LANDFILL ANNUAL REPORT

For Calendar year 2012

SW118

Division of Solid and Hazardous Waste

FEB 27 2013

2013-002106

Administrative Information (Please enter all the information requested below)

Facility Name: Bayview Landfill

Facility Mailing Address: P.O. Box 507

(Number & Street, Box and/or Route)

City: Springville Zip Code: 84663

County: Utah Permit Number: 9420R1

Owner

Name: South Utah Valley Solid Waste District Phone No.: (801)489-3027

Owner Mailing Address: P.O. Box 507, 2450 West 400 South

(Number & Street, Box and/or Route)

City: Springville State: Utah Zip Code: 84663

Contact Name: Terry Ficklin Contact Title: General Manager

Contact's Mailing Address: P.O. Box 507, Springville Utah 84663

Phone No.: (801)489-3027 Contact's Email Address: tficklin@suvswd.org

Operator (Complete this section only if the operator is not an employee of the Owner shown above)

Name: Phone No.:

Owner Mailing Address:

(Number & Street, Box and/or Route)

City: State: Utah Zip Code:

Contact Name: Contact Title:

Contact's Mailing Address:

Phone No.: Contact's Email Address:

Facility Type and Status

☒ Class I ☐ Class IIIb ☐ Class V ☐ Facility Closed during the year

☐ Class II ☐ Class IVa ☐ Class VI

☐ Class IIIa ☐ Class IVb

Date Closed:

Annual Disposal (Tons received at the facility for disposal)

Waste Type	Waste Origin		Total	Measurement	
	In-State	Out-of-State		Tons	Cubic Yards
Municipal	122,861.53		122,861.53	☒	☐
Industrial				☐	☐
C/D*				☐	☐

*C/D waste includes all waste going to a Class IV or VI landfill cell

Conversion Factor Used

☒ None Used ☐ Site Specific ☐ From Rules List Site Specific Conversion:

Recycling

Material Recycled: _____ Reported in Tons ☐ Cubic Yards ☐

Utah Disposal Fee

Disposal fee required to be paid to State Yes ☒ No ☐ (If yes please show fees paid below)

Municipal: _____ Industrial: _____ C/D: _____ Annual: $14,700.00

Municipal, Industrial and C/D are fees paid by Commercial Facilities. Annual fee is paid by facilities operated by a municipality

Current Landfill Remaining Capacity

Tons: _____ Cubic Yards: _____ Acre: _____ Years: 70.00

Acres Currently Open: 43.00 Acres Currently Closed: 32.00

Financial Assurance

Current Closure Cost Estimate: $1,425,465.00

Current Post-Closure Cost Estimate: $1,048,657.00

Current Amount or Balance in Mechanism: $3,082,176.19

(If facility permit has been renewed and if balance does not equal or exceed total for closure and post-closure care please contact the Division)

Current Financial Assurance Mechanism: Utah Public Treasurers' Investment Fund

(ie. Bond, Trust Fund, Corporate or government Test etc.)

Current Financial Assurance Mechanism Holder: PTIF #254

(ie. Name of Bond Company, Bank etc. Account number)

Financial Assurance: Each facility must recalculate the cost of closure and post-closure care to account for inflation and design changes each year. The inflation factor can be found on the Division web page. Facilities that are using a trust account should include a copy of the most recent account statement.

Note Facilities using "Local Government Financial Test" or the "Corporate Financial Test" must provide the information required in R315-309-8(4) or R315-309-9(3) each year.

Other Reports and Information to be Submitted with Annual Report

Ground Water Monitoring: Class I and V landfills only. Check if exempt ☐

Explosive Gas Monitoring: Class I, II and V landfills only. Check if exempt ☐

Does the facility have a landfill gas collection system Yes ☐ No ☒

If yes please briefly describe use of gas, e.g., flared or used for electricity generation.

_____

Training Report: A report of all training programs or procedures completed by facility personnel during the year.

Signature: Terry Ficklin Date : 2-25-2013

Signature should be by an executive officer, general partner, proprietor, elected official, or a duly authorized representative. A duly authorized representative must meet the requirements of the solid waste rules (UAC R315-310-2(4)(d)).

Type Name: Terry Ficklin Title: General Manager

SOUTH UTAH VALLEY SOLID WASTE DISTRIC

Bayview landfill

2012 training and certifications

Landfill supervisor

MOLO certified

Fire fighter 1 and 2 certified

Hazmat awareness certified

Hazmat operations certified

CPR and AED certified

Apparatus driver operator P

Certified

Equipment operators

1 Fire I and 2 certified

1 Hazmat awareness certified

1 hazmat operations certified

7 CPR AED certified

2 certified composting

technical associates

Training Topics 2012

Monthly Safety Training

Personal Protective Equipment

SCBA testing and use

SWPPP spills Training

Incident Command system

200 300 400 700

GPS Training

Equipment Mounting and Dismounting 3 points of contact

Emergency Response Plan

Welding Safety

Heavy Equipment Use and Operations

Equipment Walk Around Inspections

Tender-Water Truck Operations

Communicating safely

Safety mistakes

Ergonomic safety

Heavy equipment rescue

Pumps repair and operations

South Utah Valley Solid Waste District
Bayview Landfill
Quarterly Landfill Gas Monitoring Results

1st Quarter 2012

Date 4/20/2012

Time 11:30

Weather overcast breazy Temperature 55°

Sample Collector Scott Aiken

Monitoring Device Calibrated Prior to sampling. (Yes) No

Monitoring Device Used: PhD Plus Multi Gas Detector

	Monitoring Location	Measured %LEL	Internal Action Limit Half Regulatory Limit %LEL	Regulator Action Limit %LEL
Maintenance Shop Outside		0%	12	25
Office Lunch Room Inside		0%	12	25
North Boundary		0%	50	100
South Boundary		0%	50	100
East Boundary Leachate Pond		0%	50	100
West Boundary Pump House		0%	50	100

Gas Sample Collector: If measured %LEL equals or exceeds internal action limit, contact landfill supervisor.

Landfill Supervisor: If measured %LEL equals or exceeds regulatory action limit, notify the State Director, in compliance with 40 CFR 258.23c.

Comments: weather was cool with 50TH breeze

no signs of stressed vegitation

Samples Collected By Scott Aitken

South Utah Valley Solid Waste District
Bayview Landfill
Quarterly Landfill Gas Monitoring Results

2nd Quarter 2012

Date 7/26

Time 1:15

Weather Sunny slight breeze Temperature 80°

Sample Collector Scott Aitken

Monitoring Device Calibrated Prior to sampling (Yes) No

Monitoring Device Used: PhD Plus Multi Gas Detector

	Monitoring Location	Measured %LEL	Internal Action Limit Half Regulatory Limit %LEL	Regulator Action Limit %LEL
Maintenance Shop Outside		0%	12	25
Office Lunch Room Inside		0%	12	25
North Boundary		0%	50	100
South Boundary		0%	50	100
East Boundary Leachate Pond		0%	50	100
West Boundary Pump House		0%	50	100

Gas Sample Collector: If measured %LEL equals or exceeds internal action limit, contact landfill supervisor.

Landfill Supervisor: If measured %LEL equals or exceeds regulatory action limit, notify the State Director, in compliance with 40 CFR 258.23c.

Comments: Rain showers yesterday ground not muddy slight breeze out of the SOUTH

Samples Collected By Scott Aitken

South Utah Valley Solid Waste District
Bayview Landfill
Quarterly Landfill Gas Monitoring Results

3 Quarter 2012

Date 9/14/1

Time 10:45 am

Weather slight overcast slight breeze Temperature 82°

Sample Collector Scott Aitken

Monitoring Device Calibrated Prior to sampling. (Yes) No

Monitoring Device Used: PhD Plus Multi Gas Detector

	Monitoring Location	Measured %LEL	Internal Action Limit Half Regulatory Limit %LEL	Regulator Action Limit %LEL
Maintenance Shop Outside		0%	12	25
Office Lunch Room Inside		0%	12	25
North Boundary		0%	50	100
South Boundary		0%	50	100
East Boundary Leachate Pond		0%	50	100
West Boundary Pump House		0%	50	100

Gas Sample Collector: If measured %LEL equals or exceeds internal action limit, contact landfill supervisor.

Landfill Supervisor: If measured %LEL equals or exceeds regulatory action limit, notify the State Director, in compliance with 40 CFR 258.23c.

Comments: slight breeze out of South dry conditions

Samples Collected By Scott Aitken

South Utah Valley Solid Waste District
Bayview Landfill
Quarterly Landfill Gas Monitoring Results

4TH Quarter 2012

Date 11/30/2012

Time 10:30

Weather breezy rain cold Temperature 40°

Sample Collector Scott Aitken

Monitoring Device Calibrated Prior to sampling. (Yes) No

Monitoring Device Used: PhD Plus Multi Gas Detector

	Monitoring Location	Measured %LEL	Internal Action Limit Half Regulatory Limit %LEL	Regulator Action Limit %LEL
Maintenance Shop Outside		0%	12	25
Office Lunch Room Inside		0%	12	25
North Boundary		0%	50	100
South Boundary		0%	50	100
East Boundary Leachate Pond		0%	50	100
West Boundary Pump House		0%	50	100

Gas Sample Collector: If measured %LEL equals or exceeds internal action limit, contact landfill supervisor.

Landfill Supervisor: If measured %LEL equals or exceeds regulatory action limit, notify the State Director, in compliance with 40 CFR 258.23c.

Comments: cold rain showers breezy.

Samples Collected By Scott Aitken

February 25, 2013

Terry Ficklin
General Manager
South Utah Valley Solid Waste District
2450 West 400 South
Springville, Utah 84663

Re: Updated Closure and Post Closure Care Cost Estimates

Dear Terry:

This letter transmits an updated closure and post closure cost estimate. Because there was not change in the landfill operations, the cost estimates prepared in 2012 were inflated to reflect 2013 dollars. An inflation factor of 1.01767 (1.767%) was applied as recommended by the Division of Solid and Hazardous Waste[1]. The total closure and post closure care estimate for 2013 is ***$2,474,122***. Please include a copy of your trust fund balance when you submit these estimates.

I appreciate the opportunity to provide engineering services to the District. If you have any questions or comments regarding this report, please contact me at (801) 743-7812.

Sincerely,

Terry Warner, P.E.

enclosure

[1] http://www.hazardouswaste.utah.gov/Solid_Waste_Section/epadocs.htm, Accessed on Feb 20, 2013

HDR Engineering, Inc.

3949 South 700 East
Suite 500
Salt Lake City, UT 84107

Phone (801) 743-7800
Fax (801) 743-7878
www hdrinc com

Bayview Landfill
Closure Cost Estimate
Cell 2 - Stages 1 and 2 (2013 Dollars)

Cell #2 Stage 1	20	Acres
Cell #2 Stage 2	23	Acres
Total	43	Acres

	Item	Unit	Unit Cost	Quantity	Cost
1.00	**Engineering/Management**				
1 01	Topo Survey Initial	HR	$150	95	$14,250
1.02	Topo Survey Final	HR	$150	80	$12,000
1 03	Site Reconnaissance	HR	$150	55	$8,250
1 04	Boundary Survey	HR	$150	40	$6,000
1.05	Construction Plans/Specs	LUMP	$57,000	1	$57,000
1 06	Bidding and Award	LUMP	$6,200	1	$6,200
1 07	Quality Control Testing	LUMP	$20,500	1	$20,500
1 08	Construction Management/QC	LUMP	$180,000	1	$180,000
1 09	Closure Report/As-Builts	LUMP	$25,000	1	$25,000
1 10	Obtain UPDES and other permits	LUMP	$11,000	1	$11,000
			Subtotal		$340,200
			Contingency	20%	$68,040
			Engineering Subtotal		**$408,240**

2.00	**Construction**				
2 01	Grading Top of Intermediate Cover [1]	SY	$1 28	208,120	$265,626
2 02	34" On-site Soil for Final Cover Placement/Grading [4] [5]	CY	$2 30	196,558	$451,565
2 03	Leachate Collection [2]	LS	$0 00	0	$0
2 04	Silt Fence/Erosion Control [3]	LF	$2 55	5,500	$14,039
2 05	Dust Control and Watering	LS	$12,200 00	1	$12,200
2 06	Drainage Ditches	LF	$3 06	5,500	$16,847
2 07	Temporary Drainage Control	LS	$11,200 00	1	$11,200
2 08	Gas Collection System [6]	ACRE	$15,000 00	0	$0
			Subtotal		$771,478
			Contingency	20%	$154,296
			Construction Subtotal		**$925,773**

	Summary			
		Engineering		$408,240
		Construction		$925,773
		Inflation Adjustment	1 767%	$23,572
		Legal	5%	$67,879
			Total	**$1,425,465**

Assumptions/Notes

1 Estimate assumes closure of Cell #2 Stage 1 and 2
2 Leachate collection system was constructed with Cell 2 Stage 2 and no additional improvements will be necessary
3 No permanent culverts or drainage piping is required
4 Assumes cover is imported from areas near Bayview
5 Assumes topsoil is available onsite
6 Active gas collection system not required at this time

2/25/2013

Bayview Landfill
Post-Closure Care Cost Estimate for
Cell 1 and Cell 2 - Stages 1 and 2
(2013 Dollars)

COST ESTIMATE FOR LANDFILL POST-CLOSURE CARE

	Item	Unit	Unit Cost	Quantity	Cost
1 0	ENGINEERING				
1 1	Post Closure Plan	LUMP	$6,200	1	$6,200
1 2	Site Inspection & Recordkeeping (quarterly)	PER YEAR	$3,200	30	$96,000
1 3	Correctional Plans & Specs (annual)	PER YEAR	$1,300	30	$39,000
1.4	Site Monitoring (semi-annually) (1)	PER YEAR	$18,000	30	$540,000
2 0	MAINTENANCE COSTS (2)	PER YEAR	$6,000	30	$180,000
3 0	LEACHATE DISPOSAL (3)	PER GALLON	$0 05	0	$0
			Subtotal		$861,200
			Inflation Adjustment (1.767%)		$15,217
			Contingency (20%)		$172,240
			Total		**$1,048,657**

Closure Estimate (previous page)	**$1,425,465**
Total Closure/Post Closure	**$2,474,122**

Assumptions/Notes

1 Includes groundwater monitoring and statistical analysis and gas sampling
2 Includes repairing eroded final cover material with on site material, compost and seed
3. Leachate is treated on site, no dipsosal is required

STATEMENT OF ACCOUNT

PTIF

UTAH PUBLIC TREASURERS' INVESTMENT FUND

Richard K Ellis, Utah State Treasurer, Fund Manager
PO Box 142315
350 N State Street, Suite 180
Salt Lake City, Utah 84114-2315
Local Call (801) 538-1042 Toll Free (800) 395-7665
www.treasurer.utah.gov

ESC-SO UT VALL SOLID WASTE
PHIL BIRD
PO BOX 507
SPRINGVILLE, UT 84663-0507

Account	Account Period
254	January 01, 2013 through January 31, 2013

Summary

Beginning Balance	$ 3,080,475.84	Average Daily Balance	$ 3,080,475.84
Deposits	$ 1,700.35	Interest Earned	$ 1,700.35
Withdrawals	$ 0.00	360 Day Rate	0.6410
Ending Balance	$ 3,082,176.19	365 Day Rate	0.6499

Date	Activity	Deposits	Withdrawals	Balance
01/01/2013	FORWARD BALANCE	$ 0.00	$ 0.00	$ 3,080,475.84
01/31/2013	REINVESTMENT	$ 1,700.35	$ 0.00	$ 3,082,176.19
01/31/2013	ENDING BALANCE	$ 0.00	$ 0.00	$ 3,082,176.19

{Effective: 01/31/2013} *The GASB Fair Value factor at December 31, 2012 is 1.00557603*

APPENDIX S

LANDFILL OPERATIONS PLAN

SUVSWD Bayview
Class I Landfill Permit Application

Originally Submitted

February 2004

Modified

October 2009

Prepared By:

HDR ENGINEERING, INC.

SUVSWD Bayview
Class I Landfill Permit Application – Appendix S

Table of Contents

1.0 INTRODUCTION

The purpose of this Operations Plan is to assist the Landfill Foreman and Landfill Operating Personnel in conducting day-to-day operations in a manner that is consistent with the various permit requirements, and with the design of the Bayview Landfill. Section 2 describes the emergency response procedures applicable to the landfill, the permit conditions applicable to the landfill, the designed facilities at the landfill, and equipment and personnel requirements for proper operation of the landfill. Section 3 provides a discussion of landfill facilities at the site. Section 4 describes the procedures for handling wastes received at the landfill. Section 5 provides a schedule for conducting inspections, monitoring, and reporting for the landfill facilities. Section 6 provides contingency plans and corrective action programs to be implemented if emergency conditions (e.g., fire or explosion) exist, or if data indicate that containment systems have failed. Section 7 discusses alternative waste handling and disposal during inclement weather. Section 8 describes the maintenance of landfill monitoring equipment. Section 9 describes routine and non-routine procedures to be implemented to control disease vectors. Section 10 addresses waste screening to exclude regulated hazardous wastes. Sections 11 and 12 provide a discussion of the current and planned recycling and diversion of solid wastes at the landfill.

2.0 EMERGENCY RESPONSE AND BACKGROUND INFORMATION

2.1 Emergency Response Actions

Landfill emergencies include: injury, dismemberment, or death of personnel; and fire, explosion, or other catastrophic events. Because of its remote location, the landfill maintains its own fire protection equipment, and personnel are trained in the operation of this equipment. Also because of its remote location, injured personnel will be transported to medical facilities in District vehicles if their condition allows movement. The Landfill Foreman, or his designee, may request that ambulance and paramedical personnel meet the transporting vehicle enroute to the medical facility.

For other emergencies, the following list provides the phone number to access emergency services. This list will be posted directly adjacent to each phone on the facility site within a colorless, protective plastic cover.

Fire and Rescue ..... 911 ..... (801)851-4100

Hospital 911

Utah Valley Regional Medical Center ..... (801) 371-7001

Mountain View ..... (801) 465-7190

County Fire Marshall ..... (801) 851-4100

Sheriff ..... (801) 851-4100

District Office ..... (801) 489-3027

In the event of any emergency, the following personnel will be notified:

Name	Position/Title	Work Phone
Terry Ficklin	~~Board Chairman~~ General Manager	(801)489-3027
Scott Aitken	Landfill Supervisor	(801)667-2031
Mark Loveless	Transfer Station	(801)489-3027
Dorothy Morse	Executive Secretary	(801)489-3027
~~Keith Anderson~~	~~Compost Supervisor~~	~~(801)404-6055~~

2.2 Permit Requirements

The Bayview Landfill is subject to both State of Utah and local Utah County requirements controlling day-to-day operations at the landfill. The state and local requirements are discussed below.

2.2.1 State Requirements

On October 9, 1991, the U.S. Environmental Protection Agency (EPA) published revisions to the Criteria for Classification of Solid Waste Disposal Facilities. These regulations were developed in response to requirements of Subtitle D of the 1984 Hazardous and Solid Wastes Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA) of 1976. The Subtitle D regulations set forth minimum federal criteria for municipal solid waste landfills, including facility design and operational requirements. The Subtitle D regulations became effective on October 9, 1993.

Subtitle D establishes a framework for federal, state, and local government cooperation in controlling the management of non-hazardous solid wastes. The federal government's role within this framework is to establish the regulatory direction by providing minimum nationwide standards for protection of human health and the environment, and by providing technical assistance to states for planning and developing their own environmentally sound waste management practices. However, the actual planning, direct implementation, and enforcement of solid waste programs remains a state and local role under the Subtitle D framework.

On July 15, 1993, the Utah Department of Environmental Quality (UDEQ) issued final Administrative Rules implementing Subtitle D at the state level. These rules, entitled Solid Waste Permitting and Management, Rules (8315-301 through 320), have been reviewed by EPA, and the UDEQ has received authorization from EPA to implement and enforce the solid waste management program.

The UDEQ rules require that each landfill develop and comply with its approved Operations Plan. The rules further specify certain operational requirements including: excluding hazardous and bulk liquid wastes; controlling access; controlling disease vectors; controlling air discharges and explosive gases; controlling run-on, run-off, and surface water discharges; and maintaining records. This Operations Plan has been developed to include the requirements of the UDEQ rules.

2.2.2 Utah County Requirements

During the process of permitting the Bayview Landfill site, the Utah County Board of Adjustment enumerated 26 criteria that the landfill must meet to remain in compliance with the Board's Conditional Use Permit. These permit conditions include the following. (Note: These permit conditions are quoted directly from the Conditional Use Permit granted to Provo City and are provided here to make the landfill operators aware of the District's obligations under the Conditional Use Permit. References to "Provo City", below. can be changed to read "South Utah Valley Solid Waste District")

1. Compacted or baled garbage will be placed in trenches and covered at the end of each day.
2. The waste will be buried away from the gravel pit area.
3. A fence will be installed surrounding each trench area at least eight (8) feet in height and higher if found inadequate to control blowing papers.
4. After an area has been filled, it will be contoured, mulched, and reseeded as indicated by the State Agronomist and the State Extension Service.
5. There will be a watchman on site during normal working hours.
6. The gate will be closed any time it is unattended and it must be locked. (This is the main gate, not that around a particular area being filled.)
7. A new access road from the state highway into the deposit area will be provided as required by the Department of Transportation.
8. The size of the garbage trucks will meet the requirements of the Utah Department of Transportation and Utah Highway Patrol.
9. Provo City will cooperate with the State Highway Department and local residents to prevent inordinate damage to the road during periods when the road is saturated and subject to destruction, and comply with all state and local ordinances conforming to the same.
10. All municipal garbage will be collected and compacted at a location other than the landfill site and transported in covered trucks by Provo City.
11. No burning is to be allowed at the disposal site.
12. The trenching will be done in such a manner as to protect the drainage channels in the area as required by the State Department of Environmental Health.

13. No hazardous wastes will be deposited in the area.
14. All reasonable caution and prudence be exercised to not dispose of any waste during any unreasonable weather conditions.
15. All requirements in the "Code of Solid Waste Disposal Regulations" will be met.
16. Any terms of the lease held by Mr. Jacobs are protected and that Provo City cooperates with him during lambing season to minimize the impact on his operation.
17. No public dumping.
18. Landfill to be used only by Provo City, and if other cities were to use the landfill, approval from the Board of Adjustment would be necessary.
19. Personnel will police the grounds outside the fence, and keep litter and garbage picked up.
20. Rodent control must be in effect at all times as state law provides.
21. Water samples will be taken by the Department of Environmental Health from any wells within 1500' of the disposal site prior to any dumping to determine the water quality. Samples would be taken every six months or more often as determined by the Department of Environmental Health.
22. The area used to begin the operation of filling must be selected to minimize the impact on people in the surrounding area.
23. In constructing the road or roads required by the Department of Transportation to get access to the landfill, Provo City will minimize the amount of disruption to the environment of the area.
24. That Provo City maintain a buffer zone of at least 100' from existing state roads, homes and premises in dumping their compacted garbage.
25. Upon noncompliance with any of these provisions Utah County will revoke said right to the landfill.
26. Provo City will provide an annual report to the Board of Adjustment for their review as to the progress in the engineering of the landfill.

These conditions will be considered the minimum criteria that the landfill operations must meet to remain in compliance with the Conditional Use Permit.

2.3 Landfill Facilities

At the time of this permit application renewal, the Bayview Landfill consists of one 33-acre landfill cell almost at final grade, one stormwater/leachate evaporation pond, five screening berms, one maintenance building, and appurtenant roads, fences, and culinary and monitoring wells. In addition, an 82-acre cell is currently under design and will be constructed in 15-acre increments or stages. Figure 5 in Part IV provides a layout of the existing facilities at the Bayview Landfill. Each of these facilities was anticipated in the Landfill Master Plan (HDR, 1988) developed for the site, and is described in the following paragraphs. The landfill is also currently equipped with various earthmoving and landfill operations equipment. The types and numbers of pieces of equipment necessary for proper operation of the landfill are described below.

2.3.1 Fixed Landfill Facilities

Cell 1 Stage 1 and Stage 2 have been constructed with a liner and leachate collection system. The liner consists of a 40-mil and 60-mil high density polyethylene (HDPE) geomembrane, respectively, sandwiched between two layers of 12-ounce polypropylene geotextile. At the time of its construction, the liner system was covered with a 2-foot layer of protective soil cover. The liner system and its protective soil cover are critical elements in the landfill leachate containment system; therefore, operators will take all possible precautions to protect the liner system. Damage to the protective soil cover will be inspected, and damage to the liner system will be reported to the District Manager for appropriate action.

Cell 2 will also be constructed with a liner and leachate collection system. The liner will consist of a geosynthetic clay liner (GCL), and a 60-mil high-density polyethylene (HDPE) geomembrane sandwiched between two layers of geotextile. The liner system will be covered by 2 feet of protective cover/leachate collection material.

For Cell 2, the leachate collection system will consist of 2 feet of permeable screened soil on the floor of the landfill cell and a leachate collection trench that is fitted with granular fill and a pipe. The granular fill is surrounded with filter fabric (geotextile). The leachate collected within this system flows by gravity to a sump at the low end of the cell and pumped to

the surface, where it then flows by gravity to the on-site leachate sewer line and ultimately to the evaporation pond. The cleanout stations on the pipeline will be inspected on a regular basis to verify integrity.

The stormwater/leachate evaporation pond has been constructed with a liner and a protective cover system. The liner system consists of a 60-mil HDPE geomembrane sandwiched between two layers of 12-ounce polypropylene geotextile. The liner system was covered with a 6-inch concrete pad on the bottom and a 40-mil HDPE geomembrane on the side slopes. The concrete pad extends approximately 3 feet (measured vertically) up the side slopes, and a concrete access road has been constructed to provide equipment access into the bottom of the pond. The concrete pad is intended to allow landfill operators to enter the pond to remove accumulated sediments as required. The concrete bottom and access road will be inspected on a regular basis to verify the integrity of the concrete. Similarly, the 40-mil HDPE protective liner will be inspected on a regular basis to verify its integrity. Damage to either the concrete or HDPE protective cover materials will be reported to the District Manager for appropriate action.

The screening berms have been constructed to provide a visual barrier between State Highway 68 and the active landfill facilities. These screening berms also provide a partial visual barrier between properties north and south of the site and the active landfill facilities. The District constructed these berms to lessen the visual impact of the landfill facilities on the passersby, not as a condition of a permit.

The maintenance building consists of three equipment maintenance bays, a combined office/break room, and restroom facilities. This building is locked when landfill operations personnel are not on-site. The building is supplied with culinary water from the culinary well located in Section 18.

~~Fourteen~~ Fifteen wells have been constructed around the landfill property to provide stations for monitoring groundwater underlying the site. ~~Eight~~ Nine of these wells were constructed to intercept the regional groundwater at a depth of approximately 250 feet below ground

surface. The remaining six wells were constructed as "wet/dry" wells screened in the seasonal water table aquifer at a depth of approximately 70 feet below ground surface. These shallow wells are intended to provide early warning of leachate movement, if it should occur.

A 6-foot high chain link fence surrounds the site to control access to the facilities when landfill operations personnel are not present. The main access to the site is equipped with doublewide, locking gates. These gates are locked during nonworking hours. In addition, the stormwater/leachate evaporation pond is surrounded by a 6-foot high chain link fence and two doublewide, locking gates. The stormwater/leachate evaporation pond gates are locked unless landfill operations personnel are inside the fenced enclosure.

2.3.2 Landfill Equipment

The following equipment is maintained for use at the Bayview Landfill:

Equipment	Quantity	Size	Make/Model
Compactor, Landfill Blade	2	120,000 lb.	Cat 823C
Scraper	2	22 cu. yd.	Cat 623E
Dozer	1		Cat D8R
Grader	1		John Deere
Water Truck	1	5,000 gal.	CAT 613
Pickup Truck	1	¾ ton	Ford 250
Pickup Truck	1	¾ ton	Dodge 2500

This equipment is sufficiently sized for operation of the Bayview Landfill. All equipment, with the exception of the pickup truck and fire truck, is required to have an OSHA-approved safety cab, a fire extinguisher, a first aid kit, and a backup alarm. Additional equipment may be purchased as existing equipment approaches the end of its useful life, or as operating conditions require.

2.3.3 Landfill Personnel

The following persons are responsible or available for on-site operations at the Bayview Landfill:

- **District Manager.** The District Manager is responsible for: planning, design, and construction of the landfill facilities; overall operation of the solid waste management system, including the landfill; and production of annual environmental and financial reports. The District Manager reports to the District's Board of Directors. The Landfill Foreman reports directly to the District Manager.
- **Landfill Supervisor.** The Landfill Supervisor is responsible for all day-to-day operations at the Bayview Landfill. He is responsible for: acceptance and placement of wastes at the landfill; routine inspection of the facilities for compliance with permit requirements; and coordination with the Transfer Station Foreman. The Landfill Foreman is a certified Manager of Landfill Operations with at least 10 years of professional experience related to landfill operations and earthwork. The Equipment Operator(s), Spotter/Laborer(s), and any visitors report directly to the Landfill Foreman.
- **Equipment Operators.** The Equipment Operator is responsible for: safe operation and daily maintenance of equipment; visual inspection of waste loads for unauthorized or hazardous wastes; and daily operations on the working face of the landfill. The Equipment Operators, with the exception of apprentices, typically have 2 years of professional experience related to landfill operations or earth work. As of July 2003, two of the operators have in excess of two years experience and a third is nearing completion of two years. ~~The current apprentice operator has about one year of experience.~~ Equipment Operators have all received training on landfill operations ~~within 2 years of employment~~. The Landfill Foreman may designate the Equipment Operator to act in his behalf in the foreman's absence.
- **Spotter/Laborer.** The Spotter/Laborer is responsible for: directing traffic to the working face; control of litter and dust generated from the landfilling operations; assistance to the Equipment Operators; and any other tasks assigned by the Landfill Foreman.

3.0 SCHEDULE OF FACILITIES CONSTRUCTION

Landfill Cell 1 - Stage 1, the first landfill half-cell, was excavated in 1988. The soils excavated from this half-cell were used to construct portions of the screening berms on the eastern and northern boundaries of the site. The geomembrane lining system for this half-cell was installed during the fall of 1989. Essentially, the construction consisted of: excavating the native soils, compacting the exposed soils to 95% of optimum density (Standard Proctor), installing a geotextile to cushion the overlying geomembrane from underlying soils, installing a 40-mil HDPE geomembrane liner, installing a geotextile to absorb side slope tensile stresses and to transmit leachate, and placing the protective soil cover. Provo City Corporation and design personnel (HDR Engineering, Inc.) provided construction quality assurance observation during the installation of the geosynthetics and during the placement of protective cover soils.

Stage 2 of Cell 1 was similarly constructed except that a 60-mil geomembrane was used. Cell 1 is nearing final waste grades, and closure is expected to occur in 2005.

Stage 1 of Cell 2 is anticipated to be constructed in early 2004 and is expected to last approximately 5 years. Soil excavation to be used as daily cover is ongoing in Cell 2, and select material will be used as final cover on Cell 1. A portion of this select material has already been stockpiled on-site.

As a general rule, landfill cells will be planned to be available no less than 3 months prior to the completion of filling in the operational cell. This will allow for construction delays due to weather, construction contractor difficulties, or other unanticipated delays. The design, permit review, and contractor negotiations will be planned to require approximately 1 year.

4.0 SOLID WASTE HANDLING

4.1 Waste Acceptance

All solid wastes entering the Bayview Landfill originate at the Springville Transfer Station or the City of Goshen Transfer Station. Wastes entering these transfer station facilities are pre-screened

for unacceptable materials by transfer station personnel prior to compaction of the wastes. Operations at the transfer stations are not included in this landfill Operations Plan.

Private hauler and citizen self-hauled wastes are generally not accepted at the landfill. Occasionally special wastes will be received directly at the landfill after arrangement with the waste generator.

4.2 Waste Disposal

Transfer trailers entering the site will be directed by landfill operations personnel to the working face, where the driver will be instructed to discharge the load. Landfill operations personnel will push the solid waste up the working face using a compactor. The waste will be placed in lifts with a loose thickness of 2 - 3 feet. After the waste has been placed in loose lifts, the operator will run the compactor over all portions of the lift at least two times parallel with the slope (up slope), and at least one time across the slope. There may be times in operating the landfill when pushing uphill may be impractical or poor practice (i.e., when the first lift of waste is placed on protective cover soil.) Equipment operators will also maintain the working face so that it is as small as practical to allow for efficient unloading of transfer trucks, and placement and compaction of solid wastes.

4.3 Placement of Cover Soils

Cover soils or other approved material will be placed over solid wastes to minimize the potential for nuisance conditions, fire, and disease vector contact with solid wastes. Nuisance conditions include: odor generation and air discharges; blowing of plastic and paper wastes; and other conditions that impair the use of adjoining properties.

At the end of each working day, the landfill operations personnel will cover all solid wastes received during that day with daily cover. The daily cover will consist of a minimum of 6 inches of soil excavated from other portions of the landfill site. Daily cover will be placed to minimize the nuisance, fire, and disease vector potential attributable to each day's waste placement. On an infrequent basis, oversized wood chips that are generated from the composting operation

are used as an alternative daily cover. The landfill operators will record the time that this alternative daily cover is use and monitor its effectiveness. This type of daily cover would only be placed on Mondays through Thursdays. The standard 6 inches of onsite soils will be used on Fridays.

Whenever a portion of the landfill cell will remain in an inactive condition for an extended period, landfill operations personnel will place an intermediate cover over the inactive portion. The intermediate cover will reduce the potential for wind- and water-induced erosion of the cover, and reduce the production of leachate and contact stormwater within the landfill cell. The intermediate cover will consist of an additional 6-inches of soil.

5.0 INSPECTIONS, MONITORING, AND REPORTING

5.1 Inspections

The Landfill Foreman is responsible for conducting and recording routine inspections of landfill facilities. The schedule for conducting routine inspections is provided in Table S-1. Forms for recording routine inspections are presented in Appendix I.

The District Manager is responsible for verifying the completeness of the inspection records on a quarterly basis.

5.2 Groundwater Monitoring

5.2.1 Detection Monitoring

The District has completed the 2-year program to determine the background water quality in each of the 12 monitoring wells constructed at the landfill site. The 2-year program consisted of bi-monthly sampling of each well. During the first year, the District sampled each well every other month; during the second year, the District also sampled every other month, skipping one month so that each calendar month was sampled during the 2-year program. The results of the 2-year program are used as a baseline for each well, and subsequent groundwater

monitoring results for each well will be compared to this baseline data. Baseline data will be collected by 2 years of sampling following the construction of new wells.

The District will continue to conduct groundwater sampling on a semi-annual basis. The District Manager and the Landfill Foreman will coordinate the monitoring events, schedule the timing of groundwater sampling, sample or arrange for sampling of the wells, arrange for analysis of the groundwater samples, and arrange for interpretation of the analytical results. The groundwater samples will be analyzed for the constituents listed in UDEQ rules (R315-308-4) for detection monitoring. The semi-annual detection monitoring samples will be compared to the baseline data and to ongoing averages for each well to determine if the data is statistically different from either the baseline data or from ongoing average data for each well. If statistically significant increases are detected in the Detection Monitoring Program, the District will begin an Assessment Monitoring Program, as required by UDEQ rules. Appendix F contains the District's Groundwater Quality Report and Groundwater Monitoring Plan.

Table S-1: Recommended Frequency of Inspection of Landfill Facilities

Landfill Facility	Inspection	Frequency
Landfill Cell	Daily and intermediate cover integrity. Stormwater and leachate collection (ponding). Run-on/run-off control integrity. Cell perimeter fence integrity.	Daily Daily Daily Daily
Stormwater/Leachate Pond	Perimeter fence integrity. Water depth. Liner system integrity. Water volume.	Daily Weekly Weekly Quarterly
Other Appurtenances	Entrance/main gate integrity. Perimeter fence integrity. Monitoring well integrity. Equipment maintenance. Site road integrity. Berm integrity.	Daily Weekly Monthly Monthly Quarterly Quarterly

5.2.2 Assessment Monitoring

If a statistically significant increase in groundwater contaminants is detected as part of the Detection Monitoring Program, the District will initiate the following actions:

- Notify UDEQ in writing, within 14 days of obtaining laboratory results. The notification will include identification of the constituents that have shown a statistically significant increase.
- Enter the laboratory results into the operating record for the landfill.
- Immediately resample the groundwater in all wells, or a subset of the wells as specified by the Executive Secretary, for all constituents listed in R315-308-4. Determine whether a statistically significant change has occurred such that the groundwater protection has been compromised.
- Notify UDEQ within 7 days of receipt of the results of the resampling if a statistically significant change has occurred.

Figure S-1 summarizes the requirements imposed on the District by UDEQ regulations to define the nature and extent of groundwater contamination, and to take corrective action if the source of the groundwater contamination is the landfill.

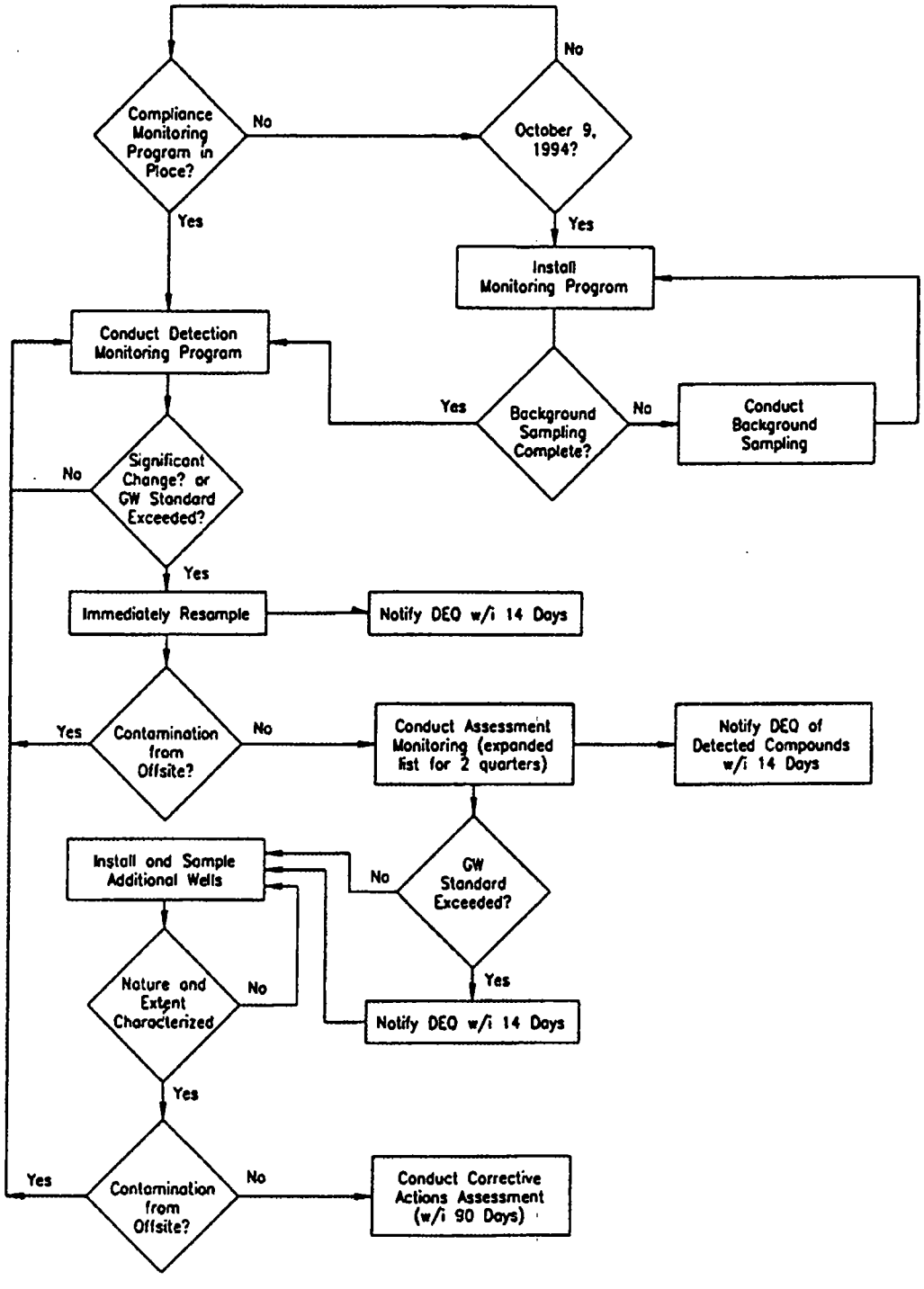
5.3 Landfill Gas Monitoring

The District began a landfill gas monitoring program by conducting an initial surface survey for combustible gases, and by purchasing a combustible gas indicator (CGI). During the initial survey, no measurable combustible gases were detected on the site, and landfill gas monitoring stations were established for future monitoring events.

The District will continue to conduct combustible gas monitoring at the established stations on a quarterly basis. The District Manager and the Landfill Foreman will coordinate the gas monitoring events with groundwater monitoring events, and will arrange for interpretation of the monitoring results if combustible gases are detected at any station.

If concentrations of combustible gasses exceed the standard set in the UDEQ Rules, the District will implement the requirements imposed on the District by UDEQ regulations in effect at the time of the permit or revisions of the permit.

Figure S-1: Utah Requirements for Groundwater Monitoring



6.0 CONTINGENCY AND CORRECTIVE ACTION PLANS

The following sections describe the contingency and corrective action plans that will be implemented if fire, explosion, failure of run-off/run-on structures, release of explosive gases, or contamination of groundwater occurs.

6.1 Fire

No burning of wastes is planned in the active landfill cell area. Limited burning may be planned, permitted, and accomplished during clearing of new landfill cell construction areas, and perimeter fence and drainage channel maintenance. No other burning activities are planned at the Bayview Landfill.

Two other types of fires, fires in loaded vehicles and fires in disposed wastes, must be anticipated and response activities planned. Each of these is discussed below. The preferred method of fighting fires in the Bayview Landfill will consist of smothering the fire with soil. Water will contribute to the formation of leachate, and should only be used as a last resort if the fire cannot be smothered.

6.1.1 Loaded Vehicle Fires

In the event that a transport vehicle enters the landfill site carrying a burning or smoldering load of waste, landfill operations personnel will take the following actions:

- Direct the vehicle to a designated section of the landfill away from the working face. Direct the driver to deposit his load and to clear the area as quickly as possible.
- Immediately cover the burning waste with sufficient soil to completely smother the fire. Allow the waste to cool for several days, or longer if necessary.
- If necessary, spray equipment and the transfer vehicle with water to cool the equipment while working the fire. This will not be necessary if the equipment is pushing or dumping soil on the burning wastes in front of the advancing equipment.

- If landfill operations personnel cannot control the fire, the County Fire Marshall will be contacted.
- Notify the UDEQ immediately and provide written documentation within 14 days of the fire.

6.1.2 Working Face/Below Cover Fire

In the event of a working face fire or a fire below cover, landfill operations personnel will take the following actions:

- Evacuate all non-essential personnel from the area of the fire. Non-essential personnel would include transfer truck drivers, laborers/spotters, and visitors.
- Isolate the burning material from other wastes to the extent possible. Use compactor blades and dozers to move the burning materials away from other wastes; this may not be possible if the fire is below cover soil.
- Immediately cover the burning waste with sufficient soil to completely smother the fire. Allow the waste to cool for several days, or longer if necessary.
- If necessary, spray equipment and the transfer vehicle with water to cool the equipment while working the fire. This will not be necessary if the equipment is pushing or dumping soil on the burning wastes in front of the advancing equipment.
- If landfill operations personnel cannot control the fire, the County Fire Marshall will be contacted.
- Notify the UDEQ immediately and provide written documentation within 14 days of the fire.

6.2 Explosion

In the event that an explosion should occur at the landfill or in any structure associated with the landfill, landfill operations personnel will take the following actions:

- Immediately evacuate the area surrounding the explosion, including any adjacent buildings. Shut down and abandon any equipment near the explosion that is hot and may provide an ignition source for additional explosions.

- Account for all personnel. Contact the County Fire Marshall and the emergency dispatcher (911). Contact the District Manager.
- Restrict the explosion area to any entry until emergency response personnel clear the area.
- Notify the UDEQ immediately and provide written documentation within 14 days of the explosion.

6.3 Failure of Run-Off/Run-On Structures

Failure of run-off structures may allow the release of contaminated water into the environment. Failure of run-on structures may allow stormwater to mingle with and become leachate. Neither of these conditions is desirable.

6.3.1 Failure of Run-Off Structures

In the event that a failure of run-off structures is discovered during routine or non-routine inspections, landfill operations personnel will take the following actions:

- As soon as practical, suspend acceptance of wastes at the landfill, if necessary, and inform the transfer stations of this suspension.
- Use landfill compactor and dozer equipment to construct temporary berms to contain the run-off. Divert the flow of run-off water away from surface water drainage channels.
- Resume landfilling operations as soon as possible after the run-off is contained. Inspect the temporary berms as frequently as possible, but not less frequently than once every 2 hours.
- Assess the impact of the release of run-off as soon as practicable following the event. Assess the need for permanent improvements in the temporary berms, or other run-off control structures, as soon as practicable following control of the run-off.
- Notify the UDEQ immediately and provide written documentation within 14 days of the release event.

6.3.2 Failure of Run-On Structures

Failure of run-on control structures may temporarily overload the leachate collection system, but is generally less serious than failure of run-off control structures. In the event that failure of run-on control structures is discovered during routine or non-routine inspections, landfill operations personnel will take the following actions:

- Immediately mobilize landfill compactor or dozer equipment to construct temporary berms, swales, or other structures to temporarily divert surface water run-on from the active landfill cell. Assess the need to suspend acceptance of waste.
- Assess the need for permanent run-on control structures as soon as practicable.
- Notify the UDEQ immediately and provide written documentation within 14 days of the failure event.

6.4 Release of Explosive Gases

It is unlikely that a release of explosive gas will occur from the lined Bayview Landfill cells. However, it is possible that landfill gas concentrations will exceed the regulatory requirements in one or more gas monitoring locations. For purposes of this contingency plan, a release is defined as the detection of more than 25% of the lower explosive limit (LEL) in a landfill building, or more than 100% LEL at the property boundary. The LEL is 5% by volume of methane in air. If a release of explosive gases is detected, landfill operations personnel will take the following actions:

- Immediately suspend landfilling operations and determine if landfill personnel or structures are threatened. If so, personnel will be evacuated immediately, and building doors will be opened to allow gases to escape. Notify the transfer stations of the suspension of operations.
- As soon as possible, determine if off-site buildings or other structures are threatened. If so, immediately notify the County Fire Marshall.
- Monitor the release area, and all other landfill gas monitoring locations, until the emergency condition has been eliminated.

- Determine temporary corrective actions as soon as possible, and permanent corrective actions as soon as practicable, following detection of the release.
- Notify the UDEQ immediately and provide written documentation within 14 days of the release event.

6.5 Groundwater Contamination

Contingency and corrective actions following the detection of groundwater contamination are described in Figure S-1.

7.0 ALTERNATIVE WASTE HANDLING PROCEDURES

Landfill operations have been adapted for wet weather by constructing an all-weather, asphalt-paved roadway from the site entrance to the active cell. The site soils, including those used as daily cover, consist primarily of sands and gravels. In the semi-arid climate of the Bayview Landfill site, experience has shown that precipitation has little effect on the operation of the landfill, especially given the nature of the cover soils. The District does not believe that alternate waste handling plans are necessary for this site with respect to wet weather operations.

All reasonable caution and prudence will be exercised to not dispose of wastes during any unreasonable weather conditions. If unforeseen weather conditions occur, the District Manager, or his designee, will be informed and will coordinate any changes in operations. The District Manager will consider the system-wide requirements (including transfer station requirements) in determining what changes, if any, need to be made in operations at the landfill.

8.0 MONITORING EQUIPMENT MAINTENANCE

8.1 General

The inspection schedule for groundwater monitoring wells and landfill gas monitoring stations is presented in Section 5. This section describes the more detailed inspection and maintenance of these landfill structures.

8.2 Groundwater Monitoring Wells

All groundwater monitoring wells will be thoroughly inspected during each sampling event. The detailed inspection will note signs of deterioration or failure of the protective steel casing, the concrete pad and bollards, and the polyvinyl chloride (PVC) well casing and screen. If damage is discovered, the nature of the problem will be recorded and reported to the District Manager who will make a decision to repair, replace, or abandon the well. This decision will be documented in the operating record for the landfill, and the required actions will be completed prior to the next scheduled monitoring event.

The monitoring well locations will be maintained on a routine basis. Weeds will be removed at least every 6 months, approximately 2 weeks prior to each scheduled sampling event. During the weed removal, landfill personnel will note any obvious indications that the well has been damaged to allow the Landfill Foreman and the District Manager to assess the situation.

Bollards and well casing materials will be inspected during each sampling event to determine whether painting or other routine maintenance is required.

8.3 Gas Monitoring Locations

Gas monitoring locations will be maintained on a routine basis. Weeds will be removed from the vicinity of each monitoring location at least every 3 months, approximately 2 weeks prior to each scheduled sampling event.

9.0 DISEASE VECTOR CONTROL

For landfills in Utah, disease vectors essentially consist of rodents and birds. This section describes the methods that the Bayview Landfill personnel will use to control rodents and birds.

9.1 Rodent Control

The primary method of rodent control is to eliminate conditions favorable for the reproduction of rodents through proper compaction of wastes and proper placement of daily cover. If landfill personnel observe the presence of rodents, more frequent application of cover soils will be considered.

If the primary method of rodent control does not produce satisfactory results, the District may employ poisoning. A poison control program must include the following conditions:

- Poison traps must be set by experienced, professional exterminators.
- Poison traps may only be set within areas with controlled access. This means that the trapped area must be within the site's security fencing, and the security gates must be locked for the duration of the poisoning program whenever landfill personnel are not on-site.
- Occupational Health and Safety Administration (OSHA) requires warning signs of acceptable color and size to be permanently fixed to the outside of the access gate and fencing, at spacings not to exceed 150 feet, for the duration of the poisoning program. A minimum of one sign per side of the fence is required.
- Landfill personnel must conduct a daily inspection of each poison trap, and notify the professional exterminator if disruptions of any traps are noted.
- The professional exterminator must conduct periodic inspections of the poison traps.
- Written documentation of the poisoning program must be maintained at the maintenance building. The documentation must include: the number and exact location(s) of the poison traps; the name of the poison(s) (including both chemical and brand name, and a listing of ingredients); the quantity of poison contained in each trap; and the medically accepted antidotes or treatments for the poison(s).
- The professional exterminator must submit monthly reports to the District Manager documenting the status of the poisoning program. The reports shall include the number and location of traps, the quantities of poison(s) used during the past month, and any changes in the program instituted during the past month.

- Poison supplies shall be stored on-site in a separate, locked, and properly labeled enclosure. Access to the poison shall be restricted to the professional exterminator and the Landfill Foreman, or his designee.

9.2 Bird Control

As with rodent control, the primary method of controlling birds is to control the conditions favorable to their existence. The following methods will be used as needed:

- Minimizing the size of the working face. This is the most effective method of controlling birds since it reduces the area available for feeding. More frequent cover and higher degrees of compaction of the wastes may also serve to minimize the opportunities for feeding.
- Minimizing the accumulation of water in depressions, ponds, or other features near the active working face. The lack of water makes a landfill a less attractive feeding area for birds.
- Use of noise or other frightening techniques. These techniques offer short-term reductions in the numbers of birds feeding at a landfill.

If the primary methods do not produce satisfactory results, a destructive method of control may need to be implemented. Destructive methods may cause harm or death to some birds, and authorization must be obtained from local officials prior to implementing a destructive program.

10.0 WASTE SCREENING

The primary location for screening of wastes will be the transfer stations. All transfer station personnel will receive periodic training in detecting wastes that are prohibited for disposal at the landfill. This training will consist of an initial training and annual refresher training. These personnel will conduct routine inspections and random load inspections as specified in the operations plan for the transfer stations.

The landfill equipment operators will also receive periodic training in detecting prohibited wastes. This training will consist of an initial training and annual refresher training; however, the landfill operational personnel will provide secondary waste screening only.

11.0 RECYCLING

The primary location for recycling will be the transfer stations. These locations are best suited for separating recyclable materials, and separation will be difficult or impossible after the wastes have been compacted and loaded into over-the-road trucks. The landfill operations personnel may segregate tires, large and bulky wooden wastes, and similar materials upon receipt at the landfill; however, this recycling activity is considered secondary to recycling at the transfer stations.

12.0 COMPOSTING

A compost program utilizing yard waste and biosolids is proposed for the Bayview Landfill. A plan of operations and permission to implement the compost operations has been submitted under separate cover. A copy of the Plan of Operations is included with this Permit Application as Appendix R.

Bayview Landfill Master Plan

SUVSWD Bayview Class 1 Landfill

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January 2013

Table of Contents

1.0 INTRODUCTION

The South Utah Valley Solid Waste District (SUVSWD or the District) was formed in 1989 to own and operate municipal solid waste (MSW) management facilities for the cities of Provo, Salem, Spanish Fork, Springville and Mapleton, Utah. Subsequently, Goshen, Brigham Young University and Woodland Hills joined the District. The District assumed previously permitted and designed or constructed solid waste facilities, including the Bayview Landfill and Springville Transfer Station, from the City of Provo. Figure 1 shows the locations of the Bayview Landfill and the Springville Transfer Station in relationship to member cities. Goshen City owns and operates its own transfer station.

This document is the fourth version of the Bayview Landfill Master Plan. The previous versions include:

- The original master plan, which was created in 1988 to guide development of the 660 acre Bayview Landfill, envisioned seven individual landfill cells each encompassing from 40 to 60 acres and providing more than 50 years of useful landfill life. It developed concepts still in use today, including property boundary earthen berms to restrict sight of landfill cells from adjacent roadways and properties, controlled access and exclusion of uncompacted wastes. This master plan was approved by the Utah County Board of Commissioners and was included as an appendix to the 1993 Bayview Landfill Permit Application.
- The 2002 master plan revision evaluated two fundamental changes from the original plan's concepts for the Bayview Landfill cells north of the landfill access road. These changes were aimed at increasing the useful life of the landfill and included: combining cells 2 and 3 by removing the earthen berm between these cells; and increasing the excavation depths in this cell (now designated as cell 2).
- The 2009 revision added a second leachate sump, modified landfill bottom grades in minor ways and added a new leachate collection system and evaporation pond.

2.0 LANDFILL CONSIDERATIONS

The 2009 master plan updated the status of Cell 2; the current (2012) Master Plan updates the status of all phases of the Bayview Landfill. In doing so, the current Master Plan provides a road map for future development of the entire site. For ease of understanding, the Design Considerations will be subdivided into several subsections, including: design assumptions; Cell 1 status; Cell 2 status, volumetrics and phasing; Cell 3 volumetrics and phasing; and design features outside of planned landfill cells.

2.1. Assumptions

Since this 2012 Bayview Landfill Master Plan modifies assumptions made in earlier versions, the current assumptions are described in bullets, which are followed by a discussion of the changes. Our 2012 assumptions, which will be used for the completion of Cell 2, include:

- An in-place waste density of 1,500 pounds per cubic yard (lbs/cy);
- An in-place waste to soil ratio of 20% consisting of:
  - An in-place waste to daily and intermediate cover soil of 10%; and,
  - An in-place waste to liner protection layer and final closure cap soil of 10%;
- A waste tonnage increase of 1%.

The 2009 master plan also assumed an in-place waste density of 1,500 lbs/cy. This density seems to be conservative since survey data consistently indicate an actual in-place density of 1,600 to 1,700 lbs/cy, or approximately 10 percent to the conservative side.
The 2009 master plan assumed an in-place waste to daily and intermediate cover soil ratio of 20 percent, and added the closure cap soil to this for a 25 percent waste-to-soil ratio. Bayview Landfill has been using an alternate daily cover (Posi-shell) combined with weekly soil cover for most of the life of Cell 2. Survey data for Cell 2 indicate that the ratio of daily and intermediate cover soil is approximately 9 percent. The liner protection layer and final closure cap will consume another 9 percent of Cell 2, so a total of 20 percent waste-to-soil ratio is approximately 10 percent conservative.

The 2009 master plan assumed that the annual waste increase would be approximately 3 percent based on a comparison of 1991-2 and 2008-9 tonnages. This comparison did not anticipate the depth and breadth of the effects of the "Great Recession" on waste production, primarily because these effects were just beginning to be apparent in Utah in 2009. If we compare the 1991-2 to 2011-2 tonnages, the annual waste increase is almost exactly 1 percent. Added to this trend, the public (both in Utah and the U.S. as a whole) is demanding an increasing rate of diversion from disposal. This demand includes diversion of residential, commercial and construction debris (C&D) wastes, which together will tend to decrease waste disposal as the effects of the recession recede. Many leaders in the waste industry are foreseeing a time in the not-too-distant future when the growth of diversion and the growth of disposal will cross and diversion will begin to dominate (see further discussion in Attachment 3). In any case, the Trans-Jordan Landfill is also projecting an annual waste increase of 1 percent, so this assumption is consistent with at least one other major Utah landfill.

2.2. Cell 1 Status

Cell 1 was active from 1991 until 2005; it was capped during 2005 through 2008, when it began its 30-year post-closure care period. It contained approximately 1,800,000 tons of MSW at the time of its closure.

2.3. Cell 2 Volumetrics and Phasing

Cell 2 (formerly Cells 2 and 3, modified by the 2009 master plan) was divided into several stages of development in the earlier master planning documents. Stage 1 began accepting waste in 2005 and Stage 2 began accepting waste in 2010. This master plan includes a discussion of the history of several factors in Cell 2 because these factors will become important in the final design of Stages 3 and 4, as well as in final closure of Cell 2. This discussion is particularly important since final closure of Cell 2 will occur some three or four decades in the future.

Important historical information and changes from the 2009 master plan for Cell 2 include the following:

- Stage 2 was constructed early to mitigate uncontrolled movement of waste in Stage 1 during a seismic event. A reverse grade buttress was constructed east of Stage 1, which resulted in construction of separate leachate collection sumps for Stages 1 & 2. This may affect the final design of Stage 3 to the extent of planning for leachate removal from these two sumps. In particular, the Stage 1 sump will need to be retrofitted with a drainage path, or continue to be pumped; and the Stage 2 sump will need to be designed to drain into Stage 3, or continue to be pumped.
- The 2009 master plan envisioned a central leachate collection drainage and sump in Stage 3; this master plan envisions drainage of Stage 3 to the northeast corner to allow continued use of the double-containment leachate pipe on the northern side of Cell 2 as a conduit to the leachate collection and evaporation pond. This orientation may require design of an intermediate leachate collection pipe midway across the north/south cross section of Stage 3 to prevent excessive head on the liner system. This design detail envisions a minor trench and/or berm to divert leachate into the leachate collection pipe.
- This master plan envisions increasing the elevation of the final cap centerline to increase the useful life of Cell 2. Since the site has excess spoil from excavation, it will be difficult to extend the excavation depth (each foot of excavation creates some 60,000 cy of spoil soil for disposal); however, the capped elevation could be increased from the 2009 master plan, using some of the spoil soil for daily and intermediate cover. The current plan shows an increase in elevation of 15 feet (approximately two lifts) at the western end, and 30 feet at the eastern end of Cell

2, yielding a volume increase of approximately 1.5 million cy and extending Cell 2 life some four to five years.

- As a practical matter, closure of Stages 1 & 2 should occur during filling of Stage 3; this should reduce the quantity of leachate produced in Stages 1 & 2 attributable to heavy storms.
- Stage 3 excavation has begun, and Stage 4 excavation will begin during the 2022-3 fiscal year to maximize use of this excavation material as daily cover in Stage 3.
- Stage 3 excavation is estimated to require one FTE (10 hours per day including breaks and maintenance time, 5 days per week, 50 weeks per year) for seven years (2012-3 through 2019-20). This corresponds with the timing of liner construction during the 2020-1 fiscal year (see Attachment 1).

Table 2-1 below provides a summary of the capacity and phasing of Cells 1 & 2; capacity and phasing of Cell 3 are discussed in the next section.

Table 2-1. Summary of Capacity and Phasing of Cells 1 & 2.

Cell and Stage	Waste Capacity (tons)*	Status
Cell 1	1,800,000	Post-closure care
Cell 2 – Stage 1 & 2	2,270,000	Currently receiving waste
Cell 2 – Stage 3	2,300,000	Currently in excavation
Cell 2 – Stage 4	2,160,000	Excavation begins in 2022
Total	**8,530,000**	Begins closure in 2050±
*All assumptions apply.		

Spreadsheet calculations of waste volume consumption supporting Table 2-1are presented in Attachment 1, and plan and cross section drawings of Cell 2 are presented in Attachment 2.

2.4. Cell 3 Volumetrics and Phasing

Cell 2 completion is projected to occur during the 2050 timeframe. This is so far in the future that almost any assumption for Cell 3 is likely to be in error, with only the magnitude of the error in question. Still, SUVSWD is considering accepting waste from other public agencies, and requested an estimate of the future life of Cell 3. This estimate was completed earlier in 2012 and is attached in Attachment 3; this study is summarized in the following paragraphs.

To project the capacity and life of Cell 3, two assumptions were made. The first assumption is that the four cells shown in previous master plans (Cells 4 through7) have transformed into a single large area fill with stages similar to Cell 2. The second assumption is that the annual increase in tonnage will be zero percent – no growth in tonnage. Other assumptions are identical to those for Cell 2: 1,500 lbs/cy for in-place

waste; 20 percent for the in-place waste-to-soil ratio; and an average elevation difference (bottom of excavation to top of closure cap) of 110 feet.

Using these assumptions, the life of Cell 3 was estimated at 88 to 104 years. Since Cell 3 is projected to begin accepting waste in 2050, this means it has capacity through 2140 or 2150 accepting only MSW from SUVSWD. If SUVSWD were able to immediately double the tonnage received at Bayview by adding one or more out-of-District customers, Bayview would have 65 to 75 years of capacity without further increasing the capacity of Cell 3.

2.5. Other Design Features

2.5.1. Stormwater Management

The Bayview Landfill site lies between the Tintic Mountains and Utah Lake. Three historic unnamed drainages cross the site from west to east, including: a drainage near the northern boundary of the site; a drainage near the center of the site, just south of the landfill entrance road; and a drainage near the southern boundary of the site. Two of these drainages need evaluation for improvements in the short term (2 to 10 years), and the third will need evaluation during design of Cell 3 (during the 2040s).

The northern drainage was improved during design and construction of Cell 2, Stage 2. These improvements created a straight channel some 1,000 feet in length. This channel needs engineering evaluation for three potential design improvements, including:

- During a design runoff event, the long, straight channel may be at risk of bottom scour, embankment erosion and erosion or overtopping at the bend near the leachate ponds. This may require design and construction of drop structures and/or energy dissipation structures in the channel.
- The design improvements built during Cell 2 construction include single 36-inch diameter culverts at internal landfill haul roads. In contrast, this drainage exits the landfill site through a single 24-inch culvert at Highway 68. During a design runoff event, this configuration may present risk of overtopping and/or washout of Highway 68. Alternatives which further control runoff on-site should be evaluated during renewal of the Bayview Landfill Stormwater Permit in 2013.
- Staff is recommending enlargement of the compost pad to accommodate additional biosolids composting. The likely area for this enlargement could require burial of the northern drainage channel. This also should be evaluated during renewal of the stormwater permit in 2013.

The central drainage has been partially or completely blocked by construction of site berms and haul roads. This does not create an immediate flooding problem, but may affect off-site water rights, since the stormwater simply impounds upgradient of the blockage. This impounded water evaporates or infiltrates into the ground to augment groundwater, which may mitigate water rights issues. However, this channel needs engineering evaluation for two potential design improvements, including:

- This channel is blocked by a saddle between a site berm paralleling the entrance road and a site berm paralleling Highway 68. If it is improved in this configuration, it may lessen the area available for future development of Cell 3, and it may present erosion issues for the embankments surrounding Cell 3. This drainage channel should be evaluated for relocation along the south side of the landfill entrance road.
- This channel also exits the landfill site through a 24-inch culvert under Highway 68. It should be evaluated for further on-site control before it is relocated.

The southern drainage currently becomes an alluvial fan as the channel disappears. This appears to be a natural feature, but may have been altered during site work. In any case, the stormwater either infiltrates into the ground or re-enters the drainage further east through overland flow. This channel will eventually need improvements, including:

- This channel will need to be re-located close to the site's southern boundary to allow construction of Cell 3. It will be most logical to make these design improvements, including drop structures and/or energy dissipation structures, immediately prior to opening Cell 3.
- This channel also exits the landfill site through a 24-inch culvert under Highway 68, and should be evaluated for further on-site control as part of its relocation design.

2.5.2. Soil Balance

Beginning with the first Bayview Landfill Master Plan (1989), the landfill was planned as an excess soil site. In the 1989 master plan, the excess soil was used to construct soil berms that would limit the visibility of landfill activities to traffic on Highway 68, as well as to neighboring property owners. The 2002 and 2009 revisions of the master plan increased the ratio of excess soil to the area of the cells by increasing the depth of Cell 2 compared to Cell 1. This excess of soil may impact future development of Cell 3, and the following paragraphs provide recommendations for new and continued practices to protect the value of future air space at the Bayview Landfill.

Soil Stockpile Areas

Landfill staff have been stockpiling selected soil materials in several locations around the site. These stockpiles have included materials that staff or contractors may need to construct future landfill cells, or to construct future landfill closure caps; these materials include: silty sand to be used for closure cap construction (currently in the northwest corner of the landfill site); and clayey soil (hard pan) to be used in construction of future landfill cells (also in the northwest corner of the site). Staff has also been stockpiling other select materials in berm areas as it is feasible; these materials include sand, gravel and cobbles. Staff is currently designating all of these stockpile areas on the site-wide drawing of the Bayview Landfill so that these locations are available for future landfill staff.

While the stockpiling of silty and clayey materials in the northwest corner is beneficial, it should be augmented with stockpiles in the eastern portion of the landfill site. Doing this will reduce the haul distances during excavation, thereby improving excavation efficiency. It will also increase efficiency during construction of new landfill liner and closure caps, since it will also reduce haul distances for these construction projects. Staff is currently designating areas along the northeastern side of the landfill site for stockpiling silty and clayey materials.

It is recommended that staff continually update site drawings to show stockpile areas of all select materials, to show new areas as the older areas become full, and to use the drawings to help educate equipment operators on proper laydown of select materials. The site superintendent and management should verify these procedures on a regular basis; this should include a quarterly verification by management.

Site Berms

The site berms were initially developed to provide line-of-sight screening of landfill operations from traffic on Highway 68 and from neighboring land owners. The 1989 master plan established minimum elevations for the screening berms, and these elevations could be increased to provide for additional laydown/disposal of excavation soils. In addition, the berms were initially established to delineate the outer buffer around the landfill. They also delineate the inner boundary, and the outer boundary could be available for additional disposal of excavation soils.

It is recommended that staff survey new screening berm limits to end approximately 50 feet from the property fence; in doing this, staff should provide bollards around all groundwater monitoring wells, and provide at least 25 feet of undisturbed buffer around all monitoring wells. Extending the berms closer to property fences will allow additional acreage for the berms, which will make elevation increases more

meaningful in terms of volume. It is also recommended that the elevation of the berms near Cell 2 be increased by at least 10 feet.

Soil Re-Use

In the short term, SUVSWD will be able to expand the screening berms on the eastern boundary of the site. To a lesser degree it will be able to expand the northern and southern berms; the northern berm may be expanded vertically, but its lateral extent is severely limited by the proximity of property line, drainage channel and Cell 2 boundaries; the southern berm may be expanded to a much greater extent, but the 2,000 foot one-way haul would increase scaper cycle time to a marginally acceptable or unacceptable limit. Berm 6 (the eastern and southern berm south of the entrance road) can be used to dispose of 4 to 4.5 years of excavation from Cell 2 Stage 3 (note: excavation needs to be completed in 6 to 7 years). By fiscal year 2016 – 17, SUVSWD will need to have another disposal option available. That alternative may be among the following:

- Dispose of excavation soils in areas that will impact the future development of Cell 3. This will either reduce the capacity of Cell 3, or will require second handling of the disposed soil;
- Implement an off-site soil disposal option (see below); or,
- Develop a plan to place additional fill on top of Cell 1, between Cells 1 & 2, on top of Cell 2, on the current compost area, and in other areas which will not become part of Cell 3. If the compost area is used for soil disposal, SUVSWD could design and construct a new compost area on top of closed cells, or on top of fill between the two closed cells.

Ultimately, SUVSWD will need an off-site disposal of soil to maximize the development of air space on the Bayview Landfill. Cell 2 Stage 4 and all stages of Cell 3 will require off-site disposal of excess soil, tying the need to develop solutions to this issue to initiation of excavation of Cell 2 Stage 4 in 2020 at the latest. The most obvious alternatives include the following:

- Acquiring or leasing adjacent property for disposal of clean soil. SUVSWD could approach the School Trust Board regarding a lease of the property west of the current Bayview Landfill site. Only the eastern half of this section has value to SUVSWD since the section is divided approximately in half by north/south power utility easements. Alternatively, SUVSWD could approach property owners to the north or south of the current Bayview Landfill site.
- Development of off-site soil materials markets. This could consist of marketing soil materials in competition with private companies, or formation of a public/private partnership with a firm(s) interested in excavating Cell 3 in

exchange for rights to market selected materials. The second alternative is more likely to be easily implemented, and could involve a competitive bid process to secure a private partner.

In any case, this issue does become critical to further development of the Bayview Landfill by 2020 at the latest.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Using updated assumptions based on 20 years of history and a modified cell configuration, Cell 2 has a projected lifetime capacity sufficient to serve SUVSWD through the 2050 calendar year. Cell 3 appears to have a projected lifetime capacity to serve SUVSWD through the 2140 or 2150 timeframe. Each of these projections should be updated annually, and re-evaluated with regard to assumptions at least every 10 years (every second permit renewal).

Since excavation of Cell 2 Stage 3 will require one FTE for the next seven years, it will be most cost effective for SUVSWD to dedicate one person and one excavator to this task from today through the end of 2020.

During the 2013 to 2020 timeframe, SUVSWD will need to implement off-site disposal of excavated soils. Continuing to define areas for disposal of select soils may make it easier for a public/private partnership to develop, since the private contractor may be able to begin operation by mining stockpiled materials.

4.0 REFERENCES

Previous versions of the Bayview Landfill Master Plan are available through request to SUVSWD. These include the 1988, 2002 and 2009 master plans.

ATTACHMENT 1

Cell 2 Volume and Operating Life Calculations

Bayview Landfill
Cell 2 Remaining Volume

Assumptions:			
	125,000 tons per year 2011-12	121,000	
	1% annual growth rate	101.0%	
	4:1 waste to soil ratio (including sand and cap)		
	9:1 Daily cover	10%	Based on surveyed test data
	Liner cover and cap	10%	
	1,500 pounds per cu yd compaction	0.75	

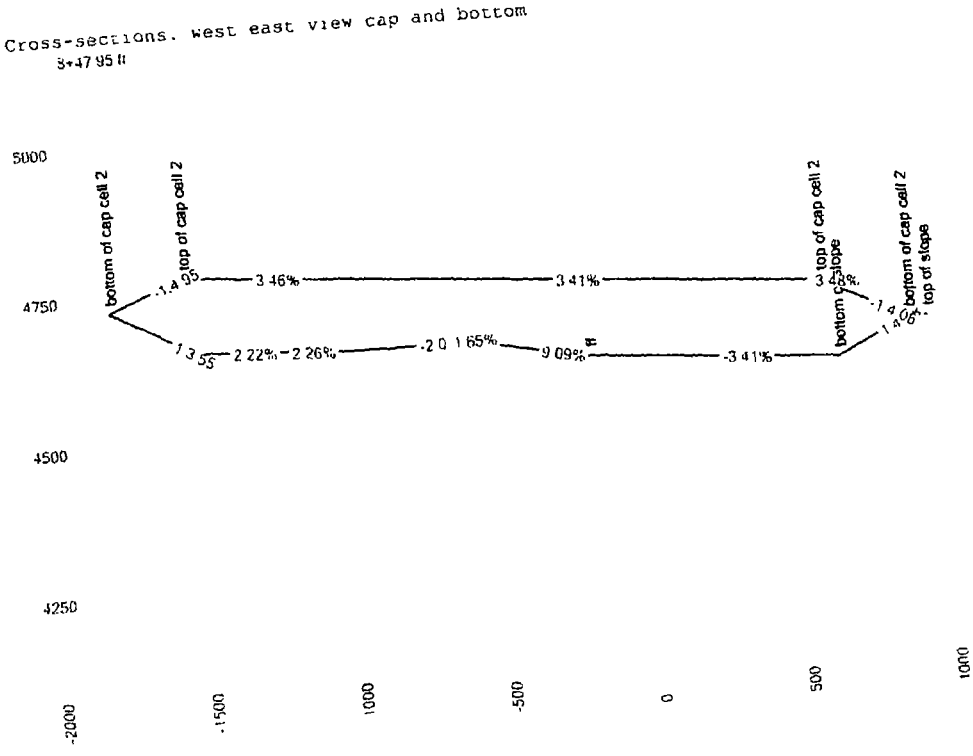
Year (7/1 - 6/30)	Annual MSW Received (tons)	Cumulative MSW Received (tons)	Annual MSW Volume (cu yd)	Cumulative MSW Volume (cu yd)	Required Daily Cover Volume (cu yd)	Cumulative Daily Cover Volume (cu yd)	Annual Airspace Consumed (cu yd)	Cumulative Airspace Consumed (cu yd)	Remaining Airspace (cu yd)	Remaining Life (yrs)	Stage	Added Airspace (cu yd)
									1,980,835		2	
2012 - 13	122,210	122,210	162,947	162,947	16,295	16,295	179,241	179,241	1,801,594	14.7	2	
2013 - 14	123,482	245,643	164,576	327,523	16,458	32,752	181,034	360,275	1,620,560	13.1	2	
2014 - 15	124,666	370,309	166,222	493,745	16,622	49,374	182,844	543,119	1,437,716	11.5	2	
2015 - 16	125,913	496,222	167,884	661,629	16,788	66,163	184,673	727,792	1,253,044	10.0	2	
2016 - 17	127,172	623,394	169,563	831,192	16,956	83,119	186,519	914,311	1,066,525	8.4	2	
2017 - 18	128,444	751,838	171,259	1,002,450	17,126	100,245	188,384	1,102,695	878,140	6.8	2	
2018 - 19	129,728	881,566	172,971	1,175,422	17,297	117,542	190,268	1,292,964	687,672	5.3	2	
2019 - 20	131,026	1,012,592	174,701	1,350,122	17,470	135,012	192,171	1,485,135	495,701	3.8	2	
2020 - 21	132,336	1,144,928	176,448	1,526,570	17,645	152,657	194,093	1,679,227	3,771,115	28.5	2	3,855,008
2021 - 22	133,659	1,278,587	178,212	1,704,783	17,821	170,478	196,034	1,875,261	3,575,082	26.7	2	
2022 - 23	134,996	1,413,583	179,994	1,884,777	17,999	188,478	197,994	2,073,255	3,377,088	25.0	3	
2023 - 24	136,346	1,549,929	181,794	2,066,572	18,179	206,657	199,974	2,273,229	3,177,114	23.3	3	
2024 - 25	137,709	1,687,638	183,612	2,250,184	18,361	225,018	201,974	2,475,202	2,975,140	21.6	3	
2025 - 26	139,086	1,826,724	185,449	2,435,632	18,545	243,563	203,993	2,679,196	2,771,147	19.8	3	
2026 - 27	140,477	1,967,202	187,303	2,622,935	18,730	262,294	206,033	2,885,229	2,565,114	18.3	3	
2027 - 28	141,882	2,109,084	189,176	2,812,111	18,918	281,211	208,094	3,093,323	2,357,020	16.6	3	
2028 - 29	143,301	2,252,384	191,068	3,003,179	19,107	300,318	210,175	3,303,497	2,146,845	15.0	3	
2029 - 30	144,734	2,397,118	192,978	3,196,158	19,298	319,616	212,276	3,515,774	1,934,569	13.4	3	
2030 - 31	146,181	2,543,299	194,908	3,391,066	19,491	339,107	214,399	3,730,173	1,720,170	11.8	3	
2031 - 32	147,643	2,690,942	196,857	3,587,923	19,686	358,792	216,543	3,946,716	1,503,627	10.2	3	
2032 - 33	149,119	2,840,062	198,826	3,786,749	19,883	378,675	218,708	4,165,424	1,284,919	8.6	3	
2033 - 34	150,611	2,990,673	200,814	3,987,563	20,081	398,756	220,896	4,386,320	1,064,023	7.1	3	
2034 - 35	152,117	3,142,788	202,822	4,190,385	20,282	419,039	223,105	4,609,424	840,918	5.5	3	
2035 - 36	153,638	3,296,427	204,851	4,395,236	20,485	439,524	225,336	4,834,760	615,583	4.8	3	
2036 - 37	155,174	3,451,601	206,899	4,602,135	20,690	460,214	227,589	5,062,349	3,308,813	20.7	3	2,969,283
2037 - 38	156,726	3,608,327	208,968	4,811,103	20,897	481,110	229,865	5,292,214	2,978,948	19.0	4	
2038 - 39	158,293	3,766,621	211,059	5,022,161	21,106	502,216	232,163	5,524,377	2,746,785	17.4	4	
2039 - 40	159,876	3,926,497	213,169	5,235,329	21,317	523,533	234,485	5,758,862	2,512,299	15.7	4	
2040 - 41	161,475	4,087,972	215,300	5,450,629	21,530	545,063	236,830	5,995,692	2,275,469	14.1	4	
2041 - 42	163,090	4,251,062	217,453	5,668,082	21,745	566,808	239,198	6,234,890	2,036,271	12.5	4	
2042 - 43	164,721	4,415,782	219,627	5,887,710	21,963	588,771	241,590	6,476,481	1,794,681	10.3	4	
2043 - 44	166,368	4,582,150	221,824	6,109,533	22,182	610,953	244,006	6,720,487	1,550,675	9.3	4	
2044 - 45	168,032	4,750,182	224,042	6,333,575	22,404	633,358	246,446	6,966,933	1,304,229	7.8	4	
2045 - 46	169,712	4,919,893	226,282	6,559,858	22,628	655,986	248,911	7,215,844	1,055,318	6.2	4	
2046 - 47	171,409	5,091,302	228,545	6,788,403	22,855	678,840	251,400	7,467,243	803,918	4.7	4	
2047 - 48	173,123	5,264,425	230,831	7,019,234	23,083	701,923	253,914	7,721,157	550,004	3.2	4	
2048 - 49	174,854	5,439,280	233,139	7,252,373	23,314	725,237	256,453	7,977,610	293,552	1.7	4	
2049 - 50	176,603	5,615,882	235,470	7,487,843	23,547	748,784	259,017	8,236,627	34,534	0.2	4	

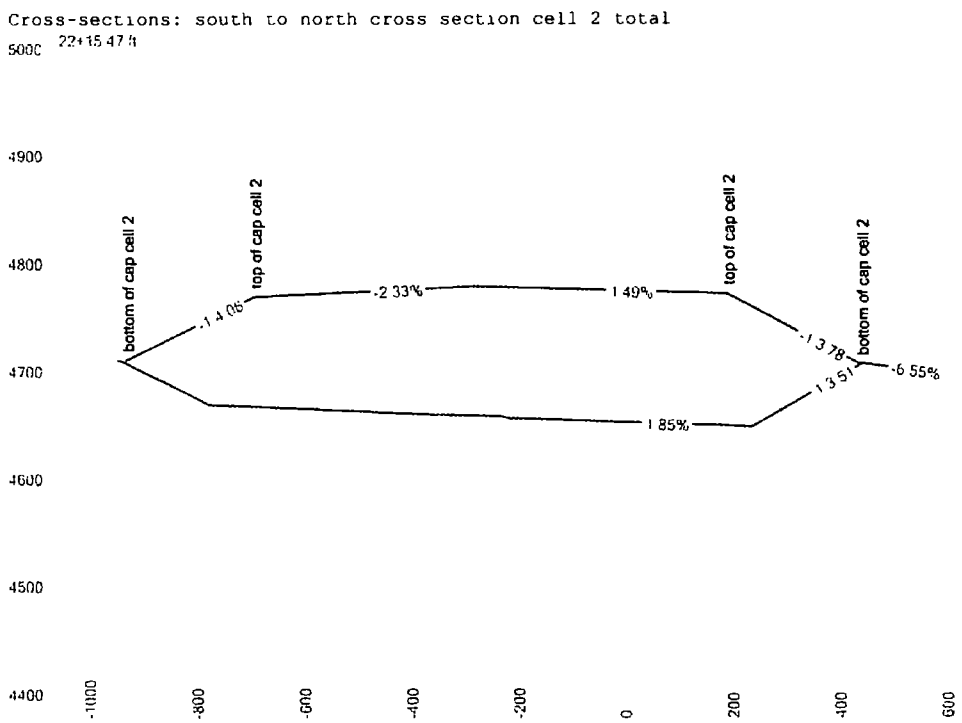
ATTACHMENT 2

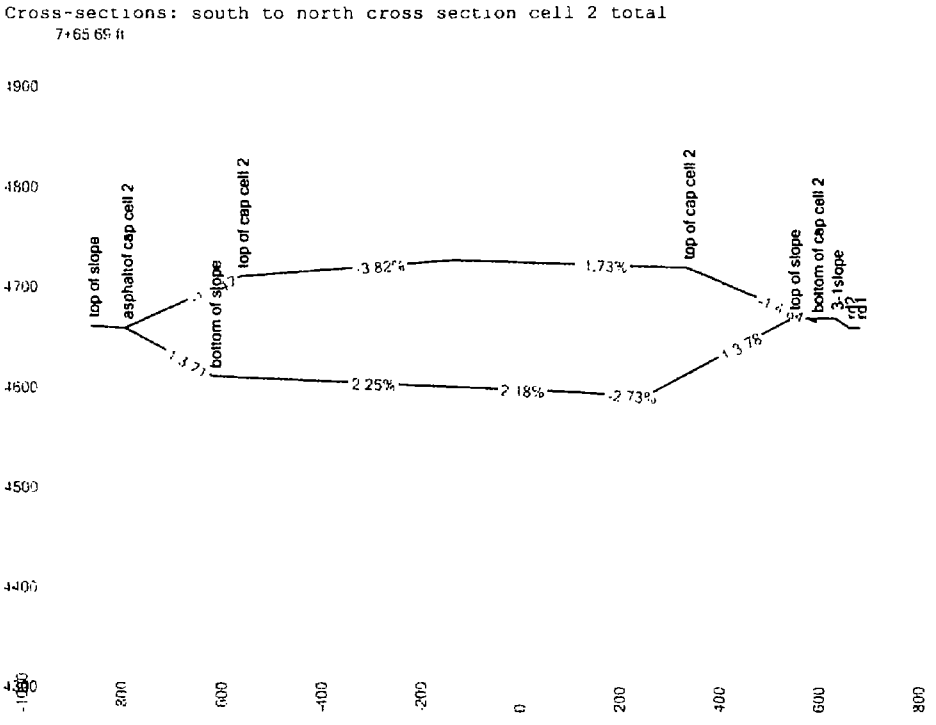
Cell 2 Drawings

BAYVIEW LANDFILL

SOUTH UTAH VALLEY SOLID WASTE DISTRICT


Cross-sections. west east view cap and bottom
5000
4750
4500
4250
bottom of cap cell 2
top of cap cell 2
top of cap cell 2
bottom of cap cell 2
top of slope
bottom of slope
3.46%
3.41%
3.41%
2.22%
2.26%
-2.01
65%
9.09%
-3.41%
-2000
-1500
1000
-500
0
500
1000


Cross-sections: south to north cross section cell 2 total
5000
4900
4800
4700
4600
4500
4400
bottom of cap cell 2
top of cap cell 2
top of cap cell 2
bottom of cap cell 2
-2 33%
1 49%
1 85%
-6 55%
-1000
-800
-600
-400
-200
0
200
400
600


Cross-sections: south to north cross section cell 2 total
7+65 69 ft
4900
4800
4700
4600
4500
4400
4300
top of slope
asphaltof cap cell 2
bottom of slope
top of cap cell 2
3.82%
1.73%
top of cap cell 2
top of slope
bottom of cap cell 2
3:1slope
2.25%
2.18%
2.73%
-800
-600
-400
-200
0
200
400
600
800

ATTACHMENT 3

Cell 3 Volume and Operating Life Calculations

Letter Report
Bayview Landfill Capacity and Alternatives Study

January 5, 2012

Mr. Terry Ficklin, General Manager
South Utah Valley Solid Waste District
P.O. Box 507
Springville, UT 84663

Delivered via email

Subject: Planning Level Estimates for the Bayview Landfill

Dear Mr. Ficklin:

This letter report is submitted to partially fulfill the requirements of our contract for professional services executed on November 15, 2011. This letter report provides my best estimate of the planning life for the Bayview Landfill. It also provides information regarding the relative costs of landfill disposal compared to other options for waste disposal. Throughout this letter report, I provide my best estimate of South Utah Valley Solid Waste District's (the District) disposal capacity of its wastes as defined by the District boundaries. I also estimate the site life with several different amounts of North Pointe Solid Waste Special Service District's (North Pointe) municipal solid waste (MSW).

To reiterate for your Board of Directors, I have been involved in the District's projects since the fall of 1989, and had been either Project Manager or Project Principal on these projects from 1992 through 2009 when I retired from HDR Engineering. So I know the District extremely well.

I worked together with the District's CAD Technician, Don (Fuzzy) Perry to refine my "back of envelope" estimate of the volume of waste that can be disposed of in the Bayview Landfill. I have completed this type of estimate more than a dozen times using "back of the envelope" estimates; while these estimates are inexact on small scale drawings, Mr. Perry helped me immensely in providing accurately scaled and calculated estimates.

Landfill Capacity

HDR's original (1989) Bayview Master Plan provided details on development of the 660 acres of the site leased from the State Board of Education. This site was approved by the Utah County Board of Commissioners as a Special Use Permit with more than 20 Conditional Use Provisions (attached).

The original Bayview Master Plan included seven isolated landfill cells, with the first cell located in the northwest corner of the site. While Cell 1 conformed to the original Master Plan, cells 2 & 3 were combined into a single cell under an early 2000s revision of the Master Plan, which was approved by the Utah Department of Environmental Quality (UDEQ). According to HDR's 2009 revision of the Bayview Landfill Master Plan, cells 2 & 3 have a lifetime volume lasting until 2033. Recent communication with UDEQ has increased the maximum height of cells 2 & 3 by 10 feet, increasing the life by 2 to 6 years. Cells 4 through 7 have not changed in concept since the original 1989 Master Plan.

In HDR's 1989 Master Plan, Cells 4 through 7 were envisioned as individual and isolated cells. This makes sense from a perspective of isolating closed cells and beginning a 30-year post-closure care for a landfill cell as proscribed by the US EPA and Utah DEQ regulations; unfortunately, we have learned that a 30-year post-

closure care period is not realistic, especially in the arid west, and may extend to perpetual care. If a landfill owner amortizes for a more realistic 100-year post-closure care, this becomes essentially perpetual care.

Combining Cells 4 through 7 adds an additional volume to these cells; this increase in volume could translate to more than a 30 percent increase in capacity, simply because side slopes and areas between cells add a large volume. Meanwhile, perpetual maintenance costs remain constant for this portion of the property.

We used both "back of envelope" and AutoCAD estimates to determine the volumetric capacity of the Bayview Landfill. My original "back of envelope" estimates were based on rough estimates of dimensions from HDR's most recent Bayview Master Plan (dated 2009). These estimates were extremely rough due to scaling factors: the width of my pencil line was roughly 50 feet when opposite sides are considered. In addition to the small scale of this sketch, it was not to a convenient scale, and I had to estimate dimensions. Working together, Mr. Perry and I refined these estimates using accurate and scaled AutoCAD drawings provided to the District by HDR.

My "back of envelope" calculation yielded a volume of 24,790,000 cubic yards, while Mr. Perry's AutoCAD drawing yielded a volume of 24,640,000 cubic yards. Since the AutoCAD calculation is considerably more accurate, we will use 24,640,000 cubic yards as our basis for calculating site life. From this volume, we must subtract the volume of soil used as daily and intermediate cover (Note: intermediate cover is placed when an area of the landfill cell will not receive more solid waste for a period of months). The industry routinely uses 20 percent as an estimate of the volume of daily and intermediate soil cover (Note: final cover is calculated separately since the type and thickness of final cover varies among the states). When we subtract 20 percent of 24,640,000, we obtain 19,710,000 cubic yards of air space available for MSW. And applying an in-place density of 1,500 pounds (3/4 of a ton) of solid waste per cubic yard gives us 14,780,000 tons of MSW. It is important to note that several assumptions in these calculations are conservative, including: the soil-to-waste ratio (20 percent) is quite conservative since many landfills are now using an alternative daily cover to conserve landfill air space; the 1,500 pounds per cubic yard is similar conservative, since Bayview Landfill operators routinely achieve approximately 1,600 pounds per cubic yard; and the 22 year service life of cells 2 & 3 is likely 25 percent low.

Long-term landfill tonnage is difficult to estimate. The current economic downturn has caused a decrease of 15 to 40 percent in solid wastes received at landfills throughout the United States. Most of this decrease is attributable to less construction and demolition (C&D) waste generated and disposed of in landfills. Locally, the Bayview Landfill is currently receiving approximately 20 percent less MSW than it did immediately before the economic downturn. On the other hand, recycling has increased significantly in the past 20 years (or less), which also affects the volume of MSW arriving at a landfill. In the 20 (almost 21) years since Bayview opened for business, South Utah Valley Solid Waste District has gone from less than 1 or 2 percent recycling to approximately 20 percent recycling. Population projections fail

to consider the changes in solid waste management which have occurred and which will continue to occur. At some point in the future, population growth and recycling growth (or other management changes) may cancel each other.

In any case, it is beyond the scope of this study to project solid waste growth in a quantitative manner. Currently, the Bayview Landfill is receiving approximately 115,000 tons of MSW per year. For purposes of this study, I increased this tonnage by 75 percent (to approximately 200,000 tons per year) and applied this tonnage to the remaining life of the Bayview Landfill. This number will be high in early years and may be low in later years, but it was an expedient way to estimate site life.

The 2009 calculations by HDR show a probable life time of the Bayview Landfill of 22 years for Cells 2 & 3. These 22 years plus 74 years for Cells 4 through 7 gives us 96 years of life using conservative estimates for

SUVSWD-controlled MSW. I believe that this estimate could be 20 to 30 percent low; multiplying 74 years by 125 percent gives us 92 years of life cells 4 through 7 or 114 years for the combination of cells 2 through 7.

Based on these estimates, I believe that the Bayview offers more than 100 years of capacity for its member cities.

Summary

This letter report has provided the South Utah Valley Solid Waste District Board of Directors with estimates of the capacity of the Bayview Landfill for disposal of District-controlled MSW. I estimated that the Bayview Landfill will provide District citizens with reliable MSW disposal for more than 100 years.

I appreciate the opportunity to continue to serve the District, and truly appreciate the teamwork that Mr. Perry and I were able to achieve.

Sincerely,

Richard T. Sprague
Principal
R.T. Sprague Consulting

Attachments

AutoCAD Earthwork Volume Report
"Back of the Envelope" Calculation Sheet

From: Saved by Windows Internet Explorer 8
Sent: Wednesday, November 30, 2011 12:10 PM
Subject: Earthwork Report

Project Information		Coordinate System	
Name:	C \Documents and Settings\dperry\My Documents\Business Center - HCE\Trimble Business Center\future cell south side cap.vce	Name	SCS900 Localizations
		Datum:	Datum from Data Collector
		Zone	SCS900 Record
Size.	232 KB	Geoid:	
Modified.	11/30/2011 10 16.42 AM (UTC-7)	Vertical datum	
Time zone:	Mountain Standard Time		
Reference number:			
Description:			

Earthwork Volume Report

Unclassified surface compared to Work-in-progress surface

Surfaces	
Future Cell South Side	Classification: Unclassified
cap on future cell	Classification: Work-in-progress

Bank Volumes Based on Surface Geometry Alone	
Cut material:	**0.0 yd³**
Fill material:	**24,640,678.3 yd³**
Deficit:	**24,640,678.3 yd³**

Note: 'Cut Material' is defined as material where [cap on future cell] is lower than [Future Cell South Side]. 'Fill Material' is defined as the volume of material where [cap on future cell] is higher than [Future Cell South Side].

Note. The above volumes are calculated solely from the geometries of the selected surfaces. No material properties are applied to the above numbers.

Date. 11/30/2011 12:08:54 PM	Project. C:\Documents and Settings\dperry\My Documents\Business Center - HCE\Trimble Business Center\future cell south side cap.vce	Business Center - HCE

CALCULATIONS

Client: South Utah Valley Solid Waste District **Project:** Bayview Landfill Site Life

Purpose: Calculate Volumetric Life of Cells 4 - 7 **Date:** December 9, 2011

Assumptions:

1. Create an area fill from four cells shown on the current master plan; use the 1989 outer perimeter*
2. 4:1 internal landfill slopes*
3. 4:1 external landfill slopes
4. 1,500 pounds per cubic yard density of in-place MSW*
5. 20% soil-to-MSW ratio (no ADC)*
6. 2.5% slope for landfill bottom and closure cap
7. 110 feet of elevation difference including liner and cap (100 feet of MSW) *

* Approximately 10% conservative

Volume Calculation:

1. Area = 2,100 ft X 4,000 ft = 8,400,000 sq ft/43,560 sq ft/ac = 192 acres
   Say 190 acres

2. Assume that excavation depth and final elevation above ground level are equal over the site. Therefore, 4:1 slopes interior/exterior each average 50 vertical feet.
   Slope = 50 ft X 4 = 200 ft. This affects both opposing slopes, so two times 200 feet.
   (3,780 ft – (400 ft)) X (2,085 ft – 400 ft) = 5,695,000 sq ft/43,560 sq ft/ac = 130.7 acres; say 130 acres

3. (5,695,000 sq ft X 100 ft)/27 cu ft/cu yd = 21,090,000 cu yd = 15,800,000 tons @ 1,500 lb/cu yd. This is volume calculated for vertical landfill walls, without inclusion of interior/exterior slopes.

4. If slopes are (on average) 200 ft in length, and depth is 100 ft, the horizontal extension of the 200 ft slope is the square root of 200 squared plus 50 squared (half the depth) = 206 ft, and the area of the slope is 200 ft X 100 ft/2 = 10,000 sq ft. 10,000 sq ft X 1ft/1/ft = 10,000 cu ft/ft of perimeter = 370 cu yd/ft of perimeter. If perimeter is 10,000 ft, 10,000 ft X 370 cu yd/ft = 3,700,000 cu yd = 2,775,000 tons.
   Say 2,700,000 tons.

5. Capacity is 15,800,000 tons + 2,700,000 tons = 18,500,000 tons. At 20% soil (daily and intermediate cover) = 14,800,000 tons.

6. Long-term landfill tonnage is difficult to estimate: current tonnage at landfills nationwide is down 15% to 40%, with an average around 20% (primarily due to a plunge in construction and demolition debris (C&D)), so current tonnage is a poor indicator; Utah County has a strong growth potential especially in the southern part of the County, so tonnage should increase; at the same time, diversion (both in Utah County and nationally) is increasing dramatically. At some point, build growth and recycling growth are likely to equal each other.

Therefore, assume a build-out tonnage of approximately 75% increase from today's amount (approximately 115,000 tons per year in 2011 vs. approximately 200,000 tons per year at build-out).

14,800,000 tons / 200,000 tons per year = 74 years. Since this value is conservative by 20% to 40% (say 25%), the range of years-to-capacity of the southern cell is 88 to 104 years for disposal of SUVSWD-controlled waste.

7. In 2009, HDR's Landfill Master Plan revision stated that the capacity of Cells 2 & 3 combined will reach capacity in 2033. Since that time, SUVSWD has received approval from the State to increase the height of this combined cell. Also since 2009, landfill tonnage has decreased approximately 20%. Both of these facts make 2033 a very conservative estimate.

8. Adding these cell lives gives an overall site capacity of 110 to 126 years for the disposal of SUVSWD waste.

9. Moving forward, SUVSWD could reasonably assume that the currently leased Bayview Landfill site has a capacity sufficient to provide more than 100 years of SUVSWD-controlled waste disposal.

October 29, 2012

Scott Aitken
South Utah Valley Solid Waste District
P.O. Box 507
Springville, UT 84663

Re: April 2012 Groundwater Monitoring Statistical Results for Bayview Landfill

Dear Mr. Aitken:

HDR Engineering, Inc. (HDR) has prepared this letter report regarding the groundwater monitoring program at the Bayview Landfill. This report summarizes the statistical analyses performed for results from the groundwater sampling conducted in **April 2012.** Attachment 1 contains the control charts and prediction limit graphs used in the statistical analyses. Attachment 2 contains the results of the latest laboratory analyses and the results of the field-measured parameters, including a recording of the static water level found in each well.

Statistical Methods

The initial inter-well analysis of the groundwater chemistry indicated enough variability between wells to justify using an intra-well analysis approach. The results of the inter-well analysis were presented in a report submitted to the Division of Solid and Hazardous Waste on October 8, 1998. A software package called SANITAS, developed by NIC Environmental (formerly Intelligent Decision Technologies of Longmont, Colorado), was used to perform the statistical analysis of the groundwater data.

The statistical analysis approach uses intra-well methods consisting of control charts and prediction limits. The purpose of this analysis is to determine if there are any statistically significant changes in the compliance data relative to background concentrations. These methods establish limit values based on the background water quality data collected for each well.

In the case of control charts, a statistically significant change is based on the standard deviation established by the background data. When using the control charts method, the constituents will have the following characteristics:

- The data will be tested for normality using the Shipiro-Wilk normality test (for <50 samples) or the Shipiro-Francia test (for >50 samples) included in the SANITAS statistical analysis package. The Shapiro-Wilk normality test is the preferred method based on EPA guidance.[1] When data are considered normal, the values are consistent and follow a normal, bell-shaped curve (Gaussian curve). The majority of the values (95%) are within two standard deviations from the mean of the concentration values.

[1] EPA, June 1992. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance. EPA 530SW89026.

- The percentage of non-detects will be less than 50%.
- The data will have no statistical trends as shown by the trend analysis plots.
- This method assumes that the landfill has not previously affected the groundwater.

The SANITAS program will not execute a control chart if the data set is transformed normal using Cohen's adjustment. In general, Cohen's adjustment accounts for data that are below the set detection limit or practical quantitation limit (PQL) for the method established by the laboratory. The Cohen adjustment is executed when the data set includes at least 15% non-detects.

The constituents that do not meet all the criteria above are analyzed using a prediction limit (PL). Typically, for inorganic constituents, the preferred method is to use a parametric intra-well analysis approach. Under this approach, the false positive rate or alpha is 0.01 or 1%. The assumption under the parametric approach is that the background data are normal or transformed normal. The PL for a particular constituent is calculated from the mean value (X) of the entire background data set, excluding the most recent data point, using the following equation:

$$PL = \text{Mean } (X) + (\text{T-value} \times \text{Standard Deviation})$$

Note T-value from standard statistical tables

Not all constituents in this data set allow the use of a parametric approach. A non-parametric approach will be used in lieu of a parametric approach if the data set fails the normality test using the Shipiro-Wilk normality test, cannot be transformed normal, and has between 50% and 90% non-detects. When the data set has greater than 90% non-detects, an intra-well Poisson PL is executed, and the non-detect values are substituted with one-half the detection limit. Data that fall under the Poisson criteria have a low probability of detection but stay constant from sampling period to sampling period.[2] When a non-parametric approach is applied, the highest background concentration from the data set is used for the PL.

Summary of Statistical Analysis

The statistical analysis is for data collected from wells DMW-3, DMW-6, DMW-7, DMW-8, and DMW-9 during the period from March 1991 through April 2012. The background sampling was performed from March 1991 to June 1992. Well DMW-7 is located upgradient from landfill Cell #1. Wells DMW-3 and DMW-8 serve as downgradient compliance wells for landfill Cell #1. Monitoring well DMW-6 is east of the leachate pond. Monitoring well DMW-9 serves as a downgradient well for the initial phases of Cell #2. Background samples from DMW-9 were collected between December 2004 and October 2007.

The laboratory analytical results were reviewed to determine whether a statistical analysis was needed. If the laboratory results reported a non-detect for a particular constituent from a particular monitoring well, no statistical analysis was conducted for that constituent. However, the information was placed in the groundwater quality database to maintain a complete record.

No volatile organic constituents (VOCs) were detected in any well. Therefore, no statistical analysis was conducted for VOCs.

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[2] EPA, June 1992. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance. EPA 530SW89026.

Statistically Significant Changes

The data were analyzed using control charts (titled Combined Shewhart-Cusum Charts) and PL graphs to determine if there were any statistically significant changes from background levels. Only statistically significant changes in the reported values from the latest sampling event are reported here.

Upgradient Monitoring Well

DMW-7

No statistically significant changes detected in data

Compliance Monitoring Wells

DMW-3

The laboratory reported pH (7.5) was determined by Sanitas to be a statistically significant change. The reported pH concentration is within the control limits; however, a statistically significant change is reported because the low-CUSUM line on the control chart shows a trend that is below the lower control. Compared to background concentrations in DMW-7, the reported pH concentration in DMW-3 appears to be within the natural variability of pH concentrations in groundwater at the site. In addition, the reported concentration is within the Utah Ground Water Quality Standards, which ranges from 6.5 to 8.5.[3]

DMW-8

No statistically significant changes detected in data

DMW-9

The statistical analysis conducted on the concentrations of sulfate in this compliance monitoring well show a statistically significant change compared to background concentrations in groundwater from this well. The reported concentration of sulfate (65.2 mg/L) from the latest sampling event is within control limits. However, the CUSUM line, which represents a long-term trend, exceeded the limit. This trend is caused by one sample, from May 2010 (159 mg/L), being elevated. When the EPA 1989 statistical outliers test is applied to the entire DMW-9 sulfate data set, the May 2010 concentration is determined to be an outlier. The April 2012 result is the forth consecutive sulfate concentration reported by the laboratory that falls within the control limit (see the control charts and EPA outliers test results provided in Attachment 1). The reported concentration of iron (0.092 mg/L) is a statistically significant increase compared to background concentrations in this compliance well. The distribution of the background data was determined to be non-normal, and a non-parametric statistical approach was used. The data are non-normal because the background concentrations were mostly non-detects. As mentioned above, when a non-parametric approach is applied, the highest background concentration from the data set is used for the PL. The PL for the data set was set at the laboratory detection limit 0.05 mg/L, which is 0.042 mg/L lower than the reported concentration (0.092 mg/L) from the April 2012 sampling. Background sampling at the landfill reported iron concentrations as high as 1 mg/L to 2 mg/L in background sample data from compliance well DMW 6 and as high as 3 to 4 mg/L in upgradient wells DMW-1 and DMW-4. This

[3] Utah Administrative Code Rule 317-6

indicates that iron might be naturally occurring at concentrations similar to the concentration reported in the April 2012 groundwater sample from compliance DMW 9.

The statistical analysis conducted for the latest sampling event for sodium indicated a statistically significant change. The reported concentration of sodium (96.5 mg/L) is within control limits. However, the CUSUM trend line exceeded the limit. All sodium concentrations in the data set for DMW-9 have remained below the control limit. While there is a general upward trend in sodium concentrations in DMW-9, the concentrations (ranging from about 90 to 100 mg/L) are all close to the concentration in background samples collected from other upgradient wells. For example, the reported concentrations of sodium in both upgradient and down gradient wells collected during background sampling events average from about 100 to 130 mg/L with background concentrations as high as 150 to 160 mg/L in DMW-3.

This indicates the April 2012 concentration in DMW-9 remains near natural occurring sodium levels.

No other statistically significant changes were detected in the laboratory data for this well.

Leachate Pond Monitoring Well

DMW-6

The laboratory reported a chloride concentration of 96.8 mg/L in this compliance monitoring well. The statistical analysis conducted for this sampling event noted a statistically significant change from background sampling concentrations. The laboratory determined that the concentration is below the background control limits (109.1 mg/L); however a statistical significant change is reported because the CUSUM trend line for chloride remains above the control limits. The cause of the trend line exceeding the limits was due to a reported chloride concentration of 129 mg/L from the April 2011 sampling event. When the EPA 1989 statistical outliers test is applied to the entire DMW-6 chloride data set, the April 2011 concentration is determined to be an outlier (see EPA outliers test results provided in Attachment 1). Laboratory results from the last two sampling events report chloride concentrations below the control limit. As detection monitoring continues, and concentrations remain below background control limits, the CUSUM trend line will continue to fall back below the established limits.

The laboratory reported pH (7.9) was noted as a statistically significant change. The reported pH concentration is within the control limits; however, a statistically significant change is reported because the low-CUSUM line on the control chart shows a trend that is below the lower control. Compared to background concentrations in upgradient well DMW-7, the reported pH concentration in DMW-6 appears to be within the natural variability of pH concentrations in groundwater at the site. In addition, the reported concentration is within the Utah Ground Water Quality Standards, which ranges from 6.5 to 8.5.[4]

The laboratory reported a nitrate concentration (1.07 mg/L) in this compliance monitoring well. The statistical analysis noted a statistically significant change from background sampling concentrations. The reported concentration is below the background control limits (1.66 mg/L); however the reported statistically significant change was due to the CUSUM trend line for chloride remaining above the control limits. When compared to the mean nitrate concentration in DMW-7 (5.06 mg/l), which serves as an up

[4] Utah Administrative Code Rule 317-6

gradient compliance well, the data indicates that the concentration detected in the April 2012 sampling event is well within naturally occurring nitrate concentrations in the area. The State of Utah does not have groundwater standards for nitrate.

No other statistically significant changes in the data were noted.

Conclusions

Statistical analysis conducted for the April 2012 groundwater sampling event indicate statistically significant changes in chemical concentrations from compliance monitoring wells DMW-3, DMW-6 and DMW-9. However, none of the statistically significant changes were a result of the chemical concentrations from the latest sampling event. Considering the background concentrations in these compliance wells and the concentrations in upgradient wells, the reported chemical concentrations from the April 2012 sampling event appear to be near naturally occurring levels.

If you have any questions regarding this letter or the results of the analysis, please contact me at (801) 743-7812.

Sincerely,

Terry Warner, PE
HDR Engineering, Inc.

Attachment 1: Control charts and prediction limit graphs
Attachment 2: Results of laboratory analysis, field-measured parameters, and chain of custody form

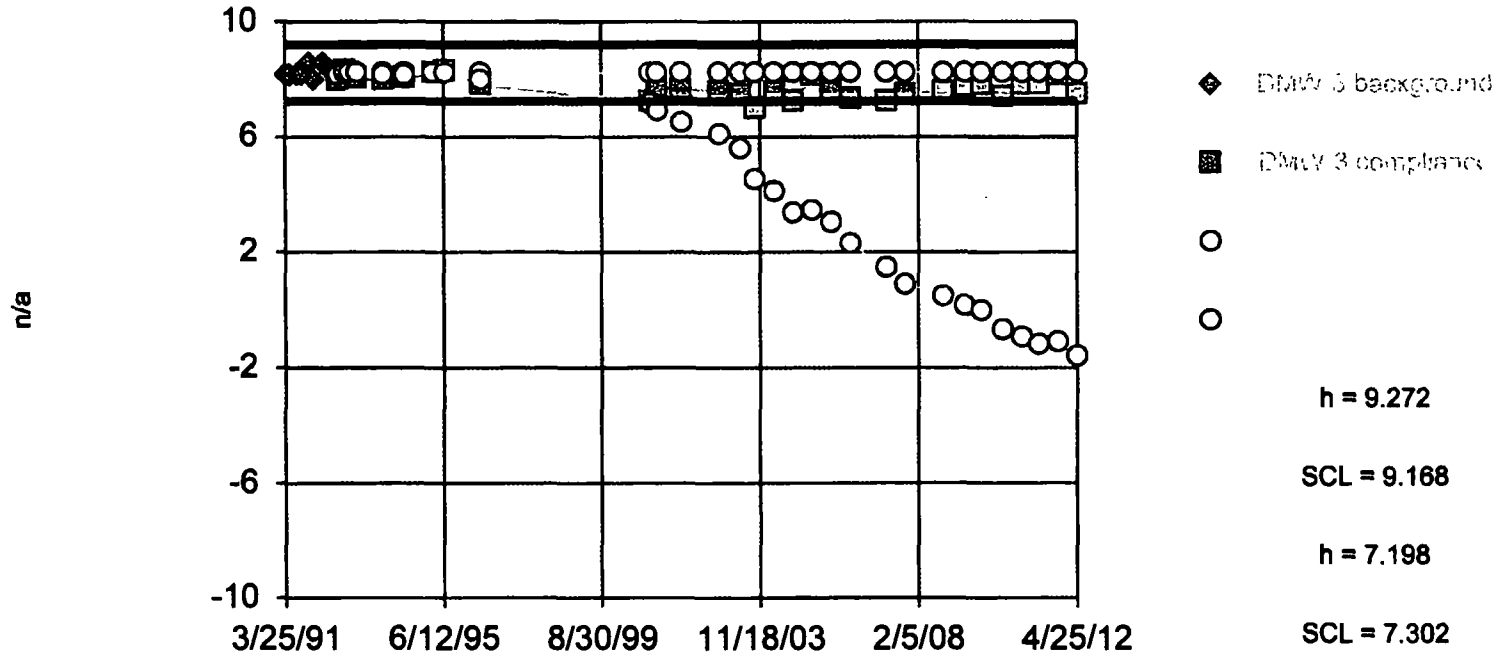
Attachment 1

Statistical Analysis Results

Exceeds Control Limits

Control Chart

DMW-3 (bg)



Background Data Summary: Mean=8.235, Std. Dev.=0.2074, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8781, critical = 0.818. Dates ending 6/24/1992 used for control stats.

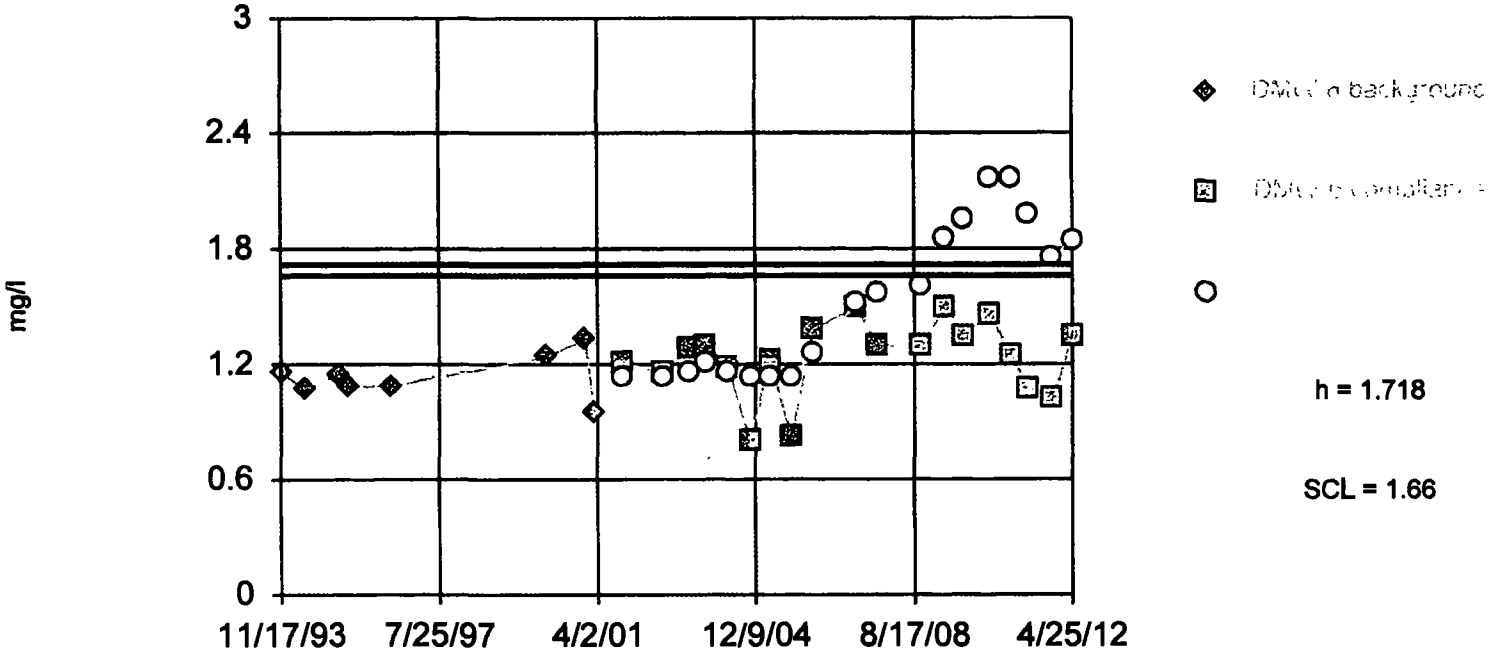
Constituent: pH Analysis Run 8/1/2012 11:33 AM

Facility: Bayview Landfill Client: SUVSWD Data File: 501B656D

Exceeds Control Limits

Control Chart

DMW-6 (bg)



Background Data Summary: Mean=1.133, Std. Dev.=0.1171, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.971, critical = 0.818. Dates ending 3/7/2001 used for control stats.

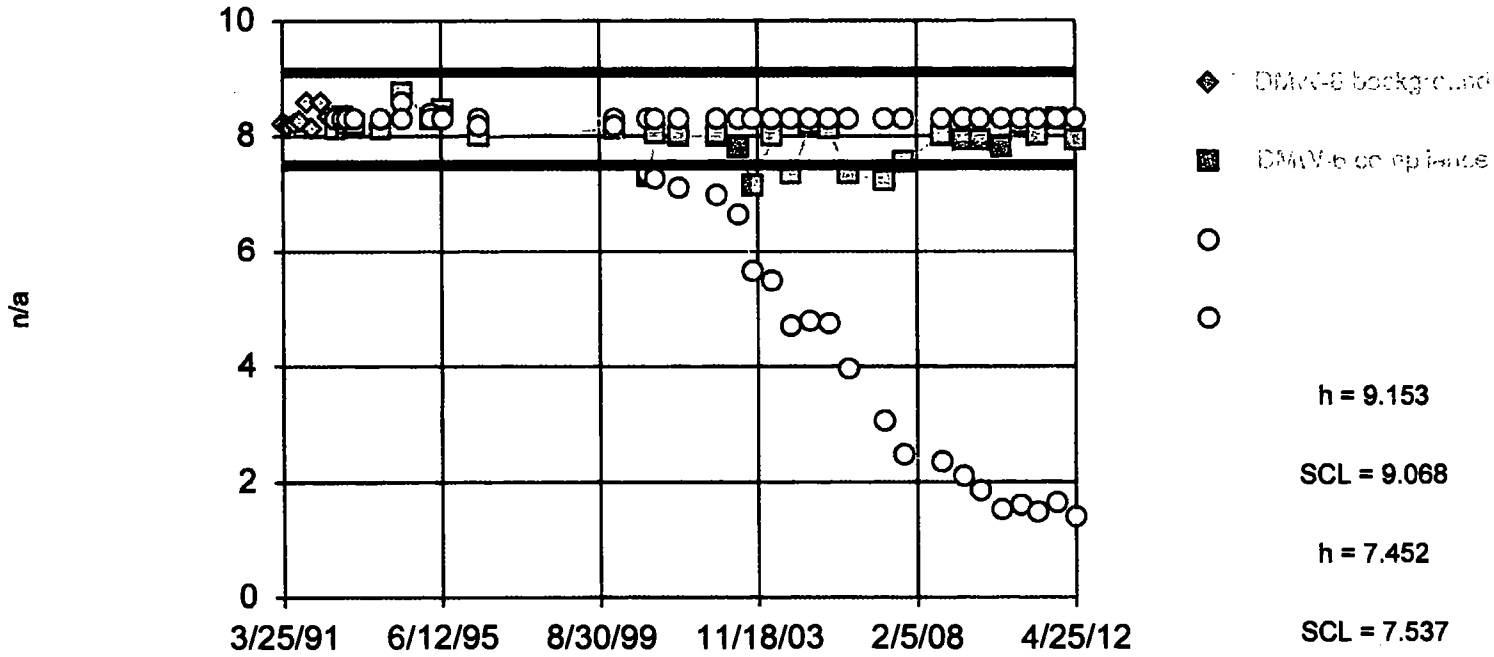
Constituent: Nitrate Analysis Run 8/1/2012 12:02 PM

Facility: Bayview Landfill Client: SUVSWD Data File: 501B656D

Exceeds Control Limits

Control Chart

DMW-6 (bg)



Background Data Summary: Mean=8.303, Std. Dev.=0.1701, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8265, critical = 0.818. Dates ending 6/24/1992 used for control stats.

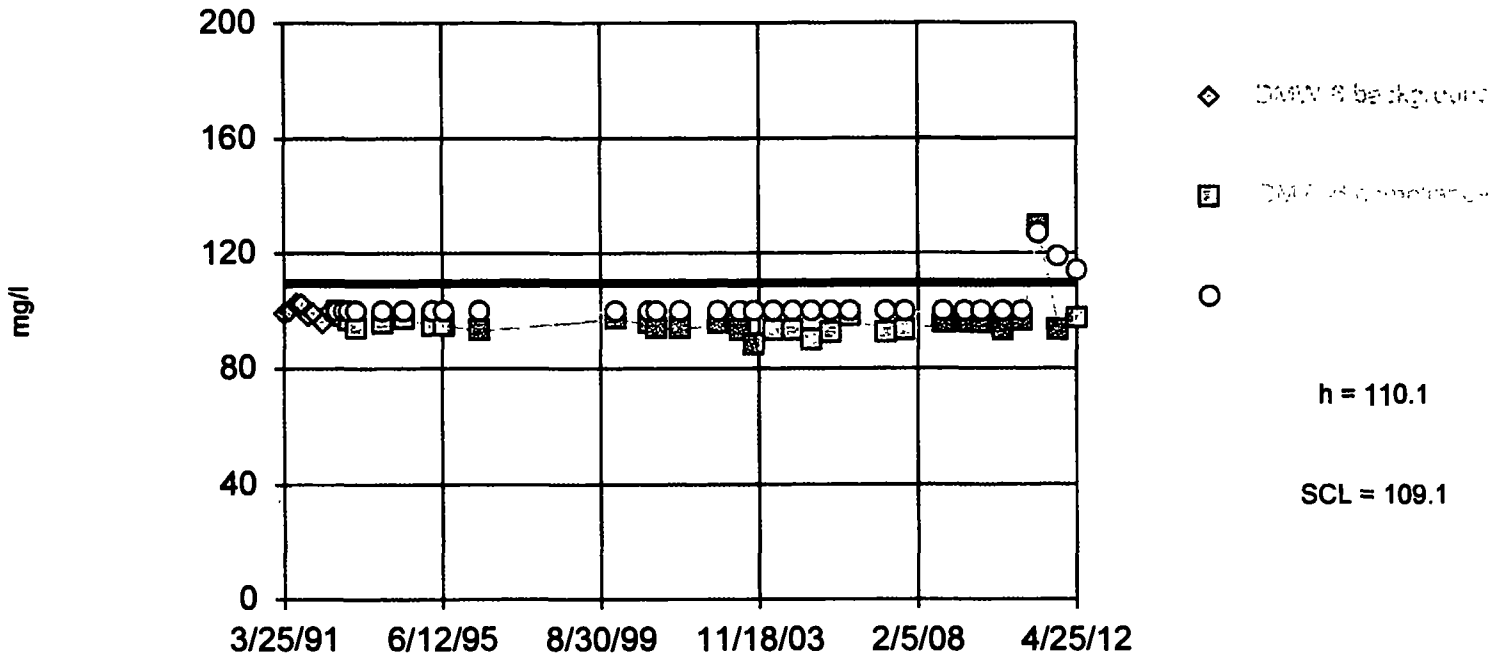
Constituent: pH Analysis Run 8/1/2012 12:04 PM

Facility: Bayview Landfill Client: SUVSWD Data File: 501B656D

Exceeds Control Limits

Control Chart

DMW-6 (bg)

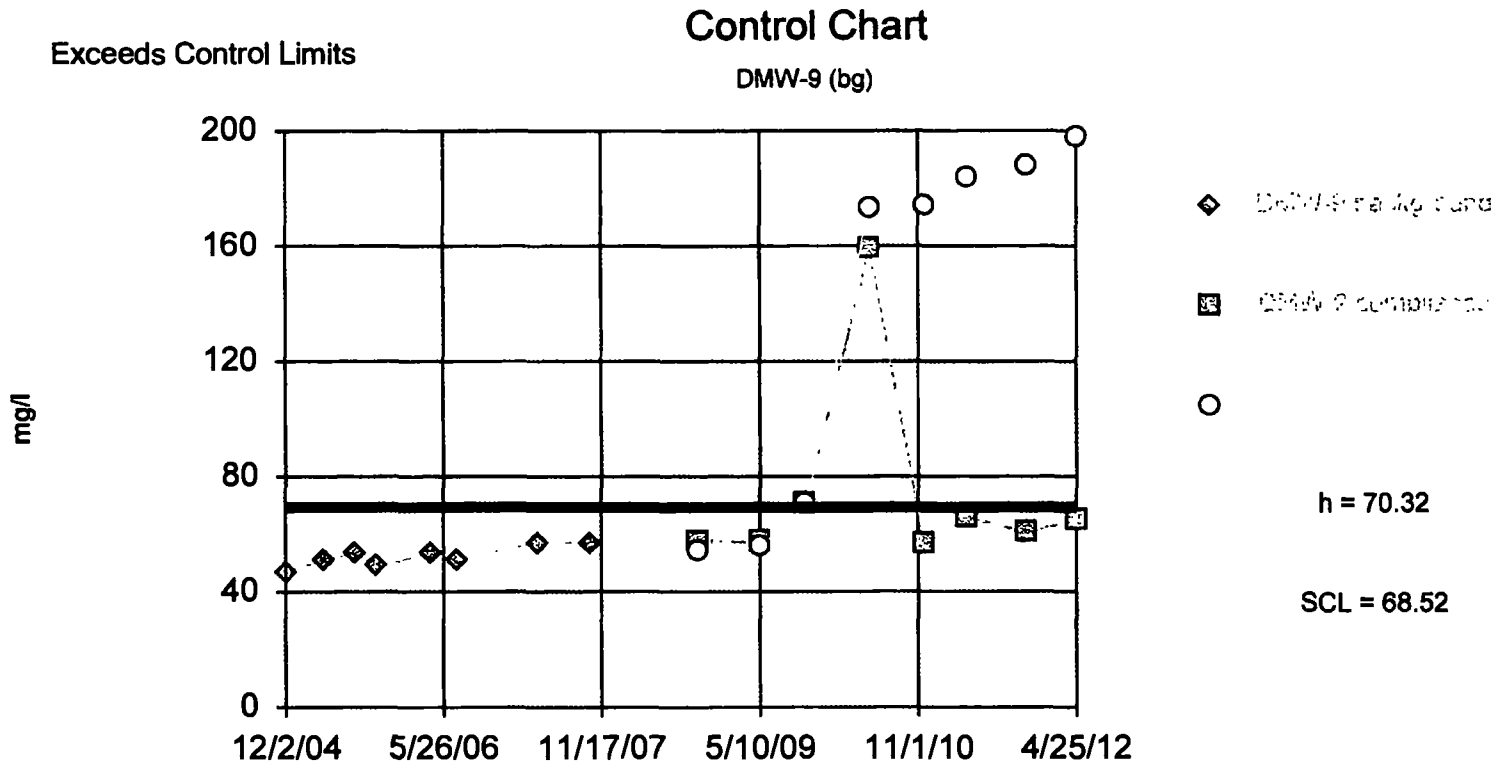


Background Data Summary: Mean=99.3, Std. Dev.=2.17, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9226, critical = 0.818. Dates ending 6/24/1992 used for control stats.

Constituent: Chloride Analysis Run 8/1/2012 11:53 AM

Facility: Bayview Landfill Client: SUVSWD Data File: 501B656D

Exceeds Control Limits



Background Data Summary: Mean=52.35, Std. Dev.=3.594, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9434, critical = 0.818. Dates ending 10/10/2007 used for control stats.

Constituent: Sulfate Analysis Run 8/1/2012 2:10 PM

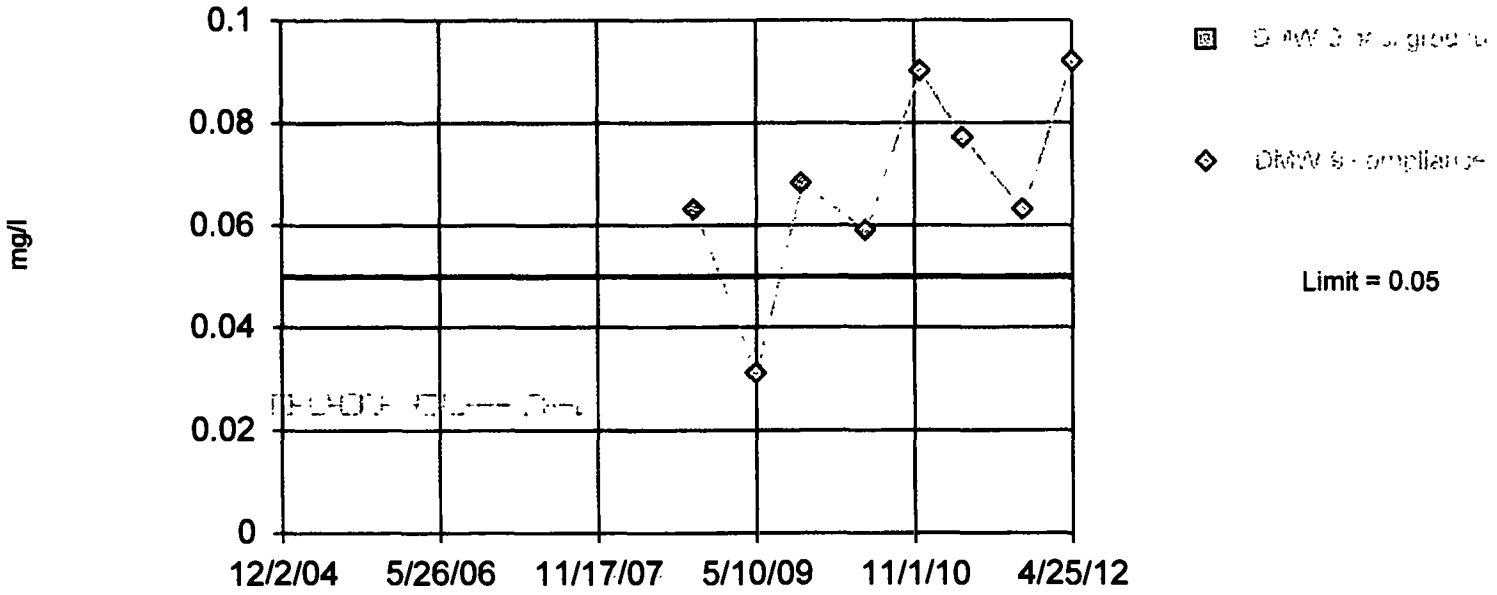
Facility: Bayview Landfill Client: SUVSWD Data File: 501B656D

v.9.0.28 For the statistical analysis of ground water by SUVSWD only. EPA
Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values were censored; limit is most recent reporting limit Report alpha = 0.1111. Most recent point compared to limit.

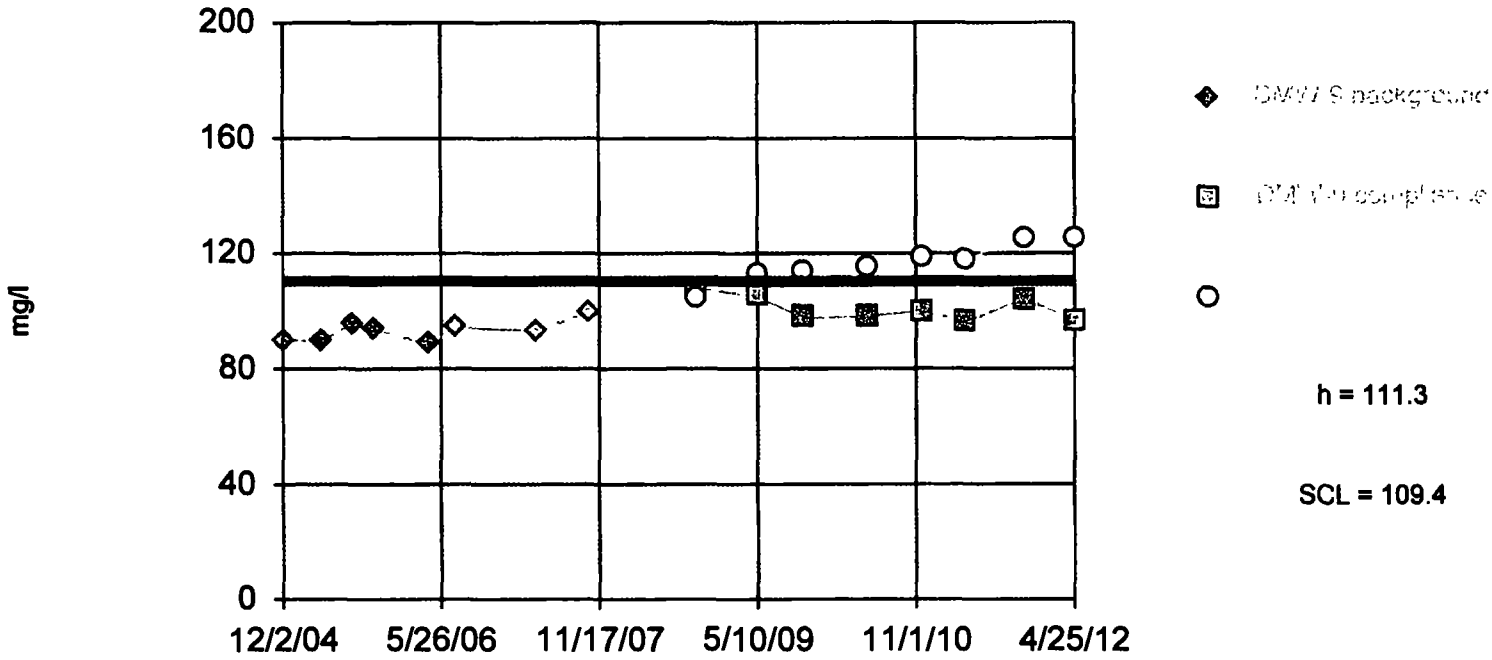
Constituent: Iron Analysis Run 8/1/2012 1:30 PM

Facility: Bayview Landfill Client: SUVSWD Data File: 501B656D

Exceeds Control Limits

Control Chart

DMW-9 (bg)



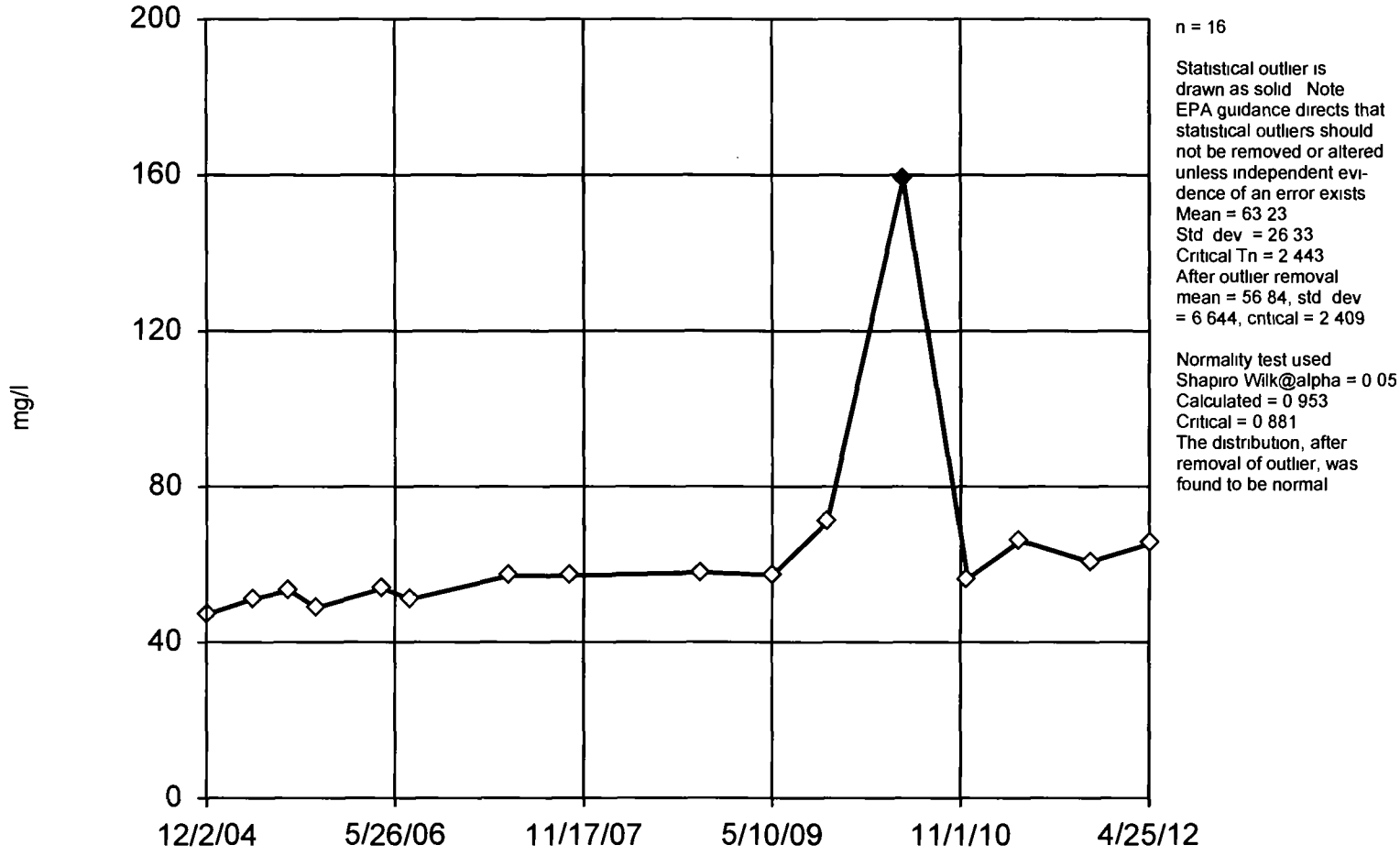
Background Data Summary: Mean=93.03, Std. Dev.=3.645, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9447, critical = 0.818. Dates ending 10/10/2007 used for control stats.

Constituent: Na Analysis Run 8/1/2012 2:05 PM

Facility: Bayview Landfill Client: SUVSWD Data File: 501B656D

EPA 1989 Outlier Test

DMW-9



n = 16

Statistical outlier is drawn as solid Note EPA guidance directs that statistical outliers should not be removed or altered unless independent evidence of an error exists
Mean = 63 23
Std dev = 26 33
Critical Tn = 2 443
After outlier removal mean = 56 84, std dev = 6 644, cntical = 2 409

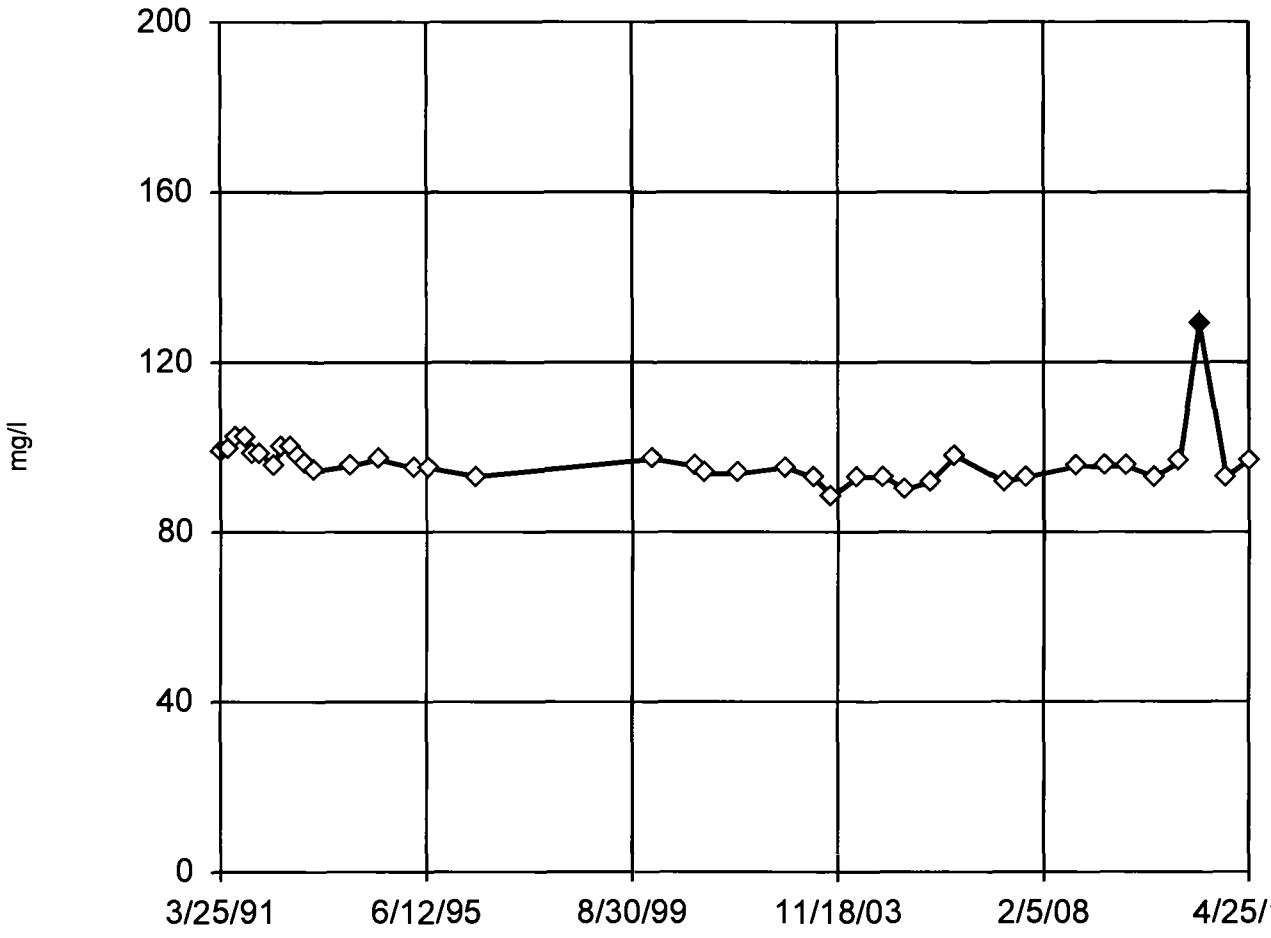
Normality test used
Shapiro Wilk@alpha = 0 05
Calculated = 0 953
Critical = 0 881
The distribution, after removal of outlier, was found to be normal

Constituent: Sulfate Analysis Run 10/26/2012 2:02 PM

Facility: Bayview Client: SUVSWD Data File: april 2012 ground water data

EPA 1989 Outlier Test

DMW-6



n = 39

Statistical outlier is drawn as solid Note EPA guidance directs that statistical outliers should not be removed or altered unless independent evidence of an error exists
Mean = 96 37
Std dev = 6 166
Critical Tn = 2 857
After outlier removal mean = 95 51, std dev = 3 085, critical = 2 846

Normality test used
Shapiro Wilk@alpha = 0 05
Calculated = 0 9767
Critical = 0 938
The distribution, after removal of outlier, was found to be normal

Constituent: Chloride Analysis Run 10/26/2012 2:00 PM

Facility: Bayview Client: SUVSWD Data File: april 2012 ground water data

Attachment 2

Field Monitored Data

Laboratory Results

Chain of Custody

Enviropro Laboratories

2712 South 3600 West, Suite E
West Valley City, UT 84119
Phone: (801) 964-2511 • Fax: (801) 964-2721
www.enviroprolabs.com

Analytical Test Results

South Utah Valley Solid Waste
Scott Aitken
P.O. Box 507
Springville, UT 84663-0507
Date Reported: 5/11/2011

Work Order #: 4879
PO# / Project Name: Bayview Landfill
Date / Time Received: 4/21/2011 12:52

Sample Name: DMW7 **Lab ID #: 111075**

Collected: 4/21/2011 10:59 **Matrix:** Water

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Antimony	3113 B-99	5/9/2011	0.005	mg/L	< 0.005	
Arsenic	200.7	4/27/2011	0.01	mg/L	0.032	
Barium	200.7	4/27/2011	0.005	mg/L	0.021	
Beryllium	200.7	4/27/2011	0.004	mg/L	< 0.004	
Cadmium	200.7	4/27/2011	0.005	mg/L	< 0.005	
Calcium	200.7	4/28/2011	0.05	mg/L	29.5	
Chromium	200.7	4/27/2011	0.01	mg/L	< 0.01	
Cobalt	200.7	4/27/2011	0.05	mg/L	< 0.05	
Copper	200.7	4/27/2011	0.05	mg/L	< 0.05	
Iron	200.7	4/27/2011	0.02	mg/L	0.22	
Lead	200.7	4/27/2011	0.01	mg/L	< 0.01	
Magnesium	200.7	4/28/2011	0.05	mg/L	10.5	
Manganese	200.7	4/27/2011	0.01	mg/L	< 0.01	
Mercury	245.1	5/9/2011	0.0002	mg/L	< 0.0002	
Nickel	200.7	4/27/2011	0.05	mg/L	< 0.05	
Potassium	200.7	4/28/2011	0.2	mg/L	6.86	Jlo
Selenium	200.7	4/27/2011	0.01	mg/L	< 0.01	
Silver	200.7	4/27/2011	0.01	mg/L	< 0.01	
Sodium	200.7	4/28/2011	1	mg/L	127	
Thallium	3113 B-99	5/9/2011	0.002	mg/L	< 0.002	
Vanadium	200.7	4/27/2011	0.05	mg/L	< 0.05	
Zinc	200.7	4/27/2011	0.05	mg/L	< 0.05	

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Total Organic Carbon (TOC)	SM5310B	4/22/2011	1	ppm	2.88	S 2

Sample Name: DMW7 **Lab ID #: 111075**

Collected: 4/21/2011 10:59 **Matrix:** Water

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
1,2-Dibromo-3-Chloropropane	504.1	4/25/2011	0.0103	µg/L	< 0.0103	S 2
Ethylene Dibromide	504.1	4/25/2011	0.0103	µg/L	< 0.0103	S 2
Volatiles Prep	5030A	5/4/2011				
1,1,1,2-Tetrachloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,1-Trichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2,2-Tetrachloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2-Trichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2-Trichlorotrifluoroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
1,1-Dichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1-Dichloropropene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,3-Trichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,3-Trichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,4-Trichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,4-Trimethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dibromo-3-chloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
1,2-Dibromoethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3,5-Trimethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,4-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
2,2-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
2-Butanone(MEK)	8260B	5/4/2011	0.01	mg/L	< 0.01	
2-Chlorotoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
2-Nitropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
4-Chlorotoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
4-Methyl 2-pentanone (MIBK)	8260B	5/4/2011	0.02	mg/L	< 0.02	
Acetone	8260B	5/4/2011	0.02	mg/L	< 0.02	
Benzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromochloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromodichloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromoform	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromomethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Carbon Disulfide	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
Carbon Tetrachloride	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
Chloroform	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
cis-1,2-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Cyclohexanone	8260B	5/4/2011	0.01	mg/L	< 0.01	
Dibromochloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Dibromomethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Dichlorodifluoromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Ethyl Acetate	8260B	5/4/2011	0.02	mg/L	< 0.02	UJ

Sample Name: DMW7 **Lab ID #: 111075**

Collected: 4/21/2011 10:59 **Matrix:** Water

Ethyl Ether	8260B	5/4/2011	0.01	mg/L	< 0.01	UJ
Ethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Hexachlorobutadiene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Isopropylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
m,p-Xylenes	8260B	5/4/2011	0.005	mg/L	< 0.005	
Methylene Chloride	8260B	5/4/2011	0.01	mg/L	< 0.01	
MTBE	8260B	5/4/2011	0.005	mg/L	< 0.005	
Naphthalene	8260B	5/4/2011	0.01	mg/L	< 0.01	
n-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
n-Propylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
o-Xylene	8260B	5/4/2011	0.005	mg/L	< 0.005	
p-Isopropyltoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
sec-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Styrene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Tert-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Tetrachloroethylene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Toluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
trans-1,2-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Trichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Trichlorofluoromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Vinyl Chloride	8260B	5/4/2011	0.005	mg/L	< 0.005	

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Ammonia (NH3-N), Direct ISE	4500(NH3)E	4/25/2011	0.2	mg/L	0.327	S 1
Chemical Oxygen Demand	8000	4/22/2011	10	mg/L	< 10	S 1
Nitrate (NO3-N)	352.1	4/22/2011	0.2	mg/L	4.94	S 1
Total Dissolved Solids (TDS)	2540C	4/22/2011	20	mg/L	370	S 1
Bicarbonate (as CaCO3)	2320B	5/10/2011	1	mg/L	150	
Carbonate (as CaCO3)	2320B	5/10/2011	1	mg/L	< 1	
Chloride	4500 (Cl-)	5/10/2011	10	mg/L	18.1	
pH Units	4500(H+)B	4/21/2011		pH	8.0 at 22°C	
Sulfate	D-516 (02)	5/6/2011	50	mg/L	208	

Sample Name: DMW8 **Lab ID #:** 111082

Collected: 4/21/2011 10:11 **Matrix:** Water

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Antimony	3113 B-99	5/9/2011	0.005	mg/L	< 0.005	
Arsenic	200.7	4/27/2011	0.01	mg/L	0.018	
Barium	200.7	4/27/2011	0.005	mg/L	0.020	
Beryllium	200.7	4/27/2011	0.004	mg/L	< 0.004	
Cadmium	200.7	4/27/2011	0.005	mg/L	< 0.005	
Calcium	200.7	4/28/2011	0.05	mg/L	51.3	
Chromium	200.7	4/27/2011	0.01	mg/L	< 0.01	
Cobalt	200.7	4/27/2011	0.05	mg/L	< 0.05	
Copper	200.7	4/27/2011	0.05	mg/L	< 0.05	
Iron	200.7	4/27/2011	0.02	mg/L	0.030	
Lead	200.7	4/27/2011	0.01	mg/L	< 0.01.	
Magnesium	200.7	4/28/2011	0.05	mg/L	19.7	
Manganese	200.7	4/27/2011	0.01	mg/L	< 0.01	
Mercury	245.1	5/9/2011	0.0002	mg/L	< 0.0002	
Nickel	200.7	4/27/2011	0.05	mg/L	< 0.05	
Potassium	200.7	4/28/2011	0.2	mg/L	9.41	Jlo
Selenium	200.7	4/27/2011	0.01	mg/L	< 0.01	
Silver	200.7	4/27/2011	0.01	mg/L	< 0.01	
Sodium	200.7	4/28/2011	1	mg/L	169	
Thallium	3113 B-99	5/9/2011	0.002	mg/L	< 0.002	
Vanadium	200.7	4/27/2011	0.05	mg/L	< 0.05	
Zinc	200.7	4/27/2011	0.05	mg/L	< 0.05	

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Total Organic Carbon (TOC)	SM5310B	4/22/2011	1	ppm	1.85	S 2

Sample Name: DMW8 **Lab ID #: 111082**

Collected: 4/21/2011 10:11 **Matrix:** Water

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
1,2-Dibromo-3-Chloropropane	504.1	4/25/2011	0.0103	µg/L	< 0.0103	S 2
Ethylene Dibromide	504.1	4/25/2011	0.0103	µg/L	< 0.0103	S 2
Volatiles Prep	5030A	5/4/2011				
1,1,1,2-Tetrachloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,1-Trichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2,2-Tetrachloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2-Trichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2-Trichlorotrifluoroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
1,1-Dichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1-Dichloropropene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,3-Trichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,3-Trichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,4-Trichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,4-Trimethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dibromo-3-chloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
1,2-Dibromoethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3,5-Trimethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,4-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
2,2-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
2-Butanone(MEK)	8260B	5/4/2011	0.01	mg/L	< 0.01	
2-Chlorotoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
2-Nitropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
4-Chlorotoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
4-Methyl 2-pentanone (MIBK)	8260B	5/4/2011	0.02	mg/L	< 0.02	
Acetone	8260B	5/4/2011	0.02	mg/L	< 0.02	
Benzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromochloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromodichloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromoform	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromomethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Carbon Disulfide	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
Carbon Tetrachloride	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
Chloroform	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
cis-1,2-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Cyclohexanone	8260B	5/4/2011	0.01	mg/L	< 0.01	
Dibromochloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Dibromomethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Dichlorodifluoromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Ethyl Acetate	8260B	5/4/2011	0.02	mg/L	< 0.02	UJ

Sample Name: DMW8 **Lab ID #: 111082**

Collected: 4/21/2011 10:11 **Matrix:** Water

Ethyl Ether	8260B	5/4/2011	0.01	mg/L	< 0.01	UJ
Ethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Hexachlorobutadiene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Isopropylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
m,p-Xylenes	8260B	5/4/2011	0.005	mg/L	< 0.005	
Methylene Chloride	8260B	5/4/2011	0.01	mg/L	< 0.01	
MTBE	8260B	5/4/2011	0.005	mg/L	< 0.005	
Naphthalene	8260B	5/4/2011	0.01	mg/L	< 0.01	
n-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
n-Propylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
o-Xylene	8260B	5/4/2011	0.005	mg/L	< 0.005	
p-Isopropyltoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
sec-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Styrene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Tert-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Tetrachloroethylene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Toluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
trans-1,2-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Trichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Trichlorofluoromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Vinyl Chloride	8260B	5/4/2011	0.005	mg/L	< 0.005	

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Ammonia (NH3-N), Direct ISE	4500(NH3)E	4/25/2011	0.2	mg/L	< 0.2	S 1
Chemical Oxygen Demand	8000	4/22/2011	10	mg/L	< 10	S 1
Nitrate (NO3-N)	352.1	4/22/2011	0.2	mg/L	3.60	S 1
Total Dissolved Solids (TDS)	2540C	4/22/2011	20	mg/L	520	S 1
Bicarbonate (as CaCO3)	2320B	5/10/2011	1	mg/L	151	
Carbonate (as CaCO3)	2320B	5/10/2011	1	mg/L	< 1	
Chloride	4500 (Cl-)	5/10/2011	10	mg/L	182	
pH Units	4500(H+)B	4/21/2011		pH	7.8 at 22°C	
Sulfate	D-516 (02)	5/6/2011	50	mg/L	162	

Sample Name: DMW3 **Lab ID #:** 111089

Collected: 4/21/2011 9:45 **Matrix:** Water

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Antimony	3113 B-99	5/9/2011	0.005	mg/L	< 0.005	
Arsenic	200.7	4/27/2011	0.01	mg/L	0.018	
Barium	200.7	4/27/2011	0.005	mg/L	0.024	
Beryllium	200.7	4/27/2011	0.004	mg/L	< 0.004	
Cadmium	200.7	4/27/2011	0.005	mg/L	< 0.005	
Calcium	200.7	4/28/2011	0.05	mg/L	47.7	
Chromium	200.7	4/27/2011	0.01	mg/L	0.022	
Cobalt	200.7	4/27/2011	0.05	mg/L	< 0.05	
Copper	200.7	4/27/2011	0.05	mg/L	< 0.05	
Iron	200.7	4/27/2011	0.02	mg/L	0.20	
Lead	200.7	4/27/2011	0.01	mg/L	< 0.01	
Magnesium	200.7	4/28/2011	0.05	mg/L	20.8	
Manganese	200.7	4/27/2011	0.01	mg/L	0.015	
Mercury	245.1	5/9/2011	0.0002	mg/L	< 0.0002	
Nickel	200.7	4/27/2011	0.05	mg/L	< 0.05	
Potassium	200.7	4/28/2011	0.2	mg/L	10.3	Jlo
Selenium	200.7	4/27/2011	0.01	mg/L	< 0.01	
Silver	200.7	4/27/2011	0.01	mg/L	< 0.01	
Sodium	200.7	4/28/2011	1	mg/L	158	
Thallium	3113 B-99	5/9/2011	0.002	mg/L	< 0.002	
Vanadium	200.7	4/27/2011	0.05	mg/L	< 0.05	
Zinc	200.7	4/27/2011	0.05	mg/L	< 0.05	
Parameter	**Method**	**Analysis Date**	**MRL**	**Units**	**Results**	**Flags**
Total Organic Carbon (TOC)	SM5310B	4/22/2011	1	ppm	2.04	S 2

Sample Name: DMW3 **Lab ID #: 111089**

Collected: 4/21/2011 9:45 **Matrix:** Water

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
1,2-Dibromo-3-Chloropropane	504.1	4/25/2011	0.0103	µg/L	< 0.0103	S 2
Ethylene Dibromide	504.1	4/25/2011	0.0103	µg/L	< 0.0103	S 2
Volatiles Prep	5030A	5/4/2011				
1,1,1,2-Tetrachloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,1-Trichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2,2-Tetrachloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2-Trichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2-Trichlorotrifluoroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
1,1-Dichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1-Dichloropropene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,3-Trichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,3-Trichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,4-Trichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,4-Trimethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dibromo-3-chloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
1,2-Dibromoethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3,5-Trimethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,4-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
2,2-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
2-Butanone(MEK)	8260B	5/4/2011	0.01	mg/L	< 0.01	
2-Chlorotoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
2-Nitropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
4-Chlorotoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
4-Methyl 2-pentanone (MIBK)	8260B	5/4/2011	0.02	mg/L	< 0.02	
Acetone	8260B	5/4/2011	0.02	mg/L	< 0.02	
Benzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromochloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromodichloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromoform	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromomethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Carbon Disulfide	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
Carbon Tetrachloride	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
Chloroform	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
cis-1,2-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Cyclohexanone	8260B	5/4/2011	0.01	mg/L	< 0.01	
Dibromochloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Dibromomethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Dichlorodifluoromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Ethyl Acetate	8260B	5/4/2011	0.02	mg/L	< 0.02	UJ

Sample Name: DMW3 **Lab ID #: 111089**

Collected: 4/21/2011 9:45 **Matrix:** Water

Ethyl Ether	8260B	5/4/2011	0.01	mg/L	< 0.01	UJ
Ethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Hexachlorobutadiene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Isopropylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
m,p-Xylenes	8260B	5/4/2011	0.005	mg/L	< 0.005	
Methylene Chloride	8260B	5/4/2011	0.01	mg/L	< 0.01	
MTBE	8260B	5/4/2011	0.005	mg/L	< 0.005	
Naphthalene	8260B	5/4/2011	0.01	mg/L	< 0.01	
n-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
n-Propylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
o-Xylene	8260B	5/4/2011	0.005	mg/L	< 0.005	
p-Isopropyltoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
sec-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Styrene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Tert-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Tetrachloroethylene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Toluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
trans-1,2-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Trichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Trichlorofluoromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Vinyl Chloride	8260B	5/4/2011	0.005	mg/L	< 0.005	
Parameter	**Method**	**Analysis Date**	**MRL**	**Units**	**Results**	**Flags**
Ammonia (NH3-N), Direct ISE	4500(NH3)E	4/25/2011	0.2	mg/L	< 0.2	S 1
Chemical Oxygen Demand	8000	4/22/2011	10	mg/L	< 10	S 1
Nitrate (NO3-N)	352.1	4/22/2011	0.2	mg/L	1.36	S 1
Total Dissolved Solids (TDS)	2540C	4/22/2011	20	mg/L	566	S 1
Bicarbonate (as CaCO3)	2320B	5/10/2011	1	mg/L	149	
Carbonate (as CaCO3)	2320B	5/10/2011	1	mg/L	< 1	
Chloride	4500 (Cl-)	5/10/2011	10	mg/L	186	
pH Units	4500(H+)B	4/21/2011		pH	7.8 at 22°C	
Sulfate	D-516 (02)	5/6/2011	50	mg/L	141	

Sample Name: DMW9 **Lab ID #:** 111096

Collected: 4/21/2011 8:59 **Matrix:** Water

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Antimony	3113 B-99	5/9/2011	0.005	mg/L	< 0.005	
Arsenic	200.7	4/27/2011	0.01	mg/L	< 0.01	
Barium	200.7	4/27/2011	0.005	mg/L	0.054	
Beryllium	200.7	4/27/2011	0.004	mg/L	< 0.004	
Cadmium	200.7	4/27/2011	0.005	mg/L	< 0.005	
Calcium	200.7	4/28/2011	0.05	mg/L	47.7	
Chromium	200.7	4/27/2011	0.01	mg/L	< 0.01	
Cobalt	200.7	4/27/2011	0.05	mg/L	< 0.05	
Copper	200.7	4/27/2011	0.05	mg/L	< 0.05	
Iron	200.7	4/27/2011	0.02	mg/L	0.077	
Lead	200.7	4/27/2011	0.01	mg/L	< 0.01	
Magnesium	200.7	4/28/2011	0.05	mg/L	18.8	
Manganese	200.7	4/27/2011	0.01	mg/L	0.017	
Mercury	245.1	5/9/2011	0.0002	mg/L	< 0.0002	
Nickel	200.7	4/27/2011	0.05	mg/L	< 0.05	
Potassium	200.7	4/28/2011	0.2	mg/L	7.66	Jlo
Selenium	200.7	4/27/2011	0.01	mg/L	< 0.01	
Silver	200.7	4/27/2011	0.01	mg/L	< 0.01	
Sodium	200.7	4/28/2011	0.1	mg/L	96.4	
Thallium	3113 B-99	5/9/2011	0.002	mg/L	< 0.002	
Vanadium	200.7	4/27/2011	0.05	mg/L	< 0.05	
Zinc	200.7	4/27/2011	0.05	mg/L	< 0.05	

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Total Organic Carbon (TOC)	SM5310B	4/22/2011	1	ppm	< 1	S 2

Sample Name: DMW9 **Lab ID #:** 111096

Collected: 4/21/2011 8:59 **Matrix:** Water

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
1,2-Dibromo-3-Chloropropane	504.1	4/25/2011	0.0103	µg/L	< 0.0103	S 2
Ethylene Dibromide	504.1	4/25/2011	0.0103	µg/L	< 0.0103	S 2
Volatiles Prep	5030A	5/4/2011				
1,1,1,2-Tetrachloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,1-Trichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2,2-Tetrachloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2-Trichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2-Trichlorotrifluoroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
1,1-Dichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1-Dichloropropene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,3-Trichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,3-Trichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,4-Trichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,4-Trimethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dibromo-3-chloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
1,2-Dibromoethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3,5-Trimethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,4-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
2,2-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
2-Butanone(MEK)	8260B	5/4/2011	0.01	mg/L	< 0.01	
2-Chlorotoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
2-Nitropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
4-Chlorotoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
4-Methyl 2-pentanone (MIBK)	8260B	5/4/2011	0.02	mg/L	< 0.02	
Acetone	8260B	5/4/2011	0.02	mg/L	< 0.02	
Benzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromochloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromodichloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromoform	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromomethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Carbon Disulfide	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
Carbon Tetrachloride	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
Chloroform	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
cis-1,2-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Cyclohexanone	8260B	5/4/2011	0.01	mg/L	< 0.01	
Dibromochloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Dibromomethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Dichlorodifluoromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Ethyl Acetate	8260B	5/4/2011	0.02	mg/L	< 0.02	UJ

Sample Name: DMW9 **Lab ID #: 111096**

Collected: 4/21/2011 8:59 **Matrix:** Water

Ethyl Ether	8260B	5/4/2011	0.01	mg/L	< 0.01	UJ
Ethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Hexachlorobutadiene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Isopropylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
m,p-Xylenes	8260B	5/4/2011	0.005	mg/L	< 0.005	
Methylene Chloride	8260B	5/4/2011	0.01	mg/L	< 0.01	
MTBE	8260B	5/4/2011	0.005	mg/L	< 0.005	
Naphthalene	8260B	5/4/2011	0.01	mg/L	< 0.01	
n-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
n-Propylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
o-Xylene	8260B	5/4/2011	0.005	mg/L	< 0.005	
p-Isopropyltoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
sec-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Styrene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Tert-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Tetrachloroethylene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Toluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
trans-1,2-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Trichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Trichlorofluoromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Vinyl Chloride	8260B	5/4/2011	0.005	mg/L	< 0.005	
Parameter	**Method**	**Analysis Date**	**MRL**	**Units**	**Results**	**Flags**
Ammonia (NH3-N), Direct ISE	4500(NH3)E	4/25/2011	0.2	mg/L	< 0.2	S 1
Chemical Oxygen Demand	8000	4/22/2011	10	mg/L	< 10	S 1
Nitrate (NO3-N)	352.1	4/22/2011	0.2	mg/L	4.18	S 1
Total Dissolved Solids (TDS)	2540C	4/22/2011	20	mg/L	472	S 1
Bicarbonate (as CaCO3)	2320B	5/10/2011	1	mg/L	121	
Carbonate (as CaCO3)	2320B	5/10/2011	1	mg/L	< 1	
Chloride	4500 (Cl-)	5/10/2011	10	mg/L	162	
pH Units	4500(H+)B	4/21/2011		pH	8.3 at 22°C	
Sulfate	D-516 (02)	5/6/2011	20	mg/L	66.0	

Sample Name: DMW6 **Lab ID #:** 111103

Collected: 4/21/2011 8:45 **Matrix:** Water

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Antimony	3113 B-99	5/9/2011	0.005	mg/L	< 0.005	
Arsenic	200.7	4/27/2011	0.01	mg/L	0.018	
Barium	200.7	4/27/2011	0.005	mg/L	0.044	
Beryllium	200.7	4/27/2011	0.004	mg/L	< 0.004	
Cadmium	200.7	4/27/2011	0.005	mg/L	< 0.005	
Calcium	200.7	4/28/2011	0.05	mg/L	20.6	
Chromium	200.7	4/27/2011	0.01	mg/L	< 0.01	
Cobalt	200.7	4/27/2011	0.05	mg/L	< 0.05	
Copper	200.7	4/27/2011	0.05	mg/L	< 0.05	
Iron	200.7	4/27/2011	0.02	mg/L	0.038	
Lead	200.7	4/27/2011	0.01	mg/L	< 0.01	
Magnesium	200.7	4/28/2011	0.05	mg/L	9.03	
Manganese	200.7	4/27/2011	0.01	mg/L	< 0.01	
Mercury	245.1	5/9/2011	0.0002	mg/L	< 0.0002	
Nickel	200.7	4/27/2011	0.05	mg/L	< 0.05	
Potassium	200.7	4/28/2011	0.2	mg/L	5.30	Jlo
Selenium	200.7	4/27/2011	0.01	mg/L	< 0.01	
Silver	200.7	4/27/2011	0.01	mg/L	< 0.01	
Sodium	200.7	4/28/2011	1	mg/L	106	
Thallium	3113 B-99	5/9/2011	0.002	mg/L	< 0.002	
Vanadium	200.7	4/27/2011	0.05	mg/L	< 0.05	
Zinc	200.7	4/27/2011	0.05	mg/L	< 0.05	

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
Total Organic Carbon (TOC)	SM5310B	4/22/2011	1	ppm	< 1	S 2

Sample Name: DMW6 **Lab ID #:** 111103

Collected: 4/21/2011 8:45 **Matrix:** Water

Parameter	Method	Analysis Date	MRL	Units	Results	Flags
1,2-Dibromo-3-Chloropropane	504.1	4/25/2011	0.0103	µg/L	< 0.0103	S 2
Ethylene Dibromide	504.1	4/25/2011	0.0103	µg/L	< 0.0103	S 2
Volatiles Prep	5030A	5/4/2011				
1,1,1,2-Tetrachloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,1-Trichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2,2-Tetrachloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2-Trichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1,2-Trichlorotrifluoroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
1,1-Dichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,1-Dichloropropene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,3-Trichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,3-Trichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,4-Trichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2,4-Trimethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dibromo-3-chloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
1,2-Dibromoethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,2-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3,5-Trimethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,3-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
1,4-Dichlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
2,2-Dichloropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
2-Butanone(MEK)	8260B	5/4/2011	0.01	mg/L	< 0.01	
2-Chlorotoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
2-Nitropropane	8260B	5/4/2011	0.005	mg/L	< 0.005	
4-Chlorotoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
4-Methyl 2-pentanone (MIBK)	8260B	5/4/2011	0.02	mg/L	< 0.02	
Acetone	8260B	5/4/2011	0.02	mg/L	< 0.02	
Benzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromochloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromodichloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromoform	8260B	5/4/2011	0.005	mg/L	< 0.005	
Bromomethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Carbon Disulfide	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
Carbon Tetrachloride	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chlorobenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chloroethane	8260B	5/4/2011	0.005	mg/L	< 0.005	UJ
Chloroform	8260B	5/4/2011	0.005	mg/L	< 0.005	
Chloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
cis-1,2-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Cyclohexanone	8260B	5/4/2011	0.01	mg/L	< 0.01	
Dibromochloromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Dibromomethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Dichlorodifluoromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Ethyl Acetate	8260B	5/4/2011	0.02	mg/L	< 0.02	UJ

Sample Name: DMW6 **Lab ID #: 111103**

Collected: 4/21/2011 8:45 **Matrix:** Water

Ethyl Ether	8260B	5/4/2011	0.01	mg/L	< 0.01	UJ
Ethylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Hexachlorobutadiene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Isopropylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
m,p-Xylenes	8260B	5/4/2011	0.005	mg/L	< 0.005	
Methylene Chloride	8260B	5/4/2011	0.01	mg/L	< 0.01	
MTBE	8260B	5/4/2011	0.005	mg/L	< 0.005	
Naphthalene	8260B	5/4/2011	0.01	mg/L	< 0.01	
n-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
n-Propylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
o-Xylene	8260B	5/4/2011	0.005	mg/L	< 0.005	
p-Isopropyltoluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
sec-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Styrene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Tert-Butylbenzene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Tetrachloroethylene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Toluene	8260B	5/4/2011	0.005	mg/L	< 0.005	
trans-1,2-Dichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Trichloroethene	8260B	5/4/2011	0.005	mg/L	< 0.005	
Trichlorofluoromethane	8260B	5/4/2011	0.005	mg/L	< 0.005	
Vinyl Chloride	8260B	5/4/2011	0.005	mg/L	< 0.005	

Parameter	**Method**	**Analysis Date**	**MRL**	**Units**	**Results**	**Flags**
Ammonia (NH3-N), Direct ISE	4500(NH3)E	4/25/2011	0.2	mg/L	< 0.2	S 1
Chemical Oxygen Demand	8000	4/22/2011	10	mg/L	< 10	S 1
Nitrate (NO3-N)	352.1	4/22/2011	0.2	mg/L	1.07	S 1
Total Dissolved Solids (TDS)	2540C	4/22/2011	20	mg/L	322	S 1
Bicarbonate (as CaCO3)	2320B	5/10/2011	1	mg/L	135	
Carbonate (as CaCO3)	2320B	5/10/2011	1	mg/L	< 1	
Chloride	4500 (Cl-)	5/10/2011	10	mg/L	129	
pH Units	4500(H+)B	4/21/2011		pH	8.0 at 22°C	
Sulfate	D-516 (02)	5/6/2011	50	mg/L	67.1	

Reviewed by:

Roy Breslawski, Laboratory Manager

Comments:

Flags:

- S1 Subcontracted to Timpview Analytical
- S2 Subcontracted to American West Analytical Laboratories
- Jlo Estimated value Result may be biased low Spike or surrogate recovery below QC limits
- UJ Analyte not detected Spike or surrogate recovery below limits

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Chain of Custody Record

Date: 4-21-11

Scott Aitken	801-489-3027	801-491-9367
Contact Name	Phone Number	Fax Number
South Utah Valley Solid Waste District		
Company Name		
2450 West 400 South		
Street Address		
Springville, UT 84663		
City, State, Zip		
Project Name	Bayview landfill Site Location	

Sample ID	Date Collected	Time	Matrix	Lab ID	Preservation Code	Number of Containers	Container Size	Ammonia 4500NH3G, COD 8000	Nitrate 352.1, TDS 2540C	TOC 415.1	Ph 4500(H+)B, Chloride 4500 (Cl-), Sulfate D-516 (02), Carbonate/Bicarbonate 2320B	EDB/DBCP 504 1	VOC 8260B	Ca, Fe, Mg, Mn, K, Na, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, V, Zn 200 7 Hg 245 1		Comments
DMW7	4-21-11	10:56-10:59	Water	111069	4	1	1L	√								
		11:25- 11:28	Water	111070	1	1	500		√							
		11:14- 11:16	Water	111071	5	3	40			√						
		10:59-11:05	Water	111072	1	1	1L				√					
		11:11- 11:14	Water	111073	6	3	40					√				
		11:11- 11:11	Water	111074	3	2	40						√			
		11:07-11:10	Water	111075	2	1	500							√		

Analysis Request

Preservation Code

1 = 4°C
2 = HNO_3
3 = HCl
4 = H_2SO_4
5 = H_3PO_4
6 = $Na_2S_2O_3$

Special Instructions / Comments

Route Results Through: saitken@suvswd.org

(1) Relinquished By	(2) Relinquished By
(1) Date / Time: 4-21-11 12:52	(2) Date / Time
(1) Company: S.U.V.S.W.D	(2) Company
(1) Received By	(2) Received By
(1) Date / Time: 4-21-11 12:52	(2) Date / Time
(1) Company	(2) Company

Sampler Initials:

Method of Shipment: HAND CARRY USPS FEDX UPS

CoC Seal Intact? Yes No

ENVIROPRO LABORATORIES

www.enviroprolabs.com

2712 South 3600 West, Suite E
West Valley City, UT 84119
Phone: 801-964-2511
Fax: 801-964-2721

Chain of Custody Record

Date: 4-21-11

Scott Aitken	801-489-3027	801-491-9367
Contact Name	Phone Number	Fax Number

South Utah Valley Solid Waste District
Company Name

2450 West 400 South
Street Address

Springville, UT 84663
City, State, Zip

Project Name: Bayview landfill
Site Location

Sample ID	Date Collected	Time	Matrix	Lab ID	Preservation Code	Number of Containers	Container Size	Ammonia 4500NH3G, COD 8000	Nitrate 352.1, TDS 2540C	TOC 415.1	Ph 4500(H+)B, Chloride 4500 (Cl-), Sulfate D-516 (02), Carbonate/Bicarbonate 2320B	EDB/DBCP 504.1	VOC 8260B	Ca, Fe, Mg, Mn, K, Na, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, V, Zn 200.7 Hg 245.1		Comments
DMW 8	4-21-11	10:00-10:03	Water	111076	4	1	1L	√								
		10:06-10:07	Water	111077	1	1	500		√							
		10:08-10:09	Water	111078	5	3	40			√						
		10:03-10:06	Water	111079	1	1	1L				√					
		10:04-10:10	Water	111080	6	3	40					√				
		10:10-10:11	Water	111081	3	2	40						√			
		10:02-10:08	Water	111082	2	1	500							√		

Analysis Request

Preservation Code

1 = 4°C
2 = HNO_3
3 = HCl
4 = H_2SO_4
5 = H_3PO_4
6 = $Na_2S_2O_3$

Special Instructions / Comments

Route Results Through: saitken@suvswd.org

(1) Relinquished By	(2) Relinquished By
(1) Date / Time: 4-21-11 12:53	(2) Date / Time
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(1) Company	(2) Company

Sampler Initials:

Method of Shipment: HAND CARRY USPS FEDX UPS

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Contact Name	Phone Number	Fax Number

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Street Address

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City, State, Zip

Bayview landfill
Project Name / Site Location

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DMW 3	4-21-11	9:30-9:34	Water	111083	4	1	1L	√								
		9:34-9:39	Water	111084	1	1	500		√							
		9:43-9:44	Water	111085	5	3	40			√						
		9:34-9:39	Water	111086	1	1	1L				√					
		9:42-9:43	Water	111087	6	3	40					√				
		9:44-9:45	Water	111088	3	2	40						√			
		9:36-9:41	Water	111089	2	1	500							√		

Analysis Request

Preservation Code

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5 = H_3PO_4
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Special Instructions / Comments

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(1) Date / Time: 4-21-11 12:52	(2) Date / Time	Method of Shipment: HAND CARRY USPS FEDX UPS
(1) Company: SUVSWD	(2) Company	
(1) Received By	(2) Received By	CoC Seal Intact? Yes No
(1) Date / Time: 4-21-11 12:52	(2) Date / Time	
(1) Company	(2) Company	

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Chain of Custody Record

Date: 4-21-11

Scott Aitken	801-489-3027	801-491-9367
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Street Address

Springville, UT 84663
City, State, Zip

Project Name: Bayview landfill
Site Location

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DMW 9	4-21-11	8:43 - 8:45	Water	111090	4	1	1L	√								
		8:49 - 8:51	Water	111091	1	1	500		√							
		8:57 - 8:59	Water	111092	5	3	40			√						
		8:45 - 8:49	Water	111093	1	1	1L				√					
		8:55 - 8:57	Water	111094	6	3	40					√				
		8:53 - 8:54	Water	111095	3	2	40						√			
		8:51 - 8:53	Water	111096	2	1	500							√		

Preservation Code

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6 = $Na_2S_2O_3$

Special Instructions / Comments

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Sampler Initials:

Method of Shipment: HAND CARRY USPS FEDX UPS

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South Utah Valley Solid Waste District		
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2450 West 400 South		
Street Address		
Springville, UT 84663		
City, State, Zip		
	Bayview landfill	
Project Name	Site Location	

Sample ID	Date Collected	Time	Matrix	Lab ID	Preservation Code	Number of Containers	Container Size	Ammonia 4500NH3G, COD 8000	Nitrate 352 1, TDS 2540C	TOC 415.1	Ph 4500(H+)B, Chloride 4500 (Cl-), Sulfate D-516 (02), Carbonate/Bicarbonate 2320B	EDB/DBCP 504.1	VOC 8260B	Ca, Fe, Mg, Mn, K, Na, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, V, Zn 200.7 Hg 245.1		Comments
DMW 6	4-21-11	7:48 - 7:55	Water	111097	4	1	1L	√								
		8:05 - 8:09	Water	111098	1	1	500		√							
		8:13 - 8:15	Water	111099	5	3	40			√						
		7:55 - 8:01	Water	111100	1	1	1L				√					
		8:11 - 8:13	Water	111101	6	3	40					√				
		8:09 8:11	Water	111102	3	2	40						√			
		8:01 - 8:05	Water	111103	2	1	500							√		

Analysis Request

Preservation Code

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2 = HNO_3
3 = HCl
4 = H_2SO_4
5 = H_3PO_4
6 = $Na_2S_2O_3$

Special Instructions / Comments

Route Results Through: saitken@suvswd.org

(1) Relinquished By	(2) Relinquished By	Sampler Initials
(1) Date / Time: 4-21-11 12:52	(2) Date / Time	Method of Shipment: HAND CARRY USPS FEDX UPS
(1) Company: SUVSWD	(2) Company	
(1) Received By:	(2) Received By	CoC
(1) Date / Time: 4-21-11 12:52	(2) Date / Time	Seal Intact? Yes No
(1) Company	(2) Company	

GROUNDWATER MONITORING PROGRAM
BAYVIEW MUNICIPAL SOLID WASTE LANDFILL
SOUTH UTAH VALLEY SOLID WASTE DISTRICT

DATE: [redacted] 4/25/12
SAMPLED BY: [redacted] Scott Aitken / Steve Dansie
RECORDED BY: [redacted] Don Perry
WEATHER:

Well Number	Depth of Well (feet)	Depth to Water (feet)	Temp. C_X__ F___	pH	Conductivity	Comments
DMW1	300					
DMW2	278					
DMW3	308	253' 5"	13.60	8.19	1234	sprinkling, cloudy 66°
DMW4	195					
DMW5	210					
DMW6	166	157' 10"	14.74	8.24	752.5	cloudy
DMW7	293	270	14.10	8.12	861.0	cloudy
DMW8	270	253' 11"	14.30	8.16	1292.	cloudy slight breeze
DMW9	247	226	14.52	8.29	966.1	cloudy

February 25, 2013

Scott Aitken
South Utah Valley Solid Waste District
P.O. Box 507
Springville, UT 84663

Re: October 2012 Groundwater Monitoring Statistical Results for Bayview Landfill

Dear Mr. Aitken:

HDR Engineering, Inc. (HDR) has prepared this letter report regarding the groundwater monitoring program at the Bayview Landfill. This report summarizes the statistical analyses performed for results from the groundwater sampling conducted in **October 2012.** Attachment 1 contains the control charts and prediction limit graphs used in the statistical analyses. Attachment 2 contains the results of the latest laboratory analyses and the results of the field-measured parameters, including a recording of the static water level found in each well.

Statistical Methods

The initial inter-well analysis of the groundwater chemistry indicated enough variability between wells to justify using an intra-well analysis approach. The results of the inter-well analysis were presented in a report submitted to the Division of Solid and Hazardous Waste on October 8, 1998. A software package called SANITAS, developed by NIC Environmental (formerly Intelligent Decision Technologies of Longmont, Colorado), was used to perform the statistical analysis of the groundwater data.

The statistical analysis approach uses intra-well methods consisting of control charts and prediction limits. The purpose of this analysis is to determine if there are any statistically significant changes in the compliance data relative to background concentrations. These methods establish limit values based on the background water quality data collected for each well.

In the case of control charts, a statistically significant change is based on the standard deviation established by the background data. When using the control charts method, the constituents will have the following characteristics:

- The data will be tested for normality using the Shipiro-Wilk normality test (for <50 samples) or the Shipiro-Francia test (for >50 samples) included in the SANITAS statistical analysis package. The Shapiro-Wilk normality test is the preferred method based on EPA guidance.[1] When data are considered normal, the values are consistent and follow a normal, bell-shaped curve (Gaussian curve). The majority of the values (95%) are within two standard deviations from the mean of the concentration values.

[1] EPA, June 1992. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance. EPA 530SW89026.

- The percentage of non-detects will be less than 50%.
- The data will have no statistical trends as shown by the trend analysis plots.
- This method assumes that the landfill has not previously affected the groundwater.

The SANITAS program will not execute a control chart if the data set is transformed normal using Cohen's adjustment. In general, Cohen's adjustment accounts for data that are below the set detection limit or practical quantitation limit (PQL) for the method established by the laboratory. The Cohen adjustment is executed when the data set includes at least 15% non-detects.

The constituents that do not meet all the criteria above are analyzed using a prediction limit (PL). Typically, for inorganic constituents, the preferred method is to use a parametric intra-well analysis approach. Under this approach, the false positive rate or alpha is 0.01 or 1%. The assumption under the parametric approach is that the background data are normal or transformed normal. The PL for a particular constituent is calculated from the mean value (X) of the entire background data set, excluding the most recent data point, using the following equation:

$$PL = \text{Mean } (X) + (\text{T-value} \times \text{Standard Deviation})$$

Note T-value from standard statistical tables

Not all constituents in this data set allow the use of a parametric approach. A non-parametric approach will be used in lieu of a parametric approach if the data set fails the normality test using the Shipiro-Wilk normality test, cannot be transformed normal, and has between 50% and 90% non-detects. When the data set has greater than 90% non-detects, an intra-well Poisson PL is executed, and the non-detect values are substituted with one-half the detection limit. Data that fall under the Poisson criteria have a low probability of detection but stay constant from sampling period to sampling period.[2] When a non-parametric approach is applied, the highest background concentration from the data set is used for the PL.

Summary of Statistical Analysis

The statistical analysis is for data collected from wells DMW-3, DMW-6, DMW-7, DMW-8, and DMW-9 during the period from March 1991 through October 2012. The background sampling was performed from March 1991 to June 1992. Well DMW-7 is located upgradient from landfill Cell #1. Wells DMW-3 and DMW-8 serve as downgradient compliance wells for landfill Cell #1. Monitoring well DMW-6 is east of the leachate pond. Monitoring well DMW-9 serves as a downgradient well for the initial phases of Cell #2. Background samples from DMW-9 were collected between December 2004 and October 2007.

The laboratory analytical results were reviewed to determine whether a statistical analysis was needed. If the laboratory results reported a non-detect for a particular constituent from a particular monitoring well, no statistical analysis was conducted for that constituent. However, the information was placed in the groundwater quality database to maintain a complete record.

No volatile organic constituents (VOCs) were detected in any well. Therefore, no statistical analysis was conducted for VOCs

[2] EPA, June 1992. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance. EPA 530SW89026.

Statistically Significant Changes

The data were analyzed using control charts (titled Combined Shewhart-Cusum Charts) and PL graphs to determine if there were any statistically significant changes from background levels. Only statistically significant changes in the reported values from the latest sampling event are reported here.

Upgradient Monitoring Weil

DMW-7

No statistically significant changes detected in data.

Compliance Monitoring Wells

DMW-3

The laboratory reported pH (7.4) was determined by Sanitas to be a statistically significant change. The reported pH concentration, however, is within the control limits. A statistically significant change is reported because the low-CUSUM line on the control chart shows a trend that is below the lower control. Compared to background concentrations in DMW-7, the reported pH concentration in DMW-3 appears to be within the natural variability of pH concentrations in groundwater at the site. In addition, the reported concentration is within the Utah Ground Water Quality Standards, which ranges from 6.5 to 8.5.[3]

DMW-8

No statistically significant changes detected in data.

DMW-9

The statistical analysis conducted on the concentrations of sulfate in this compliance monitoring well show a statistically significant change compared to background concentrations in groundwater from this well. The reported concentration of sulfate (66.1 mg/L) from the latest sampling event is within control limits. However, the CUSUM line, which represents a long-term trend, exceeded the limit. This upward trend in the CUSUM line was caused by one sample, from May 2010 (159 mg/L), being elevated. When the EPA 1989 statistical outliers test is applied to the entire DMW-9 sulfate data set, the May 2010 concentration is determined to be an outlier. The October 2012 result is the fifth consecutive sulfate concentration reported by the laboratory that falls within the control limit (see the control charts and EPA outliers test results provided in Attachment 1).

The reported concentration of iron (0.043 mg/L) was not a statistically significant increase compared to background concentrations in this compliance well for October. The reported concentration from the April 2012 sampling(0.092 mg/L) was a statistically significant increase above background concentrations. Iron concentration in groundwater from this well appears to have dropped to back to background levels by October 2012.

The statistical analysis conducted for the latest sampling event for sodium (NA) indicated a statistically significant change from background concentrations. The reported concentration of sodium (109 mg/L) is

[3] Utah Administrative Code Rule 317-6

within control limits. However, the CUSUM trend line exceeded the limit as in the April 2012 sampling. All sodium concentrations in the data set for DMW-9 have remained below the control limit. While there is a general upward trend in sodium concentrations in DMW-9, the concentrations (ranging from about 90 to 109 mg/L) are all close to the concentration in background samples collected from other upgradient wells. For example, the reported concentrations of sodium in both upgradient and down gradient wells collected during background sampling events average from about 100 to 130 mg/L with background concentrations as high as 150 to 160 mg/L in DMW-3.This indicates the April and October 2012 concentrations in DMW-9 remains near naturally occurring sodium levels.

No other statistically significant changes were detected in the laboratory data for this well.

Leachate Pond Monitoring Well

DMW-6

The laboratory reported a chloride concentration of 93.9 mg/L in this compliance monitoring well. The statistical analysis conducted for this sampling event noted a statistically significant change from background sampling concentrations. The laboratory determined that the concentration is below the background control limits (109.6 mg/L); however a statistical significant change is reported because the CUSUM trend line for chloride remains above the control limits. The cause of the trend line exceeding the limits was due to a reported chloride concentration of 129 mg/L from the April 2011 sampling event. When the EPA 1989 statistical outliers test is applied to the entire DMW-6 chloride data set, the April 2011 concentration is determined to be an outlier (see EPA outliers test results provided in Attachment 1). Laboratory results from the last three sampling events report chloride concentrations below the control limit and the CUSUM line is trending down. As detection monitoring continues and concentrations remain below background control limits, the CUSUM trend line will continue to fall back below the established limits.

The laboratory reported pH (7.6) was noted as a statistically significant change from background pH levels. The reported pH concentration is within the control limits; however, a statistically significant change is reported because the low-CUSUM line on the control chart shows a trend that is below the lower control. Compared to background concentrations in upgradient well DMW-7, the reported pH concentration in DMW-6 appears to be within the natural variability of pH concentrations in groundwater at the site. In addition, the reported concentration is within the Utah Ground Water Quality Standards, which ranges from 6.5 to 8.5.[4]

The laboratory reported a nitrate concentration (1.10 mg/L) in this compliance monitoring well. The statistical analysis noted a statistically significant change from background sampling concentrations. The reported concentration is below the background control limits (1.66 mg/L); however the reported statistically significant change was due to the CUSUM trend line for nitrate remaining above the control limits. When compared to the mean nitrate concentration in DMW-7 (5.06 mg/l), which serves as an up gradient compliance well, the data indicates that the concentration detected in the October 2012 sampling event is well within naturally occurring nitrate concentrations in the area. The State of Utah does not have groundwater standards for nitrate.

[4] Utah Administrative Code Rule 317-6

No other statistically significant changes in the data were noted.

Conclusions

Statistical analysis conducted for the October 2012 groundwater sampling event indicate statistically significant changes in chemical concentrations from compliance monitoring wells DMW-3, DMW-6 and DMW-9. However, none of the statistically significant changes were a result of the chemical concentrations from the latest sampling event. Considering the background concentrations in these compliance wells and the concentrations in upgradient wells, the reported chemical concentrations from the October 2012 sampling event appear to be near naturally occurring levels.

If you have any questions regarding this letter or the results of the analysis, please contact me at (801) 743-7812.

Sincerely,

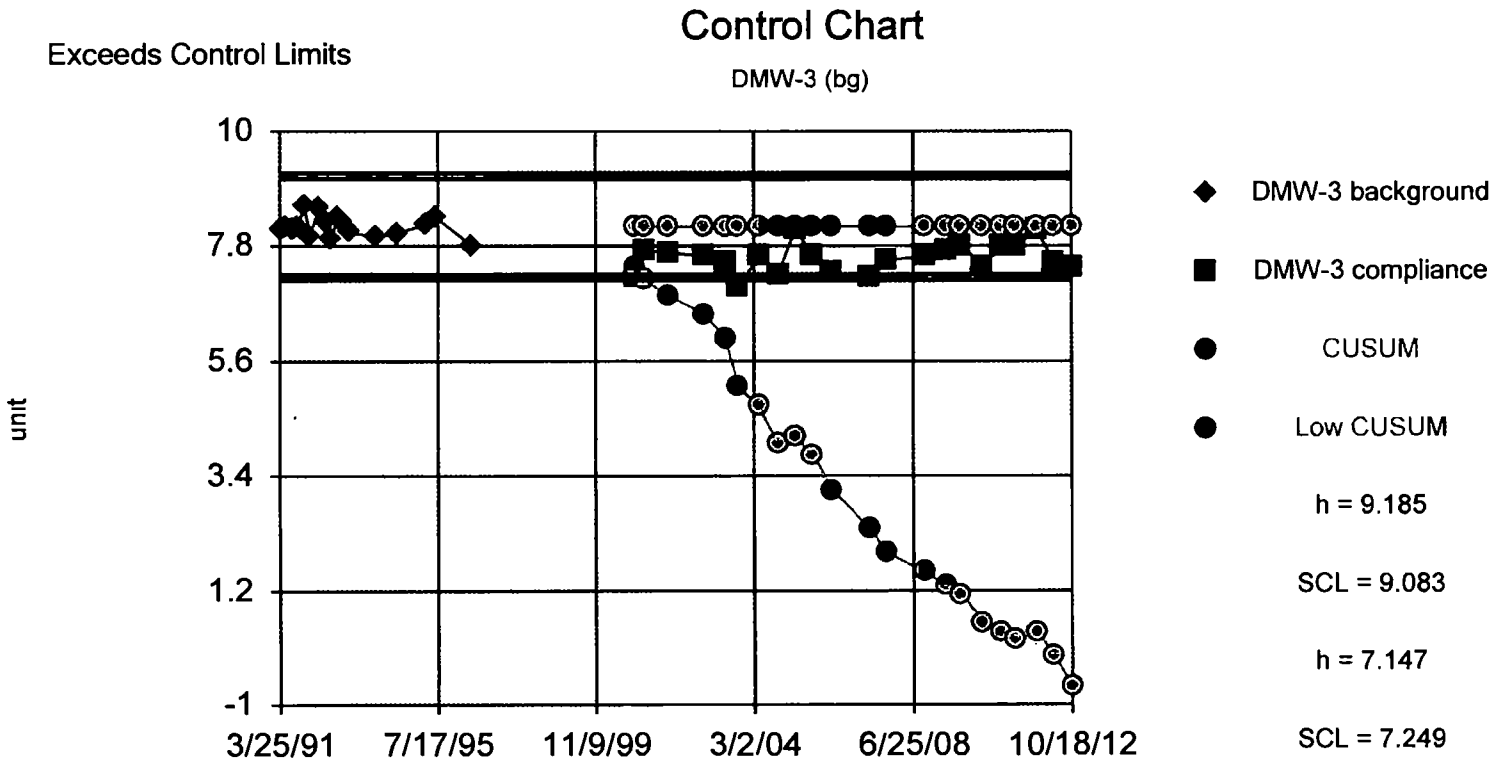
Terry Warner, PE
HDR Engineering, Inc.

Attachment 1: Control charts and prediction limit graphs
Attachment 2: Results of laboratory analysis, field-measured parameters, and chain of custody form

Attachment 1

Statistical Analysis Results

Exceeds Control Limits



Background Data Summary: Mean=8.166, Std. Dev.=0.2037, n=17. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9768, critical = 0.892. Dates ending 6/26/1996 used for control stats.

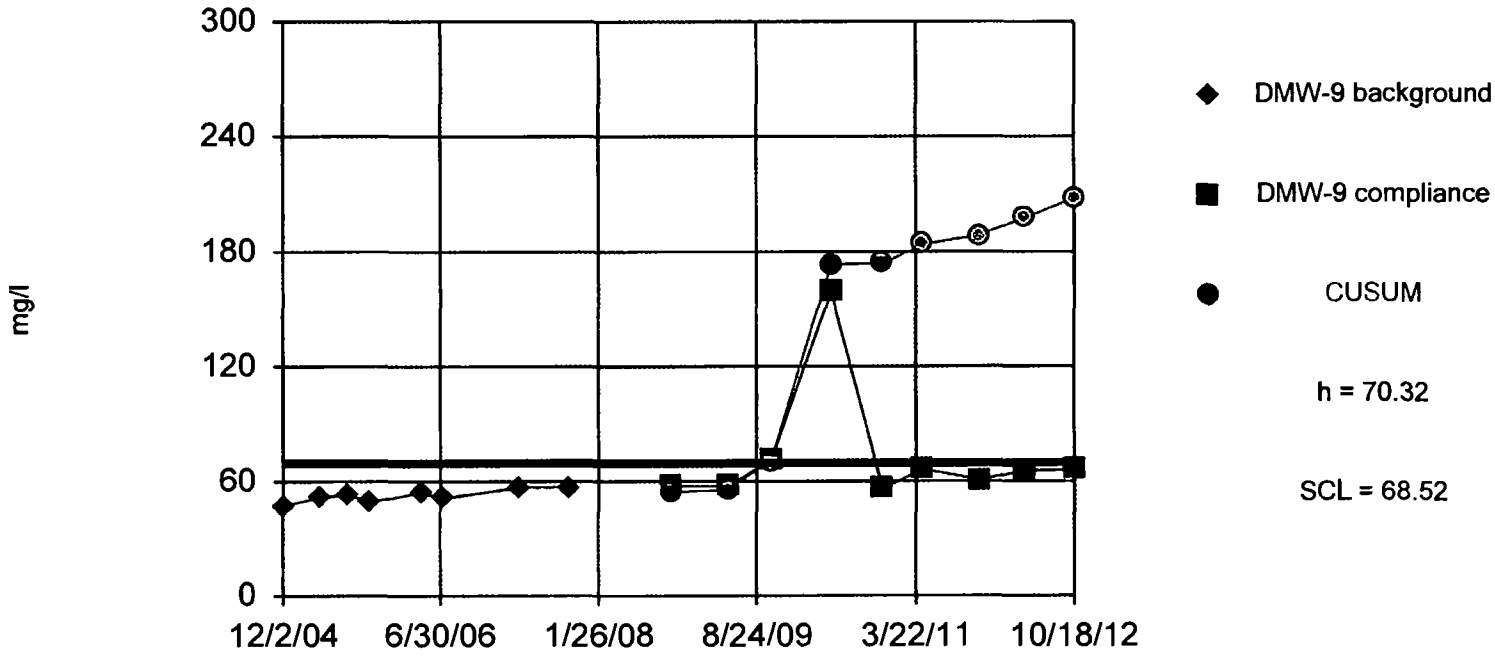
Constituent: pH Analysis Run 2/21/2013 12:00 PM

Facility: Bayview Landfill Client: SUVSWD Data File: Copy of Copy (2) of sanits ground water spreadsheet

Exceeds Control Limits

Control Chart

DMW-9 (bg)



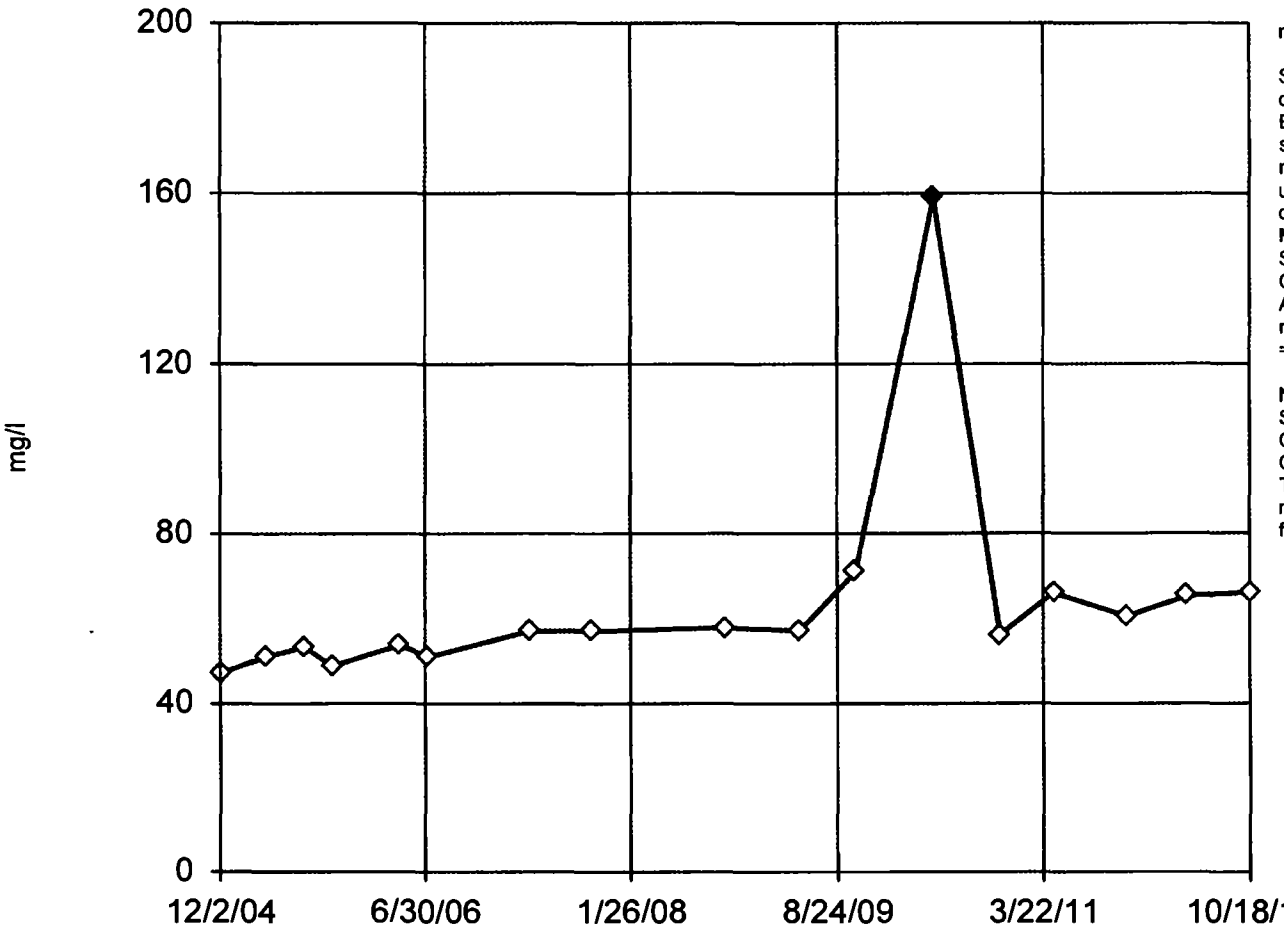
Background Data Summary: Mean=52.35, Std. Dev.=3.594, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9434, critical = 0.818. Dates ending 10/10/2007 used for control stats.

Constituent: Sulfate Analysis Run 2/21/2013 12:31 PM

Facility: Bayview Landfill Client: SUVSWD Data File: Copy of Copy (2) of sanits ground water spreadsheet

EPA 1989 Outlier Test

DMW-9



n = 17

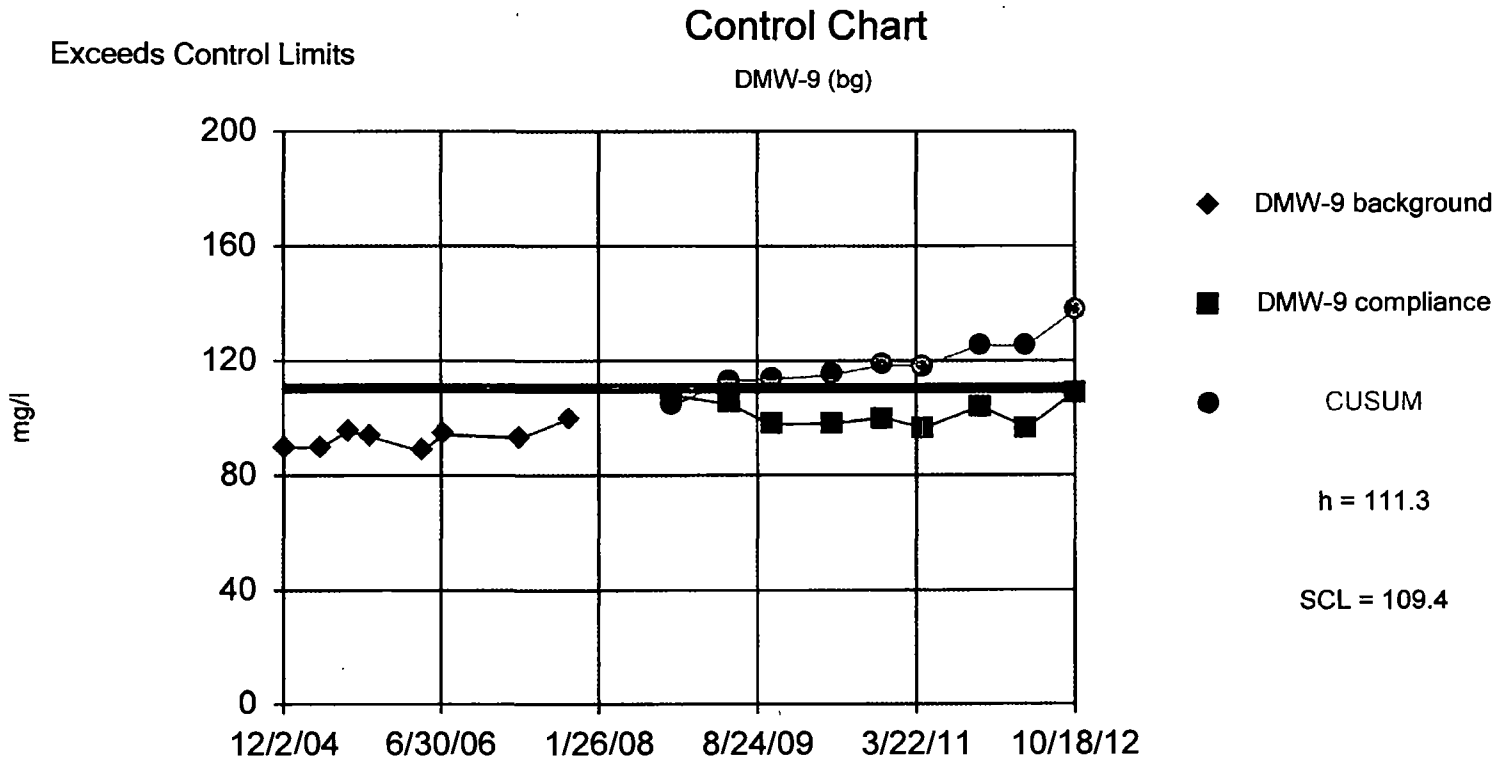
Statistical outlier is drawn as solid Note: EPA guidance directs that statistical outliers should not be removed or altered unless independent evidence of an error exists
Mean = 63 39
Std dev. = 25 51
Critical Tn = 2 475.
After outlier removal: mean = 57 42, std. dev. = 6.824, cntical = 2.443.

Normality test used
Shapiro Wilk@alpha = 0 05
Calculated = 0.9545
Critical = 0.887
The distribution, after removal of outlier, was found to be normal.

Constituent: Sulfate Analysis Run 2/21/2013 2:53 PM

Facility: Bayview Landfill Client: SUVSWD Data File: Copy of Copy (2) of sanits ground water spreadsheet

Exceeds Control Limits

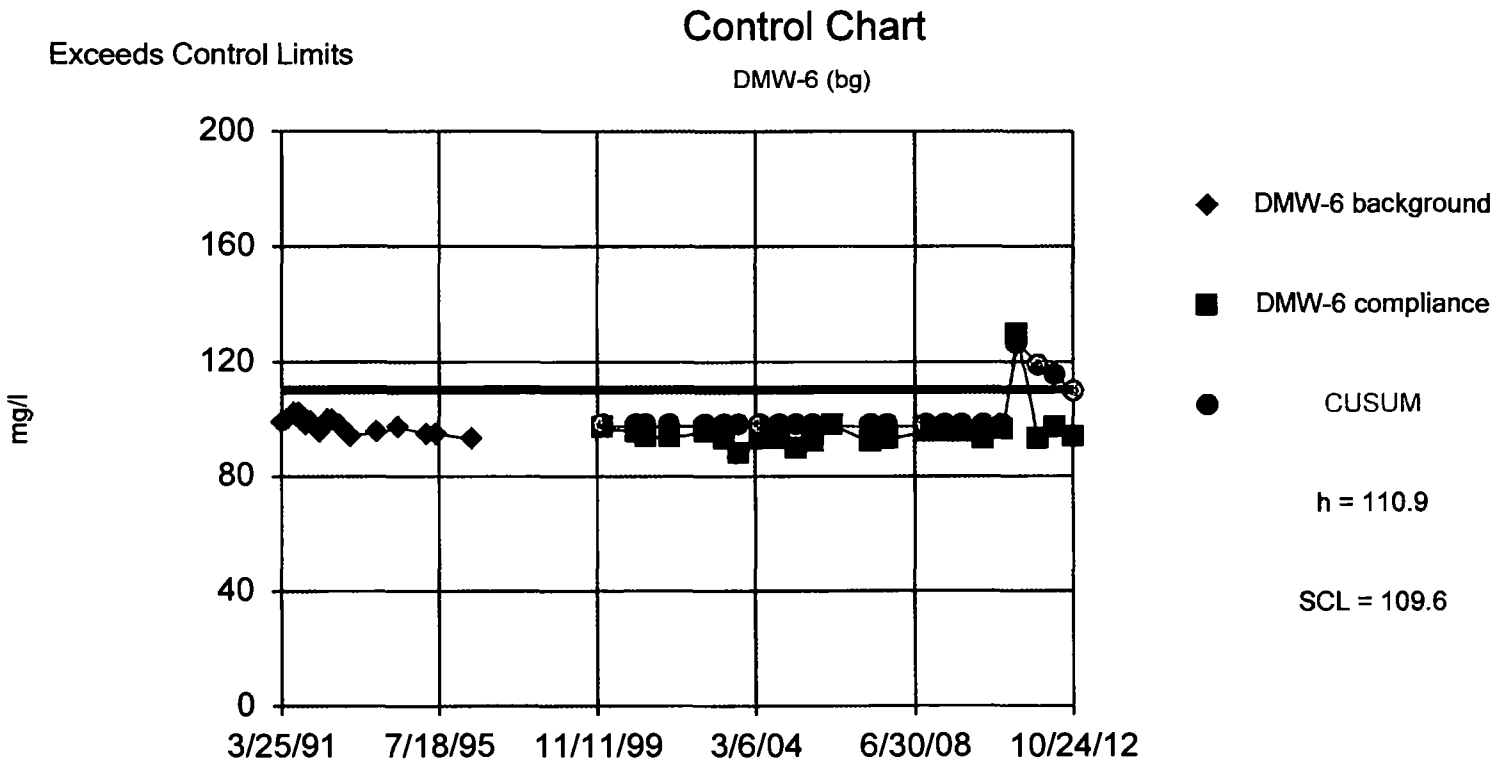


Background Data Summary: Mean=93.03, Std. Dev.=3.645, n=8. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9447, critical = 0.818. Dates ending 10/10/2007 used for control stats.

Constituent: Na Analysis Run 2/21/2013 12:31 PM

Facility: Bayview Landfill Client: SUVSWD Data File: Copy of Copy (2) of sanits ground water spreadsheet

Exceeds Control Limits



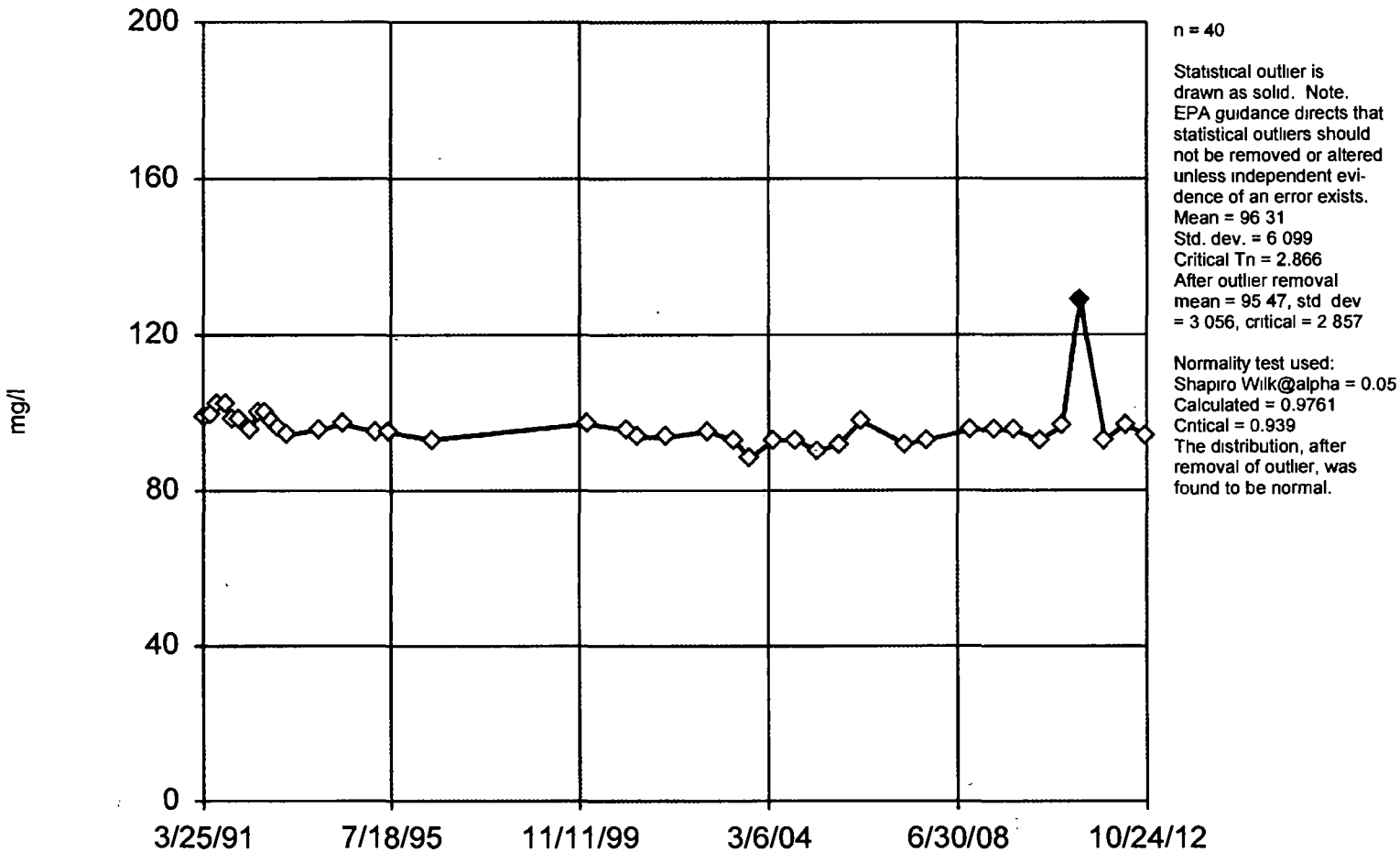
Background Data Summary: Mean=97.54, Std. Dev.=2.675, n=17. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9621, critical = 0.892. Dates ending 6/26/1996 used for control stats.

Constituent: Chloride Analysis Run 2/21/2013 12:15 PM

Facility: Bayview Landfill Client: SUVSWD Data File: Copy of Copy (2) of sanits ground water spreadsheet

EPA 1989 Outlier Test

DMW-6



n = 40

Statistical outlier is drawn as solid. Note. EPA guidance directs that statistical outliers should not be removed or altered unless independent evidence of an error exists.
Mean = 96 31
Std. dev. = 6 099
Critical Tn = 2.866
After outlier removal mean = 95 47, std dev = 3 056, critical = 2 857

Normality test used:
Shapiro Wilk@alpha = 0.05
Calculated = 0.9761
Cntical = 0.939
The distribution, after removal of outlier, was found to be normal.

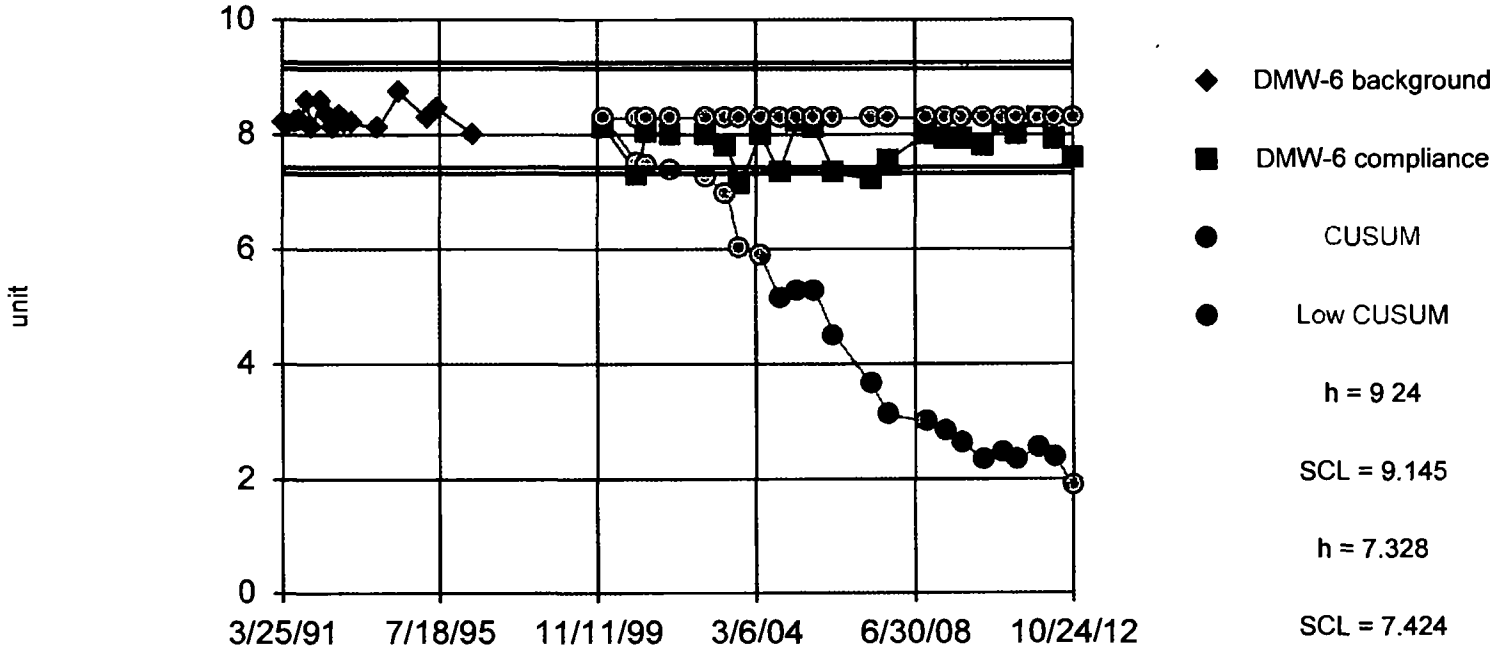
Constituent: Chloride Analysis Run 2/21/2013 3:09 PM

Facility: Bayview Landfill Client: SUVSWD Data File: Copy of Copy (2) of sanits ground water spreadsheet

Exceeds Control Limits

Control Chart

DMW-6 (bg)

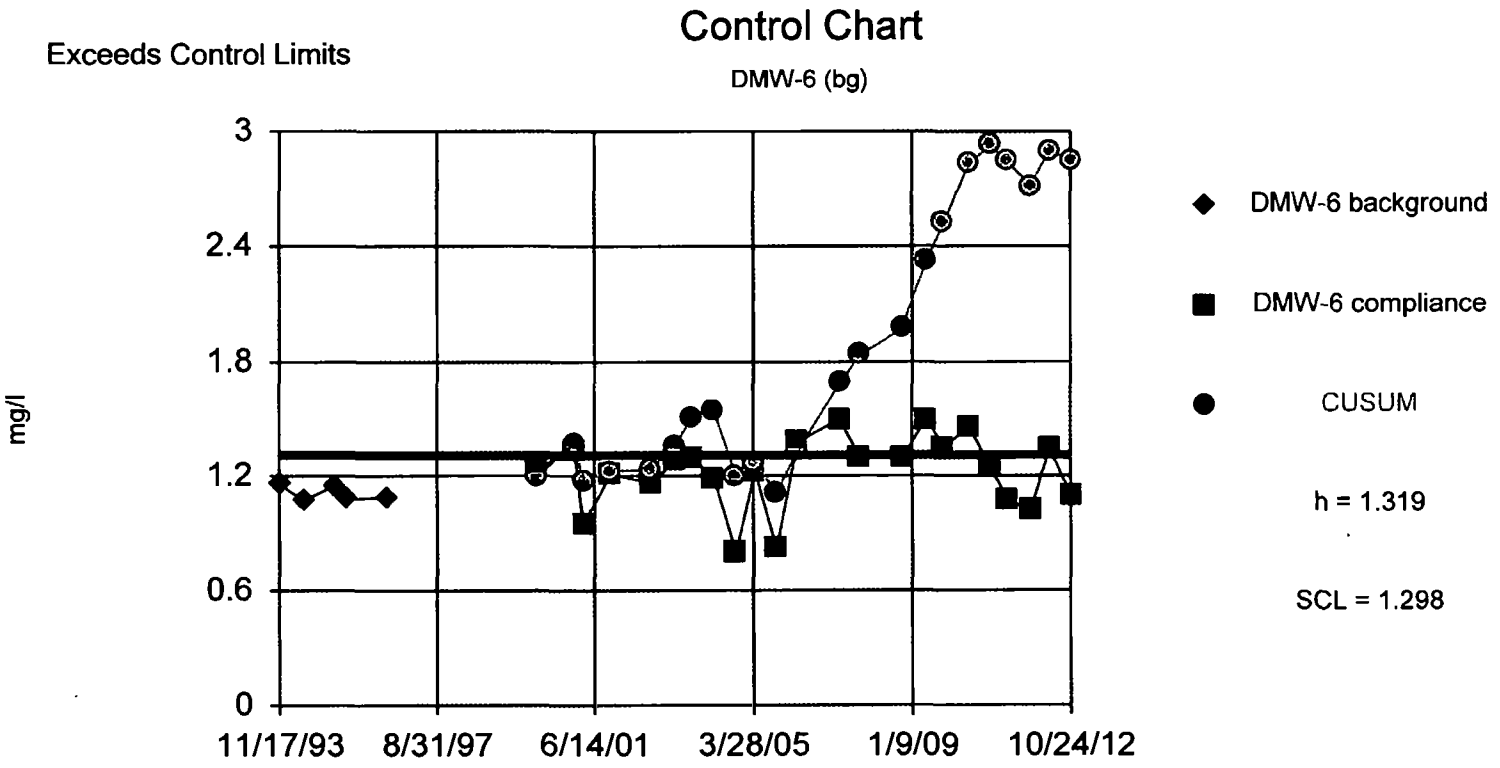


Background Data Summary: Mean=8.284, Std. Dev.=0.1912, n=17. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9169, critical = 0.892. Dates ending 6/26/1996 used for control stats.

Constituent: pH Analysis Run 2/21/2013 12:15 PM

Facility: Bayview Landfill Client: SUVSWD Data File: Copy of Copy (2) of sanits ground water spreadsheet

Exceeds Control Limits



Background Data Summary: Mean=1.11, Std. Dev.=0.04183, n=5. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8405, critical = 0.762. Dates ending 6/26/1996 used for control stats.

Constituent: Nitrate Analysis Run 2/21/2013 12:15 PM

Facility: Bayview Landfill Client: SUVSWD Data File: Copy of Copy (2) of sanits ground water spreadsheet

Attachment 2

Field Monitored Data

Laboratory Results

Chain of Custody

Enviropro Laboratories

2712 South 3600 West, Suite E
West Valley City, UT 84119
Phone: (801) 964-2511 • Fax: (801) 964-2721
www.enviroprolabs.com

Analytical Test Results

South Utah Valley Solid Waste
Scott Aitken
P.O. Box 507
Springville, UT 84663-0507

PO# / Project Name: Bayview
Date / Time Received: 10/18/2012 14:18
Date Reported: 11/7/2012

Sample Name: DMW7 — **Lab ID#:** 292002A
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 8:48 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Ammonia (NH3-N), Direct ISE	4500(NH3)E	10/19/2012 14:20	0.2	mg/L	<0.2	SI
Chemical Oxygen Demand	8000	10/19/2012 12:19	10	mg/L	<10	SI

Sample Name: DMW7 — **Lab ID#:** 292002B
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 8:48 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Nitrate (NO3-N)	352.1	10/19/2012 16:35	0.2	mg/L	5.42	SI
Total Dissolved Solids (TDS)	2540C	10/19/2012 11:08	20	mg/L	548	SI

Sample Name: DMW7 — **Lab ID#:** 292002C
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 8:48 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Total Organic Carbon (TOC)	SM5310B	10/19/2012 15:12	1	mg/L	1.70	S2

Sample Name: DMW7 — **Lab ID#:** 292002D
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 8:48 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags	
Bicarbonate (as CaCO3)	2320B	11/6/2012	1	mg/L	151		
Carbonate (as CaCO3)	2320B	11/6/2012	1	mg/L	<1		
Chloride	4500 (Cl-)	10/31/2012	2	mg/L	13.5		
pH Units	4500(H+)B	10/19/2012 15:35		pH	7.5@20°C		H
Sulfate	D-516 (02)	10/30/2012	5	mg/L	196		

Sample Name: DMW7 — **Lab ID#:** 292002E
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 8:48 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
1,2-Dibromo-3-Chloropropane	504.1	10/19/2012 11:29	0.0101	µg/L	<0.0101	S2
1,2-Dibromoethane	504.1	10/19/2012 11:29	0.0101	µg/L	<0.0101	S2

Analyses presented in this report were performed in accordance with the National Environmental Laboratory Accreditation Program (nelap)

Sample Name: DMW3 **Lab ID#:** 292009G

Collection Began: [illegible] **Collection Completed:** 10/18/2012 10:01 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Volatiles Prep	5030A	10/24/2012				
1,1,1,2-Tetrachloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,1-Trichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,2,2-Tetrachloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,2-Trichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,2-Trichlorotrifluoroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1-Dichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1-Dichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1-Dichloropropene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,3-Trichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,3-Trichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,4-Trichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,4-Trimethylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2-Dichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2-Dichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2-Dichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,3,5-Trimethylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,3-Dichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,3-Dichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,4-Dichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
2,2-Dichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
2-Butanone(MEK)	8260B	10/24/2012	0.01	mg/L	<0.01	
2-Chlorotoluene	8260B	10/24/2012	0.005	mg/L	<0.005	
2-Nitropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
4-Chlorotoluene	8260B	10/24/2012	0.005	mg/L	<0.005	
4-Methyl 2-pentanone (MIBK)	8260B	10/24/2012	0.02	mg/L	<0.02	
Acetone	8260B	10/24/2012	0.02	mg/L	<0.02	
Benzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromochloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromodichloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromoform	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromomethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Carbon Disulfide	8260B	10/24/2012	0.005	mg/L	<0.005	
Carbon Tetrachloride	8260B	10/24/2012	0.005	mg/L	<0.005	
Chlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Chloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Chloroform	8260B	10/24/2012	0.005	mg/L	<0.005	
Chloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
cis-1,2-Dichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Cyclohexanone	8260B	10/24/2012	0.01	mg/L	<0.01	
Dibromochloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Dibromomethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Dichlorodifluoromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Ethyl Acetate	8260B	10/24/2012	0.02	mg/L	<0.02	
Ethyl Ether	8260B	10/24/2012	0.01	mg/L	<0.01	
Ethylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	

Sample Name: DMW7 **Lab ID#:** 292002G

Collection Began: Not Applicable **Collection Completed:** 10/18/2012 8:48 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Hexachlorobutadiene	8260B	10/24/2012	0.005	mg/L	<0.005	
Isopropylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
m,p-Xylenes	8260B	10/24/2012	0.005	mg/L	<0.005	
Methylene Chloride	8260B	10/24/2012	0.01	mg/L	<0.01	
MTBE	8260B	10/24/2012	0.005	mg/L	<0.005	
Naphthalene	8260B	10/24/2012	0.01	mg/L	<0.01	
n-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
n-Propylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
o-Xylene	8260B	10/24/2012	0.005	mg/L	<0.005	
p-Isopropyltoluene	8260B	10/24/2012	0.005	mg/L	<0.005	
sec-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Styrene	8260B	10/24/2012	0.005	mg/L	<0.005	
Tert-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Tetrachloroethylene	8260B	10/24/2012	0.005	mg/L	<0.005	
Toluene	8260B	10/24/2012	0.005	mg/L	<0.005	
trans-1,2-Dichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Trichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Trichlorofluoromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Vinyl Chloride	8260B	10/24/2012	0.005	mg/L	<0.005	

Sample Name: DMW7 **Lab ID#:** 292002I

Collection Began: Not Applicable **Collection Completed:** 10/18/2012 8:48 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Antimony	200.8	11/1/2012	0.1	µg/L	**0.82**	
Arsenic	200.8	11/1/2012	1	µg/L	**35.3**	
Barium	200.7	10/31/2012	0.005	mg/L	**0.022**	
Beryllium	200.8	11/1/2012	0.5	µg/L	<0.5	UJ
Cadmium	200.8	11/1/2012	0.5	µg/L	<0.5	
Calcium	200.7	10/19/2012	0.05	mg/L	**29.2**	
Chromium	200.7	10/31/2012	0.01	mg/L	<0.01	
Cobalt	200.7	10/31/2012	0.05	mg/L	<0.05	
Copper	200.7	10/31/2012	0.05	mg/L	<0.05	
Iron	200.7	10/31/2012	0.02	mg/L	**0.031**	
Lead	200.8	11/1/2012	1	µg/L	<1	
Magnesium	200.7	10/19/2012	0.05	mg/L	**10.4**	
Manganese	200.7	10/31/2012	0.01	mg/L	<0.01	
Mercury	245.1	10/26/2012	0.0002	mg/L	<0.0002	
Nickel	200.7	10/31/2012	0.05	mg/L	<0.05	
Potassium	200.7	10/19/2012	0.2	mg/L	**6.87**	
Selenium	200.8	11/1/2012	2	µg/L	**4.73**	
Silver	200.7	10/31/2012	0.01	mg/L	<0.01	
Sodium	200.7	10/19/2012	1	mg/L	**130**	
Thallium	200.8	11/1/2012	0.2	µg/L	<0.2	
Vanadium	200.7	10/31/2012	0.05	mg/L	<0.05	
Zinc	200.7	10/31/2012	0.05	mg/L	<0.05	

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West Valley City, UT 84119
Phone: 801-964-2511
Fax: 801-964-2721

16°

Chain of Custody Record

Date: 10-18-12

Scott Aitken	801-489-3027	801-491-9367
Contact Name	Phone Number	Fax Number
South Utah Valley Solid Waste District		
Company Name		
2450 West 400 South		
Street Address		
Springville, UT 84663		
City, State, Zip		
Bayview		
Project Name	Site Location	

Sample ID	Date Collected	Time	Matrix	Lab ID	Preservation Code	Number of Containers	Container Size	Ammonia 4500NH3G, COD 8000	Nitrate 352.1, TDS 2540C	TOC 415.1	Ph 4500[H+]B, Chloride 4500 (Cl-), Sulfate D-516 (02), Carbonate/Bicarbonate 2320B	EDB/DBCP 504.1	VOC 8260B	Ca, Fe, Mg, Mn, K, Na, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, V, Zn 200.7 Hg 245.1		Comments
DMW 7	10-18-12	8:49	Water	1210002A	4	1	1L	√	-							
		8:52	Water	1210002B	1	1	500		√							
		8:57	Water	1210002C	5	3	40			√						
		8:56	Water	1210002D	1	1	1L				√					
		8:58	Water	1210002E/F	6	3	40					√				
		8:54	Water	1210002G/H	3	2	40						√			
		8:55	Water	1210002I	2	1	500							√		

Preservation Code

1 = 4°C
2 = HNO_3
3 = HCl
4 = H_2SO_4
5 = H_3PO_4
6 = $Na_2S_2O_3$

Special Instructions / Comments	(1) Relinquished By	(2) Relinquished By	Sampler Initials:
Report as Email + Hard Copy	(1) Date / Time 10/18 2:17	(2) Date / Time	Method of Shipment
	(1) Company SUVSWD	(2) Company	HAND CARRY USPS FEDX UPS
	(1) Received By	(2) Received By	CoC
	(1) Date / Time 10/18/12 14:17	(2) Date / Time	Seal Intact?
Route Results Through: saitken@suvswd.org	(1) Company	(2) Company	Yes No

Enviropro Laboratories

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West Valley City, UT 84119
Phone: (801) 964-2511 • Fax: (801) 964-2721
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Analytical Test Results

South Utah Valley Solid Waste
Scott Aitken
P.O. Box 507
Springville, UT 84663-0507

PO# / Project Name: Bayview

Date / Time Received: 10/18/2012 14:18
Date Reported: 11/7/2012

Sample Name: DMW3 — **Lab ID#:** 292009A
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 10:01 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Ammonia (NH3-N), Direct ISE	4500(NH3)E	10/19/2012 14.20	0.2	mg/L	<0.2	SI
Chemical Oxygen Demand	8000	10/19/2012 12:19	10	mg/L	14	SI

Sample Name: DMW3 — **Lab ID#:** 292009B
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 10:01 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Nitrate (NO3-N)	352.1	10/19/2012 16 35	0.2	mg/L	1.56	SI
Total Dissolved Solids (TDS)	2540C	10/19/2012 11.08	20	mg/L	702	SI

Sample Name: DMW3 — **Lab ID#:** 292009C
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 10:01 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Total Organic Carbon (TOC)	SM5310B	10/19/2012 16.14	1	mg/L	<1	S2

Sample Name: DMW3 — **Lab ID#:** 292009D
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 10:01 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags	
Bicarbonate (as CaCO3)	2320B	11/6/2012	1	mg/L	150		
Carbonate (as CaCO3)	2320B	11/6/2012	1	mg/L	<1		
Chloride	4500 (Cl-)	10/31/2012	2	mg/L	213		
pH Units	4500(H+)B	10/19/2012 15.35		pH	7.4@20°C		H
Sulfate	D-516 (02)	10/30/2012	5	mg/L	134		

Sample Name: DMW3 — **Lab ID#:** 292009E
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 10:01 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
1,2-Dibromo-3-Chloropropane	504.1	10/19/2012 11·29	0.0102	µg/L	<0.0102	S2
1,2-Dibromoethane	504.1	10/19/2012 11 29	0.0102	µg/L	<0.0102	S2

Analyses presented in this report were performed in accordance with the National Environmental Laboratory Accreditation Program (nelap)

Sample Name: DMW3 **Lab ID#: 292009G**

Collection Began: Not Applicable **Collection Completed:** 10/18/2012 10:01 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Hexachlorobutadiene	8260B	10/24/2012	0.005	mg/L	<0.005	
Isopropylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
m,p-Xylenes	8260B	10/24/2012	0.005	mg/L	<0.005	
Methylene Chloride	8260B	10/24/2012	0.01	mg/L	<0.01	
MTBE	8260B	10/24/2012	0.005	mg/L	<0.005	
Naphthalene	8260B	10/24/2012	0.01	mg/L	<0.01	
n-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
n-Propylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
o-Xylene	8260B	10/24/2012	0.005	mg/L	<0.005	
p-Isopropyltoluene	8260B	10/24/2012	0.005	mg/L	<0.005	
sec-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Styrene	8260B	10/24/2012	0.005	mg/L	<0.005	
Tert-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Tetrachloroethylene	8260B	10/24/2012	0.005	mg/L	<0.005	
Toluene	8260B	10/24/2012	0.005	mg/L	<0.005	
trans-1,2-Dichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Trichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Trichlorofluoromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Vinyl Chloride	8260B	10/24/2012	0.005	mg/L	<0.005	

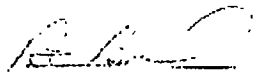
Sample Name: DMW3 **Lab ID#: 292009I**

Collection Began: Not Applicable **Collection Completed:** 10/18/2012 10:01 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Antimony	200.8	11/1/2012	0.1	µg/L	**0.62**	
Arsenic	200.8	11/1/2012	1	µg/L	**15.4**	
Barium	200.7	10/31/2012	0.005	mg/L	**0.025**	
Beryllium	200.8	11/1/2012	0.5	µg/L	<0.5	UJ
Cadmium	200.8	11/1/2012	0.5	µg/L	<0.5	
Calcium	200.7	10/19/2012	0.05	mg/L	**46.6**	
Chromium	200.7	10/31/2012	0.01	mg/L	**0.013**	
Cobalt	200.7	10/31/2012	0.05	mg/L	<0.05	
Copper	200.7	10/31/2012	0.05	mg/L	<0.05	
Iron	200.7	10/31/2012	0.02	mg/L	**0.046**	
Lead	200.8	11/1/2012	1	µg/L	<1	
Magnesium	200.7	10/19/2012	0.05	mg/L	**21.0**	
Manganese	200.7	10/31/2012	0.01	mg/L	<0.01	
Mercury	245.1	10/26/2012	0.0002	mg/L	<0.0002	
Nickel	200.7	10/31/2012	0.05	mg/L	<0.05	
Potassium	200.7	10/19/2012	0.2	mg/L	**10.5**	
Selenium	200.8	11/1/2012	2	µg/L	<2	
Silver	200.7	10/31/2012	0.01	mg/L	<0.01	
Sodium	200.7	10/19/2012	1	mg/L	**169**	
Thallium	200.8	11/1/2012	0.2	µg/L	<0.2	
Vanadium	200.7	10/31/2012	0.05	mg/L	<0.05	
Zinc	200.7	10/31/2012	0.05	mg/L	<0.05	

Reviewed by:

Comments:



Roy Breslawski, Laboratory Manager

Flags:

S1	Subcontracted to Timpview Analytical
S2	Subcontracted to American West Analytical Laboratories
H	Sample hold time exceeded
UJ	Analyte not detected. Spike or surrogate recovery below limits.

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Phone: 801-964-2511
Fax: 801-964-2721

10

Chain of Custody Record

Date: 10/18/12

Scott Aitken	801-489-3027	801-491-9367
Contact Name	Phone Number	Fax Number
South Utah Valley Solid Waste District		
Company Name		
2450 West 400 South		
Street Address		
Springville, UT 84663		
City, State, Zip		
Bawiew		
Project Name	Site Location	

Sample ID	Date Collected	Time	Matrix	Lab ID	Preservation Code	Number of Containers	Container Size	Ammonia 4500NH3G, COD 8000	Nitrate 352.1, TDS 2540C	TOC 415.1	Ph 4500(H+)B, Chloride 4500 (Cl-), Sulfate D-516 (02), Carbonate/Bicarbonate 2320B	EDB/DBCP 504.1	VOC 8260B	Ca, Fe, Mg, Mn, K, Na, Sb, As, Ba, Be, Cd, Ct, Co, Cu, Pb, Ni, Se, Ag, Tl, V, Zn 200.7 Hg 245.1		Comments
DMW 3	10/18/12	10:01	Water	1292009A	4	1	1L	√								
		10:13	Water	1292009B	1	1	500		√							
		10:15	Water	1292009C	5	3	40			√						
		10:03	Water	1292009D	1	1	1L				√					
		10:17	Water	1292009E/F	6	3	40					√				
		10:16	Water	1292009G/H	3	2	40						√			
		10:11	Water	1292009I	2	1	500							√		

Special Instructions / Comments	(1) Relinquished By	(2) Relinquished By	Sampler Initials:
Report as Email + Hard Copy	(1) Date / Time 10/18 2:18	(2) Date / Time	Method of Shipment
	(1) Company SUVSWD	(2) Company	HAND CARRY USPS FEDX UPS
	(1) Received By	(2) Received By	CoC
	(1) Date / Time 10/18/12 14:18	(2) Date / Time	Seal Intact?
Route Results Through: saitken@suvswd.org	(1) Company	(2) Company	Yes No

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Analytical Test Results

South Utah Valley Solid Waste
Scott Aitken
P.O. Box 507
Springville, UT 84663-0507

PO# / Project Name: Bayview

Date / Time Received: 10/18/2012 14:18
Date Reported: 11/7/2012

Sample Name: DMW8 **Lab ID#: 292016A**
Collection Began: Not Applicable **Collection Completed:** 10/18/2012 9:26 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Ammonia (NH3-N), Direct ISE	4500(NH3)E	10/19/2012 14.20	0.2	mg/L	<0.2	SI
Chemical Oxygen Demand	8000	10/19/2012 12:19	10	mg/L	15	SI

Sample Name: DMW8 **Lab ID#: 292016B**
Collection Began: Not Applicable **Collection Completed:** 10/18/2012 9:26 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Nitrate (NO3-N)	352.1	10/19/2012 16:35	0.2	mg/L	3.71	SI
Total Dissolved Solids (TDS)	2540C	10/19/2012 11:08	20	mg/L	708	SI

Sample Name: DMW8 **Lab ID#: 292016C**
Collection Began: Not Applicable **Collection Completed:** 10/18/2012 9:26 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Total Organic Carbon (TOC)	SM5310B	10/19/2012 16:34	1	mg/L	<1	S2

Sample Name: DMW8 **Lab ID#: 292016D**
Collection Began: Not Applicable **Collection Completed:** 10/18/2012 9:26 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags	
Bicarbonate (as CaCO3)	2320B	11/6/2012	1	mg/L	152		
Carbonate (as CaCO3)	2320B	11/6/2012	1	mg/L	<1		
Chloride	4500 (Cl-)	10/31/2012	2	mg/L	140		
pH Units	4500(H+)B	10/19/2012 15:35		pH	7.4@20°C		H
Sulfate	D-516 (02)	10/30/2012	5	mg/L	159		

Sample Name: DMW8 **Lab ID#: 292016E**
Collection Began: Not Applicable **Collection Completed:** 10/18/2012 9:26 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
1,2-Dibromo-3-Chloropropane	504.1	10/19/2012 11:29	0.0102	µg/L	<0.0102	S2
1,2-Dibromoethane	504.1	10/19/2012 11:29	0.0102	µg/L	<0.0102	S2

Sample Name: DMW8 **Lab ID#:** 292016G

Collection Began: Not Applicable **Collection Completed:** 10/18/2012 9:26 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Volatiles Prep	5030A	10/24/2012				
1,1,1,2-Tetrachloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,1-Trichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,2,2-Tetrachloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,2-Trichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,2-Trichlorotrifluoroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1-Dichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1-Dichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1-Dichloropropene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,3-Trichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,3-Trichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,4-Trichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,4-Trimethylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2-Dichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2-Dichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2-Dichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,3,5-Trimethylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,3-Dichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,3-Dichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,4-Dichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
2,2-Dichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
2-Butanone(MEK)	8260B	10/24/2012	0.01	mg/L	<0.01	
2-Chlorotoluene	8260B	10/24/2012	0.005	mg/L	<0.005	
2-Nitropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
4-Chlorotoluene	8260B	10/24/2012	0.005	mg/L	<0.005	
4-Methyl 2-pentanone (MIBK)	8260B	10/24/2012	0.02	mg/L	<0.02	
Acetone	8260B	10/24/2012	0.02	mg/L	<0.02	
Benzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromochloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromodichloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromoform	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromomethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Carbon Disulfide	8260B	10/24/2012	0.005	mg/L	<0.005	
Carbon Tetrachloride	8260B	10/24/2012	0.005	mg/L	<0.005	
Chlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Chloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Chloroform	8260B	10/24/2012	0.005	mg/L	<0.005	
Chloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
cis-1,2-Dichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Cyclohexanone	8260B	10/24/2012	0.01	mg/L	<0.01	
Dibromochloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Dibromomethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Dichlorodifluoromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Ethyl Acetate	8260B	10/24/2012	0.02	mg/L	<0.02	
Ethyl Ether	8260B	10/24/2012	0.01	mg/L	<0.01	
Ethylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	

Sample Name: DMW8 **Lab ID#:** 292016G

Collection Began: Not Applicable **Collection Completed:** 10/18/2012 9:26 **Matrix:** Wastewater

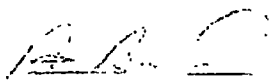
Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Hexachlorobutadiene	8260B	10/24/2012	0.005	mg/L	<0.005	
Isopropylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
m,p-Xylenes	8260B	10/24/2012	0.005	mg/L	<0.005	
Methylene Chloride	8260B	10/24/2012	0.01	mg/L	<0.01	
MTBE	8260B	10/24/2012	0.005	mg/L	<0.005	
Naphthalene	8260B	10/24/2012	0.01	mg/L	<0.01	
n-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
n-Propylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
o-Xylene	8260B	10/24/2012	0.005	mg/L	<0.005	
p-Isopropyltoluene	8260B	10/24/2012	0.005	mg/L	<0.005	
sec-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Styrene	8260B	10/24/2012	0.005	mg/L	<0.005	
Tert-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Tetrachloroethylene	8260B	10/24/2012	0.005	mg/L	<0.005	
Toluene	8260B	10/24/2012	0.005	mg/L	<0.005	
trans-1,2-Dichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Trichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Trichlorofluoromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Vinyl Chloride	8260B	10/24/2012	0.005	mg/L	<0.005	

Sample Name: DMW8 **Lab ID#:** 292016I

Collection Began: Not Applicable **Collection Completed:** 10/18/2012 9:26 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Antimony	200.8	11/1/2012	0.1	µg/L	**0.53**	
Arsenic	200.8	11/1/2012	1	µg/L	**13.4**	
Banum	200.7	10/31/2012	0.005	mg/L	**0.024**	
Beryllium	200.8	11/1/2012	0.5	µg/L	<0.5	UJ
Cadmium	200.8	11/1/2012	0.5	µg/L	<0.5	
Calcium	200.7	10/19/2012	0.05	mg/L	**49.8**	
Chromium	200.7	10/31/2012	0.01	mg/L	**0.025**	
Cobalt	200.7	10/31/2012	0.05	mg/L	<0.05	
Copper	200.7	10/31/2012	0.05	mg/L	<0.05	
Iron	200.7	10/31/2012	0.02	mg/L	**0.17**	
Lead	200.8	11/1/2012	1	µg/L	<1	
Magnesium	200.7	10/19/2012	0.05	mg/L	**19.6**	
Manganese	200.7	10/31/2012	0.01	mg/L	<0.01	
Mercury	245.1	10/26/2012	0.0002	mg/L	<0.0002	
Nickel	200.7	10/31/2012	0.05	mg/L	<0.05	
Potassium	200.7	10/19/2012	0.2	mg/L	**9.11**	
Selenium	200.8	11/1/2012	2	µg/L	**4.46**	
Silver	200.7	10/31/2012	0.01	mg/L	<0.01	
Sodium	200.7	10/19/2012	1	mg/L	**180**	
Thallium	200.8	11/1/2012	0.2	µg/L	<0.2	
Vanadium	200.7	10/31/2012	0.05	mg/L	<0.05	
Zinc	200.7	10/31/2012	0.05	mg/L	<0.05	

Reviewed by:



Roy Breslawski, Laboratory Manager

Comments:

Flags:

S1	Subcontracted to Timpview Analytical
S2	Subcontracted to American West Analytical Laboratories
H	Sample hold time exceeded
UJ	Analyte not detected. Spike or surrogate recovery below limits.

ENVIROPRO LABORATORIES

www.enviroprolabs.com

2712 South 3600 West, Sui
West Valley City, UT 84
Phone: 801-964-2
Fax: 801-964-2

Chain of Custody Record

Date: 10/18/12

Scott Aitken	801-489-3027	801-491-9367
Contact Name	Phone Number	Fax Number
South Utah Valley Solid Waste District		
Company Name		
2450 West 400 South		
Street Address		
Springville, UT 84663		
City, State, Zip		
Bayview		
Project Name	Site Location	

Sample ID	Date Collected	Time	Matrix	Lab ID	Preservation Code	Number of Containers	Container Size	Ammonia 4500NH3G, COD 8000	Nitrate 352.1, TDS 2540C	TOC 415.1	Ph 4500(H+)B, Chloride 4500 (Cl-), Sulfate D-516 (02), Carbonate/Bicarbonate 2320B	EDB/DBCP 504.1	VOC 8260B	Ca, Fe, Mg, Mn, K, Na, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, V, Zn 200.7 Hg 245.1		Comments
DMW 8	10/18/12	9:26	Water	797016A	4	1	1L	√								
		9:31	Water	797016B	1	1	500		√							
		9:32	Water	797016C	5	3	40			√						
		9:29	Water	797016D	1	1	1L				√					
		9:33	Water	797016E/F	6	3	40					√				
		9:34	Water	797016G/H	3	2	40						√			
		9:36	Water	797016I	2	1	500							√		

Analysis Request

Preservation Code

1 = 4°C
2 = HNO_3
3 = HCl
4 = H_2SO_4
5 = H_3PO_4
6 = $Na_2S_2O_3$

Special Instructions / Comments	(1) Relinquished By	(2) Relinquished By	Sampler Initials:
Report as Email & Hard Copy	(1) Date / Time 10/18 2:18	(2) Date / Time	Method of Shipment
	(1) Company SUVSWD	(2) Company	HAND CARRY USPS FEDX UPS
	(1) Received By	(2) Received By	CoC
	(1) Date / Time 10/18/12 14:18	(2) Date / Time	Seal Intact?
Route Results Through: saitken@suvswd.org	(1) Company	(2) Company	Yes No

Enviropro Laboratories

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Analytical Test Results

South Utah Valley Solid Waste
Scott Aitken
P.O. Box 507
Springville, UT 84663-0507

PO# / Project Name: Bayview

Date / Time Received: 10/18/2012 14:18
Date Reported: 11/7/2012

Sample Name: DMW9 — **Lab ID#: 292023A**
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 10:37 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Ammonia (NH3-N), Direct ISE	4500(NH3)E	10/19/2012 14:20	0.2	mg/L	<0.2	SI
Chemical Oxygen Demand	8000	10/19/2012 12:19	10	mg/L	13	SI

Sample Name: DMW9 — **Lab ID#: 292023B**
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 10:37 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Nitrate (NO3-N)	352.1	10/19/2012 16:35	0.2	mg/L	3.75	SI
Total Dissolved Solids (TDS)	2540C	10/19/2012 11:08	20	mg/L	518	SI

Sample Name: DMW9 — **Lab ID#: 292023C**
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 10:37 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Total Organic Carbon (TOC)	SM5310B	10/19/2012 16:54	1	mg/L	<1	S2

Sample Name: DMW9 — **Lab ID#: 292023D**
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 10:37 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags	
Bicarbonate (as CaCO3)	2320B	11/6/2012	1	mg/L	122		
Carbonate (as CaCO3)	2320B	11/6/2012	1	mg/L	<1		
Chloride	4500 (Cl-)	10/31/2012	2	mg/L	152		
pH Units	4500(H+)B	10/19/2012 15:35		pH	7.9@20°C		H
Sulfate	D-516 (02)	10/30/2012	5	mg/L	66.1		

Sample Name: DMW9 — **Lab ID#: 292023E**
Collection Began: Not Applicable — **Collection Completed:** 10/18/2012 10:37 — **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
1,2-Dibromo-3-Chloropropane	504.1	10/19/2012 11:29	0.0103	µg/L	<0.0103	S2
1,2-Dibromoethane	504.1	10/19/2012 11:29	0.0103	µg/L	<0.0103	S2

Sample Name: DMW9 **Lab ID#:** 292023G

Collection Began: Not Applicable **Collection Completed:** 10/18/2012 10:37 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Volatiles Prep	5030A	10/24/2012				
1,1,1,2-Tetrachloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,1-Trichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,2,2-Tetrachloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,2-Trichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1,2-Trichlorotrifluoroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1-Dichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1-Dichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,1-Dichloropropene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,3-Trichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,3-Trichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,4-Trichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2,4-Trimethylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2-Dichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2-Dichloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,2-Dichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,3,5-Trimethylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,3-Dichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
1,3-Dichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
1,4-Dichlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
2,2-Dichloropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
2-Butanone(MEK)	8260B	10/24/2012	0.01	mg/L	<0.01	
2-Chlorotoluene	8260B	10/24/2012	0.005	mg/L	<0.005	
2-Nitropropane	8260B	10/24/2012	0.005	mg/L	<0.005	
4-Chlorotoluene	8260B	10/24/2012	0.005	mg/L	<0.005	
4-Methyl 2-pentanone (MIBK)	8260B	10/24/2012	0.02	mg/L	<0.02	
Acetone	8260B	10/24/2012	0.02	mg/L	<0.02	
Benzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromochloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromodichloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromoform	8260B	10/24/2012	0.005	mg/L	<0.005	
Bromomethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Carbon Disulfide	8260B	10/24/2012	0.005	mg/L	<0.005	
Carbon Tetrachloride	8260B	10/24/2012	0.005	mg/L	<0.005	
Chlorobenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Chloroethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Chloroform	8260B	10/24/2012	0.005	mg/L	<0.005	
Chloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
cis-1,2-Dichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Cyclohexanone	8260B	10/24/2012	0.01	mg/L	<0.01	
Dibromochloromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Dibromomethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Dichlorodifluoromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Ethyl Acetate	8260B	10/24/2012	0.02	mg/L	<0.02	
Ethyl Ether	8260B	10/24/2012	0.01	mg/L	<0.01	
Ethylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	

Sample Name: DMW9 **Lab ID#: 292023G**

Collection Began: Not Applicable **Collection Completed:** 10/18/2012 10:37 **Matrix:** Wastewater

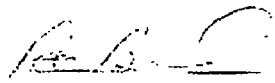
Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Hexachlorobutadiene	8260B	10/24/2012	0.005	mg/L	<0.005	
Isopropylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
m,p-Xylenes	8260B	10/24/2012	0.005	mg/L	<0.005	
Methylene Chloride	8260B	10/24/2012	0.01	mg/L	<0.01	
MTBE	8260B	10/24/2012	0.005	mg/L	<0.005	
Naphthalene	8260B	10/24/2012	0.01	mg/L	<0.01	
n-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
n-Propylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
o-Xylene	8260B	10/24/2012	0.005	mg/L	<0.005	
p-Isopropyltoluene	8260B	10/24/2012	0.005	mg/L	<0.005	
sec-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Styrene	8260B	10/24/2012	0.005	mg/L	<0.005	
Tert-Butylbenzene	8260B	10/24/2012	0.005	mg/L	<0.005	
Tetrachloroethylene	8260B	10/24/2012	0.005	mg/L	<0.005	
Toluene	8260B	10/24/2012	0.005	mg/L	<0.005	
trans-1,2-Dichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Trichloroethene	8260B	10/24/2012	0.005	mg/L	<0.005	
Trichlorofluoromethane	8260B	10/24/2012	0.005	mg/L	<0.005	
Vinyl Chloride	8260B	10/24/2012	0.005	mg/L	<0.005	

Sample Name: DMW9 **Lab ID#: 292023I**

Collection Began: Not Applicable **Collection Completed:** 10/18/2012 10:37 **Matrix:** Wastewater

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Antimony	200.8	11/1/2012	0.1	µg/L	**0.49**	
Arsenic	200.8	11/1/2012	1	µg/L	**10.7**	
Barium	200.7	10/31/2012	0.005	mg/L	**0.060**	
Beryllium	200.8	11/1/2012	0.5	µg/L	<0.5	UJ
Cadmium	200.8	11/1/2012	0.5	µg/L	<0.5	
Calcium	200.7	10/19/2012	0.05	mg/L	**47.6**	
Chromium	200.7	10/31/2012	0.01	mg/L	<0.01	
Cobalt	200.7	10/31/2012	0.05	mg/L	<0.05	
Copper	200.7	10/31/2012	0.05	mg/L	<0.05	
Iron	200.7	10/31/2012	0.02	mg/L	**0.043**	
Lead	200.8	11/1/2012	1	µg/L	**<1**	
Magnesium	200.7	10/19/2012	0.05	mg/L	**18.8**	
Manganese	200.7	10/31/2012	0.01	mg/L	<0.01	
Mercury	245.1	10/26/2012	0.0002	mg/L	<0.0002	
Nickel	200.7	10/31/2012	0.05	mg/L	<0.05	
Potassium	200.7	10/19/2012	0.2	mg/L	**7.76**	
Selenium	200.8	11/1/2012	2	µg/L	**4.32**	
Silver	200.7	10/31/2012	0.01	mg/L	<0.01	
Sodium	200.7	10/19/2012	1	mg/L	**109**	
Thallium	200.8	11/1/2012	0.2	µg/L	<0.2	
Vanadium	200.7	10/31/2012	0.05	mg/L	<0.05	
Zinc	200.7	10/31/2012	0.05	mg/L	<0.05	

Reviewed by:



Roy Breslawski, Laboratory Manager

Comments:

Flags:

S1	Subcontracted to Timpview Analytical
S2	Subcontracted to American West Analytical Laboratories
H	Sample hold time exceeded
UJ	Analyte not detected. Spike or surrogate recovery below limits.

ENVIROPRO LABORATORIES

www.enviroprolabs.com

2712 South 3600 West, Sui
West Valley City, UT 84
Phone: 801-964-2
Fax: 801-964-2

Chain of Custody Record

Date: 10-18-12

Scott Aitken	801-489-3027	801-491-9367
Contact Name	Phone Number	Fax Number

South Utah Valley Solid Waste District
Company Name

2450 West 400 South
Street Address

Springville, UT 84663
City, State, Zip

Project Name | Site Location

Sample ID	Date Collected	Time	Matrix	Lab ID	Preservation Code	Number of Containers	Container Size	Ammonia 4500NH3G, COD 8000	Nitrate 352.1, TDS 2540C	TOC 415.1	Ph 4500(H+)B, Chloride 4500 (Cl-), Sulfate D-516 (02), Carbonate/Bicarbonate 2320B	EDB/DBCP 504.1	VOC 8260B	Ca, Fe, Mg, Mn, K, Na, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, V, Zn 200.7 Hg 245.1		Comments
DMW 9	10/18/12	10:57	Water	297073A	4	1	1L	√								
		10:58	Water	297073B	1	1	500		√							
		10:59	Water	297073C	5	3	40			√						
		10:47	Water	297073D	1	1	1L				√					
		11:01	Water	297073E/H	6	3	40					√				
		11:03	Water	297073F/H	3	2	40						√			
		10:53	Water	297073I	2	1	500							√		

Analysis Request

Preservation Code

1 = 4°C
2 = HNO_3
3 = HCl
4 = H_2SO_4
5 = H_3PO_4
6 = $Na_2S_2O_3$

Special Instructions / Comments

Report as Email + Hard Copy

Route Results Through: saitken@suvswd.org

	(1)	(2)
Relinquished By	D. P.	
Date / Time	10/18 2:18	
Company	SUVSWD	
Received By		
Date / Time	10/19/12 14:18	
Company		

Sampler Initials: D.P.

Method of Shipment: HAND CARRY USPS FEDX UPS

CoC Seal Intact? Yes No

Enviropro Laboratories

2712 South 3600 West, Suite E
West Valley City, UT 84119
Phone: (801) 964-2511 • Fax: (801) 964-2721
www.enviroprolabs.com

Analytical Test Results

South Utah Valley Solid Waste
Scott Aitken
P.O. Box 507
Springville, UT 84663-0507

PO# / Project Name: Bayview

Date / Time Received: 10/24/2012 9:27
Date Reported: 11/9/2012

Sample Name: DMW6 **Lab ID#: 298001A**
Collection Began: Not Applicable **Collection Completed:** 10/24/2012 7:39 **Matrix:** Water

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Ammonia (NH3-N), Direct ISE	4500(NH3)E	10/25/2012 10:55	0.2	mg/L	<0.2	SI
Chemical Oxygen Demand	8000	10/24/2012 17:39	10	mg/L	11	SI

Sample Name: DMW6 **Lab ID#: 298001B**
Collection Began: Not Applicable **Collection Completed:** 10/24/2012 7:39 **Matrix:** Water

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Nitrate (NO3-N)	352.1	10/25/2012 11:55	0.2	mg/L	1.10	SI
Total Dissolved Solids (TDS)	2540C	10/26/2012 14:23	20	mg/L	430	SI

Sample Name: DMW6 **Lab ID#: 298001C**
Collection Began: Not Applicable **Collection Completed:** 10/24/2012 7:39 **Matrix:** Water

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Total Organic Carbon (TOC)	SM5310B	10/29/2012 15:39	1	mg/L	1.06	S2

Sample Name: DMW6 **Lab ID#: 298001D**
Collection Began: Not Applicable **Collection Completed:** 10/24/2012 7:39 **Matrix:** Water

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Bicarbonate (as CaCO3)	2320B	11/6/2012	1	mg/L	137	
Carbonate (as CaCO3)	2320B	11/6/2012	1	mg/L	<1	
Chloride	4500 (Cl-)	10/31/2012	2	mg/L	93.9	
pH Units	4500(H+)B	10/24/2012 15:50		pH	7.6@20°C	
Sulfate	D-516 (02)	10/30/2012	5	mg/L	70.0	

Sample Name: DMW6 **Lab ID#: 298001E**
Collection Began: Not Applicable **Collection Completed:** 10/24/2012 7:39 **Matrix:** Water

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
1,2-Dibromo-3-Chloropropane	504.1	10/30/2012 11:40	0.0105	µg/L	<0.0105	S2
1,2-Dibromoethane	504.1	10/30/2012 11:40	0.0105	µg/L	<0.0105	S2

Sample Name: DMW6 **Lab ID#:** 298001G

Collection Began: Not Applicable **Collection Completed:** 10/24/2012 7:39 **Matrix:** Water

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Volatiles Prep	5030A	11/1/2012				
1,1,1,2-Tetrachloroethane	8260B	11/1/2012	0.005	mg/L	<0.005	
1,1,1-Trichloroethane	8260B	11/1/2012	0.005	mg/L	<0.005	
1,1,2,2-Tetrachloroethane	8260B	11/1/2012	0.005	mg/L	<0.005	
1,1,2-Trichloroethane	8260B	11/1/2012	0.005	mg/L	<0.005	
1,1,2-Tnchlorotrifluoroethane	8260B	11/1/2012	0.005	mg/L	<0.005	
1,1-Dichloroethane	8260B	11/1/2012	0.005	mg/L	<0.005	
1,1-Dichloroethene	8260B	11/1/2012	0.005	mg/L	<0.005	
1,1-Dichloropropene	8260B	11/1/2012	0.005	mg/L	<0.005	
1,2,3-Trichlorobenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
1,2,3-Trichloropropane	8260B	11/1/2012	0.005	mg/L	<0.005	
1,2,4-Trichlorobenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
1,2,4-Trimethylbenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
1,2-Dichlorobenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
1,2-Dichloroethane	8260B	11/1/2012	0.005	mg/L	<0.005	
1,2-Dichloropropane	8260B	11/1/2012	0.005	mg/L	<0.005	
1,3,5-Trimethylbenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
1,3-Dichlorobenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
1,3-Dichloropropane	8260B	11/1/2012	0.005	mg/L	<0.005	
1,4-Dichlorobenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
2,2-Dichloropropane	8260B	11/1/2012	0.005	mg/L	<0.005	
2-Butanone(MEK)	8260B	11/1/2012	0.01	mg/L	<0.01	
2-Chlorotoluene	8260B	11/1/2012	0.005	mg/L	<0.005	
2-Nitropropane	8260B	11/1/2012	0.005	mg/L	<0.005	
4-Chlorotoluene	8260B	11/1/2012	0.005	mg/L	<0.005	
4-Methyl 2-pentanone (MIBK)	8260B	11/1/2012	0.02	mg/L	<0.02	
Acetone	8260B	11/1/2012	0.02	mg/L	<0.02	
Benzene	8260B	11/1/2012	0.005	mg/L	<0.005	
Bromobenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
Bromochloromethane	8260B	11/1/2012	0.005	mg/L	<0.005	
Bromodichloromethane	8260B	11/1/2012	0.005	mg/L	<0.005	
Bromoform	8260B	11/1/2012	0.005	mg/L	<0.005	
Bromomethane	8260B	11/1/2012	0.005	mg/L	<0.005	
Carbon Disulfide	8260B	11/1/2012	0.005	mg/L	<0.005	
Carbon Tetrachloride	8260B	11/1/2012	0.005	mg/L	<0.005	
Chlorobenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
Chloroethane	8260B	11/1/2012	0.005	mg/L	<0.005	UJ
Chloroform	8260B	11/1/2012	0.005	mg/L	<0.005	
Chloromethane	8260B	11/1/2012	0.005	mg/L	<0.005	
cis-1,2-Dichloroethene	8260B	11/1/2012	0.005	mg/L	<0.005	
Cyclohexanone	8260B	11/1/2012	0.01	mg/L	<0.01	
Dibromochloromethane	8260B	11/1/2012	0.005	mg/L	<0.005	
Dibromomethane	8260B	11/1/2012	0.005	mg/L	<0.005	
Dichlorodifluoromethane	8260B	11/1/2012	0.005	mg/L	<0.005	
Ethyl Acetate	8260B	11/1/2012	0.02	mg/L	<0.02	
Ethyl Ether	8260B	11/1/2012	0.01	mg/L	<0.01	
Ethylbenzene	8260B	11/1/2012	0.005	mg/L	<0.005	

Sample Name: DMW6 **Lab ID#: 298001G**

Collection Began: Not Applicable **Collection Completed:** 10/24/2012 7:39 **Matrix:** Water

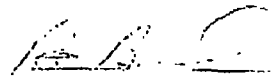
Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Hexachlorobutadiene	8260B	11/1/2012	0.005	mg/L	<0.005	
Isopropylbenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
m,p-Xylenes	8260B	11/1/2012	0.005	mg/L	<0.005	
Methylene Chloride	8260B	11/1/2012	0.01	mg/L	<0.01	
MTBE	8260B	11/1/2012	0.005	mg/L	<0.005	
Naphthalene	8260B	11/1/2012	0.01	mg/L	<0.01	
n-Butylbenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
n-Propylbenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
o-Xylene	8260B	11/1/2012	0.005	mg/L	<0.005	
p-Isopropyltoluene	8260B	11/1/2012	0.005	mg/L	<0.005	
sec-Butylbenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
Styrene	8260B	11/1/2012	0.005	mg/L	<0.005	
Tert-Butylbenzene	8260B	11/1/2012	0.005	mg/L	<0.005	
Tetrachloroethylene	8260B	11/1/2012	0.005	mg/L	<0.005	
Toluene	8260B	11/1/2012	0.005	mg/L	<0.005	
trans-1,2-Dichloroethene	8260B	11/1/2012	0.005	mg/L	<0.005	
Trichloroethene	8260B	11/1/2012	0.005	mg/L	<0.005	
Trichlorofluoromethane	8260B	11/1/2012	0.005	mg/L	<0.005	
Vinyl Chloride	8260B	11/1/2012	0.005	mg/L	<0.005	

Sample Name: DMW6 **Lab ID#: 298001I**

Collection Began: Not Applicable **Collection Completed:** 10/24/2012 7:39 **Matrix:** Water

Parameter	Method	Analysis Date / Time	MRL	Units	Results	Flags
Antimony	200.8	11/1/2012	0.1	µg/L	**0.38**	
Arsenic	200.8	11/1/2012	1	µg/L	**17.9**	
Barium	200.7	10/31/2012	0.005	mg/L	**0.047**	Jhi
Beryllium	200.8	11/1/2012	0.5	µg/L	<0.5	UJ
Cadmium	200.8	11/1/2012	0.5	µg/L	<0.5	
Calcium	200.7	11/8/2012	0.05	mg/L	**22.8**	Jhi
Chromium	200.7	10/31/2012	0.01	mg/L	<0.01	
Cobalt	200.7	10/31/2012	0.05	mg/L	<0.05	
Copper	200.7	10/31/2012	0.05	mg/L	<0.05	
Iron	200.7	10/31/2012	0.02	mg/L	**0.037**	Jhi
Lead	200.8	11/1/2012	1	µg/L	**1.52**	
Magnesium	200.7	11/8/2012	0.05	mg/L	**9.54**	
Manganese	200.7	10/31/2012	0.01	mg/L	<0.01	
Mercury	245.1	11/7/2012	0.0002	mg/L	<0.0002	
Nickel	200.7	10/31/2012	0.05	mg/L	<0.05	
Potassium	200.7	11/8/2012	0.2	mg/L	**5.80**	
Selenium	200.8	11/1/2012	2	µg/L	**2.39**	
Silver	200.7	10/31/2012	0.01	mg/L	<0.01	
Sodium	200.7	11/8/2012	1	mg/L	**122**	Jhi
Thallium	200.8	11/1/2012	0.2	µg/L	<0.2	
Vanadium	200.7	10/31/2012	0.05	mg/L	<0.05	
Zinc	200.7	10/31/2012	0.05	mg/L	<0.05	

Reviewed by:



Roy Breslawski, Laboratory Manager

Comments:

Flags:

S1	Subcontracted to Timpview Analytical
S2	Subcontracted to American West Analytical Laboratories
Jhi	Estimated Value. Result may be biased high. Spike or Surrogate recovery above QC limits.
UJ	Analyte not detected. Spike or surrogate recovery below limits.

ENVIROPRO LABORATORIES

www.enviroprolabs.com

2712 South 3600 West, Sui
West Valley City, UT 84
Phone: 801-964-2
Fax: 801-964-2

Chain of Custody Record

Date: 10-24-12

Scott Aitken	801-489-3027	801-491-9367
Contact Name	Phone Number	Fax Number
South Utah Valley Solid Waste District		
Company Name		
2450 West 400 South		
Street Address		
Springville, UT 84663		
City, State, Zip		
Dayium	Elberta, ut	
Project Name	Site Location	

Preservation Code

1 = 4°C
2 = HNO_3
3 = HCl
4 = H_2SO_4
5 = H_3PO_4
6 = $Na_2S_2O_3$

Sample ID	Date Collected	Time	Matrix	Lab ID	Preservation Code	Number of Containers	Container Size	Ammonia 4500NH3G, COD 8000	Nitrate 352.1, TDS 2540C	TOC 415.1	Ph 4500(H+)B, Chloride 4500 (Cl-), Sulfate D-516 (02), Carbonate/Bicarbonate 2320B	EDB/DBCP 504.1	VOC 8260B	Ca, Fe, Mg, Mn, K, Na, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, V, Zn 200.7 Hg 245.1		Comments
DMW 6	7:34-7:46		Water	2980001A	4	1	1L	√								
	7:44 7:48		Water	2980001B	1	1	500		√							
	7:56-7:57		Water	2980001C	5	3	40			√						
	[illegible]		Water	2980001D	1	1	1L				√					
	7:53 7:56		Water	2980001E	6	3	40					√				
	[illegible]		Water	2980001G	3	2	40						√			
	7:45 7:52		Water	2980001F	2	1	500							√		

Special Instructions / Comments

Route Results Through: saitken@suvswd.org

(1) Relinquished By: [signature]	(2) Relinquished By	Sampler Initials: D.P.
(1) Date / Time: 10-24-12 9:27	(2) Date / Time	Method of Shipment
(1) Company: SUVSWD	(2) Company	HAND CARRY USPS FEDX UPS
(1) Received By: [signature]	(2) Received By	CoC
(1) Date / Time: 10/24/12 9:27	(2) Date / Time	Seal Intact?
(1) Company: Enviropro	(2) Company	Yes No

Note: DMW #6 we lengthened the pump hose 18" to place the pump into the water column - water level has dropped and the pump was not correctly pumping.

GROUNDWATER MONITORING PROGRAM
BAYVIEW MUNICIPAL SOLID WASTE LANDFILL
SOUTH UTAH VALLEY SOLID WASTE DISTRICT

DATE: 10-18-2012
SAMPLED BY: Scott Aitken
RECORDED BY:
WEATHER: clear / cool

Well Number	Depth of Well (feet)	Depth to Water (feet)	Temp @ X F	pH	Conductivity	Comments
DMW1	300					
DMW2	276					
DMW3	309	255	13.27	8.4	623.4	clear / cool
DMW4	185					
DMW5	210					
DMW6	168	159	13.60	8.19	745.8	clear / cool
DMW7	283	271.5	12.52	8.58	795	clear / cool
DMW8	270	255.4	13.25	8.45	369	clear / cool
DMW9	287.10		13.79	8.41	409	clear / cool