system owners and/or operators, communities, and local governments with information they can use to preserve the quality of Alaska's public drinking water supplies. The results of this source water assessment can be used to decide where voluntary protection efforts are needed and feasible, and what efforts will be most effective in reducing contaminant risks to your water system.

This source water assessment combines a review of the natural conditions at the site and the potential and existing contaminant risks. These are combined to determine the overall vulnerability of the drinking water source to contamination.

DESCRIPTION OF THE ANCHORAGE AREA, ALASKA

Location

Anchorage, located in south-central Alaska, encompasses 1,698 square miles of land and 264 square miles of water. The area containing a majority of the urban development, commonly referred to as the Anchorage Bowl, encompasses approximately 180 square miles [*Partick, Brabets, and Glass, 1989*] and envelopes the low lands of the area. This area is bounded on the east by the Chugach Mountains and the north, west, and south by the Knik and Turnagain Arm of Cook Inlet (Figure 1). In recent times, urban development has extended eastward along the flanks of the Chugach Mountains. This area, known locally as the Anchorage Hillside, contains development at elevations exceeding 3,700 feet in elevation above sea level.

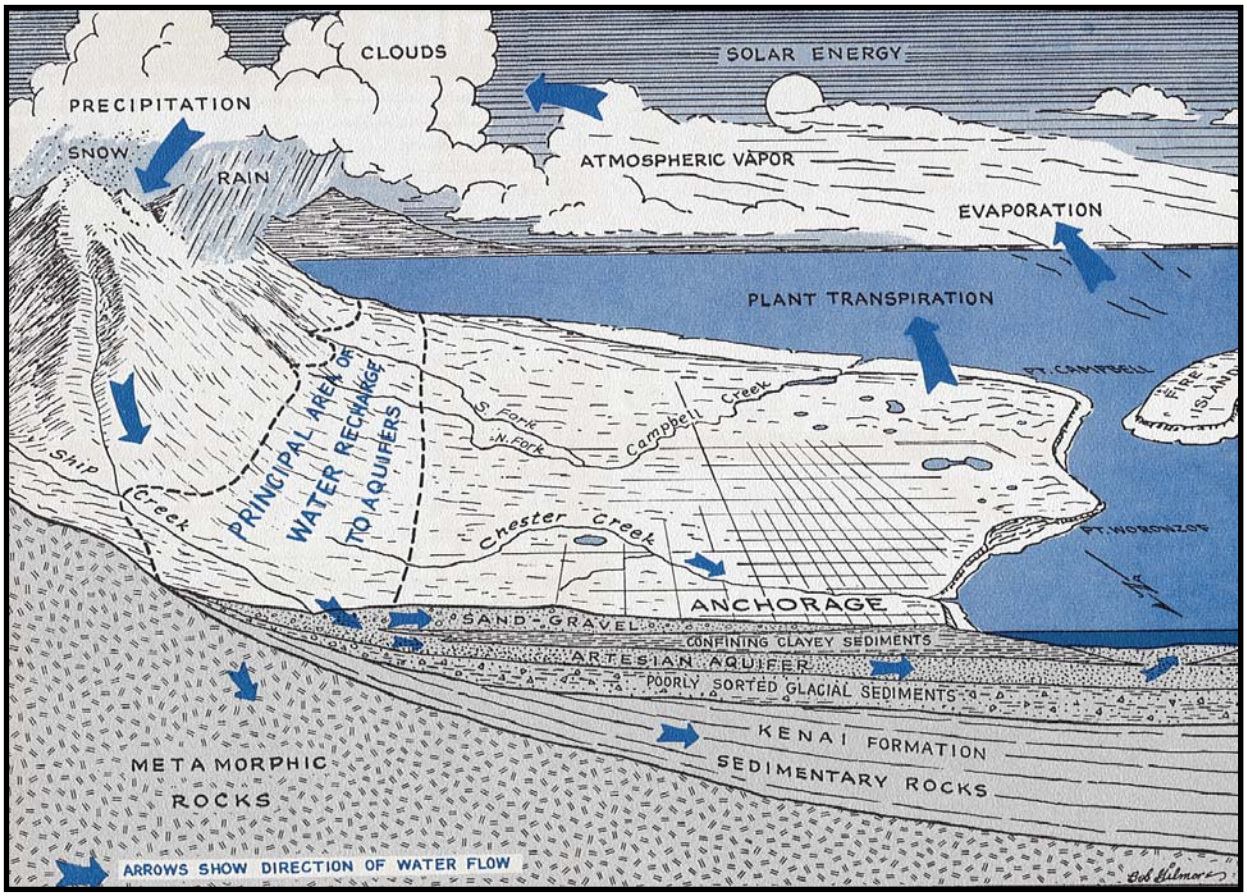

Figure 2. Generalized hydrologic cycle in the Anchorage area [*Barnwell, George, Dearborn,Weeks, and Zenone*, 1972].

Climate

The Anchorage area climate is somewhat transitional in that it does not experience large daily and annual temperature fluctuations like those experienced in the interior of Alaska nor does it experience high amounts of precipitation typified by gulf coast regions. Mean annual precipitation at the Anchorage International Airport is approximately 16 inches per year. On average, Anchorage receives a total snow accumulation of 69 inches per year. Precipitation generally increases inland toward the Chugach Mountains where annual precipitation may exceed 160 inches per year [*Barnwell, George, Dearborn, Weeks, and Zenone*, 1972]. Mean daily temperature ranges from 65^{o} F during July to 8^{o} F in January [*Western Regional Climate Center*, 2000].

Physiography and Groundwater Conditions

Surface elevations in the Anchorage area range from sea level at Knik and Turnagain Arms to well over 5,000 feet in the peaks that bound the area. Glacial moraine and outwash deposits primarily mantle the surface of the Anchorage Bowl.

The backbone of the Chugach Mountains is composed primarily of metamorphic marine and volcanic rocks (bedrock). These high peaks that bound Anchorage's east side are flanked with colluvium or slope deposits. These slope deposits eventually grade into the glacial and stream deposits at lower elevations in the Anchorage Bowl.

In the Anchorage area, two principal groundwater flow systems or aquifers exist (see Figure 2). The upper unconfined aquifer or water-table aquifer is separated from a lower confined aquifer system by layers of silty, clayey glacially derived sediments (confining layer) [*Ulery and Updike*, 1983]. The lower confined aquifer system consists of a series of hydrologically interconnected layers and lenses of gravel, sand and silt that, collectively, form the confined aquifer. The confining layer ranges from 0 to 270 feet thick throughout the Anchorage area and generally thins with increasing distance from Cook Inlet, thus pinching out at the mountain front [*Patrick, Brabets, and Glass*, 1989].

Water enters or recharges these two aquifer systems in several different ways. Along the front of the Chugach Mountains, groundwater seeps from fractures in

bedrock into the sediments. At these higher elevations, rain and snowmelt also enters the sediments. This area along the mountain front is considered the principal recharge area for wells in the Anchorage area. Precipitation in the low lands may also percolate directly into the ground. Lastly, aquifers may also be recharged by streams where surface water percolates into surrounding permeable sediments (losing reaches of streams). Groundwater flow in the confined aquifer is generally east to west from the mountain front toward Cook Inlet and Turnagain Arm, except in areas where the direction of flow is influenced by large municipal or industrial production wells. The direction of groundwater flow in the upper unconfined aquifer is more variable due to the influence from surfacial topography as well as its close connection with surface water bodies.

TOPHAND TRAILER COURT PUBLIC DRINKING WATER SYSTEM

Tophand Trailer Court is a Class A (community) water system. The system consists of one well in the Anchorage area. (See Map 1 of Appendix A).

The well is located near 36thAve and Arkansas Dr., at an elevation of approximately 100 feet above sea level.

The 1997 Sanitary Survey indicates that the well is installed with caps providing a sanitary seal. A properly installed sanitary seal may provide protection against contaminants from entering the source waters at the well casing. The well is located in a well pit, which increases the susceptibility of the well to flooding. Due to the date that the well was installed, 1950's, it is suspected that the well was not grouted according to current ADEC regulations. Proper grouting provides added protection against contaminants traveling along the well casing and into source waters.

Records indicate that the well depth is 265 feet deep and had a static water level of 70 bellow the surface. The well log is unavailable. However, logs of nearby wells indicate that there is a confining layer from 16 feet to 120 feet below the surface. This confining layer may provide protection from contaminates entering the aquifer. However, the protectiveness of the clay layers tend to thin out towards the mountains allowing contaminants that enter the subsurface near the base of the mountains to enter the confined aquifer uninhibited by the absence of any protective layer. In addition, wells penetrating the confining layer can further reduce the protectiveness.

This system operates 365 days per year and serves 60 residents through 23 service connections.

TOPHAND TRAILER COURT PROTECTION AREA

In order to evaluate whether a drinking water source is at risk, we must first evaluate what are the most likely pathways for surface contamination to reach the groundwater. Some areas are more likely to allow contamination to reach the well than others. These areas are determined by looking at the characteristics of the soil, groundwater, aquifer, and well.

The most probable area for contamination to reach the drinking water well is the area that contributes water to the well, the groundwater recharge area. This area is designated as the Drinking Water Protection Area (DWPA). Because releases of contaminants within the DWPA are most likely to impact the drinking water well, this area will serve as the focus for voluntary protection efforts.

An outline of the immediate watershed was used to determine the size and shape of the DWPA for Tophand Trailer Court. Available geology was also considered to take into account any uncertainties in groundwater flow and aquifer characteristics to arrive at a meaningful DWPA (Please refer to the Guidance Manual for Class A Public Water Systems for additional information).

The DWPAs established for wells by the ADEC are usually separated into four zones, limited by the watershed. These zones correspond to differences in the time-of-travel (TOT) of the water moving through the aquifer to the well. An analytical calculation was used to determine the size and shape of the DWPA. The input parameters describing the attributes of the aquifer in this calculation were adopted from the U.S. Geological Survey (*Patrick, Brabets, and Glass, 1989*), and State of Alaska Department of Water Resources (*Jokela et. al., 1991*).

The time of travel for contaminants within the water varies and is dependent on the physical and chemical characteristics of each contaminant. The following is a summary of the four DWPA zones and the calculated time-of-travel for each:

Table 1. Definition of Zones

Zone	Definition
A	¼ the distance for the 2-yr. TOT
B	Less than the 2 year TOT
C	Less Than the 5 year TOT
D	Less than the 10 year TOT

INVENTORY OF POTENTIAL AND EXISTING CONTAMINANT SOURCES

The Drinking Water Protection Program has completed an inventory of potential and existing sources of contamination within Tophand Trailer Court DWPA. This inventory was completed through a search of agency records and other publicly available information. Potential sources of contamination to the drinking water aquifer include a wide range of categories and types. Potential drinking water contaminants are found within agricultural, residential, commercial, and industrial areas, but can also occur within areas that have little or no development.

For the basis of all Class A public water system assessments, six categories of drinking water contaminants were inventoried. They include:

- Bacteria and viruses;
- Nitrates and/or nitrites;
- Volatile organic chemicals
- Heavy metals, cyanide, and other inorganic chemicals,
- Synthetic organic chemicals, and
- Other organic chemicals.

The sources are displayed on Maps 2 -10 in Appendix C and summarized in Table 1 of Appendix B.

RANKING OF CONTAMINANT RISKS

Once the potential and existing sources of contamination have been identified, they are assigned a ranking according to what type and level of risk they represent. Ranking of contaminant risks for a "potential" or "existing" source of contamination is a function of toxicity and volumes of specific contaminants associated with that source.

Tables 2 through 7 in Appendix B contain the ranking of potential and existing sources of contamination with respect to bacteria and viruses, nitrates and/or nitrites, volatile organic chemicals, heavy metals, synthetic organic chemicals, and other organic chemicals.

VULNERABILITY OF TOPHAND TRAILER COURTDRINKING WATER SOURCE

Vulnerability of a drinking water source to contamination is a combination of two factors:

- Natural susceptibility; and
- Contaminant risks.

Each of the six categories of drinking water contaminants has been analyzed and an overall vulnerability score of 0 to 100 is ultimately assigned:

Natural Susceptibility (0 – 50 points)

+

Contaminant Risks (0 – 50 points)

=

Vulnerability of the

Drinking Water Source to Contamination (0 – 100).
A score for the Natural Susceptibility is achieved by analyzing the properties of the well and the aquifer.

Susceptibility of the Wellhead (0 – 25 Points)

+

Susceptibility of the Aquifer (0 – 25 Points)

=

Natural Susceptibility (Susceptibility of the Well)
(0 – 50 Points)

Table 2 shows the Susceptibility scores and ratings for the well serving Tophand Trailer Court.

Table 2. Susceptibility of the well

	Score	Rating
Susceptibility of the Wellhead	10	Low
Susceptibility of the Aquifer	10	Low
Natural Susceptibility	20	Medium

Contaminant risks to a drinking water source depend on the type, number or density, and distribution of contaminant sources. This data has been derived from an examination of existing and historical contamination that has been detected at the drinking water source through routine sampling. It also evaluates potential sources of contamination. Table 3 summarizes the Contaminant Risks for each category of drinking water contaminants.

Table 3. Contaminant Risks

Category	Score	Rating
Bacteria and Viruses	25	Medium
Nitrates and/or Nitrites	30	High
Volatile Organic Chemicals	50	Very High
Heavy Metals, Cyanide, and Other Inorganic Chemicals	34	High
Synthetic Organic Chemicals	22	Medium
Other Organic Chemicals	42	Very High

Appendix D contains fourteen charts, which together form the 'Vulnerability Analysis' for a source water assessment for a public drinking water source. Chart 1 analyzes the 'Susceptibility of the Wellhead' to contamination by looking at the construction of the well and its surrounding area. Chart 2 analyzes the 'Susceptibility of the Aquifer' to contamination by looking at the naturally occurring attributes of the water source and influences on the groundwater system that might lead to contamination. Chart 3 analyzes 'Contaminant Risks' for the drinking water source with respect to bacteria and viruses. The 'Contaminant Risks' portion of the analysis considers potential sources of contaminants as well as a review of contamination that has or may have occurred, but has not arrived or been detected at the well. Lastly, Chart 4 contains the 'Vulnerability Analysis for Bacteria and Viruses'. Charts 5 through 14 contain the Contaminant Risks and Vulnerability Analyses for nitrates and nitrites, volatile organic chemicals, heavy metals, synthetic organic chemicals, and other organic chemicals, respectively.
Table 4 contains the overall vulnerability scores (0 – 100) and ratings for each of the six categories of drinking water contaminants. Note: scores are rounded off to the nearest five.

Table 4. Overall Vulnerability

Category	Score	Rating
Bacteria and Viruses	45	Medium
Nitrates and Nitrites	50	Medium
Volatile Organic Chemicals	70	High
Heavy Metals, Cyanide and Other Inorganic Chemicals	55	Medium
Synthetic Organic Chemicals	40	Medium
Other Organic Chemicals	60	High

Bacteria and Viruses
The contaminant risk for bacteria and viruses is medium with sewer lines presenting the most significant risk to the drinking water well (See Chart 3 – Contaminant Risks for Bacteria and Viruses in Appendix D).

Recent sampling of the well indicates that no bacteria and viruses have been detected. .

After combining the contaminant risk for bacteria and viruses with the natural susceptibility of the well, the overall vulnerability is medium.

Nitrates and Nitrites
The contaminant risk for nitrates and nitrites is high with sewer lines presenting the most significant risk to the drinking water well.

Recent historical sampling data indicates that nitrates have not been detected in source waters.

After combining the contaminant risk for nitrates and nitrites with the natural susceptibility of the well, the overall vulnerability of the well to contamination is medium.

Volatile Organic Chemicals
The contaminant risk for volatile organic chemicals is very high with sewer lines, roads, electrical and photographic equipment manufacturing, printers, motor vehicle dealerships, underground fuel tanks, motor vehicle waste disposal, leaking under ground storage (LUST) sites and recognized contaminated sites presenting the most significant risk to the drinking water source. (See Chart 7 – Contaminant Risks for Volatile Organic Chemicals in Appendix D).

Recent sampling indicates that no volatile organic chemicals have been detected in the source waters.

After combining the contaminant risk for volatile organic chemicals with the natural susceptibility of the well, the overall vulnerability of the well to contamination is high.

Heavy Metals, Cyanide, and Other Inorganic Chemicals
The contaminant risk for heavy metals, cyanide and other inorganic chemicals is very high with sewer lines, roads, electrical and photographic equipment manufacturing, firehouses, printers and a motor vehicle waste disposal well presenting the most significant risk to the drinking water source (See Chart 9 – Contaminant Risks for Heavy Metals, Cyanide, and Other Inorganic Chemicals in Appendix D).

Sampling on 3/12/93 and 11/3/93 detected very low levels of barium, approximately 3% of the 2.0 mg/l Maximum Contaminant Level (MCL). The MCL is the maximum level of contaminant allowed to exist in

drinking water, and still be consumed by humans. It is likely that these contaminants are naturally occurring. (See Chart 9 – Contaminant Risks for Heavy Metals, Cyanide, and Other Inorganic Chemicals in Appendix D).

Combining the contaminant risk with the natural susceptibility of the well leads to an overall vulnerability to heavy metals and other inorganic chemical contamination of high.

Synthetic Organic Chemicals
The contaminant risk for synthetic organic chemicals is medium with sewer lines, residential areas, electrical and photographic manufacturing and rail corridors presenting the most significant risk. (See Chart 11 – Contaminant Risks for Synthetic Organic Chemicals in Appendix D, respectively).

Sampling of synthetic organic chemicals has not occurred. After combining the contaminant risk with the natural susceptibility of the well, the overall vulnerability to synthetic organic chemicals is medium.

Other Organic Chemicals
The contaminant risk for other organic chemicals is very high with sewer lines, residential areas, electrical and photographic manufacturing, motor vehicle dealerships presenting the most significant risk.

Sampling of other organic chemicals has not occurred. After combining the contaminant risk with the natural susceptibility of the well, the overall vulnerability to other organic chemicals is high. (See Chart 13 – Contaminant Risks for Other Organic Chemicals in Appendix D, respectively).

SUMMARY

A *Source Water Assessment* has been completed for the source of public drinking water serving Tophand Trailer Court. The overall vulnerability of this source to contamination is **Medium** for bacteria and viruses, nitrate/nitrites, inorganic chemicals and synthetic organic chemicals and **High** for volatile organic chemicals and other organic chemicals. This assessment of contaminant risks can be used as a foundation for local voluntary protection efforts as well as a basis for the continuous efforts on the part of Tophand Trailer Court to protect public health. It is anticipated that *Source Water Assessments* will be updated every five years to reflect any changes in the vulnerability and/or susceptibility of Tophand Trailer Court public drinking water source.

REFERENCES

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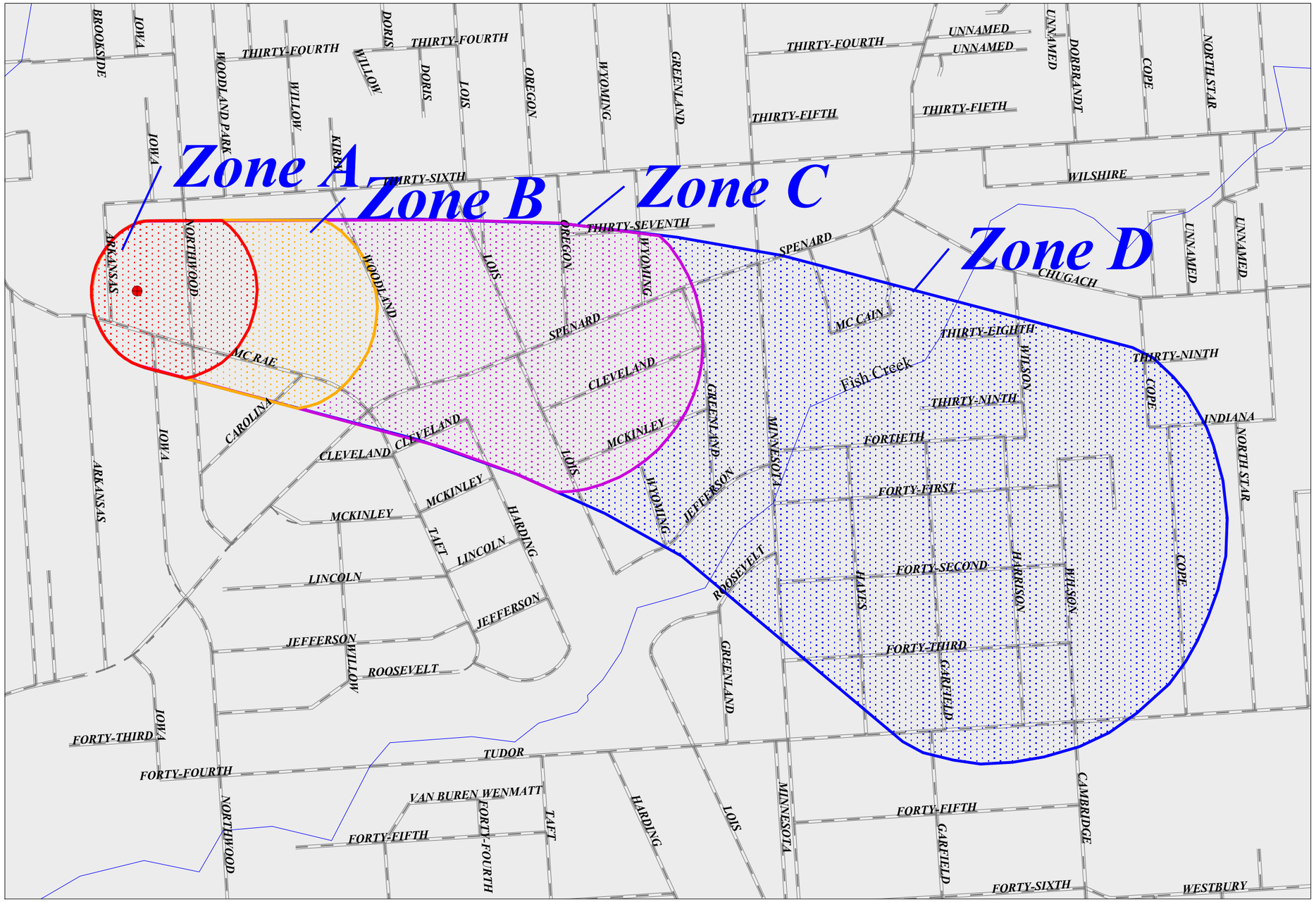
Ulery, C.A. and Updike, R.G, 1983, Subsurface structure of the cohesive facies of the Bootlegger Cove Formation, Southwest Anchorage, Alaska: Alaska Division of Geological and Geophysical Surveys Professional Report 84, 5 p.

Western Regional Climate Center, 2000, August 24, Web extension to the *Western Regional Climate Center* [WWW document]. URL http://www.wrcc.dri.edu/index.html

APPENDIX A

Tophand Trailer Court
Drinking Water Protection Area Location Map
(Map 1)

Tophand Trailer Court Drinking Water Protection Areas



PWSID 210566.001

- Tophand Trailer Court Well

Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less Than 2 Years Travel Time

Zone C Protection Area
- Less Than 5 Years Travel Time

Zone D Protection Area
- Less Than 10 Years Travel Time

- Streams
- Roads

N
W E
S

Map 1

500 0 500 Feet

APPENDIX B

Contaminant Source Inventory and Risk Ranking for Tophand Trailer Court (Tables 1-7)

Table 1

Contaminant Source Inventory for ***Tophand Trailer Court***

PWSID 210566.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	2	
Residential Areas	R01	R1-1	A	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	2	
Dog walking areas/foot trails	X46	X46-1	A	3	
Dog walking areas/foot trails	X46	X46-2	A	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	2	
Electrical, electronic, computer, and communications equipment/component manufacturing	I13	I13-1	B	3	
Photographic equipment manufacturing	I35	I35-1	B	3	
Residential Areas	R01	R1-2	B	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	2	
Firehouses	X38	X38-1	B	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	B	3	
Construction trade areas and materials	C09	C9-2	C	4	
Construction trade areas and materials	C09	C9-3	C	4	
Funeral services and crematories	C13	C13-1	C	4	
Hardware stores	C17	C17-1	C	4	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	C	4	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Map Number*	*Comments*
Printers, publishers, copiers	C37	C37-1	C	4	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-5-17	C	2	Zone C has 13 sewer lines
Residential Areas	R01	R1-3	C	4	31 acres
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-1	C	4	File No. CS96.84 1903 McKinley Ave. Private residence Petroleum contamination discovered from leaking underground fuel tank. Monitoring well confirmed groundwater contamination. Migration of contaminant off property unlikely. Priority: Medium
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U8-1	C	4	File No. L69.51 MOA-Fire Station #5 2270 McCrae Road. Petroleum contamination discovered during underground storage tank removal. Soil treated and removed. Priority: Medium
Highways and roads, paved (cement or asphalt)	X20	X20-5-15	C	2	Zone C has 11 roads
Motor vehicle/general storage yards/facilities	X27	X27-1	C	4	
Motor vehicle/general storage yards/facilities	X27	X27-2	C	4	
Motor vehicle/general storage yards/facilities	X27	X27-3	C	4	
Rail corridors	X30	X30-1	C	4	
Dog walking areas/foot trails	X46	X46-3	C	4	
Dog walking areas/foot trails	X46	X46-4	C	4	
Dog walking areas/foot trails	X46	X46-5	C	4	
Car washes with engine or undercarriage cleaning	C08	C8-1	D	5	
Furniture manufacturing, repair, and finishing shops	C14	C14-1	D	5	
Gasoline stations (without repair shop)	C15	C15-1	D	5	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-1	D	5	
Tanks, diesel (underground)	T08	T8-1	D	5	
Tanks, gasoline (underground)	T12	T12-1	D	5	
Tanks, gasoline (underground)	T12	T12-2	D	5	
Tanks, gasoline (underground)	T12	T12-3	D	5	
Tanks, gasoline (underground)	T12	T12-4	D	5	
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-2	D	5	File No. CS100.148 1311 West 4th Ave. Former Auto Repair Shop. Petroleum contamination discovered from 55-gallon drums left on site. Priority: Low

Table 2

Contaminant Source Inventory and Risk Ranking for Tophand Trailer Court Sources of Bacteria and Viruses

PWSID 210566.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Medium	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Medium	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Medium	2	
Residential Areas	R01	R1-1	A	Low	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	2	
Dog walking areas/foot trails	X46	X46-1	A	Low	3	
Dog walking areas/foot trails	X46	X46-2	A	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Medium	2	
Residential Areas	R01	R1-2	B	Low	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Low	2	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	B	Medium	3	
Residential Areas	R01	R1-3	C	Low	4	31 acres

Table 3

Contaminant Source Inventory and Risk Ranking for Tophand Trailer Court Sources of Nitrates/Nitrites

PWSID 210566.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Medium	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Medium	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Medium	2	
Residential Areas	R01	R1-1	A	Low	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	2	
Dog walking areas/foot trails	X46	X46-1	A	Low	3	
Dog walking areas/foot trails	X46	X46-2	A	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Medium	2	
Residential Areas	R01	R1-2	B	Low	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Low	2	
Hardware stores	C17	C17-1	C	Low	4	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-5-17	C	Medium	2	Zone C has 13 sewer lines
Residential Areas	R01	R1-3	C	Low	4	31 acres
Highways and roads, paved (cement or asphalt)	X20	X20-5-15	C	Low	2	Zone C has 11 roads
Dog walking areas/foot trails	X46	X46-3	C	Low	4	
Dog walking areas/foot trails	X46	X46-4	C	Low	4	
Dog walking areas/foot trails	X46	X46-5	C	Low	4	

Table 4

Contaminant Source Inventory and Risk Ranking for Tophand Trailer Court Sources of Volatile Organic Chemicals

PWSID 210566.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Low	2	
Residential Areas	R01	R1-1	A	Low	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Low	2	
Electrical, electronic, computer, and communications equipment/component manufacturing	I13	I13-1	B	Very High	3	
Photographic equipment manufacturing	I35	I35-1	B	High	3	
Residential Areas	R01	R1-2	B	Low	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Low	2	
Firehouses	X38	X38-1	B	Low	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	B	Low	3	
Hardware stores	C17	C17-1	C	Low	4	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	C	Medium	4	
Printers, publishers, copiers	C37	C37-1	C	High	4	
Construction trade areas and materials	C09	C9-2	C	Low	4	
Construction trade areas and materials	C09	C9-3	C	Low	4	

Table 4 (continued)

Contaminant Source Inventory and Risk Ranking for Tophand Trailer Court
Sources of Volatile Organic Chemicals

PWSID 210566.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-5-17	C	Low	2	Zone C has 13 sewer lines
Residential Areas	R01	R1-3	C	Low	4	31 acres
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-1	C	High	4	File No. CS96.84 1903 McKinley Ave. Private residence Petroleum contamination discovered from leaking underground fuel tank. Monitoring well confirmed groundwater contamination. Migration of contaminant off property unlikely. Priority: Medium
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U8-1	C	High	4	File No. L69.51 MOA-Fire Station #5 2270 McCrae Road. Petroleum contamination discovered during underground storage tank removal. Soil treated and removed. Priority: Medium
Highways and roads, paved (cement or asphalt)	X20	X20-5-15	C	Low	2	Zone C has 11 roads
Motor vehicle/general storage yards/facilities	X27	X27-1	C	Low	4	
Motor vehicle/general storage yards/facilities	X27	X27-2	C	Low	4	
Motor vehicle/general storage yards/facilities	X27	X27-3	C	Low	4	
Rail corridors	X30	X30-1	C	Medium	4	
Furniture manufacturing, repair, and finishing shops	C14	C14-1	D	High	5	
Gasoline stations (without repair shop)	C15	C15-1	D	High	5	
Car washes with engine or undercarriage cleaning	C08	C8-1	D	High	5	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-1	D	High	5	
Tanks, gasoline (underground)	T12	T12-1	D	High	5	
Tanks, gasoline (underground)	T12	T12-2	D	High	5	
Tanks, gasoline (underground)	T12	T12-3	D	High	5	
Tanks, gasoline (underground)	T12	T12-4	D	High	5	
Tanks, diesel (underground)	T08	T8-1	D	High	5	
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-2	D	High	5	File No. CS100.148 1311 West 4th Ave. Former Auto Repair Shop. Petroleum contamination discovered from 55-gallon drums left on site. Priority: Low

Table 4 (continued)

Contaminant Source Inventory and Risk Ranking for Tophand Trailer Court
Sources of Volatile Organic Chemicals

PWSID 210566.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U7-1	D	High	5	File No. L55.57 3730 Spenard Road. Petroleum contamination found during underground storage tank removal. Groundwater contamination has occurred. Priority: High
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U7-2	D	High	5	File No. L30.30 Leaks discovered during replacement of overfill buckets on current tanks. Priority: High
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U7-3	D	High	5	File No. L30.30 Subsurface spill due to overfilling tanks. Monitoring well installed. Priority: Medium
Closed Leaking Underground Fuel Storage Tank (LUST) Sites	U08	U8-2	D	Low	5	File No. L55.332 3730 Spenard Road Petroleum contamination from underground storage tank. Priority: Low

Table 5

Contaminant Source Inventory and Risk Ranking for Tophand Trailer Court

Sources of Heavy Metals, Cyanide and Other Inorganic Chemicals

PWSID 210566.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Low	2	
Residential Areas	R01	R1-1	A	Low	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Low	2	
Electrical, electronic, computer, and communications equipment/component manufacturing	I13	I13-1	B	High	3	
Photographic equipment manufacturing	I35	I35-1	B	Medium	3	
Residential Areas	R01	R1-2	B	Low	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Low	2	
Firehouses	X38	X38-1	B	Low	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	B	Low	3	
Hardware stores	C17	C17-1	C	Low	4	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	C	Low	4	
Printers, publishers, copiers	C37	C37-1	C	Medium	4	
Construction trade areas and materials	C09	C9-2	C	Low	4	
Construction trade areas and materials	C09	C9-3	C	Low	4	

Contaminant Source Inventory and Risk Ranking for Tophand Trailer Court

Sources of Heavy Metals, Cyanide and Other Inorganic Chemicals

Contaminant Source Type	***Contaminant Source ID***	***CS ID tag***	***Zone***	***Risk Ranking for Analysis***	***Map Number***	***Comments***
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-5-17	C	Low	2	Zone C has 13 sewer lines
Residential Areas	R01	R1-3	C	Low	4	31 acres
Highways and roads, paved (cement or asphalt)	X20	X20-5-15	C	Low	2	Zone C has 11 roads
Rail corridors	X30	X30-1	C	Low	4	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-1	D	High	5	

Table 6

Contaminant Source Inventory and Risk Ranking for Tophand Trailer Court Sources of Synthetic Organic Chemicals

PWSID 210566.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Low	2	
Residential Areas	R01	R1-1	A	Low	3	9 acres
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Low	2	
Residential Areas	R01	R1-2	B	Low	3	9 acres
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	B	Low	3	
Funeral services and crematories	C13	C13-1	C	Low	4	
Printers, publishers, copiers	C37	C37-1	C	Low	4	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-5-17	C	Low	2	Zone C has 13 sewer lines
Residential Areas	R01	R1-3	C	Low	4	31 acres
Rail corridors	X30	X30-1	C	Medium	4	

Table 7

Contaminant Source Inventory and Risk Ranking for Tophand Trailer Court
Sources of Other Organic Chemicals

PWSID 210566.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Low	2	
Residential Areas	R01	R1-1	A	Low	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Low	2	
Electrical, electronic, computer, and communications equipment/component manufacturing	I13	I13-1	B	Very High	3	
Photographic equipment manufacturing	I35	I35-1	B	Medium	3	
Residential Areas	R01	R1-2	B	Low	3	9 acres
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Low	2	
Hardware stores	C17	C17-1	C	Low	4	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	C	Medium	4	
Construction trade areas and materials	C09	C9-2	C	Low	4	
Construction trade areas and materials	C09	C9-3	C	Low	4	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-5-17	C	Low	2	Zone C has 13 sewer lines
Residential Areas	R01	R1-3	C	Low	4	31 acres
Highways and roads, paved (cement or asphalt)	X20	X20-5-15	C	Low	2	Zone C has 11 roads
Motor vehicle/general storage yards/facilities	X27	X27-1	C	Low	4	

Sources of Other Organic Chemicals

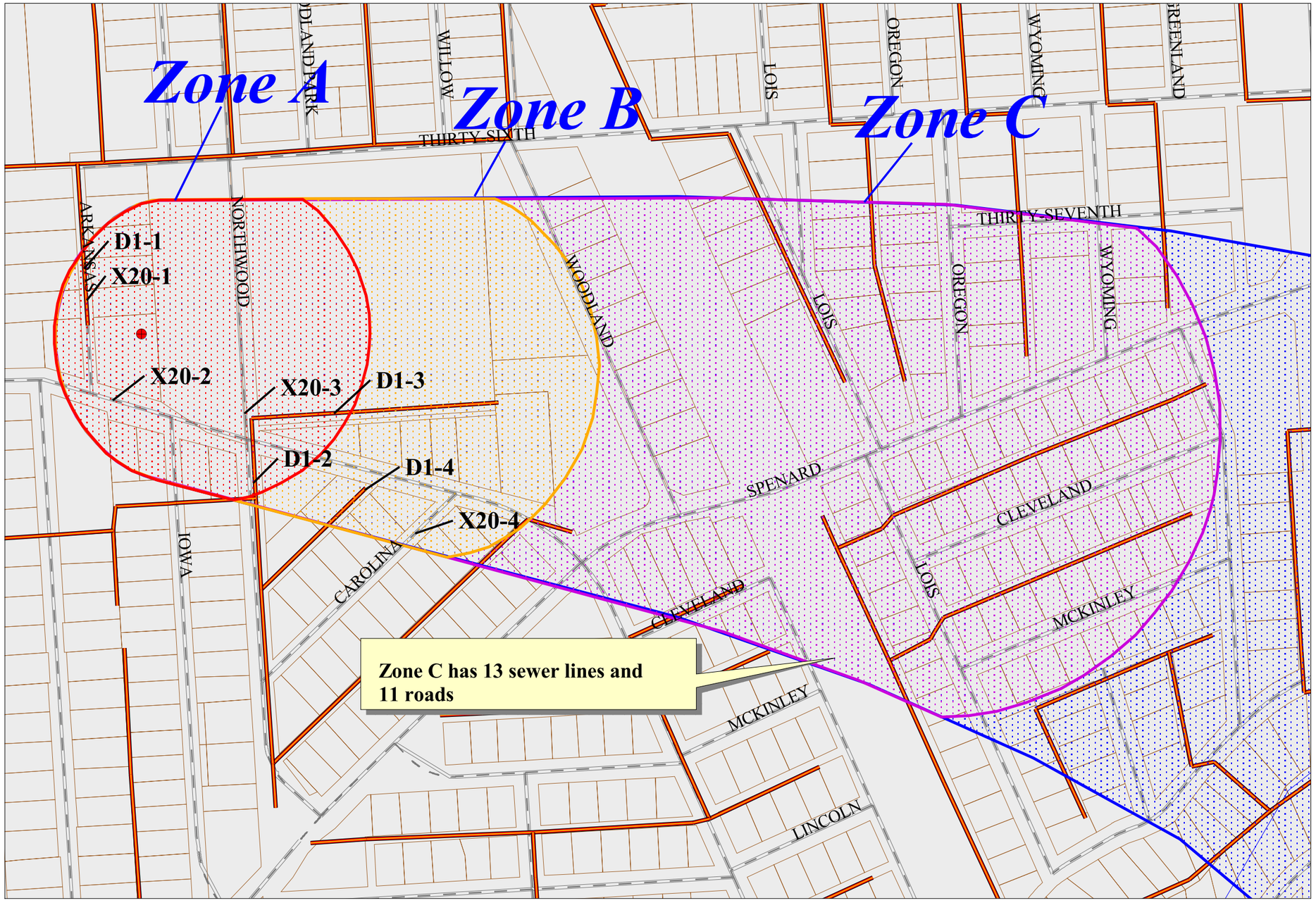
Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Motor vehicle/general storage yards/facilities	X27	X27-2	C	Low	4	
Motor vehicle/general storage yards/facilities	X27	X27-3	C	Low	4	
Rail corridors	X30	X30-1	C	Low	4	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-1	D	High	5	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Map Number*	*Comments*
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U7-1	D	5	File No. L55.57 3730 Spenard Road. Petroleum contamination found during underground storage tank removal. Groundwater contamination has occurred. Priority: High
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U7-2	D	5	File No. L30.30 Leaks discovered during replacement of overfill buckets on current tanks. Priority: High
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U7-3	D	5	File No. L30.30 Subsurface spill due to overfilling tanks. Monitoring well installed. Priority: Medium
Closed Leaking Underground Fuel Storage Tank (LUST) Sites	U08	U8-2	D	5	File No. L55.332 3730 Spenard Road Petroleum contamination from underground storage tank. Priority: Low

APPENDIX C

Tophand Trailer Court
Drinking Water Protection Area
and Potential and Existing Contaminant Sources
(Maps 2-5

Tophand Trailer Court Drinking Water Protection Areas and Potential and Existing Contaminant Sources



PWSID 210566.001

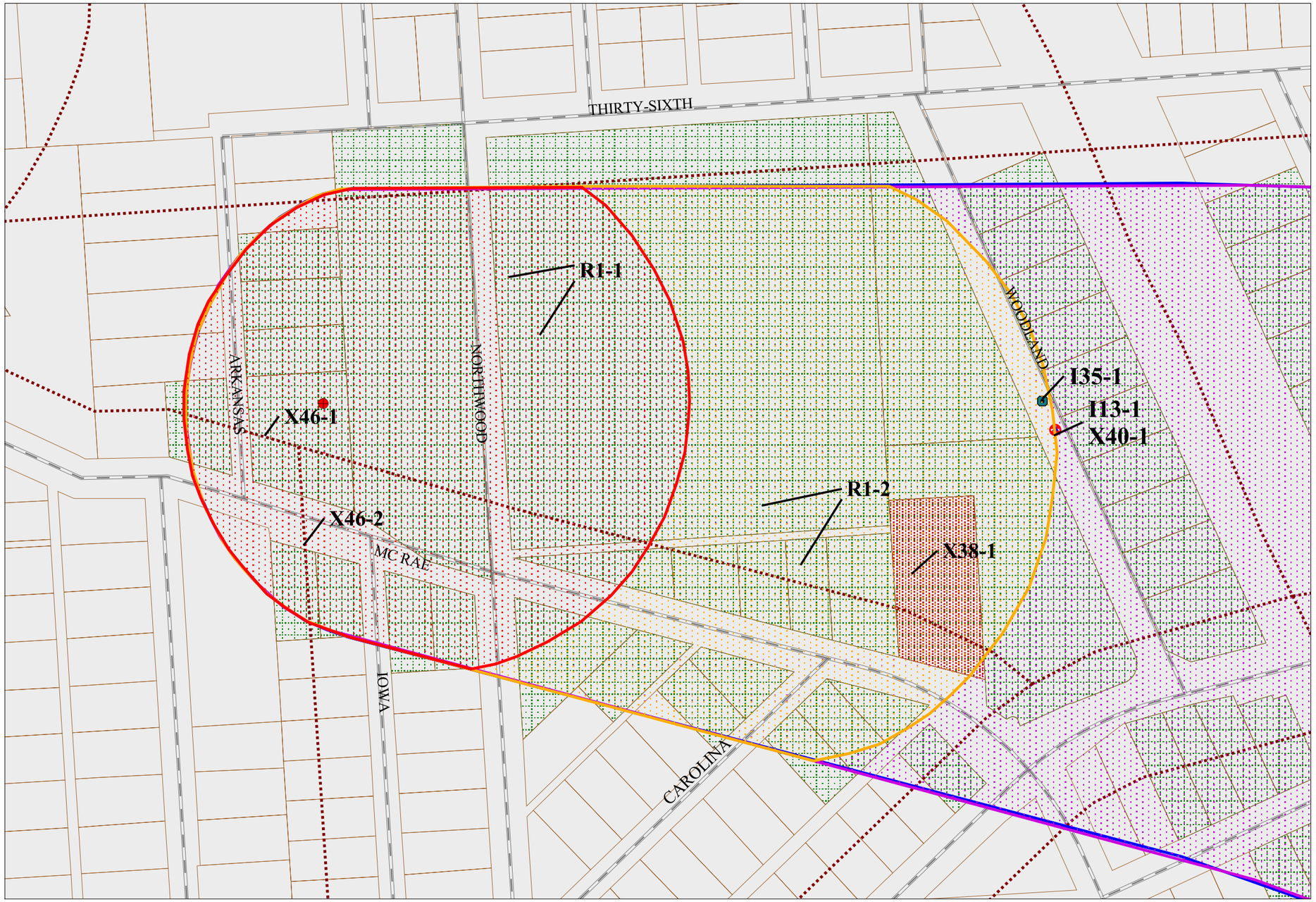
- Tophand Trailer Court Well
- Zone A Protection Area
  - Several Months Travel Time
- Zone B Protection Area
  - Less Than 2 Years Travel Time
- Zone C Protection Area
  - Less Than 5 Years Travel Time
- Zone D Protection Area
  - Less Than 10 Years Travel Time
- Sewers (D1)
- Roads
- Streams
- MOA Land Parcels

N
W E
S

Map 2

300 0 300 Feet

Tophand Trailer Court Drinking Water Protection Areas and Potential and Existing Contaminant Sources



PWSID 210566.001

- Tophand Trailer Court Well

Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less Than 2 Years Travel Time

Zone C Protection Area
- Less Than 5 Years Travel Time

Zone D Protection Area
- Less Than 10 Years Travel Time

Contaminant Sources
- Electrical/electronic/communications equip, (I13)
- Photographic equipment manufacturing (I35)
- Medical/veterinary facilities (X40)
- Trails (X46)
- Roads
- MOA Land Parcels
- Firehouses (X38)
- Residential lawns (R1)

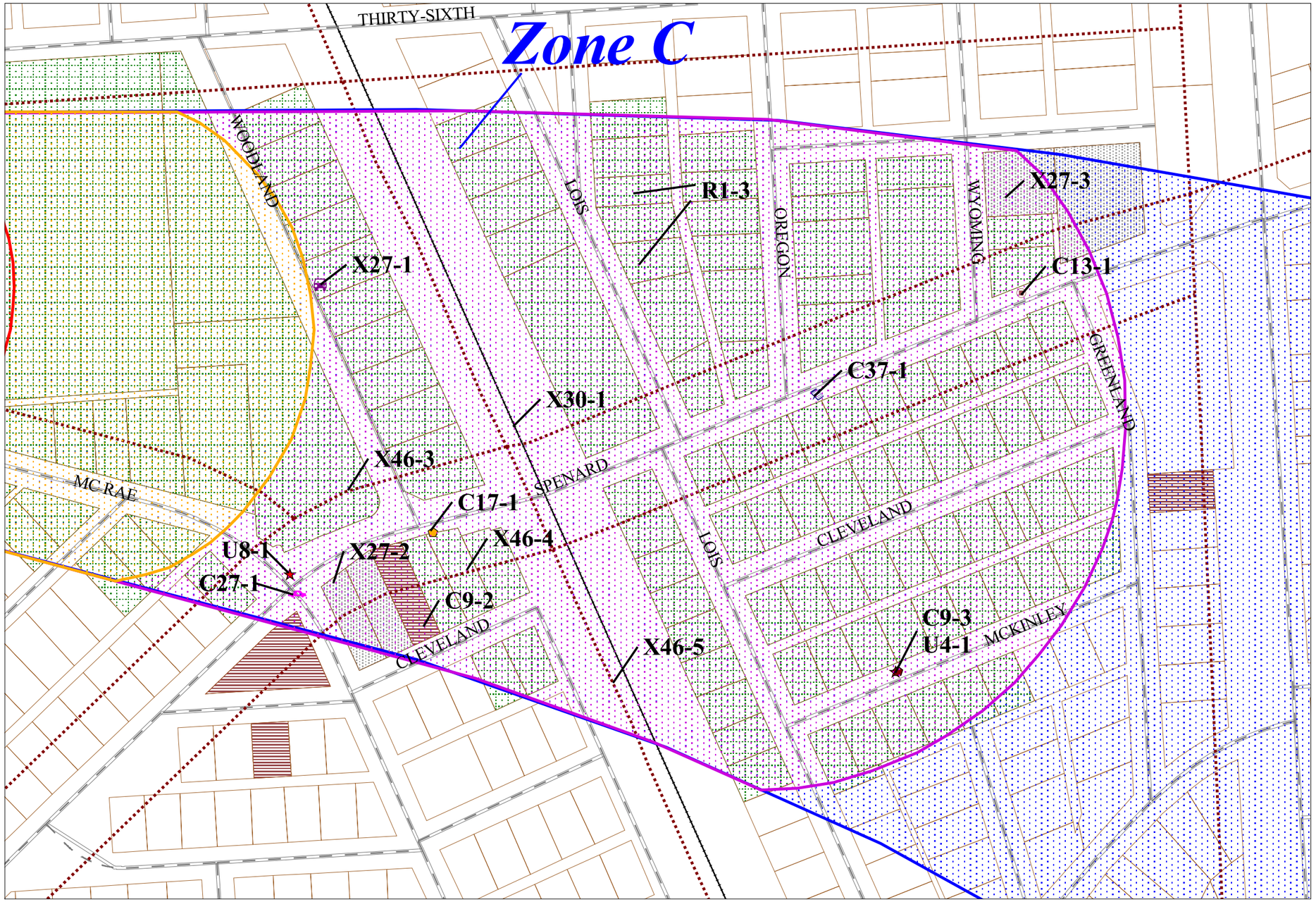
N
W E
S

Map 3

200 0 200 Feet

Tophand Trailer Court Drinking Water Protection Areas and Potential and Existing Contaminant Sources

PWSID 210566.001



Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less Than 2 Years Travel Time

Zone C Protection Area
- Less Than 5 Years Travel Time

Zone D Protection Area
- Less Than 10 Years Travel Time

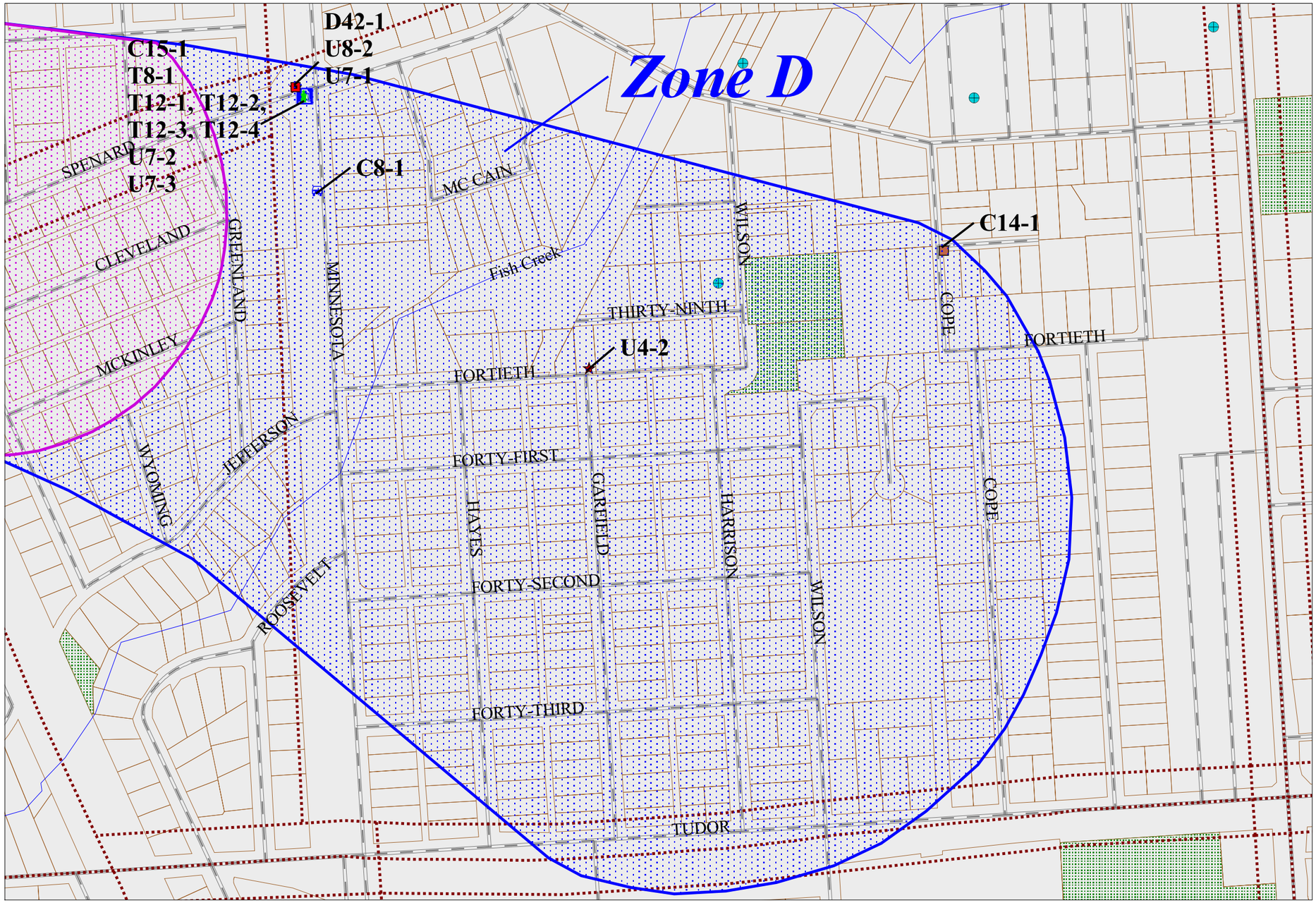
Contaminant Sources
- Funeral services and crematories (C13)
- Hardware stores (C17)
- Motor vehicle dealerships (C27)
- Printers, publishers, copiers (C37)
- Construction trade areas (C9)
- Contaminated site, DEC recognized (U4)
- Motor vehicle/general storage yards (X27)
- Trails (X46)
- Roads
- Railroads (X30)
- MOA Land Parcels
- Motor vehicle-general storage yards (X27)
- Construction trade areas and materials (C9)
- Residential lawns (R1)

N
W E
S

Map 4

100 0 100 Feet

Tophand Trailer Court Drinking Water Protection Areas and Potential and Existing Contaminant Sources



PWSID 210556.001

Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less Than 2 Years Travel Time

Zone C Protection Area
- Less Than 5 Years Travel Time

Zone D Protection Area
- Less Than 10 Years Travel Time
- Private/Public Water Wells

Contaminant Sources
- Furniture manufacturing/repair/finishing (C14)
- Gasoline station (without repair shop) (C15)
- Car wash with engine cleaning (C8)
- Injection well (Class V) Motor vehicle waste (D42)
- Tanks, gasoline (underground) (T12)
- Tanks, diesel (underground) (T8)
- Contaminated site, DEC recognized (U4)

- Trails (X46)
- Streams
- Roads
- MOA Land Parcels
- Parks (X4)

N
W E
S

Map 5

300 0 300 Feet

APPENDIX D

Vulnerability Analysis for Tophand Trailer Court

(Charts 1-14)

Chart 1. Susceptibility of the wellhead - Tophand Trailer Court

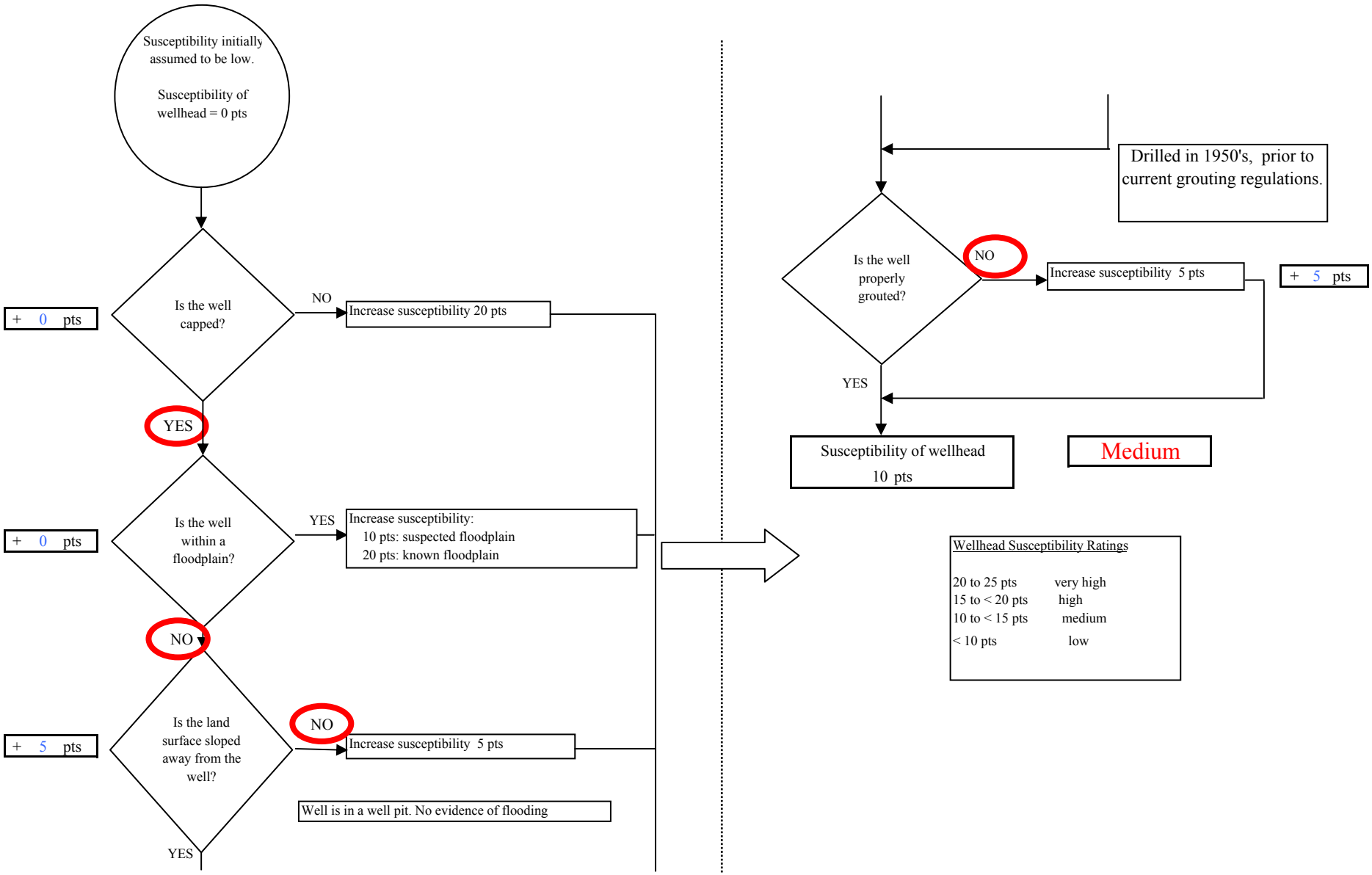


Chart 2. Susceptibility of the aquifer - Tophand Trailer Court

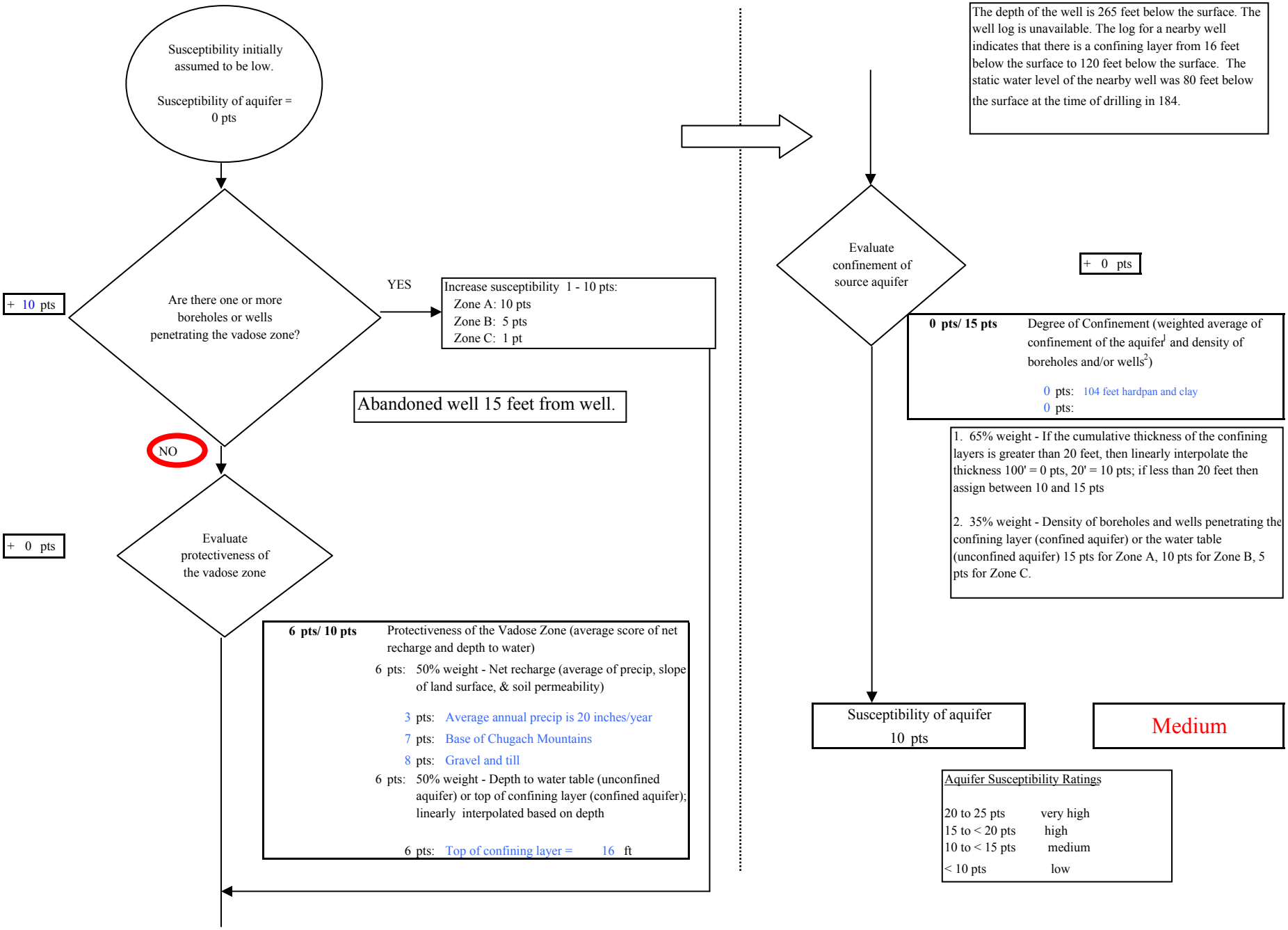
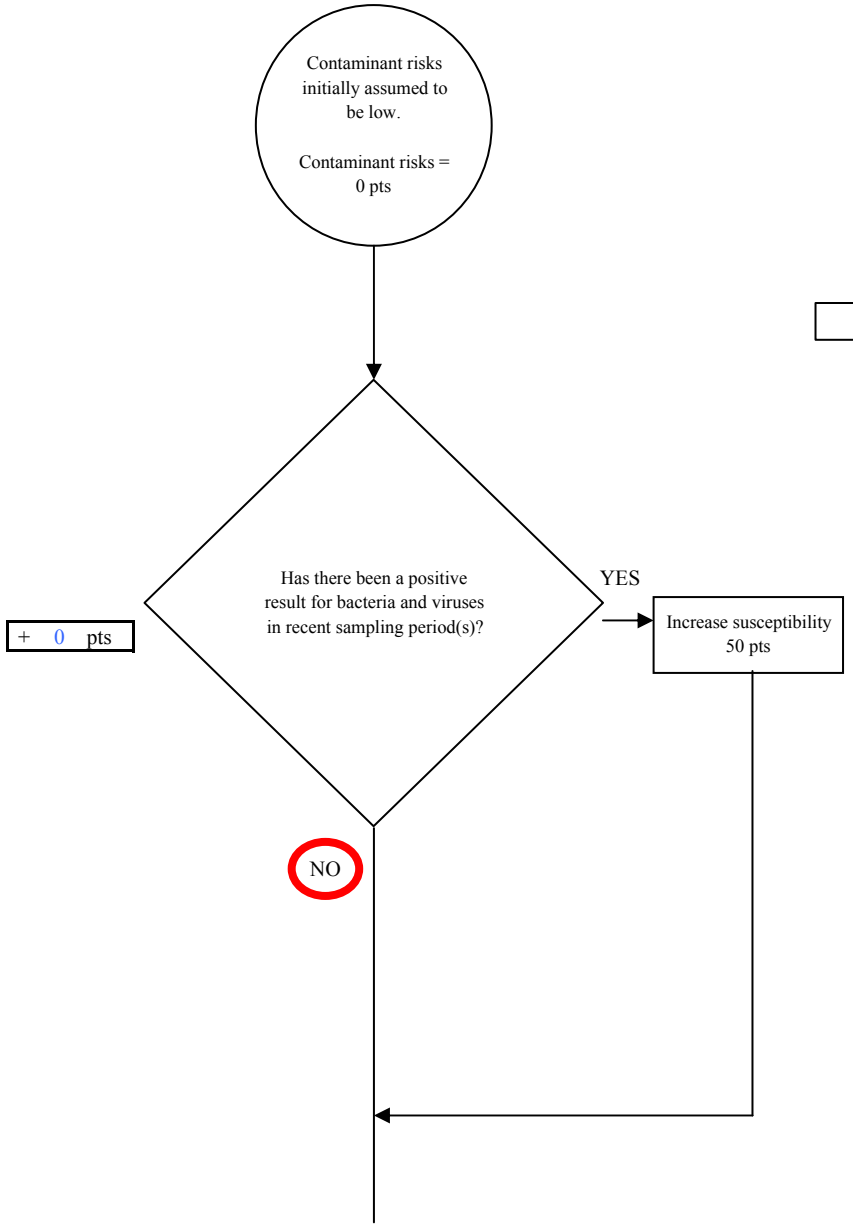
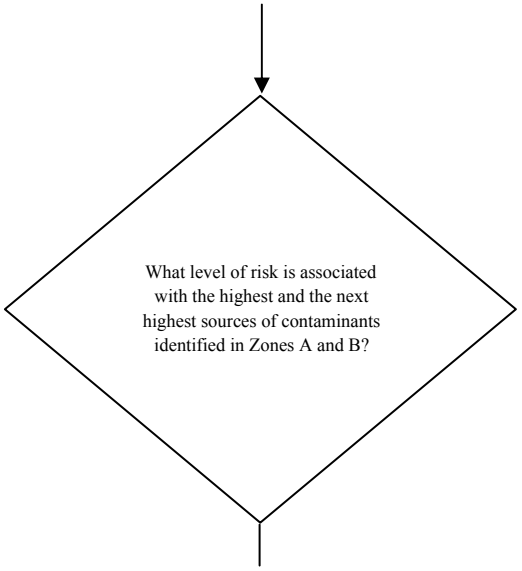


Chart 3. Contaminant risks for Tophand Trailer Court- Bacteria & Viruses





+ 20 pts

Risk Rankings for Contaminant Sources Identified in Zones A and B

	Zone A	Zone B	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	1	1	2
Low(s)	5	2	7

	LOW 10 pts	**MEDIUM** 20 pts	**HIGH** 30 pts	**VERY HIGH** 40 pts
LOW	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	----
MEDIUM	----	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
HIGH	----	----	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
VERY HIGH	----	----	----	≥ 1 source + 10 pts

Matrix Score 20

Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.

Chart 3. Contaminant risks for Tophand Trailer Court- Bacteria & Viruses

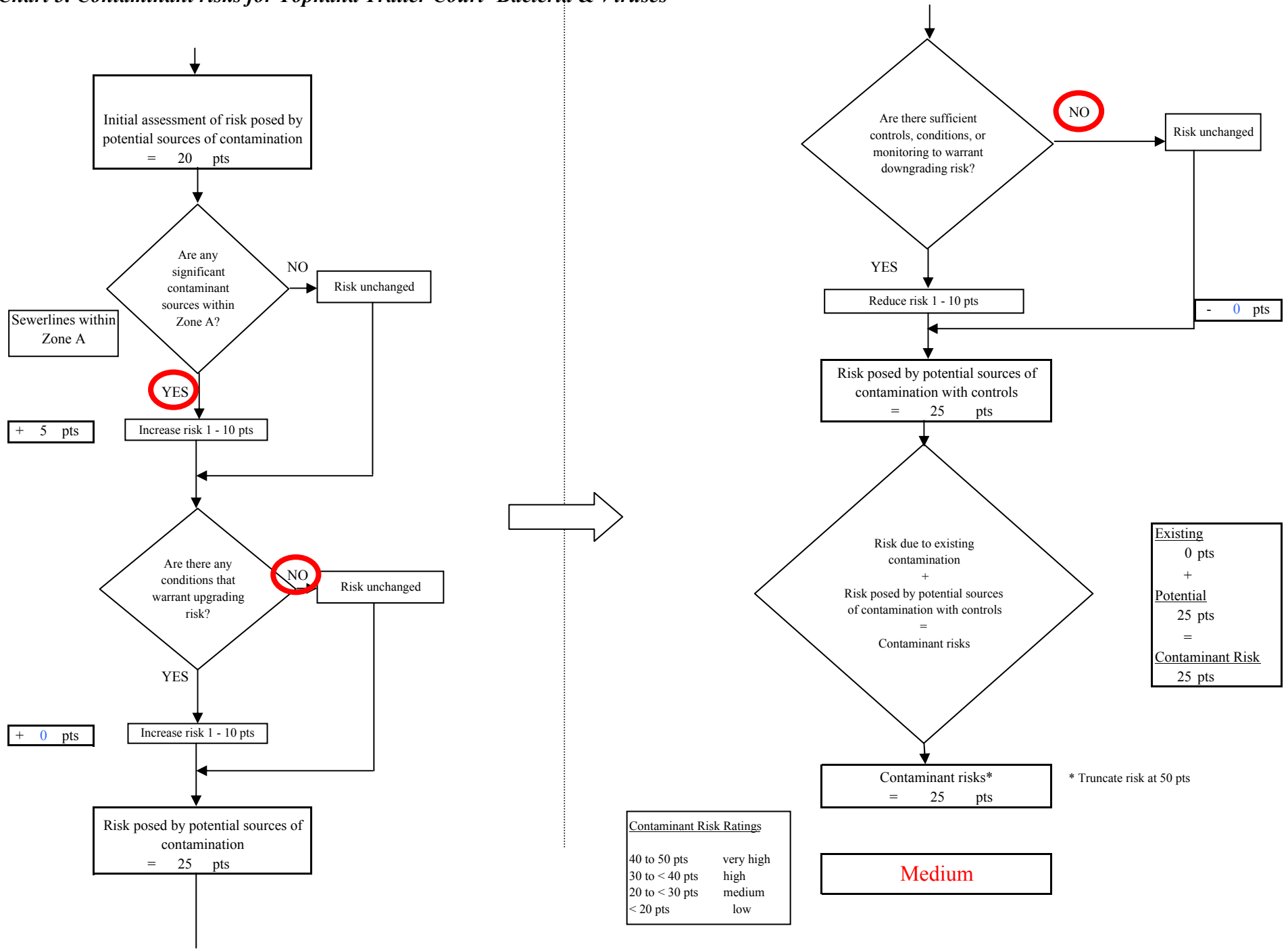


Chart 4. Vulnerability analysis for Tophand Trailer Court- Bacteria & Viruses

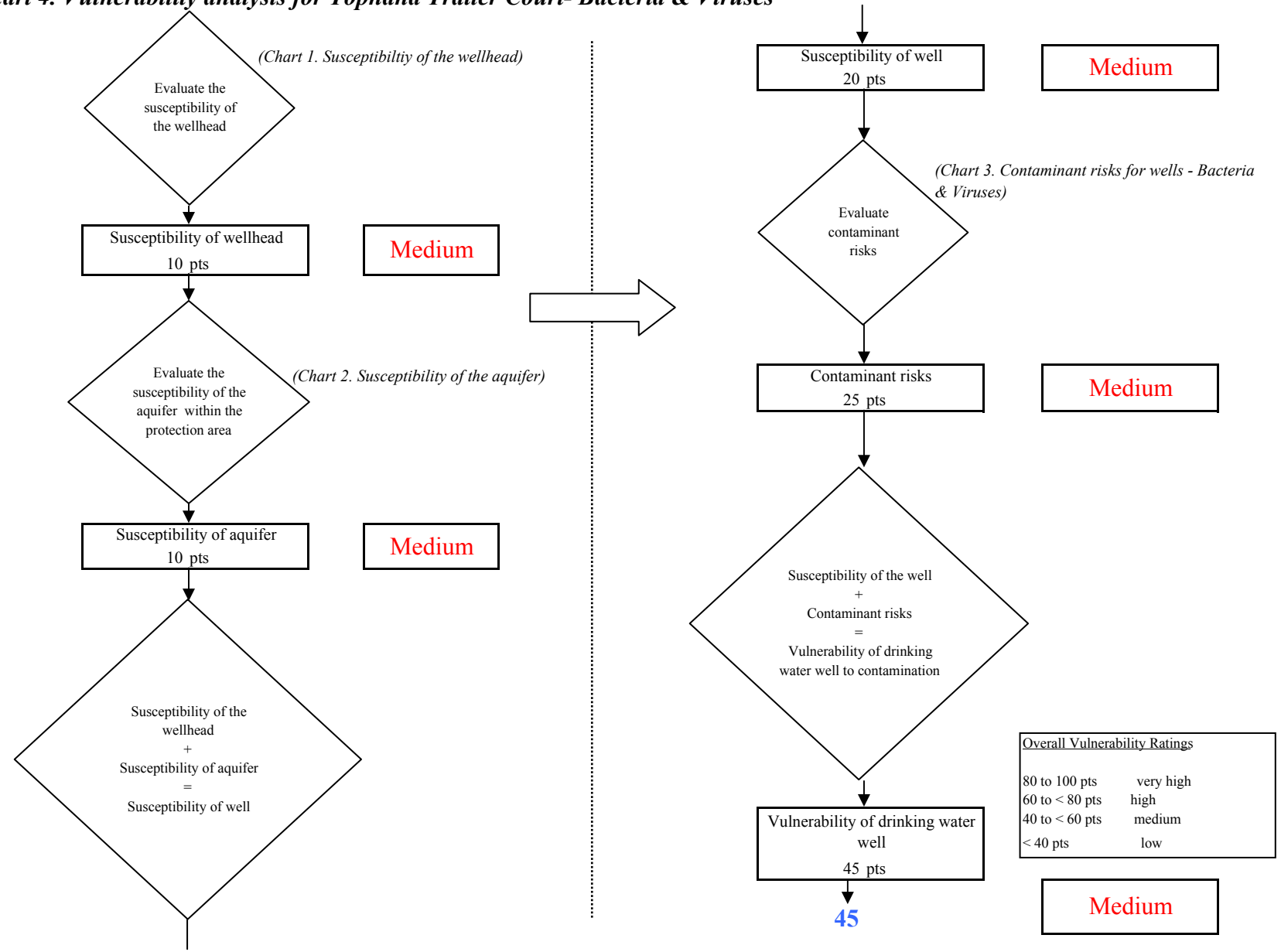


Chart 5. Contaminant risks for Tophand Trailer Court- Nitrates and Nitrites

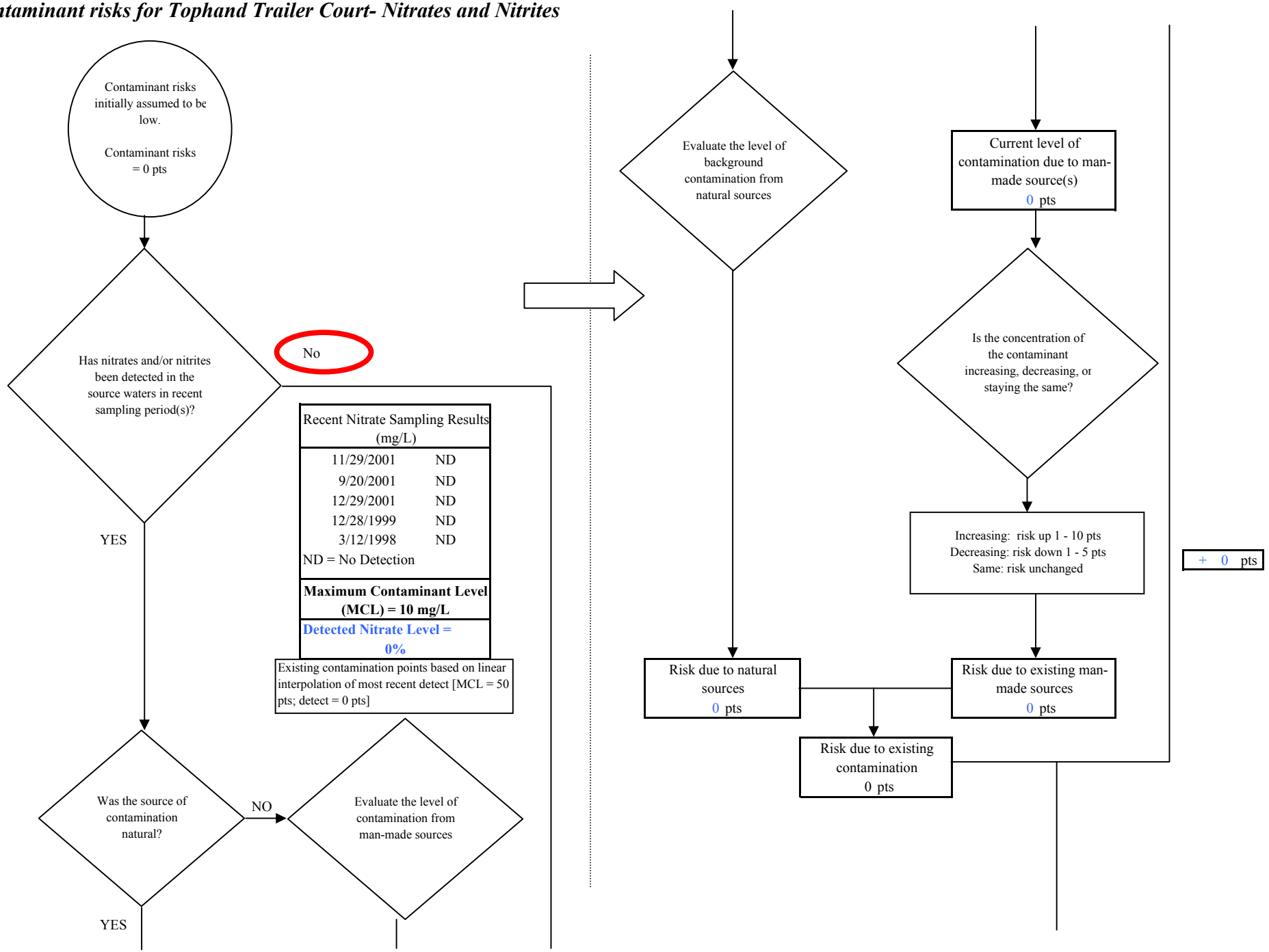


Chart 5. Contaminant risks for Tophand Trailer Court- Nitrates and Nitrites

+ 25 pts

What level of risk is associated with the highest and the next highest risk sources(s) of contaminants identified in Zones A, B and C?

Risk Levels for Contaminant Sources identified in Zones A, B and C

	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	1	0	1
Low(s)	6	7	13

	LOW 10 pts	**MEDIUM** 20 pts	**HIGH** 30 pts	**VERY HIGH** 40 pts
LOW	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	----
MEDIUM	----	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
HIGH	----	----	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
VERY HIGH	----	----	----	≥ 1 source + 10 pts

Matrix Score 25

Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.

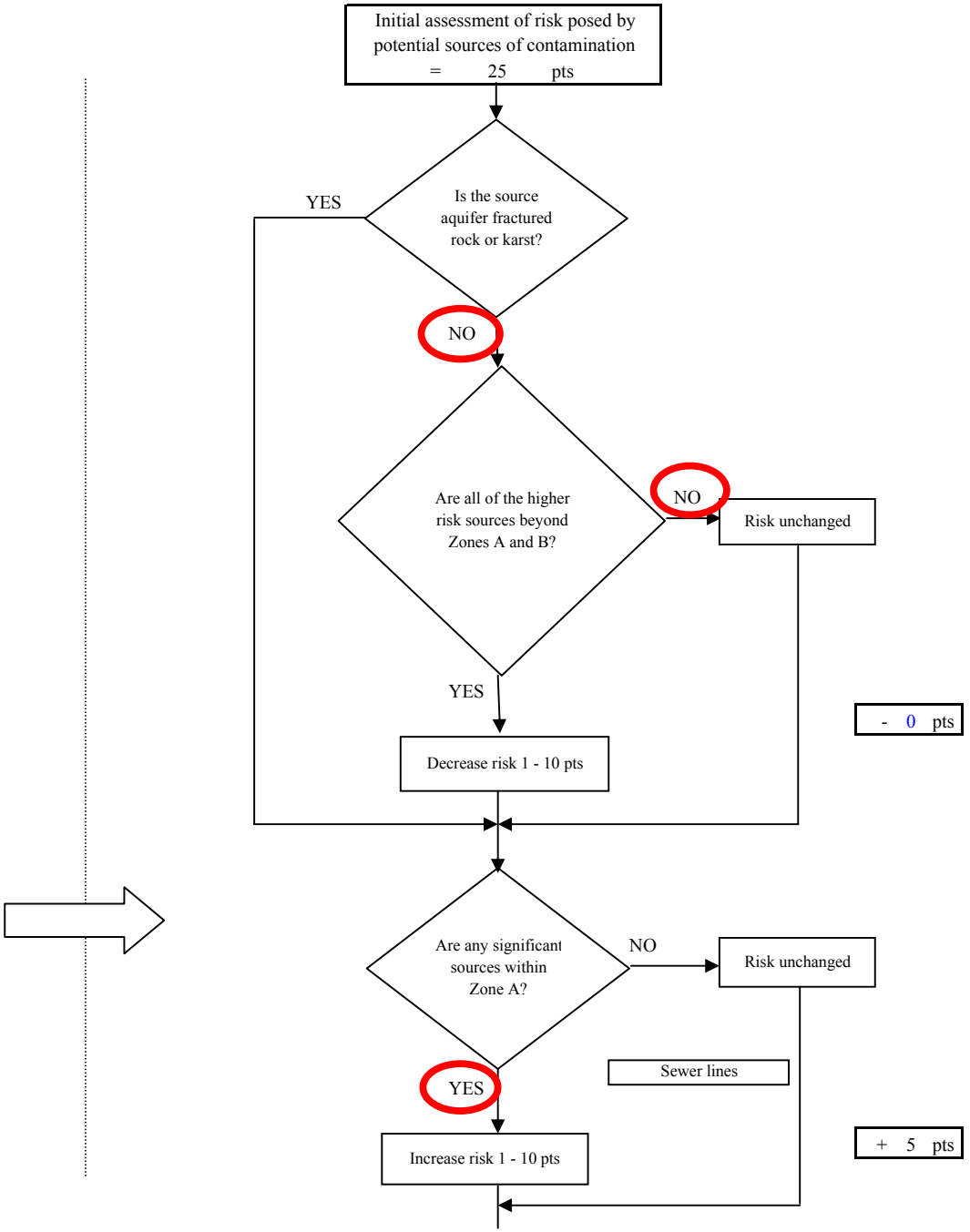


Chart 5. Contaminant risks for Tophand Trailer Court- Nitrates and Nitrites

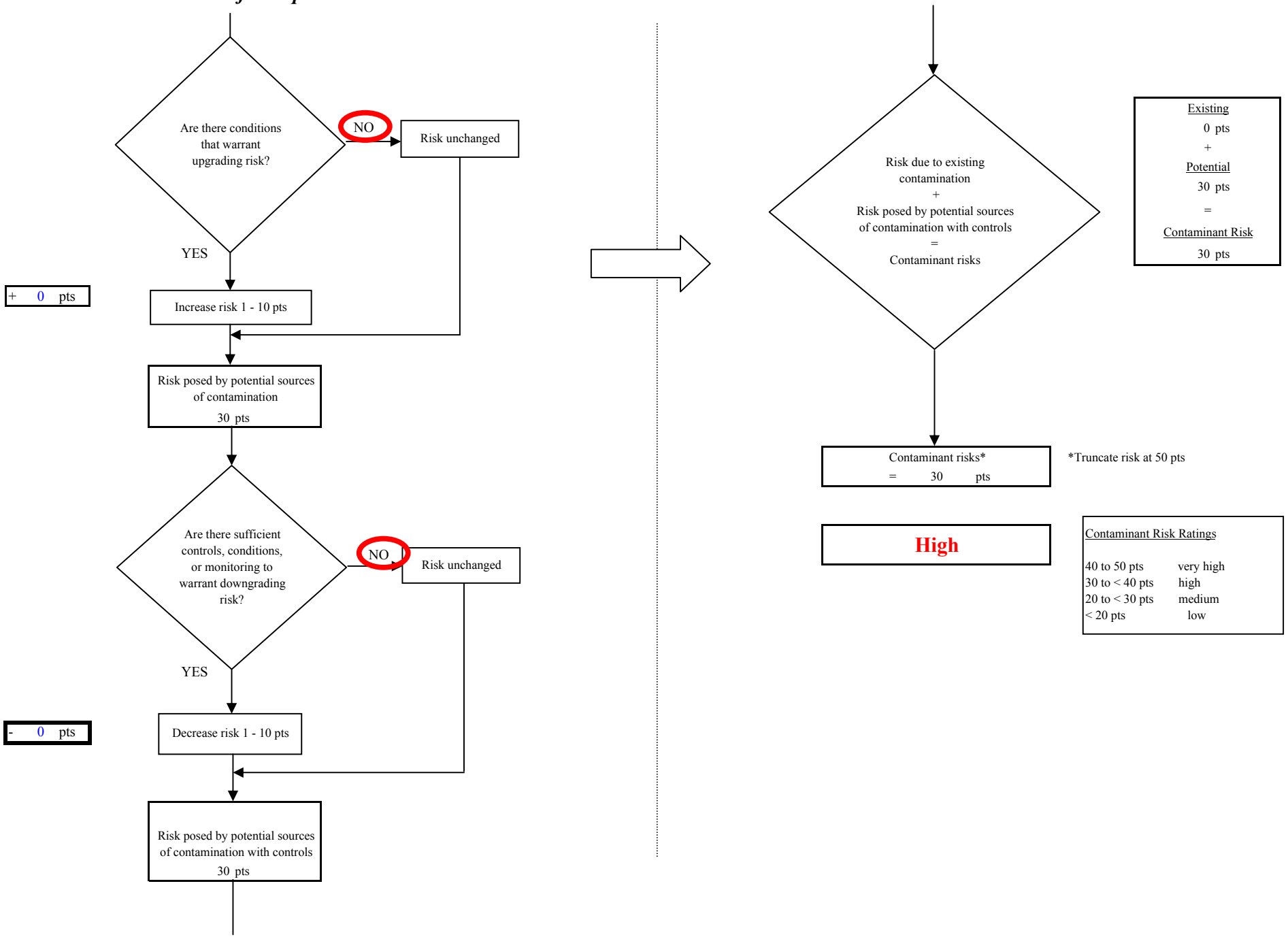


Chart 6. Vulnerability analysis for Tophand Trailer Court- Nitrates and Nitrites

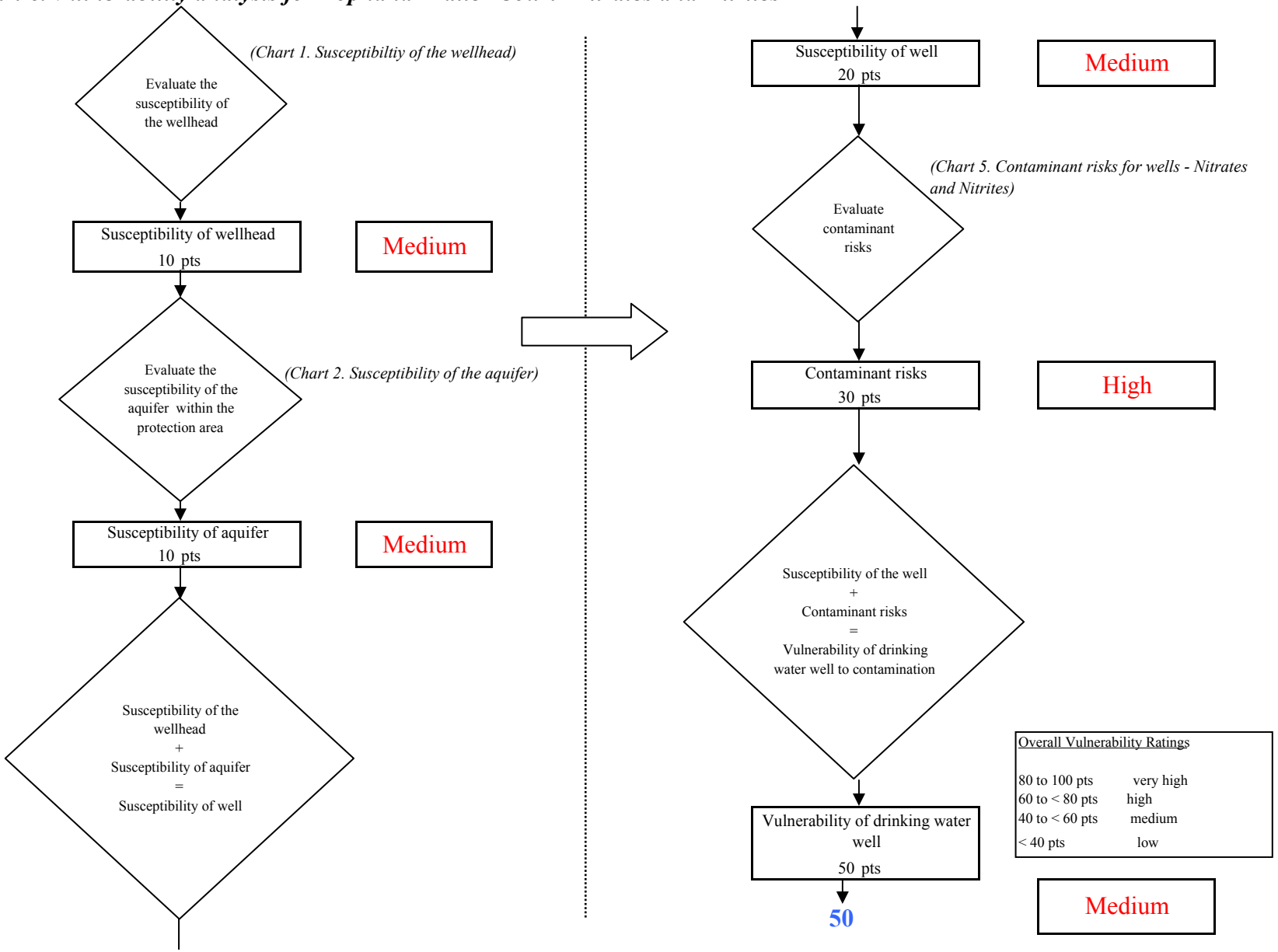


Chart 7. Contaminant risks for Tophand Trailer Court- Volatile Organic Chemicals

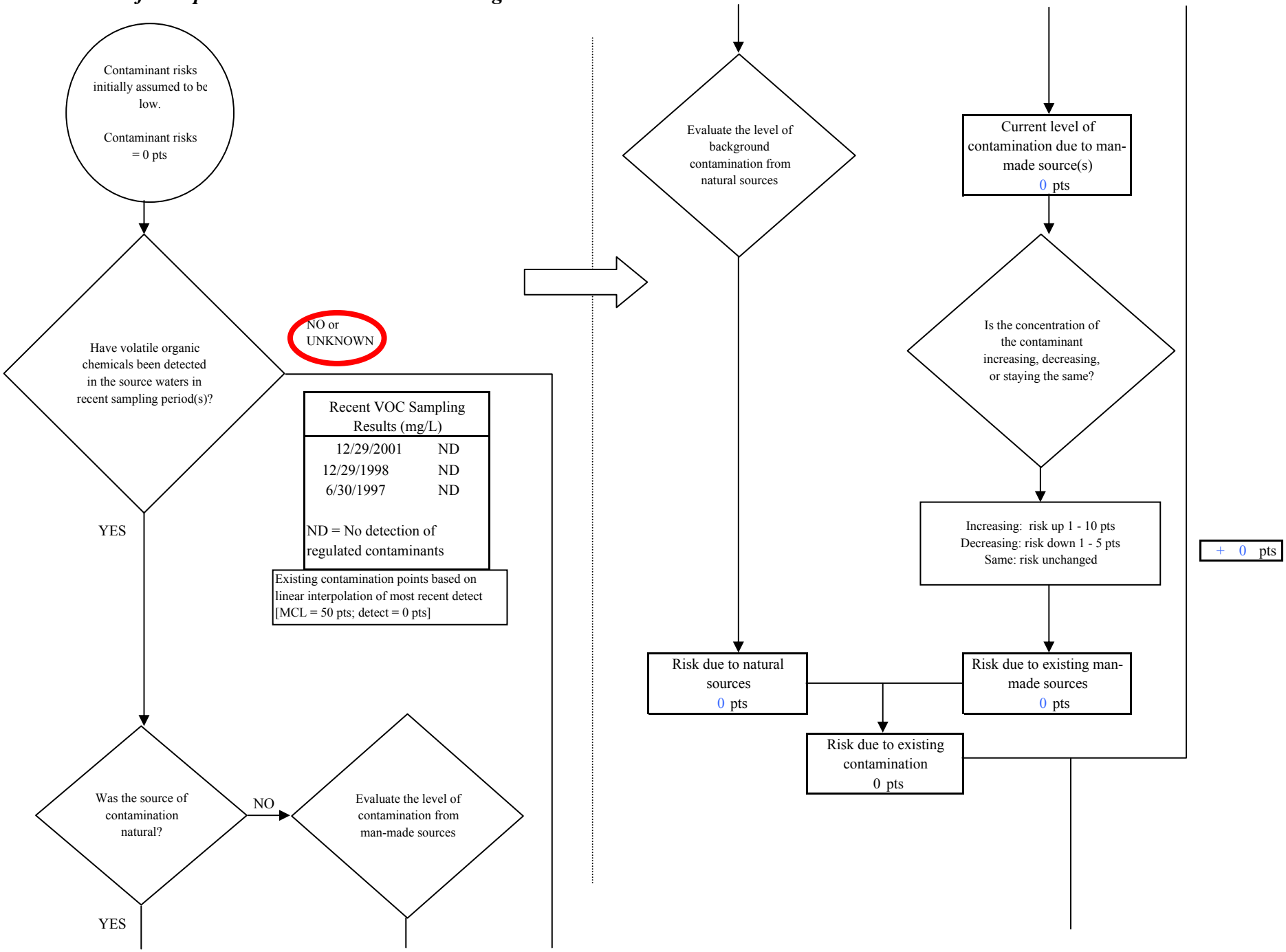
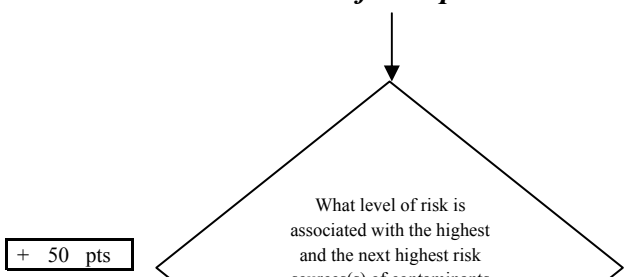


Chart 7. Contaminant risks for Tophand Trailer Court- Volatile Organic Chemicals



+ 50 pts

Risk Levels for Contaminant Sources identified in Zones A, B and C

	Zone A	Zones B&C	Total
Very Highs(s)	0	1	1
High(s)	0	4	4
Medium(s)	0	2	2
Low(s)	4	9	13

	LOW 10 pts	**MEDIUM** 20 pts	**HIGH** 30 pts	**VERY HIGH** 40 pts
LOW	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	----
MEDIUM	----	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
HIGH	----	----	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
VERY HIGH	----	----	----	≥ 1 source + 10 pts

Matrix Score 50

Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.

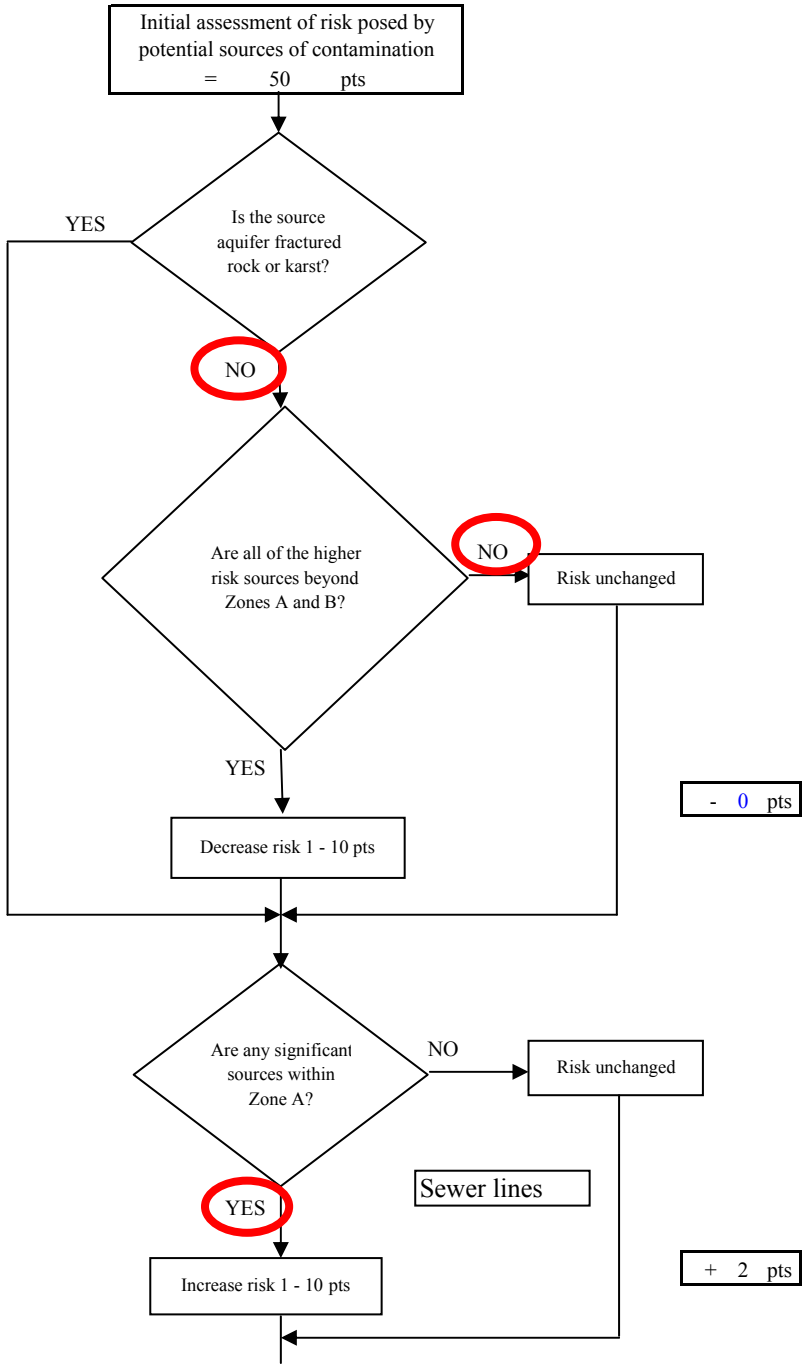


Chart 7. Contaminant risks for Tophand Trailer Court- Volatile Organic Chemicals

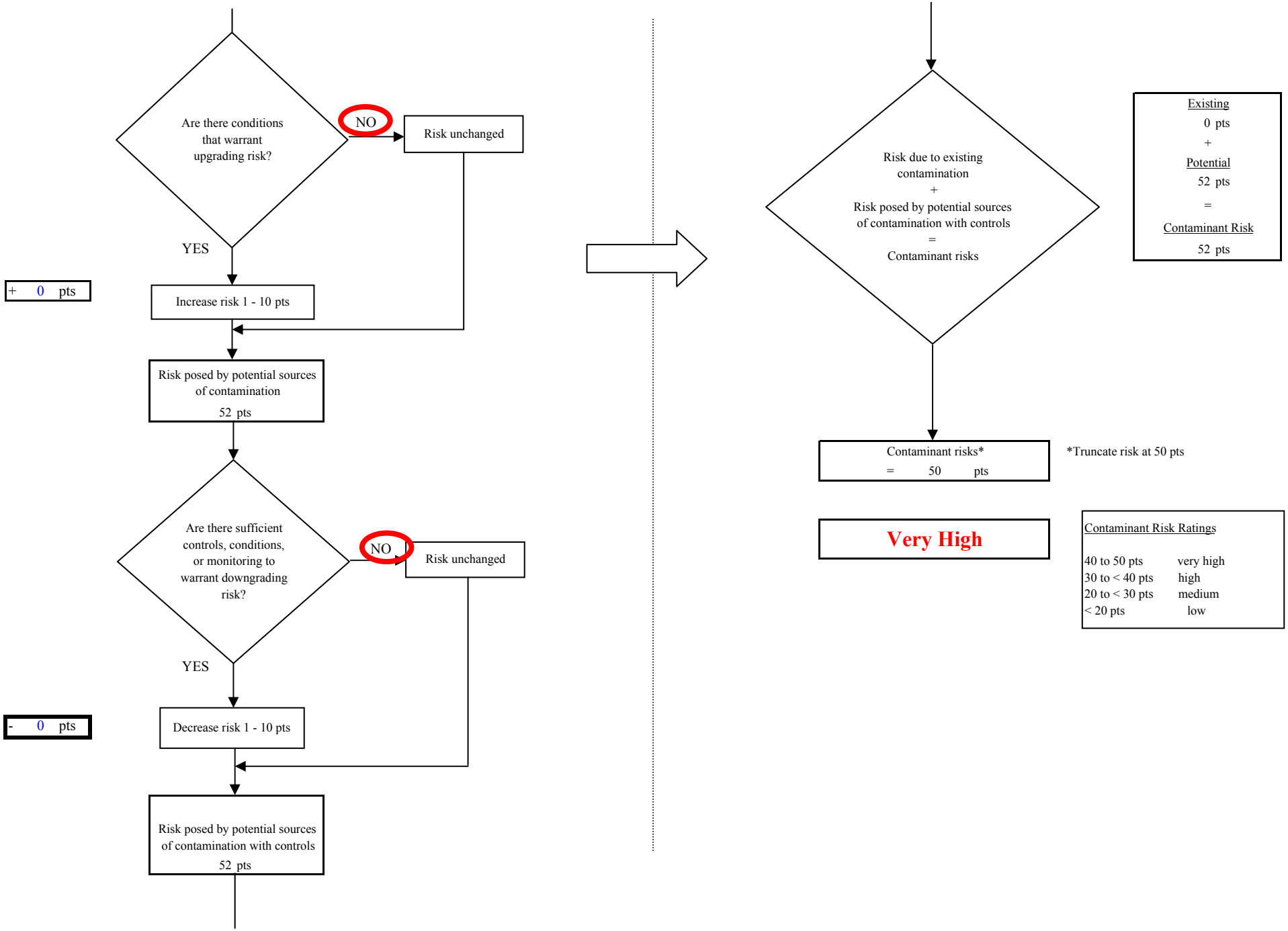


Chart 8. Vulnerability analysis for Tophand Trailer Court- Volatile Organic Chemicals

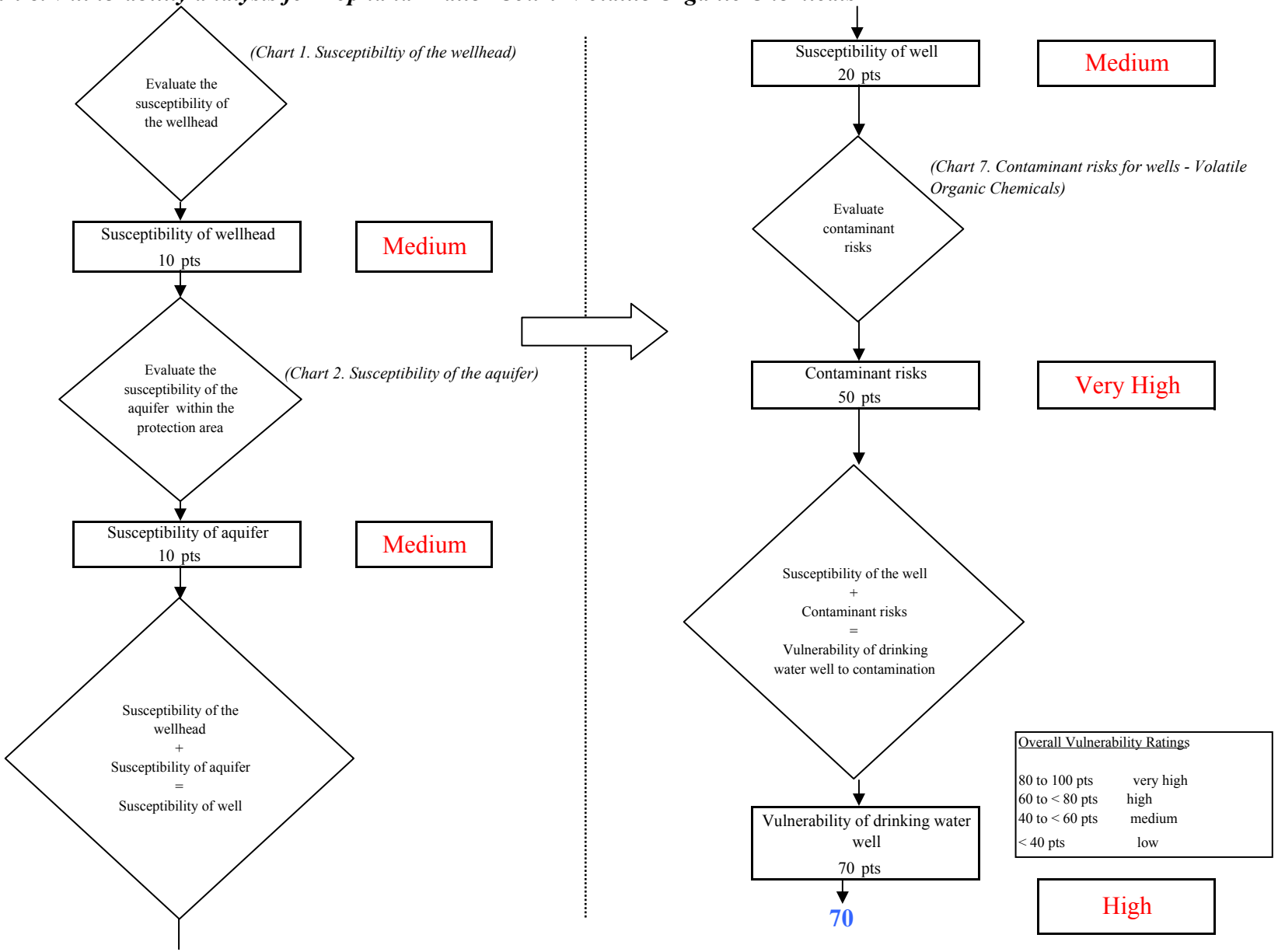


Chart 9. Contaminant risks for Tophand Trailer Court- Heavy Metals, Cyanide and Other Inorganic Chemicals

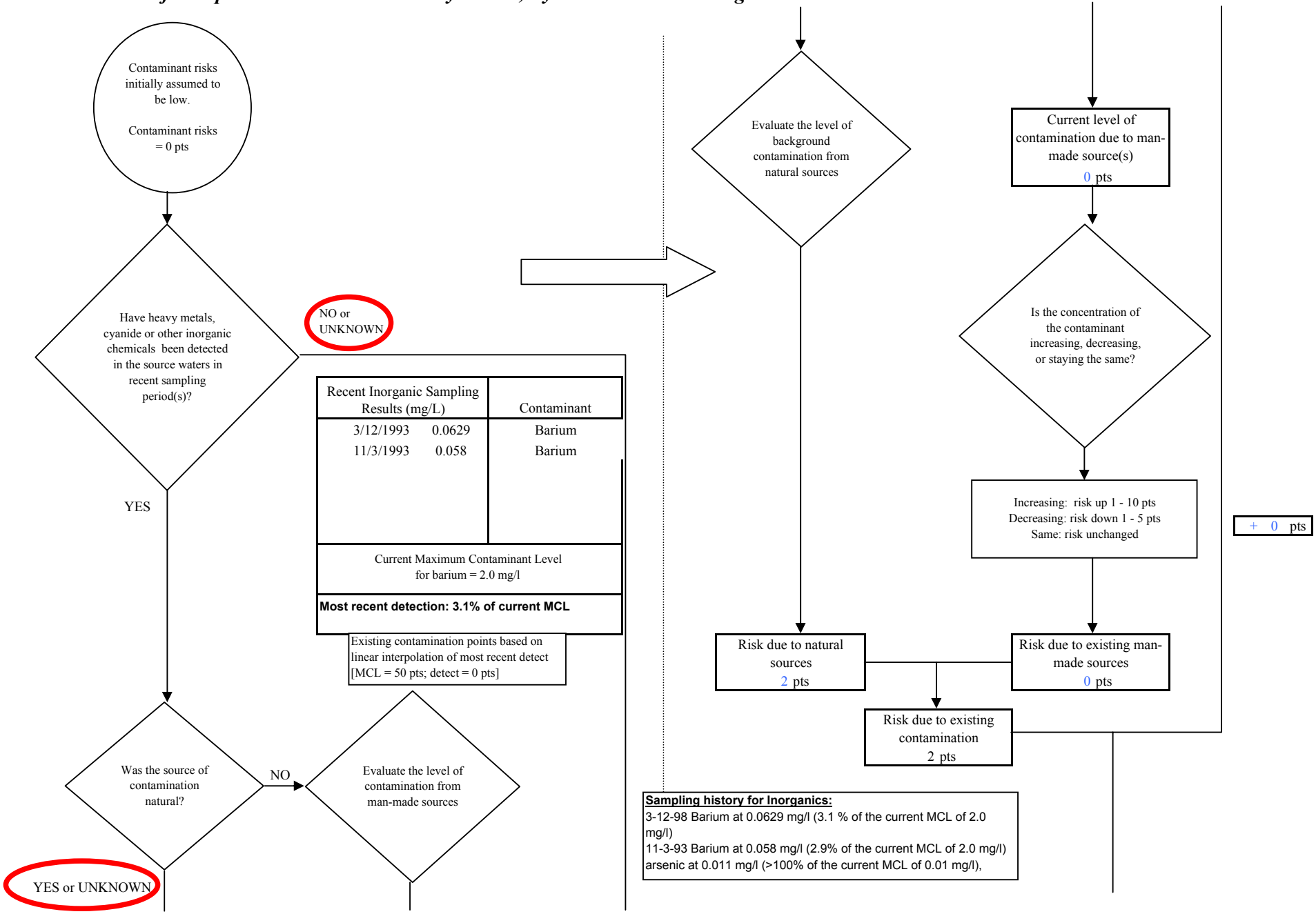
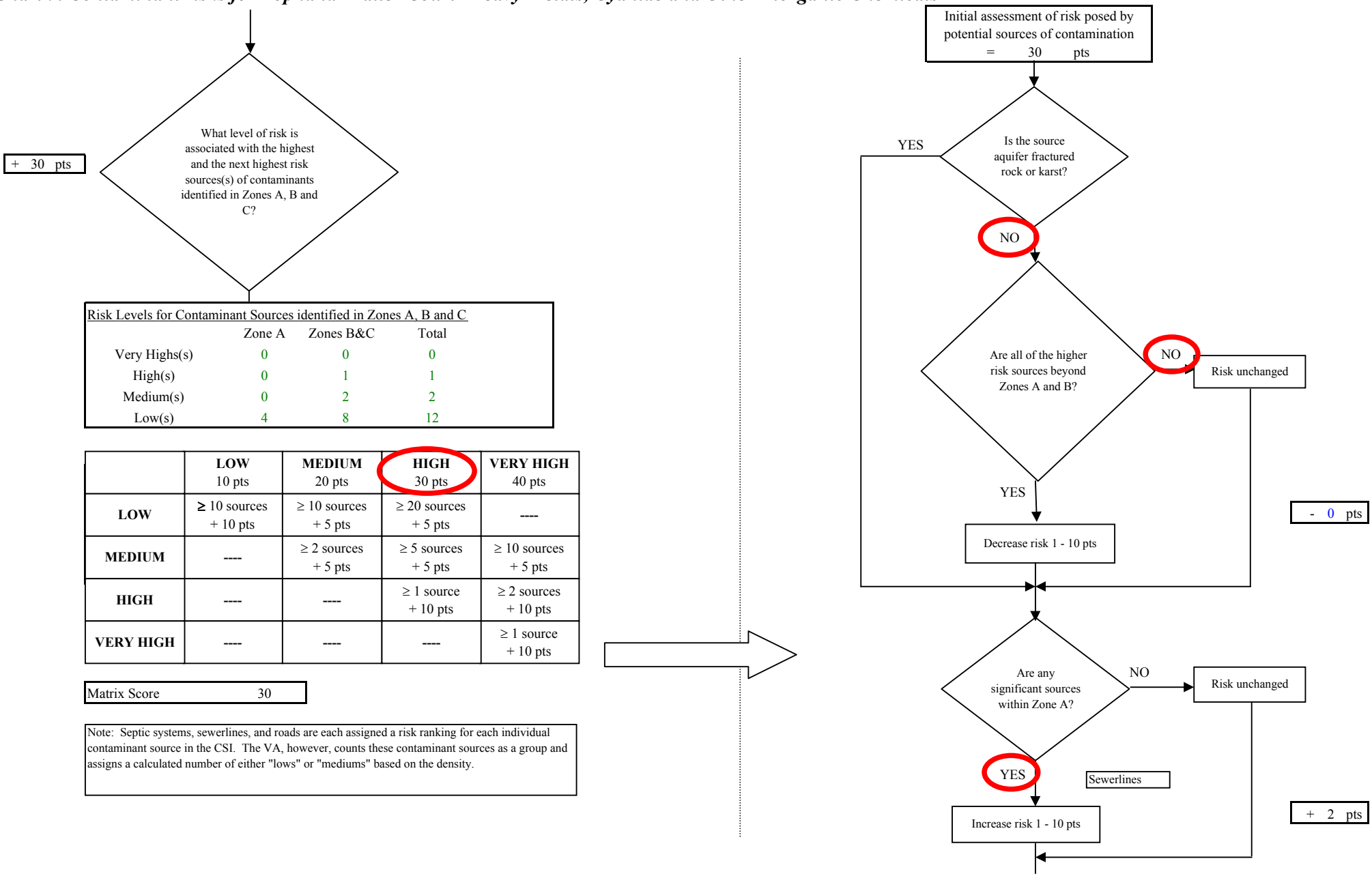


Chart 9. Contaminant risks for Tophand Trailer Court- Heavy Metals, Cyanide and Other Inorganic Chemicals



Risk Levels for Contaminant Sources identified in Zones A, B and C			
	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	0	1	1
Medium(s)	0	2	2
Low(s)	4	8	12

	LOW 10 pts	**MEDIUM** 20 pts	**HIGH** 30 pts	**VERY HIGH** 40 pts
LOW	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	----
MEDIUM	----	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
HIGH	----	----	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
VERY HIGH	----	----	----	≥ 1 source + 10 pts

Matrix Score	30

Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.

Chart 9. Contaminant risks for Tophand Trailer Court- Heavy Metals, Cyanide and Other Inorganic Chemicals

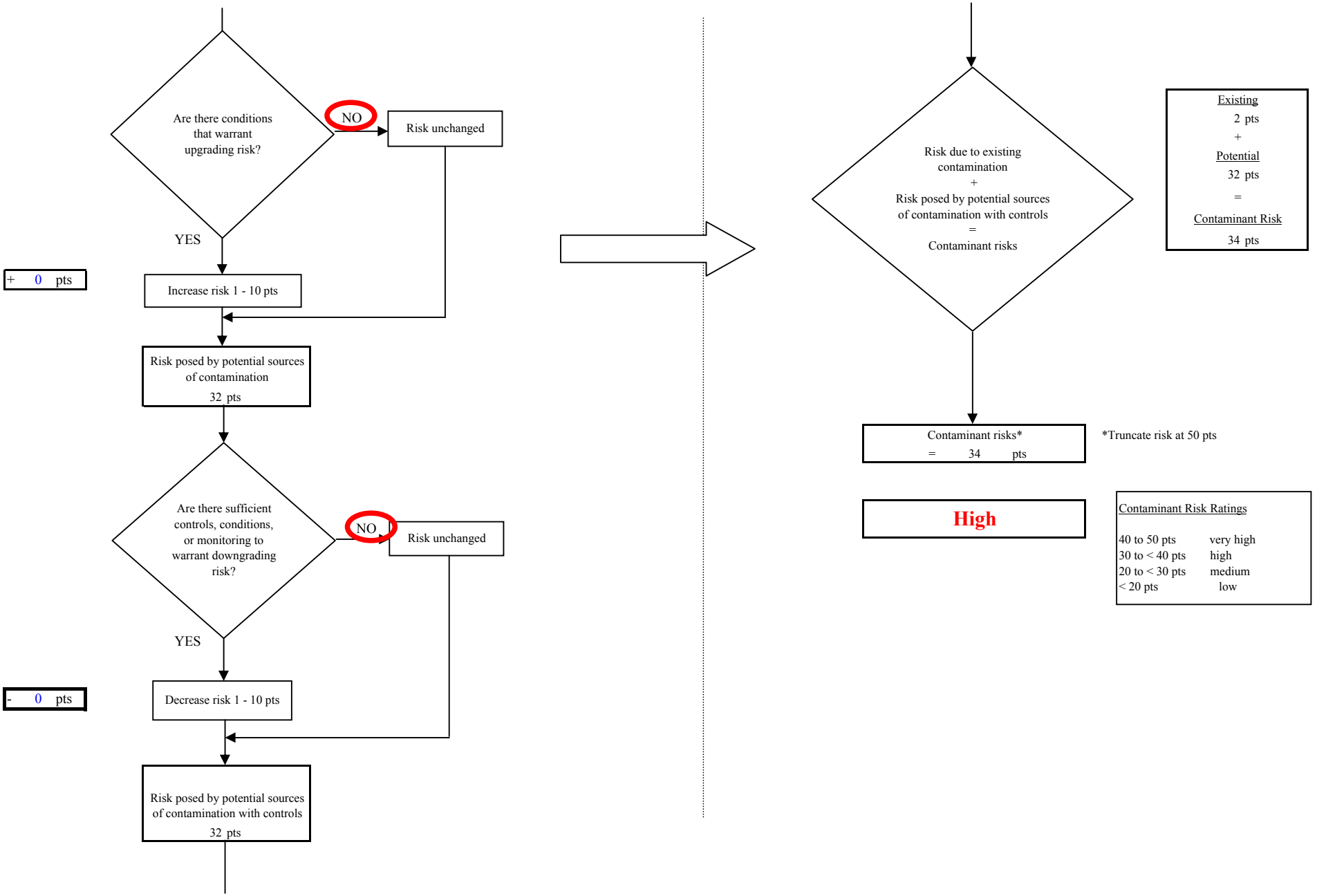


Chart 10. Vulnerability analysis for Tophand Trailer Court- Heavy Metals, Cyanide and Other Inorganic Chemicals

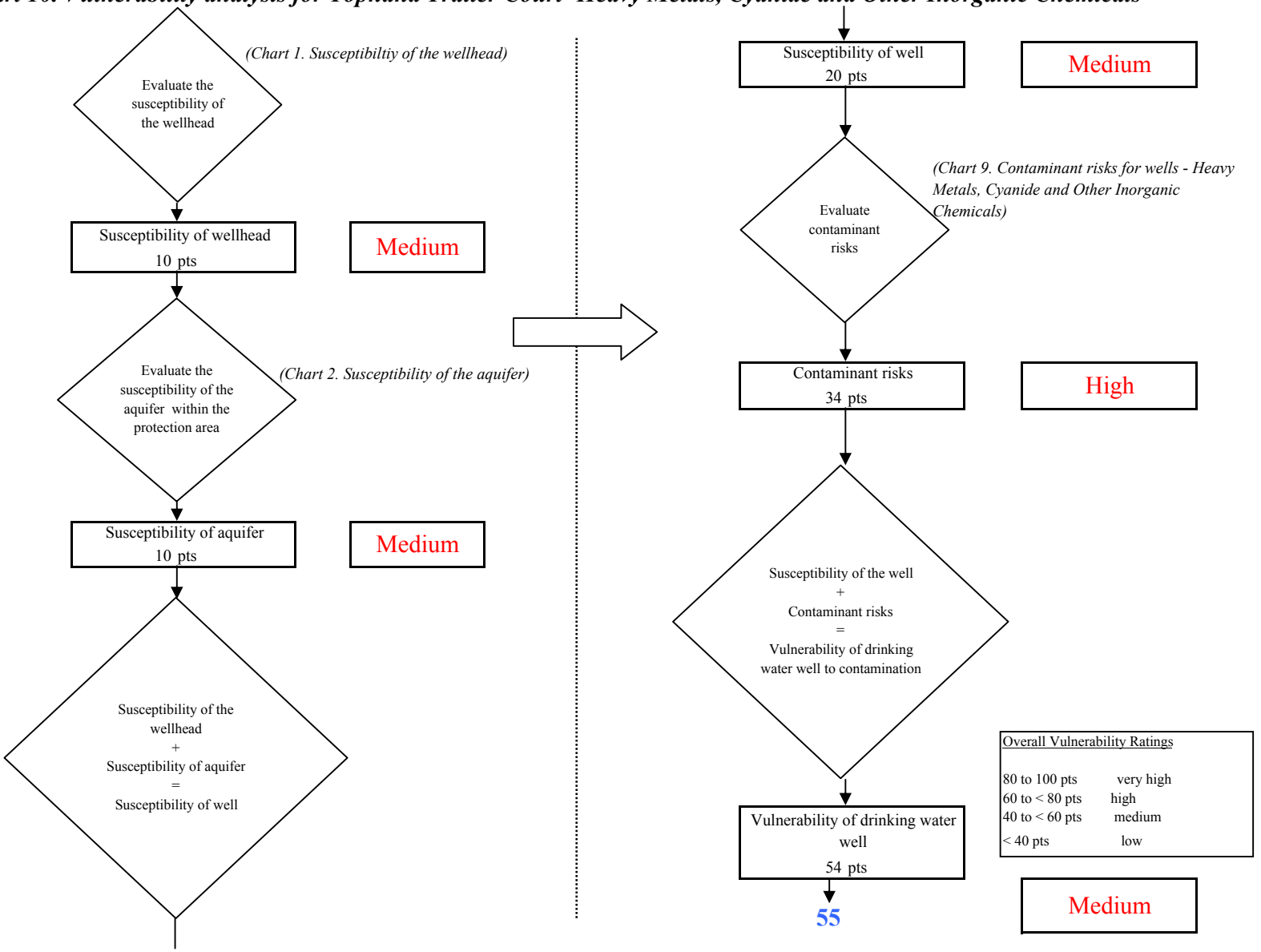


Chart 11. Contaminant risks for Tophand Trailer Court- Synthetic Organic Chemicals

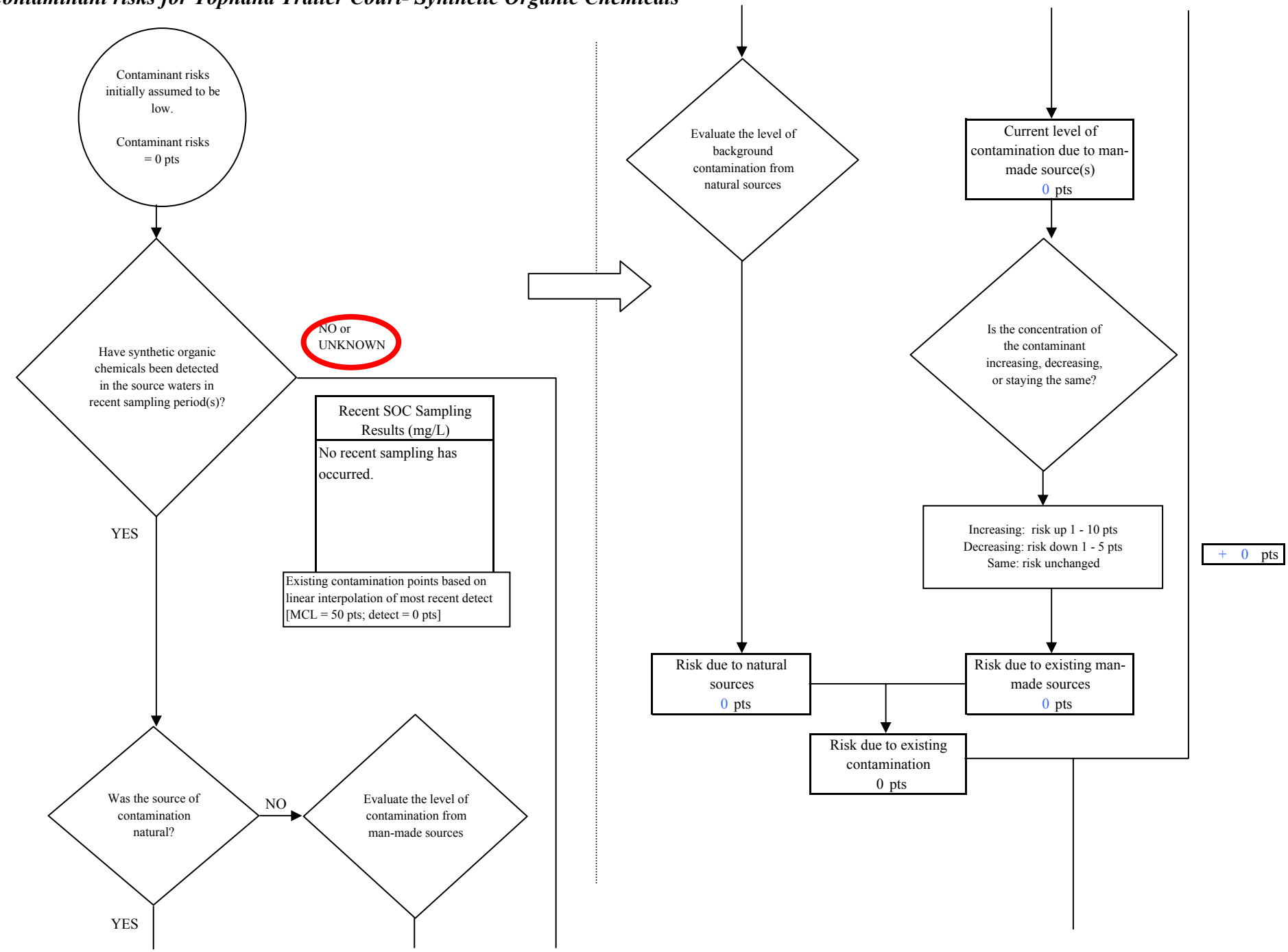
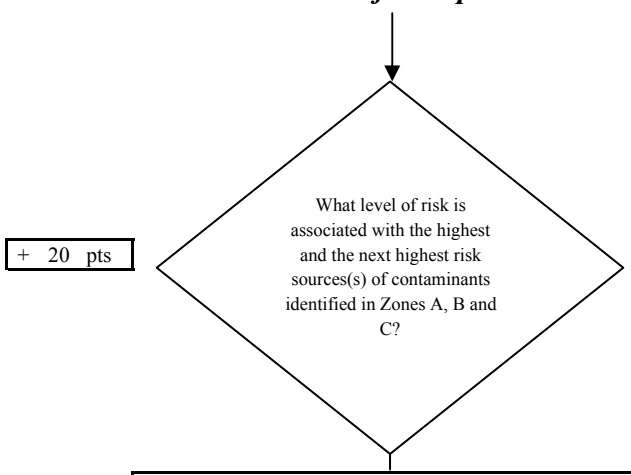


Chart 11. Contaminant risks for Tophand Trailer Court- Synthetic Organic Chemicals



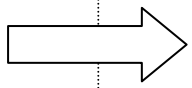
Risk Levels for Contaminant Sources identified in Zones A, B and C

	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	0	1	1
Low(s)	4	4	8

	LOW 10 pts	**MEDIUM** 20 pts	**HIGH** 30 pts	**VERY HIGH** 40 pts
LOW	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	----
MEDIUM	----	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
HIGH	----	----	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
VERY HIGH	----	----	----	≥ 1 source + 10 pts

Matrix Score 20

Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.



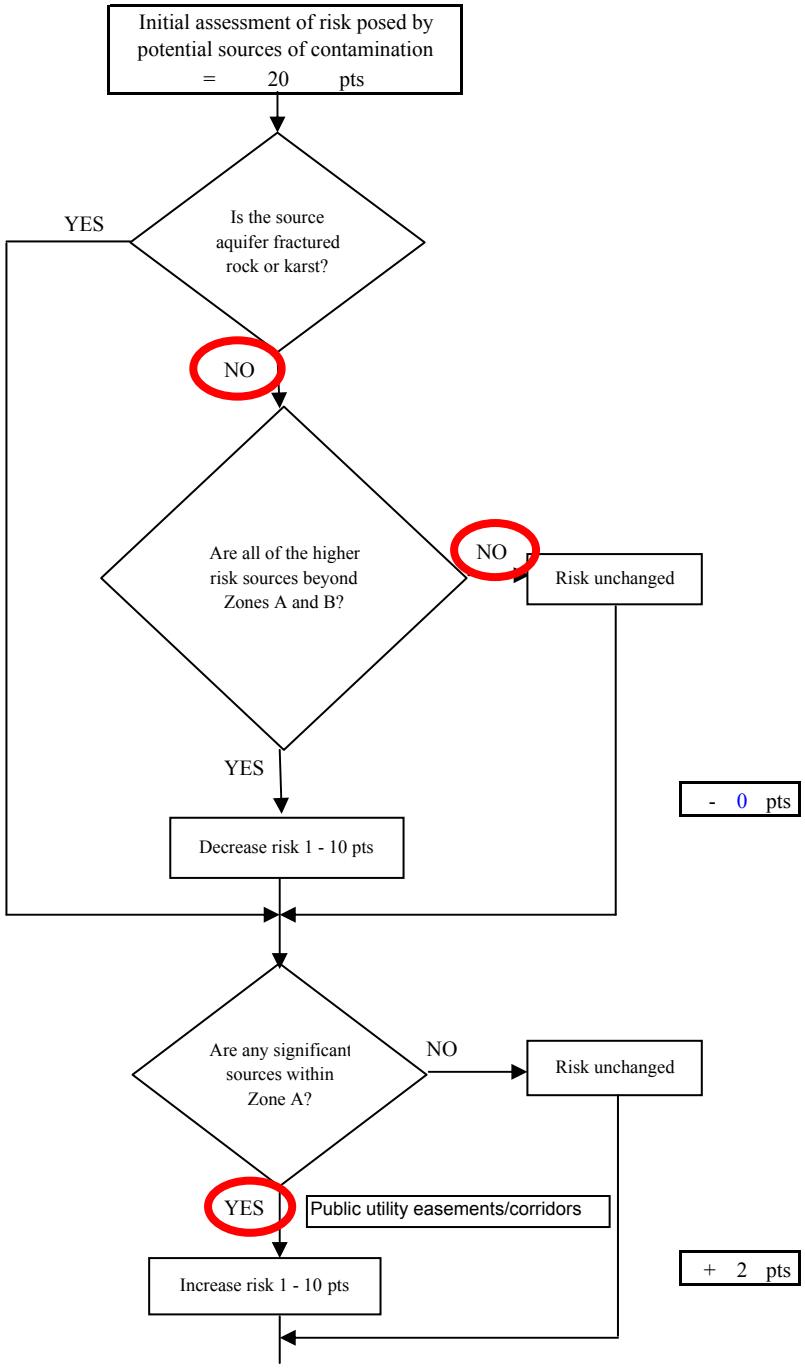


Chart 11. Contaminant risks for Tophand Trailer Court- Synthetic Organic Chemicals

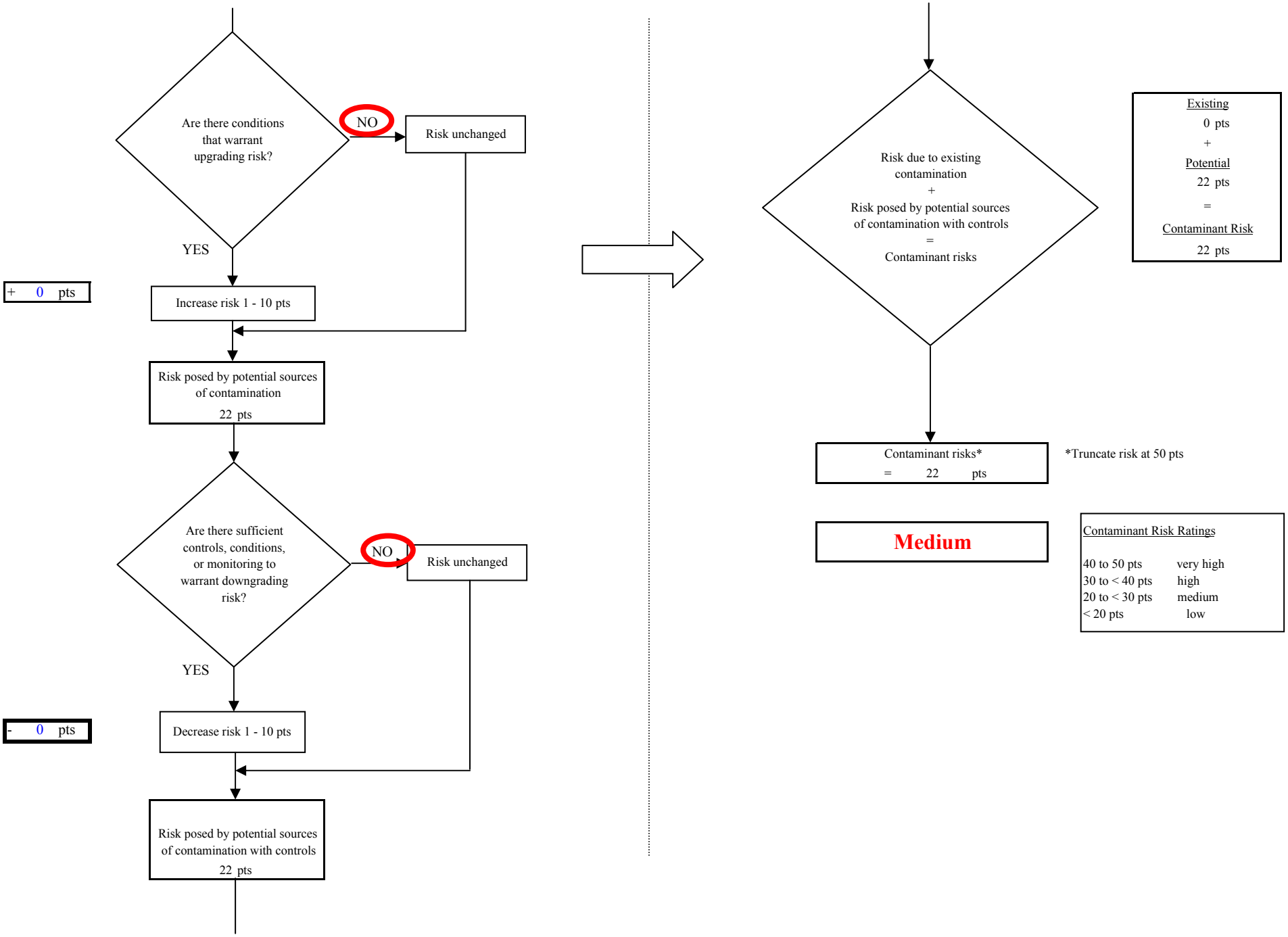


Chart 12. Vulnerability analysis for Tophand Trailer Court- Synthetic Organic Chemicals

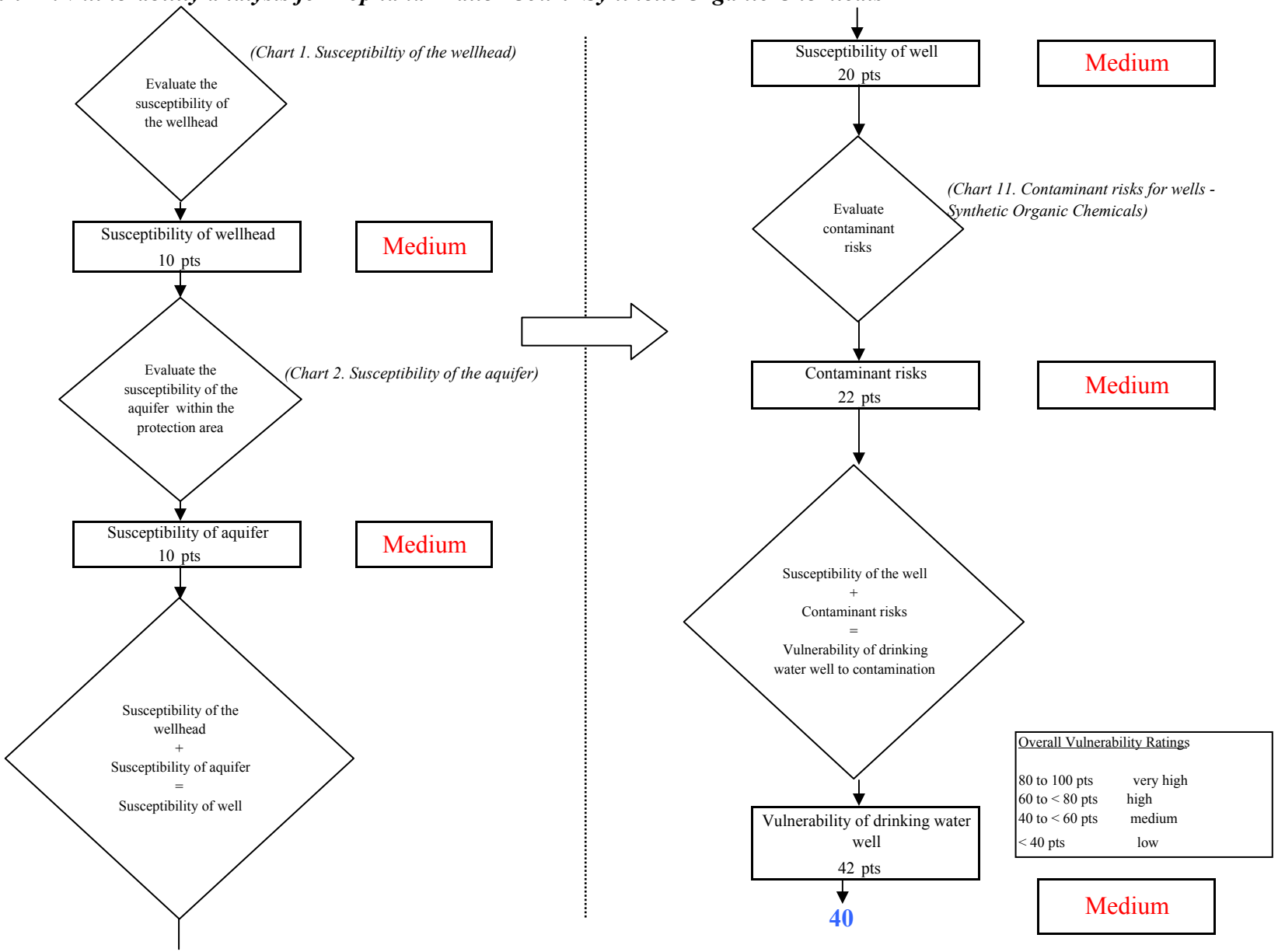


Chart 13. Contaminant risks for Tophand Trailer Court- Other Organic Chemicals

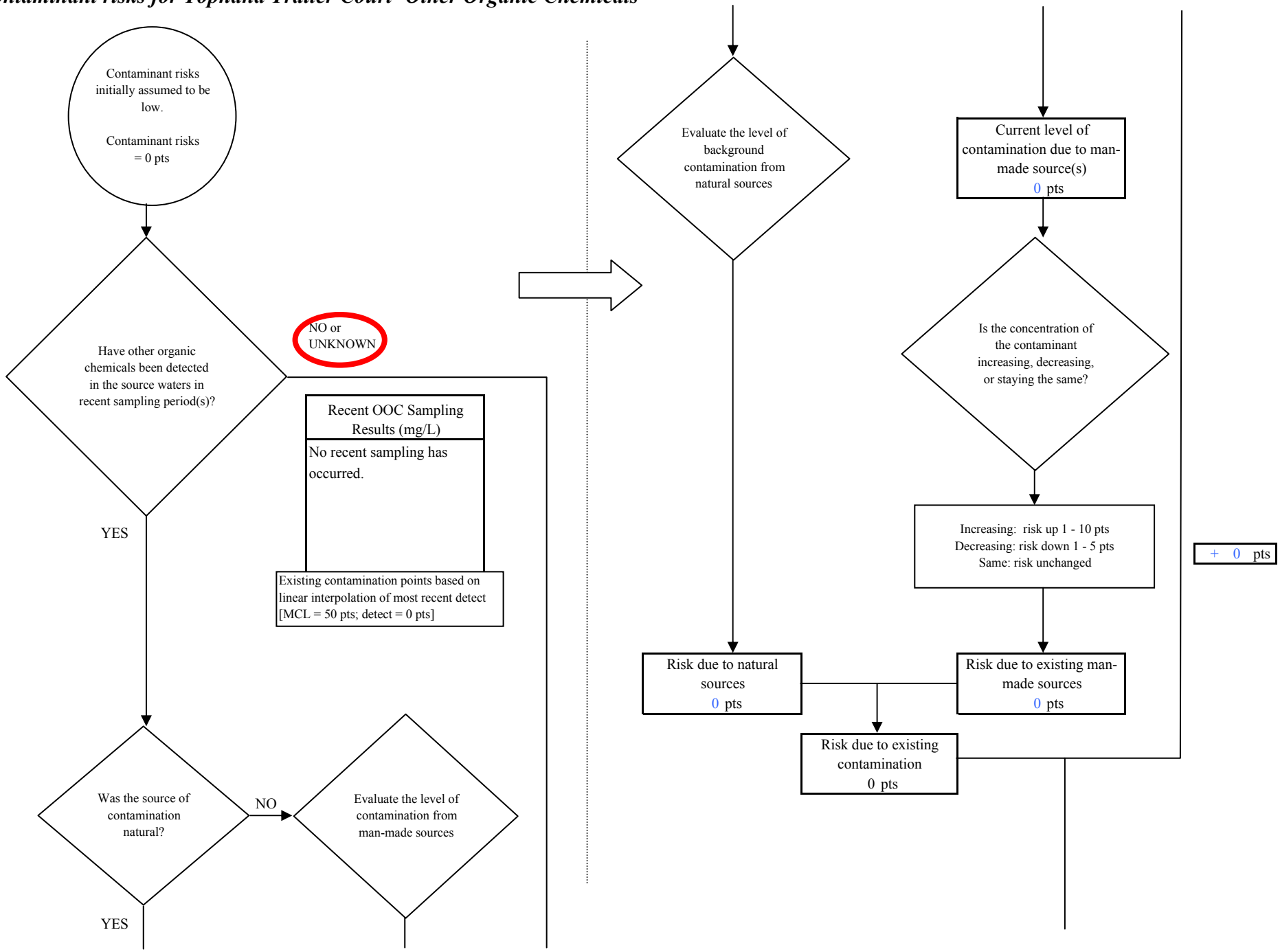
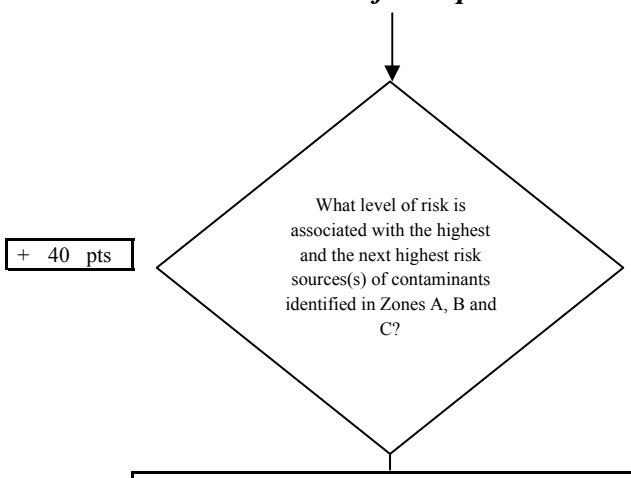


Chart 13. Contaminant risks for Tophand Trailer Court- Other Organic Chemicals



+ 40 pts

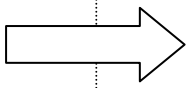
Risk Levels for Contaminant Sources identified in Zones A, B and C

	Zone A	Zones B&C	Total
Very Highs(s)	0	1	1
High(s)	0	0	0
Medium(s)	0	2	2
Low(s)	4	7	11

	LOW 10 pts	**MEDIUM** 20 pts	**HIGH** 30 pts	**VERY HIGH** 40 pts
LOW	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	----
MEDIUM	----	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
HIGH	----	----	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
VERY HIGH	----	----	----	≥ 1 source + 10 pts

Matrix Score 40

Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.



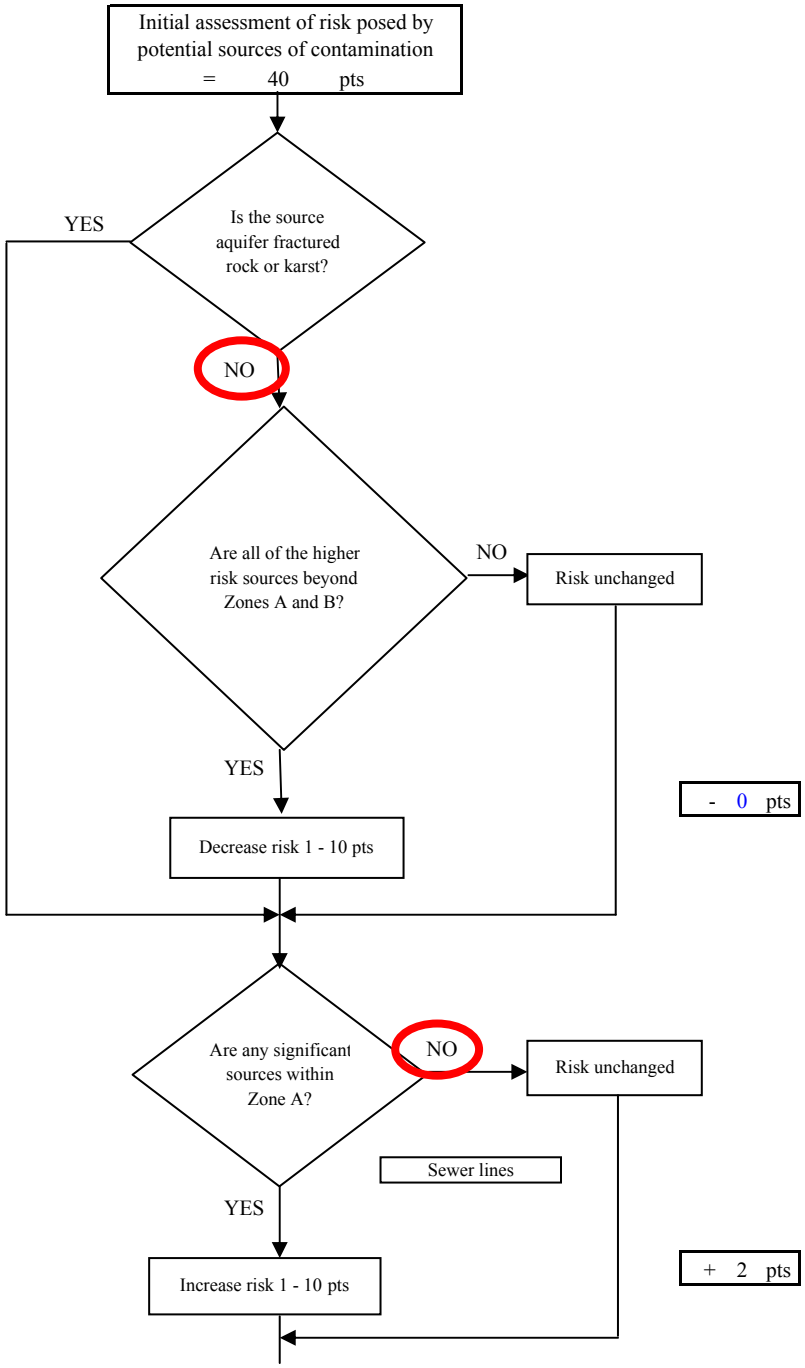


Chart 13. Contaminant risks for Tophand Trailer Court- Other Organic Chemicals

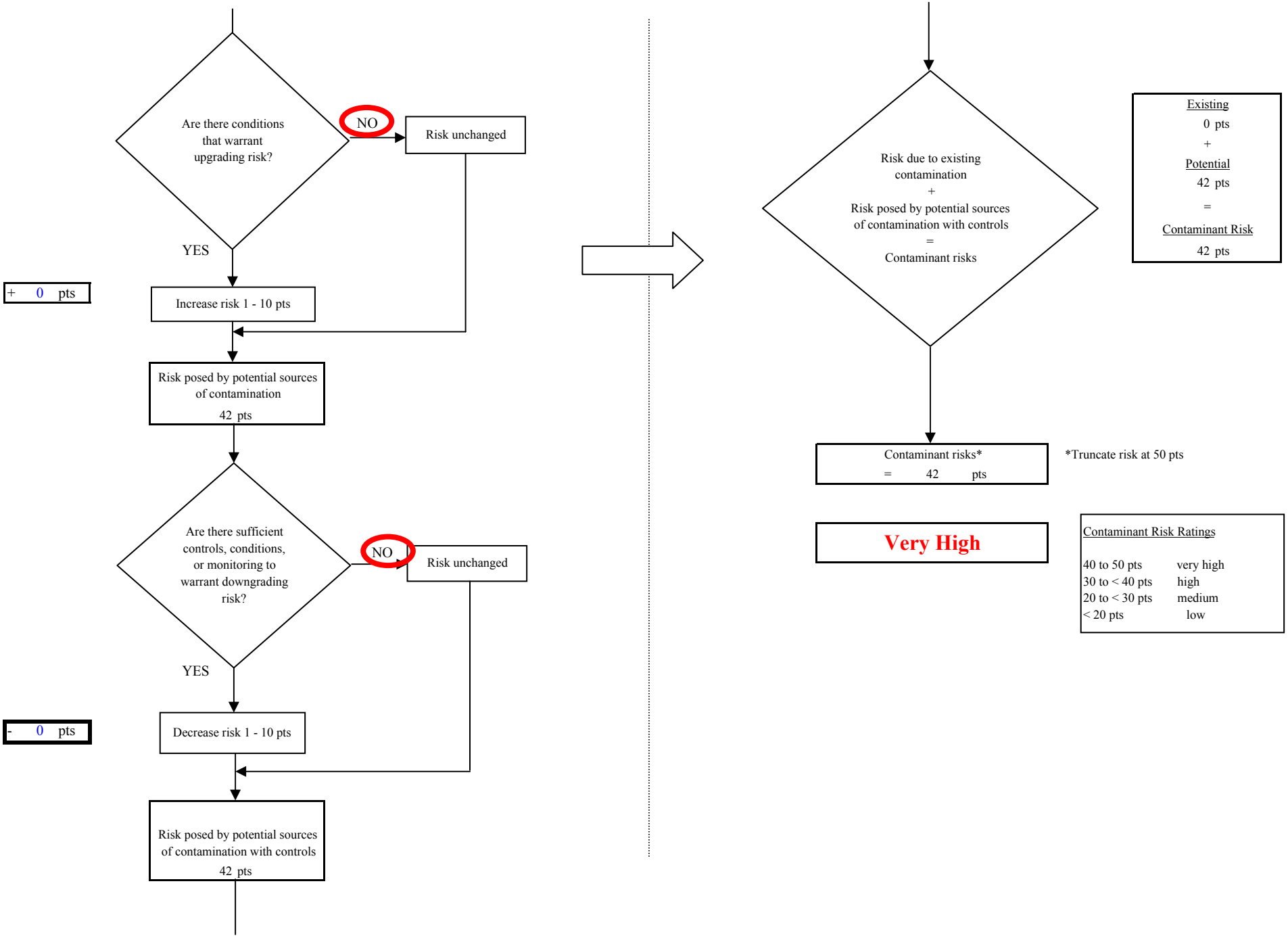


Chart 14. Vulnerability analysis for Tophand Trailer Court- Other Organic Chemicals