Hydrogeologic Susceptibility and Vulnerability Assessment for Double Musky Inn Public Drinking Water Well, Girdwood, Alaska

DRINKING WATER PROTECTION PROGRAM REPORT 9

September 2000

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By MICHAEL. J. CROTTEAU

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ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION: 2000

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By Michael J. Crotteau

Drinking Water Protection Program
Alaska Department of Environmental Conservation

EXECUTIVE SUMMARY

Double Musky Inn Public Water System is a Class B (transient/non-community) water system consisting of one well. Identified potential and current sources of contaminants for the Double Musky Inn well include: the motor vehicle parking area surrounding the Double Musky Inn and unsewered residential areas. Overall, the Double Musky Inn's public water system received a vulnerability rating of **Low** for bacteria and viruses, nitrates and/or nitrites, and **Medium** for volatile organic chemicals.

INTRODUCTION

The purpose of this environmental assessment is to provide public water system owners/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 Double Musky Inn's source of public drinking water. This source consists of one well in the Glacier Creek Valley (see Figure 1). 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 performed as a basis for voluntary local protection efforts and to assist agencies in their efforts to reduce risk to this public drinking water supply.

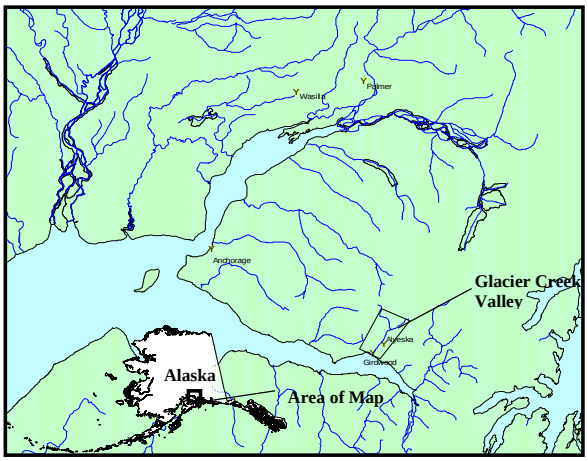


Figure 1. Index map showing the location of the Glacier Creek Valley, Alaska

PHYSIOGRAPHY OF THE GLACIER CREEK VALLEY, ALASKA

Glacier Creek Valley, drained primarily by Glacier Creek, is located near the head of Turnagain Arm of Cook Inlet, approximately 45 miles south of Anchorage, Alaska (see Figure 1). Widened by glaciers and surrounded by steep mountain slopes, the valley is approximately six miles in length and trends northeast-southwest. The valley floor is roughly four miles wide. Elevations within the valley increase inland, from sea level at Turnagain Arm to approximately 6500 feet at the head of the valley. Development comprising the community of Girdwood is present along the lower four miles of the valley.

The floor of the Girdwood Valley is covered primarily by coniferous forests. Bedrock is exposed at the surface and wetlands occur intermittently in the valley floor. Bedrock also crops out at elevation in the mountains. Glacier Creek originates in uplands at the head of the valley, drains an area of approximately 58.2 square miles and is roughly centrally located. A mean annual discharge of 265 cubic feet per second was recorded in Glacier Creek (USGS gaging station near the mouth) from 1965-78. California Creek and Alyeska Creek flow into Glacier Creek. California Creek drains an area of roughly 6.96 square miles. Virgin Creek flows directly into the Turnagain Arm and drains an area of about 3.5 square miles in the valley [*Glass and Brabets*, 1988].

Mean annual precipitation of roughly 40 inches per year was recorded near the mouth of the valley from 1955-66 and 1977-78. At the base of the Alyeska Ski Resort, annual precipitation in excess of 65 inches per year has been recorded (1985-86) [*Glass and Brabets, 1988*].

Mean daily temperature ranges from 65.1° F during cool rainy summers to 13.9° F in snowy winters, with average total snow depths of 197.4 inches [*Western Regional Climate Center*, 2000].

Groundwater flows from bedrock highlands, including steep valley walls, toward sediments in the center of the valley. Flow through valley sediments, or unconsolidated deposits, is generally to the southwest toward Turnagain Arm.

DOUBLE MUSKY INN PUBLIC WATER SYSTEM

Double Musky Inn Public Water System is a Class B (transient/non-community) water system, which is owned and operated by Double Musky Inn. The system consists of one well, which is located in front of the Double Musky Inn near mile 0.5 of Crow Creek Road, northwest of the new Girdwood Townsite (see Figure 2). The well for Double Musky Inn was drilled in 1958 to a total depth of 46 feet below land surface and re-drilled and the casing extended and grouted in 1996. No well log is available for the original well, however, adjacent wells penetrate minor, discontinuous layers of clay and silty gravel through the first 50 feet below land surface. The improved well for Double Musky Inn penetrates gravel (46 to 76 feet below land surface) and discontinuous layers of clay and silty gravelly clay (76 to 110 feet below land surface). The well is screened in the unconfined aquifer from 63 to 75 feet below land surface. Total depth of the well is 111 feet below land surface where it encounters bedrock. The well had a static water level of 41.6 feet below land surface at the time of drilling (April 15, 1996). This water system operates year round and serves approximately three residents and 160 non-residents through a single connection to the restaurant.

ASSESSMENT AND PROTECTION AREA FOR DOUBLE MUSKY INN'S DRINKING WATER SOURCE

The Drinking Water Protection and Assessment Area that has been established for Double Musky Inn's public drinking water well is the area that is most sensitive

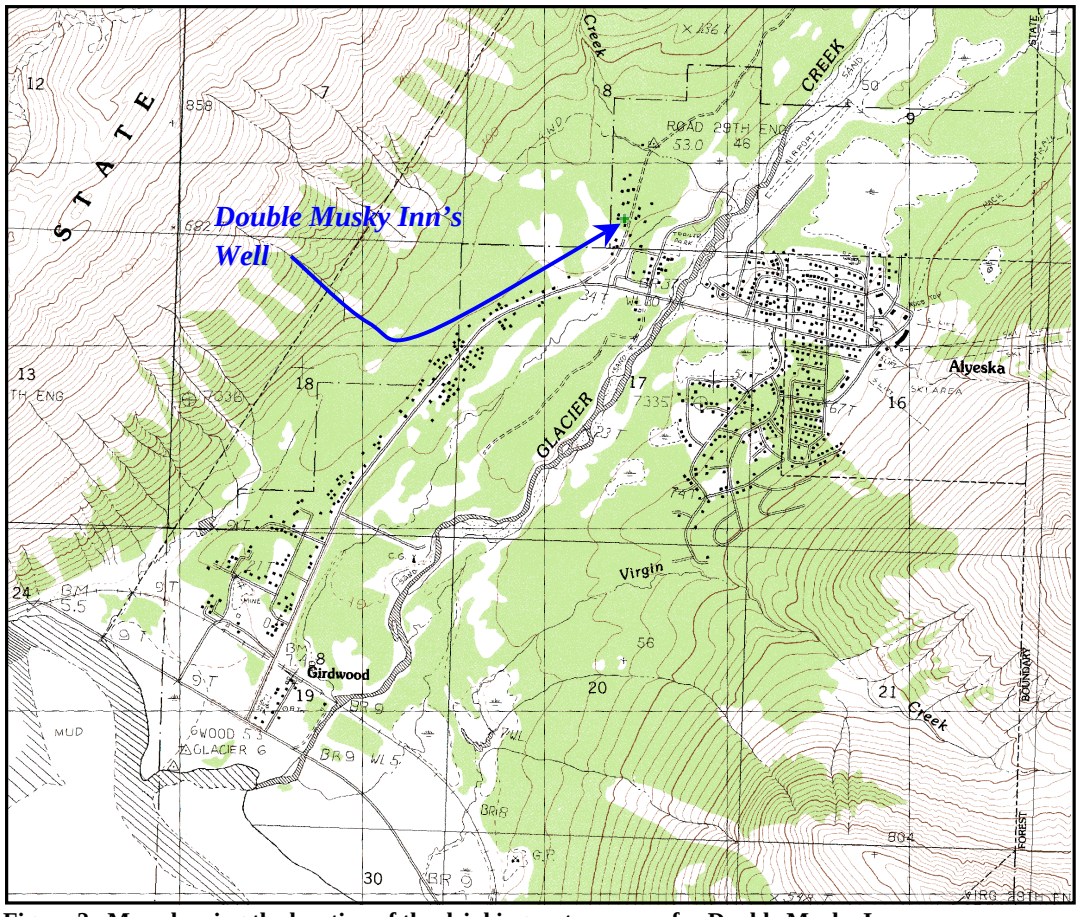


Figure 2. Map showing the location of the drinking water source for Double Musky Inn.

to contamination. This area has served as a basis for assessing the risk of the drinking water source to contamination. This zone around the drinking water source is the most critical area to the preservation of the quality of this water system's drinking water. Therefore, this area will also serve as the area of focus for voluntary protection efforts.

Conceptually, surface water and groundwater flow is downgradient from steep bedrock slopes toward the unconsolidated stream and glacial deposits in the valley (see Figure 4). A 2-dimensional groundwater flow model was built to simulate groundwater flow in the saturated valley sediments (water table aquifer). This model was used as a guide in the first step in establishing the protection and assessment area for Double Musky Inn's source of public drinking water. Additional methods were further employed to take into account any uncertainties in groundwater flow and aquifer characteristics to arrive at meaningful and conservative protection and assessment area with respect to public health (Please refer to the Guidance Manual for Class B Public Water Systems for additional information).

The Drinking Water Protection and Assessment 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 and Assessment Area for the Double Musky Inn contains two zones, Zone A and (See Map 1 - Map 2 in Appendix B). Zone A corresponds to ¼ of the distance to the 2-year time-of-travel. Depending on where a contaminant source is located within Zone A, travel time for a contaminant to the well may be on the order of several days to several hours.

The Zone B protection and assessment area for Double Musky Inn corresponds to a time-of-travel of less than two years. Zone B extends up-slope to the top of the watershed divide to take into account contaminants that may flow overland or in California Creek and enter valley sediments.

INVENTORY OF CONTAMINANT SOURCES

The Drinking Water Protection Program has completed an inventory of potential and existing sources of contamination within Double Musky Inn's Drinking Water Assessment and Protection Area. 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.

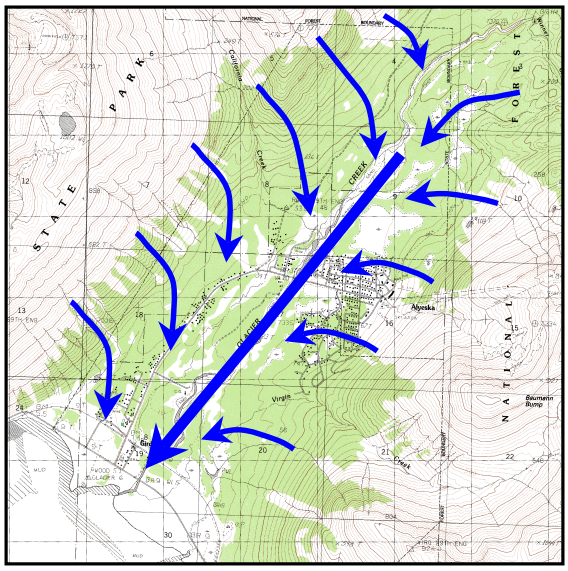


Figure 3. Map showing the conceptual groundwater flow in the Glacier Creek Valley.

For the basis of this assessment as well as all Class B public water systems, three categories of drinking water contaminants were inventoried. They include:

- Bacteria and viruses;
- Nitrates and/or nitrites; and
- Volatile organic chemicals.

Map 3 and Map 4 in Appendix C depict the Contaminant Source Inventory for Double Musky Inn. Inventoried potential sources of contamination within Zones A through Zone B were associated with residential type activities (see Table 1 in Appendix A). Below is a summary of the potential sources inventoried within Double Musky Inn's protection and assessment area:

- Motor vehicle parking areas; and
- Unsewered residential areas;

These potential and existing contaminant sources present risk for all three categories of drinking water contaminants for Double Musky Inn's drinking water source (See Page 5 for further discussion of these potential and existing sources of contamination).

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/density of those types of contaminant sources as well as the proximity of those sources to the well.

VULNERABILITY OF DOUBLE MUSKY INN'S DRINKING WATER SOURCE

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

- natural susceptibility; and
- contaminant risks.

Appendix D contains eight charts, which together form the 'Vulnerability Analysis'. Chart 1 contains the 'Vulnerability Analysis' for bacteria and viruses. Chart 2 analyzes the 'Susceptibility of the Wellhead' to contamination by looking at the construction of the well and its surrounding area. Chart 3 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. Lastly, Chart 4 analyzes 'Contaminant Risks' for the drinking water source with respect to bacteria and viruses. This portion of the analysis examines any existing or historical contamination that has been detected at the drinking water source through routine sampling. It also reviews contamination that has or may have occurred but has not arrived at the well. The 'Contaminant Risks' portion of the analysis also considers potential sources of contaminants. Chart 5 through Chart 8 contains the Vulnerability Analysis for nitrates and/or nitrites and volatile organic chemicals, respectively.

Each of the three 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 susceptibility of the aquifer and the well to contamination is achieved by analyzing the properties of the aquifer and the well. The Double Musky Inn well, penetrates mostly gravel and only minor, discontinuous layers of clay, which provide little if any of a protective barrier for the movement of contaminants in the subsurface. However, the water table is encountered approximately 40 feet below land surface. The well appears to be properly grouted, which can prevent the transport of contaminants along the well casing. Combining the susceptibility of the wellhead and the aquifer to contamination leads to a score (0 – 50 points) and rating of overall Susceptibility (See Appendix D). Table 1 shows the overall Susceptibility score and rating for Double Musky Inn.

Table 1. Susceptibility of the Wellhead and Aquifer to Contamination

	Score	Rating
Susceptibility	19	Medium

Contaminant risks to a drinking water source depend on the type, number and/or density, and distribution of contaminant sources. Motor vehicle parking areas and residential areas contribute the highest risk for potential contamination to the Double Musky Inn's source of public drinking water.

A score (0 – 50 points) and rating of Contaminant Risks (See Appendix D) is assigned based on the findings of the Contaminant Source Inventory (Appendix A - Table 1 – Table 4). Table 2 below summarizes the Contaminant risks for Double Musky Inn for each category of drinking contaminants.

Table 2. Contaminant Risks

Contaminant Risks	Score	Rating
Bacteria and Viruses	13	Low
Nitrates and/or Nitrites	18	Low
Volatile Organic Chemicals	20	Medium

Vulnerability of the drinking water source 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 three categories of drinking water contaminants (See Appendix D). Note: scores are rounded off to the nearest five.

Table 3. Overall Vulnerability of Double Musky Inn Public Drinking Water System to Contamination by Category

Category	Score	Rating
Bacteria & Viruses	30	Low
Nitrates/Nitrites	35	Low
Volatile Organic Chemicals	40	Medium

Tables 2 through 4 in Appendix A contain the ranking of potential and existing sources of contamination with respect to bacteria and viruses, nitrates/nitrites, and volatile organic chemicals, respectively.

Residential areas rank as the highest sources of bacteria and viruses as well as nitrates and/or nitrites for Double Musky Inn. The residential lots within the Drinking Water Protection Area for the Double Musky Inn are not connected to domestic wastewater sewer lines. All residential areas within the Protection Area rank as low risk for all three categories from potential release from spilled fuel, on-site septic systems, and other activities associated with these areas.

The motor vehicle parking area surrounding the Double Musky Inn ranks as the highest sources of volatile organic chemicals for this source of public drinking water. This risk of contamination stems from the likelihood that parked cars will leak gasoline or oil onto the gravel in this area, which is only several feet away from the well, itself. The motor vehicle parking area represents a medium risk of volatile organic chemical contamination for the Double Musky Inn.

SUMMARY

A *Source Water Assessment* has been completed for the Double Musky Inn's source of public drinking water. The overall vulnerability of this source to contamination is **Low** for bacteria and viruses and nitrates and/or nitrites, and **Medium** for volatile 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 agencies to protect public health. It is anticipated that *Source Water Assessments* will be updated every five years to reflect any changes in the susceptibility and/or vulnerability of the public drinking water system.

REFERENCES CITED

Glass, Roy L. and Brabets, Timothy P., 1988, Summary of water resources data for the Girdwood-Alyeska Area, Alaska: USGS Open-File Report 87-678.

Municipality of Anchorage, Management Information Systems Department, 2000, Data layer representing flood hazard zones within specific study areas (after U.S. Army Corps of Engineers FEMA – 1979).

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

Contaminant Source Inventory and Risk Ranking for Double Musky Inn

Table 1

Contaminant Source Inventory for Chair 5 Restaurant Public Water System

PWSID 214251

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Location	Map Number	Notes/Comments
Tanks, diesel (above ground)	T7	T7-1	A	Holmgren Place	3 and 4	Fuel
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U4	U4-1	A	North and west side of Max's Bar & Grill	3 and 4	Diesel spill on 4/90. Site Closed.
Residential Areas	R1	R1-1	A	Along Crow Creek Road	3 and 4	Residential area with sewer connect
Residential Areas	R1	R1-2	A	Along Crow Creek Road	3 and 4	Residential area with sewer connect
Residential Areas	R1	R1-3	A	Along Crow Creek Road	3 and 4	Residential area with sewer connect
Residential Areas	R1	R1-4	A	Along Crow Creek Road	4	Unswered lot
Residential Areas	R1	R1-5	A	Along Crow Creek Road	4	Unswered lot

Table 2

Contaminant Source Inventory and Risk Ranking for Double Musky Inn Public Water System Sources of Bacteria and Viruses

PWSID 213409

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Risk Ranking for Analysis	Overall Rank after Anaysis	Location	Map Number	Notes/Comments
Residential Areas	R1	R1-1	A	Low	1	Along Crow Creek Road	3 and 4	
Residential Areas	R1	R1-2	A	Low	2	Snowmass Circle	3 and 4	
Residential Areas	R1	R1-3	A	Low	3	Snowmass Circle	3 and 4	
Residential Areas	R1	R1-4	A	Low	4	Along Crow Creek Road	3 and 4	

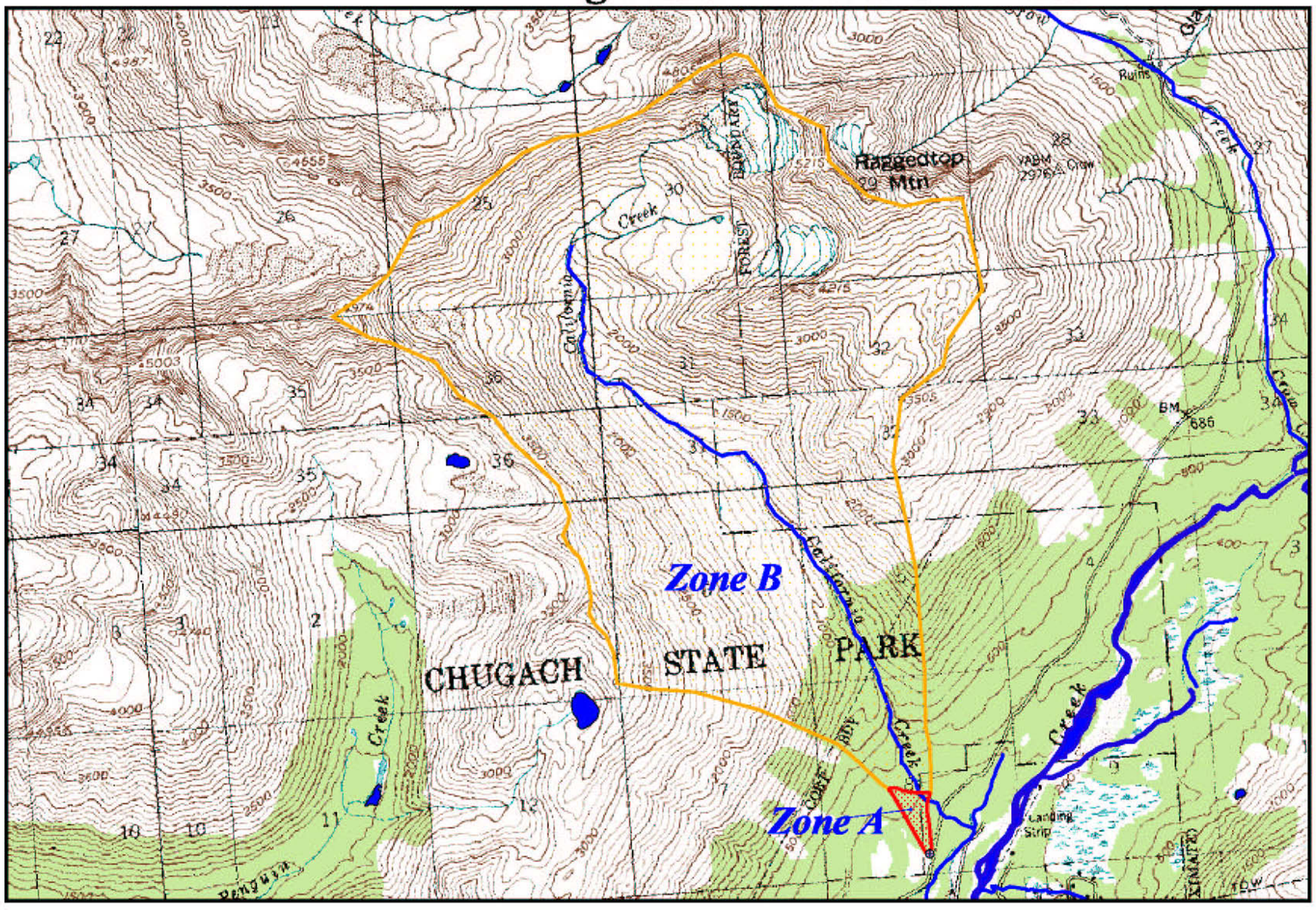
Table 3

Contaminant Source Inventory and Risk Ranking for Double Musky Inn Public Water System Sources of Nitrates/Nitrites

PWSID 213409

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Risk Ranking for Analysis	Overall Rank after Anaysis	Location	Map Number	Notes/Comments
Residential Areas	R1	R1-1	A	Low	1	Along Crow Creek Road	3 and 4	
Residential Areas	R1	R1-2	A	Low	2	Snowmass Circle	3 and 4	
Residential Areas	R1	R1-3	A	Low	3	Snowmass Circle	3 and 4	
Residential Areas	R1	R1-4	A	Low	4	Along Crow Creek Road	3 and 4	

Double Musky Inn (PWSID 213409)
Drinking Water Protection Areas



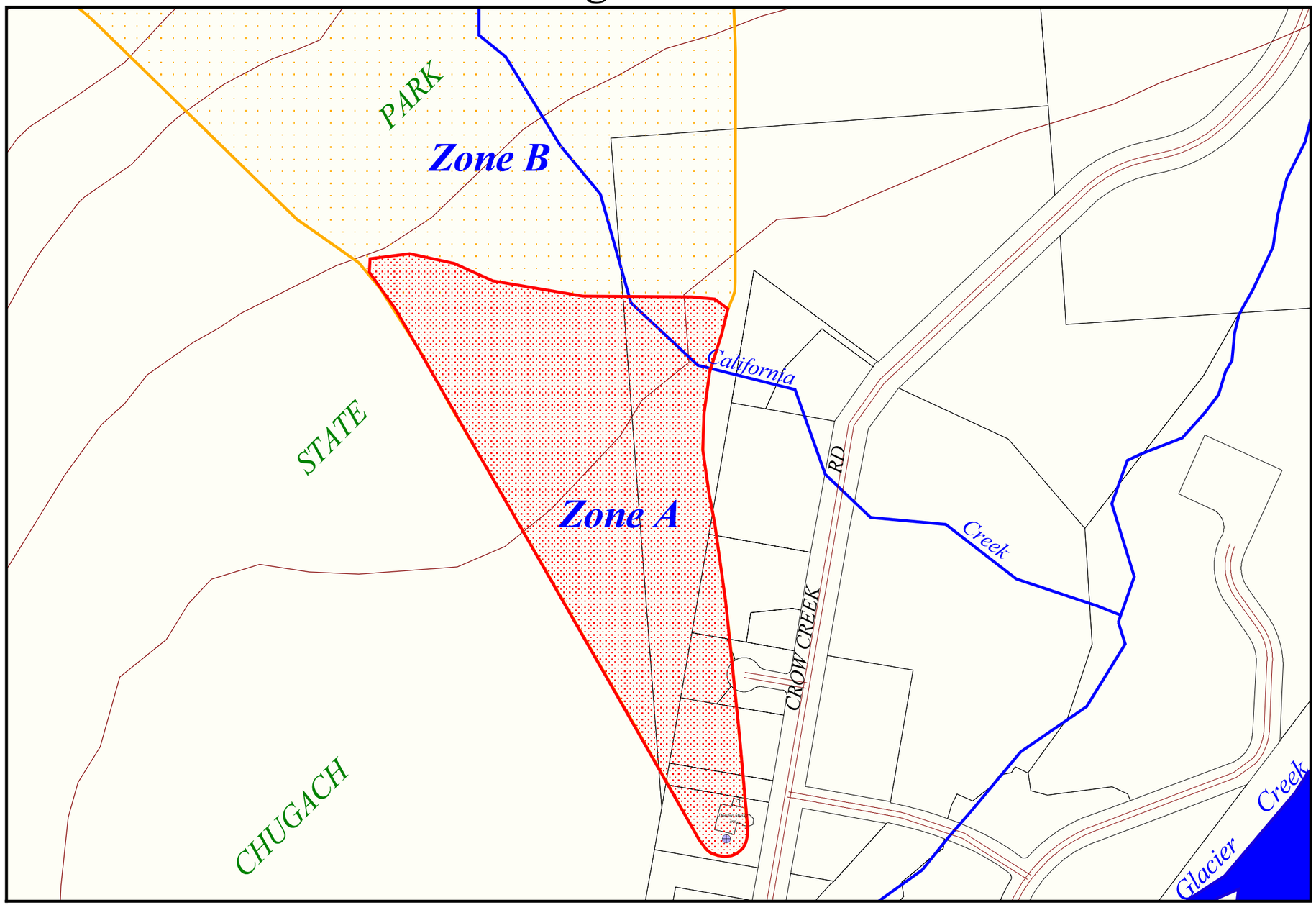
- Double Musky Inn Well

Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less than 2 Years Travel Time
- 2nd order streams
- 3rd order streams
- 4th order streams
- Glacier Creek
- Lakes and Ponds

Map 1

Double Musky Inn (PWSID 213409)
Drinking Water Protection Areas



- Double Musky Inn Well

Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less than 2 Years Travel Time

- MOA Roads
- Buildings
- 2nd order streams
- 3rd order streams
- 4th order streams
- Glacier Creek
- Lakes and Ponds
- Elevation Contours = 20 meters
- MOA Land Parcels

Map 2

Table 4

Contaminant Source Inventory and Risk Ranking for Double Musky Inn Public Water System Sources of Volatile Organic Chemicals

PWSID 213409

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Risk Ranking for Analysis	Overall Rank after Anaysis	Location	Map Number	Notes/Comments
Motor Vehicle Parking Areas	X27	X27-1	A	Low	1	Around Double Musky Inn	3 and 4	
Residential Areas	R1	R1-1	A	Low	2	Along Crow Creek Road	3 and 4	
Residential Areas	R1	R1-2	A	Low	3	Snowmass Circle	3 and 4	
Residential Areas	R1	R1-3	A	Low	4	Snowmass Circle	3 and 4	
Residential Areas	R1	R1-4	A	Low	5	Along Crow Creek Road	3 and 4	

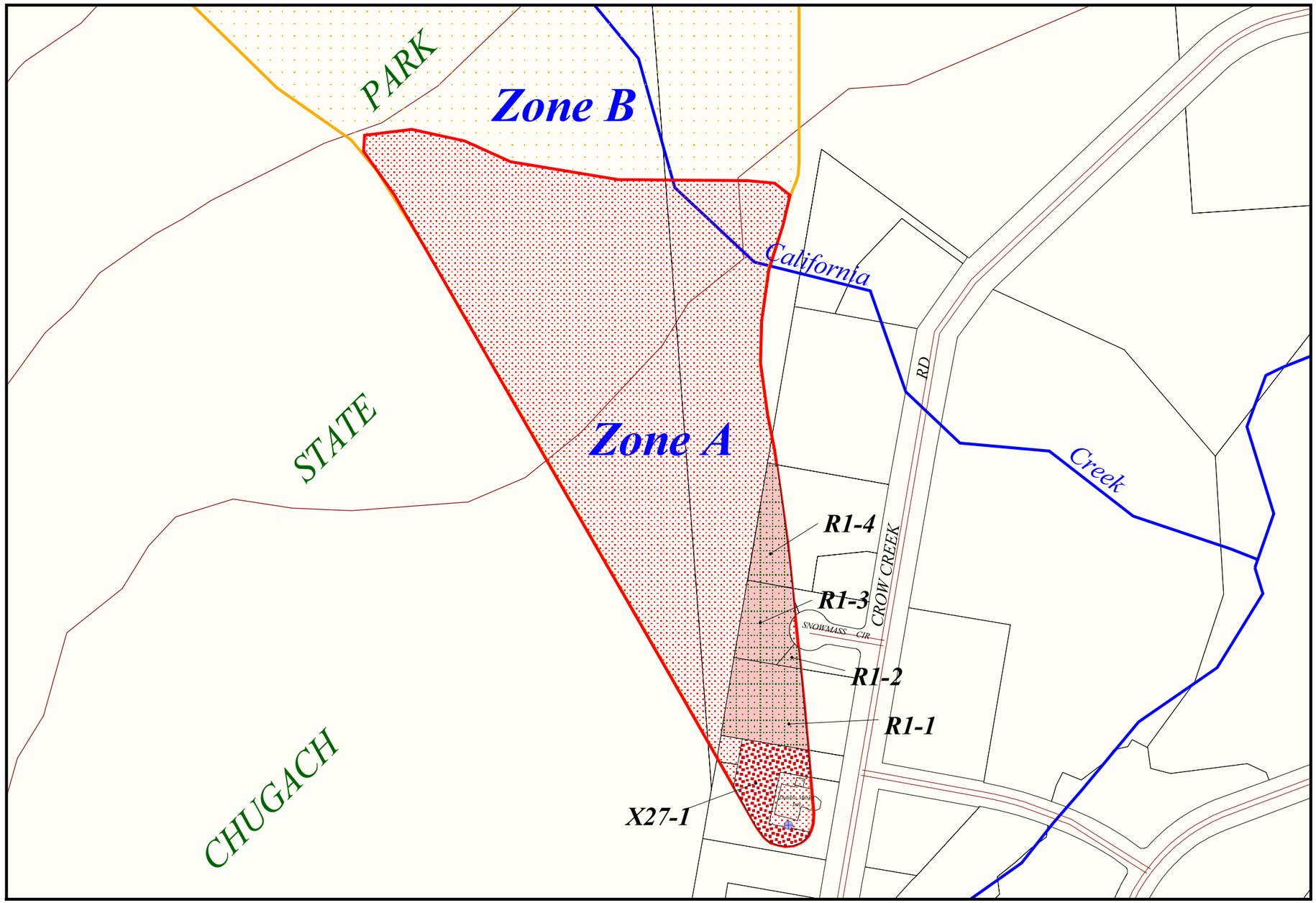
APPENDIX B

Double Musky Inn's
Drinking Water Protection Area

APPENDIX C

Double Musky Inn's Drinking Water Protection Area and Potential & Existing Contaminant Sources

Double Musky Inn (PWSID 213409) Drinking Water Protection Areas and Potential & Existing Contaminant Sources



- Double Musky Inn Well
- Motor Vehicle Parking Areas
- Unsewered Residential Areas

Zone A Protection Area

- Several Months Travel Time

Zone B Protection Area

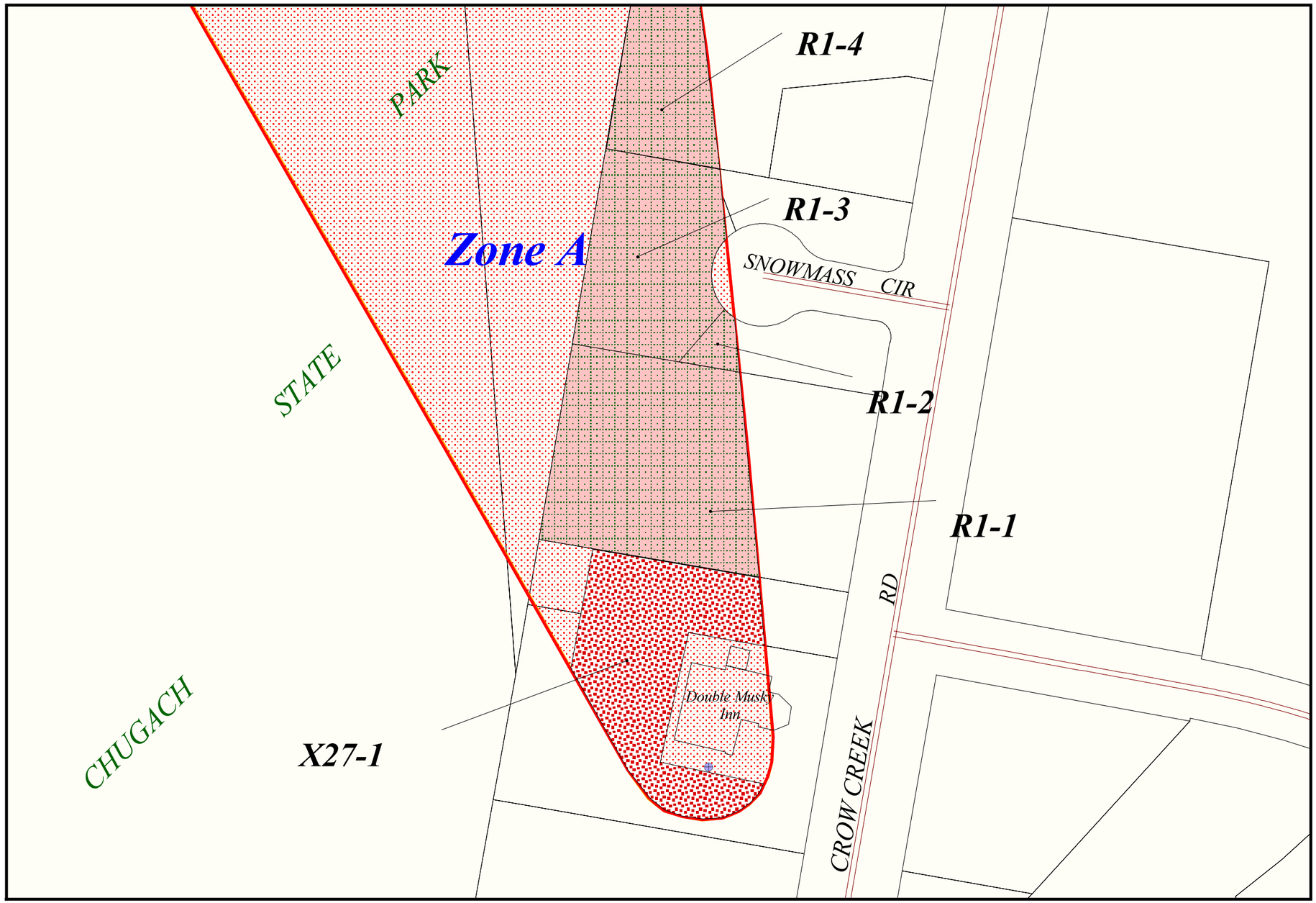
- Less than 2 Years Travel Time
- MOA Roads
- Buildings
- 2nd order streams
- 3rd order streams
- 4th order streams
- Glacier Creek
- Lakes and Ponds
- Elevation Contours = 20 meters
- MOA Land Parcels

N
W E
S

300 0 300 Feet

Map 3

Double Musky Inn (PWSID 213409) Drinking Water Protection Areas and Potential & Existing Contaminant Sources



Double Musky Inn Well
Motor Vehicle Parking Areas
Unsewered Residential Areas
Buildings
Zone A Protection Area
Several Months Travel Time
Zone B Protection Area
Less than 2 Years Travel Time
MOA Roads
Elevation Contours = 20 meters
MOA Land Parcels

N
W
E
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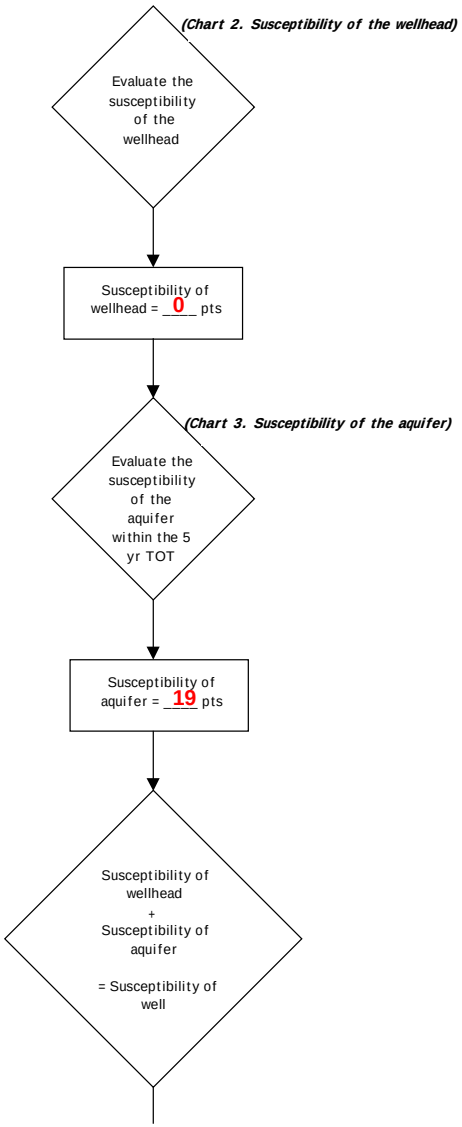
100 0 100 Feet

Map 4

APPENDIX D

Vulnerability Analysis for Double Musky Inn Public Drinking Water System

Chart 1. Vulnerability analysis for Bacteria & Viruses –Double Musky Inn



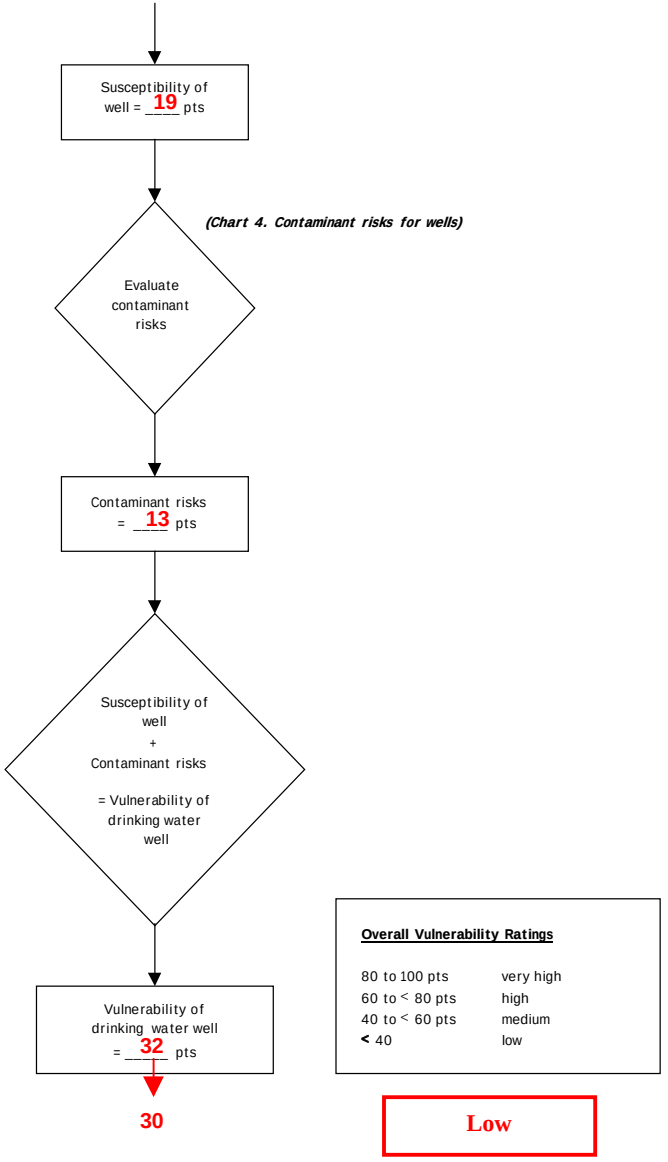
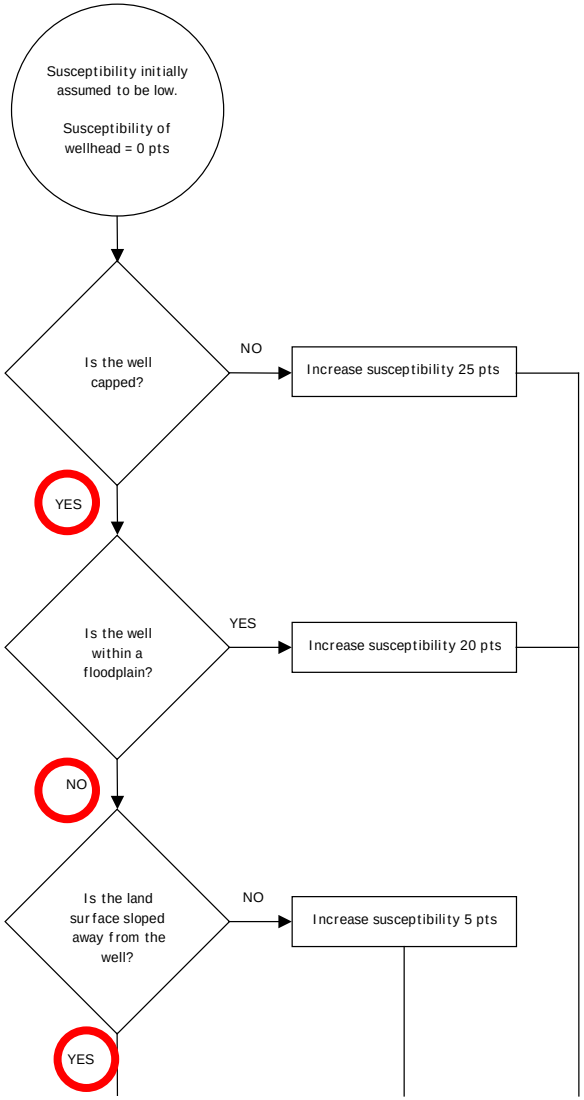
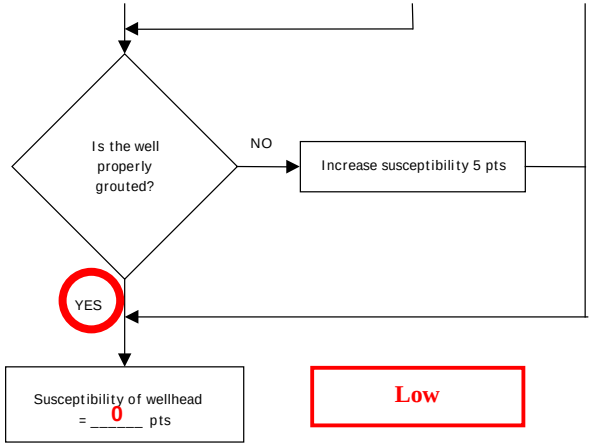


Chart 2. Susceptibility of the wellhead

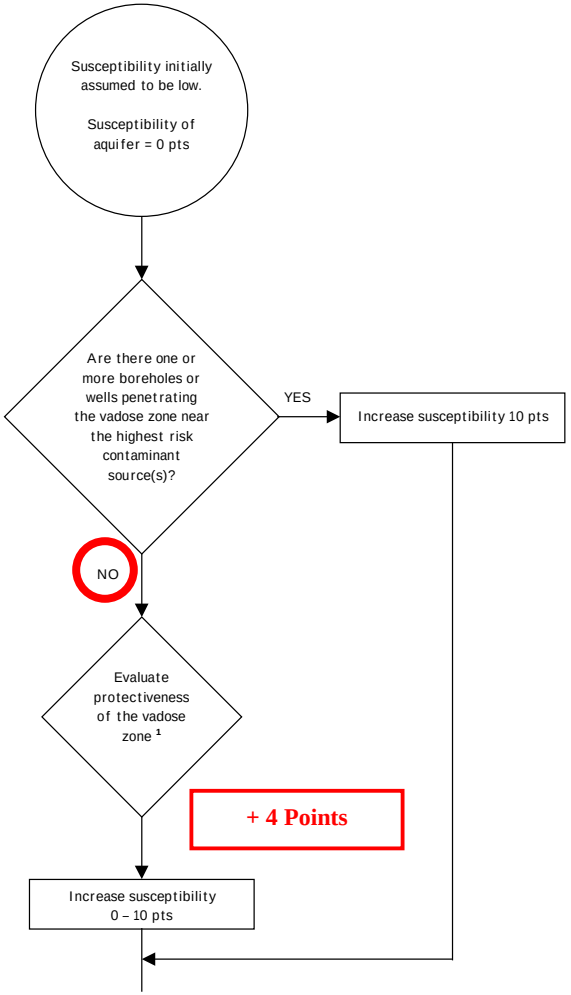


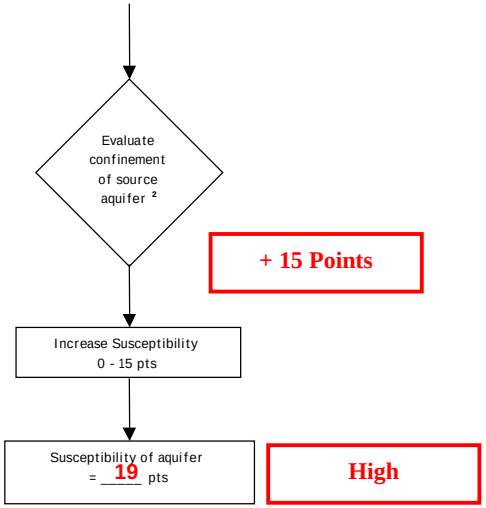


Wellhead Susceptibility Ratings

20 to 25 pts	very high
15 to < 20 pts	high
10 to < 15 pts	medium
< 10	low

Chart 3. Susceptibility of the aquifer





1. Protectiveness of the Vadose Zone

- net recharge (function of precipitation, slope of land surface, & permeability of soils)
  [0 – 10 pts; 50% weight]
- depth to water table (unconfined aquifer) or top of confining layer (confined aquifer)
  [interpolate linearly: 100' – 20', 0 – 5 pts; 20' – 0', 5 – 10 pts; 50% weight]

Recharge 4/10 = 2 Points
Depth to water table 4/10 = 2 Points

Protectiveness of the Vadose Zone Total = **4 Points**

2. Degree of Confinement

- confined verses unconfined aquifer
  [confined: K ≤ 10^{-6} cm/s, minimum thickness of at least one layer = 20 ft, interpolate linearly 100' – 20', 0 – 10 pts; unconfined = 15 pts; 65% weight]
- density of boreholes and wells penetrating the confining layer (confined aquifer) or the water table (unconfined aquifer)
  [confined: 0 – 15 pts; unconfined = 15 pts; 35% weight]

Confinement 15/15 = 9.75 Points
Depth to water table 15/15 = 5.25 Points

Degree of Confinement Total = **15 Points**

Aquifer Susceptibility Ratings

20 to 25 pts	very high
15 to < 20 pts	high
10 to < 15 pts	medium
< 10	low

High

Chart 4. Contaminant risks for Double Musky Inn – Bacteria & Viruses

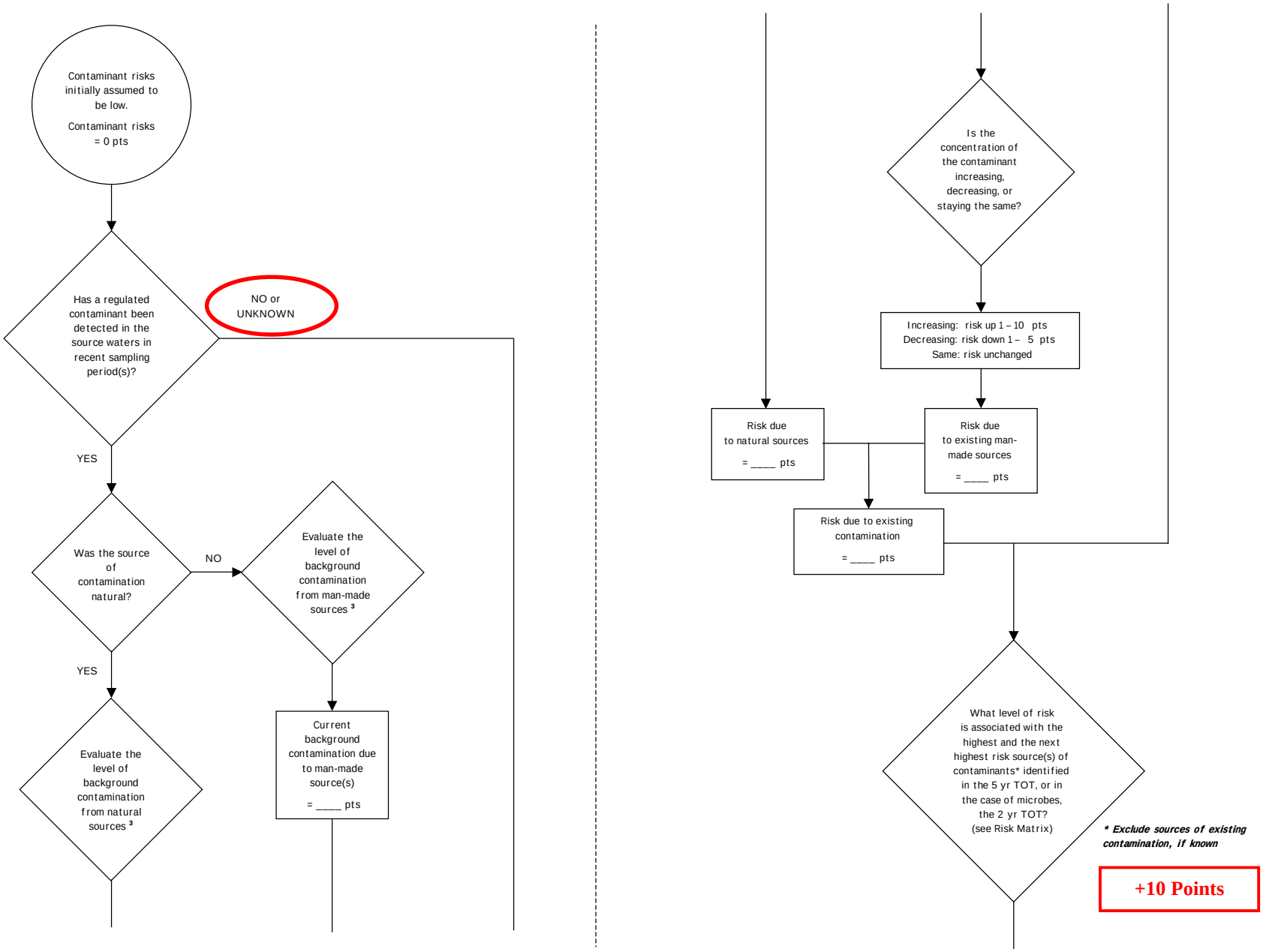
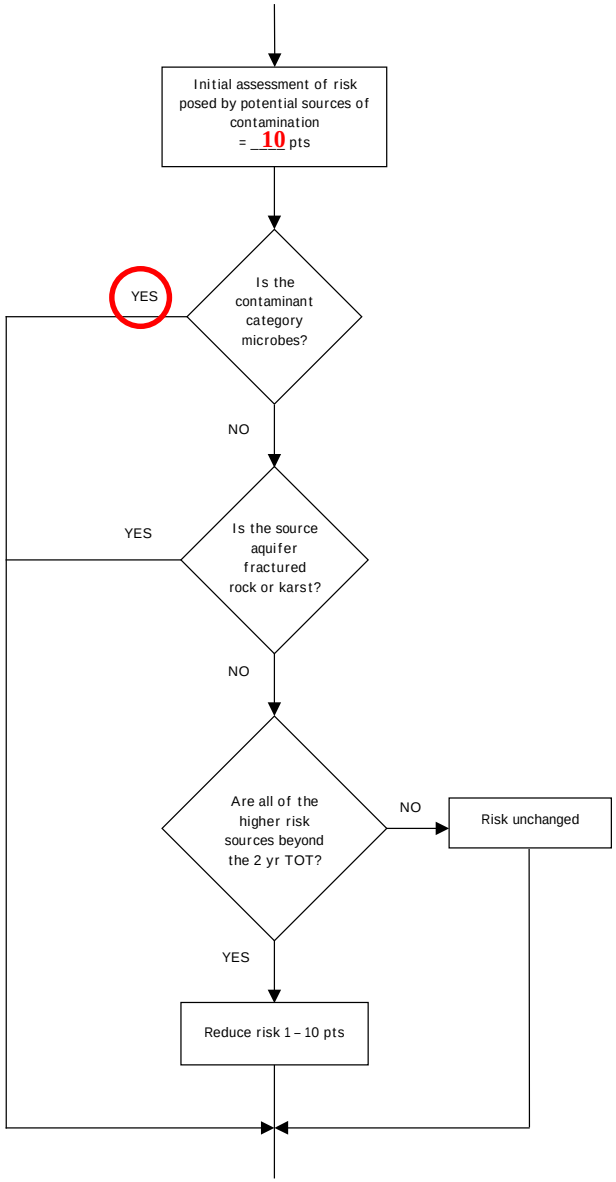


Chart 4. Contaminant risks for Double Musky Inn – Bacteria & Viruses (Continued)



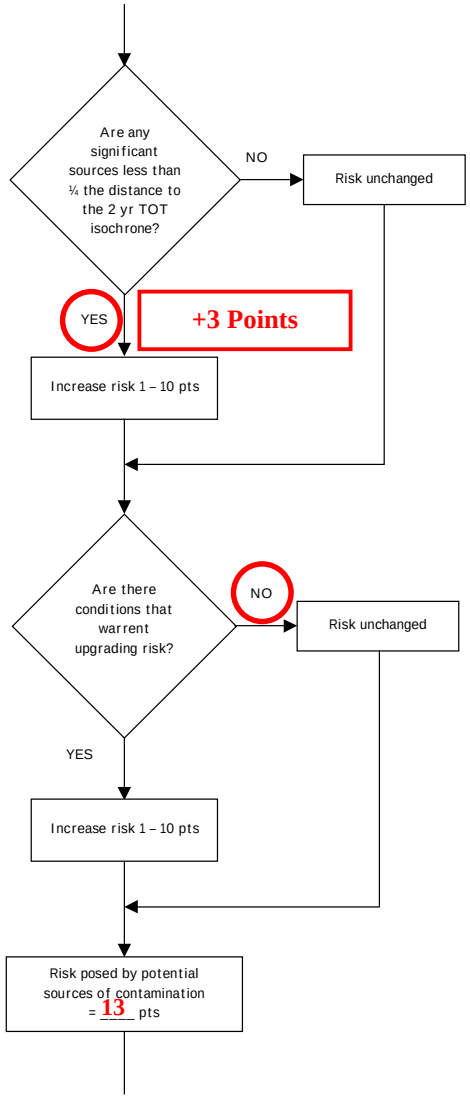
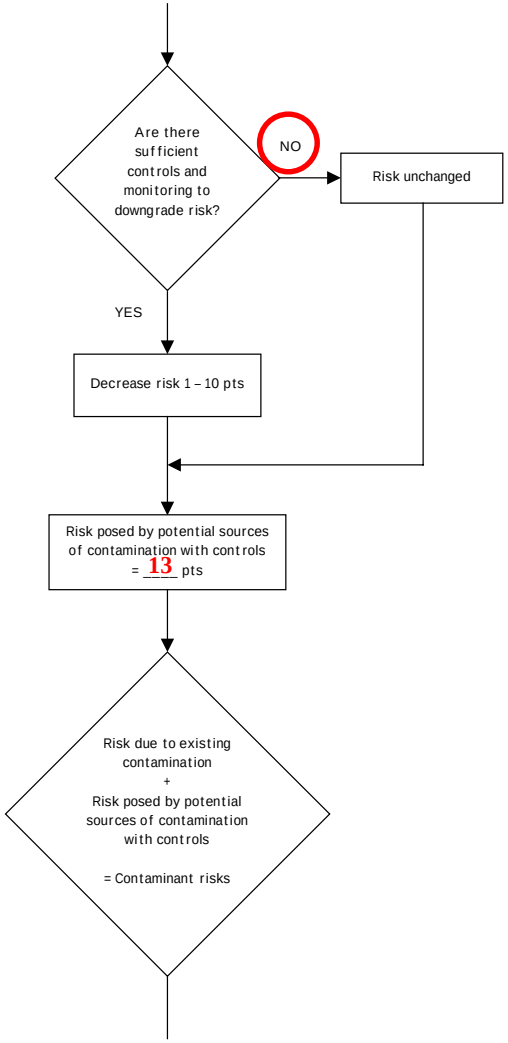
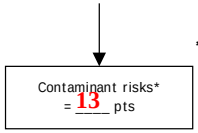


Chart 4. Contaminant risks Double Musky Inn – Bacteria & Viruses (Continued)





**** Truncate risk at 50 pts***

3. Level of Background Contamination

> MCL	50 pts
0.5 MCL to < MCL	20 pts
0.2 MCL to < 0.5 MCL	10 pts
'detect' to < 0.2 MCL	5 pts

Contaminant Risk Ratings

40 to 50 pts	very high
30 to < 40 pts	high
20 to < 30 pts	medium
< 20	low

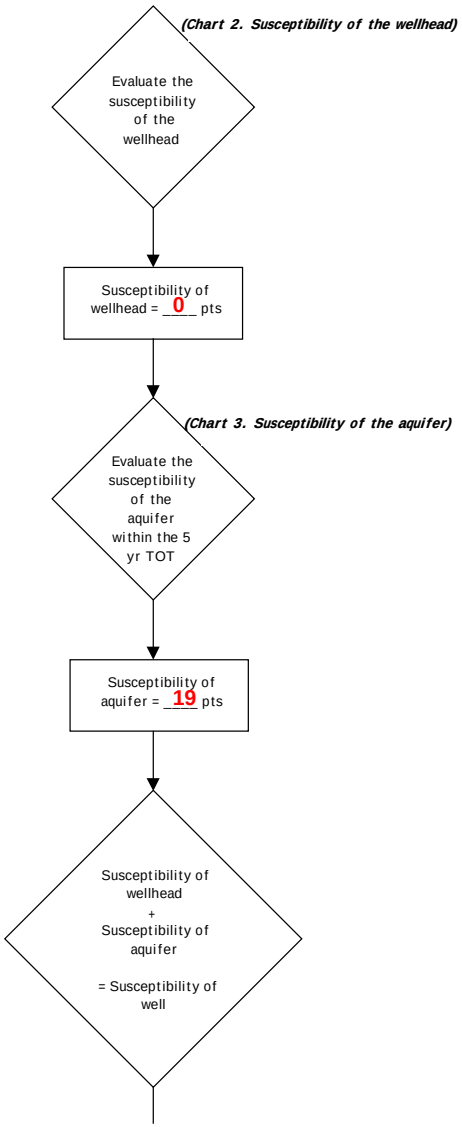
Low

Table 1. Risk Matrix for Contaminant Sources for Bacteria & Viruses – Double Musky Inn

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	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

Chart 5. Vulnerability analysis for Nitrates/Nitrites –Double Musky Inn



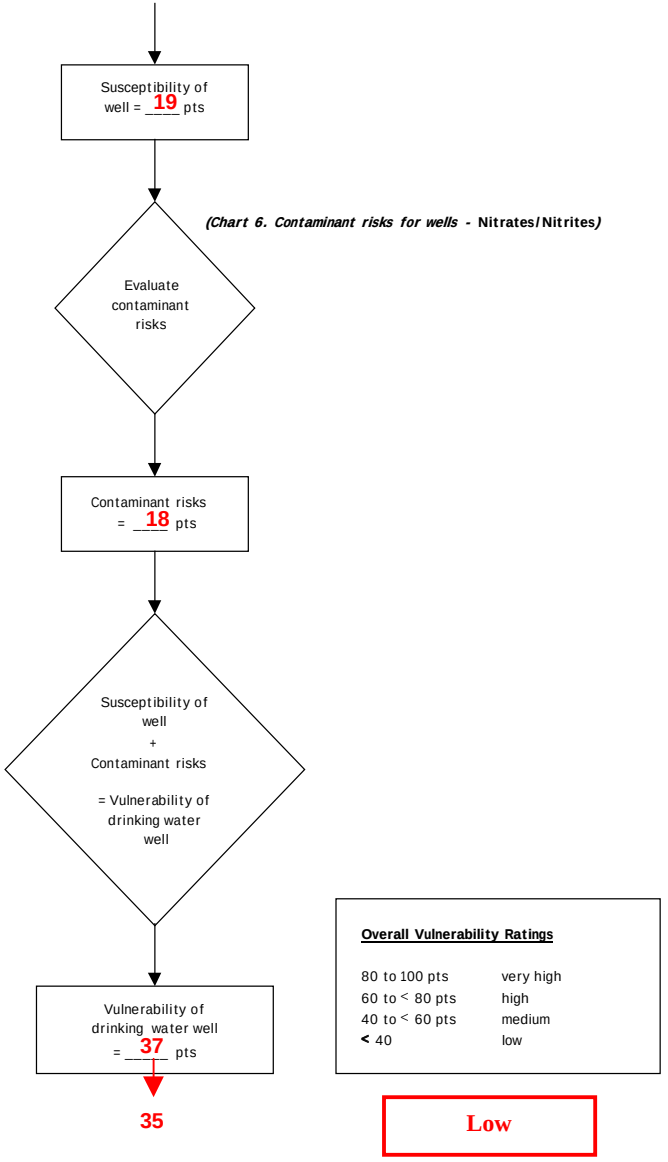


Chart 6. Contaminant risks for Double Musky Inn – Nitrates/Nitrites

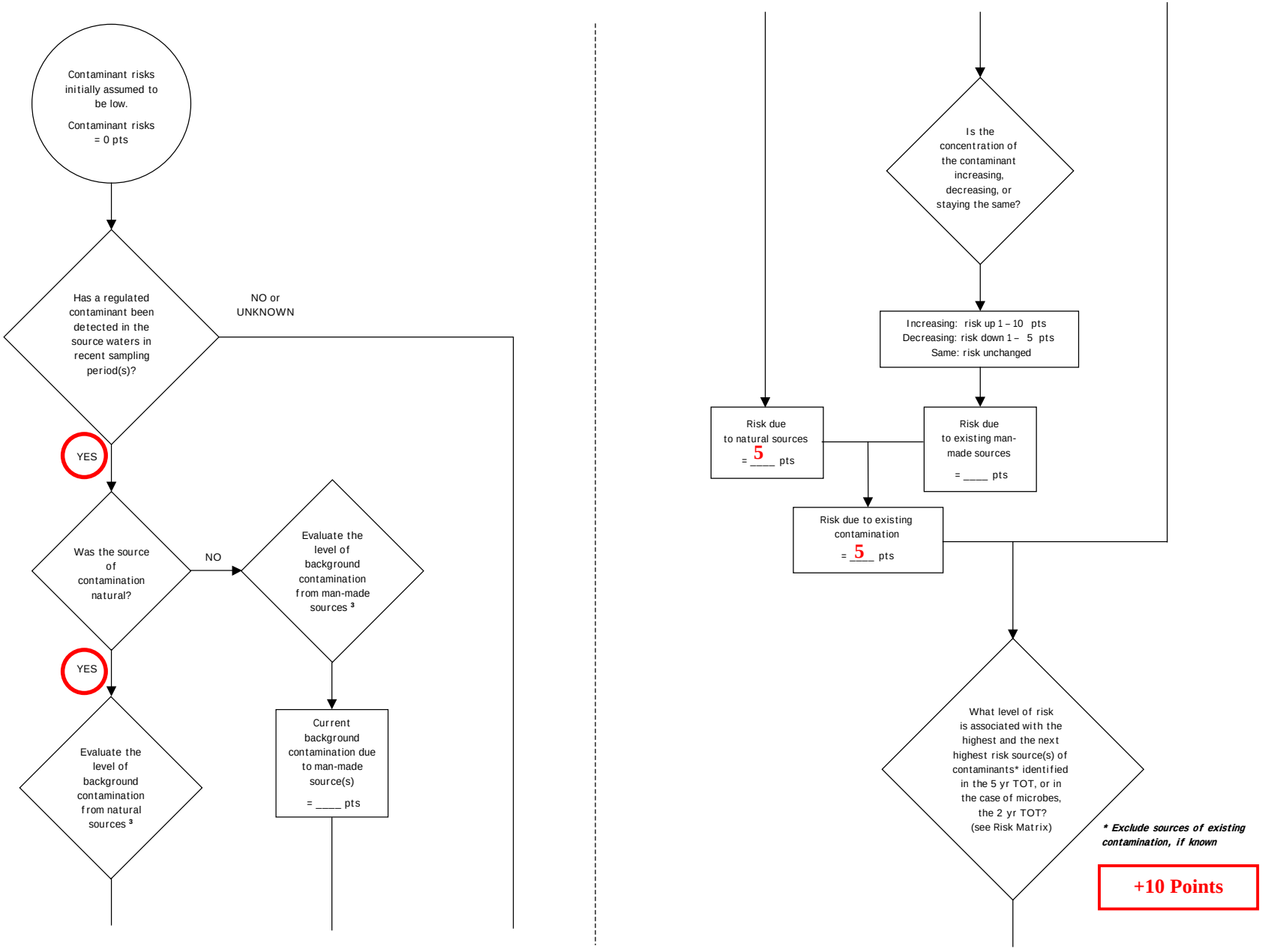
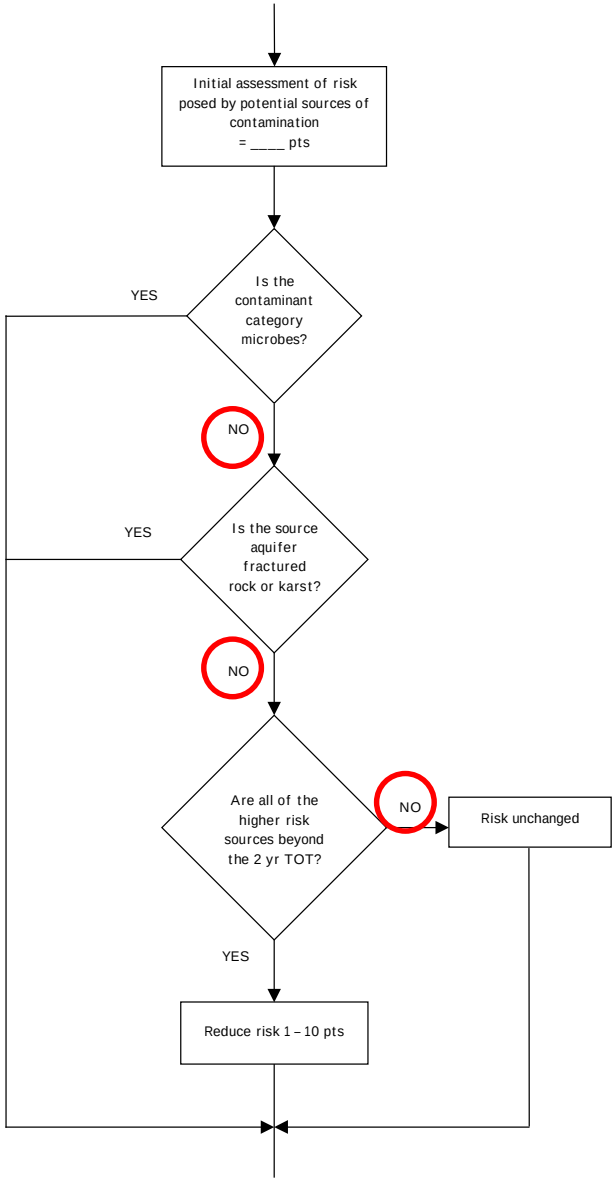


Chart 6. Contaminant risks for Double Musky Inn – Nitrates/Nitrites (Continued)



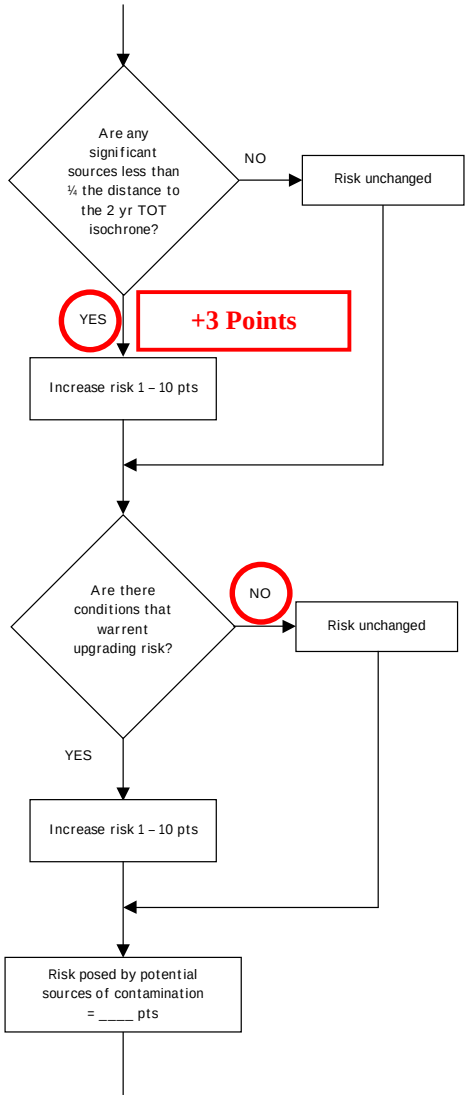
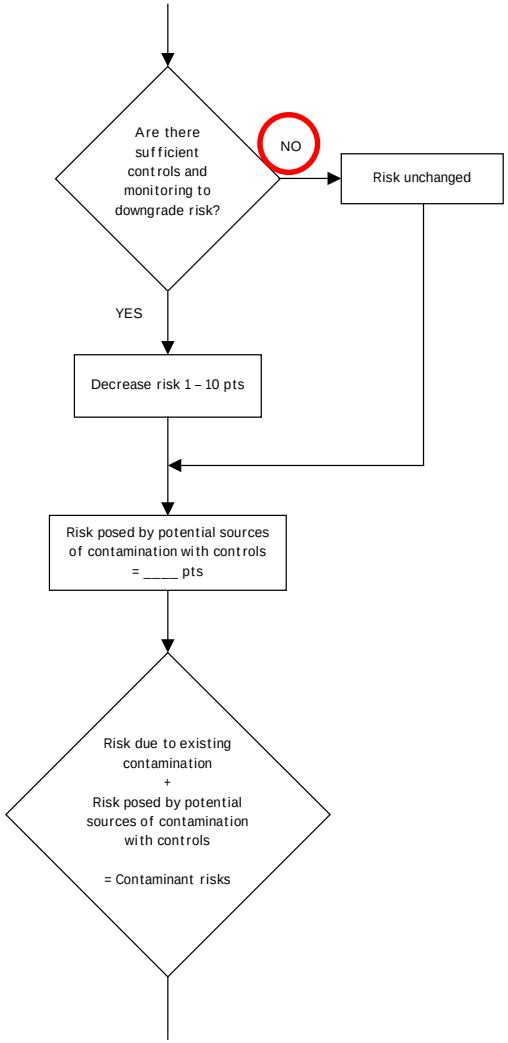
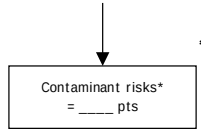


Chart 6. Contaminant risks Double Musky Inn – Nitrates/Nitrites (Continued)





**** Truncate risk at 50 pts***

3. Level of Background Contamination

> MCL	50 pts
0.5 MCL to < MCL	20 pts
0.2 MCL to < 0.5 MCL	10 pts
'detect' to < 0.2 MCL	5 pts

Contaminant Risk Ratings

40 to 50 pts	very high
30 to < 40 pts	high
20 to < 30 pts	medium
< 20	low

570 µg/L on 8/10/00
MCL = 10,000 µg/L

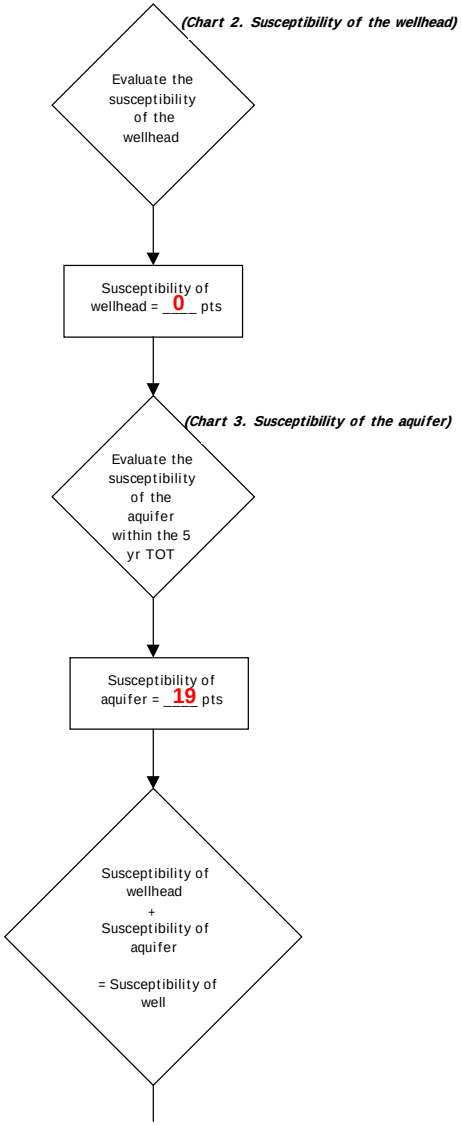
Low

Table 2. Risk Matrix for Contaminant Sources for Nitrates/Nitrites – Double Musky Inn

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	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

Chart 7. Vulnerability analysis for Volatile Organic Chemicals – Double Musky Inn



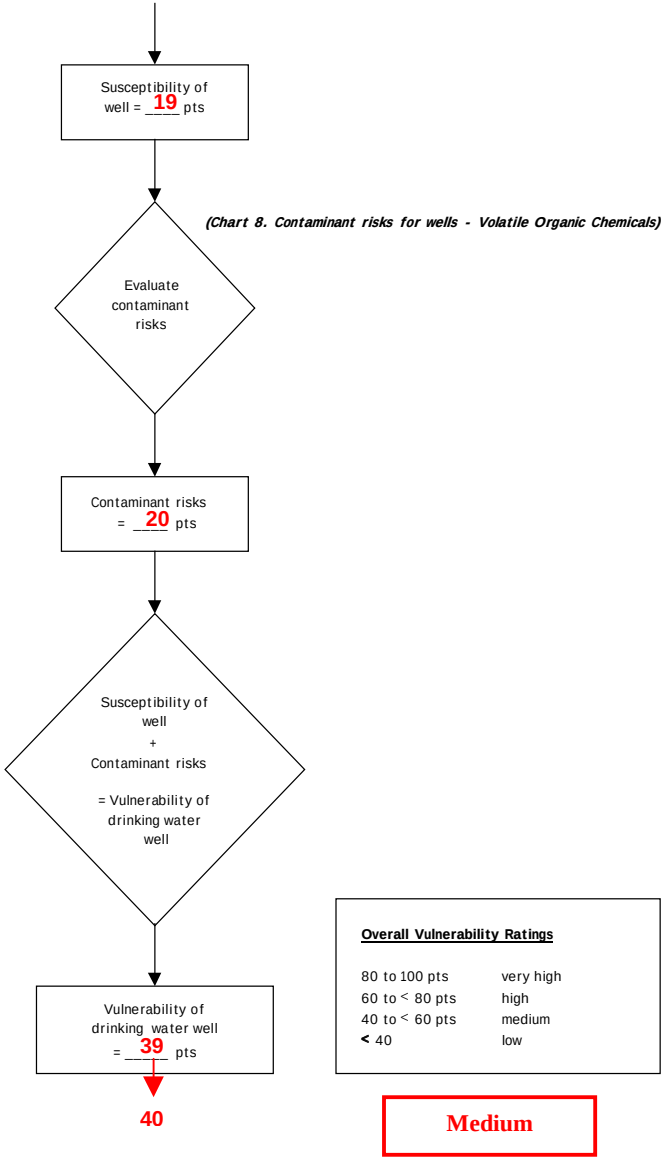


Chart 8. Contaminant risks for Double Musky Inn – Volatile Organic Chemicals

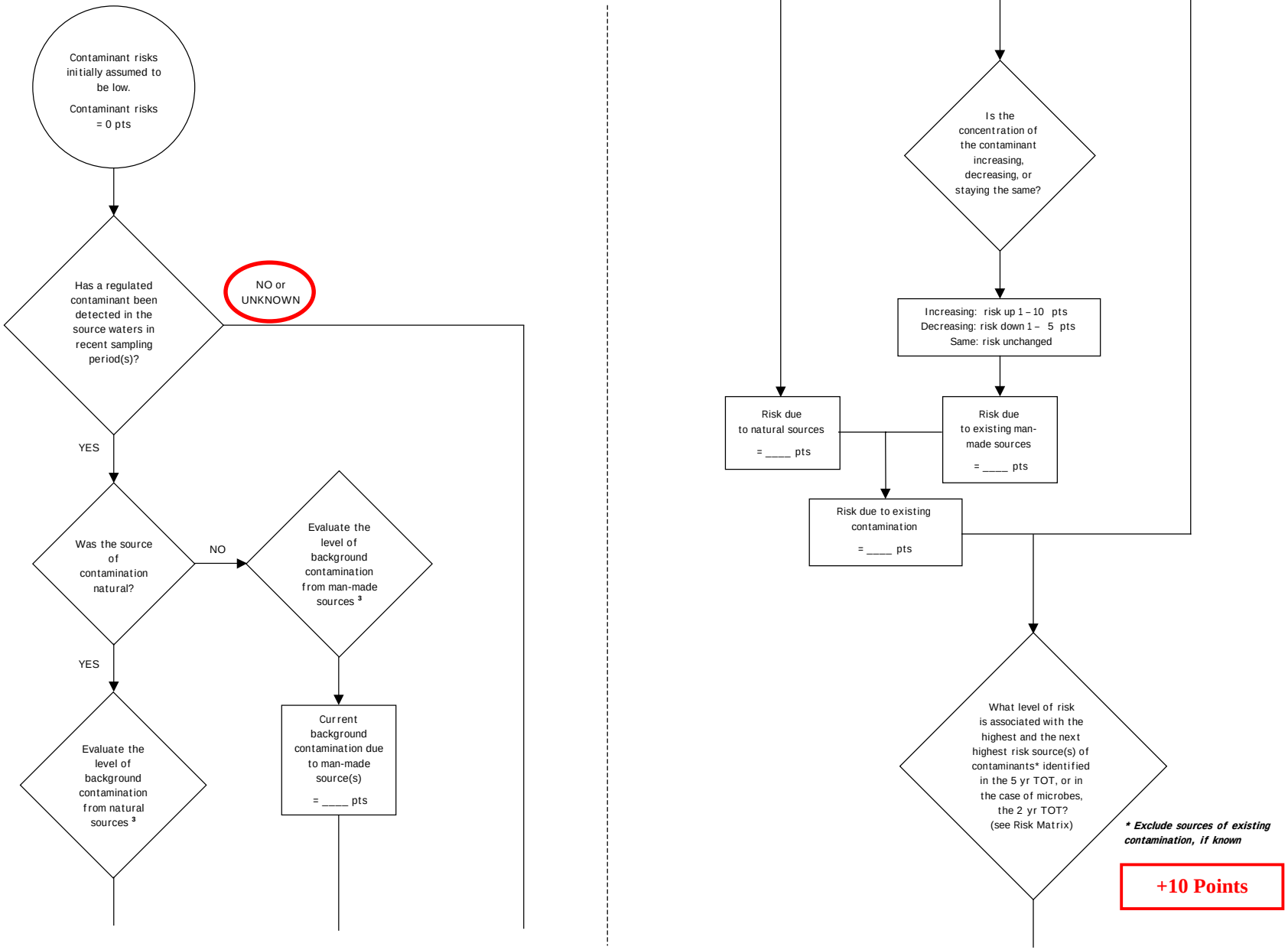
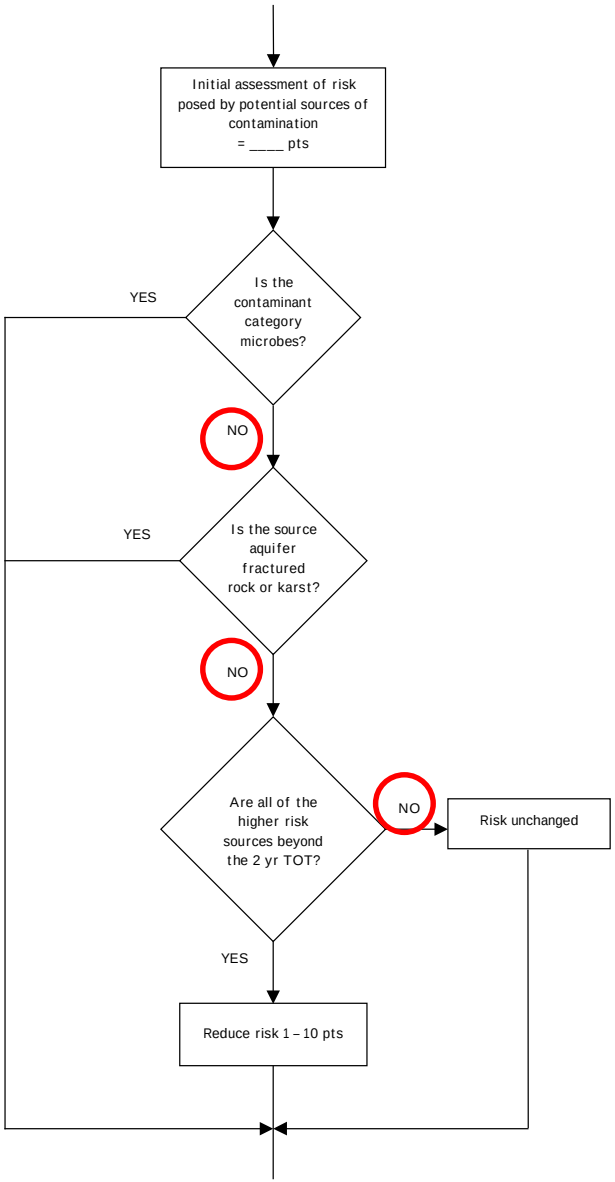


Chart 8. Contaminant risks for Double Musky Inn – Volatile Organic Chemicals (Continued)



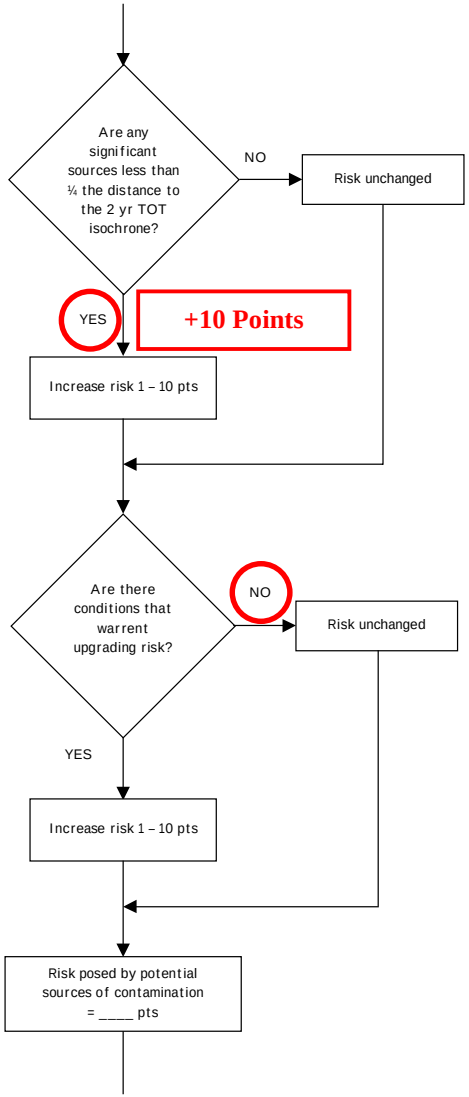
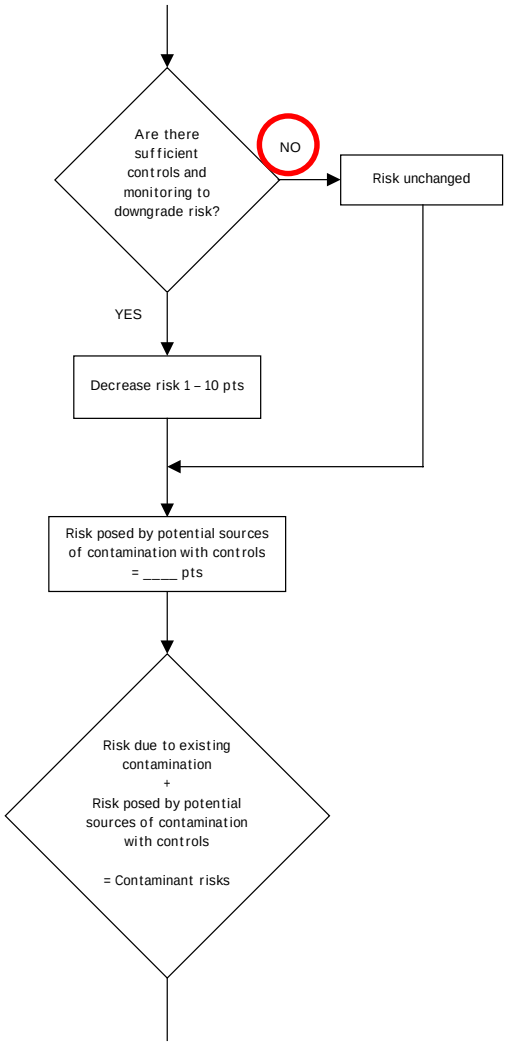
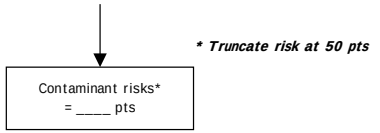


Chart 8. Contaminant risks Double Musky Inn – Volatile Organic Chemicals (Continued)





**** Truncate risk at 50 pts***

3. Level of Background Contamination

> MCL	50 pts
0.5 MCL to < MCL	20 pts
0.2 MCL to < 0.5 MCL	10 pts
'detect' to < 0.2 MCL	5 pts

Contaminant Risk Ratings

40 to 50 pts	very high
30 to < 40 pts	high
20 to < 30 pts	medium
< 20	low

Medium

Table 3. Risk Matrix for Contaminant Sources for Volatile Organic Chemicals – Double Musky Inn

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	Motor vehicle parking area at the Double Musky Inn initially ranked as a low	**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