DRINKING WATER SOURCE PROTECTION PLAN UPDATE

West Corinne Water Company

(PWS ID 02022)

ANDERSON WELL #2

(WS007)

December 2022

Prepared by:

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Project #55-22-088

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List of Abbreviations

DDW – Utah Division of Drinking Water

DEQ – Utah Department of Environmental Quality

DWSP – Drinking Water Source Protection

DWSPP – Drinking Water Source Protection Plan

EPA – Environmental Protection Agency

PCS – Potential Contamination Source(s)

PER – Preliminary Evaluation Report

TOT – Time of Travel

UAC – Utah Administrative Code

UGS – Utah Geological Survey

VOC – Volatile Organic Compound

WhAEM – Wellhead Analytic Element Model

WR – Water Rights

EXECUTIVE SUMMARY

This Drinking Water Source Protection Plan (DWSPP) update for the Anderson Well has been prepared to meet the Utah Division of Drinking Water (DDW) requirement to update DWSPP every six years. The DWSPP was last updated in 2016. Several residential homes have been construction within Zone 3 since the last update. These PCS list and other sections of the DWSPP has been updated accordingly.

1.0 INTRODUCTION

This document is an update to the West Corinne Water Company (WCWC) Drinking Water Source Protection Plan for the Anderson Well.

1.1 System Information

West Corinne Water Company
Cary McFarland
4050 West Highway 13
Corinne, UT 84307

PWS ID: UTAH02022
435-744-5160

1.2 Source Information

Source Name: Anderson Well
Source Number: WS007
Source Type: Well

1.3 Designated Contact Person

The designated person is as indicated below.

Cary McFarland
West Corinne Water Company
4050 West Highway 13
Corinne, UT 84307
435-230-0792

2.0 DELINEATION REPORT

There are no changes to the delineation report or related subsections.

3.0 INVENTORY OF POTENTIAL CONTAMINATION SOURCES (PCS)

The approach used to identify and assess the potential contamination sources (PCSs) located in the Drinking Water Source Protection (DWSP) areas for the Anderson Well followed guidance provided in:

- UAC R309-600 (Utah Office of Administrative Rules, 2017)
- Division of Drinking Water *Preliminary Evaluation Report, Standard Report Format for New Wells and Springs* dated January 2007 and based on Rules of April 2005 (Division of Drinking Water, 2007)
- Division of Drinking Water Ground Water Source Protection User's Guide (Division of Drinking Water, 2020)
- *Wellhead Protection: A Guide for Small Communities* (Office of Water, 1993)

The overall approach used to compile a list of PCSs, identify the hazards, identify and assess the controls, identify and assess management procedures, and assess risk can be summarized as follows:

- A site reconnaissance was conducted by J-U-B in August 2022 to identify and confirm the locations of all PCSs, identify their hazards, and identify and assess any controls that are in place.
- Identification and screening of PCSs and hazards present through a review of various State of Utah, EPA, and other databases.

General guidelines to identifying and assessing PCSs were as follows:

- A PCS was included in the inventory if the general activity of the source was included in the list within Chapter 5 of DDW's *Ground Water Source Protection User's Guide*. Other sites specifically named in the list were included based upon professional judgment.

3.1 PCS List

PCSs identified in zones 1, 2, 3, and 4 of the DWSP areas for the new Anderson Well are listed in Table 3-1 below.

Table 3-1: Identified Potential Contamination Sources (PCS)

PCS #	Name of Facility	Description of Potential Contamination Source	Contact	Address	Phone Number
DWSP Zone 1					
None					
DWSP Zone 2					
4	Faust Valley Road	Highway	Bill Gilson	Box Elder County Road Department 5730 W. 8800 N. Tremonton, UT 84337	435-230-3012
DWSP Zone 3 and 4					
1	Summers Land and Livestock residence	Residence	Summers Land and Livestock	9660 W. 11200 N Tremonton, UT 84337-8907	Unknown
2	Paul Waldron residence	Residence	Paul W. Waldron	12596 W. Faust Valley Rd. Thatcher, UT 84337	435-854-3722
3	Mark Trevor residence	Residence	Darin Nelson	12760 W. Faust Valley Rd. Tremonton, UT 84337	Unknown
5	Stephen Eddy residence	Residence	Stephen Eddy	12660 W. Edna Way Bothwell, UT 84337	Unknown
6	Travis Rhynsburger residence	Residence	Travis Rhynsburger	12666 W. Edna Way Bothwell, UT 84337	Unknown

PCS #	Name of Facility	Description of Potential Contamination Source	Contact	Address	Phone Number
7	Jared Rose residence	Residence	Jared Rose	12670 W. Edna Way Bothwell, UT 84337	Unknown
8	Cody Nelson residence	Residence	Cody Nelson	12672 W. Edna Way Bothwell, UT 84337	Unknown
9	Summers Land and Livestock gravel pit	Gravel Pit	Summers Land and Livestock	9660 W. 11200 N Tremonton, UT 84337-8907	Unknown

3.2 PCS Hazards

Identified activities and hazards associated with the identified PCSs found in the DWSP zones for the Anderson are listed in Table 3-2 below:

Table 3-2: Identification of PCS Hazards

PCS #	Name of Facility	Hazards [a]	Quantities
DWSP Zone 1			
None			
DWSP Zone 2			
4	Faust Valley Road	Road salt, de-icing agents, automotive wastes[b], spills	Minimal
DWSP Zone 3 and 4			
1	Summers Land and Livestock residence	Residential pesticide, herbicide, and fertilizer storage, use, filing and mixing areas; automotive wastes[b]; single family septic tank/drain-field system[c]	Minimal
2	Paul Waldron residence	Residential pesticide, herbicide, and fertilizer storage, use, filing and mixing areas; automotive wastes[b]; single family septic tank/drain-field system[c]	Minimal
3	Mark Trevor residence	Residential pesticide, herbicide, and fertilizer storage, use, filing and mixing areas; automotive wastes[b]; single family septic tank/drain-field system[c]	Minimal
5	Stephen Eddy residence	Residential pesticide, herbicide, and fertilizer storage, use, filing and mixing areas; automotive wastes[b]; single family septic tank/drain-field system[c]	Minimal
6	Travis Rhynsburger residence	Residential pesticide, herbicide, and fertilizer storage, use, filing and mixing areas; automotive wastes[b]; single family septic tank/drain-field system[c]	Minimal
7	Jared Rose residence	Residential pesticide, herbicide, and fertilizer storage, use, filing and mixing areas; automotive wastes[b]; single family septic tank/drain-field system[c]	Minimal
8	Cody Nelson residence	Residential pesticide, herbicide, and fertilizer storage, use, filing and mixing areas; automotive wastes[b]; single family septic tank/drain-field system[c]	Minimal
9	Summers Land and Livestock gravel pit	Sand and gravel mining operations	Minimal

a - Chemical, biological and radiological substances used, stored, manufactured, transported and disposed at the PCS, which could contaminate water.
b - "Automotive wastes can include gasoline, antifreeze, automatic transmission fluid, battery acid, engine and radiator flushes, engine and metal degreasers, hydraulic (brake) fluid, and motor oils" - from Wellhead Protection: A Guide for Small Communities (EPA, February 1993).
c – “Septage; coliform and noncoliform bacteria; viruses; nitrates; heavy metals; synthetic detergents; cooking and motor oils; bleach; pesticides; paints; paint thinner; photographic chemicals; swimming pool chemicals; septic tank/cesspool cleaner chemicals; elevated levels of chloride, sulfate, calcium, magnesium, potassium, and phosphate” - from Wellhead Protection: A Guide for Small Communities (EPA, February 1993).

3.3 Prioritized Inventory

The following prioritization framework is included as a tool should additional PCS be identified during updates to the Drinking Water Source Protection Plan.

The prioritized PCS list will help West Corinne Water Company staff to identify the greatest health risk to the groundwater supply. More effective management strategies can then be implemented to better prevent contamination from reaching the groundwater source and the well.

This section describes the process used to prioritize the identified potential contamination sources. The Environmental Protection Agency's document entitled "*Managing Ground Water Contamination Sources In Wellhead Protection Areas: A Priority Setting Approach*" *EPA 570/9-91-023 October 1991* outlines a complex method to prioritize contamination sources (Office of Water, 1993). The method is based upon distance, contaminant properties, likelihood of release, quantity, attenuation, and other factors. The approach has been deemed too complex to be warranted for this specific well. However, the document has been used as a guide in developing a prioritization method.

Each PCS will be ranked according to a risk value (R). The risk value is a function of likelihood of contamination (L) and severity (S) of the contamination should it occur. The basic relationship is given by:

$$R = L + S$$

PCSs will be prioritized by the risk value in descending order.

Likelihood of contamination is described in *EPA 570/9-91-023* as "the probability that the contamination will be released from the source and will reach the drinking water source within a user-specified planning period". The likelihood of contamination is, in turn, a function of two elements, containment (C) and travel time to well (D). The relationship is given by:

$$L = C + D$$

The containment element depends on factors such as whether the material is stored, if it stored above or below ground, if secondary containment is present, if it is stored indoors or outdoors, the age of the storage container, and other elements.

The travel time to the well is primarily related to several hydrological factors. The delineation report is used to determine a numerical value for this element. Discrete values will be assigned each PCS based upon location within DWSP zones.

The severity of contamination is described in *EPA 570/9-91-023* as the "degree of contamination to the drinking-water in the event contaminants are released and reach the well". Severity is also a function of two elements: quantity (Q) and toxicity (T) of the contaminant. The relationship is given by:

$$S = Q + T$$

Larger quantities of contaminant pose a greater risk in the event of a mishap. A source with more material will have a greater value assigned this element than those with less. Likewise, large storage containers will have a greater value than smaller because a breach in a large container will result in a greater volume of contaminant being released.

The toxicity of the contaminant is the second element in the severity portion of the risk value. The toxicity rating is based upon a contaminant's toxicity, concentration, mobility, persistence, and whether or not it is known to be carcinogenic. *EPA 570/9-91-023* gives appropriate values for various chemicals in forms S.1 and S.2.

The risk or probability associated with a potential contamination source contaminating the well is dependent on the likelihood of release, containment, distance to the well, quantity, and toxicity. These factors do not have an equal influence of the risk. A highly toxic material further from the well will pose a greater risk than a much less toxic material near the well. As a result, some factoring of the risk elements is necessary. The four factors influencing risks are weighted from greatest to least as follows: toxicity, likelihood of release, quantity, and distance to the well.

A risk score between 0 and 100 is assigned to each PCS. Each of the four influencing factors is assigned a percentage of the risk score. Each of these four has components that are also broken down into percentages. The total risk score is the sum of the scores of the four risk influencing factors. The following page shows the percentages and numerical values used in the prioritization.

This method for prioritizing the PCSs has limitations as does any method that may be used. Some of these assumptions and limitations are contaminants released will reach the well by traveling in a straight line, constituent concentrations do not vary with time nor vertical dimension, some types of PCSs cannot be directly assessed by this approach. The types of PCSs most commonly encountered are applicable to this method. Best judgment was used in the priority ranking where this was not the case.

The next page details the numerical values assigned to each risk element. Following is Table 3-3 which lists the PCSs by priority ranking.

3.3.1 Contaminant Risk Evaluation

Risk is measured on a scale from 0 to 100. Risk equals the sum of the likelihood and severity of contamination.

3.3.1.1 Likelihood Of Contamination

Likelihood of contamination equals the sum of the likelihood of release and the likelihood of reaching the well. Likelihood of contamination is 45 percent of the risk.

Likelihood of Release (30%)

Use Chemicals (U)	Store Chemicals (S)	Storage Container Age (A)	Storage Location (L)
No = 0	No = 0	New – 1 year = 0	Indoors = 0
Yes = 2	Yes = 2	2 – 4 years = 3	Outside, above grnd = 3
		5 – 10 years = 6	Outside, below grnd = 6
		> 10 years = 9	Inadequate storage = 9

Handling Record (H)	Secondary Containment (E)	Existing Controls (R)
Good = -3	Yes = -3	Yes = 0
Unknown = 0	No = 0	No = 5
Bad = 3		

Likelihood of Reaching the Well (15%)

Distance (D)

Within 100 ft radius = 15	3–yr zone, near = 7
250-day zone, near = 13	3-yr zone, middle = 5
250-day zone, middle = 11	3-yr zone, far = 4
250-day zone, far = 9	15-yr zone, near = 3
	15-yr zone, far = 2

3.3.1.2 Severity Of Contamination

Severity of contamination equals the sum of the quantity and toxicity of the contaminant.

Severity of contamination is 55 percent of the risk.

Quantity (20%)

Tank Size (Z)	Number of Tanks (N)
< 55 gal = 0	Zero = 0
55 – 100 gal = 2	1 = 2
101 – 1,000 gal = 4	2 – 3 = 4
1,001 – 5,000 gal = 6	4 – 5 = 6
5,001 – 10,000 gal = 8	6 – 10 = 8
> 10,000 gal = 10	> 10 = 10

(Residential chemicals = 1 tank, < 55 gallons; Pipelines = 3 tanks, 1,000 gallons)

Toxicity (35%)

Carcinogenic (C)	Toxicity (T)	Concentration (O)	Mobility (M)	Persistence (P)
No = 0	Low = 0	Low = 0	Low = 0	Low = 0
Yes = 10	Med = 6	Med = 3	Med = 3	Med = 3
	High = 10	High = 5	High = 5	High = 5

(Residential: assume medium for toxicity, concentration, mobility, and persistence, unless a septic system is present then concentration is high)

Table 3-3: PCS Priority Ranking

Priority	PCS #	Name	Source Containment							Dist.	Quantity		Toxicity					Risk Score
			U	S	A	L	H	E	R	D	Z	N	C	T	O	M	P	
			(2)	(2)	(9)	(9)	(3)	(0)	(5)	(15)	(10)	(10)	(10)	(10)	(5)	(5)	(5)	
1	1	Summers Land and Livestock residence	2	2	3	3	0	0	0	7	6	2	10	6	5	3	3	52
2	2	Paul Waldron residence	2	2	3	3	0	0	0	6	6	2	10	6	5	3	3	51
3	5	Stephen Eddy Residence	2	2	3	3	0	0	0	6	6	2	10	6	5	3	3	51
4	3	Mark Trevor residence	2	2	3	3	0	0	0	5	6	2	10	6	5	3	3	50
5	6	Travis Rhynburger residence	2	2	0	3	0	0	0	6	6	2	10	6	5	3	3	48
6	7	Jared Rose residence	2	2	0	3	0	0	0	6	6	2	10	6	5	3	3	48
7	8	Cody Nelson Residence	2	2	0	3	0	0	0	6	6	2	10	6	5	3	3	48
8	9	Summers Land and Livestock gravel pit	2	2	2	3	0	0	0	6	6	4	10	6	5	0	0	46
9	4	Faust Valley Road	2	0	0	0	0	0	0	15	0	0	10	6	3	3	3	42

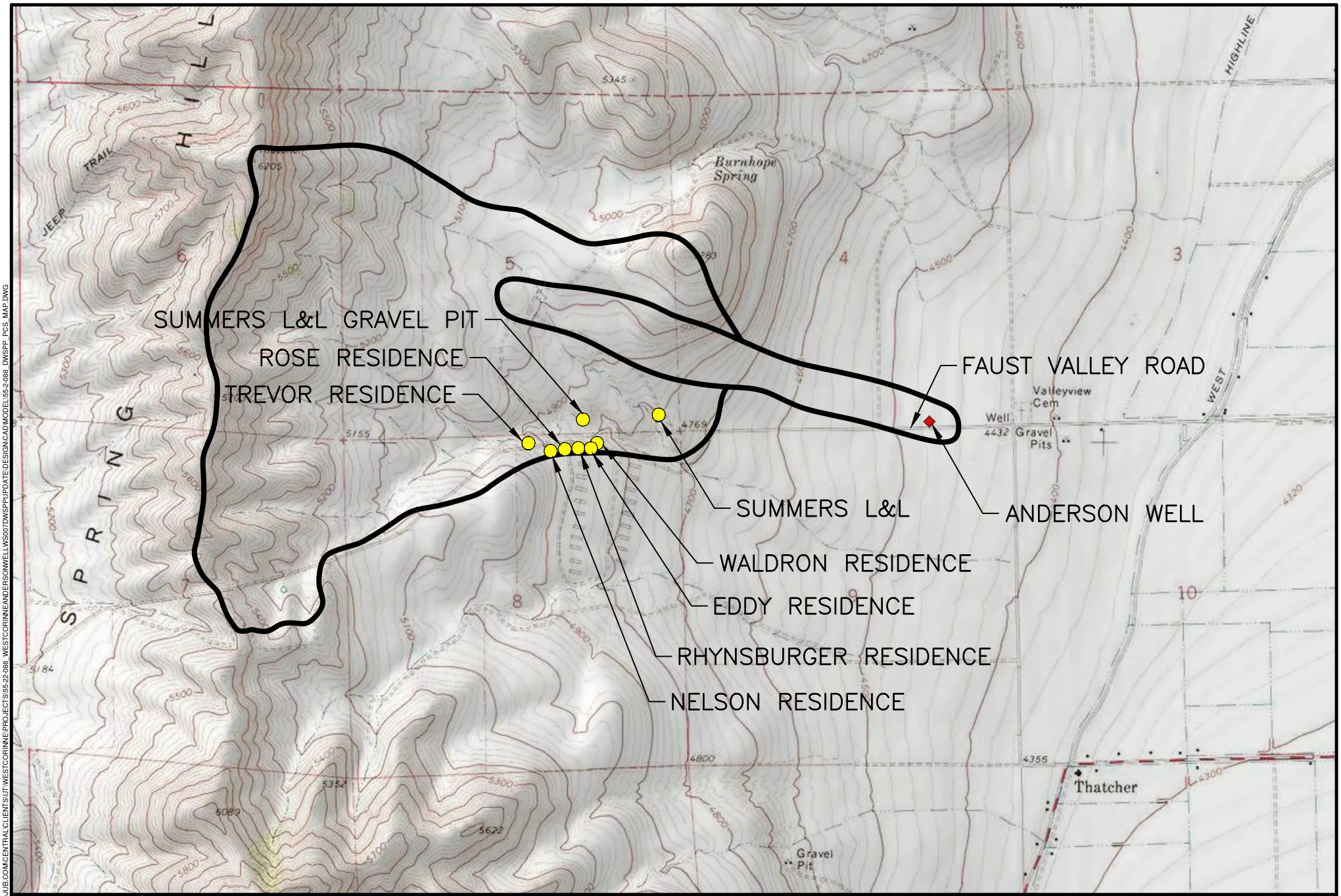
U = Use chemicals
S = Store chemicals
A = Storage container age
L = Storage location
H = Handling record
E = Secondary containment
R = Existing controls
D = Distance to well
Z = Tank size
N = Number of tanks
C = Carcinogenic
T = Toxicity
O = Concentration
M = Mobility
P = Persistence

3.4 PCS Location

Table 3-1 describes each PCS as to its location in zone one, two three, or four. Please refer to this table.

3.5 PCS Map

Figure 3-1 is included below and indicates the location of PCS relative to the DWSP zones.



0 .5 1 MILES

1000 0 1000 2000 3000 4000 5000 FEET

SCALE: 1"=2000'

J-U-B Engineers • Surveyors • Planners

LAST UPDATE: 12/22/2022
PLOT DATE: 12/22/2022
FILE: 55-2-088_DWSPP_PCS_MAP

WEST CORINNE WATER COMPANY
DRINKING WATER SOURCE PROTECTION PLAN UPDATE

FIGURE 3-1
DWSP ZONES AND PCS LOCATIONS

Plot Date:12/22/2022 9:17 AM Plotted By: Sam Wakeham
Date Created:12/20/2022 \\JUB.COM\CENTRAL\CLIENTS\UT\WESTCORINNE\PROJECTS\55-22-088_WESTCORINNEANDERSONWELLWS007DWSPPUPDATE\DESIGN\CAD\MODEL\55-2-088_DWSPP_PCS_MAP.DWG

4.0 IDENTIFICATION AND ASSESSMENT OF CONTROLS

This section presents the identification and assessment of hazard controls already in place to control potential contamination sources (PCS). As stated in R309-600-10(2), four types of hazard controls are recognized. These are: 1) Regulatory, 2) Best management/pollution prevention 3) Physical, and 4) Negligible quantity. General guidelines used in the assessment of the controls present at each PCS were as follows:

1. Regulatory controls listed in this section are from those outlined in DDW's *"Source Protection User's Guide for Ground-Water Sources"* (Division of Drinking Water, 2020)

2. *"Any hazard that is not assessed as adequately controlled will be considered to be not adequately controlled."* (Division of Drinking Water, 2020)

3. *"…if the hazards at a PCS cannot be identified, the PCS must be assessed as not adequately controlled. Many PCS hazards have no controls and must be assessed as not adequately controlled."* (Division of Drinking Water, 2020)

4. List only one hazard control for a PCS even if multiple exist.

The identified controls for each PCS hazard assessed for the Anderson Well are listed in Table 4-1.

Table 4-1: PCS Hazard Controls

Priority Ranking	PCS #	PCS Name	Control	Description of Control	Verification or Enforcement Agency	Adequacy
1	1	Summers Land and Livestock residence	Best Management and Pollution Prevention Practices	Notify each residence of their location in the DWSP zone; give them a copy of the Utah DEQ Septic System, Household Hazardous Waste, and Pesticide Fact Sheets; explain need for cooperation to protect groundwater	West Corinne Water Company P.O. Box 37 Corinne, UT 84307	Adequate
2	2	Paul Waldron residence	Best Management and Pollution Prevention Practices	Notify each residence of their location in the DWSP zone; give them a copy of the Utah DEQ Septic System, Household Hazardous Waste, and Pesticide Fact Sheets; explain need for cooperation to protect groundwater	West Corinne Water Company P.O. Box 37 Corinne, UT 84307	Adequate
3	5	Stephen Eddy Residence	Best Management and Pollution Prevention Practices	Notify each residence of their location in the DWSP zone; give them a copy of the Utah DEQ Septic System, Household Hazardous Waste, and Pesticide Fact Sheets; explain need for cooperation to protect groundwater	West Corinne Water Company P.O. Box 37 Corinne, UT 84307	Adequate
4	3	Mark Trevor residence	Best Management and Pollution Prevention Practices	Minimal quantities of traffic on this rural road. Road is used primarily by passenger vehicles; few transport trucks use the road, likely due to the steep grade over the Blue Spring Hills summit 2.3 miles west of the well.	N/A	Adequate
5	6	Travis Rhynsburger residence	Best Management and Pollution Prevention Practices	Notify each residence of their location in the DWSP zone; give them a copy of the Utah DEQ Septic System, Household Hazardous Waste, and Pesticide Fact Sheets; explain need for cooperation to protect groundwater	West Corinne Water Company P.O. Box 37 Corinne, UT 84307	Adequate

Priority Ranking	PCS #	PCS Name	Control	Description of Control	Verification or Enforcement Agency	Adequacy
6	7	Jared Rose Residence	Best Management and Pollution Prevention Practices	Notify each residence of their location in the DWSP zone; give them a copy of the Utah DEQ Septic System, Household Hazardous Waste, and Pesticide Fact Sheets; explain need for cooperation to protect groundwater	West Corinne Water Company P.O. Box 37 Corinne, UT 84307	Adequate
7	8	Cody Nelson residence	Best Management and Pollution Prevention Practices	Notify each residence of their location in the DWSP zone; give them a copy of the Utah DEQ Septic System, Household Hazardous Waste, and Pesticide Fact Sheets; explain need for cooperation to protect groundwater	West Corinne Water Company P.O. Box 37 Corinne, UT 84307	Adequate
8	4	Faust Valley Road	Negligible Quantity Control	Minimal quantities of traffic on this rural road. Road is used primarily by passenger vehicles; few transport trucks use the road, likely due to the steep grade over the Blue Spring Hills summit 2.3 miles west of the well.	N/A	Adequate
9	9	Summers Land and Livestock gravel pit	Best Management and Pollution Prevention Practices	Notify the owner of their location in the DWSP zone; give them a copy of the Utah DEQ Septic System, Household Hazardous Waste, and Pesticide Fact Sheets; explain need for cooperation to protect groundwater	West Corinne Water Company P.O. Box 37 Corinne, UT 84307	Adequate

4.1 Identify and Assess Regulatory Controls

None of the PCSs identified are managed by this type of control.

4.2 Identify and Assess Best Management and Pollution Prevention Practices

The residential PCSs and gravel pit will be managed by this type of control. Table 4-1 summarizes the management program associated with this control. Each of these PCSs will be contacted to discuss the location of their residence in the DWSP zone of the Anderson Well, and the nature of potential contaminants typically stored at residences in the area including septic systems, household hazardous waste and pesticides. Utah DEQ fact sheets on these topics will also be distributed to each. Cooperation by the residences will greatly reduce the hazard associated with these PCSs. The control is assessed as adequate. This control will be reassessed as part of the next DWSP plan update.

4.3 Identify and Assess Physical Controls

None of the PCSs identified are managed by this type of control.

4.4 Identify and Assess Negligible Quantity Controls

Faust Valley Road is the PCS managed by this type of control. The road has a minor potential for spills because 1) the vast majority of traffic on the road is from passenger vehicles with a limited potential for large spills, and 2) the low traffic volume reduces the likelihood of an accident that would cause a spill. Larger transport vehicles are typically not observed using the road most likely due to the alternate route S.R. 102 provides around the south of the Blue Spring Hills range to S.R. 83 as opposed to Faust Valley Road which climbs over the range. For these reasons the control is assessed as adequate. This control will be reassessed as part of the next DWSP plan update.

5.0 MANAGEMENT PLAN FOR EXISTING POTENTIAL CONTAMINATION SOURCES

All the identified PCS have been identified as adequately controlled. There are no changes to the management plan for existing PCSs.

6.0 MANAGEMENT PLAN FOR FUTURE POTENTIAL CONTAMINATION SOURCES

There are no changes to the management program for future PCSs.

7.0 IMPLEMENTATION SCHEDULE

WCWC will notify each PCS and provide them copies of the fact sheets identified in Table 4-1 by the end of the 2nd quarter of 2023.

8.0 RESOURCE EVALUATION

There are no changes for this section.

9.0 RECORD KEEPING

There are no changes to this section. WCWC keeps copies of the Box Elder County Drinking Water Source Protection Ordinance and DEQ fact sheets in the original DWSPP for the Anderson Well on file at their offices. Copies of these are also included in Appendix A for reference.

10.0 CONTINGENCY PLAN

There are no changes to the contingency plan. However, it is noted that the phone number for Glenn's Electric Pump and Motor Service has changed to 435-752-4178.

11.0 PUBLIC NOTIFICATION

There are no changes to this section. WCWC will continue to send a public notification statement with the annual Consumer Confidence Report. An example of the statement to be mailed out is below.

> The Drinking Water Source Protection Plan for the West Corinne Water Company is available for your review. It contains information about source protection zones, potential contamination sources, and management strategies to protect our drinking water. Potential contamination sources common in our protection areas are septic tanks, roads, residential areas, and industrial areas. Additionally, our well and springs have a low to medium susceptibility to potential contamination. We have also developed management strategies to further protect our sources from contamination. Please contact us at 435-744-5160 if you have questions or concerns about our source protection plan.

12.0 WAIVERS

The Anderson Well is not eligible for Use or Susceptibility Waivers due to the unprotected aquifer status and the presence of residences and roads within the protection zones. WCWC may pursue a Reliably and Consistently Waiver apart from the DWSPP Update.

13.0 REFERENCES

There are no updates to this section.

14.0 APPENDIX A

14.1 Box Elder County Drinking Water Source Protection Ordinance

ORDINANCE NO. 216

AN ORDINANCE OF BOX ELDER COUNTY AMENDING ORDINANCE NO. 121 AND ESTABLISHING DRINKING WATER SOURCE PROTECTION.

WHEREAS, the County is authorized to enact zoning ordinances to promote the health, safety, and welfare of its residents;

WHEREAS, many residents of Box Elder County receive drinking water from public water systems in the County;

WHEREAS, the Utah Safe Drinking Water Act is intended to ensure that all citizens in the state of Utah have access to safe water supplies for their domestic and culinary needs;

WHEREAS, the Utah Division of Drinking Water has adopted drinking water source protection regulations pursuant to the Utah Safe Drinking Water Act that are intended to protect the groundwater sources used by public water systems to provide drinking water from contamination;

WHEREAS, the Utah Division of Drinking Water's drinking water source protection regulations require public water systems to develop plans to protect their sources of groundwater used for drinking water from contamination;

WHEREAS, Box Elder County's interest in promoting the health, safety, and welfare of its residents coincides with the state's interest in encouraging public water systems to protect their sources of groundwater used for drinking water from contamination;

WHEREAS, it is in the best interests of the residents of Box Elder County that the County's zoning ordinances be amended so as to protect the sources of groundwater used by public water systems in the County to provide drinking water to residents of the County.

NOW BE IT AND IT IS HEREBY ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF BOX ELDER COUNTY as follows:

SECTION 1: Box Elder County Ordinance No. 121 is hereby amended by this Ordinance, upon the terms and and conditions hereof, as follows:

Drinking Water Source Protection.

1. Short Title and Purpose.

(a) This ordinance shall be known as the "Drinking Water Source Protection Ordinance."

(b) The purpose of this ordinance is to ensure the provision of a safe and sanitary drinking water supply to the residents of Box Elder County who receive water for culinary and domestic use from public water systems in the County by the establishment of drinking water source protection zones surrounding the wellheads and springs for all wells and springs used by public water systems in the County and by the designation and regulation of property uses and conditions that may be maintained within such zones.

2. Definitions

When used in this ordinance the following words and phrases shall have the meanings given in this Section:

(a) "Design Standard" means a control that is implemented by a potential contamination source to prevent discharges to the groundwater. Spill protection is an example of a design standard.

(b) "Drinking Water Source Protection (DWSP) Zone" means the surface and subsurface area surrounding a groundwater source of drinking water supplying a public water system through which contaminants are reasonably likely to move toward and reach such groundwater source.

(c) "Groundwater Source" means any well, spring, tunnel, adit, or other underground opening from or through which groundwater flows or is pumped from subsurface water-bearing formations.

(d) "Pollution source" means point source discharges of contaminants to ground water or potential discharges of the liquid forms of "extremely hazardous substances" which are stored in containers in excess of "applicable threshold planning quantities" as specified in SARA Title III. Examples of possible pollution sources include, but are not limited to, the following: storage facilities that store the liquid forms of extremely hazardous substances, septic tanks, drain fields, class V underground injection wells, landfills, open dumps, landfilling of sludge and septage, manure piles, salt piles, pit privies, drain lines, and animal feeding operations with more than ten animal units.

The following definitions clarify the meaning of "pollution source:"

(1) "Animal feeding operation" means a lot or facility where the following conditions are met: animals have been or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12 month period, and crops, vegetation forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility. Two or more animal feeding operations under common ownership are considered to be a single feeding operation if they adjoin each other, if they use a common area, or if they use a common system for the disposal of wastes.

(2) "Animal unit" means a unit of measurement for any animal feeding operation calculated by adding the following numbers; the number of slaughter and feeder cattle multiplied by 1.0, plus the number of mature dairy cattle multiplied by 1.4, plus the number of swine weighing over 55 pounds multiplied by 0.4, plus the number of sheep multiplied by 0.1, plus the number of horses multiplied by 2.0.

(3) "Extremely hazardous substances" means those substances which are identified in the Sec. 302(EHS) column of the "TITLE III LIST OF LISTS - Consolidated List of Chemicals Subject to Reporting Under SARA Title III," (EPA 560/4-91-011). A copy of this document may be obtained from: Section 313 Document Distribution Center, P.O. Box 12505, Cincinnati, OH 45212.

(e) "Potential contamination source" means any facility or site which employs an activity or procedure which may potentially contaminate ground water. A pollution source is also a potential contamination source.

(f) "Public water system" means a system, either publicly or privately owned, providing water for human consumption and other domestic uses, which:

(1) Has at least 15 service connections, or

(2) Serves an average of at least 25 individuals daily at least 60 days out of the year.

Such term includes collection, treatment, storage and distribution facilities under control of the operator and used primarily in connection with the system. Additionally, the term includes collection, pretreatment or storage facilities used primarily in connection with the system but not under such control.

(g) "Sanitary Landfill" means a disposal site where solid wastes, including putrescible wastes, or hazardous wastes, are disposed of on land by placing earth cover thereon.

(h) "Sanitary sewer line" means a pipeline that connects a residence or other building with a sanitary sewer.

(i) "Septic tank/drain-field system" means a system which is comprised of a septic tank and a drain field which accepts domestic wastewater from buildings or facilities for subsurface treatment and disposal. By their design, septic tank/drain field system discharges cannot be controlled with design standards.

(j) "Spring" means the ground surface outlet of a natural underground spring including Spring collection and control boxes, valves, piping and other attachments.

(k) "Storm water infiltration structure" means a structure that is intended to discharge storm water so that it infiltrates groundwater.

(l) "Underground storage tanks" means underground tanks used for the storage of gas, oil, or other hazardous substances.

(m) "Wellhead" means the physical structure, facility, or device at the land surface from or through which groundwater flows or is pumped from subsurface, water-bearing formations.

3. **Establishment of Drinking Water Source Protection Zones**.

There is hereby established the following four use districts to be known as drinking water source protection zones one, two, three, and four:

(a) "Zone one" is the area within a 100-foot radius from the wellhead or margin of the collection area.

(b) "Zone two" is the area within a 250-day groundwater time of travel to the

wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the groundwater divide, whichever is closer.

(c) "Zone three" is the area within a 3-year groundwater time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the groundwater divide, whichever is closer.

(d) "Zone four" is the area within a 15-year groundwater time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the groundwater divide, whichever is closer.

4. Identification of public water systems and their drinking water source protection zones in Box Elder County.

After a public water system in Box Elder County submits its drinking water source protection plan to the Utah Division of Drinking Water pursuant to the Division's drinking water source protection regulations, as amended, and the Division provides written notice to the public water system of its approval of the plan, the public water system shall, at its sole cost and expense, provide the Box Elder County Building Permit and Surveyor's Office with a map, and any additional information required by the Office, identifying the four drinking water source protection zones the public water system designates for each of its sources of groundwater for drinking water in the plan approved by the Division. The Box Elder County Building Permit and Surveyor's Office shall then incorporate this information on a map of the County that it shall prepare and maintain which identifies each public water system's sources of groundwater for drinking water and the four drinking water source protection zones for each source of groundwater. It shall be the duty of each public water system, at its sole cost and expense, to submit any updated information as necessary to the Box Elder County Building Permit and Surveyor's Office.

5. Permitted Uses.

(a) In Zones One, Two, Three, and Four, each use established before the effective date of this Ordinance, and uses incidental and accessory to such use, may be continued in the same manner thereafter, provided that such use is not determined by any court of competent jurisdiction to be a nuisance under the provisions of federal, state, and/or local laws or regulations.

(b) In addition to the uses permitted under Paragraph 5(a) herein, the following uses, including uses incidental and accessory to that use, shall be allowed within the respective drinking water source protection zones:

(1) Zone One.

(a) No uses in addition to that allowed under Paragraph 5(a) herein are allowed in Zone One.

(2) Zone Two.

(a) Use of single or multiple-family residential dwellings, commercial, or institutional uses established on or after the effective date of this Ordinance, provided that such uses are connected to a sanitary sewer system.

(3) Zone Three.

(a) Use of single or multiple-family residential dwellings, commercial, or institutional uses established on or after the effective date of this Ordinance.

(4) Zone Four.

(a) Use of single or multiple-family residential dwellings, commercial, or institutional uses established on or after the effective date of this Ordinance.

(b) The tilling of the soil and the raising of crops, provided that the use of fertilizers and pesticides is accomplished within applicable federal, state, and/or local requirements.

(c) The pasturing of livestock, provided all forage is raised on the pastured area.

(c) In addition to the permitted uses specified in Paragraphs 5(a) and 5(b) herein, certain of the uses prohibited in Zones Two, Three, and Four pursuant to Paragraph 6 herein may be allowed in Zones Two, Three, and Four, respectively, if design standards are implemented for the specific use that will prevent contaminated discharges to ground water.

6. **Prohibited Uses**.

(a) Subject to Paragraph 5(c) herein, the following uses are prohibited within the following drinking water source protection zones:

(1) Zone One. All uses that fall within the definition in this Ordinance of "pollution source" or "potential contamination source," including the following, are prohibited in Zone One:

(a) Surface use, storage, or dumping of hazardous waste or material, expressly including industrial or commercial uses of agricultural pesticides (except when such pesticides are used in farming applications within strict compliance of the manufacturer's recommendations of use, subject to inspection by local officials).

(b) Sanitary landfills.

(c) Hazardous waste or material disposal sites.

(d) Septic tanks/drain field systems

(e) Sanitary sewer lines within 150 feet of a wellhead or spring collection area.

(f) Underground storage tanks.

(g) Storm water infiltration structures.

(h) Any pollution source as defined herein or in Rule 309-113-101, as amended, of the Division of Drinking Water's drinking water source protection regulations.

(i) Agriculture industries including but not limited to intensive feeding operations such as feed lots, dairies, fur breeding operations, poultry farms, etc.

(2) Zone Two.

(a) Surface use, storage, or dumping of hazardous waste or material, expressly including industrial or commercial uses of agricultural pesticides (except when such pesticides are used in farming applications within strict compliance of the manufacturer's recommendations of use, subject to inspection by local officials).

(b) Sanitary landfills.

(c) Hazardous waste or material disposal sites.

(d) Septic tanks/drain field systems

(e) Sanitary sewer lines within 150 feet of a wellhead or spring collection area.

(f) Underground storage tanks.

(g) Storm water infiltration structures.

(h) Any pollution source as defined herein or in Rule 309-113-101, as amended, of the Division of Drinking Water's drinking water source protection regulations.

(i) Agriculture industries including but not limited to intensive feeding operations such as feed lots, dairies, fur breeding operations, poultry farms, etc.

(3) Zone Three.

(a) Surface use, storage, or dumping of hazardous waste or material, expressly including industrial or commercial uses of agricultural pesticides (except when such pesticides are used in farming applications within strict compliance of the manufacturer's recommendations of use, subject to inspection by local officials).

(b) Sanitary landfills.

(c) Hazardous waste or material disposal sites.

(e) Agriculture industries including but not limited to intensive feeding operations such as feed lots, dairies, fur breeding operations, poultry farms, etc.

(4) Zone Four.

(a) Surface use, storage, or dumping of hazardous waste or material, expressly including industrial or commercial uses of agricultural pesticides (except when such pesticides are used in farming applications within strict compliance of the manufacturer's recommendations of use, subject to inspection by local officials).

(b) Sanitary landfills.

(c) Hazardous waste or material disposal sites.

7. **Drinking Water Source Protection Requirements**

Except as provided in Paragraph 8(a) herein, following the effective date of this Ordinance, no building permit or other form of approval from the County to develop or use real property within the County shall be issued until the applicant establishes that its proposed development or use of real property complies with the requirements of this Ordinance.

8. **Transition from and preemption of Ordinance No. 121**

(a) Until such time that a public water system submits its drinking water source protection plan to the Utah Division of Drinking Water, the Division provides written notice to the public water system of its approval of the plan, and the public water system provides the Box Elder County Building Permit and Surveyor's Office with a map and any additional information required by the Office identifying the public water system's sources of groundwater for drinking water and the four drinking water source protection zones for each of the sources, no building permit or other form of approval from the County to develop or use real property within the County shall be issued unless the applicant establishes that its proposed development or use of real property complies with the requirements of Ordinance No. 121 ("An Ordinance Providing for the Protection of Culinary Water Supply, Zoning Protection Strip"), if applicable, to the applicant's proposed development or use of real property.

(b) After a public water system submits its drinking water source protection plan to the Utah Division of Drinking Water, the Division provides written notice to the public water system of its approval of the plan, and the public water system provides the Box Elder County Building Permit and Surveyor's Office with a map and any additional information required by the Office identifying the public water system's sources of groundwater for drinking water and the four drinking water source protection zones for each of the sources, no building permit or other form of approval from the County to develop or use real property within the County shall be issued

unless the applicant establishes that its proposed development or use of real property complies with the requirements of this Ordinance.

(c) In the event that a proposed development or use of real property in Box Elder County might be subject to the requirements of Ordinance No. 121 and this Ordinance, the requirements of this Ordinance shall preempt and supersede the requirements of Ordinance No. 121.

9. **Administration**

The policies and procedures or administration of any drinking water source protection zone established under this ordinance, including without limitation those applicable to nonconforming uses, variances and exceptions, and enforcement and penalties, shall be the same as provided in the existing zoning ordinance for Box Elder County, Utah, as the same is presently enacted or may from time to time be amended.

This Ordinance shall take effect immediately upon its adoption and first publication.

SECTION 2: Ordinance No. 121 ("An Ordinance Providing for the Protection of Culinary Water Supply, Zoning Strip Protection") of the Box Elder County Code is hereby amended to include a new Paragraph 17 that shall provide in the entirety as follows:

17. Transition to and preemption by Ordinance No. 216 ("Drinking Water Source Protection").

(a) Following the effective date of Ordinance No. 216 ("Drinking Water Source Protection Ordinance"), until such time that a public water system submits its drinking water source protection plan to the Utah Division of Drinking Water, the Division provides written notice to the public water system of its approval of the plan, and the public water system provides the Box Elder County Building Permit and Surveyor's Office with a map and any additional information required by the Office identifying the public water system's sources of groundwater for drinking water and the four drinking water source protection zones for each of the sources, no building permit or other form of approval from the County to develop or use real property within the County shall be issued unless the applicant establishes that its proposed development or use of real property complies with the requirements of Ordinance No. 121 ("An Ordinance Providing for the Protection of Culinary Water Supply, Zoning Protection Strip"), if applicable, to the applicant's proposed development or use of real property

(b) Following the effective date of Ordinance No. 216, after a public water system submits its drinking water source protection plan to the Utah Division of Drinking Water pursuant to its drinking water source protection regulations, as amended, the Division provides written notice to the public water system of its approval of the plan, and the public water system provides the Box Elder County Building Permit and Surveyor's Office with a map and any additional information required by the Office identifying the public water system's sources of groundwater for drinking water and the four drinking water source protection zones for each of the sources, as provided in Paragraph 4 of Ordinance No. 216, no building permit or other form of approval from the County to develop or use real property within the County shall be issued unless the applicant establishes that its proposed development or use of real property complies with the requirements of Ordinance No. 216

(c) Following the effective date of Ordinance No. 216, in the event that a proposed development or use of real property in Box Elder County might be subject to the requirements of Ordinance No. 121 and Ordinance No. 216, the requirements of Ordinance No. 216 shall preempt and supersede the requirements of Ordinance No. 121.

PASSED, ADOPTED AND ORDERED PUBLISHED this 20th day of January, ~~1997.~~ 1998.

BOX ELDER COUNTY

R. Lee Allen	Voting Aye
Jay Hardy	Voting Aye
Royal K. Norman	Voting Aye

Chairman, Board of County Commissioners

ATTEST:

County Recorder/Clerk

Published on the 28th day of January, 1998, in the Box Elder News Journal.

14.2 DEQ Fact Sheets

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Dry Cleaning Fact Sheet

How Dry Cleaning Works

Dry cleaning is not, in fact, really "dry." Dry cleaning is a method that cleans clothes without using water. Instead of water, the process uses a liquid to dissolve other substances (a solvent). The solvent generally used in dry cleaning is perchloroethylene (PCE), a chlorinated cleaner. PCE dissolves grease and oil from clothing without wetting the fibers. Any dirt that remains is then mechanically removed by the action of the dry cleaning machine.

Typical wastes generated by dry cleaners include spent PCE, still bottom residues from distillation of solvents, spent filter cartridges, cooked powder residue, and water contaminated with PCE. Although not every cleaning facility produces hazardous waste, those facilities that use solvents in the cleaning process are likely to be subject to the Resource Conservation and Recovery Act (RCRA) and state requirements that cover the generation, transportation and management of hazardous waste. All hazardous wastes must be managed and disposed of legally.

Good Housekeeping

Good housekeeping measures can greatly decrease the amount of wastes that are generated. To reduce excess waste production:

- Keep tight fitting lids on containers to prevent loss of chemicals through evaporation or spillage. Keeping lids on containers also prevents mixing with water, dirt or other materials.
- Use spigots and pumps when dispensing new materials and funnels when transferring wastes to storage containers to reduce the possibility of spills.
- Provide secondary containment in areas where PCE and PCE wastes are stored.
- Store products in locations that will preserve their shelf life.
- Never mix different types of wastes together. Mixing wastes may make recycling impossible, or make waste disposal much more expensive.
- Eliminate both liquid and vapor leaks by conducting a regular maintenance program:

    1. Periodically replace the seals on the dryer deodorizer and aeration valves, the door gasket on the button trap and the gasket on the cleaning machine door.
    2. Repair holes in air and exhaust ducts.
    3. Check hose connections and couplings.
    4. Clean lint screens to avoid clogging fans and condensers.
    5. Check baffle assembly in cleaning machine.
    6. Check air relief valves for proper closure.

7. Monitor for vapor losses with solvent leak detectors.

8. Check to see that your water/solvent separator is working correctly. If there is an unusually large amount of PCE in your collection bucket, it is not working correctly.

- Track your solvent "mileage" (pounds of clothes per drum of PCE, to make sure your equipment is running efficiently. If mileage drops, call your equipment supplier for assistance.
- Adjust water flow through condensing coil so that entry and exit temperatures are within 100< F of each other.

Substitute Raw Materials

Consider replacing your current raw materials with raw materials that reduce the amount or toxicity of the waste that you generate. For example, if you use a solvent other than PCE, use one, which is not considered ignitable. You should always take into consideration the cost of disposal when you are deciding what raw materials to purchase.

Modify Your Process

If you are currently using a wet-to-dry cleaning unit, consider replacing it with a dry-to-dry unit. In wet-to-dry units, you lose solvent in the transfer process. Use refrigerated condensation systems to reduce vapor losses.

Solvent Recycling

There are several methods you can use to reclaim PCE from your system. PCE is expensive, so the more that is recovered, the more money is saved. Recycling methods include:

- Distilling your spent PCE in a distillation unit.
- Capturing the PCE vapors, which are vented from your machine and passing them through an activated carbon filter. Passing steam in reverse, through the carbon filter, then reclaims the PCE.
- Using "sniffers" to draw in the PCE vapors from the shop and then using the carbon filter process to reclaim the PCE.

Water Recycling

Water that has been in contact with PCE is a hazardous waste. Whenever possible, reuse it in your dry cleaning equipment. It should never be put into a septic system and should not enter a sewer without the permission from your sewer utility.

Personnel Training

Workers need proper training for their health and safety, for the health of your business, and for the health of the environment. Research has shown this is the most critical step in pollution prevention.

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Energy and Material Conservation Program

- Try to use the latest technology. New equipment may require less energy to operate.
- Identify all materials that are used in the facility. Evaluate how much is going into products and how much into waste.
- Monitor your water and electric meters routinely. Identify peaks and valleys for usage during the day and week. Determine if there are activities that consume water and electricity that could be curtailed during non-production hours.

For More Information, Contact:

Division of Drinking Water, Source Protection Staff - (801) 536-4200

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UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Fertilizer Fact Sheet

What Are The Potential Hazards?

Fertilizer applied to plants during crop, lawn, and garden maintenance may leach into the ground water and cause contamination. The main constituent in fertilizer is usually nitrogen. If the nitrate level of drinking water is too high, infants, up to the age of six months, can develop a fatal disease called blue baby syndrome (methemoglobenemia). Drinking water that contains 10 milligrams of nitrate-nitrogen per liter of water exceeds the drinking water standard and should not be used, especially for infant formula. Proper storage, application, and watering procedures should be included in fertilizer best management practices to prevent contamination of ground water.

Storing Fertilizers

The less fertilizer you buy, the less you will have to store. Therefore, only purchase the amount and kind of fertilizer that you need.

- Fertilizer should be stored in locked, dry cabinets.
- Keep fertilizer and pesticides on separate shelves.
- Don't store fertilizers with combustibles, such as gasoline and kerosene. This creates an extreme explosion hazard.

Application Precautions

The chemical in fertilizer that can most easily pollute ground water is a form of nitrogen called nitrate. Nitrate moves readily in soil to the ground water strata. The best way to prevent the movement of nitrate into the ground water is to apply no more nitrogen than the crops, grass, garden plants, shrubs, or trees can use during the time that the plants are growing.

- Calibrate your spreader and sprayer to keep from applying too much fertilizer.
- Load fertilizer spreaders on the driveway or other hard surfaces so any spills can easily be swept up. Fertilizer that spills should be swept up and applied to the lawn or garden at the right time and amount. This allows the fertilizer to grow plants instead of washing off into the storm drain system and ultimately contaminating nearby streams and lakes.
- If you are using liquid fertilizer on your turf, add fertilizer to the spray tank while on the lawn. This way, if you spill the fertilizer, it will be used by the plants and not run off into the storm drain system.
- Do not spray or apply fertilizer near irrigation wells. Wells are conduits to the ground water.

Application Rates for Lawns

Utah State University's Extension Service recommends the following for Utah lawns: ☐It is important to fertilize on a regular basis every four to six weeks to maintain an attractive lawn. Begin when lawns start

to green in the spring, mid to late April. Earlier applications may cause a lawn to become greener faster, but may also increase spring disease problems. Summer applications of nitrogen fertilizer will not burn lawns, if you apply them to dry grass and water immediately. Fall applications are important for good winter cold tolerance, extended fall color, and fast spring green-up. A complete fertilizer containing nitrogen, phosphorus and potassium should be applied in the fall every three to four years. This will prepare the lawn for winter conditions and allow the phosphorus to penetrate into the root zone by the next growing season.

For a well-kept lawn in Utah, apply 1 pound of available nitrogen per 1,000 square feet each four to six weeks throughout the growing season.

Types of Plants

One of the best ways to protect your groundwater is to use plants that are drought-tolerant and that are adapted to your area. Drought-tolerant or low-water-use plants can continue to survive once they are established, even during times of little rainfall. Because you do not have to water these plants, there is less chance that nitrate and pesticides will be carried with the water through the soil and into the groundwater.

If low-water-use plants are not practical, then try to use medium water use plants. Water these plants only when they begin to show drought stress. Some plants will wilt when they are drought-stressed, while other plants will show marginal leaf burn.

Watering

Over-watering plants can cause excess water to move through the soil. This water can flush fertilizer away from the root zone of your plants and into the ground water. The best way to avoid over-watering is simply to measure how much you are adding. Contact your county Extension Service to determine the best way to calculate how much water your plants need and how to measure the amount you are applying.

For More Information, Contact:

Division of Drinking Water, Source Protection Program - (801) 536-4200

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Household Hazardous Waste Fact Sheet

What is Household Hazardous Waste?

Many hazardous products and chemicals such as fuel, cleaners, oils and pesticides are used in and around the home every day. When improperly discarded, these products are called household hazardous waste (HHW). HHWs are discarded materials and products that are ignitable, corrosive, reactive, toxic or otherwise listed as hazardous by the EPA. Products used and disposed of by a typical residence may contain more than 100 hazardous substances including:

- Batteries
- Cleaners
- Cosmetics
- Fluorescent light bulbs
- Glues
- Heating oil
- Insecticides and pesticides
- Ink
- Medicines
- Motor oil, fuel and automotive supplies
- Paints, thinners, stains and varnishes
- Polishes
- Swimming pool chemicals
- Smoke detectors
- Thermometers
- Fuel

HHW is a Serious Threat

The U.S. Environmental Protection Agency estimates the average American household generates 20 pounds of HHW each year. As much as 100 pounds of HHW can accumulate in the home and remain there until the resident moves or undertakes a thorough spring cleaning.

Since the chemicals found in HHW can cause soil and groundwater contamination, generate hazardous emissions at landfills and disrupt water treatment plants, it is important to dispose of HHW properly. Many solid waste treatment facilities are currently required to screen for HHW to avoid operating under restrictive hazardous waste laws. Furthermore, many communities may be required to establish a HHW collection program in order to qualify for permits to manage storm water.

Safe Handling Tips

The best way to handle household hazardous materials is to completely use the product before disposing of the container. If this is not possible, then the next alternative is to return unused portions to your community household hazardous waste clean-up day. Keep products in their original package with all labels intact. If the container is leaking, place it in a thick plastic bag. Pack the products in a plastic-lined cardboard box to prevent leaks and breakage.

Household hazardous waste clean-up days are for household wastes only. No industrial or commercial wastes and no containers larger than five gallons are accepted. Explosives, radioactive material and medical wastes are also unacceptable.

HHW can be dangerous to people and pets who come in contact with them. HHW can endanger water supplies, damage sewage treatment systems, and cause other environmental damage. Only use the products as directed. **DO NOT:**

- Flush HHWs down the toilet
- Pour HHWs down the sink
- Pour HHWs down a storm drain
- Pour HHWs on the ground

Contact your local health department or the Division of Solid and Hazardous Waste to determine whether your community has a household hazardous waste collection program.

Identify HHW

Reduce the amount of potentially hazardous products in your home and eliminate what you throw away by following these easy steps:

1. **Before you buy:**

- Read the labels and be aware of what they mean.
- Look for these words on labels; they tell you what products may need special handling or disposal.

Caution	Flammable
Combustible	Poison
Corrosive	Toxic
Danger	Volatile
Explosive	Warning

- Buy only what you can use entirely.
- Select a product best suited for the job.

2. **After you buy:**

- Read label precautions and follow directions for safe use.
- Recycle/dispose of empty containers properly. Clean up spilled products properly.
- Share what you can't use with friends or neighbors.
- Store properly.
- Use recommended amounts; more is not necessarily better.
- Use the child-resistant closures and keep them on tightly.

For More Information, Please Contact:

Division of Drinking Water, Source Protection Program - (801) 536-4200

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Metal Finisher Fact Sheet

There are over 31,000 metal finishing facilities in the United States that generate hazardous waste from their production processes. Pollution prevention (P2) and the reduction of hazardous waste generation can save money and reduce future liabilities. Typical wastes generated are:

- Industrial wastewater and treatment residues
- Spent plating baths
- Spent process bathsSpent cleaners
- Waste solvents and oils

Waste Reduction

Both state and federal regulations require large quantity generators of hazardous waste to file a biennial generator's report including a description of efforts undertaken and achievements accomplished during the reporting period to reduce the volume and toxicity of hazardous waste generated.

Pollution prevention and waste minimization practices reduce the amount of waste generated, reduce the amount of waste subject to regulation, and help businesses comply with the requirements while saving money. Management commitment to P2 and waste minimization is just a beginning. Passing that on to employees through training in P2, waste minimization, hazardous waste handling, emergency response, and incentive programs for new waste reduction ideas is critical for success.

Source Reduction

Waste assessments are used to list the sources, types and amounts of hazardous waste generated to make it easier to pinpoint where wastes can be reduced. Source reduction is usually the least expensive approach to prevent or minimize waste. Many of these techniques involve housekeeping changes or minor in-plant process modifications.

Improved Procedures and Segregated Wastes

- Keep work areas clean.
- Improve inventory procedures to reduce the amount off-specification materials generated.
- Designate protected raw materials and hazardous waste storage areas with spill containment.
- Keep the areas clean and organized and give one person the responsibility for maintaining the areas.
- Label containers as required and cover them to prevent contact with rainfall and to avoid spills.
- Use a "first in, first-out" policy for raw materials to keep them from becoming too old to be used.
- Give one-person responsibility for maintaining and distributing raw materials.
- Designate one person to accept chemical samples and return unused samples to suppliers.
- Limit bath mixing to trained personnel.
- Segregate waste streams for recycling and treatment, and to keep non-hazardous materials from being contaminated.
- Prevent and contain spills and leaks by installing drip trays and splashguards around processing equipment.
- Conduct periodic inspections of tanks, tank liners, and other equipment to avoid failures.
- Repair malfunctions when they are discovered. Use inspection logs to follow up on repairs.
- Inspect plating racks for loose insulation that would cause increased drag-out.
- Use dry cleanup where possible to reduce the volume of wastewater.

Material Substitution

- Use process chemicals that are recyclable or treatable on-site.
- Use deionized water instead of tap water in process baths and/or rinsing operations to reduce sludge volume.
- Use non-chelated process chemistries to reduce sludge volume.
- Use non-cyanide process baths to simplify treatment required.
- Use alkaline cleaners instead of solvents for degreasing operations. They can be treated on-site and usually discharged to the sewer with permit authorization.

Extending Process Bath Life

- Treatment (filtration, electrolytic dummying) of process baths can extend their useful life.
- Bath replenishment extends the useful life of the bath.
- Monitoring (using pH meters or conductivity meters) the process baths can determine the need for bath replenishment.

Drag-Out Reduction

- Minimize bath concentrations to the lower end of their operating range.
- Maximize bath operating temperatures to lower the solution's viscosity.
- Use wetting agents (which reduce the surface tension of the solution) in process baths to decrease the amount of drag-out.
- Withdraw work pieces from tanks slowly to allow maximum drainage back into process tank.
- Use air knives or spray rinses above process tanks to rinse excess solution off work piece and into process bath.
- Install drainage boards between process tanks and rinse tanks to route drag-out back to process tank.
- Use dedicated drag-out tanks after process baths to capture drag-out.
- Install rails above process tanks to hang work piece racks for drainage prior to rinsing.

Rinse Systems

- Use spray rinses as initial rinse after process tank and before dip tank.
- Use air agitation or work piece agitation to improve rinse efficiency.
- Install multiple rinse tanks (including counter flow rinse tanks) after process baths to improve rinse efficiency and reduce water consumption.

Recycling and Resource Recovery

- Reactive rinsing reuses the acid rinse wastewater as the in-take for the alkaline rinse tank. This allows the fresh water feed to the alkaline rinse tank to be turned off. This can also be applied to process tank rinses.
- Treat rinse wastewater to recover process bath chemicals. This allows the reuse of the waste water for rinsing or neutralization prior to discharge.
- Reuse the spent by-products from the process baths in the wastewater treatment process.
- Recycle spent solvents on-site or off-site.
- Use treatment technologies to recycle rinse waters in a closed or open loop system.

- Some recycling and most treatment processes require a permit. Be sure to contact the state Division of Solid and Hazardous Waste to determine if you need a permit to treat or recycle your wastes.

Treatment Alternatives

- Pre-treat process water to reduce the natural contaminants that contribute to sludge volume.
- Use treatment chemicals that reduce sludge generation (e.g., caustic soda instead of lime).
- Use sludge de-watering equipment to reduce sludge volume.
- Use treatment technologies (such as ion exchange, evaporation, or electrolytic metal recovery) that do not use standard precipitation/clarification methods, which generate heavy metal sludge.

For More Information, Please Contact:

Division of Drinking Water, Source Protection Program - (801) 536-4200

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UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Pesticides Fact Sheet

What Are The Potential Hazards?

Pesticides applied to plants during crop, lawn, and garden maintenance may leach into the ground water and cause contamination. Proper storage, mixing, application, spill cleanup, watering, and disposal procedures should be included in pesticide best management practices.

Storing Pesticides

The fewer pesticides you buy, the fewer you will have to store. Therefore, only purchase the amount and kind of pesticide that is needed. Pesticides should always be stored in sound, properly labeled, original containers. ***Sound containers are the first defense against spills and leaks.***

- Ensure that there are no holes, tears, or weak seams in the containers and that the label is readable.
- Pesticides should be stored in locked, dry cabinets.
- Be sure to store dry products above liquids to prevent wetting from spills.
- Storage and mixing areas should not be located near floor drains of any kind.
- Storage facilities should have secondary containment, such as a berm or dike, which will hold spills or leaks at:
    - 10% of the total volume of the containers, or
    - 110% of the volume of the largest container, whichever is larger.

Mixing Pesticides

- Mix pesticides on an impermeable surface, such as concrete, so any spills will be contained.
- Mix only the amount that you will use:
    - Measure the total square feet you intend to treat.
    - Read the label on the pesticide container and follow the instructions. (These are often given in terms of amount of pesticide to use per thousand square feet.)
    - By properly measuring and calculating, there should be little or no pesticide left in the spray tank when the job is finished and it will be applied at the recommended rate.

Applying Pesticides

Pesticides are used to kill or control weeds (herbicides), insects (insecticides) and fungi (fungicides) that attack plants. Some of these pesticides can move through the soil and into the ground water. Guidelines for the safe use of pesticides are listed below:

- Be willing to accept a low level of weed, insect, and plant disease infestation.
- Use pesticides only when absolutely necessary.
- Identify pests correctly. Use the proper pesticides.
- Read and follow the directions printed on the container labels. Remember, the label is the law.

- Calibrate your spreader and sprayer to keep from applying too much pesticide.
- Do not spray or apply pesticides near irrigation wells. Wells are conduits to the ground water.
- Do not spray or apply pesticides near your walks and driveway. This prevents them from washing off into the storm drain system.

Cleaning Up Spills

- Dry formulated pesticide spills should be swept up and applied to crops, lawns, and gardens at the rate specified on the label.
- Liquid pesticide spills should be soaked up using absorbent material (such as, soil, sawdust, and cat litter). The contaminated absorbent material should then be put in a sealed container and taken to a household hazardous waste collection site.

Watering

Over-watering your plants can cause excess water to move through the soil. This water can carry pesticides that can contaminate the ground water. The best way to avoid over-watering is simply to measure how much you are adding. Contact your county Extension Service to determine the best way to calculate how much water your plants need and how to measure the amount you are applying.

Disposing of Pesticides

If the pesticide was properly measured and mixed, there should be little or no spray left in the tank. The little that may be left can be safely sprayed over the area that was treated until it is gone. Disposal of empty pesticide containers and unused pesticides should be handled as follows:

- If you are using liquid pesticides, rinse the container three times. Be sure to pour the rinsing into your sprayer and not down a drain or onto the ground. Containers, which have been emptied and rinsed, can be discarded in the trash.
- Unused pesticides in their original containers can be recycled at household hazardous waste collection sites.

For More Information, Please Contact:

Division of Drinking Water, Source Protection Program - (801) 536-4200

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Pollution Prevention Fact Sheet

Pollution Prevention (P2) uses source reduction techniques and practices to reduce or eliminate the amount of hazardous substances, pollutants or contaminants entering any waste stream or being released into the environment. In short, P2 means not creating waste in the first place while reducing risks to public health, welfare, and the environment.

Pollution Prevention is Good Business

While most pollution control strategies cost money, P2 has saved many businesses thousands of dollars in treatment and disposal costs. Other economic benefits include:

- Reduced operating costs.
- Savings from reduced need for pollution control equipment.
- Elimination of waste transportation, storage, disposal and liability costs.
- Reduced compliance costs from government regulations.
- Improved public image.
- Stimulating reinvestment and enhancing competitiveness.
- Reducing risk of spills, accidents and emergencies.
- Increasing environmental protection.

P2 Techniques

Generating less waste is the best way businesses can practice pollution prevention. This can be achieved through:

- Inventory management: Tracking all raw materials and improving operations.
- Substitute non-hazardous materials for hazardous materials.
- Improving material receiving, storage, and handling practices.
- Modifying and redesigning equipment to enhance recovery and recycling.
- Improved operating efficiency of equipment.
- Establishing strict preventive maintenance programs.
- Segregating wastes for recovery.
- Separating hazardous & non-hazardous wastes to prevent cross-contamination.
- Eliminating sources of leaks and spills.
- Use of water soluble cleaning agents in place of organic solvents and degreasers.

Management Support

The support of company management is essential for developing a lasting and successful P2 program. This commitment should be passed on to employees, especially those working in areas that generate hazardous waste. Management approaches may include the following:

- Make P2 a part of the company policy, a process of continuous improvement.
- Target goals for reducing the volume and toxicity of waste streams.
- Implement recommendations identified through waste assessments.
- Reward employees who identify cost-effective P2 opportunities.
- Train employees in P2 hazardous material waste handling and emergency response procedures.

Good Housekeeping

Most successful P2 waste assessments identify sources of waste and calculate the true cost of waste generation and management. A little extra attention paid to minor sources of waste can result in major reductions. Improved housekeeping practices, system adjustments, process and product inspections, and the use of production unit control equipment and methods are often successful P2 practices. Others include:

- Inspect and repair equipment to reduce waste caused by equipment failure, leaks and spills.
- Contain leaks and spills by using drip trays and splashguards.
- Keep containers closed except when material is added or withdrawn.
- Utilize a “first-in first-out” inventory policy to avoid losses due to expirations.

Product Substitution

Some companies are so motivated by pollution prevention practices they change the products they produce in order to employ nonhazardous production processes. For example, they may change the design, specifications, or composition of an existing end product to reduce the need for toxic materials, which can help reduce pollution and associated costs.

Process Modification

Inefficient or outdated production processes that could be sources of hazardous waste generation can be upgraded or replaced by a more efficient process.

- Changes in the placement order of equipment.
- Equipment modification.
- Changes in operation settings and schedules.
- Process automation.

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UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Printing Shop Fact Sheet

Pollution prevention (P2) is the reduction or elimination of harmful pollutants discharged or introduced to the environment. Pollution prevention reduces the generation of wastes at their source by using, reusing or reclaiming wastes once they are generated.

Pollution prevention is good business

While most pollution control strategies cost money, P2 has saved many firms thousands of dollars in treatment and disposal costs alone. By reducing or eliminating wastes a firm can:

- Reduce operating costs for energy, waste disposal, water and raw materials.
- Protect workers, the public and the environment.
- Reduce risk of spills, accidents and emergencies.
- Reduce vulnerability to lawsuits and improve its public image.

Printing is a chemical-intensive industry. The cost of disposing of hazardous and non-hazardous wastes can provide printing firms with tremendous incentives to reduce the generation of wastes. The volume or toxicity of waste produced by the printing industry may be reduced through source reduction, recycling and product substitution.

Trash and Recyclable Waste Paper

The printing industry produces waste paper in large quantities. The volume of waste paper can be reduced through recycling, improved operating procedures, and equipment changes.

- Recycle waste paper for use in pulp, paper and paper containers.
- Utilize improved start-up procedures to reduce waste to a minimum.
- Use improved maintenance to reduce the occurrence of unexpected machine downtime.
- Recycle spoiled photographic film and paper by sending it out to silver reclaimers.

Waste Lubricating Fluids from Machinery

Lubricating fluids used in most machinery may be contaminated with hazardous materials, such as lead or cadmium. If not recycled, they should be disposed of properly.

Segregate used oil from solvents or other materials.

Recycle used oil or burn for energy in accordance with applicable regulations.

Waste Chemicals, Inks, and Solvents

Certain printing processes produce waste chemicals, inks or solvents. The following methods can reduce the volume or toxicity of these wastes:

- Use silver-free films for contact operations. Recover silver to the maximum extent possible.
- Use water-based developed lithographic plates or wipe-on plates.
- Prolong the potency of oxidation process baths by reducing their exposure to air.

- Recover waste solvents on-site with batch distillation or use professional solvent recyclers.
- Fill ink fountains with only enough ink for the run or shift and return unemulsified inks to their containers. Use anti-skinning aerosols to prevent ink dry-up during shutdowns.
- Recycle empty containers by purchasing ink in bulk containers that can be returned to the supplier for refilling. Recycle used and leftover inks.
- Use water-based inks in gravure and flexographic printing processes.
- Use electronic imaging and laser plate making if possible.
- Only use the amount of solvent from the container necessary to complete the cleaning task.
- Use automatic cleaning equipment to promote more efficient use of cleaning solvent.
- Substitute less toxic solvents, such as hexane, for the highly toxic aromatic solvents. Use detergent solutions instead of solvents.
- Segregate spent solvents according to color and type of ink. Reuse the collected wastes to thin future batches of the same ink.
- Use press wipes as long as possible before discarding or laundering. Use dirty ones for the first pass, clean ones for the second pass.
- Set up an in-house dirty rag cleaning operation.

Process Wastewater

Certain printing processes produce waste chemicals and wastewater. The following methods can reduce the volume or toxicity of these wastes:

- Employ counter-current washing instead of parallel rinse systems to reduce process solution contamination and water usage. Reuse rinse water as long as possible.
- Eliminate once through cooling water for equipment and air compressors.
- Use squeegees to wipe off excess liquid in a non-automated processing system to minimize process bath contamination. This procedure increases the ease with which the bath can be recycled, prolongs bath life, and reduces the amount of replenisher chemicals required.
- Monitor and accurately add replenisher chemicals to process baths to reduce chemical wastes.
- Run similar jobs on the same day, or schedule jobs using light colored inks before darker ones. This may reduce the amount of equipment cleaning required between runs.
- Dedicate presses for various ink colors, if feasible. This will result in fewer cleanups. Dedicate one press for inks containing hazardous pigments or solvents.

Pollution prevention is everyone's responsibility. Management can demonstrate its commitment to pollution prevention and encourage employee participation by: Training employees in pollution prevention techniques, encouraging employee suggestions, providing incentives for employee participation, and providing resources necessary to get the job done.

For More Information, Please Contact:

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UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Septic Tank/Drainfield Fact Sheet

What Are The Potential Hazards?

Septic systems can contaminate ground water if they are misused, improperly maintained, or improperly constructed. The major contaminant discharged from septic systems is disease-causing germs. These germs (bacteria and viruses) - can cause many human diseases. Another contaminant discharged from septic systems is nitrogen in the form of nitrate. If the nitrate level of drinking water is too high, infants, up to the age of six months old, can develop a fatal disease called blue baby syndrome (methemoglobenemia). Additionally, if toxic chemicals are disposed in a septic system, they can percolate through the drain-field and into the ground water.

How Does a Septic Tank/Drain-field System Work?

The basic septic system is composed of a septic tank followed by a drain-field. Wastewater flows out of the house and into the septic tank through the building sewer pipe. Once in the septic tank, most solids in the wastewater settle to the bottom of the tank to form a sludge layer. Other solids float and form a scum layer on top of the wastewater. Some decomposition of solid material takes place here, but the primary function of a septic tank is to trap solids and prevent them from entering the drain-field.

Wastewater treatment is restricted to a rather thin zone of unsaturated soil underlying the drain-field. Many of the harmful bacteria and microbes are filtered out as the wastewater passes through this soil. Some of the smaller microbes (viruses) and nutrients such as phosphorus and some forms of nitrogen are trapped and held (adsorbed) by soil particles. Once the effluent reaches the groundwater table, little treatment occurs. Soils can differ markedly in their pollutant removal efficiency. The ability to which soil can remove pollutants in the wastewater determines how many impurities will eventually reach the groundwater beneath the drain-field.

Site Evaluation And Construction

Current rules require a comprehensive evaluation of the soil and ground water before a septic system can be permitted for construction in a given location. This evaluation must be reviewed and approved by the local health department. The rules require that the bottom of the drain-field trenches be placed at least 12 inches (preferably 24 inches) above the water table. Additionally, there must be adequate amounts of unsaturated soil beneath the trenches to allow sufficient treatment of the wastewater.

Site Considerations

Trees and deep-rooted shrubs should be as far away from the system as possible.

Keep the water that runs off of foundation drains, gutters, driveways, and other paved areas away from the drain-field of your septic system.

Keep the soil over the drain-field covered with grass to prevent soil erosion.

Don’t drive vehicles over the system.

Don’t cover the tank or drain-field with concrete or asphalt and don’t build over these areas.

Proper Disposal Practices

Use only a moderate amount of cleaning products and do not pour solvents or other household hazardous waste down the drains.

Garbage disposals should not be used because they tend to overload the system with solids. If you have one, you should severely limit its use.

Do not pour grease or cooking oil down the sink.

Do not put items down the drain that may clog the septic tank or other parts of the system. These items include cigarette butts, sanitary napkins, tampons, condoms, disposable diapers, paper towels, eggshells, and coffee grounds.

Water Conservation

There are limits to the amount of wastewater a septic system can treat. If you overload the system, wastewater may backup into your home or surface over your drain-field. Problems caused by using too much water can occur periodically throughout the year or be seasonal. For example, the soil beneath your drain-field is wetter in the spring than it is in the summer and its capacity to percolate wastewater is somewhat diminished. If you wash all your laundry in one day, you may have a temporary problem caused by overloading the soil's capacity to percolate wastewater for that day. To reduce the risk of using too much water, try the following:

Use 1.6 gallons (or less) per flush toilets.

Fix leaking toilets and faucets immediately.

Use faucet aerators at sinks and flow reducing nozzles at showers.

Limit the length of your shower to 10 minutes or less.

Do not fill the bathtub with more than 6 inches of water.

Do not wash more than one or two loads of laundry per day.

Do not use the dishwasher until it is full.

Septic Tank Cleaning

It is recommended that the solids that collect in your septic tank be pumped out and disposed at an approved location every three to five years. If not removed, these solids will eventually be discharged from the septic tank into the drain-field and will clog the soil in the absorption trenches. If the absorption trenches are clogged, sewage will either back up into the house or surface over the drain-field. If this happens, pump the tank will not solve the problem and a new drain-field will probably need to be constructed on a different part of the lot.

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UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
DRINKING WATER

Vehicle Maintenance and Repair Fact Sheet

Background

Vehicle repair shops generate regulated waste, either from the services they provide, such as fluid replacement, or from operations they perform, such as parts washing. Some common waste types include:

Degreasers

Engine fluids (oil, antifreeze)

Floor dust

Floor wash water

Lead acid batteries

Metal parts/scrap

Oily waste sump sludge

Spent solvents

Paints and thinners

Paper products (masking paper, cardboard, office paper.)

Rags and absorbents

Refrigerants

Tires

Here are some options vehicle maintenance and repair companies can use to reduce waste.

Train Employees to use Good Housekeeping Practices

- Implement spill prevention measures to reduce products from entering the environment.
- Perform preventative maintenance on equipment and vehicles.
- Check incoming vehicles for leaking fluids. Use drip pans to prevent spillage.
- Prevent non-hazardous material from getting contaminated by segregating waste streams.
- Monitor your inventory in storage to reduce accumulation of over-age products.
- Implement a “first-in first-out” policy.

Substitute Materials

- Look for ways to replace solvents with water based cleaners.
- Substitute detergent-based solutions for caustic solutions when cleaning.
- Substitute non-asbestos brake lining for asbestos brake lining.
- Purchase materials in non-aerosol form.
- Use biodegradable floor cleaners.
- Use non-chlorinated brake cleaners.

Modify Processes

- Pre-rinse parts with spent cleaning solution.

- Remove parts slowly after immersion in solvent solution to prevent spillage.
- Use a still rinse solvent sink rather than a free running rinse.
- Cover or plug solvent sinks when not in use to prevent evaporation.
- Replace solvent parts washers with a hot water washer or jet spray.
- Place cleaning equipment in a convenient location near the service bays to reduce drips and spills.
- Change spray-painting process to high volume, low pressure process which will minimize paint lost due to over-spray.

Recycle

- Recyclable waste streams should be segregated to prevent cross-contamination.
- Oils and antifreeze should be collected and recycled.
- Lease or purchase solvent sinks and recycle solvent on or off site.
- Send tires, batteries, and metal parts to a recycler.
- Contract a linen service that will supply clean rags and collect dirty ones for washing.
- Purchase a recycling system to recover refrigerant. Reuse containers within the facility or through a drum salvage company.
- An oil/water separator should be used before water is diverted to sewer.

For More Information, Please Contact:

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