# *Source Water Assessment* for
# B&J Rainbow Center
# Wasilla Area, Alaska

A Hydrogeologic Susceptibility and Vulnerability Assessment

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DRINKING WATER PROTECTION PROGRAM REPORT 188
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# *Source Water Assessment* for B&J Rainbow Center Wasilla Area, Alaska

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ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION: 2002

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By Sarah A. Bendewald

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**Drinking Water Protection Program**
**Alaska Department of Environmental Conservation**

## EXECUTIVE SUMMARY

The Public Water System for B&J Rainbow Center is a Class A (non-transient/non-community) water system consisting of two wells approximately six miles west of Wasilla. Identified potential and current sources of contaminants for B&J Rainbow Center include: gasoline stations, a hardware store, a motor vehicle repair shops, a motor vehicle waste disposal well, underground and above ground fuel storage tanks, a DEC-recognized contaminated site, two leaking underground fuel storage tank (LUST) sites, a motor vehicle storage yard, motor vehicle repair shops, large capacity and residential septic systems, highways and roads, and residential areas. 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, the public water sources for B&J Rainbow Center received a vulnerability rating of **High** for bacteria and viruses, nitrates and nitrites, volatile organic chemicals, heavy metals, and other organic chemicals, and **Medium** for synthetic organic chemicals.

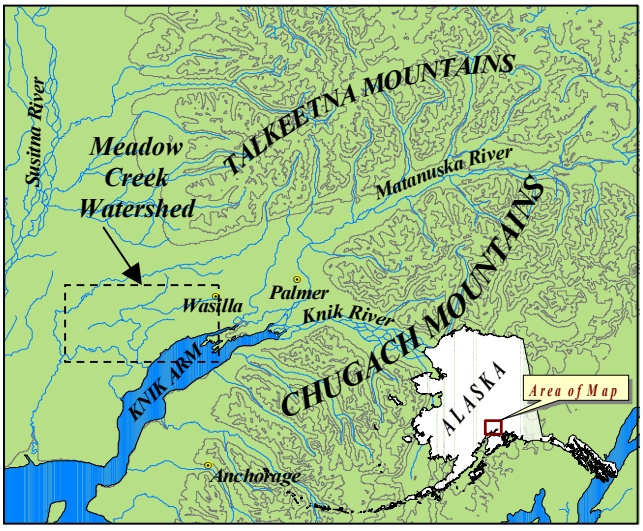


Figure 1. Index Map showing the location of the Matanuska-Susitna Valley and the Meadow Creek Watershed.

## INTRODUCTION

The purpose of this environmental 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. This assessment was completed for the source of public drinking water serving B&J Rainbow Center. This water system consists of two wells approximately six miles west of Wasilla along the Parks Highway. This assessment, known under the Alaska Drinking Water Protection Program as the *Source Water Assessment*, has combined a review of the natural hydrogeologic sensitivity with potential and existing contaminant risks to arrive at an overall vulnerability of the drinking water source to contamination. This assessment has been completed as a basis for local voluntary protection efforts and to assist agencies in their efforts to reduce risk to this public drinking water supply.

## DESCRIPTION OF THE MEADOW CREEK WATERSHED, ALASKA

### Location

The Meadow Creek watershed is located within the Matanuska-Susitna Borough in southcentral Alaska. The Borough encompasses a total of 24,694 square miles supporting a population of approximately 60,000. It is contained within the watersheds of the Matanuska and Susitna Rivers which flow from the glacier melt waters in the Alaska Range, Talkeetna Mountains, and the Chugach Mountains to tidewater in the Knik Arm of Upper Cook Inlet *(Jokela, Munter and Evans, 1991).* This area between the Matanuska and Susitna Valleys is commonly referred to as the Mat-Su Valley. The Meadow Creek watershed extends from an area northwest of Wasilla to the west end of Big Lake, and contains 115 lakes, including Big Lake *(Jokela, Munter and Evans, 1991)* (see Figure 1). The towns of Wasilla, Big Lake, and Houston lie on the outskirts of its boundaries.

## Climate

The climate in the Mat-Su Valley is considered transitional between the extreme temperature fluctuations of Interior Alaska and the wet conditions of the coastal areas.

The Meadow Creek watershed is less than 15 miles from Knik Arm and less than 75 miles from Prince William Sound. Summer temperatures are more moderate than those in the Interior due to the proximity to the coast. The Chugach and Talkeetna Mountains and the Alaska Range also protect the area from the frigid cold of the Interior Alaska winter and act to break up strong storm fronts *(Brabets, 1997), (Western Regional Climate Center, 2000)*.

The Mat-Su Valley area averages about 18 inches of precipitation per year, including about 59 inches of snowfall. Winter thaws can decrease snow cover to a few inches. Mean monthly high temperatures range from about 22 degrees Farenheight in December and January to 69 degrees in July. The frost-free period in spring and summer averages 115 days, with the first frost usually arriving by September 1.

The record low for Wasilla was –50 degrees in January 1947. The highest recorded temperature was 90 degrees in 1969 *(Wickersham Alaska Corporation, 1986)*.

## Physiography and Groundwater Conditions

Glacial forces during the end of the last ice age shaped the Mat-Su Valley. Several glacial advances and retreats left a complex system of hills, ridges, lakes, and lowlands that define the topography of today. Surface elevations in the Mat-Su Valley range from sea level where the Knik and Matanuska Rivers enter the Cook Inlet to well over 6,000 feet in the peaks that bound the area. Landforms in the area consist of undulating ridges of glacial till and flat benches of sand and gravel outwash *(Matanuska-Susitna Borough)*. The Meadow Creek watershed lies in relatively flat area of the Matanuska River valley.

The regional geology and ground water conditions of the Mat-Su Valley vary greatly by location. Glacial advances and retreats also formed a fluctuating subsurface system of unconsolidated layers comprised of fine- to coarse-grained particles (clay to boulders) and consolidated confining layers. The majority of wells in the Mat-Su Valley are located in unconsolidated layers consisting of relatively well-sorted sands and gravels. These unconsolidated layers vary substantially in size and distribution throughout the Valley. In general, the unconsolidated layers increase in thickness moving towards Cook Inlet *(Jokela, Munter and Evans, 1991)*. The numerous confining layers in the area, ranging in thickness from

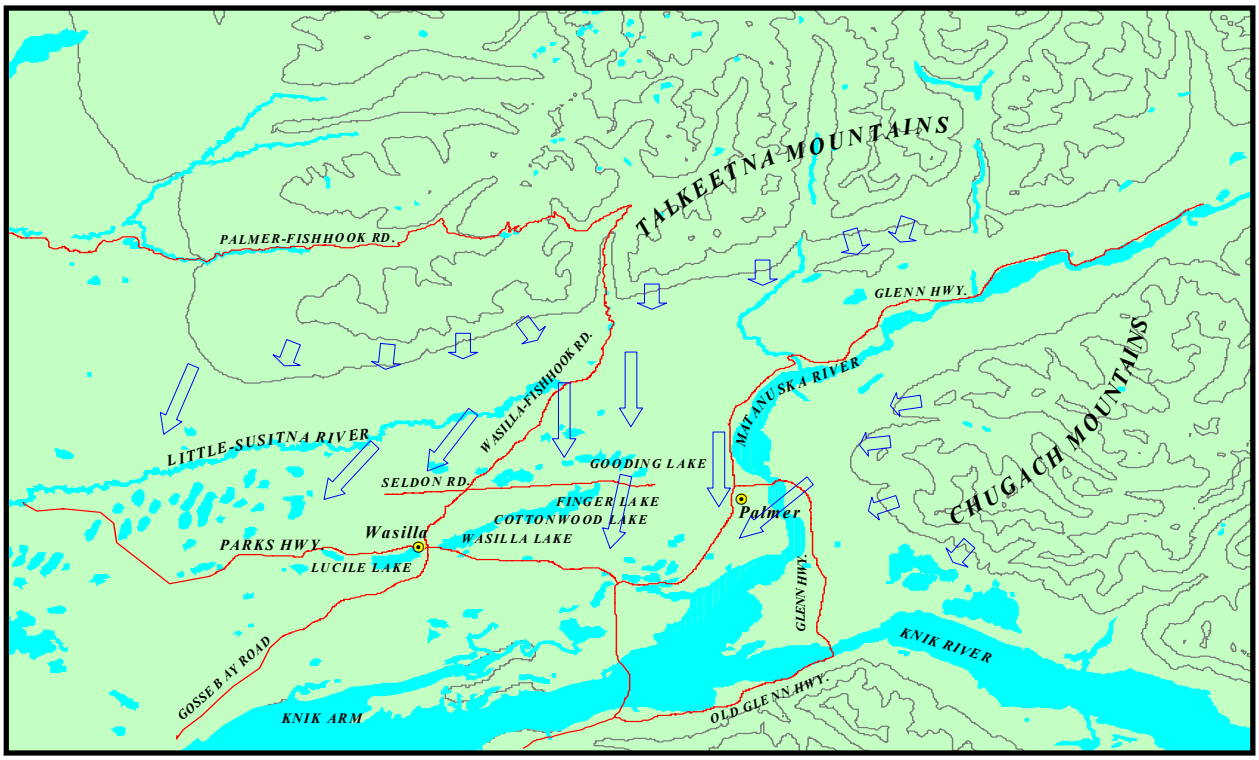


**Figure 2. Map showing groundwater flow in the Matanuska-Susitna Valley (Jokela, Munter and Evans, 1991).**

less than 1 foot to 60 feet, divide the unconsolidated layers.

Groundwater flow in the deeper confined aquifers of the Mat-Su Valley is generally north to south in the central region of the valley flowing toward the Matanuska River and gradually becoming more northeast to southwest in the western region. The direction of groundwater flow in the upper unconfined aquifers are more variable due to the influence from surficial topography as well as its close connection with surface water bodies *(Jokela, Munter and Evans, 1991)* (Figure 2). The groundwater flow direction of the Meadow Creek watershed was generally found to be northeast to southwest in both the unconfined and confined aquifers.

In the Mat-Su Valley, groundwater is primarily recharged by snowmelt and precipitation infiltrating both directly and also from the infiltration into the foothill slopes of the Talkeetna and Chugach Mountains.

**B&J RAINBOW CENTER'S PUBLIC DRINKING WATER SYSTEM**

B&J Rainbow Center's public water system is a Class A (non-transient/non-community) water system. The system consists of two wells at the intersection of the Parks Highway and Sylvan Road (T17N, R2W, Section 9). This area is at an elevation of approximately 100 feet above sea level.

The two wells are located approximately fifty feet apart and draw water from the same unconfined aquifer. The depth of both wells is 101 feet below ground surface. Both wells were installed in July of 1984 and were completed in 6-inch casing with a 10-foot screen. The two wells were installed with a cap providing a sanitary seal. A properly installed sanitary seal may provide protection against contaminants from entering the source waters at the well casing. It is unknown if the wells were grouted according the ADEC regulations. Proper grouting provides added protection against contaminants travelling along the well casing and into source waters.

**ASSESSMENT AND PROTECTION AREA FOR B&J RAINBOW CENTER'S DRINKING WATER SOURCE**

The Drinking Water Protection and Assessment Area that has been established for Scotwood Estate's source of drinking water is the area that is most sensitive to contamination. This area has served as a basis for assessing the risk of the drinking water source to contamination. The zones around the drinking water source outline the most critical area for the preservation of the quality of the drinking water for this system. For simplicity, this area will be known as your Drinking Water Protection Area and will serve as the focus for voluntary protection efforts.

Conceptually, groundwater enters the aquifer systems through infiltration of direct precipitation within the area and also from the infiltration into the foothill slopes of the Talkeetna Mountains. An analytical calculation was used to determine the size and shape of the area that contributes water to the well. 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*). This analytical calculation was used as a guide as the first step in establishing the protection area for each public drinking water source in Anchorage. Additional methods were further employed to take into account any uncertainties in groundwater flow and aquifer characteristics to arrive at meaningful and conservative protection areas with respect to public health (Please refer to the Guidance Manual for Class A Public Water Systems for additional information).

The Drinking Water Protection Areas established for wells by the Alaska Department of Environmental Conservation are separated into zones. These zones correspond to a time-of-travel. Time-of-travel is the time required for water to move in the saturated zone of the ground from a specific point to the well. The Drinking Water Protection Area for B&J Rainbow Center contains four zones, Zone A through Zone D (See Map 1 in Appendix A). Zone A corresponds to the area between the well and the distance equal to ¼ of the distance of the 2-year time-of-travel. Depending on where a contaminant source is located within Zone A, travel time for a contaminant to the wells may be on the order of several days to several hours. Zone A also extends downgradient from the wells to take into account the area of the aquifer that is influenced by pumping of the wells.

Zone B corresponds to a time-of-travel of less than two years. Zones C and D correspond to those areas between 5 years and 10 years time-of-travel, respectively.

**INVENTORY OF POTENTIAL AND EXISTING CONTAMINANT SOURCES**

The Drinking Water Protection Program has completed an inventory of potential and existing sources of contamination within the Drinking Water Protection Area for B&J Rainbow Center. This survey was completed through a search of agency records and other publicly available information. Potential sources of

contamination to drinking water supplies cover 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 this assessment and 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
- Other organic chemicals

Maps 2, 3, and 4 in Appendix C depict the Contaminant Source Inventory for B&J Rainbow Center. Table 1 in Appendix B lists the inventoried potential sources of contamination within Zones A through D. Below is a summary of the contaminant sources inventoried within the Drinking Water Protection Area for B&J Rainbow Center:

- Gasoline stations;
- a hardware store;
- a motor vehicle waste disposal well;
- underground fuel storage tanks;
- an above ground fuel storage tank;
- a DEC-recognized contaminated site;
- Leaking Underground Fuel Storage Tank (LUST) sites;
- residential septic systems;
- large capacity septic systems;
- highways and roads, and
- approximately 46 acres of residential area.

These potential and existing contaminant sources present risk for all six categories of drinking water contaminants for B&J Rainbow Center 's source of public drinking water.

**RANKING OF CONTAMINANT RISKS**

Potential and existing sources of contamination have been identified, sorted, and ranked 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. Contaminant risks are further a function of the number and density of those types of contaminant sources as well as the proximity of those sources to the public drinking water wells.

**VULNERABILITY OF B&J RAINBOW CENTER' DRINKING 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 have been analyzed and an overall vulnerability score of 0 to 100 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)

The wells serving B&J Rainbow Center were completed in an unconfined aquifer. The depth to static water surface is approximately 7 feet below land surface, although the water is being drawn from approximately 100 feet below land surface. The saturated thickness of the aquifer in which the well is screened in is approximately 110 feet and composed of sand and gravel with a layer of "hard pan". The absence of a confining layer allows contaminants that enter the subsurface within the vicinity of the well and Drinking Water Protection Area to migrate to the screened portion of the well uninhibited.

Combining the susceptibility of the wellhead and the aquifer to contamination leads to a score (0 – 50 points) and rating of overall Susceptibility of the well to contamination (See Appendix D). Table 1 depicts the

overall Susceptibility score and rating for the sources of public drinking water serving B&J Rainbow Center.

**Table 1. Natural Susceptibility - Susceptibility of the Wellheads and Aquifer to Contamination**

| | Score | Rating |
|---|---|---|
| Susceptibility of the Wellheads | 5 | Low |
| Susceptibility of the Aquifer | 23 | Very High |
| Natural Susceptibility | 28 | Medium |

Contaminant risks to a drinking water source depend on the type, number or density, and distribution of contaminant sources. A score (0 – 50 points) and rating of Contaminant Risks (See Appendix D) is assigned based on the findings of the Contaminant Source Inventory (See Appendix B - Table 1 – Table 7). This portion of the analysis examines recent existing or historical contamination that has been detected at the drinking water sources through routine sampling. It also reviews contamination that has or may have occurred but has not arrived or been detected at the either well. Table 2 summarizes the Contaminant Risks for each category of drinking water contaminants.

**Table 2. Contaminant Risks of B&J Rainbow Center's Public Drinking Water Source to Contamination by Category**

| Contaminant Risks | Score | Rating |
|---|---|---|
| Bacteria and Viruses | 50 | Very High |
| Nitrates and/or Nitrites | 50 | Very High |
| Volatile Organic Chemicals | 50 | Very High |
| Heavy Metals, Cyanide, And Other Inorganic Chemicals | 45 | Very High |
| Synthetic Organic Chemicals | 12 | Low |
| Other Organic Chemicals | 40 | Very High |

Appendix D contains fourteen charts, which together form the 'Vulnerability Analysis' for a Class A public drinking water system. 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 Analysis for nitrates and nitrites, volatile organic chemicals, heavy metals, synthetic organic chemicals, and other organic chemicals, respectively.

Vulnerability of drinking water sources to contamination is the combination of susceptibility of the aquifer and the well with contaminant risks. Table 3 contains the overall vulnerability scores (0 – 100) and ratings for each of the six categories of drinking water contaminants (See Appendix D). Note: scores are rounded off to the nearest five.

**Table 3. Overall Vulnerability of B&J Rainbow Center's Public Drinking Water Source to Contamination by Category**

| Category | Score | Rating |
|---|---|---|
| Bacteria and Viruses | 75 | High |
| Nitrates and Nitrites | 75 | High |
| Volatile Organic Chemicals | 75 | High |
| Heavy Metals, Cyanide, and Other Inorganic Chemicals | 75 | High |
| Synthetic Organic Chemicals | 40 | Medium |
| Other Organic Chemicals | 70 | High |

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, heavy metals, synthetic organic chemicals, and other organic chemicals, respectively.

The large capacity septic systems found in zone significantly increase the risk for both bacteria and viruses and nitrates and nitrites. Large capacity septic systems are classified as a type of Class V Injection well, and differ from residential septic systems in that they serve multiple dwellings, businesses, or communities. This classification does not include single family residential and other non-residential system serving less than 20 people. Septic systems are designed to leach domestic wastewater in the subsurface. If engineered and operating properly, leach fields for septic systems should filter and stop the migration of microorganisms in the subsurface. However, failure of a septic system can result in the

migration of contaminants away from the leach field, sometimes to great distances, especially in highly transmissive soils.

Only a small amount of bacteria and viruses are required to endanger public health. Bacteria and viruses have not been detected during recent water sampling of the B&J Rainbow Center water system, but it receives a ranking of high because of the potential risk sources.

Nitrates and/or nitrites are found in natural background concentration at this site, as elsewhere throughout Alaska. Nitrate concentrations in uncontaminated groundwater are typically less than 2 milligrams per liter (mg/L) and are derived primarily from the decomposition of organic matter in soils [Wang, Strelakos, Jokela, 2000].

Sampling history for the B&J Rainbow Center wells indicates that a low concentration of nitrates has recently been detected at approximately 0.5 mg/L (See Chart 5 - Contaminant Risks for Nitrates and/or Nitrites in Appendix D) or 5% of the Maximum Contaminant Level (MCL). The MCL is the maximum level of contaminant that is allowed to exist in drinking water and still be consumed by humans without harmful health effects. Though existing nitrate contamination was detected at the site, concentrations remain at safe levels with respect to human health.

In September 1996, three underground fuel tanks and three dispenser islands were removed from the Tesoro gasoline station located along the Parks Highway at the intersection of Sylvan Road. Contamination was encountered and approximately 300 cubic yards of contaminated soil was excavated from the site and transported to an approved thermal treatment facility (LUST file Event ID 880, RecKey #96220026801). The status of this site is currently open. A contaminant plume of petroleum hydrocarbons extends to groundwater, however, does not extend laterally off the Tesoro site. The site is currently being monitored and treated using a soil vapor extraction (SVE) system. This site is approximately 350 feet east of B&J Rainbow Center's public water wells and falls within the Zone A protection area. This site ranks as the highest potential source of contamination for volatile organic chemicals for B&J Rainbow Center.

Contaminated soils (diesel range contamination) were also documented at the Tesoro gasoline station in April 1996 during excavation and placement of a new 26,000-gallon underground storage tank (UST) (LUST site Event ID 872, RecKey #96220009201). Contaminant concentrations, however, were significantly below those requiring action and the site was closed the next month in May 1996.

In August of 1993, petroleum contamination as a result of a waste oil spill was documented by the ADEC (RecKey #1993220110601). Although the extent of contamination is unknown, the status of the site is inactive and therefore assumed to be only a low risk of contamination to the B&J Rainbow Center water source.

Although petroleum hydrocarbons (contaminants within the volatile organic chemicals category) have been sampled for and have not been detected at the B&J Rainbow Center's public water source, the system receives a risk ranking of high for volatile organic chemicals. This ranking is based on the open LUST site, the five underground fuel storage tanks, the motor vehicle waste disposal well, and the two gasoline stations all located within Zone A.

**SUMMARY**

A *Source Water Assessment* has been completed for the sources of public drinking water serving B&J Rainbow Center. The overall vulnerability of this source to contamination is **High** for bacteria and viruses, nitrates and nitrites, volatile organic chemicals, heavy metals, and other organic chemicals, and **Medium** for synthetic 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 B&J Rainbow Center 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 B&J Rainbow Center's public drinking water source.

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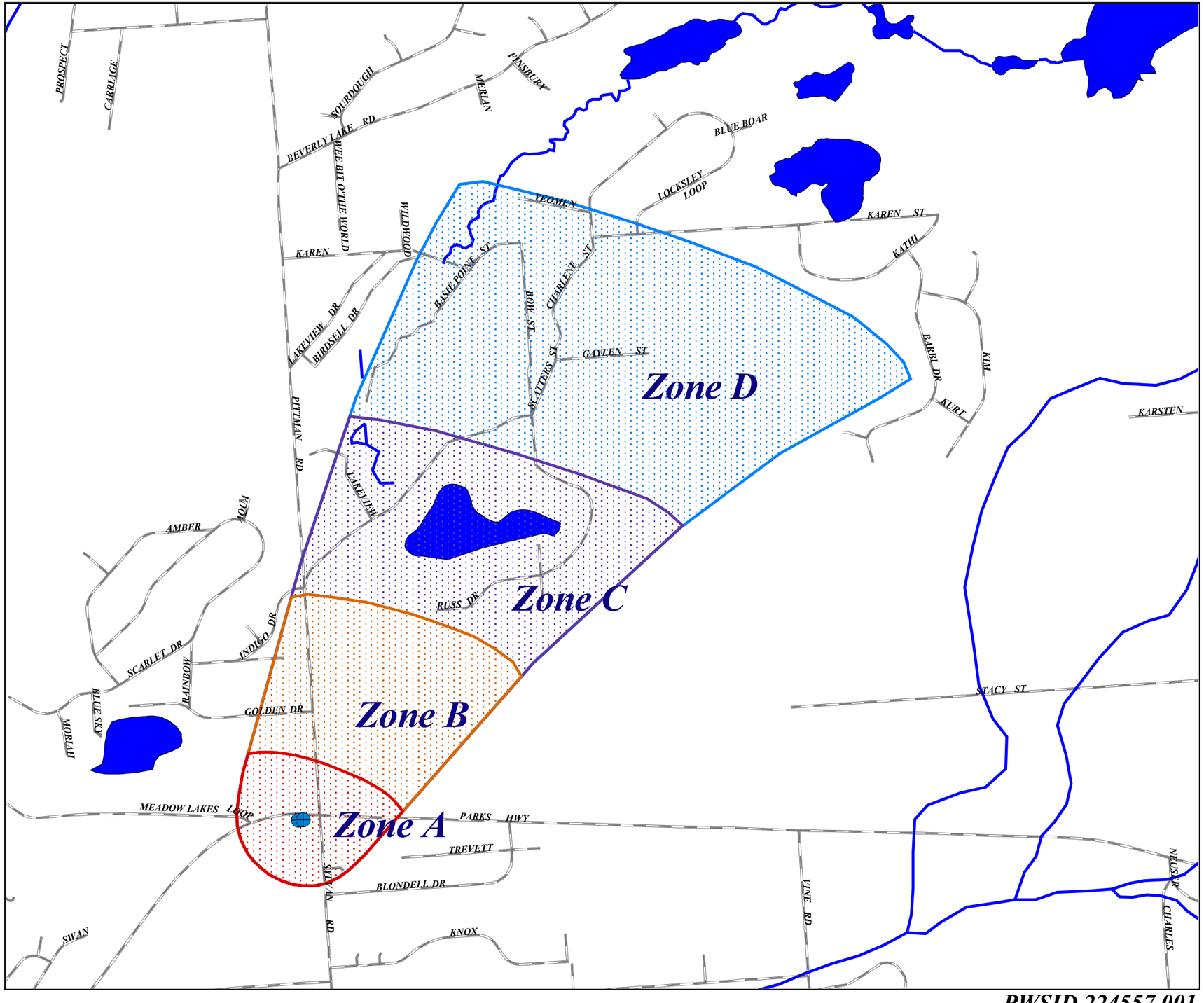
# APPENDIX A

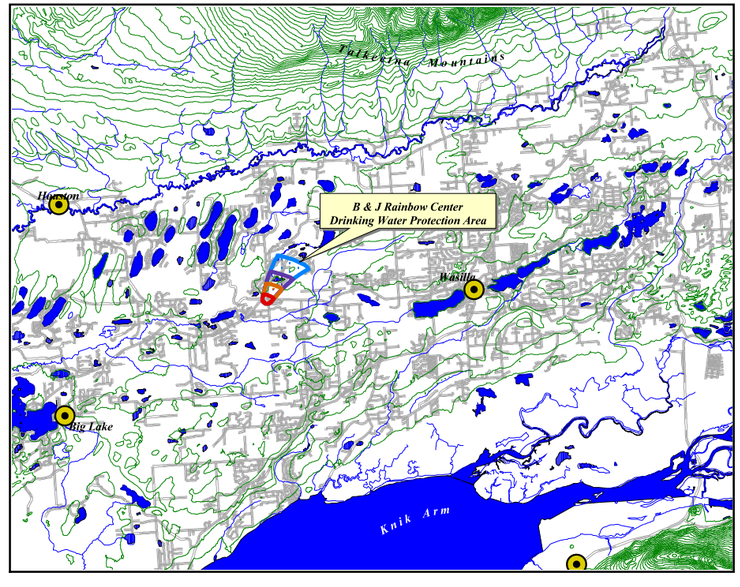
# B&J Rainbow Center
# Drinking Water Protection Area

# B & J Rainbow Center Drinking Water Protection Areas




## Legend

- B & J Rainbow Center Wells
- 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
- Rivers and Streams
- Lakes
- Roads

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# Map 1

# APPENDIX B

# Contaminant Source Inventory and Risk Ranking for B&J Rainbow Center

***Table 1*** *Contaminant Source Inventory for* ***PWSID 224557.001***

## *B & J Rainbow Center*

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Map Number* | *Comments* |
|---|---|---|---|---|---|
| Gasoline stations (without repair shop) | C15 | C15-1 | A | 4 | |
| Gasoline stations (without repair shop) | C15 | C15-2 | A | 4 | |
| Hardware stores | C17 | C17-1 | A | 4 | |
| Motor /motor vehicle repair shops | C31 | C31-1 | A | 4 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-1 | A | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-2 | A | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-3 | A | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-4 | A | 3 | |
| Injection wells (Class V) Motor Vehicle Waste Disposal Well | D42 | D42-1 | A | 3 | |
| Residential Areas | R01 | R01-1 | A | 2 | 6.5 acres of residential area in Zone A |
| Septic systems (serves one single-family home) | R02 | R02-01 | A | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-02 | A | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-03 | A | 3 | |
| Tanks, heating oil, residential (above ground) | R08 | R08-1 | A | 4 | |
| Tanks, gasoline (underground) | T12 | T12-1 | A | 4 | |
| Tanks, gasoline (underground) | T12 | T12-2 | A | 4 | |
| Tanks, gasoline (underground) | T12 | T12-3 | A | 4 | |
| Tanks, gasoline (underground) | T12 | T12-4 | A | 4 | |
| Tanks, gasoline (underground) | T12 | T12-5 | A | 4 | |
| Tanks, heating oil, nonresidential (aboveground) | T14 | T14-1 | A | 4 | |
| Tanks, heating oil, nonresidential (aboveground) | T14 | T14-2 | A | 4 | |
| Contaminated sites, DEC recognized, non-Superfund, non-RCRA | U04 | U04-1 | A | 4 | |

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Map Number* | *Comments* |
|---|---|---|---|---|---|
| Open Leaking Underground Fuel Storage Tank (LUST) Sites | U07 | U07-1 | A | 4 | |
| Closed Leaking Underground Fuel Storage Tank (LUST) Sites | U08 | U08-1 | A | 4 | |
| Highways and roads, paved (cement or asphalt) | X20 | X20-1 | A | 2 | |
| Highways and roads, paved (cement or asphalt) | X20 | X20-2 | A | 2 | |
| Motor vehicle/general storage yards/facilities | X27 | X27-1 | A | 4 | |
| Motor /motor vehicle repair shops | C31 | C31-2 | B | 4 | |
| Residential Areas | R01 | R01-2 | B | 2 | 16.5 acres of residential area in Zone B |
| Septic systems (serves one single-family home) | R02 | R02-04 | B | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-05 | B | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-06 | B | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-07 | B | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-08 | B | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-09 | B | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-1 | B | 2 | |
| Residential Areas | R01 | R01-3 | C | 2 | 23 acres of residential area in Zone C |
| Septic systems (serves one single-family home) | R02 | R02-10 | C | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-11 | C | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-12 | C | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-13 | C | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-14 | C | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-15 | C | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-16 | C | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-17 | C | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-18 | C | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-19 | C | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-20 | C | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-2 | C | 2 | |

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Map Number* | *Comments* |
|---|---|---|---|---|---|
| Highways and roads, dirt/gravel | X24 | X24-3 | C | 2 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-5 | D | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-6 | D | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-7 | D | 3 | |

**Table 2**

# *Contaminant Source Inventory and Risk Ranking for B & J Rainbow Center Sources of Bacteria and Viruses*

**PWSID 224557.001**

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Risk Ranking for Analysis* | *Map Number* | *Comments* |
|---|---|---|---|---|---|---|
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-1 | A | High | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-2 | A | High | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-3 | A | High | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-4 | A | High | 3 | |
| Injection wells (Class V) Motor Vehicle Waste Disposal Well | D42 | D42-1 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-01 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-02 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-03 | A | Low | 3 | |
| Residential Areas | R01 | R01-1 | A | Low | 2 | 6.5 acres of residential area in Zone A |
| 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 | |
| Residential Areas | R01 | R01-2 | B | Low | 2 | 16.5 acres of residential area in Zone B |
| Septic systems (serves one single-family home) | R02 | R02-04 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-05 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-06 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-07 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-08 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-09 | B | Low | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-1 | B | Low | 2 | |

**Table 3**

# *Contaminant Source Inventory and Risk Ranking for B & J Rainbow Center Sources of Nitrates/Nitrites*

**PWSID 224557.001**

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Risk Ranking for Analysis* | *Map Number* | *Comments* |
|---|---|---|---|---|---|---|
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-1 | A | High | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-2 | A | High | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-3 | A | High | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-4 | A | High | 3 | |
| Hardware stores | C17 | C17-1 | A | Low | 4 | |
| Septic systems (serves one single-family home) | R02 | R02-01 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-02 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-03 | A | Low | 3 | |
| Residential Areas | R01 | R01-1 | A | Low | 2 | 6.5 acres of residential area in Zone A |
| 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 | |
| Residential Areas | R01 | R01-2 | B | Low | 2 | 16.5 acres of residential area in Zone B |
| Septic systems (serves one single-family home) | R02 | R02-04 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-05 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-06 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-07 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-08 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-09 | B | Low | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-1 | B | Low | 2 | |
| Residential Areas | R01 | R01-3 | C | Low | 2 | 23 acres of residential area in Zone C |
| Septic systems (serves one single-family home) | R02 | R02-10 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-11 | C | Low | 3 | |

*Table 3 (continued)*

# *Contaminant Source Inventory and Risk Ranking for B & J Rainbow Center Sources of Nitrates/Nitrites*

***PWSID 224557.001***

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Risk Ranking for Analysis* | *Map Number* | *Comments* |
|---|---|---|---|---|---|---|
| Septic systems (serves one single-family home) | R02 | R02-12 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-13 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-14 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-15 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-16 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-17 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-18 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-19 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-20 | C | Low | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-2 | C | Low | 2 | |
| Highways and roads, dirt/gravel | X24 | X24-3 | C | Low | 2 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-5 | D | High | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-6 | D | High | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-7 | D | High | 3 | |

**Table 4**

# *Contaminant Source Inventory and Risk Ranking for B & J Rainbow Center Sources of Volatile Organic Chemicals*

**PWSID 224557.001**

| *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 | U07-1 | A | High | 4 | |
| Tanks, gasoline (underground) | T12 | T12-1 | A | High | 4 | |
| Tanks, gasoline (underground) | T12 | T12-2 | A | High | 4 | |
| Tanks, gasoline (underground) | T12 | T12-3 | A | High | 4 | |
| Tanks, gasoline (underground) | T12 | T12-4 | A | High | 4 | |
| Tanks, gasoline (underground) | T12 | T12-5 | A | High | 4 | |
| Injection wells (Class V) Motor Vehicle Waste Disposal Well | D42 | D42-1 | A | High | 3 | |
| Gasoline stations (without repair shop) | C15 | C15-1 | A | High | 4 | |
| Gasoline stations (without repair shop) | C15 | C15-2 | A | High | 4 | |
| Tanks, heating oil, residential (above ground) | R08 | R08-1 | A | Medium | 4 | |
| Hardware stores | C17 | C17-1 | A | Low | 4 | |
| Motor /motor vehicle repair shops | C31 | C31-1 | A | Medium | 4 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-1 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-2 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-3 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-4 | A | Low | 3 | |
| Residential Areas | R01 | R01-1 | A | Low | 2 | 6.5 acres of residential area in Zone A |
| Septic systems (serves one single-family home) | R02 | R02-01 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-02 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-03 | A | Low | 3 | |
| Tanks, heating oil, nonresidential (aboveground) | T14 | T14-1 | A | Low | 4 | |

*Table 4 (continued)*

# *Contaminant Source Inventory and Risk Ranking for B & J Rainbow Center Sources of Volatile Organic Chemicals*

***PWSID 224557.001***

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Risk Ranking for Analysis* | *Map Number* | *Comments* |
|---|---|---|---|---|---|---|
| Tanks, heating oil, nonresidential (aboveground) | T14 | T14-2 | A | Low | 4 | |
| Contaminated sites, DEC recognized, non-Superfund, non-RCRA | U04 | U04-1 | A | Low | 4 | |
| Closed Leaking Underground Fuel Storage Tank (LUST) Sites | U08 | U08-1 | A | Low | 4 | |
| 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 | |
| Motor vehicle/general storage yards/facilities | X27 | X27-1 | A | Low | 4 | |
| Motor /motor vehicle repair shops | C31 | C31-2 | B | Medium | 4 | |
| Residential Areas | R01 | R01-2 | B | Low | 2 | 16.5 acres of residential area in Zone B |
| Septic systems (serves one single-family home) | R02 | R02-04 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-05 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-06 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-07 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-08 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-09 | B | Low | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-1 | B | Low | 2 | |
| Residential Areas | R01 | R01-3 | C | Low | 2 | 23 acres of residential area in Zone C |
| Septic systems (serves one single-family home) | R02 | R02-10 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-11 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-12 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-13 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-14 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-15 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-16 | C | Low | 3 | |

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Risk Ranking for Analysis* | *Map Number* | *Comments* |
|---|---|---|---|---|---|---|
| Septic systems (serves one single-family home) | R02 | R02-17 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-18 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-19 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-20 | C | Low | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-2 | C | Low | 2 | |
| Highways and roads, dirt/gravel | X24 | X24-3 | C | Low | 2 | |

**Table 5**

# *Contaminant Source Inventory and Risk Ranking for B & J Rainbow Center*

## *Sources of Heavy Metals, Cyanide and Other Inorganic Chemicals*

**PWSID 224557.001**

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Risk Ranking for Analysis* | *Map Number* | *Comments* |
|---|---|---|---|---|---|---|
| Injection wells (Class V) Motor Vehicle Waste Disposal Well | D42 | D42-1 | A | High | 3 | |
| Tanks, gasoline (underground) | T12 | T12-1 | A | Medium | 4 | |
| Tanks, gasoline (underground) | T12 | T12-2 | A | Medium | 4 | |
| Tanks, gasoline (underground) | T12 | T12-3 | A | Medium | 4 | |
| Tanks, gasoline (underground) | T12 | T12-4 | A | Medium | 4 | |
| Tanks, gasoline (underground) | T12 | T12-5 | A | Medium | 4 | |
| Motor /motor vehicle repair shops | C31 | C31-1 | A | Medium | 4 | |
| Motor /motor vehicle repair shops | C31 | C31-2 | B | Medium | 4 | |
| Open Leaking Underground Fuel Storage Tank (LUST) Sites | U07 | U07-1 | A | Low | 4 | |
| Contaminated sites, DEC recognized, non-Superfund, non-RCRA | U04 | U04-1 | A | Low | 4 | |
| Hardware stores | C17 | C17-1 | A | Low | 4 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-1 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-2 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-3 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-4 | A | Low | 3 | |
| Residential Areas | R01 | R01-1 | A | Low | 2 | 6.5 acres of residential area in Zone A |
| Septic systems (serves one single-family home) | R02 | R02-01 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-02 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-03 | A | Low | 3 | |
| Tanks, heating oil, nonresidential (aboveground) | T14 | T14-1 | A | Low | 4 | |

# *Contaminant Source Inventory and Risk Ranking for B & J Rainbow Center*

## *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* |
|---|---|---|---|---|---|---|
| Tanks, heating oil, nonresidential (aboveground) | T14 | T14-2 | A | Low | 4 | |
| 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 | |
| Residential Areas | R01 | R01-2 | B | Low | 2 | 16.5 acres of residential area in Zone B |
| Septic systems (serves one single-family home) | R02 | R02-04 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-05 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-06 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-07 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-08 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-09 | B | Low | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-1 | B | Low | 2 | |
| Residential Areas | R01 | R01-3 | C | Low | 2 | 23 acres of residential area in Zone C |
| Septic systems (serves one single-family home) | R02 | R02-10 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-11 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-12 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-13 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-14 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-15 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-16 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-17 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-18 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-19 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-20 | C | Low | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-2 | C | Low | 2 | |

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Risk Ranking for Analysis* | *Map Number* | *Comments* |
|---|---|---|---|---|---|---|
| Highways and roads, dirt/gravel | X24 | X24-3 | C | Low | 2 | |

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Risk Ranking for Analysis* | *Map Number* | *Comments* |
|---|---|---|---|---|---|---|
| Injection wells (Class V) Motor Vehicle Waste Disposal Well | D42 | D42-1 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-1 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-2 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-3 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-4 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-01 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-02 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-03 | A | Low | 3 | |
| Residential Areas | R01 | R01-1 | A | Low | 2 | 6.5 acres of residential area in Zone A |
| Septic systems (serves one single-family home) | R02 | R02-04 | B | Low | 3 | |
| Residential Areas | R01 | R01-2 | B | Low | 2 | 16.5 acres of residential area in Zone B |
| Septic systems (serves one single-family home) | R02 | R02-05 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-06 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-07 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-08 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-09 | B | Low | 3 | |
| Residential Areas | R01 | R01-3 | C | Low | 2 | 23 acres of residential area in Zone C |
| Septic systems (serves one single-family home) | R02 | R02-10 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-11 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-12 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-13 | C | Low | 3 | |

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Risk Ranking for Analysis* | *Map Number* | *Comments* |
|---|---|---|---|---|---|---|
| Septic systems (serves one single-family home) | R02 | R02-14 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-15 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-16 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-17 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-18 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-19 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-20 | C | Low | 3 | |

**Table 7**

# Contaminant Source Inventory and Risk Ranking for B & J Rainbow Center Sources of Other Organic Chemicals

**PWSID 224557.001**

| Contaminant Source Type | Contaminant Source ID | CS ID tag | Zone | Risk Ranking for Analysis | Map Number | Comments |
|---|---|---|---|---|---|---|
| Injection wells (Class V) Motor Vehicle Waste Disposal Well | D42 | D42-1 | A | High | 3 | |
| Motor /motor vehicle repair shops | C31 | C31-1 | A | Medium | 4 | |
| Motor /motor vehicle repair shops | C31 | C31-2 | B | Medium | 4 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-1 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-2 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-3 | A | Low | 3 | |
| Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method) | D10 | D10-4 | A | Low | 3 | |
| Gasoline stations (without repair shop) | C15 | C15-1 | A | Low | 4 | |
| Gasoline stations (without repair shop) | C15 | C15-2 | A | Low | 4 | |
| Hardware stores | C17 | C17-1 | A | Low | 4 | |
| Residential Areas | R01 | R01-1 | A | Low | 2 | 6.5 acres of residential area in Zone A |
| Septic systems (serves one single-family home) | R02 | R02-01 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-02 | A | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-03 | A | Low | 3 | |
| 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 | |
| Motor vehicle/general storage yards/facilities | X27 | X27-1 | A | Low | 4 | |
| Residential Areas | R01 | R01-2 | B | Low | 2 | 16.5 acres of residential area in Zone B |
| Septic systems (serves one single-family home) | R02 | R02-04 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-05 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-06 | B | Low | 3 | |

# *Contaminant Source Inventory and Risk Ranking for B & J Rainbow Center*

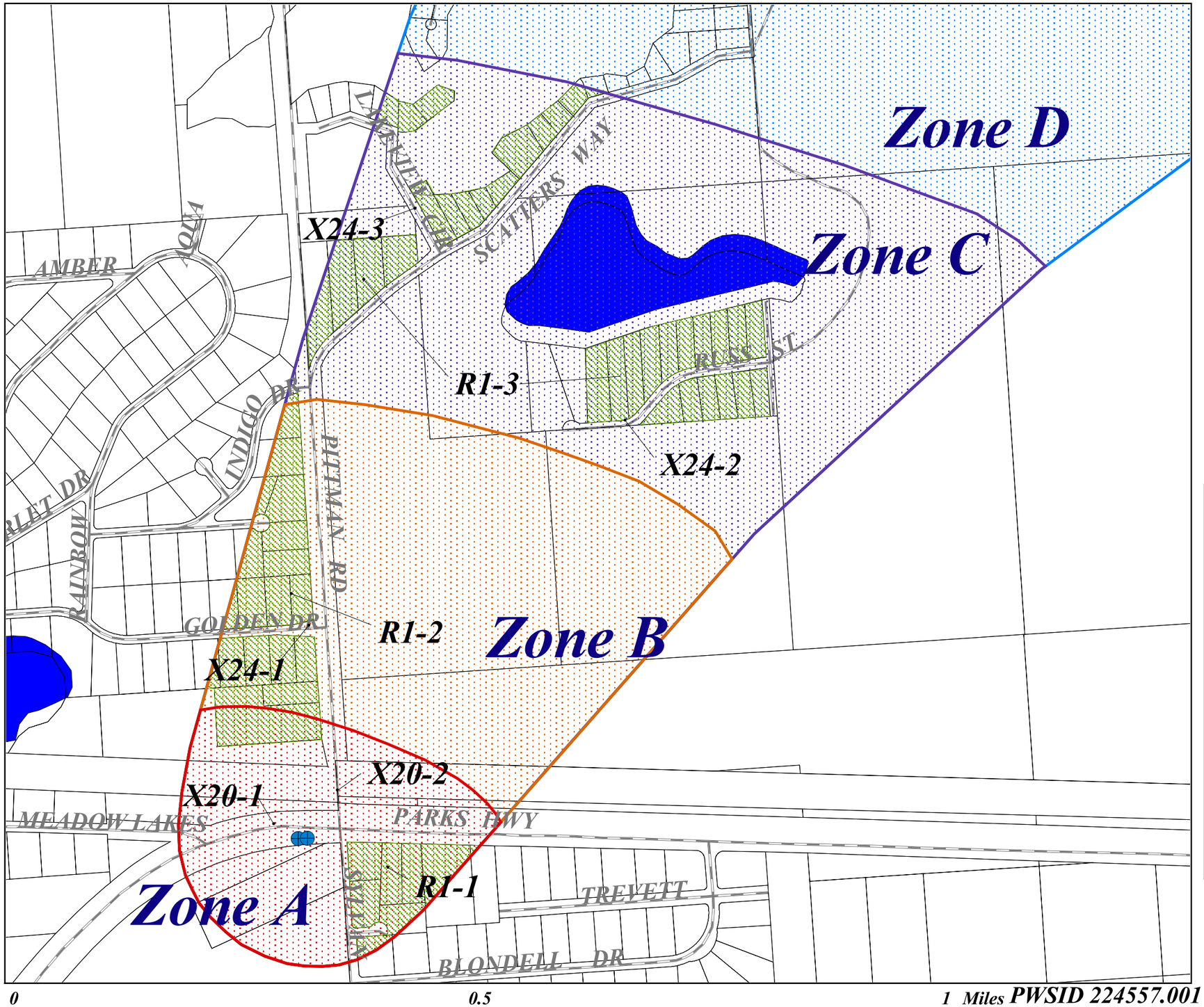
## *Sources of Other Organic Chemicals*

| *Contaminant Source Type* | *Contaminant Source ID* | *CS ID tag* | *Zone* | *Risk Ranking for Analysis* | *Map Number* | *Comments* |
|---|---|---|---|---|---|---|
| Septic systems (serves one single-family home) | R02 | R02-07 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-08 | B | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-09 | B | Low | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-1 | B | Low | 2 | |
| Residential Areas | R01 | R01-3 | C | Low | 2 | 23 acres of residential area in Zone C |
| Septic systems (serves one single-family home) | R02 | R02-10 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-11 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-12 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-13 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-14 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-15 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-16 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-17 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-18 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-19 | C | Low | 3 | |
| Septic systems (serves one single-family home) | R02 | R02-20 | C | Low | 3 | |
| Highways and roads, dirt/gravel | X24 | X24-2 | C | Low | 2 | |
| Highways and roads, dirt/gravel | X24 | X24-3 | C | Low | 2 | |

# APPENDIX C

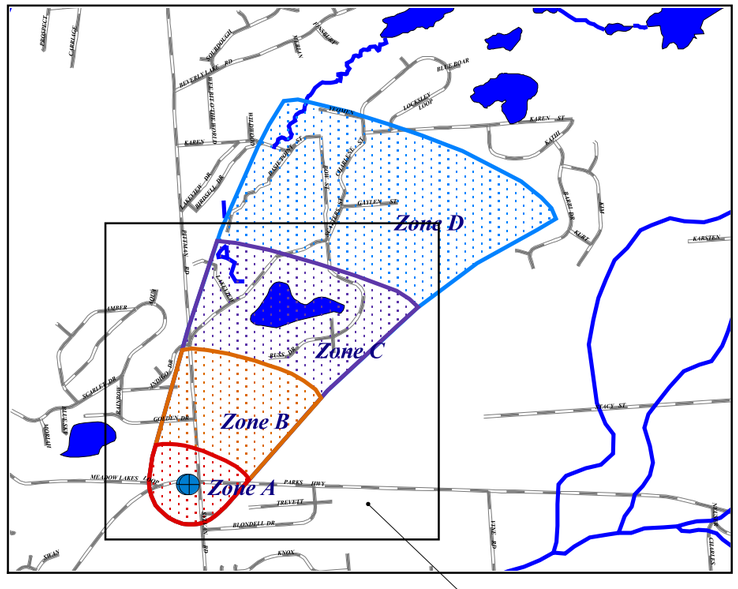
## B&J Rainbow Center
## Drinking Water Protection Area
## and Potential and Existing Contaminant Sources

# B & J Rainbow Center Drinking Water Protection Areas with Potential & Existing Contaminant Sources




## Legend

- B & J Rainbow Center Wells
- 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
- Residential Areas (R1)
- Parcels
- Lakes
- Roads




area of map

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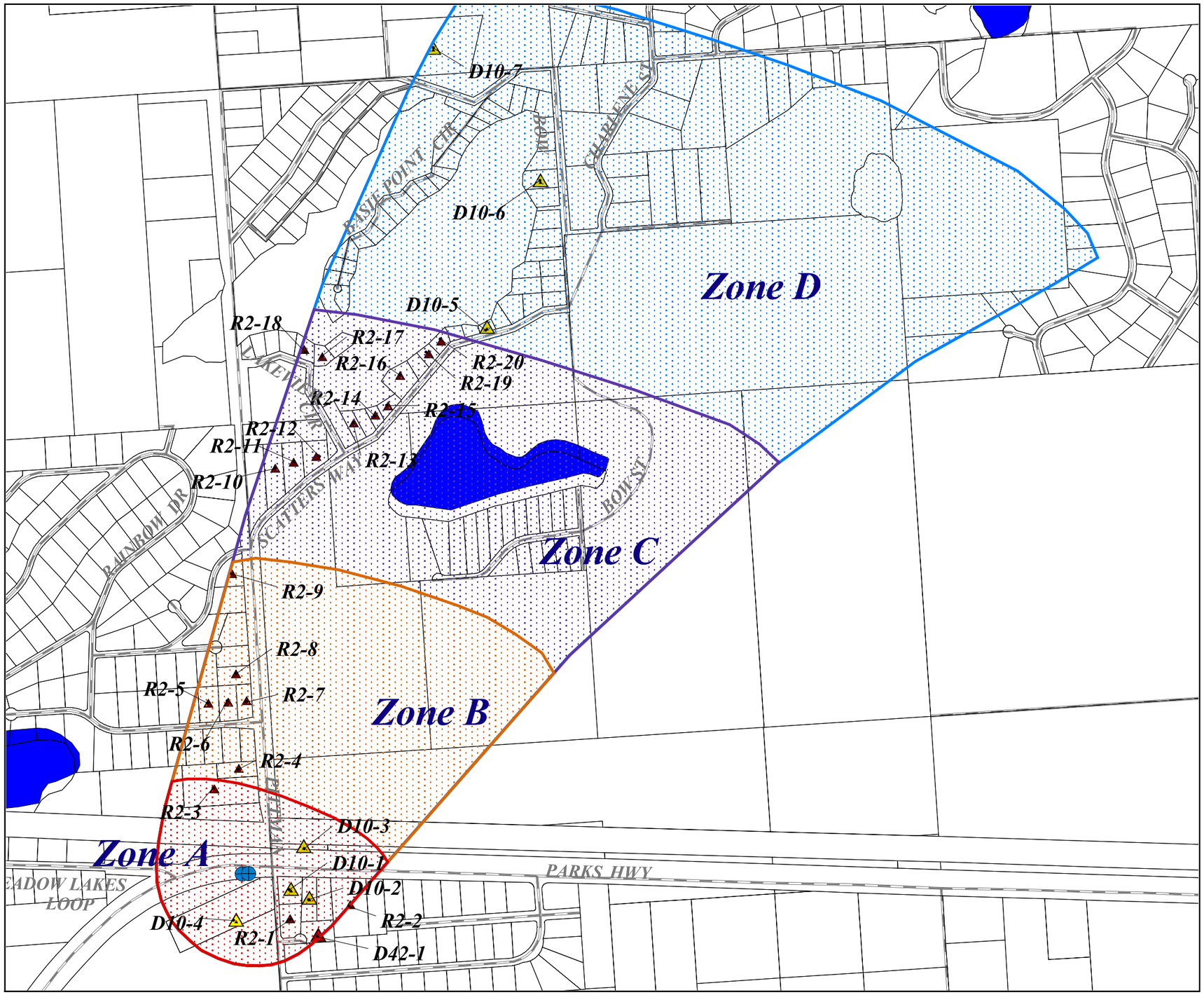
PWSID 224557.001
224557.002

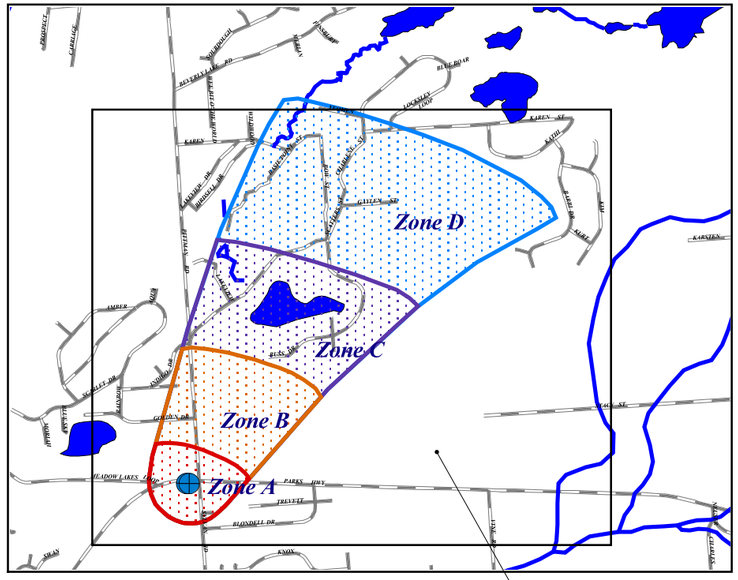
# Map 2

# B & J Rainbow Center Drinking Water Protection Area with Potential & Existing Contaminant Sources




## Legend

- B & J Rainbow Center Wells
- 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
- Septic Systems
  - Large Capacity Septic Systems (D10)
  - Class V Motor Vehicle Waste Dispoal Injection Well (D42)
  - Single Family Septic Systems (R2)
- Parcels
- Lakes
- Roads

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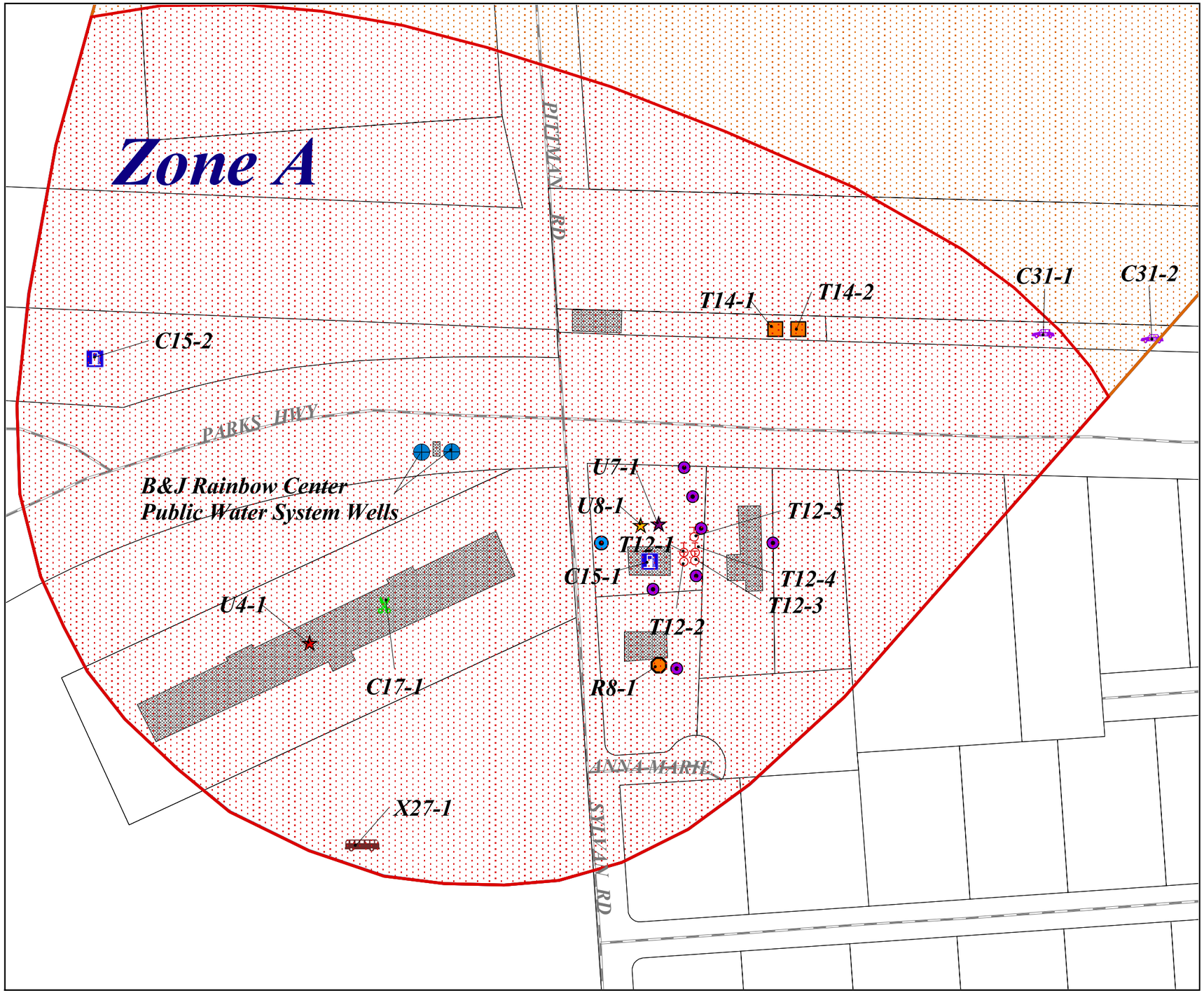
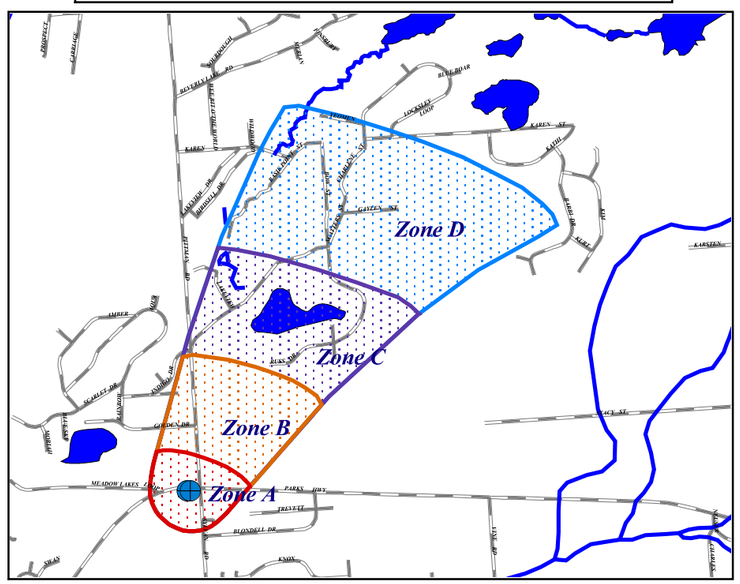
# Map 3

# B & J Rainbow Center Drinking Water Protection Area with Potential & Existing Contaminant Sources




## Legend

- B & J Rainbow Center Wells
- 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 Source Inventory
- Gasoline Stations without a Repair Shop (C15)
- Hardware Stores (C17)
- Motor/Motor Vehicle Repair Shops (C31)
- Above ground Residential Heating Oil Tanks (R8)
- Underground Gasoline Tanks (T12)
- Above ground Nonresidential Heating Oil Tanks (T14)
- DEC-recognized, non-Superfund, non-RCRA Contaminanted Sites (U4)
- Abandoned Wells
- Monitoring Wells
- Motor Vehicle/General Storage Yards/Facilities (X27)
- Closed Leaking Underground Storage Tank Site (U8)
- Open Leaking Underground Storage Tank Site (U7)
- Parcels
- Roads
- Buildings




0.1 0 0.1 0.2 Miles

PWSID 224557.001
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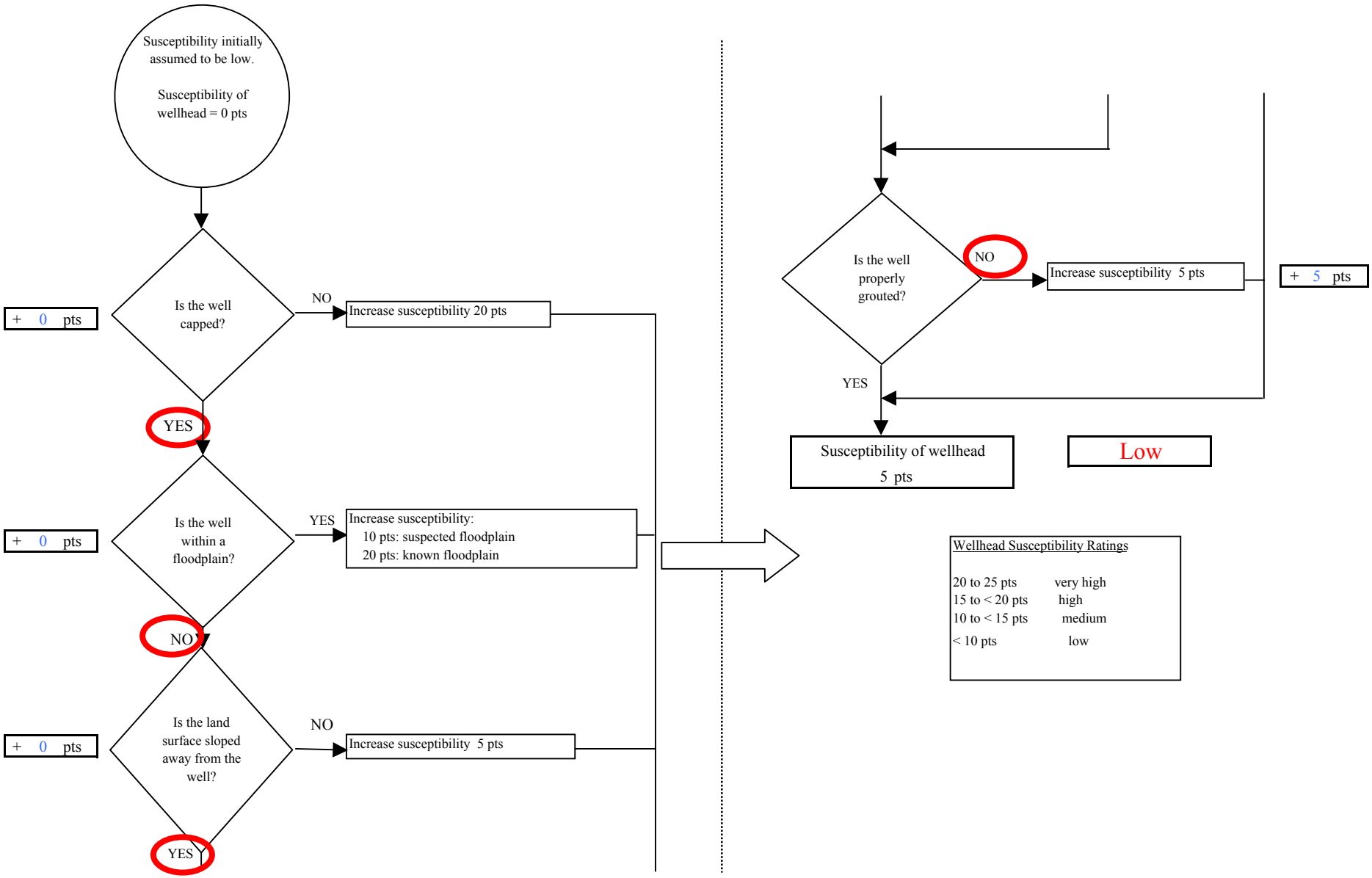
# Map 4

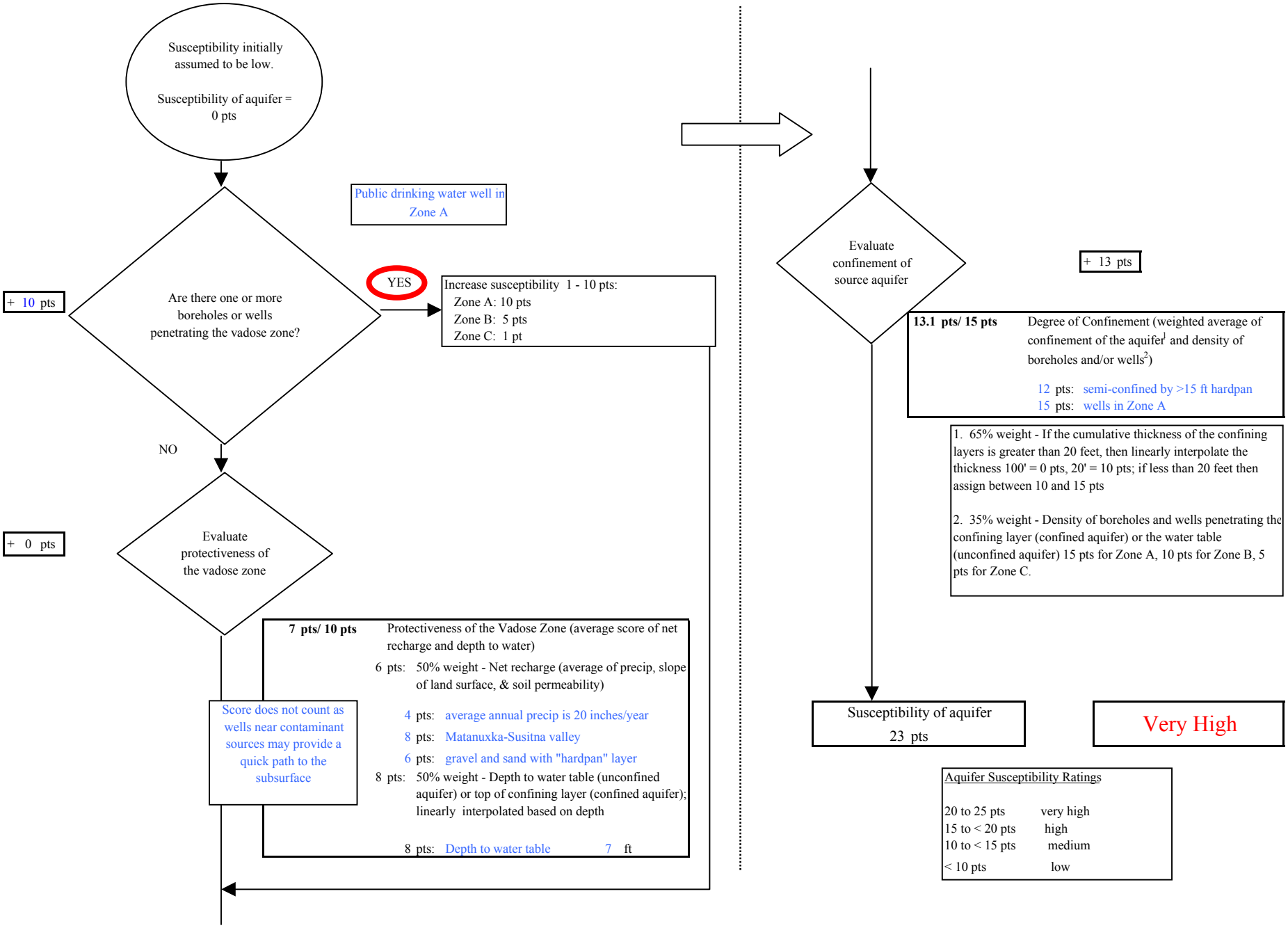
# APPENDIX D

# Vulnerability Analysis for B&J Rainbow Center Public Drinking Water Source

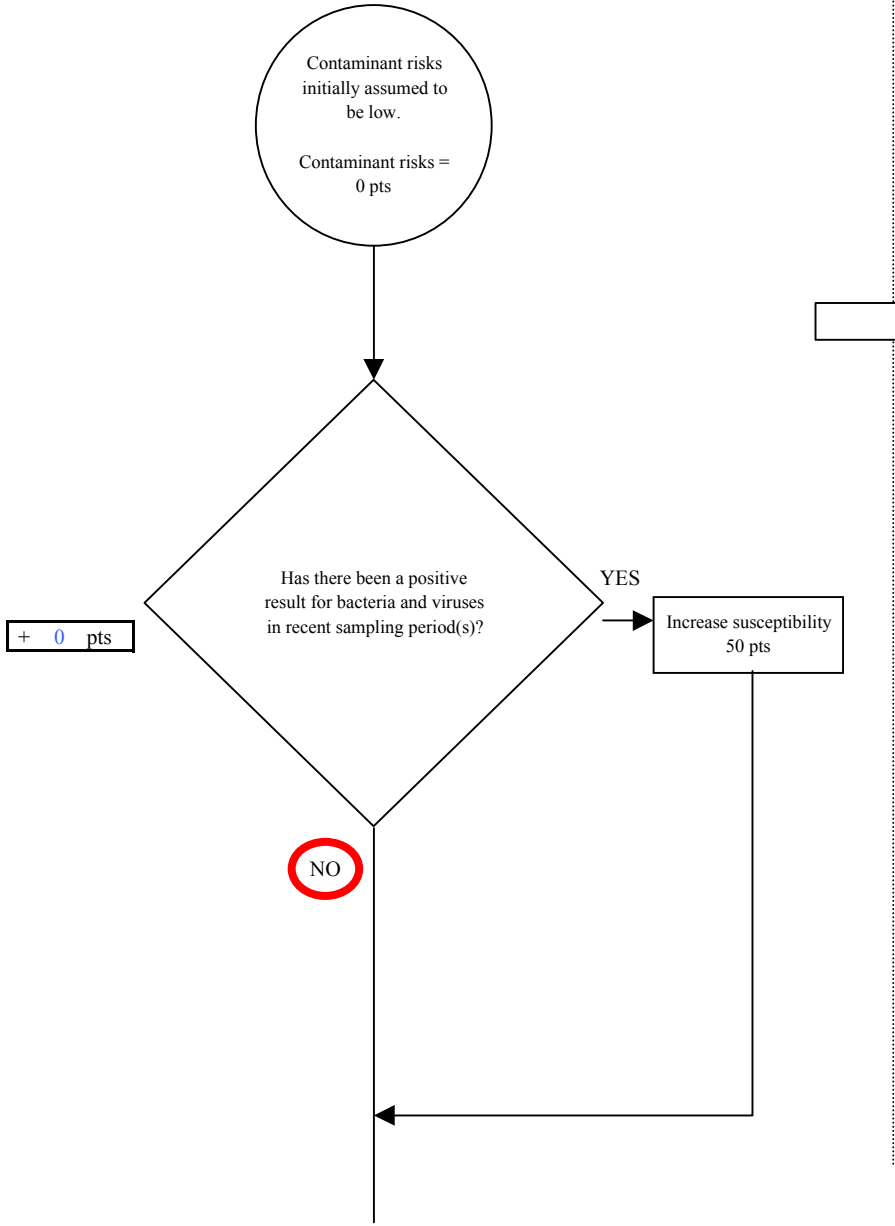
## *Chart 1. Susceptibility of the wellhead - B&J Rainbow Center*

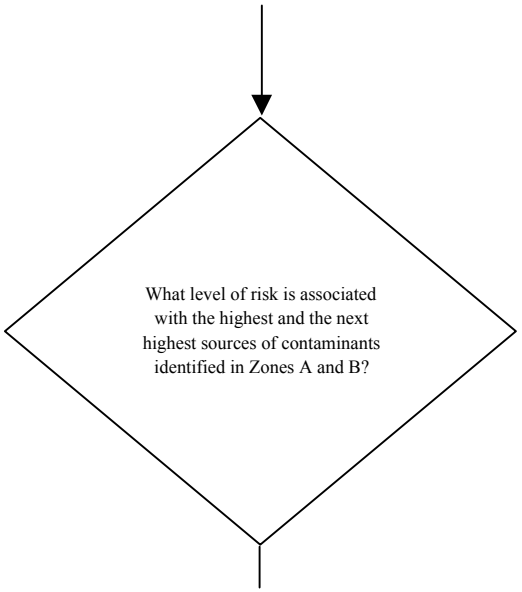


## *Chart 2. Susceptibility of the aquifer - B&J Rainbow Center*



## *Chart 3. Contaminant risks for B&J Rainbow Center - Bacteria & Viruses*




+ 40 pts

Risk Rankings for Contaminant Sources Identified in Zones A and B

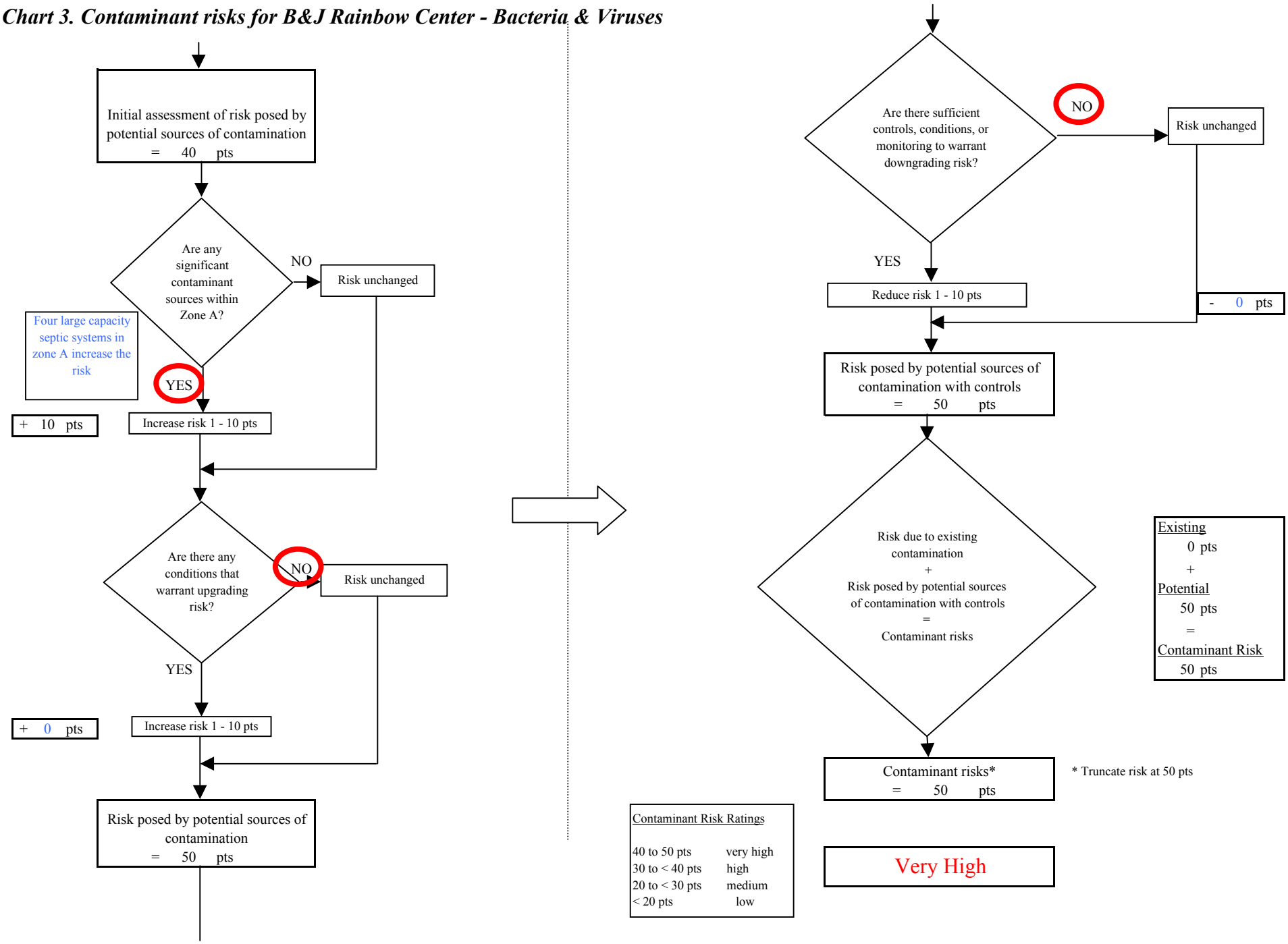
| | Zone A | Zone B | Total |
|---|---|---|---|
| Very Highs(s) | 0 | 0 | 0 |
| High(s) | 4 | 0 | 4 |
| Medium(s) | 0 | 0 | 0 |
| Low(s) | 6 | 3 | 9 |

| | **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 |

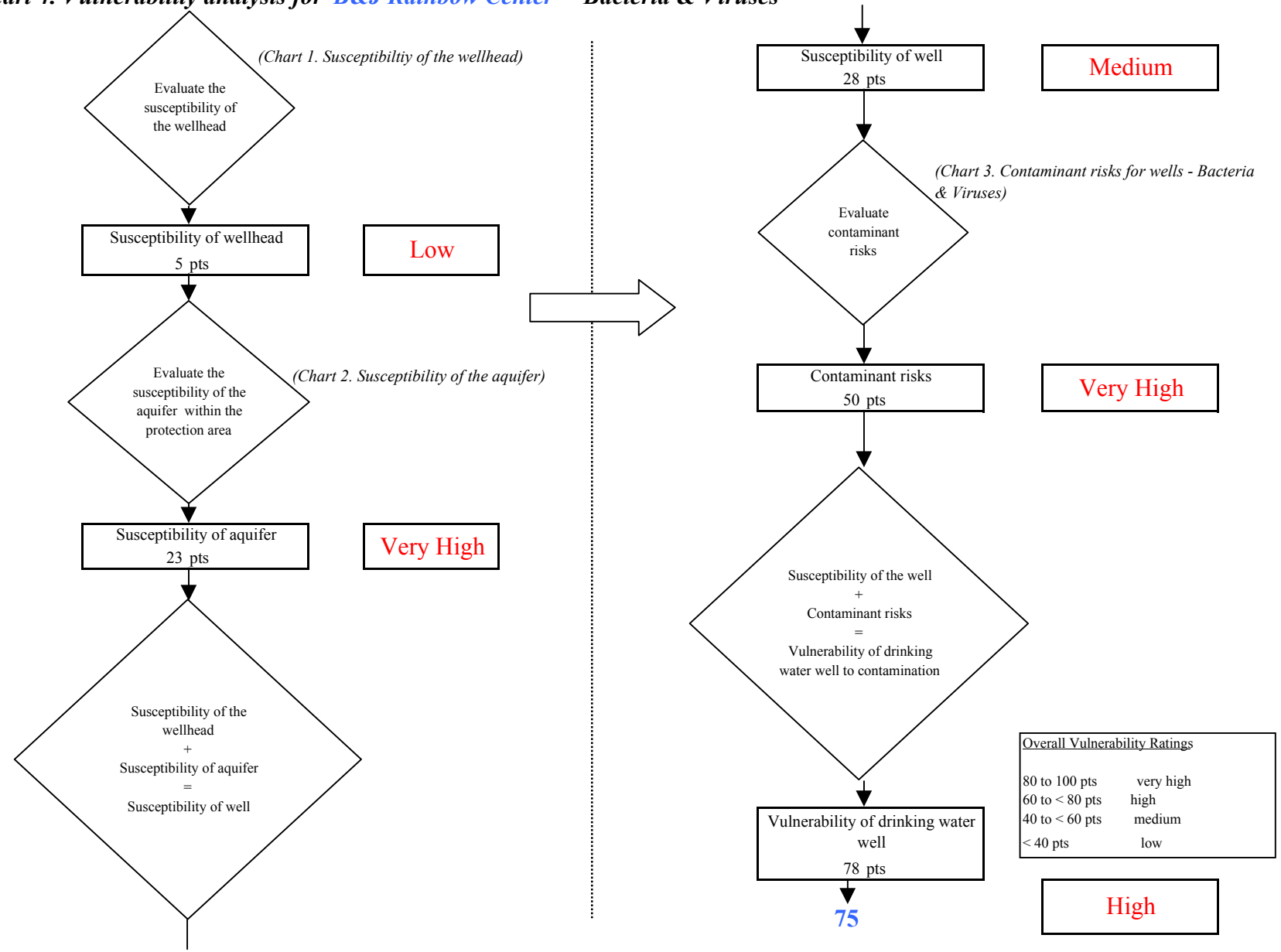
Matrix Score 40

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.

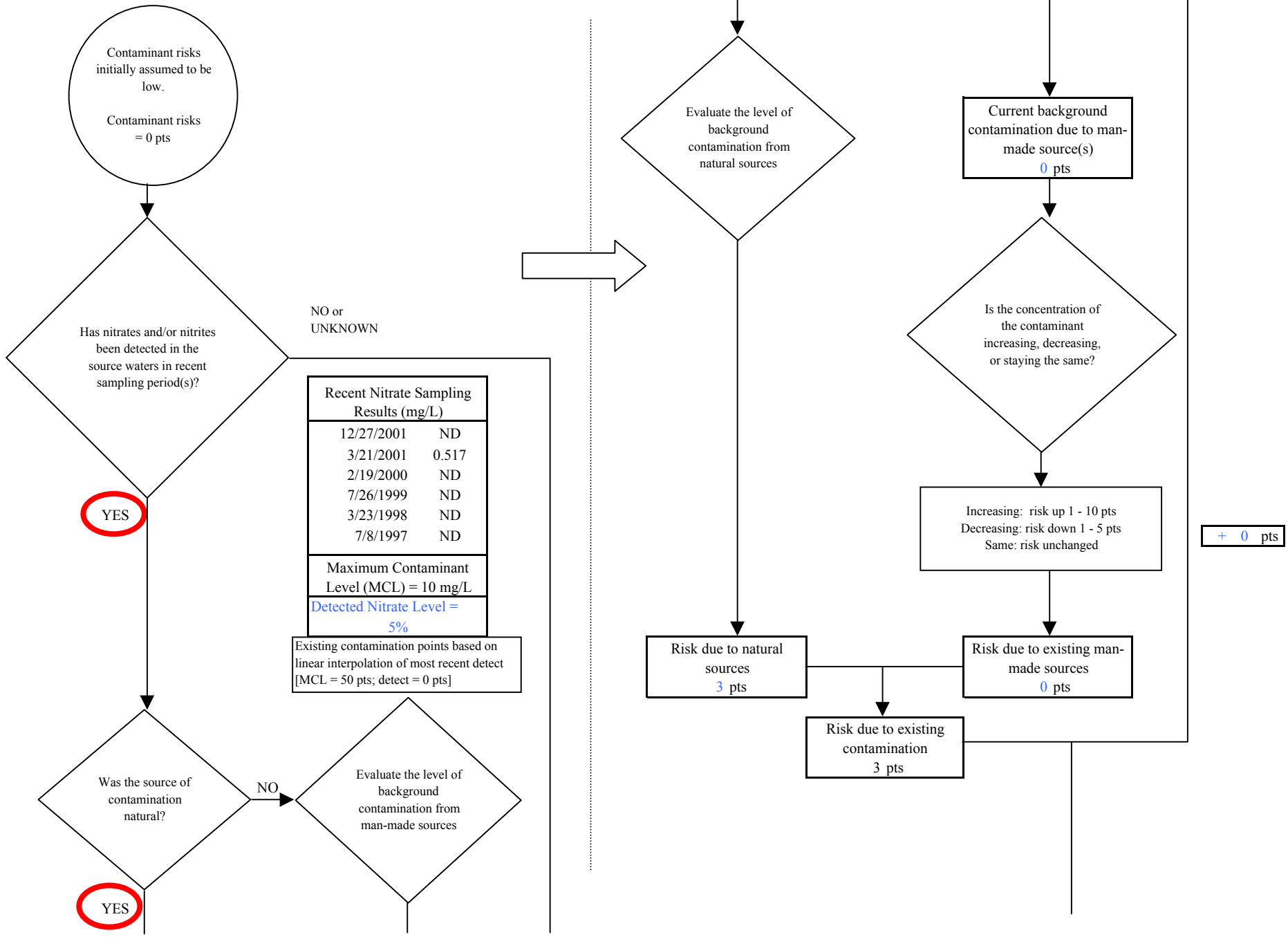
## *Chart 3. Contaminant risks for B&J Rainbow Center - Bacteria & Viruses*



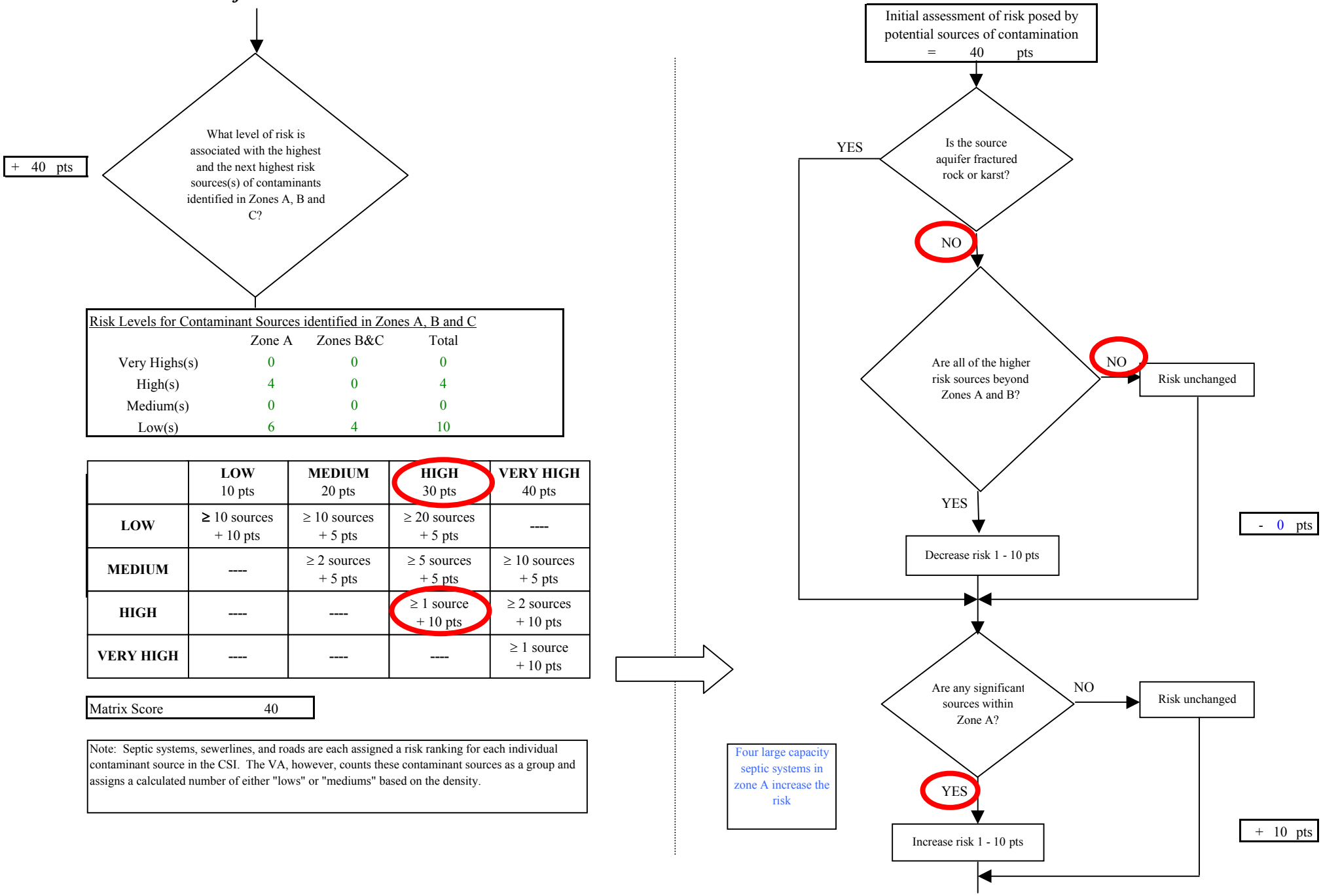
## *Chart 4. Vulnerability analysis for B&J Rainbow Center - Bacteria & Viruses*



## *Chart 5. Contaminant risks for B&J Rainbow Center - Nitrates and Nitrites*



## *Chart 5. Contaminant risks for B&J Rainbow Center - Nitrates and Nitrites*



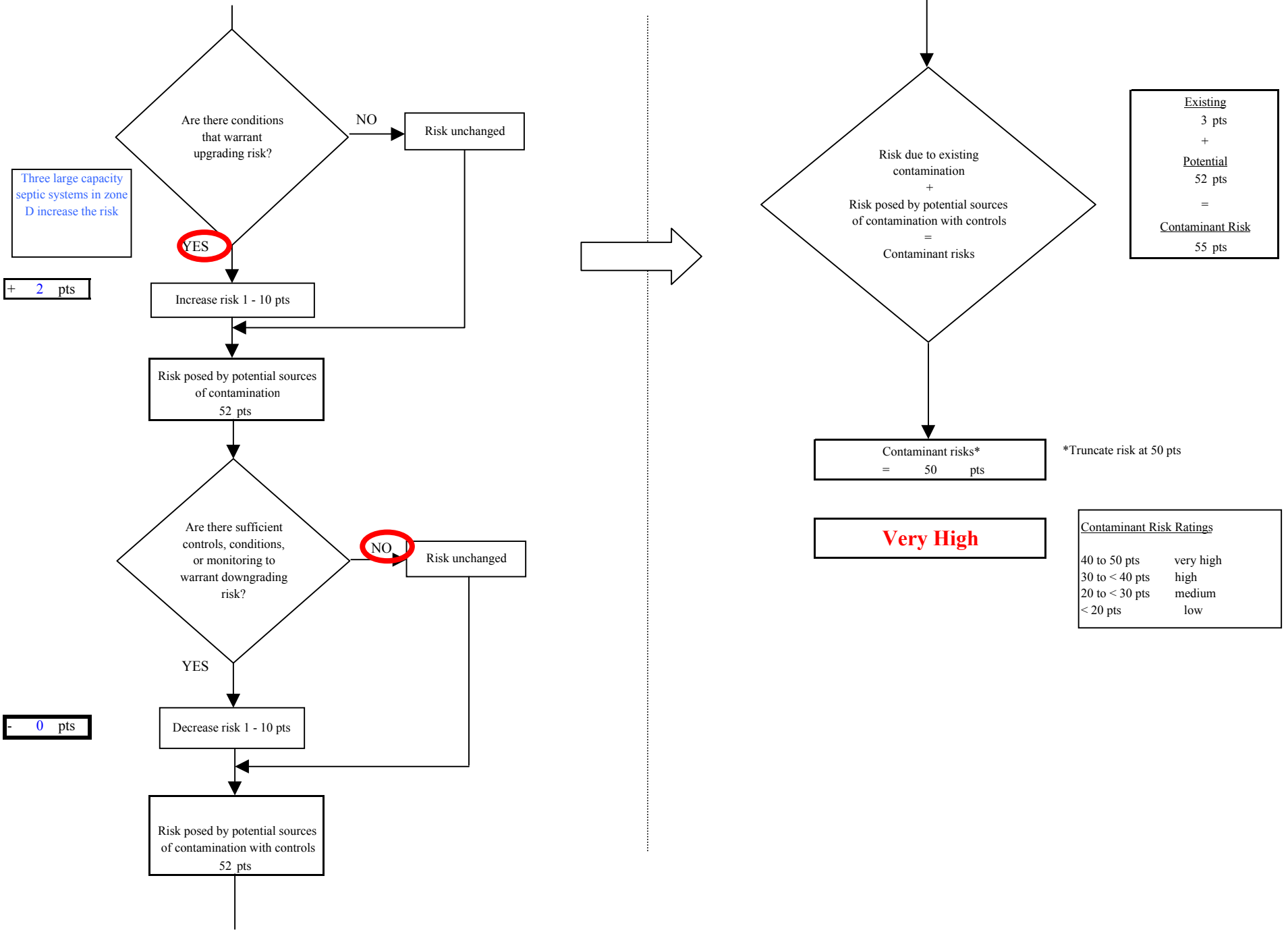

| Risk Levels for Contaminant Sources identified in Zones A, B and C | | | |
|---|---|---|---|
| | Zone A | Zones B&C | Total |
| Very Highs(s) | 0 | 0 | 0 |
| High(s) | 4 | 0 | 4 |
| Medium(s) | 0 | 0 | 0 |
| Low(s) | 6 | 4 | 10 |

| | **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 |

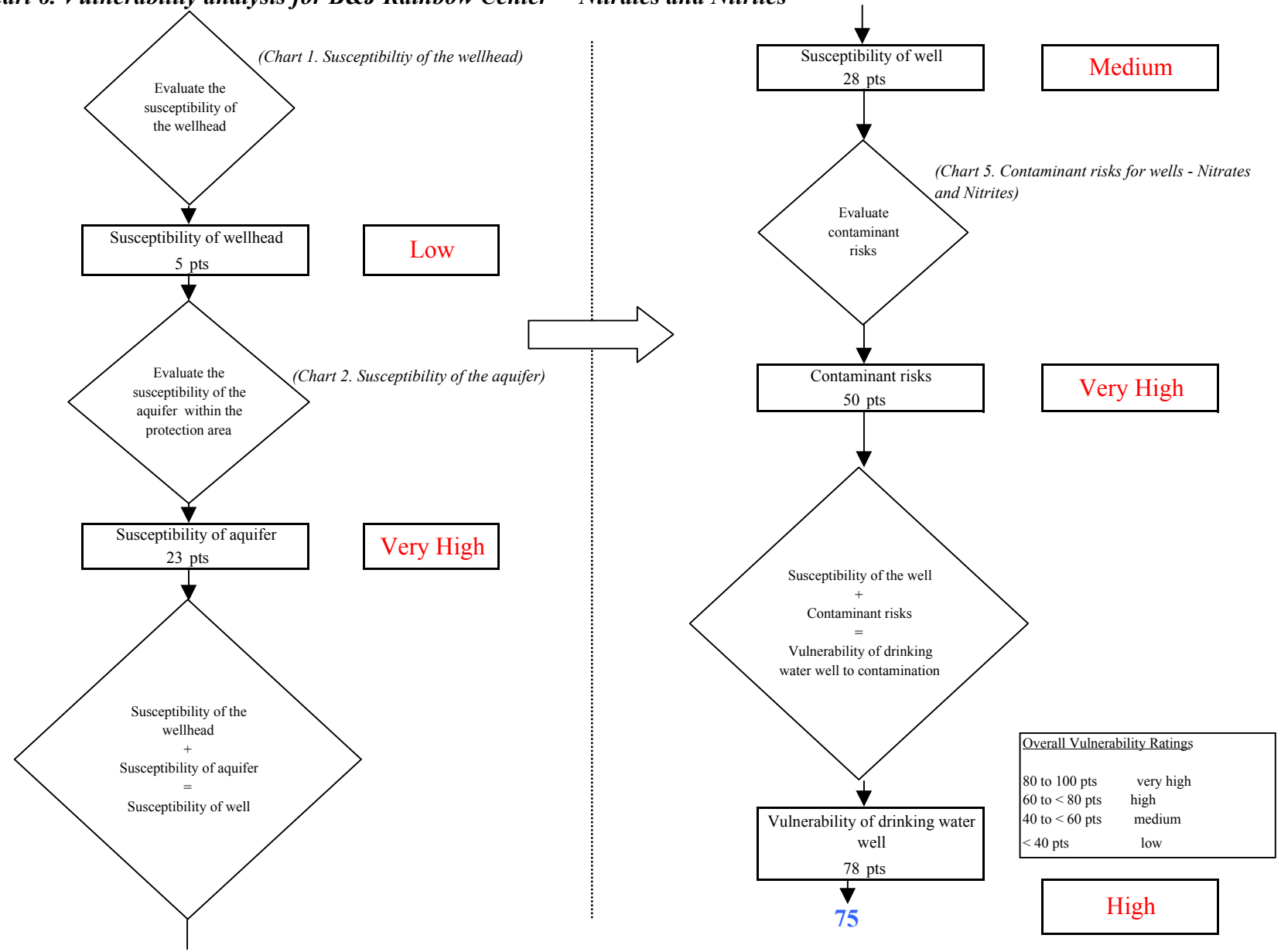
Matrix Score 40

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.

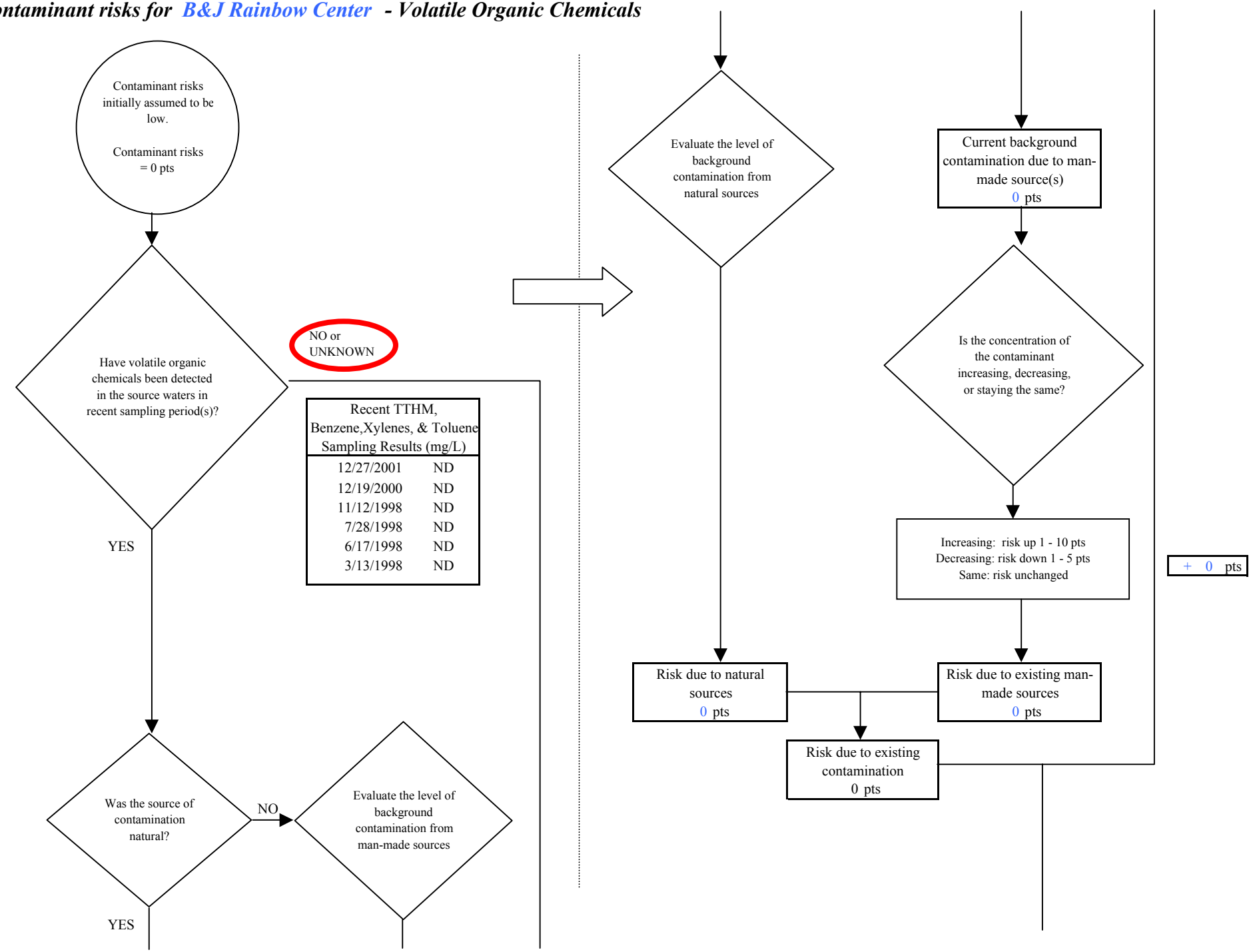
## *Chart 5. Contaminant risks for B&J Rainbow Center - Nitrates and Nitrites*



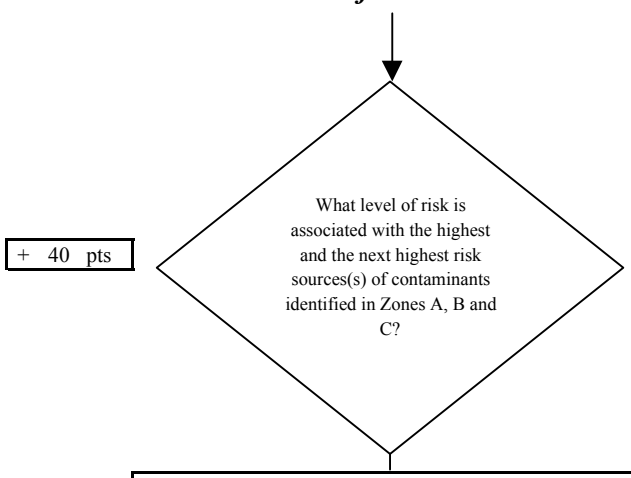
## *Chart 6. Vulnerability analysis for B&J Rainbow Center - Nitrates and Nitrites*



## *Chart 7. Contaminant risks for B&J Rainbow Center - Volatile Organic Chemicals*



## *Chart 7. Contaminant risks for B&J Rainbow Center - Volatile Organic Chemicals*




+ 40 pts

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

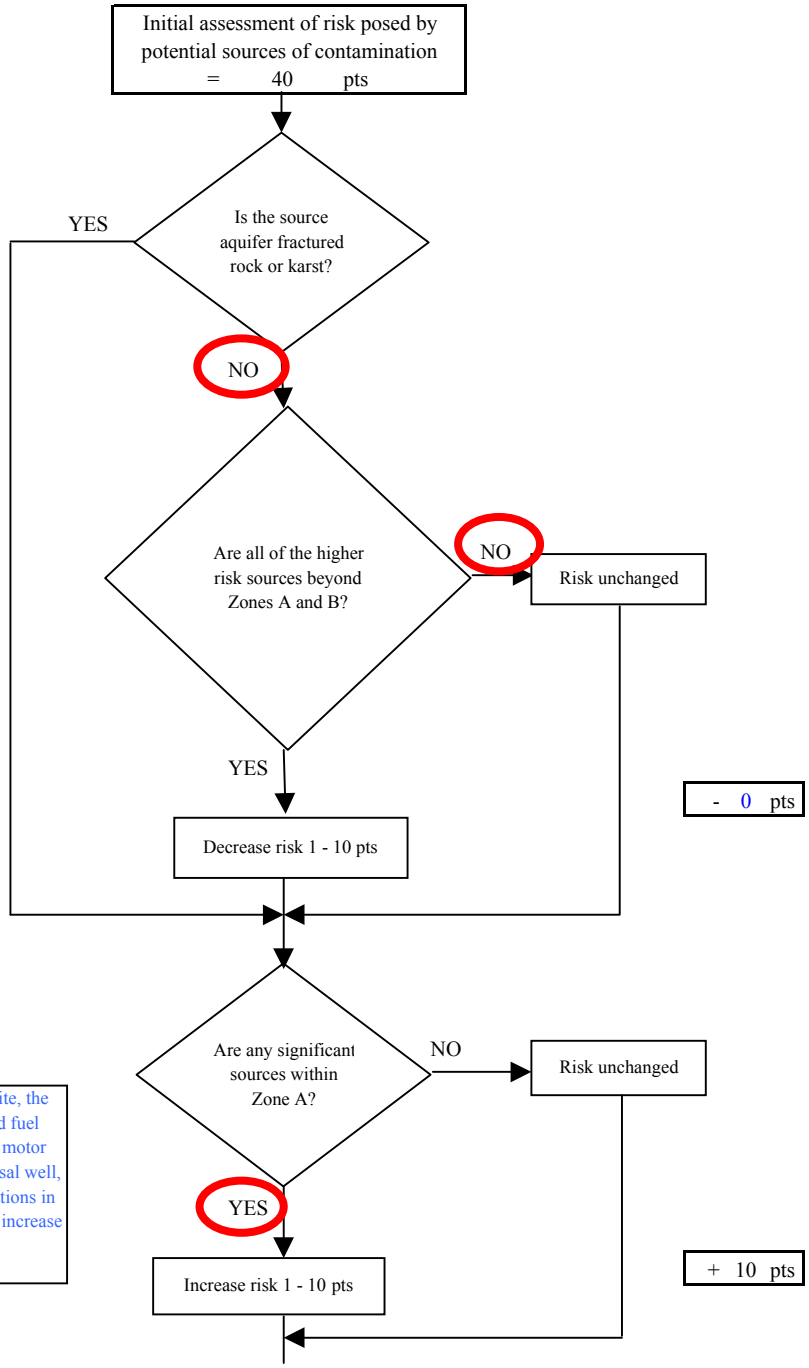
| | Zone A | Zones B&C | Total |
|---|---|---|---|
| Very Highs(s) | 0 | 0 | 0 |
| High(s) | 9 | 0 | 9 |
| Medium(s) | 2 | 1 | 3 |
| Low(s) | 13 | 3 | 16 |

| | **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 |

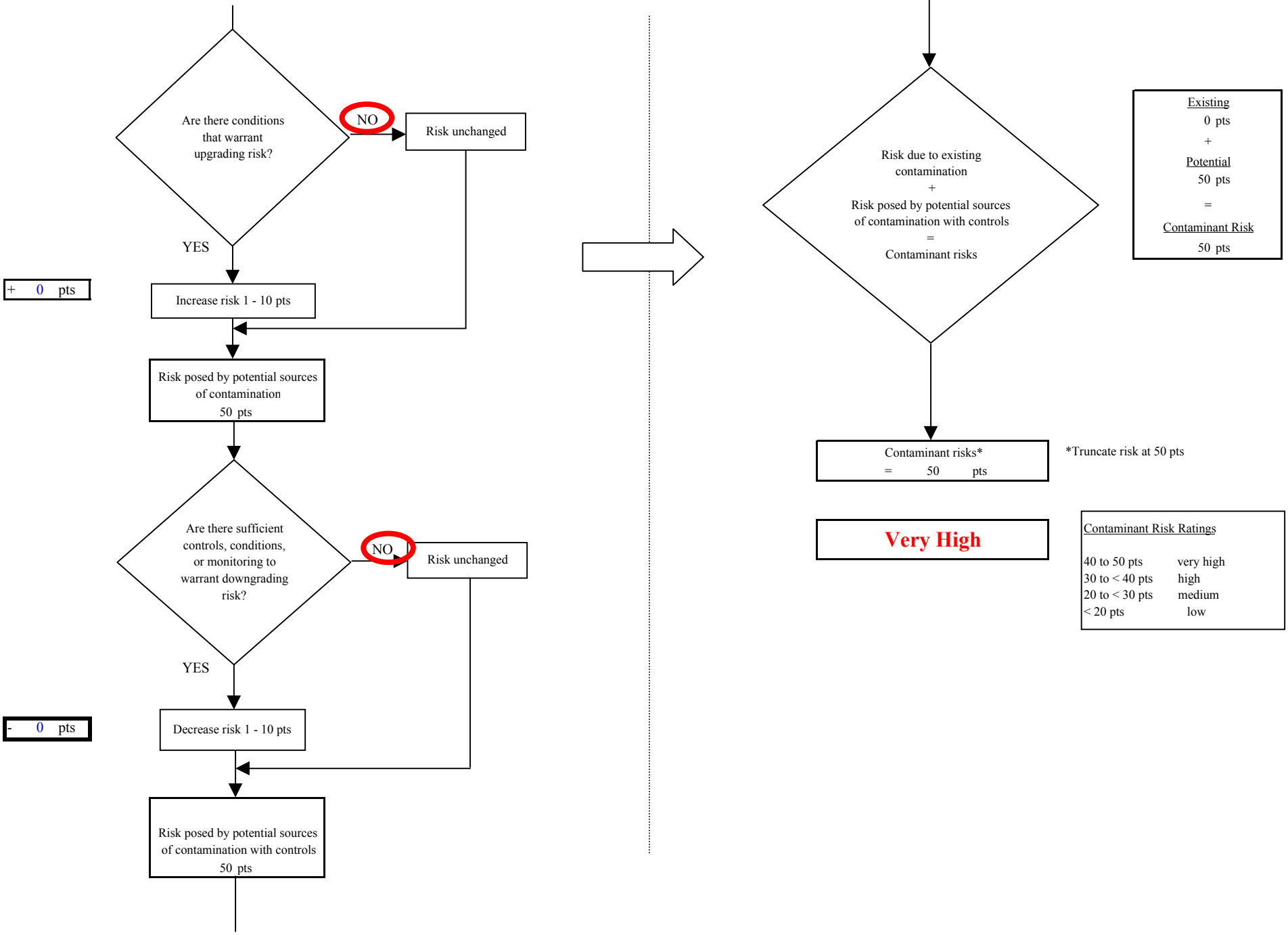
Matrix Score 40

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.

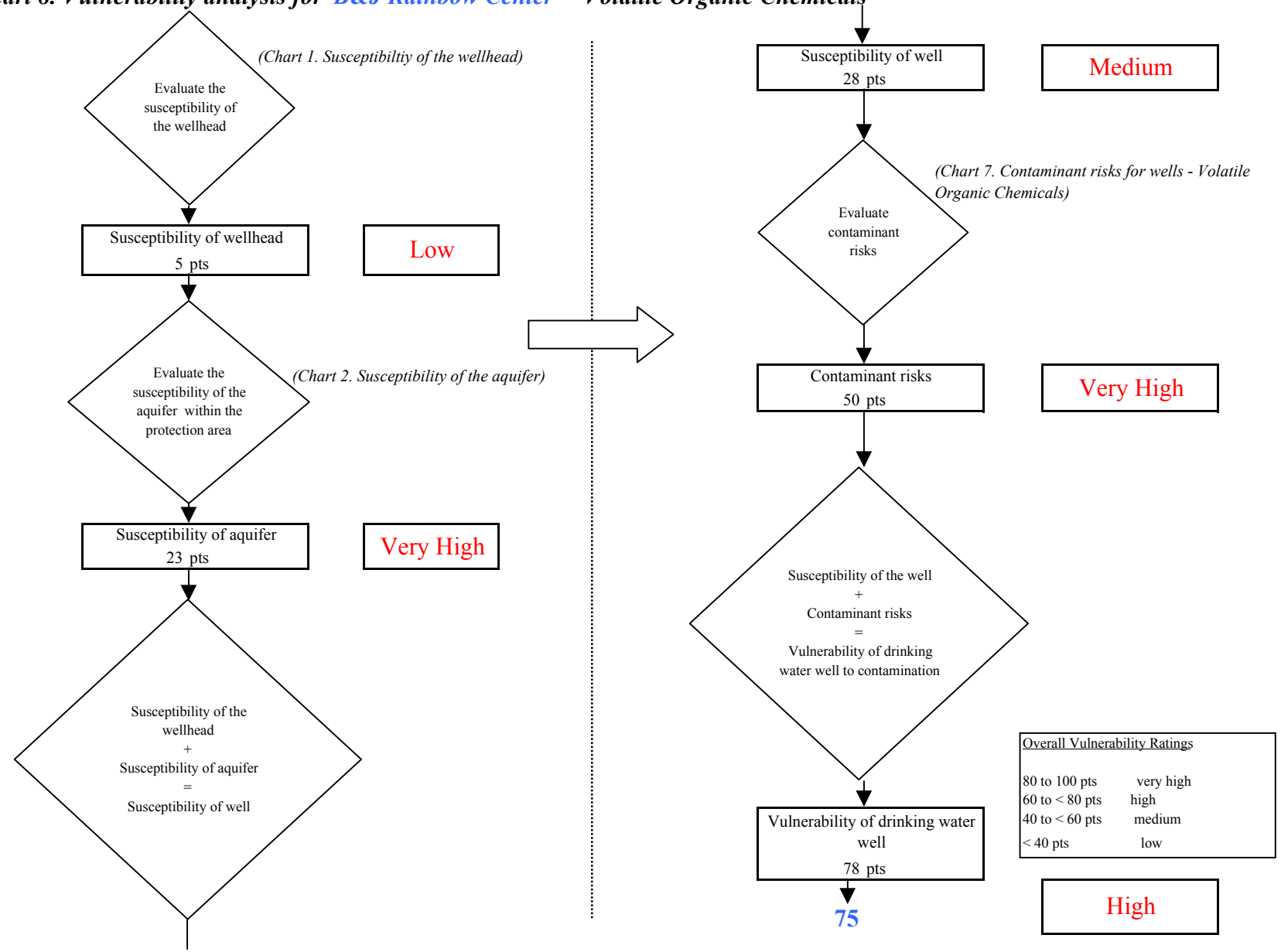
The open LUST site, the five underground fuel storage tanks, the motor vehicle waste disposal well, and the two gas stations in Zone A combine to increase the risk.



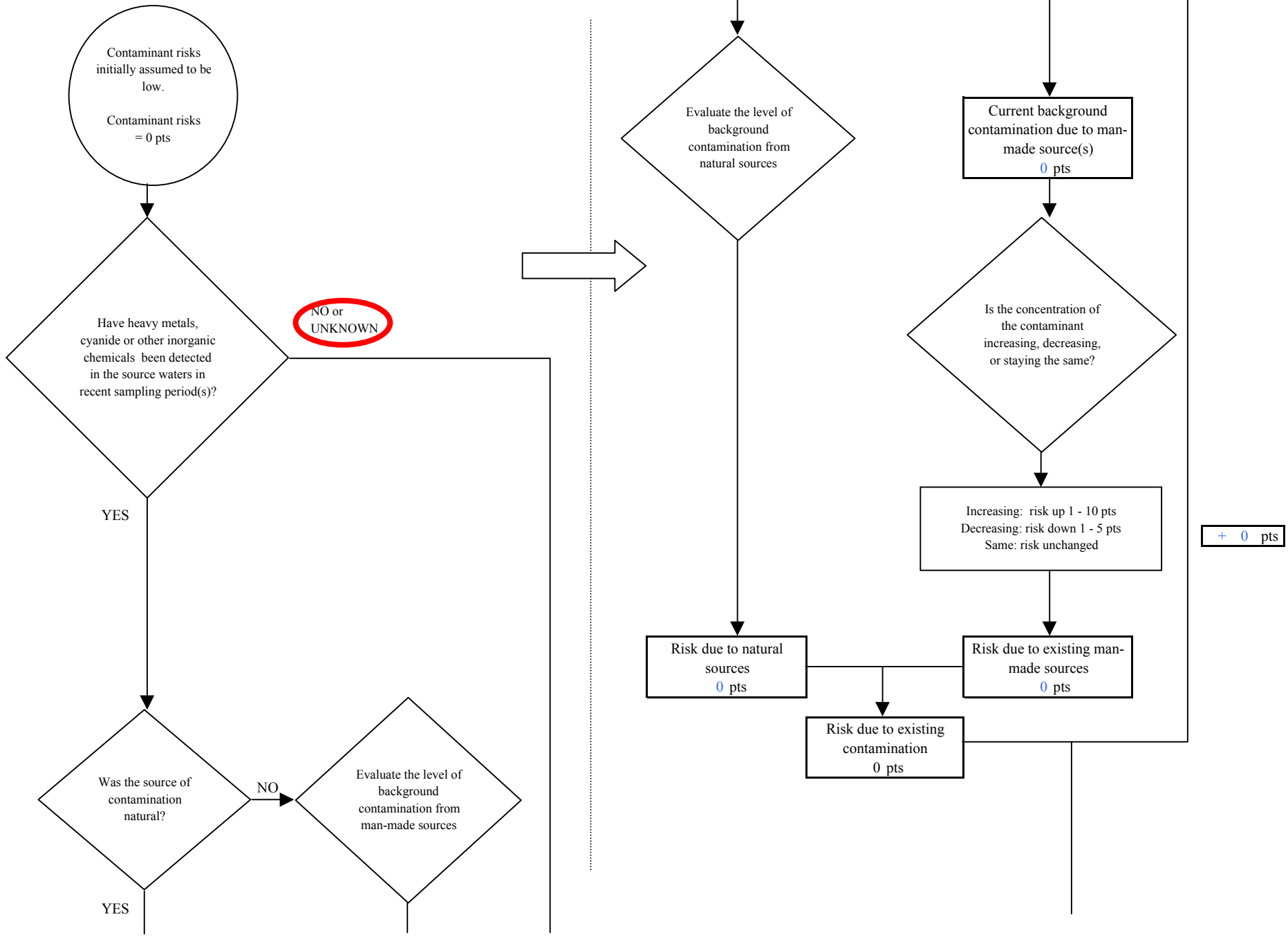
## *Chart 7. Contaminant risks for B&J Rainbow Center - Volatile Organic Chemicals*



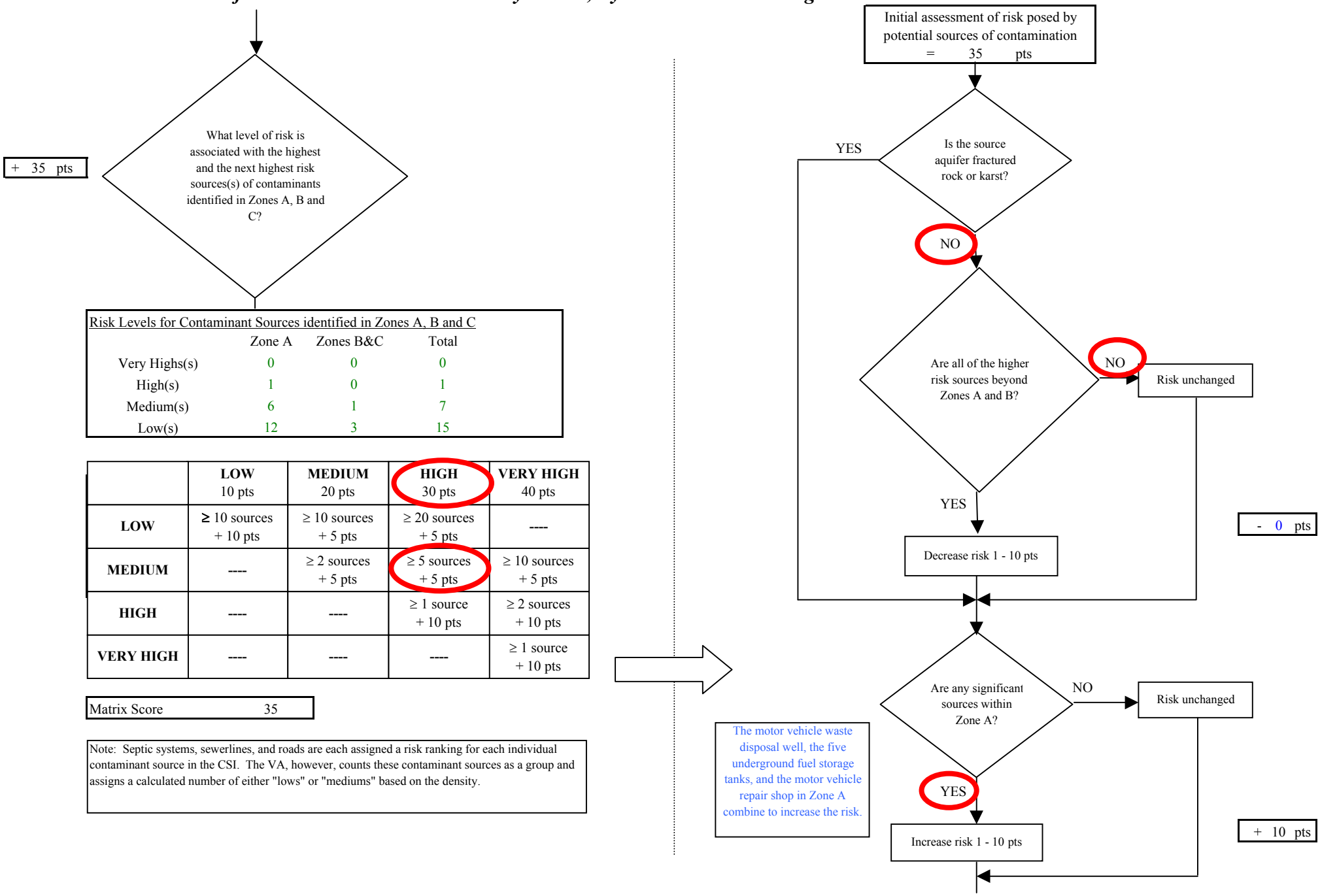
## *Chart 8. Vulnerability analysis for B&J Rainbow Center - Volatile Organic Chemicals*



## *Chart 9. Contaminant risks for B&J Rainbow Center - Heavy Metals, Cyanide and Other Inorganic Chemicals*



## *Chart 9. Contaminant risks for B&J Rainbow Center - Heavy Metals, Cyanide and Other Inorganic Chemicals*




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

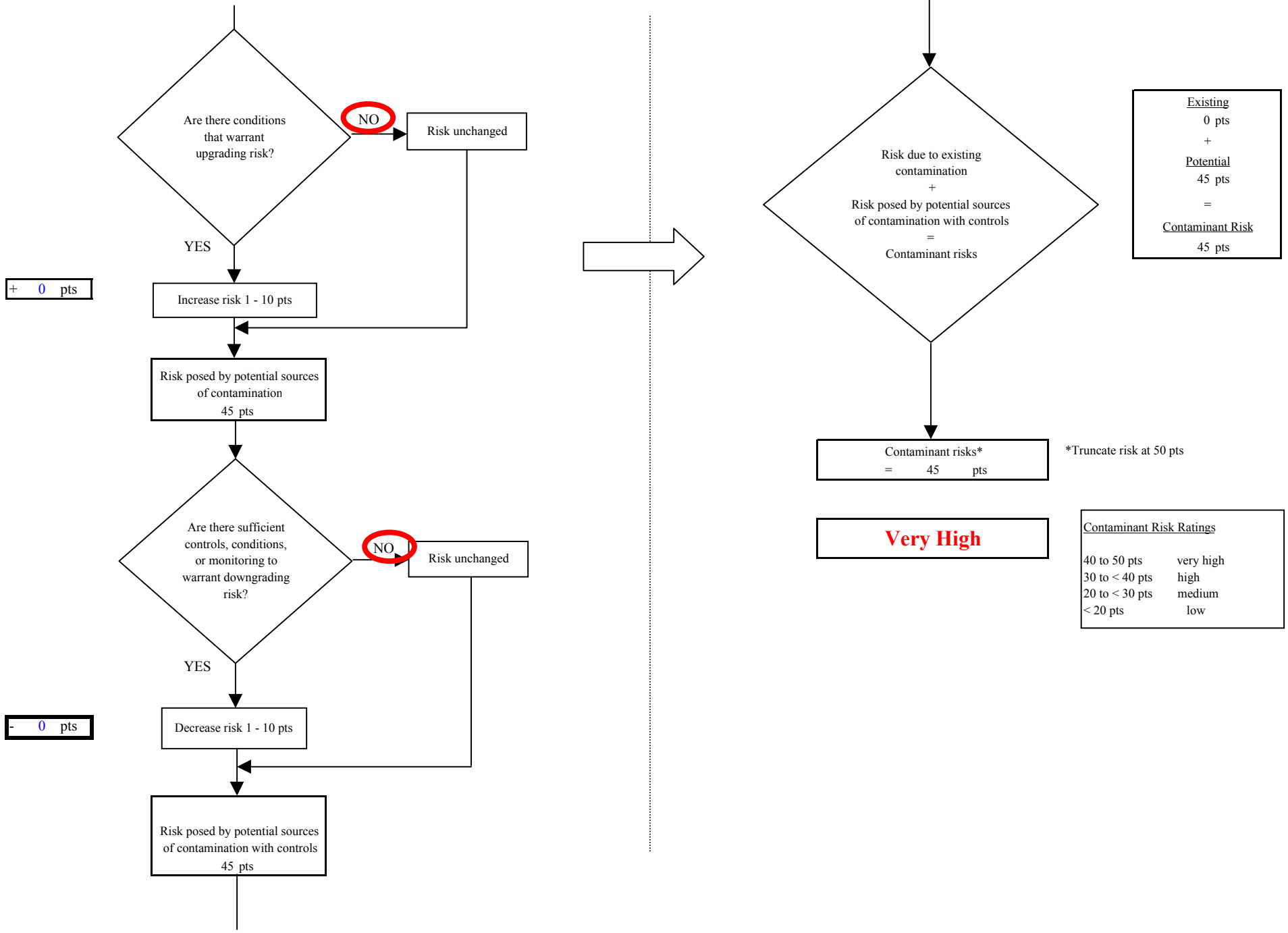
| | Zone A | Zones B&C | Total |
|---|---|---|---|
| Very Highs(s) | 0 | 0 | 0 |
| High(s) | 1 | 0 | 1 |
| Medium(s) | 6 | 1 | 7 |
| Low(s) | 12 | 3 | 15 |

| | **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 |

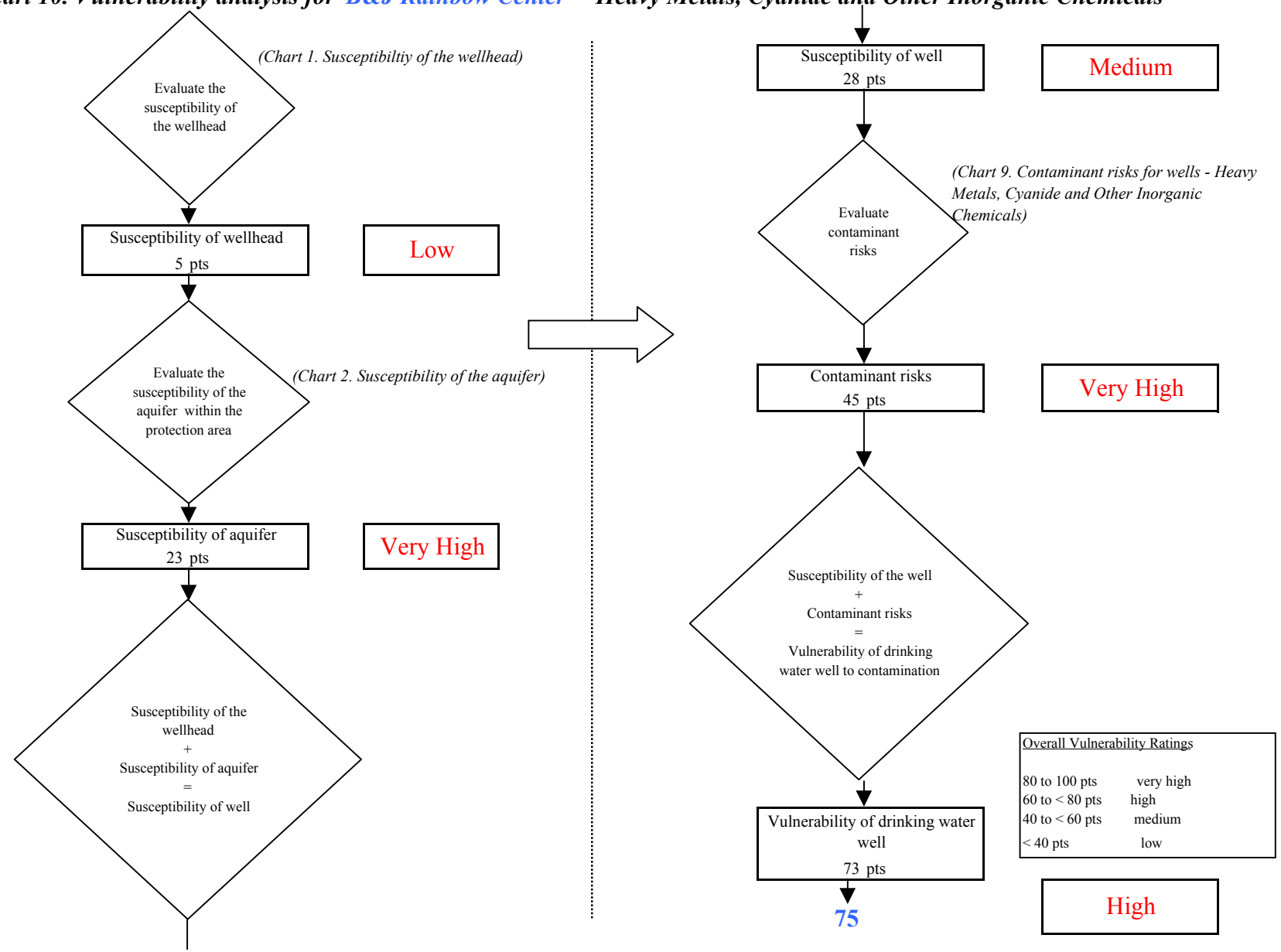
Matrix Score 35

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.

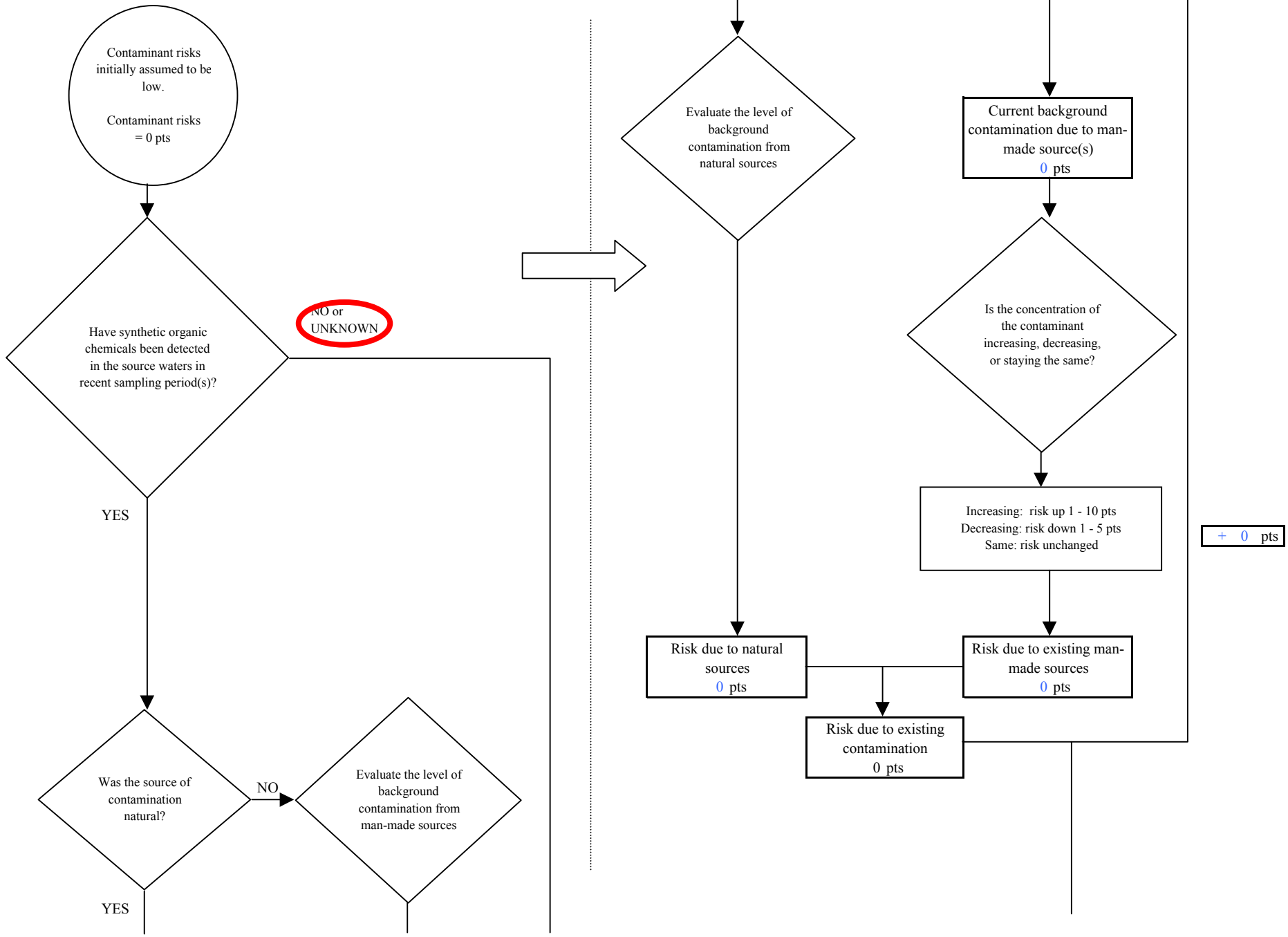
## *Chart 9. Contaminant risks for B&J Rainbow Center - Heavy Metals, Cyanide and Other Inorganic Chemicals*



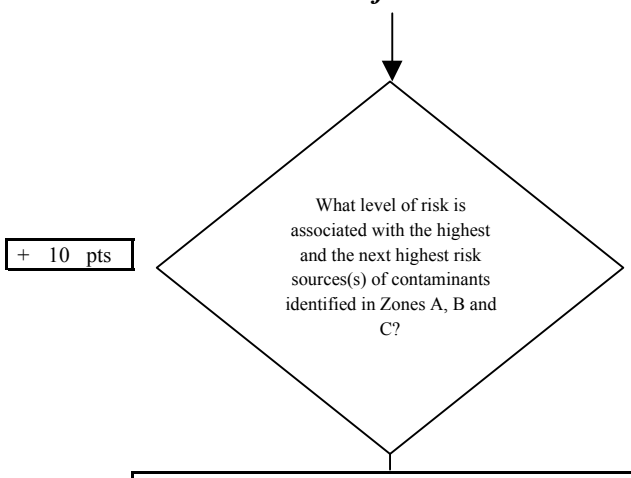
## *Chart 10. Vulnerability analysis for B&J Rainbow Center - Heavy Metals, Cyanide and Other Inorganic Chemicals*



## *Chart 11. Contaminant risks for B&J Rainbow Center - Synthetic Organic Chemicals*



## *Chart 11. Contaminant risks for B&J Rainbow Center - Synthetic Organic Chemicals*




+ 10 pts

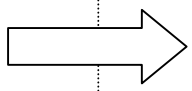
Risk Levels for Contaminant Sources identified in Zones A, B and C

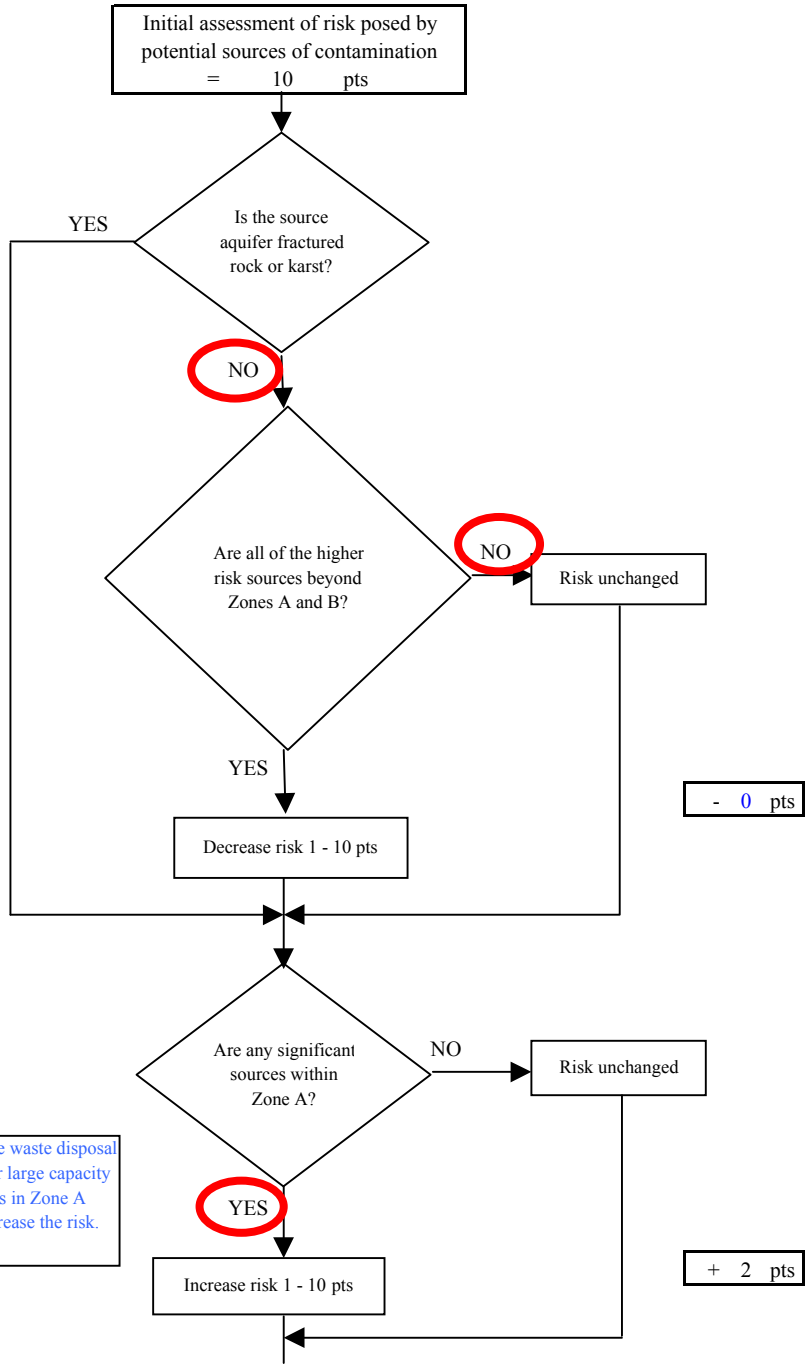
| | Zone A | Zones B&C | Total |
|---|---|---|---|
| Very Highs(s) | 0 | 0 | 0 |
| High(s) | 0 | 0 | 0 |
| Medium(s) | 0 | 0 | 0 |
| Low(s) | 7 | 2 | 9 |

| | **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 10

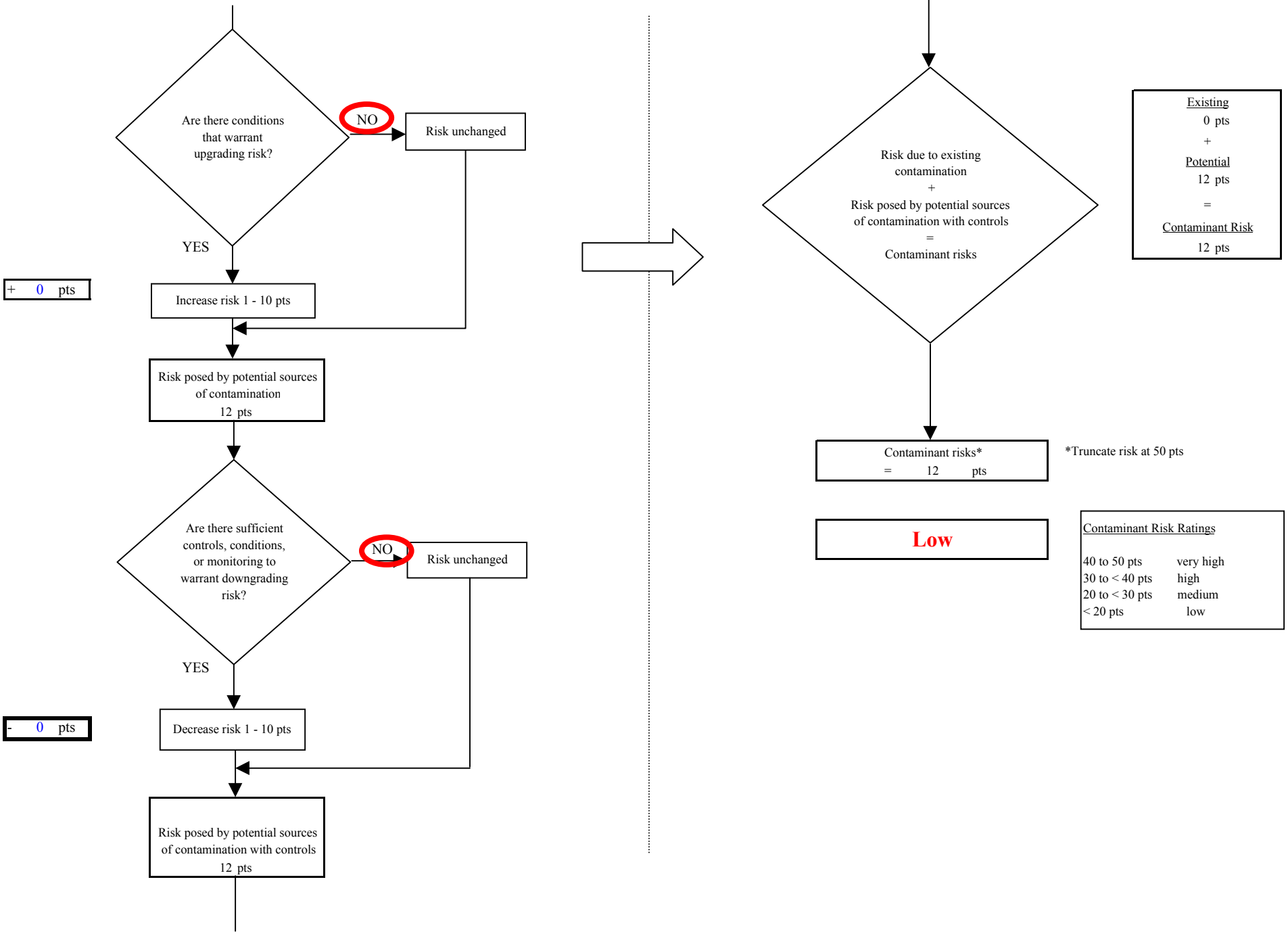
Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.



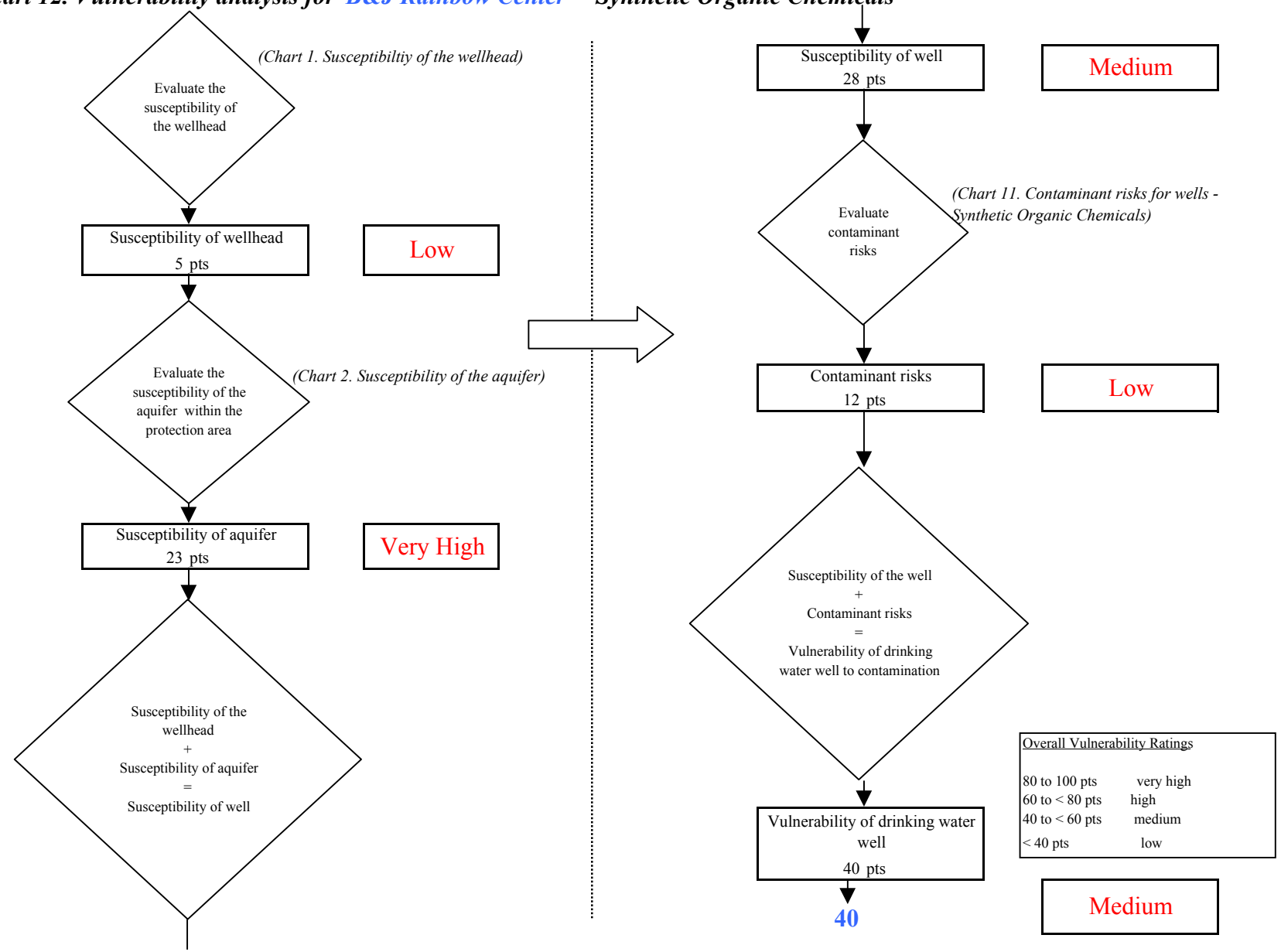



The motor vehicle waste disposal well and the four large capacity septic systems in Zone A combine to increase the risk.

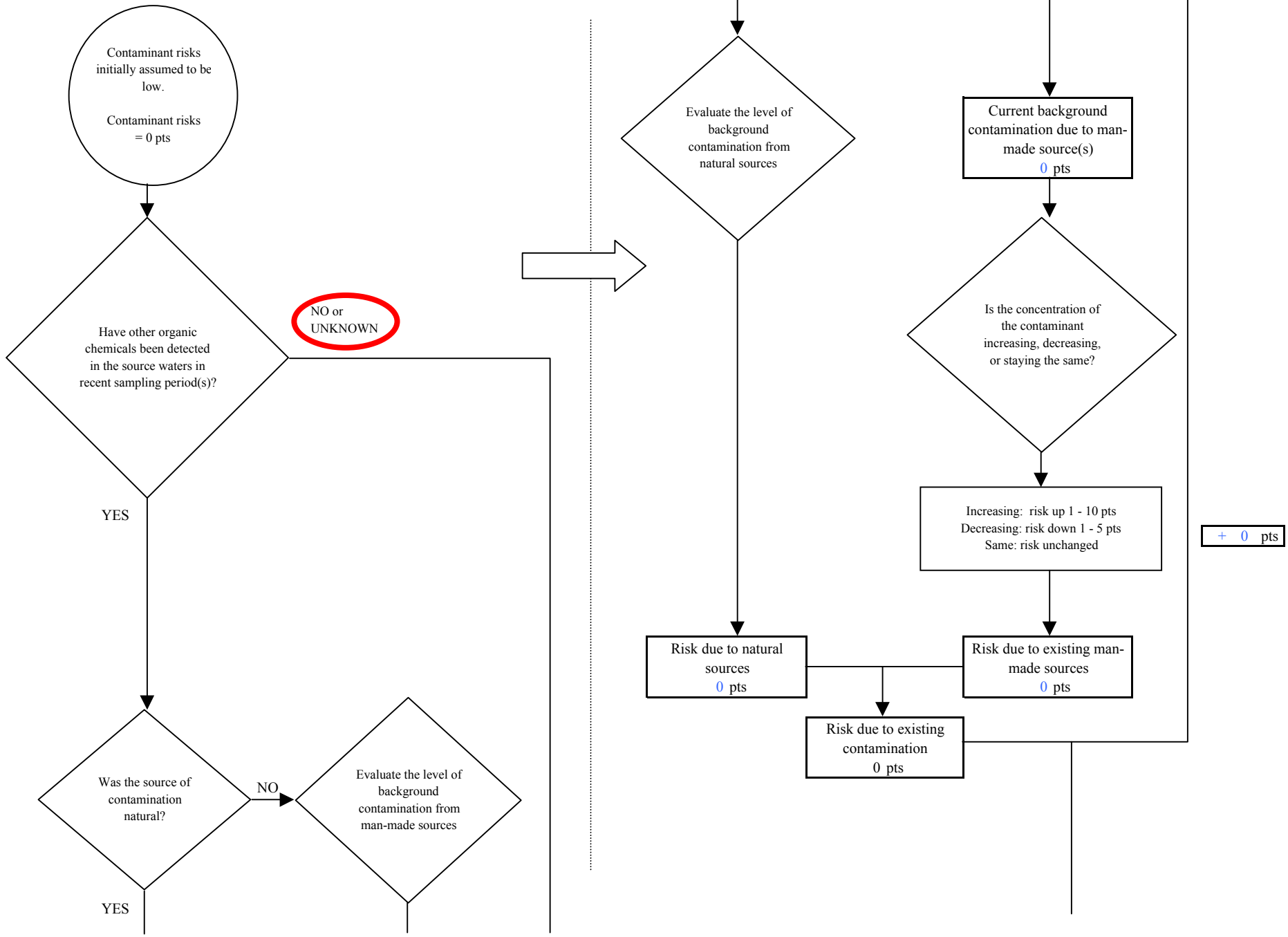
## *Chart 11. Contaminant risks for B&J Rainbow Center - Synthetic Organic Chemicals*



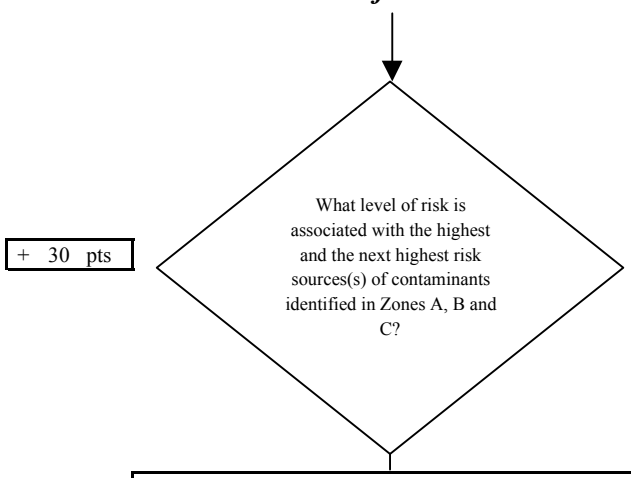
## *Chart 12. Vulnerability analysis for B&J Rainbow Center - Synthetic Organic Chemicals*



## *Chart 13. Contaminant risks for B&J Rainbow Center - Other Organic Chemicals*



## *Chart 13. Contaminant risks for B&J Rainbow Center - Other Organic Chemicals*



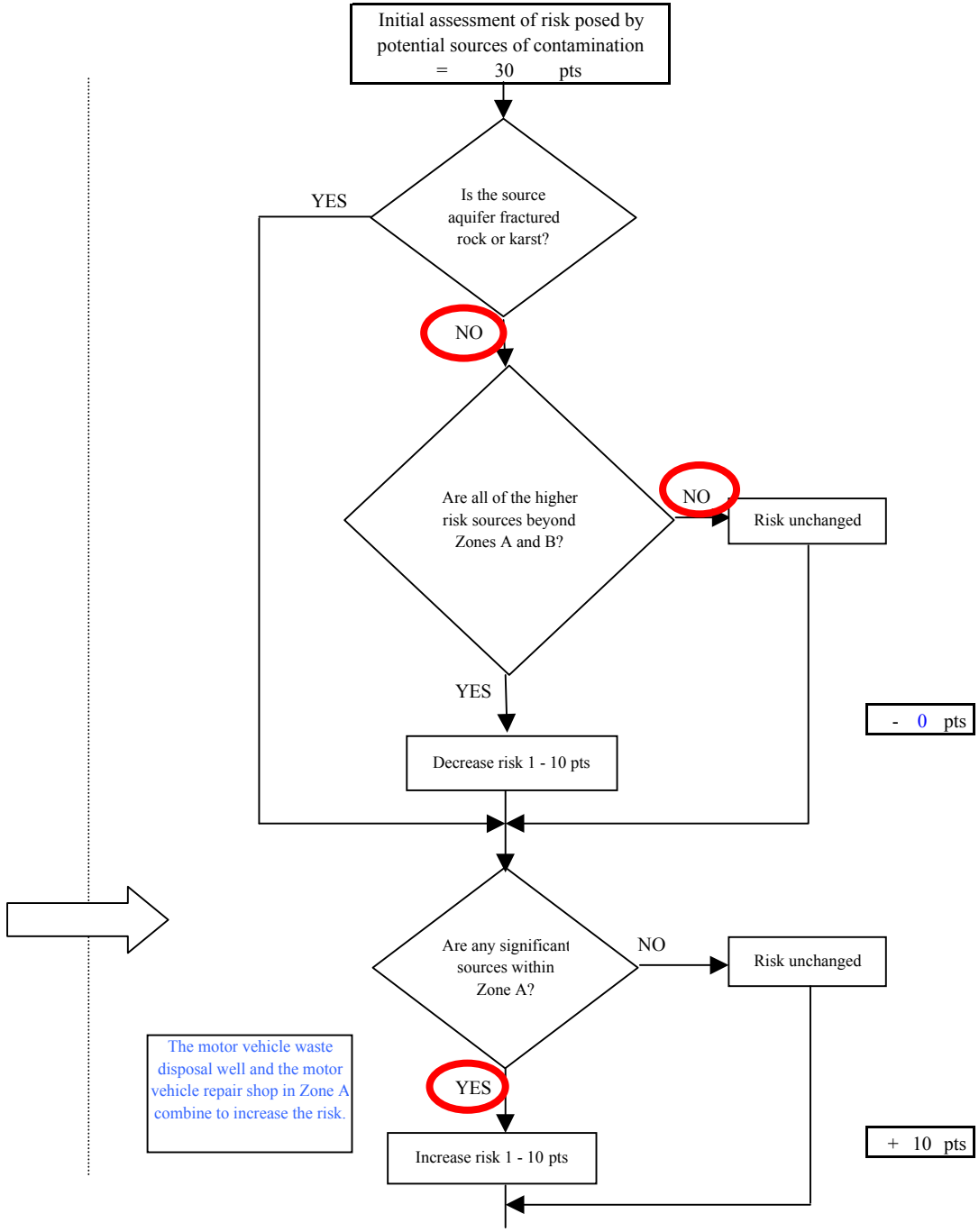

Risk Levels for Contaminant Sources identified in Zones A, B and C

| | Zone A | Zones B&C | Total |
|---|---|---|---|
| Very Highs(s) | 0 | 0 | 0 |
| High(s) | 1 | 0 | 1 |
| Medium(s) | 1 | 1 | 2 |
| Low(s) | 11 | 3 | 14 |

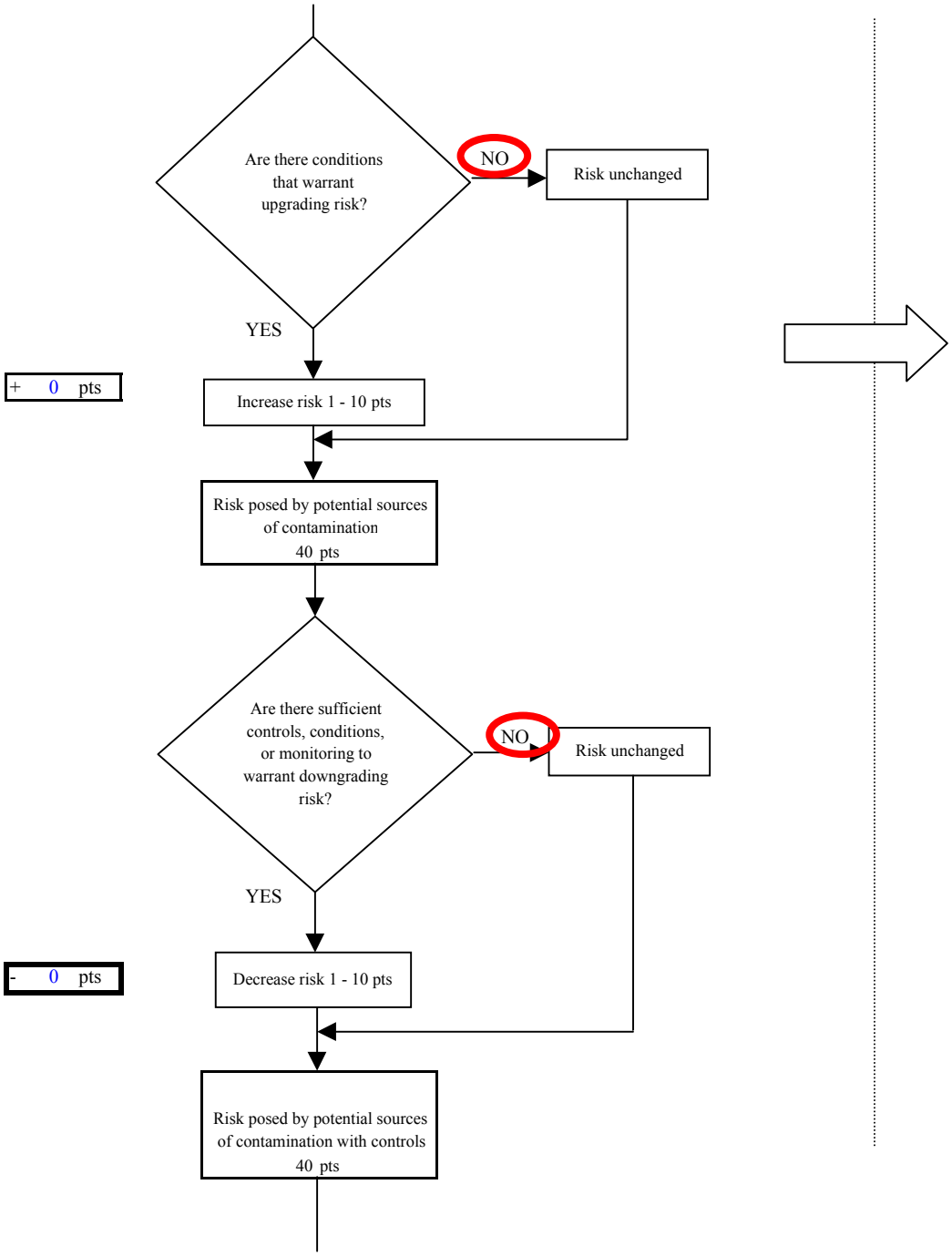
| | **LOW** 10 pts | **MEDIUM** 20 pts | **HIGH** 30 pts | **VERY HIGH** 40 pts |
|---|---|---|---|---|
| **LOW** | ≥ 10 sources + 10 pts | ≥ 10 sources + 5 pts | ≥ 20 sources + 5 pts | ---- |
| **MEDIUM** | ---- | ≥ 2 sources + 5 pts | ≥ 5 sources + 5 pts | ≥ 10 sources + 5 pts |
| **HIGH** | ---- |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

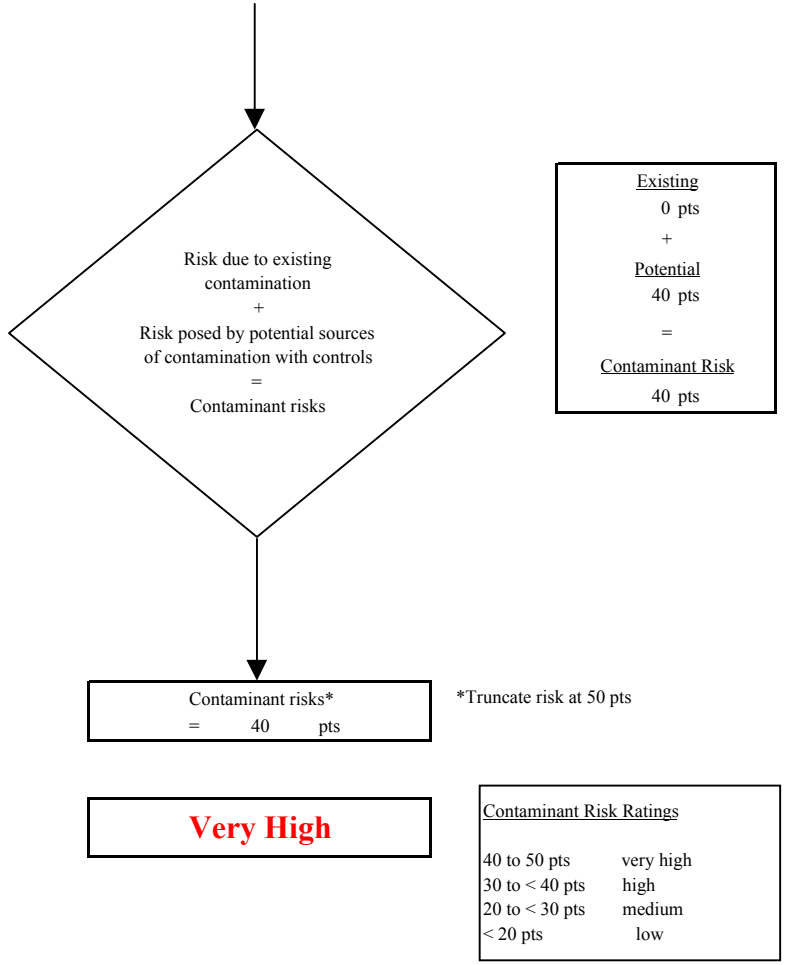
Matrix Score 30

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 13. Contaminant risks for B&J Rainbow Center - Other Organic Chemicals*



## *Chart 14. Vulnerability analysis for B&J Rainbow Center - Other Organic Chemicals*