Environmental Sciences -FINAL

Town of Weymouth, Massachusetts

Habitat Study of Whitman's Pond



Submitted by:

BETA

BETA Group, Inc.

1420 Providence Highway
Suite 117
Norwood, MA. 02062
718-255-1982
beta@beta-inc.com

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1 INTRODUCTION

1.1 Purpose

Beta Engineering (BETA) has been contracted to evaluate habitat and water quality conditions of Whitman's Pond located in Weymouth, Massachusetts. The purpose of this study was to evaluate the water quality and trophic condition of the three (3) basins of Whitman's Pond and to provide the Town of Weymouth with recommendations for future efforts. The tasks included the following:

- Evaluation of water quality [pH, specific conductance, temperature, dissolved oxygen, total Kjeldahl nitrogen (TKN), total phosphorus, and total metals (including antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, magnesium, manganese, mercury, nickel, selenium, silver, thallium, and zinc)].

- Evaluation of sediment quality [Kjeldahl nitrogen (TKN), total phosphorus, and total metals (including arsenic, barium, cadmium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, silver, thallium, and zinc)].

- Survey macrophytic vegetation and algal blooms.

- Evaluation of fish habitat and spawning areas.

Based upon the results of these investigations, comparisons to results obtained during previous studies conducted by others in the 1980's and 1990's were made. The goal was to see whether any changes or trends in water quality, sediment quality, vegetation or fish habitat were evident.

2 SITE DESCRIPTION

2.1 Location and Description

The Site is known as Whitman's Pond in Weymouth, Massachusetts. Please refer to the attached USGS Locus Map (Figure 1) for the Site location. Whitman's Pond has a surface area of approximately 210 acres (Metcalf & Eddy, 1983). The Pond is comprised of three basins: the Main Basin, the South Basin and the West Basin. According the USGS Locus Map (1987 Weymouth, MA Quadrangle – 7.5 x 15 minute) of the Site, the Mill River and Old Swamp River are the two major tributaries that drain into Whitman's Pond. In addition, a small un-named stream drains into the northwest corner of the western basin. Whitman's Pond watershed area consists of approximately 13 sq. mi. (8320 acres). It lies entirely within the Weymouth and Weir Watersheds (DEP, 1998).

The Mill River and Old Swamp River are currently listed by the Massachusetts Department of Environmental Protection (DEP) as Section 303d waters, with degraded water quality. The Back River, the only outlet of Whitman's Pond, is listed as a Section 303d water body as well. Pollutants of concern include organic enrichment, low dissolved oxygen, pathogenic organisms and noxious plants. Section 303d waters have been targeted by the DEP and the Environmental protection Agency (EPA) as not meeting the standards or uses for which they are intended, and are priorities for cleanup.

2.2 Pond Uses

Whitman's Pond is an important resource to the Town of Weymouth. The Town of Weymouth uses the South Basin of the Pond as a source of drinking water. When needed, water is pumped into Great Pond located approximately 2.5 miles southwest of Whitman's Pond. Water from Great Pond is then treated and distributed through the municipal water supply system.

In addition to providing a source of drinking water, Whitman's Pond is utilized for recreational purposes. The public uses the pond for fishing, swimming, boating, bird watching, and ice-skating. A public beach is located on the north shore of the pond and is accessible by Lake Street. A boat launch is located on the western shore and is accessible by Middle Street. Residential boating and swimming docks are located in the pond as well. Most of the land along the banks of the Pond consist of residential lots and municipal roads.

Whitman's Pond is the second largest spawning ground on the eastern seaboard for *Alosa pseudoharengus*, a species of herring. These fish migrate to Whitman's Pond from Hingham Bay each spring via fish ladders along Weymouth's Back River. The Pond is also stocked each spring with rainbow trout by the Massachusetts Division of Fish and Wildlife.



Legend

Area Location

Site Location

NOT TO SCALE

Source: MAGIS and USGS

Whitman's Pond
Weymouth, MA

Figure 1
USGS Locus Map

BETA Group, Inc.

3 HISTORICAL REFERENCES

Several research reports on Whitman's Pond were prepared for the Town of Weymouth during the 1980's and 1990's. BETA has incorporated applicable data and information into this report.

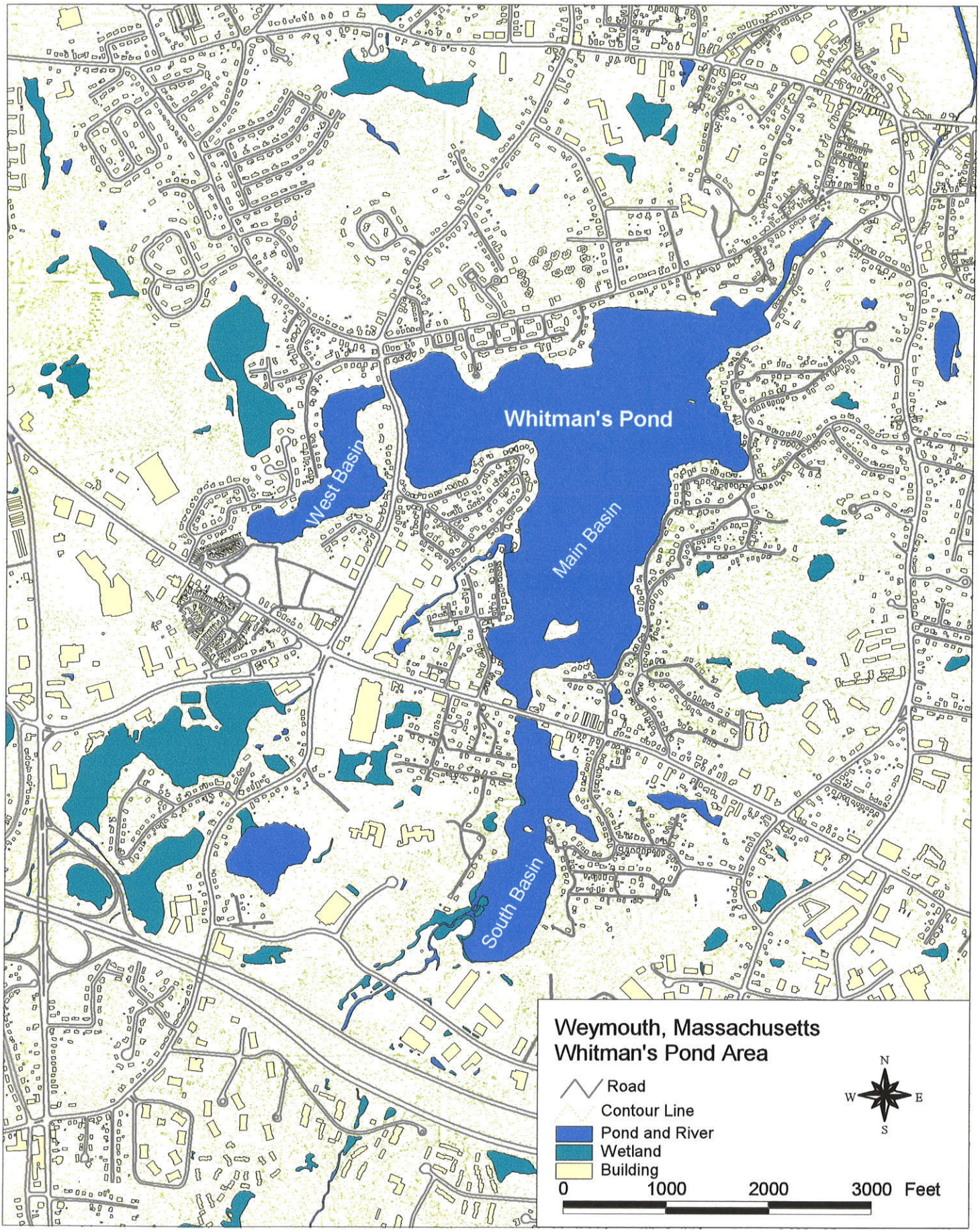
A report entitled "Diagnostic Study" was completed by the Massachusetts Department of Environmental Quality Engineering-Division of Water Pollution Control during April 1980 and March 1981. The purpose of this report was to preclude a feasibility study to be performed by Metcalf and Eddy, Inc. This report concluded that the accelerated eutrophication of Whitman's Pond potentially could be abated by controlling nutrient loading into the pond.

In May 1983, a report entitled "Feasibility Study of Lake Restoration for Whitman's Pond" was submitted to Massachusetts Department of Environmental Quality Engineering Division of Pollution Control by Metcalf and Eddy, Inc. This report included an assessment of conditions, assessment of alternatives, and a recommended restoration plan.

In February 1997, a report entitled "Diagnostic Feasibility Study - Western Basin Whitman's Pond was submitted by Lycott Environmental, Inc. The purpose of this report was to evaluate the in-lake water quality, the storm water quality, and the current level of eutrophication in the western basin. In addition, the use of herbicides was explored and a management plan was proposed for the maintenance of the basin.

In February 1998, Ambient Engineering, Inc. prepared a report regarding the water quality of the West and South Basins of the Pond. The report concluded that the "Restorer", an artificial water quality enhancement system, was effective in reducing the levels of nutrients in sediment and surface water in its vicinity, and also reduced the levels of fecal coliform in the Pond. The Report also included recommendations for additional investigations.

The abovementioned reports are referenced in the following discussion in order to compare limnological characteristics, water quality trends and to allow comprehensive recommendations to be made.


Whitman's Pond
West Basin
Main Basin
South Basin
Weymouth, Massachusetts
Whitman's Pond Area
Road
Contour Line
Pond and River
Wetland
Building
N
W
E
S
0
1000
2000
3000 Feet

4 LIMNOLOGICAL DATA

4.1 Temperature

In lake systems, retention of heat is determined by wind energy, seasonal variations, currents and water movement, basin morphometry, and water losses. Many lakes (typically those greater than 30 feet deep) will experience thermal stratification. Thermal stratification generally is greatest during the summer due to solar radiation heating the water surface more rapidly than heat is distributed by mixing. During these warmer months the epilimnion (warmer zone) separates from the hypolimnion (cooler zone) due to varying densities. In the fall, when temperature drops, the epilimnion cools, the pond turns over, and the temperature becomes constant.

Temperature is important because many aquatic organisms are sensitive to warmer temperatures. Higher temperatures also increase the solubility of contaminants in suspended solids and sediments in the pond water. In addition the solubility of oxygen is lower in warmer waters. Therefore, temperature is a limiting factor for oxygen supply (see "Dissolved Oxygen" discussion below).

Sources for thermal input include stormwater runoff carrying heated surface water from impervious areas. In addition, ponds and streams such as Whitman's Pond with excessive amounts of suspended solids are darker and therefore, more susceptible to solar heating.

Temperature in Whitman's Pond was measured in the field with a Hach Dissolved Oxygen/Temperature Probe and Sension™6 Dissolved Oxygen/Temperature Meter. On July 28, 2000, surface temperature in Whitman's Pond ranged from 17.1°C and 21.2°C. On August 18, 2000, surface temperatures ranged from 20.2°C to 23.2°C. Temperature was also measured at multiple depths at sample locations 1 and 1A, the deepest section of the Pond. Temperature stratification was noted at sample location 1 with a temperature of 21.3°C at the surface and 14.6°C at approximately 6.5 meters below the surface.

On September 21, 2000, the surface temperature ranged from 20.1°C to 28.0°C. At sample location 1 the temperature at approximately 6.5 meters was 20.6°C. Sample location 1 is one of the deeper sampling locations of the Pond. From these readings, it appears that during the September sampling the hypolimnion and the epilimnion were mixing and temperature was reaching equilibrium. This appears to be consistent with temperature readings taken in September 1980, although each year temperatures fluctuate based upon the weather.

4.2 Dissolved Oxygen

Dissolved oxygen is necessary for aquatic plant and animal life. Levels of dissolved oxygen in a pond or lake is an indication of the extent of eutrophication. Oxygen enters a water body as a by-product of photosynthesis from aquatic macrophytes and phytoplankton. In addition, oxygen is dissolved at the air/water interface. Anoxic (low oxygen) conditions occur when the biological oxygen demand is greater than the oxygen input. A contributing factor to this condition is the presence of dense vegetation in the pond preventing mixing of the epilimnion and hypolimnion, and decaying organic matter in the sediment which depletes the dissolved oxygen. The result of extended periods of anoxic conditions results in eutrophication. Additionally, the distribution of dissolved oxygen in the water column corresponds to the ability

of the pond to support aquatic life. Low oxygen levels in the hypolimnion are usually detrimental to supporting fish populations.

Dissolved oxygen was measured in the field with a Hach Dissolved Oxygen/Temperature Probe and Sension™6 Dissolved Oxygen/Temperature Meter. On July 28, dissolved oxygen at the surface (0-4 feet) ranged from 1.6 mg/L to 7.1 mg/L. In most areas, sufficient concentrations of dissolved oxygen were noted in the epilimnetic layers to support fish populations and aquatic life.

On August 18, 2000, dissolved oxygen levels were monitored again in the deeper portions of the pond and hypolimnetic concentrations ranged from 0.0 mg/L and 0.3 mg/L. At these same sampling locations, the dissolved oxygen levels at 3.5 meters were 7.5 mg/L and 5.2 mg/L, respectively. Levels at or below 4 mg/L are too low to support fish populations, with levels around 7 mg/L preferred. Based on this standard, several areas in Whitman's Pond experience anoxic conditions during the summer months. Concentrations appeared to be consistent with dissolved oxygen readings taken at similar times of the year during the study performed in 1980. The lowest levels of dissolved oxygen occur during July and August, when organic matter decomposition rates are highest, and aquatic plants block sunlight penetration to deeper depths.

4.3 Total Nitrogen

Nitrogen may enter a lake or pond in many forms: dissolved N_2, nitric acid, NH_4^+, and NO_3^-, as NH_4^+ adsorbed to inorganic particulate matter, and as organic compounds. Sources of nutrient loading in a lake or pond typically include stormwater and agricultural runoff, fertilizers from adjacent yards, sewage and industrial wastes, and atmospheric pollutants. In addition, bodies of water that have wetland areas associated with them will have an increase in nitrogen due to decomposition of herbaceous plants and direct leaf fall in the autumn.

Water and sediment in Whitman's Pond was analyzed for total Kjeldahl nitrogen (TKN). TKN is the sum of organic nitrogen and ammonia-nitrogen present. Nitrogen levels in the water of Whitman's Pond varied from 0.3 mg/L to 9.2 mg/L. Elevated levels were noted at sample locations 11, 4 and 7. Nitrogen levels in Whitman's Pond are considered eutrophic to hyper-eutrophic, indicating that they contribute to rapid "aging" of the Pond, and impair water quality.

Sediment in Whitman's Pond was also analyzed for TKN. TKN concentration in sediment ranged from not detected (ND) to 38,000 mg/kg. The lower concentrations were noted in sample locations were the bottom of the pond was noted to be rocky. In some cases concentrations at sample locations varied greatly between the two sampling events. It is likely that the inconsistency is due to the amount of stones included in the sample. The average concentration of TKN during the July and September sampling events were 6,236 mg/kg and 7,206 mg./kg, respectively, which indicate significant quantities of nitrogen in the sediment.

4.4 Total Phosphorus

Phosphorus is present in lakes as both inorganic (Po_4^{---}) and organic phosphates. Organic phosphates originate primarily from organic matter in and around a water body. Inorganic phosphates are generally from synthetic detergents and enter lakes and ponds in stormwater runoff, and leachate from septic systems and dry wells. Phosphorus tends to accumulate in sediments due to its affinity for colloids and organic matter.

Of the myriad of substances that enter a lake or pond from the surrounding watershed, phosphorus is often of primary concern. All lakes have the ability to adsorb some phosphorus before experiencing a negative impact. However, when the levels become excessive, phosphorus can cause algae to flourish. As a result of the decomposition of algae, the concentration of dissolved oxygen decreases causing anoxic conditions, and lowering fish and aquatic habitat values.

Total phosphorus levels in the water of Whitman's Pond ranged from .01 mg/L to 1.10 mg/L. Elevated levels of phosphorus were noted in both sampling rounds at sample locations 4, 7 and 10. These locations were noted to have elevated levels of total phosphorus during previous studies (Metcalf and Eddy, 1983) as well. Based on EPA guidelines, and this years phosphorus levels, Whitman's Pond average phosphorus levels are considered eutrophic, and indicate an accelerated "aging" rate, and a rapid buildup of organic matter.

Sediment in Whitman's Pond was also analyzed for total phosphorus. Total phosphorus levels in the sediment ranged from not detected to 14,000 mg/kg. As expected, those samples collected from locations with sediments that were organic in nature (sample locations 1 and 3), contained the highest levels of phosphorus. The average phosphorus concentrations from the July and September sampling rounds were 1,094 mg/kg and 2,185 mg/kg, respectively, which indicate significant quantities of phosphorus exist in the sediment.

4.5 PH

Generally, the pH of water reflects the pH of the soils that it is associated with. However, when influenced by urban runoff, the pH in a pond or lake may be altered. For example, nutrient loading can cause an increase in algal blooms that, in turn, increases the water pH due to the release of hydroxyl ions from algae. An increase in pH can cause ammonia to be more toxic to aquatic organisms. Conversely, a low pH increases the solubility of heavy metals releasing them to the food chain. The pH of rainfall is typically more acidic than in pond conditions. Therefore, precipitation often causes lower pH values in water bodies.

The pH in Whitman's Pond ranged from 5.9 (logarithmic units) to 7.7. During both sampling events, the pH was lowest at sample location 4. Sample location 4 is located in a marsh at the southern end of the South Basin at the mouth of the Old Swamp River. The low pH in this area is indicative of the anoxic conditions resulting from the accumulation of decomposing organic matter. It is also possible that surface water from the Old Swamp River has an affect on the pH. The overall pH of Whitman's Pond was lower during the July sampling round. It is possible that the rainy conditions during the month of July caused this acidic condition since rainwater tends to be more acidic (lower pH) than typical pond conditions (Appendix E). In addition, the increase in surface water entering the pond during such rainy conditions may have caused a decrease in the overall pH of the Pond.

4.6 Specific Conductance

Specific conductance is a measurement of dissolved ions in the pond water and is an indication of the trophic status of the pond. In fresh water, this reading can also be defined as a reading of salinity. High specific conductance can cause some freshwater organisms to "dry out". A reading of 100 micromhos or less is considered excellent water quality.

Specific conductance in Whitman's Pond ranged from 200 micromhos to 300 micromhos. Highest readings were noted at inlet sample locations 5, 6, and 9. Sample locations 5 and 6 are inlets into the main basin and sample location 9 is an inlet to the western basin. Compared to readings taken during July and September in 1980, specific conductance in Whitman's Pond was high, indicating an accelerated "aging" rate of the Pond. Conductivity values typically increase with warmer temperature, however based on temperature data, a notable increase in conductivity was not observed. However, when compared to rainfall data, both sampling events were performed within 48 hours of a storm event (Appendix C). Rainfall can cause an increase in conductivity through runoff inputs and atmospheric deposition.

4.7 Total Metals

Metals are naturally occurring and are by-products of industrial processes. Some industrial activities have occurred on the banks of Whitman's Pond in the past. High concentrations of metals are often found in the runoff from industrial and urbanized areas. The runoff enters streams and ponds and the metals often accumulate in the sediments through precipitation and deposition processes.

Many aquatic plants and animals are sensitive to soluble metals, even at concentrations in the range of parts per billion. However, the solubility of many metals is low at normal pH levels. Therefore high concentrations of dissolved metals are usually associated with a low pH (acidic) or with excessive loading from industrial runoff. To monitor metal loading, water samples are analyzed for total metals in order to measure both dissolved metals and those metals associated with suspended solids in water samples. Water samples were analyzed for antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, magnesium, mercury, nickel, selenium, silver, thallium, and zinc.

When compared to the EPA National Primary and Secondary Drinking Water Standards, water samples from Whitman's Pond were noted to contain elevated concentrations of lead, iron, and manganese. Lead, iron and manganese are often water quality issues in this region due to their existence in the bedrock and soils of the area.

Water Quality

Lead concentrations ranged from not detected (ND) to 0.06 mg/L. Concentrations at sample locations 4, 6, and 11 were noted to exceed the primary drinking water standard (0.015 mg/L). Lead is one of the most common priority pollutants found in urban runoff. Levels of 0.05 mg/L, 0.06 mg/L and 0.04 mg/L were measured at these locations. These levels are above chronic levels (0.0013 mg/L) which cause stress to certain fish (EPA, 1984). In other samples obtained during the study, lead was not detected.

Manganese and iron are addressed by the National Secondary Drinking Water Standards. These standards are not enforced and are considered recommended levels based on color, odor, and taste considerations, with minimal impacts upon health. Manganese concentrations ranged from 0.16 mg/L to 2.7 mg/L. Manganese levels were highest at sample locations 4 and 7. Manganese is a concern in drinking water primarily due to its potential to stain laundry, discolor water, and create a bad taste. It poses no health risk or impacts to aquatic life at these levels.

Iron concentrations ranged from 0.44 mg/L to 8.6 mg/L. Iron concentrations were highest at sample locations 4, 6, and 11. Iron causes water to appear a rusty red color, stains sediment, and creates a metallic taste. It poses no health risk or impacts to aquatic life at these levels.

Sediment Quality

Sediment samples were analyzed for antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, magnesium, mercury, nickel, selenium, silver, thallium, and zinc. Elevated levels of arsenic, beryllium, and lead were noted, and exceeded reportable concentrations of the Massachusetts Contingency Plan 310 CMR 40.0985, Soil Category S-1.

Arsenic concentrations ranged from 0.9 mg/kg to 37.0 mg/kg. The only sample that exceeded the MCP Standard was sample location 1. Common sources of arsenic include the pesticide lead arsenate, wood preservatives and from lead soldering.

Beryllium concentrations ranged from not detected to 6.2 mg/kg. Elevated levels were noted at sample locations 1, 1A, 2, 3, 4, 5, and 11 the highest concentration noted at sample location 1. While not a typical contaminant in storm water runoff or pond sediments, sources of beryllium include numerous military activities, including aircraft construction, rocket propellants and jet fuels.

Lead concentrations ranged from 15 mg/kg to 1,400 mg/kg. Elevated levels were noted in all sample locations except for locations 7 and 9. The highest concentration was at sample location 1, the deepest section of the Pond. Sediments in the Pond likely exhibit elevated levels of lead due to the historical use of leaded gasoline, and the presence of lead in the soils and bedrock of the area. Leaded gasoline historically resulted in lead build-up on roadways, where it was carried into water bodies by storm water runoff, and settled into the sediments. In urban areas, lead is a common contaminant in sediment of lakes and ponds. Water resources, which have undeveloped watersheds, are usually less likely to have lead contaminant issues in sediment.

Lead bio-accumulates in organisms of the ecosystem, making it especially toxic. Excessive levels of lead in sediment often impacts the neurological systems of bottom dwelling organisms and wildlife.

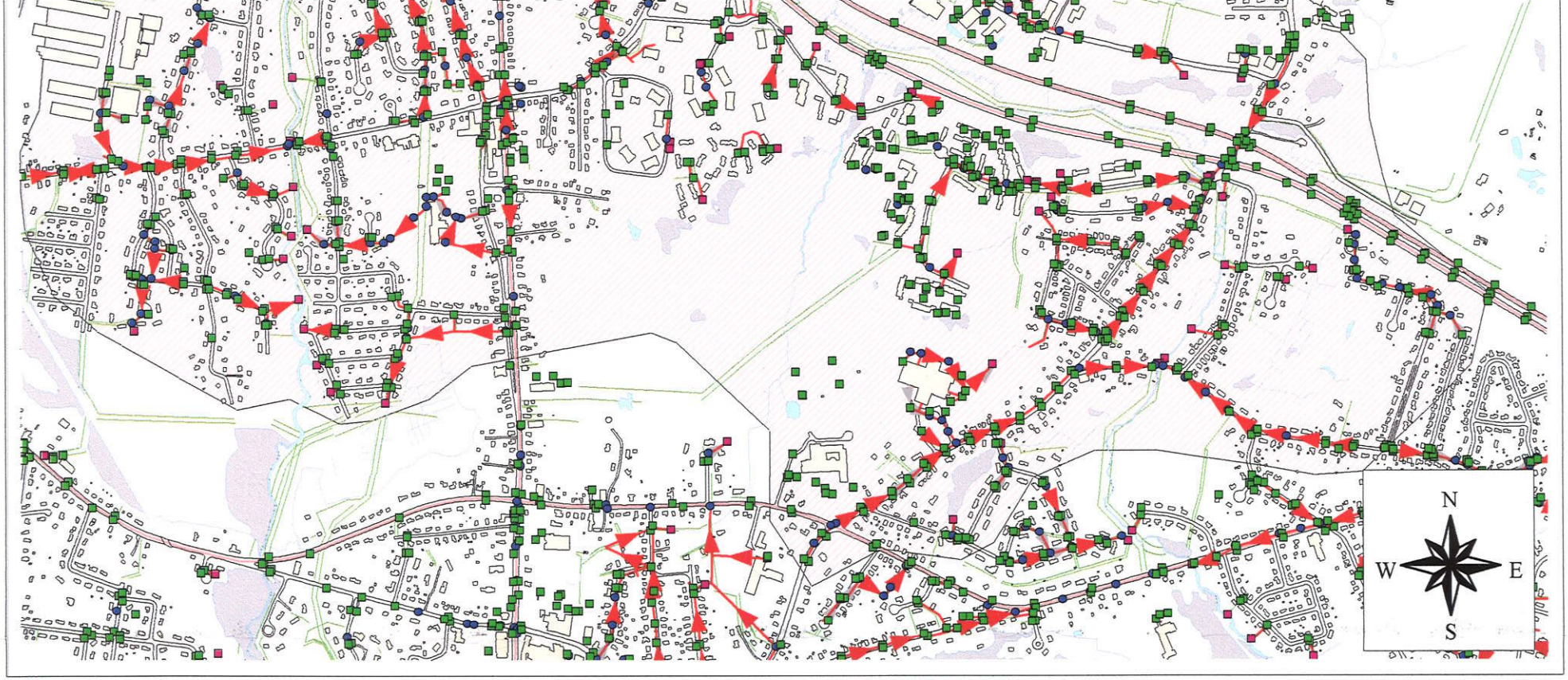


Figure 10
Whitman's Pond Area
Storm Drainage System

Structures
- Catch Basin
- Drain Manhole
- WP Outfalls
- Complete Outfalls
- Weymouth Pipes
- Drainpip
- Town Roads
- State Roads
- Stream
- Building

Pond
- POND
- RIVER
- UPLAND
- WETAREA
- Right of Way
- WP Drainage Watershed

BETA Group, Inc.
Engineers • Scientists • Planners
315 Norwood Park South Norwood, MA 02062 781.255.1982
6 Blackstone Valley Place, Lincoln, RI
email: beta@beta-inc.com

Temperature - Water (Degrees C)

Location	Depth (m)	1980																1981				2000			AVE[4]	MAX[4]
		4/14	4/30	5/12	5/22	6/11	6/25	7/7	7/21	8/4	8/19	9/2	9/23	10/6	10/20	11/19	12/15	1/12	2/9	3/16	3/30	7/28	8/18	9/21		
1	0.5	----	12.0	14.0	----	18	25	22.7	27.0	28.9	22.0	25.0	22.5	16	14	----	----	----	5.0	4.0	7.5	21.1	21.3	20.8	17.0	28.9
	2	----	11.5	14.0	----	18	22	22.7	26.5	28.6	22.0	25.0	21	16	14	----	----	----	4.5	4.0	7.0	----	----	----	16.7	28.6
	3.5	----	11.5	13.5	----	18.0	20.0	22.5	24.0	26.4	22.0	22.5	19	16	13.5	----	----	----	4.5	4.0	7.0	----	19.4	----	16.3	26.4
	5	----	11.5	13.5	----	17.5	16.5	17.8	18.0	25.3	19.0	19.0	19	16	13	----	----	----	4.0	4.0	7.0	----	----	----	14.7	25.3
	5.5-6.5	----	11.0	13.0	----	15.5	13.5	17.2	14.0	23.1	14.5	16.5	18.5	16	13	----	----	----	4.0	4.0	7.0	----	14.6	20.6	13.4	23.1
1A	0.5	----	12.0	14.0	----	18.0	24.5	23.3	28.0	28.9	----	----	----	----	----	----	----	----	----	----	----	21.2	22.3	21.1	21.2	28.9
	3.5	----	11.5	13.5	----	18.0	21.0	21.1	25.0	26.9	----	----	----	----	----	----	----	----	----	----	----	----	21.3	----	19.6	26.9
	4.5-6.5	----	11.0	13.0	----	17.5	15.0	15.6	17.5	25.8	----	----	----	----	----	----	----	----	----	----	----	----	----	21.1	16.5	25.8
2	0.5	----	11.1	13.3	----	16.0	25.0	23.3	30.0	27.8	22.8	25.0	23.9	13.3	14.4	----	----	----	3.0	5.0	9.0	21.1	21.9	21.2	17.5	30.0
3	0.5	----	11.7	13.3	----	18.0	29.5	24.4	28.9	----	21.1	----	----	----	----	----	----	----	3.0	5.0	11.0	21.1	22.0	21.1	16.6	29.5
4	0.5	8.9	11.1	12.5	15.0	13.0	20.0	15.6	----	22.2	18.9	21.7	20	12.2	12.2	3.3	1.7	3.9	0.0	5.0	12.0	17.7	----	28.0	12.1	22.2
5	0.5	11.1	10.0	13.9	18.0	18.0	27.5	23.9	28.9	27.2	22.2	25.0	23.9	13.3	15.6	1.7	3.3	2.2	----	5.0	10.0	17.1	20.2	20.1	15.8	28.9
6	0.5	12.2	12.2	15.0	20.0	11.0	18.9	19.4	28.0	25.6	21.1	25.0	----	----	----	4.4	3.3	----	3.0	4.0	13.0	19.5	----	20.4	14.8	28.0
7	0.5	10.6	12.8	15.5	19.0	17.0	18.3	20.6	----	----	----	----	----	----	----	----	----	----	1.0	5.0	10.5	21.1	23.2	21.2	13.0	20.6
8-2	0.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9.0	9.0	----	----	----	9.0	9.0
9	0.5	10.6	11.1	15.0	18.0	----	----	16.7	----	----	----	----	----	----	----	----	----	----	1.0	5.0	12.0	18.5	----	23.1	11.2	18.0
10	0.5	10.0	11.1	15.5	20.0	16.0	----	23.9	----	----	----	----	----	----	----	3.3	----	----	2.0	5.0	13.0	18.6	21.1	25.4	12.0	23.9
11	0.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	21.1	21.1	20.7	12.0	23.9
AVE[5]		10.6	11.4	13.9	18.3	16.4	20.8	20.7	24.7	26.4	20.6	22.7	21.0	14.9	13.7	3.2	2.8	3.1	2.9	4.9	9.6	19.7	20.7	22.0		
MAX[5]		12.2	12.8	15.5	20.0	18.0	29.5	24.4	30.0	28.9	22.8	25.0	23.9	16.0	15.6	4.4	3.3	3.9	5.0	9.0	13.0	21.2	23.2	28.0		

Notes:

1. ----: Not sampled
2. AVE: average value
3. MAX: maximum value
4. Average and maximum values calculated over time
5. Average and maximum values calculated over sample locations

Dissolved Oxygen - Water (mg/L)

Location	Depth (m)	1980														1981			2000		AVE[4]	MAX[4]
		4/14	4/30	5/12	5/22	6/11	6/25	7/7	7/21	8/4	8/19	9/2	9/23	10/6	10/20	2/9	3/16	3/30	7/28	8/18/00		
1	0.5	----	8.5	9.0	----	8.0	9.6	----	7.8	7.6	8.0	8.8	7.9	8.2	9.9	12.2	12.3	12.1	----	----	9.3	12.3
	2.0	----	----	9.7	----	----	9.2	7.6	7.6	7.3	7.0	7.9	7.3	8.2	10.0	12.1	12.2	12.0	----	----	9.1	12.2
	3.5	----	9.5	9.0	----	7.8	8.2	7.6	5.1	6.0	7.0	5.7	7.4	8.2	10.0	10.6	12.3	12.0	7.7		8.4	12.3
	5	----	8.0	7.8	----	7.6	2.0	1.6	1.3	3.1	4.4	4.7	6.4	7.9	9.6	9.3	12.3	----	----	5.2	6.1	12.3
	5.5-6.5	----	9.6	6.5	----	6.2	0.0	1.0	0.0	0.0	2.6	----	5.9	8.2	9.2	7.3	12.2	12.1	----	0.0	5.4	12.2
	13.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.0	0.0	0.0
1A	0.5	----	6.6	9.8	----	8.4	8.2	7.5	7.5	7.7	----	----	----	----	----	----	----	----	----	----	8.0	9.8
	3.5	----	11.4	9.2	----	----	9.2	6.9	6.4	6.5	----	----	----	----	----	----	----	----	6.0	7.5	7.9	11.4
	4.5-6.5	----	9.7	9.0	----	8.0	1.1	0.0	1.5	2.4	----	----	----	----	----	----	----	----	----	7.5	4.9	9.7
	13.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.3	0.3	0.3
2	0.5	----	6.8	9.0	----	8.3	9.1	8.1	8.8	7.0	7.6	8.3	7.4	8.2	9.8	12.8	12.4	----	5.5	----	8.6	12.8
3	0.5	----	9.3	9.6	----	8.9	7.9	8.6	6.5	----	6.5	----	----	----	----	11.2	12.4	----	5.6	----	8.6	12.4
4	0.5	9.8	10.5	----	10.5	10.0	6.5	7.2	6.1	5.7	8.8	8.2	7.5	7.4	6.4	----	----	----	2.9	----	7.7	10.5
5	0.5	9.5	10.1	----	8.1	8.8	8.9	8.0	7.7	7.2	5.1	8.3	6.5	8.3	9.3	----	----	----	5.3	----	7.9	10.1
6	0.5	9.3	9.4	----	8.1	7.6	4.3	3.0	3.8	----	3.9	5.2	----	----	----	----	----	----	1.6	----	5.6	9.4
7	0.5	10.4	10.9	----	8.6	9.4	7.7	8.0	7.2	----	----	----	----	----	----	----	----	----	3.4	----	8.2	10.9
8-2	0.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.0	0.0
9	0.5	6.3	4.0	----	1.4	----	----	1.0	----	----	----	----	----	----	----	----	----	----	1.8	----	2.9	6.3
10	0.5	9.2	10.0	----	8.6	7.0	----	7.5	----	----	----	----	----	----	----	----	----	----	7.1	----	8.2	10.0
11	0.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6.3	----	6.3	6.3
AVE[5]		9.1	9.0	8.9	7.6	8.2	6.6	5.6	5.5	5.5	6.1	7.1	7.0	8.1	9.3	10.8	12.3	12.1	4.8	3.4		
MAX[5]		10.4	11.4	9.8	10.5	10.0	9.6	8.6	8.8	7.7	8.8	8.8	7.9	8.3	10.0	12.8	12.4	12.1	7.7	7.5		

Notes:
1. ----: Not sampled
2. AVE: average value
3. MAX: maximum value
4. Average and maximum values calculated over time
5. Average and maximum values calculated over sample locations

Total Kjeldahl Nitrogen (TKN) - Water (mg/L)				
Location	7/28/00	9/22/00	AVE[4]	MAX[4]
1	0.7	0.4	0.5	0.7
1A	0.7	0.6	0.6	0.7
2	0.7	0.3	0.5	0.7
3	0.6	0.3	0.4	0.6
4	2.2	9.2	5.7	9.2
5	0.7	0.3	0.5	0.7
6	1.0	1.0	1.0	1.0
7	1.1	2.2	1.7	2.2
8-2	---	---	---	0.0
9	0.8	1.0	0.9	1.0
10	0.7	4.9	2.8	4.9
11	1.9	0.4	1.2	1.9
AVE[5]	1.0	1.9		
MAX[5]	2.2	9.2		

Notes:

1. ----: Not sampled
2. AVE: average value
3. MAX: maximum value
4. Average and maximum values calculated over time
5. Average and maximum values calculated over sample locations

Total Kjeldahl Nitrogen (TKN) - Sediment (mg/kg)				
Location	7/28/00	9/21/00	AVE[4]	MAX[4]
1	5,900	38,000	21,950	38,000
1A	4,500	1,300	2,900	4,500
2	8,500	10,000	9,250	10,000
3	6,800	2,100	4,450	6,800
4	6,200	12,000	9,100	12,000
5	ND	4,600	4,600	4,600
6	7,900	6,200	7,050	7,900
7	420	1,000	710	1,000
8-2	---	---	---	---
9	ND	140	140	140
10	9,000	330	4,665	9,000
11	6,900	3,600	5,250	6,900
AVE[5]	6,236	7,206		
MAX[5]	9,000	38,000		

Notes:

1. ----: Not sampled
2. AVE: average value
3. MAX: maximum value
4. Average and maximum values calculated over time
5. Average and maximum values calculated over sample locations

Phosphorus (total) - Water (mg/L)

Location	Depth (m)	1980																1981				2000		AVE[4]	MAX[4]
		4/14	4/30	5/12	5/22	6/11	6/25	7/7	7/21	8/4	8/19	9/2	9/23	10/6	10/20	11/19	12/15	1/12	2/9	3/16	3/30	7/28	9/22		
1	0.5	----	0.07	0.02	----	0.05	0.05	0.04	0.07	0.06	0.04	0.04	0.03	0.03	0.05	----	----	----	0.07	0.07	0.06	0.02	0.02	0.05	0.07
	2	----	----	----	----	----	0.11	----	0.08	0.05	0.03	0.04	0.03	0.05	0.05	----	----	----	0.07	0.09	0.05	----	----	0.06	0.11
	3.5	----	----	0.03	----	0.45	0.08	0.02	0.04	0.03	0.03	0.04	0.03	0.05	0.04	----	----	----	0.08	0.07	0.05	----	----	0.07	0.45
	5	----	----	----	----	0.11	0.05	0.03	0.04	0.02	0.03	0.02	0.03	0.05	0.04	----	----	----	0.09	0.04	0.05	----	----	0.05	0.11
	5.5-6.5	----	0.04	0.01	----	0.10	0.04	0.04	0.04	0.03	0.03	----	0.06	0.04	0.03	----	----	----	0.10	0.05	0.04	----	----	0.05	0.10
1A	0.5	----	0.08	0.06	----	0.09	0.05	0.03	0.03	0.02	----	----	----	----	----	----	----	----	----	----	----	0.01	0.01	0.04	0.09
	3.5	----	0.11	----	----	----	0.05	0.03	0.02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.05	0.11
	5.5-6.5	----	0.04	0.04	----	0.09	0.06	0.05	0.01	0.03	----	----	----	----	----	----	----	----	----	----	----	----	----	0.05	0.09
2	0.5	----	0.04	0.03	----	0.09	0.03	0.01	0.07	0.05	0.03	0.03	0.03	0.05	0.05	----	----	----	0.09	0.05	0.05	0.02	0.01	0.04	0.09
3	0.5	----	0.03	0.04	----	0.07	0.03	0.06	0.03	----	0.03	----	----	----	----	----	----	----	11.00	0.05	0.06	0.02	0.02	0.95	11.00
4	0.5	0.04	0.03	0.03	0.05	0.14	0.05	0.08	0.04	0.05	0.02	0.03	0.04	0.06	0.03	0.02	0.08	0.04	0.07	0.05	0.07	0.51	1.10	0.12	1.10
5	0.5	0.05	0.03	0.03	0.06	0.09	0.06	0.03	0.04	0.05	0.01	0.03	0.03	0.05	0.04	0.02	0.08	----	----	0.06	0.08	0.04	0.02	0.05	0.09
6	0.5	0.05	0.07	0.05	0.07	0.09	0.07	0.10	0.06	0.11	0.08	0.06	----	----	----	0.01	0.05	----	0.10	0.05	0.09	0.12	0.06	0.07	0.12
7	0.5	0.05	0.02	0.05	0.04	0.08	0.05	0.04	0.02	----	----	----	----	----	----	----	----	----	0.09	0.04	0.06	0.11	0.16	0.06	0.16
8-2	0.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.04	0.03	----	----	0.04	0.04
9	0.5	0.04	0.04	0.04	0.13	----	----	0.50	----	----	----	0.07	----	----	----	----	----	----	0.08	0.04	0.05	0.05	0.08	0.10	0.50
10	0.5	0.03	0.05	0.06	0.06	0.07	----	0.10	----	----	----	----	----	----	----	0.01	----	----	0.06	0.03	0.03	0.16	0.26	0.08	0.26
11	0.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.30	0.02	0.16	0.30
AVE[5]		0.04	0.05	0.04	0.07	0.12	0.06	0.08	0.04	0.05	0.03	0.04	0.04	0.05	0.04	0.02	0.07	0.04	0.99	0.05	0.06	0.11	0.17		
MAX[5]		0.05	0.11	0.06	0.13	0.45	0.11	0.50	0.08	0.11	0.08	0.07	0.06	0.06	0.05	0.02	0.08	0.04	11.00	0.09	0.09	0.51	1.10		

Notes:

1. ----: Not sampled
2. AVE: average value
3. MAX: maximum value
4. Average and maximum values calculated over time
5. Average and maximum values calculated over sample locations

Phosphorus (total) - Sediment (mg/kg)				
Location	7/28/00	9/21/00	AVE[4]	MAX[4]
1	1,700	14,000	7850	14000
1A	1,700	500	1100	1700
2	1,100	ND	1100	1100
3	1,700	1,100	1400	1700
4	700	1,800	1250	1800
5	95	1,600	848	1600
6	1,700	300	1000	1700
7	200	390	295	390
8-2	---	---	---	---
9	340	280	310	340
10	1,300	280	790	1300
11	1,500	1,600	1550	1600
AVE[5]	1094	2185		
MAX[5]	1700	14000		

Notes:

1. ---: Not sampled
2. AVE: average value
3. MAX: maximum value
4. Average and maximum values calculated over time
5. Average and maximum values calculated over sample locations

pH - Water

Location	Depth (m)	1980																1981				2000		AVE[4]	MAX[4]
		4/14	4/30	5/12	5/22	6/11	6/25	7/7	7/21	8/4	8/19	9/2	9/23	10/6	10/20	11/19	12/15	1/12	2/9	3/16	3/30	7/28	9/21		
1	0.5	----	6.9	7.2	----	7.2	7.4	7.1	7	6.8	6.5	7	6.9	6.9	6.7	----	----	----	6.3	6.3	6.4	6.7	7.5	6.9	7.5
	2	----	----	----	----	----	7.1	----	7.1	6.5	6.9	7	7	6.9	6.8	----	----	----	6.7	6.4	6.6	----	----	6.8	7.1
	3.5	----	----	7.1	----	7.2	7.4	7.4	7.1	6.7	7	6.8	7	7	6.9	----	----	----	6.7	6.6	6.6	----	----	7.0	7.4
	5	----	----	----	----	7.3	6.9	7	7.2	6.8	7.6	6.6	6.9	7	6.9	----	----	----	6.5	6.9	6.6	----	----	6.9	7.6
	5.5-6.5	----	6.2	6.8	----	7.2	6.9	7.1	7.4	6.7	7.2	----	6.9	7	7	----	----	----	6.7	6.9	6.6	----	----	6.9	7.4
1A	0.5	----	7	7.1	----	7.2	7.1	7.2	7.3	7	----	----	----	----	----	----	----	----	----	----	----	6.8	7.1	7.1	7.3
	3.5	----	7	----	----	----	7.1	7.5	7.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	7.2	7.5
	4.5-6.5	----	7	7.1	----	7.5	7.2	7	7.3	6.7	----	----	----	----	----	----	----	----	----	----	----	----	----	7.1	7.5
2	0.5	----	7	7.2	----	7.2	7.3	7.3	7.2	6.9	7.4	7	7.1	7.3	7.1	----	----	----	6.5	6.8	6.7	6.9	7.7	7.1	7.7
3	0.5	----	6.9	7.1	----	7.2	7.4	7.4	7.3	----	7.1	----	----	----	----	----	----	----	5.6	6.7	6.6	6.5	7.4	6.9	7.4
4	0.5	6.8	6.6	7	7.2	7.1	7.3	7.1	6.8	6.6	7.5	6.8	6.8	6.8	6.8	6.5	5.7	6.6	5.6	7	6.5	5.9	5.9	6.7	7.5
5	0.5	6.7	6.9	7.1	7.3	7.3	7.3	7.2	7.4	7	7.1	7	7.3	7.3	7.2	6.5	5.9	----	----	6.9	6.6	6.7	7.4	7.0	7.4
6	0.5	6.9	7.3	7.5	7.3	7.5	7.3	7.2	7.1	6.9	7	7	----	----	----	6.9	5.9	----	7.1	6.8	6.9	6.3	7.6	7.0	7.6
7	0.5	7	7.2	7.2	7.3	7.4	7.4	7.2	7.4	----	----	----	----	----	----	----	----	----	6.4	6.6	6.7	6.9	7.4	7.1	7.4
8-2	0.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	7.8	6.7	----	----	7.3	7.8
9	0.5	6.3	6.3	6.7	7.2	----	----	6.7	----	----	----	6.4	----	----	----	----	----	----	6.2	6.5	6.3	6.4	6.4	6.5	7.2
10	0.5	6.6	6.9	7.1	7.5	7.3	----	7.1	----	----	----	----	----	----	----	6.7	----	----	6.5	6.9	6.6	6.2	6.7	6.8	7.5
11	0.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6.8	7.4	7.1	7.4
AVE[5]		6.7	6.9	7.1	7.3	7.3	7.2	7.2	7.2	6.8	7.1	6.8	7.0	7.0	6.9	6.7	5.8	6.6	6.4	6.8	6.6	6.5	7.1		
MAX[5]		7.0	7.3	7.5	7.5	7.5	7.4	7.5	7.4	7.0	7.6	7.0	7.3	7.3	7.2	6.9	5.9	6.6	7.1	7.8	6.9	6.9	7.7		

Notes:

1. ----: Not sampled
2. AVE: average value
3. MAX: maximum value
4. Average and maximum values calculated over time
5. Average and maximum values calculated over sample locations

Specific Conductance - Water (umhos/cm)

Location	Depth (m)	1980											1981				2000		AVE[4]	MAX[4]
		4/30	6/11	6/25	7/7	7/21	8/19	9/2	9/23	10/20	11/19	12/15	1/12	2/9	3/16	3/30	7/28	9/21		
1	0.5	153	190	170	167	180	170	180	170	175	—	—	—	185	195	215	280	270	193	280
	2	----	—	170	—	170	170	170	180	175	—	—	—	185	195	215	—	—	181	215
	3.5	----	190	160	170	170	170	170	170	175	—	—	—	200	195	215	—	—	180	215
	5	----	190	170	173	170	170	170	175	165	—	—	—	210	195	215	—	—	182	215
	5.5-6.5	156	190	170	180	175	180	—	170	175	—	—	—	260	195	210	—	—	187	260
1A	0.5	157	180	170	174	170	—	—	—	—	—	—	—	—	—	—	290	270	202	290
	3.5	161	—	170	175	180	—	—	—	—	—	—	—	—	—	—	—	—	172	180
	4.5-6.5	156	190	170	177	180	—	—	—	—	—	—	—	—	—	—	—	—	175	190
2	0.5	155	180	180	174	180	170	170	180	170	—	—	—	160	195	215	330	270	195	330
3	0.5	148	190	200	177	180	180	—	—	—	—	—	—	185	225	240	270	270	206	270
4	0.5	141	210	170	210	220	220	240	240	220	250	280	280	185	225	240	130	200	215	280
5	0.5	160	200	170	165	170	170	170	180	190	300	230	—	—	215	230	260	300	207	300
6	0.5	220	240	240	212	250	210	250	—	—	260	240	—	370	340	380	940	300	318	940
7	0.5	160	180	180	191	210	—	—	—	—	—	—	—	260	205	220	300	270	218	300
8-2	0.5	----	—	—	—	—	—	—	—	—	—	—	—		660	620	—	—	640	660
9	0.5	117	—	—	176	—	—	—	—	—	—	—	—	370	300	340	190	300	256	370
10	0.5	130	200	—	272	—	—	250	—	—	300	—	—	440	250	270	180	250	254	440
11	0.5	----	—	—	—	—	—	—	—	—	—	—	—	—	—	—	280	270	275	280
AVE[5]		155	195	178	186	186	181	197	183	181	278	250	280	251	256	273	314	270		
MAX[5]		220	240	240	272	250	220	250	240	220	300	280	280	440	660	620	940	300		

Notes:

1. ----: Not sampled
2. AVE: average value
3. MAX: maximum value
4. Average and maximum values calculated over time
5. Average and maximum values calculated over sample locations

Total Metals - Water (mg/L)

Sample ID	1	1A	2	3	4	5	6	7	8	10	11	NPDWS	NSDWS	AVE[4]	MAX[4]
July 28, 2000															
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.006	NA	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	NA	ND	ND
Barium	----	----	----	----	----	----	----	----	----	----	----	2	NA	----	----
Beryllium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.004	NA	ND	ND
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	NA	ND	ND
Chromium	ND	ND	ND	ND	0.02	ND	ND	ND	ND	ND	ND	0.10	NA	0.02	0.02
Copper	ND	ND	ND	ND	0.03	ND	0.02	ND	ND	ND	ND	1.30	NA	0.03	0.03
Iron	----	----	----	----	----	----	----	----	----	----	----	NA	0.3	----	----
Lead	ND	ND	ND	ND	**0.050**	ND	**0.060**	ND	0.010	0.010	ND	0.015	NA	0.033	0.060
Magnesium	----	----	----	----	----	----	----	----	----	----	----	NA	NA	----	----
Manganese	----	----	----	----	----	----	----	----	----	----	----	NA	0.05	----	----
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	NA	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	NA	ND	ND
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	NA	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	0.1	ND	ND
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	NA	ND	ND
Zinc	ND	ND	ND	ND	0.20	ND	0.17	ND	0.07	0.10	ND	NA	5.00	0.14	0.20
September 21, 2000															
Antimony	----	----	----	----	----	----	----	----	----	----	----	0.006	NA	----	----
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	NA	ND	ND
Barium	0.02	0.02	0.02	0.02	0.05	0.03	0.11	0.03	0.05	0.02	0.11	2.00	NA	0.21	2.00
Beryllium	----	----	----	----	----	----	----	----	----	----	----	0.004	NA	----	----
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	NA	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	NA	ND	ND
Copper	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	1.30	NA	0.02	0.02
Iron	**0.78**	**0.44**	**0.51**	**0.47**	**5.40**	**0.64**	**2.80**	**0.66**	**2.00**	**2.10**	**8.60**	NA	0.30	2.22	8.60
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.04**	0.015	NA	0.04	0.04
Magnesium	2.80	2.40	2.70	2.60	3.00	2.40	3.90	2.70	1.80	2.00	3.00	NA	NA	2.66	3.90
Manganese	**0.35**	**0.30**	**0.32**	**0.26**	**0.54**	**0.17**	**0.31**	**0.97**	**0.16**	**0.28**	**2.7**	NA	0.05	0.58	2.7
Mercury	0.0006	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0020	NA	0.0006	0.0006
Nickel	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	NA	ND	ND
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	NA	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	0.1	ND	ND
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	NA	ND	ND
Zinc	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14	NA	5.00	0.14	0.14

Notes:

1. ----: Not sampled.
2. AVE: average value
3. MAX: maximum value
4. Average and maximum values calculated over time
5. NA: Not Applicable
6. NPDWS: National Primary Drinking Water Standards
7. NSDWS: National Secondary Drinking Water Standards

Total Metals - Sediment (mg/kg)

Sample ID	Sed1	Sed1A	Sed2	Sed3	Sed4	Sed5	Sed6	Sed7	Sed9	Sed10	Sed11	MCP/S-1	AVE[4]	MAX[4]
July 28, 2000														
Antimony	ND	ND	ND	ND	ND	ND	ND	2.7	ND	ND	ND	10.0	2.7	2.7
Arsenic	37.0	11.0	20.0	7.8	6.3	10.0	6.6	2.3	1.4	3.4	24.0	30.0	13.3	37.0
Barium	---	---	---	---	---	---	---	---	---	---	---	1000.0	---	---
Beryllium	6.2	1.1	2.4	1.7	1.5	1.5	ND	0.4	ND	ND	2.4	0.7	2.2	6.2
Cadmium	ND	ND	3.4	2.2	ND	3.7	4.2	0.5	ND	ND	3.1	30.0	6.7	4.2
Chromium	390.0	51.0	110.0	100.0	200.0	110.0	62.0	25.0	5.4	4.8	170.0	1000.0	185.7	390.0
Copper	290.0	46.0	100.0	88.0	120.0	230.0	180.0	19.0	10.0	7.5	120.0	NA	110.0	290.0
Lead	1400.0	220.0	350.0	320.0	280.0	560.0	880.0	58.0	15.0	27.0	640.0	300.0	420.8	1400.0
Magnesium	---	---	---	---	---	---	---	---	---	---	---	NA	---	---
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	20.0	ND	ND
Nickel	140.0	41.0	61.0	43.0	22.0	46.0	41.0	18.0	5.9	3.8	59.0	300.0	65.1	140.0
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	400.0	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100.0	ND	ND
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.0	ND	ND
Zinc	1600.0	480.0	810.0	630.0	190.0	810.0	790.0	160.0	54.0	38.0	610.0	2500.0	722.7	1600.0
September 21, 2000														
Antimony	---	---	---	---	---	---	---	---	---	---	---	10.0	---	---
Arsenic	17.0	26.0	15.0	13.0	4.8	ND	5.4	1.4	0.9	19.0	9.8	30.0	12.9	26.0
Barium	160.0	420.0	190.0	140.0	75.0	15.0	200.0	65.0	28.0	270.0	180.0	1000.0	228.6	420.0
Beryllium	---	---	---	---	---	---	---	---	---	---	---	0.7	---	---
Cadmium	ND	5.4	4.4	ND	ND	ND	4.7	1.0	ND	6.1	4.0	30.0	7.9	6.1
Chromium	67.0	260.0	94.0	120.0	70.0	6.0	51.0	11.0	2.1	48.0	110.0	1000.0	153.3	260.0
Copper	65.0	160.0	100.0	80.0	67.0	9.7	240.0	13.0	6.7	170.0	120.0	NA	93.8	240.0
Lead	430.0	550.0	410.0	440.0	120.0	28.0	630.0	37.0	18.0	520.0	410.0	300.0	324.4	630.0
Magnesium	2400.0	1600.0	980.0	1200.0	980.0	260.0	1300.0	170.0	440.0	2100.0	1300.0	NA	1157.3	2400.0
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	20.0	ND	ND
Nickel	32.0	110.0	62.0	40.0	16.0	2.0	26.0	8.8	2.4	28.0	47.0	300.0	56.2	110.0
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	400.0	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100.0	ND	ND
Thallium	ND	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.0	4.2	4.2
Zinc	470.0	970.0	720.0	400.0	92.0	40.0	770.0	150.0	48.0	860.0	660.0	2500.0	640.0	970.0

Notes:

1. ----: Not sampled.
2. AVE: average value
3. MAX: maximum value
4. Average and maximum values calculated over time
5. NA: Not Applicable
6. Massachusetts Contingency Plan Direct Contact Exposure - Soil Category S-1

5 MACROPHYTIC VEGETATION

The littoral region is the interface between the land of a drainage basin and the open water. The littoral flora contributes significantly to the productivity of the lake/pond ecosystem. Dense stands of macrophytic vegetation in this zone can alter the environmental conditions. Due to competition for light and nutrients, the population of phytoplankton typically decreases with depth (Wetzel). Under floating vegetation the temperature increases and oxygen concentration decreases.

The littoral zone provides habitat and a diverse food source for fauna. However, mono-dominant stands of macrophytic vegetation are common due to the competitiveness of invasive and invasive exotic plants (Kusler, Kentula, 1990).

Invasive species are species that are not native to an eco-system, and are artificially (either accidentally or purposefully) introduced, often causing detrimental impacts. This includes displacing native species, clogging waterways and altering the habitat and the natural ecosystem.

The overabundance of these invasive species jeopardizes those fauna dependent on native vegetation. In addition, excessive aquatic vegetation can accelerate the eutrophication process by contributing to the organic matter. High levels of decaying organic matter along the bottom of the pond decreases dissolved oxygen levels and results in the loss of fish.

Whitman's Pond has seen an increase in macrophytic vegetation over the past several decades. Populations of several invasive species such as purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), and fanwort (*Cabomba caroliniana*) have increased. The western basin has seen the largest increase in macrophytic vegetation. In addition, areas along the perimeter of the main basin have seen an increase in populations of purple loosestrife (*Lythrum salicaria*), fanwort (*Cabomba caroliniana*), smartweed (*Polygonum sp.*), and water lilly (*Nymphaea sp.*). The depth in the north central area of the main basin appears to be decreasing since surveys performed in the early 1980's. In this area stands of purple loosestrife (*Lythrum salicari*) are present.

Overall, invasive species have increased throughout the Pond, although no new type of invasive species was noted since the latest studies were conducted in 1997 and 1998. This was true even in the West Basin, where herbicides were added for the temporary control of nuisance vegetation in 1997.

During the course of this study, it was noted that historical mapping (circa 1850) indicates that the West Basin of the Pond was actually a swamp during that period. It is unclear when the West Basin actually became a surface water body, but it was likely when the outlet structure from the Main Basin discharging to the Back River was modified and water levels in the Main Basin, as well as the South and West Basin, rose as a result. Chronic problems with nuisance vegetation and invasive species in the West Basin likely result from volumes of organic matter present in the swamp system before it was flooded, and the minimal depth of the Basin (<2 feet).

6 EVALUATION OF FISH HABITAT

During the course of study, low levels of oxygen were noted in the Pond at deeper levels, where most cold-water fish would tend to exist. These levels actually reach anaerobic levels at 20-25 feet in depth, where oxygen is approximately 0.0 micrograms per liter (mg/l). Dissolved oxygen levels necessary to support fish vary upon several factors, including water chemistry and temperature. Generally, dissolved oxygen levels above 3.0 mg/l. are necessary to support most species of fish for a sustained period, with levels of above 7 mg/l preferred. It is clear from these results that the lack of oxygen in deeper waters of the Pond is insufficient to support fish species.

Furthermore, shallower depths of all three basins have such thick masses of aquatic plants and algae that fish would have a difficult task swimming at these depths, especially during the summer and fall months.

As discussed above, there has been a decrease in depth in the central area of the Main Basin, due in part to excessive accumulation of organic matter and thriving invasive species in the area. In an attempt to inventory the fish in the Pond, seine nets were used to gather representative species. Due to the excessive algae and milfoil, nets became immediately clogged when pulled through the water, making the efforts futile.

According to the Massachusetts Division of Fisheries and Wildlife, each Spring the Southeast Regional Office stocks the Pond with rainbow trout. Additionally, the Pond is the supports the second largest herring (alewife) run on the eastern seaboard (Ambient Engineers, 1997).

Excessive organic matter and thick floating layers of aquatic vegetation in the all three basins of the Pond are impacting the habitat of the fish. Accumulated organic matter that settles on the bottom of the Pond and tributaries covers the native sand and gravel deposits along the banks, where many species of fish spawn and lay their eggs. Therefore, inaccessibility of these sand and gravel deposits impacts the habitat value of the Pond and its tributaries, resulting in less propagation of new generations of fish. Given this situation, each year less fish would return to (or survive in) the Pond.

These decomposition of thick masses of vegetation are also causing a reduction in dissolved oxygen levels in deeper portions of the Pond. This is detrimental to the fish populations as well.

7 DISCUSSION OF PAST EFFORTS

7.1 Restorer Technology

There are currently two "Restorers" maintained by OceanArks, Inc. in Whitman's Pond. One is located in the West Basin and the other in the South Basin. These restorers consist of floating rafts containing organisms (bacteria, zooplankton, plants, snails, and fish). Lake water enters the center of the raft via an air lift pump where the water flows through a manufactured media used to induce nitrification. The lake water is then air lifted through floating mats containing aquatic biota. The purpose of the restorer is to reduce nutrient levels in the pond and increase dissolved oxygen levels.

The clarity of the water in the vicinity of these rafts indicates that there is a potential for a localized effect. Water sampling performed by OceanArks, Inc. indicates that the system is reducing levels of nutrients in the water and sediment, and lowering bacteria levels as well. Water quality should continue to be monitored at the outlets of these basins to see if the presence of the Restorer impacts the quality of the water entering the Main Basin.

7.2 Herbicide and chemical Treatments

In a Diagnostic Feasibility Study for the Western Basin submitted to the Town of Weymouth on February 11, 1997, the aquatic herbicide, fluridone, was applied to the western basin for the control of purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), and fanwort (*Cabomba caroliniana*). Fluridone is a nonselective systemic herbicide. The effectiveness on fanwort (*Cabomba caroliniana*) was not discussed however; fluridone was reported to be 30%-40% successful on the common reed (*Phragmites australis*), and fanwort (*Cabomba caroliniana*).

Based on available information the long-term effectiveness of chemical treatments to the western basin is unknown. Detrimental populations of the three target species are still present. Generally, chemical treatments alone are considered to have short-term and localized effects. Chemical treatments are most effective when combined with other management practices, such as maintenance cutting and pruning, and eliminating sources of pollutants and nutrients.

Copper sulfate has historically been added to the South Basin to kill weeds and algae that clog the intake to the emergency water supply pump house. Copper sulfate has a toxic effect on fish and aquatic life as well.

Chlorine has also been historically added to the Pond near the bathing beach to reduce bacteria levels and prevent closing of the beach by the Weymouth Health Department.

7.3 Septic Systems

Septic systems are often a major source of nutrient loading in ponds and streams. The Town of Weymouth has addressed this issue by extending municipal sewer lines into areas around the pond. However, there are apparently still some residential homes in the vicinity of the pond that utilize septic systems, some of which may be failing and directly impacting the Pond, either in adjacent properties to the Pond or it's tributaries. These areas should be evaluated further for their nutrient and pollutant inputs to the Pond.

7.4 Storm Drains and BMP's

Approximately 45 storm drains discharge into Whitman's Pond. Past studies indicated that storm water entering the pond via these drains have contained elevated levels of phosphorus and bacteria. While this study did not include sampling of water from these drains, it is likely that these drains are a major contributor to nutrient loading in Whitman's Pond. The Town has implemented some Best Management Practice (BMP) applications to the existing storm water system. One attempt included placement of catch basin inserts into the structures to trap silt and sediment, in an effort to reduce phosphorus inputs into the Pond. Problems with the inserts clogging and breaking occurred, and the program was terminated.

Another effort was the construction of a pond system to reduce Phosphate inputs into the Pond from the Old Swamp River. Studies in 1981 and 1983 indicated that the Old Swamp River contributes more than 60% of the total phosphorus loads to Whitman's Pond. The sediment nutrient uptake pond (SNUP) was undersized due to regulatory and wetland issues of the EPA, and its effects upon phosphorus levels in the Pond have not been determined.

An inventory and analysis of additional BMP's is needed to quantify and ensure an effective program. Additionally, stormwater inputs of nutrients and pollutants need to be addressed through a program of dry weather and wet weather sampling.

8 CONCLUSIONS

In comparing the results of this study to previous investigations, we have made the following conclusions.

- Temperature: Little variation in temperature has occurred since studies began in 1980.

- Dissolved Oxygen: Deeper areas of the Pond are anoxic, or lack sufficient oxygen to support fish and aquatic life. Shallower areas have higher levels of dissolved oxygen, but many areas contain thick masses of aquatic plants and algae. The levels of oxygen are similar to those measured since 1980.

- Nitrogen: Levels of nitrogen in the Pond are considered eutrophic to hyper-eutrophic, indicating a rapid "aging" of the Pond. Sample locations 4, 7 and 11 had the highest levels, although it is unclear why this was the case. Further investigations are needed to evaluate the sources of nitrogen. Excessive nitrogen exists in the sediment due in part to the large volume of organic matter on the bottom of the Pond.

- Phosphorus: Similarly, phosphorus was elevated throughout the Pond, and was highest at areas 4, 7 and 10. It is unclear why these areas had higher phosphorus levels. In general, the phosphorus levels indicate eutrophic conditions. Phosphorus has been regarded as the most significant detriment to water quality in the Pond since studies began in 1980. Approximately 60% of the total phosphorus entering the Pond comes from the Old Swamp River.

- pH: While the pH of the Pond fluctuated during the course of this study, overall the pH was low. This is consistent with previous studies as well. Low pH is also an indication of the eutrophication of the Pond.

- Specific Conductance: The specific conductance of the Pond has risen steadily since 1980, indicating eutrophication and rapid aging of the Pond.

- Total Metals: Elevated levels of lead, iron and manganese were noted in areas of the Pond. These metals are common in the bedrock and soils of the area, and are regional water quality issues, possibly exacerbated by pollution. Sediment in some areas of the Pond exhibited elevated levels of arsenic, beryllium and lead. While the sources of arsenic and beryllium are unclear, lead is a common contaminant in stormwater runoff in urban areas, due in part to the use of leaded gasoline and fuels. As previously mentioned, lead is also present in the soils and bedrock of the area.

- The fish habitat of the Pond is being impacted by thick masses of aquatic vegetation and algae, including invasive (artificially introduced) species. This vegetation is clogging the Pond, limiting access to spawning areas and resulting in lower dissolved oxygen levels. The aquatic vegetation is due in part to excessive nitrogen and phosphorus levels in the water and sediment. The habitat of the West Basin is being severely impacted due to an average depth of approximately 2 feet.

- The Town has expressed an interest in evaluating dredging to enhance the Pond. To date, no studies have been conducted to evaluate the cost of this alternative. Dredging alternatives must be evaluated, including de-watering methods, disposal and construction methods. Additionally, a comprehensive testing program must be conducted on the full depth of sediment to be dredged in accordance with state and federal regulations. To date, this sampling program has not been conducted. The physical and environmental characteristics of the sediment will determine the options for construction and disposal, and ultimately the cost of this alternative.

- A study conducted in 1997 by Lycott Environmental, Inc., estimated that dredging 73,000 cubic yards from the Western Basin would cost approximately $1,095,300.00, at $15.00 per cubic yard. Dredging portions of the Main Basin would require removal of 3-4 feet (on average) of sediment and organic matter as well.

- The Mill River and Old Swamp River are listed as Section 303d waters, with degraded water quality. These are the main tributaries of Whitman's Pond. The Back River, the only outlet of Whitman's Pond, is listed as a Section 303d water body as well. Pollutants of concern include organic enrichment, low dissolved oxygen, pathogenic organisms and noxious plants. Section 303d waters have been targeted by the EPA and DEP for cleanup so that their uses, such as fishing and swimming, can be restored. The Town should continue to apply for federal and state funds to improve these water resources.

- Impacts to the Pond from pollutants and nutrients of stormwater discharges and septic systems adjacent to the Pond have not been determined. These need to be evaluated, and were beyond the scope of this study.

- The West Basin of Whitman's Pond was apparently a swamp prior to the mid 1800's. It was evidently flooded when the control structure at the outlet of the Pond (Back River) was raised. Problems with eutrophication and aging of the Basin would be expected given the volumes of organic matter of the swamp, and the historic conditions of the Basin. It is likely that the Basin is "converting back" to it's previous condition.

9 Recommendations

Beta recommends the development of a Watershed Master Plan involving a multi-step approach for the restoration of Whitman's Pond. The proposed plan should include the following tasks.

9.1 Data Collection

A preliminary investigation should be performed in order to collect and document existing data. This step should include a review of Town files and records, sewer and drainage records, land use information, and meetings with Town and State (DEP and DEM) officials.

9.2 Base Map Preparation

A Base Map should be developed in order to identify bathymetric data (survey of Main Pond, West Basin and South Basin, in accordance with State requirements) for the pond, drainage system location and characteristics, land uses, sewer system location and characteristics, and septic system locations. Inspection of septic systems may be necessary, if they are proven to be impacting the Pond.

This task would include the development of GIS compatible database to document and manage existing and future data related to storm water systems, municipal sewer systems, private septic systems, and water quality data. The mapping should be compatible with GIS information currently being developed by the Town.

9.3 Storm Drain Inspection and Sampling Program

To address non-point source pollution, a storm drain inspection, sampling, and watershed analysis should be conducted in order to evaluate potential sources of pollutant loading. From this information and existing data, Total Maximum Daily Loads (TMDL) should be determined in order to establish thresholds and water quality improvement goals for nutrient and pollutant loading into Whitman's Pond. Three sampling sets should be included:

- Wet weather sampling
- Dry weather sampling
- Sediment Sampling (for dredging criteria)

9.4 Hydrological Study

A watershed hydrology study should be performed to in order to identify drainage and sub-drainage areas, peak discharge rates and a water budget associated with the determined watershed areas. This information will be compared to land use data, soils data, and monitoring data in order to determine potential sources of nutrients and pollutant loads to the Pond and targets for future water quality improvement efforts.

9.5 Structural Assessment

A structural assessment should be performed in order to identify the integrity of the existing storm water system and problem areas. Due to the age of the sanitary sewers and

storm drains, impacts to the Pond need to be evaluated. Older (clay pipe) sewers often leak through exfiltration (flow out of pipes) due to cracks, surcharging and settlement of pipes over time. The pipes can contaminate groundwater, and infiltrate into storm drains as well. Flow from storm drains from contaminated groundwater has been found to be a significant source of pollution in numerous communities.

This task should expand on the dry weather inspection program, to evaluate the source of dry weather flows to the Pond.

This assessment should include a review of existing inspection information from Infiltration /Inflow and Sewer System Evaluation Studies (II /SSES) of all those areas not yet inspected or evaluated. It should be noted that Infiltration /Inflow studies do not typically address exfiltration due to structural problems unless television inspection is involved. Leaking sewers, while reducing flows to the MWRA, may contribute to the nutrient and pollutant levels of the Pond. All inspection and information should be entered into an Access database in order to be GIS compatible.

9.6 Identification of Deficiencies

Based on the above-mentioned findings, storm drain system deficiencies (inadequate capacity, structural deficiencies, maintenance problem areas, sedimentation problem areas, water quality issues) should be outlined and summarized.

9.7 Development of Plan for Improvements

A restoration plan for Whitman's Pond should be developed and should address the deficiencies and target areas identified during the above mentioned tasks. The restoration plan should be a multi-task approach that identifies goals and considers those areas of the pond that are important resource areas. The restoration plan should address:

Nutrient and Pollutant Loading

Based on the storm drain inspections, sampling and a hydrology study, storm water systems improvements and modifications should be evaluated. Improvements may include modifications to existing catch basins and pipes and installation of additional structures. When appropriate, Best Management Practices (BMP's) should be implemented and may include water quality enhancement structures (retention/detention basins, etc.) where feasible.

Modifications to existing municipal sewer system may be necessary based on suggested assessment. Those septic systems that potentially influence the water quality of Whitman's Pond may be recommended for connection to the municipal system. Problem areas found during the suggested inspection program should be repaired or modified (including sewer and drain issues). In the interim, homeowners should continue to pump and maintain their septic systems to minimize the potential for groundwater infiltration or breakout. Local agencies can encourage and educate homeowners by providing information and incentives for maintaining systems, including updating local Conservation Commission and Planning Board regulations.

Erosion and Sedimentation

Modifications to the existing storm water system may be needed to reduce the occurrences of erosion and sedimentation entering into Whitman's Pond from the surrounding watershed. In addition, a maintenance plan should be developed to ensure the efficiency of existing BMP's and proposed BMP applications. This plan should evaluate street sweeping and catch basin cleaning schedules and frequency.

Dredging may be warranted in specific areas of the pond such as those used for recreation, fish spawning areas, or at inlets and outlets. The proposed sedimentation and hydrology studies are critical components in analyzing the feasibility of a dredging alternative. The disposal of dredged material can be considerable, given that regulatory requirements for testing and disposal locations are costly. A comprehensive testing program should be implemented to evaluate the sediment quality with respect to DEP and EPA requirements. Specifically, sediment quality must be analyzed for chemicals included in the DEP Water Quality Certification Regulations (314CMR9.00) for disposal options, so that dredging costs, if desired by the Town, may be developed.

In addition, policies may be developed and implemented by local agencies to ensure that future development within the Whitman's Pond watershed addresses the goals of the restoration plan. Development activities should be controlled in sensitive areas within the watershed. Erosion and sedimentation plans should be completed and reviewed before construction activities commence.

Homeowners can decrease the amount of erosion and sedimentation occurring from individual properties with lawn care and garden techniques. Some of these practices include: minimizing disturbance, maintaining healthy landscape, applying pesticides and fertilizers properly, watering wisely, and avoiding cutting grass too short.

Aquatic Invasive Plant Species

An integrated management plan will be needed to control existing invasive plant communities and potential introduction of other invasive communities. In most cases the implementation of one of these available methods does not produce long-term sustainable results. Therefore, an integrated approach is necessary. Available alternatives include:

Biological Management (introduction of insects, pathogens, fish, etc.)
Introducing a predator, pathogen or other known biological control can control many aquatic invasive plant species. Universities are currently studying several of these potential biological controls. Before implementing a biological control, it is important to understand all potential advantages and disadvantages as well as proper applications.

Chemical Herbicide Treatments
Several aquatic herbicides are available for controlling invasive aquatic plants. The effectiveness of these chemicals is often determined by the application method and site-specific characteristics. For example, some chemicals are systemic and others require a foliar application. It is important to follow

manufacturer's instructions and application rates to ensure effective use of the herbicide.

Mechanical and Physical Management
Mechanical and physical techniques include dredging/sediment removal, benthic barriers, nutrient inactivation, plant harvesting, and de-watering. Many of these techniques are considered effective, but are also site specific. However, they are often expensive and many have environmental impacts because of the non-selective nature.

The possible introduction of additional aquatic invasive plants should also be addressed. The most effective way of preventing the introduction of these species is public awareness. Most often, invasive plant species are unintentionally brought in on recreational equipment. Informing boaters and other lake users of this potential may prevent the unwanted introduction of these species.

Monitoring Plan
In order to ensure efficiency of these proposed efforts, a monitoring plan should be developed. Monitoring of the storm drains, pond sediments, and aquatic vegetation should be performed on a determined basis to confirm efficiency of storm drain BMP's, sewer system modifications, and aquatic plant management. The establishment of total maximum daily loads (TMDL's) of nutrients and pollutants will provide a standard for comparison and the establishment of watershed goals. Follow-up testing should be performed after the implementation of the BMP's, and the results compared to those prior to BMP implementation.

The implementation of many of these BMP's and follow up sampling efforts are eligible for federal and state grants, which the Town should pursue. This includes many water quality improvement efforts that the Town pursues. Given the degrading water quality of the Pond, and its value to the Town, these funds should be pursued. Additionally, evaluating sediment quality with respect to dredging, which was beyond the scope of this study, needs to be evaluated.

This project was an evaluation of the existing conditions of the Pond. Future needs are discussed with respect to recommendations based upon the findings of this study.

Community Participation
Community participation is critical to the successful completion of any planning process. Informational meetings should include Town officials, general public, local groups, and local businesses to ensure comprehensive decision-making and planning. Educational handouts and signs should be developed and distributed. Public recreational areas such as the beach, boat landing, and fishing spots are an effective location for educational signs used to inform the general public on what they can do and the importance of their contribution.

10 REFERENCES

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6. "Whitman's Pond Diagnostic Study". Massachusetts Department of Environmental Quality Engineering, Division of Water Pollution Control. April 1980 – March 1981.

7. "Feasibility Study of Lake Restoration for Whitman's Pond". Metcalf & Eddy, Inc. May 31, 1983.

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APPENDIX A

Photograph Log

Project Name: Whitman's Pond
Site Location: Weymouth, MA
Project Number: 1826
By: NW **Date:** 10/30/00



Photo 1: Algal blooms noted in the northwest end of the main basin of Whitman's Pond.



Photo 2: Dense stand of Phragmites, Purple loosestrife, and other macrophytic vegetation located along the northern shore of the main basin.



Photo 3: View of northwest end of the main basin. Area contains dense stands of macrophytic vegetation.



Photo 4: View of algal blooms in the northwest end of the main basin near Middle Street.

BETA

Photograph Log

Project Name: Whitman's Pond
Site Location: Weymouth, MA
Project Number: 1826
By: NW **Date:** 10/30/00

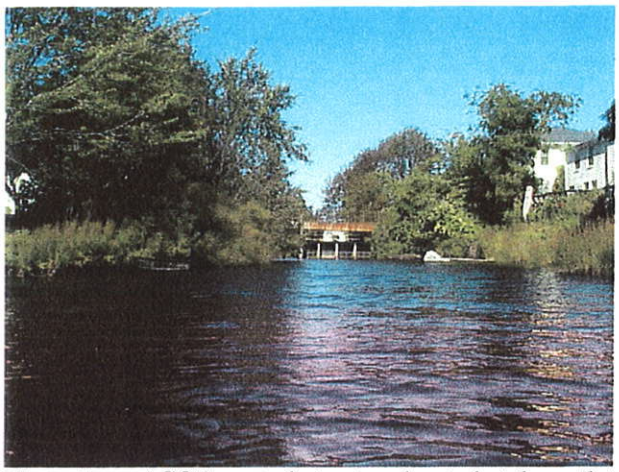


Photo 5: ACOE control structure located at the outlet in the northeast corner of the main basin.



Photo 6: View of area along the northeast shore of the main basin.



Photo 7: View of northwest end of the main basin. Area just south of the boat ramp on Middle Street.



Photo 8: View of western basin from the outlet under Middle Street.



Photo 9: View of the southern end of the main basin from Washington Street.



Photo 10: Pump station on Washington Street.

BETA

Photograph Log

Project Name: Whitman's Pond
Site Location: Weymouth, MA
Project Number: 1826
By: NW **Date:** 10/30/00



Photo 11: Pond restorer located in the western basin.



Photo 12: Overall view of pond restorer located in the western basin.

APPENDIX B

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65 NY:11148

CERTIFICATE OF ANALYSIS

Client: Beta Engineering, Inc.
Address: 6 Blackstone Valley Place
Lincoln, RI 02865
Attn: Nicole Wilkenson
Project Number:
Site: WHITMAN'S POND

Laboratory Job Number: L0006158
Invoice Number: 39506
Date Received: 28-JUL-00
Date Reported: 08-AUG-00
Delivery Method: Alpha

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0006158-01	BSW-1	WEYMOUTH, MA
L0006158-02	BSED-1	WEYMOUTH, MA
L0006158-03	BSW-1A	WEYMOUTH, MA
L0006158-04	BSED-1A	WEYMOUTH, MA
L0006158-05	BSW-2	WEYMOUTH, MA
L0006158-06	BSED-2	WEYMOUTH, MA
L0006158-07	BSW-3	WEYMOUTH, MA
L0006158-08	BSED-3	WEYMOUTH, MA
L0006158-09	BSW-4	WEYMOUTH, MA
L0006158-10	BSED-4	WEYMOUTH, MA
L0006158-11	BSW-5	WEYMOUTH, MA
L0006158-12	BSED-5	WEYMOUTH, MA
L0006158-13	BSW-6	WEYMOUTH, MA
L0006158-14	BSED-6	WEYMOUTH, MA
L0006158-15	BSW-7	WEYMOUTH, MA
L0006158-16	BSED-7	WEYMOUTH, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized by:

Scott McLean - Laboratory Director

Laboratory Job Number: L0006158
Date Reported: 08-AUG-00

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0006158-17	BSW-9	WEYMOUTH, MA
L0006158-18	BSED-9	WEYMOUTH, MA
L0006158-19	BSW-10	WEYMOUTH, MA
L0006158-20	BSED-10	WEYMOUTH, MA
L0006158-21	BSW-11	WEYMOUTH, MA
L0006158-22	BSED-11	WEYMOUTH, MA

Laboratory Job Number: L0006158

Alpha Job L0006158

Metals

It should be noted that the matrix spike percent recovery for the analysis of Silver associated with Alpha Samples L0006158-02, 04, -06, -08, -10, -12, -14, -16, -18, -20 and -22 is outside the in-house acceptance criteria for the method. A post analytical spike was performed with an acceptable recovery of 98%.

Please also note that the matrix spike percent recovery for the analysis of Zinc associated with Alpha Samples L0006158-02, 04, -06, -08, -10, -12, -14, -16, -18, -20 and -22 is invalid because the sample concentration is greater than four times the spike amount added.

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-01
BSW-1
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Nitrogen, Total Kjeldahl	0.68	mg/l	0.15	30	4500N-C		04-Aug	EI
Phosphorus, Total	0.02	mg/l	0.01	30	4500P-E		01-Aug	DI
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Barium, Total	0.02	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Copper, Total	0.02	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Iron, Total	0.78	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Magnesium, Total	2.8	mg/l	0.10	1	6010B	31-Jul	02-Aug	RI
Manganese, Total	0.35	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Mercury, Total	0.0006	mg/l	0.0005	1	7470A	01-Aug	02-Aug	AI
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	R
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	R
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	R
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	T
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-02
BSED-1
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Specific Conductance	280	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	15.	%	0.10	30	2540G		02-Aug	JF
pH	6.7	SU	-	1	9045C		28-Jul	RT
Nitrogen, Total Kjeldahl	5900	mg/kg	440	30	4500N-C		02-Aug	EI
Phosphorus, Total	1700	mg/kg	180	30	4500P-E		01-Aug	JT
Total Metals				1	3051			
Arsenic, Total	17.	mg/kg	2.6	1	6010B	01-Aug	02-Aug	RI
Barium, Total	160	mg/kg	2.6	1	6010B	01-Aug	02-Aug	RI
Cadmium, Total	ND	mg/kg	2.6	1	6010B	01-Aug	02-Aug	RI
Chromium, Total	67.	mg/kg	2.6	1	6010B	01-Aug	02-Aug	RI
Copper, Total	65.	mg/kg	2.6	1	6010B	01-Aug	02-Aug	RI
Iron, Total	27000	mg/kg	13.	1	6010B	01-Aug	02-Aug	RI
Lead, Total	430	mg/kg	13.	1	6010B	01-Aug	02-Aug	RI
Magnesium, Total	2400	mg/kg	26.	1	6010B	01-Aug	02-Aug	RI
Manganese, Total	930	mg/kg	2.6	1	6010B	01-Aug	02-Aug	R
Mercury, Total	ND	mg/kg	1.7	1	7471A	02-Aug	03-Aug	A
Nickel, Total	32.	mg/kg	6.6	1	6010B	01-Aug	02-Aug	R
Selenium, Total	ND	mg/kg	5.3	1	6010B	01-Aug	02-Aug	R
Silver, Total	ND	mg/kg	2.6	1	6010B	01-Aug	02-Aug	R
Thallium, Total	ND	mg/kg	5.3	1	6010B	01-Aug	02-Aug	R
Zinc, Total	470	mg/kg	13.	1	6010B	01-Aug	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-03
BSW-1A
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.68	mg/l	0.15	30	4500N-C		04-Aug	EI
Phosphorus, Total	0.01	mg/l	0.01	30	4500P-E		01-Aug	DI
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Barium, Total	0.02	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Copper, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Iron, Total	0.44	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Magnesium, Total	2.4	mg/l	0.10	1	6010B	31-Jul	02-Aug	RI
Manganese, Total	0.30	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	AC
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	RI
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RI
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RI
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	TI
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-04
BSED-1A
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Specific Conductance	290	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	7.2	%	0.10	30	2540G		02-Aug	JF
pH	6.8	SU	-	1	9045C		28-Jul	RI
Nitrogen, Total Kjeldahl	4500	mg/kg	1000	30	4500N-C		02-Aug	EI
Phosphorus, Total	1700	mg/kg	100	30	4500P-E		01-Aug	JI
Total Metals				1	3051			
Arsenic, Total	26.	mg/kg	1.4	1	6010B	01-Aug	02-Aug	RI
Barium, Total	420	mg/kg	1.4	1	6010B	01-Aug	02-Aug	RI
Cadmium, Total	5.4	mg/kg	1.4	1	6010B	01-Aug	02-Aug	RI
Chromium, Total	260	mg/kg	1.4	1	6010B	01-Aug	02-Aug	RI
Copper, Total	160	mg/kg	1.4	1	6010B	01-Aug	02-Aug	RI
Iron, Total	59000	mg/kg	6.9	1	6010B	01-Aug	02-Aug	RI
Lead, Total	550	mg/kg	6.9	1	6010B	01-Aug	02-Aug	RI
Magnesium, Total	1600	mg/kg	14.	1	6010B	01-Aug	02-Aug	R
Manganese, Total	5200	mg/kg	1.4	1	6010B	01-Aug	02-Aug	R
Mercury, Total	ND	mg/kg	3.5	1	7471A	02-Aug	03-Aug	A
Nickel, Total	110	mg/kg	3.5	1	6010B	01-Aug	02-Aug	R
Selenium, Total	ND	mg/kg	2.8	1	6010B	01-Aug	02-Aug	R
Silver, Total	ND	mg/kg	1.4	1	6010B	01-Aug	02-Aug	R
Thallium, Total	4.2	mg/kg	2.8	1	6010B	01-Aug	02-Aug	R
Zinc, Total	970	mg/kg	6.9	1	6010B	01-Aug	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-05
BSW-2
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Nitrogen, Total Kjeldahl	0.67	mg/l	0.15	30	4500N-C		04-Aug	EI
Phosphorus, Total	0.02	mg/l	0.01	30	4500P-E		01-Aug	DI
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Barium, Total	0.02	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Copper, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Iron, Total	0.51	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Magnesium, Total	2.7	mg/l	0.10	1	6010B	31-Jul	02-Aug	R
Manganese, Total	0.32	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	A
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	R
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	R
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	R
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	T
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-06
BSED-2
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Specific Conductance	330	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	12.	%	0.10	30	2540G		02-Aug	JI
pH	6.9	SU	-	1	9045C		28-Jul	RS
Nitrogen, Total Kjeldahl	8500	mg/kg	510	30	4500N-C		02-Aug	EI
Phosphorus, Total	1100	mg/kg	62.	30	4500P-E		01-Aug	J'
Total Metals				1	3051			
Arsenic, Total	15.	mg/kg	3.4	1	6010B	01-Aug	02-Aug	R'
Barium, Total	190	mg/kg	3.4	1	6010B	01-Aug	02-Aug	R'
Cadmium, Total	4.4	mg/kg	3.4	1	6010B	01-Aug	02-Aug	R
Chromium, Total	94.	mg/kg	3.4	1	6010B	01-Aug	02-Aug	R
Copper, Total	100	mg/kg	3.4	1	6010B	01-Aug	02-Aug	R
Iron, Total	25000	mg/kg	17.	1	6010B	01-Aug	02-Aug	R
Lead, Total	410	mg/kg	17.	1	6010B	01-Aug	02-Aug	R
Magnesium, Total	980	mg/kg	34.	1	6010B	01-Aug	02-Aug	R
Manganese, Total	2300	mg/kg	3.4	1	6010B	01-Aug	02-Aug	R
Mercury, Total	ND	mg/kg	2.2	1	7471A	02-Aug	03-Aug	A
Nickel, Total	62.	mg/kg	8.5	1	6010B	01-Aug	02-Aug	R
Selenium, Total	ND	mg/kg	6.8	1	6010B	01-Aug	02-Aug	R
Silver, Total	ND	mg/kg	3.4	1	6010B	01-Aug	02-Aug	R
Thallium, Total	ND	mg/kg	6.8	1	6010B	01-Aug	02-Aug	R
Zinc, Total	720	mg/kg	17.	1	6010B	01-Aug	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-07
BSW-3
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Nitrogen, Total Kjeldahl	0.61	mg/l	0.15	30	4500N-C		04-Aug	E
Phosphorus, Total	0.02	mg/l	0.01	30	4500P-E		01-Aug	D
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	R
Barium, Total	0.02	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	R
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Copper, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Iron, Total	0.47	mg/l	0.05	1	6010B	31-Jul	02-Aug	R
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Magnesium, Total	2.6	mg/l	0.10	1	6010B	31-Jul	02-Aug	R
Manganese, Total	0.26	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	A
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	R
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	R
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	R
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	A
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-08
BSED-3
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Specific Conductance	270	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	16.	%	0.10	30	2540G		02-Aug	JI
pH	6.5	SU	-	1	9045C		28-Jul	RT
Nitrogen, Total Kjeldahl	6800	mg/kg	300	30	4500N-C		02-Aug	EI
Phosphorus, Total	1700	mg/kg	43.	30	4500P-E		01-Aug	J'
Total Metals				1	3051			
Arsenic, Total	13.	mg/kg	2.6	1	6010B	01-Aug	02-Aug	R'
Barium, Total	140	mg/kg	2.6	1	6010B	01-Aug	02-Aug	R'
Cadmium, Total	ND	mg/kg	2.6	1	6010B	01-Aug	02-Aug	R'
Chromium, Total	120	mg/kg	2.6	1	6010B	01-Aug	02-Aug	R'
Copper, Total	80.	mg/kg	2.6	1	6010B	01-Aug	02-Aug	R
Iron, Total	21000	mg/kg	13.	1	6010B	01-Aug	02-Aug	R
Lead, Total	440	mg/kg	13.	1	6010B	01-Aug	02-Aug	R
Magnesium, Total	1200	mg/kg	26.	1	6010B	01-Aug	02-Aug	R
Manganese, Total	800	mg/kg	2.6	1	6010B	01-Aug	02-Aug	R
Mercury, Total	ND	mg/kg	1.6	1	7471A	02-Aug	03-Aug	A
Nickel, Total	40.	mg/kg	6.4	1	6010B	01-Aug	02-Aug	R
Selenium, Total	ND	mg/kg	5.1	1	6010B	01-Aug	02-Aug	R
Silver, Total	ND	mg/kg	2.6	1	6010B	01-Aug	02-Aug	R
Thallium, Total	ND	mg/kg	5.1	1	6010B	01-Aug	02-Aug	R
Zinc, Total	400	mg/kg	13.	1	6010B	01-Aug	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-09
BSW-4
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	2.2	mg/l	0.15	30	4500N-C		04-Aug	EI
Phosphorus, Total	0.51	mg/l	0.01	30	4500P-E		01-Aug	DI
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Barium, Total	0.05	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Copper, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Iron, Total	5.4	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Magnesium, Total	3.0	mg/l	0.10	1	6010B	31-Jul	02-Aug	RI
Manganese, Total	0.54	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	AC
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	RI
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RI
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RI
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	TI
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-10
BSED-4
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Specific Conductance	130	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	20.	%	0.10	30	2540G		02-Aug	JI
pH	5.9	SU	-	1	9045C		28-Jul	RJ
Nitrogen, Total Kjeldahl	6200	mg/kg	320	30	4500N-C		02-Aug	EI
Phosphorus, Total	700	mg/kg	180	30	4500P-E		01-Aug	J'
Total Metals				1	3051			
Arsenic, Total	4.8	mg/kg	2.0	1	6010B	01-Aug	02-Aug	R
Barium, Total	75.	mg/kg	2.0	1	6010B	01-Aug	02-Aug	R
Cadmium, Total	ND	mg/kg	2.0	1	6010B	01-Aug	02-Aug	R
Chromium, Total	70.	mg/kg	2.0	1	6010B	01-Aug	02-Aug	R
Copper, Total	67.	mg/kg	2.0	1	6010B	01-Aug	02-Aug	R
Iron, Total	9100	mg/kg	9.9	1	6010B	01-Aug	02-Aug	R
Lead, Total	120	mg/kg	9.9	1	6010B	01-Aug	02-Aug	R
Magnesium, Total	980	mg/kg	20.	1	6010B	01-Aug	02-Aug	R
Manganese, Total	92.	mg/kg	2.0	1	6010B	01-Aug	02-Aug	R
Mercury, Total	ND	mg/kg	1.2	1	7471A	02-Aug	03-Aug	A
Nickel, Total	16.	mg/kg	4.9	1	6010B	01-Aug	02-Aug	R
Selenium, Total	ND	mg/kg	3.9	1	6010B	01-Aug	02-Aug	R
Silver, Total	ND	mg/kg	2.0	1	6010B	01-Aug	02-Aug	R
Thallium, Total	ND	mg/kg	3.9	1	6010B	01-Aug	02-Aug	R
Zinc, Total	92.	mg/kg	9.9	1	6010B	01-Aug	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-11
BSW-5
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.69	mg/l	0.15	30	4500N-C		04-Aug	EL
Phosphorus, Total	0.04	mg/l	0.01	30	4500P-E		01-Aug	DI
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RV
Barium, Total	0.03	mg/l	0.01	1	6010B	31-Jul	02-Aug	RV
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RV
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RV
Copper, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RV
Iron, Total	0.64	mg/l	0.05	1	6010B	31-Jul	02-Aug	RV
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RV
Magnesium, Total	2.4	mg/l	0.10	1	6010B	31-Jul	02-Aug	RV
Manganese, Total	0.17	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	AC
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	RI
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RI
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RI
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	TI
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-12
BSED-5
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Specific Conductance	260	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	58.	%	0.10	30	2540G		02-Aug	JP
pH	6.7	SU	-	1	9045C		28-Jul	RT
Nitrogen, Total Kjeldahl	ND	mg/kg	100	30	4500N-C		02-Aug	ED
Phosphorus, Total	95.	mg/kg	10.	30	4500P-E		01-Aug	JT
Total Metals				1	3051			
Arsenic, Total	ND	mg/kg	0.68	1	6010B	01-Aug	02-Aug	RV
Barium, Total	15.	mg/kg	0.68	1	6010B	01-Aug	02-Aug	RV
Cadmium, Total	ND	mg/kg	0.68	1	6010B	01-Aug	02-Aug	RV
Chromium, Total	6.0	mg/kg	0.68	1	6010B	01-Aug	02-Aug	RV
Copper, Total	9.7	mg/kg	0.68	1	6010B	01-Aug	02-Aug	RV
Iron, Total	3600	mg/kg	3.4	1	6010B	01-Aug	02-Aug	RV
Lead, Total	28.	mg/kg	3.4	1	6010B	01-Aug	02-Aug	RV
Magnesium, Total	260	mg/kg	6.8	1	6010B	01-Aug	02-Aug	RV
Manganese, Total	270	mg/kg	0.68	1	6010B	01-Aug	02-Aug	RV
Mercury, Total	ND	mg/kg	0.43	1	7471A	02-Aug	03-Aug	AC
Nickel, Total	2.0	mg/kg	1.7	1	6010B	01-Aug	02-Aug	RV
Selenium, Total	ND	mg/kg	1.4	1	6010B	01-Aug	02-Aug	RV
Silver, Total	ND	mg/kg	0.68	1	6010B	01-Aug	02-Aug	RV
Thallium, Total	ND	mg/kg	1.4	1	6010B	01-Aug	02-Aug	RV
Zinc, Total	40.	mg/kg	3.4	1	6010B	01-Aug	02-Aug	RV

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-13
BSW-6
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Nitrogen, Total Kjeldahl	0.97	mg/l	0.15	30	4500N-C		04-Aug	El
Phosphorus, Total	0.12	mg/l	0.01	30	4500P-E		01-Aug	DI
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	R
Barium, Total	0.11	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	R
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Copper, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Iron, Total	2.8	mg/l	0.05	1	6010B	31-Jul	02-Aug	R
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Magnesium, Total	3.9	mg/l	0.10	1	6010B	31-Jul	02-Aug	R
Manganese, Total	0.31	mg/l	0.01	1	6010B	31-Jul	02-Aug	R
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	A
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	R
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	R
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	R
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	T
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-14
BSED-6
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Specific Conductance	940	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	11.	%	0.10	30	2540G		02-Aug	JI
pH	6.3	SU	-	1	9045C		28-Jul	RT
Nitrogen, Total Kjeldahl	7900	mg/kg	480	30	4500N-C		02-Aug	EI
Phosphorus, Total	1700	mg/kg	72.	30	4500P-E		01-Aug	J'
Total Metals				1	3051			
Arsenic, Total	5.4	mg/kg	3.6	1	6010B	01-Aug	02-Aug	RI
Barium, Total	200	mg/kg	3.6	1	6010B	01-Aug	02-Aug	RI
Cadmium, Total	4.7	mg/kg	3.6	1	6010B	01-Aug	02-Aug	R'
Chromium, Total	51.	mg/kg	3.6	1	6010B	01-Aug	02-Aug	R'
Copper, Total	240	mg/kg	3.6	1	6010B	01-Aug	02-Aug	R'
Iron, Total	25000	mg/kg	18.	1	6010B	01-Aug	02-Aug	R
Lead, Total	630	mg/kg	18.	1	6010B	01-Aug	02-Aug	R
Magnesium, Total	1300	mg/kg	36.	1	6010B	01-Aug	02-Aug	R
Manganese, Total	790	mg/kg	3.6	1	6010B	01-Aug	02-Aug	R
Mercury, Total	ND	mg/kg	2.3	1	7471A	03-Aug	04-Aug	A
Nickel, Total	26.	mg/kg	9.0	1	6010B	01-Aug	02-Aug	R
Selenium, Total	ND	mg/kg	7.2	1	6010B	01-Aug	02-Aug	R
Silver, Total	ND	mg/kg	3.6	1	6010B	01-Aug	02-Aug	R
Thallium, Total	ND	mg/kg	7.2	1	6010B	01-Aug	02-Aug	R
Zinc, Total	770	mg/kg	18.	1	6010B	01-Aug	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-15
BSW-7
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	1.1	mg/l	0.15	30	4500N-C		04-Aug	ED
Phosphorus, Total	0.11	mg/l	0.01	30	4500P-E		01-Aug	DD
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RW
Barium, Total	0.03	mg/l	0.01	1	6010B	31-Jul	02-Aug	RW
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RW
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RW
Copper, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RW
Iron, Total	0.66	mg/l	0.05	1	6010B	31-Jul	02-Aug	RW
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RW
Magnesium, Total	2.7	mg/l	0.10	1	6010B	31-Jul	02-Aug	RW
Manganese, Total	0.97	mg/l	0.01	1	6010B	31-Jul	02-Aug	RW
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	AC
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	RW
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RW
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RW
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	TC
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-16
BSED-7
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Specific Conductance	300	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	54.	%	0.10	30	2540G		02-Aug	JF
pH	6.9	SU	-	1	9045C		28-Jul	RT
Nitrogen, Total Kjeldahl	420	mg/kg	84.	30	4500N-C		02-Aug	EI
Phosphorus, Total	200	mg/kg	11.	30	4500P-E		01-Aug	J
Total Metals				1	3051			
Arsenic, Total	1.4	mg/kg	0.73	1	6010B	01-Aug	02-Aug	RI
Barium, Total	65.	mg/kg	0.73	1	6010B	01-Aug	02-Aug	RI
Cadmium, Total	0.97	mg/kg	0.73	1	6010B	01-Aug	02-Aug	RI
Chromium, Total	11.	mg/kg	0.73	1	6010B	01-Aug	02-Aug	RI
Copper, Total	13.	mg/kg	0.73	1	6010B	01-Aug	02-Aug	R
Iron, Total	5400	mg/kg	3.6	1	6010B	01-Aug	02-Aug	R
Lead, Total	37.	mg/kg	3.6	1	6010B	01-Aug	02-Aug	R
Magnesium, Total	170	mg/kg	7.3	1	6010B	01-Aug	02-Aug	R
Manganese, Total	900	mg/kg	0.73	1	6010B	01-Aug	02-Aug	R
Mercury, Total	ND	mg/kg	0.46	1	7471A	03-Aug	04-Aug	A
Nickel, Total	8.8	mg/kg	1.8	1	6010B	01-Aug	02-Aug	R
Selenium, Total	ND	mg/kg	1.4	1	6010B	01-Aug	02-Aug	R
Silver, Total	ND	mg/kg	0.73	1	6010B	01-Aug	02-Aug	R
Thallium, Total	ND	mg/kg	1.4	1	6010B	01-Aug	02-Aug	R
Zinc, Total	150	mg/kg	3.6	1	6010B	01-Aug	02-Aug	F

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-17
BSW-9
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.84	mg/l	0.15	30	4500N-C		04-Aug	EI
Phosphorus, Total	0.05	mg/l	0.01	30	4500P-E		01-Aug	DI
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RV
Barium, Total	0.05	mg/l	0.01	1	6010B	31-Jul	02-Aug	RV
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RV
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RV
Copper, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RV
Iron, Total	2.0	mg/l	0.05	1	6010B	31-Jul	02-Aug	RV
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RV
Magnesium, Total	1.8	mg/l	0.10	1	6010B	31-Jul	02-Aug	RV
Manganese, Total	0.16	mg/l	0.01	1	6010B	31-Jul	02-Aug	RV
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	AC
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	RV
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RV
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RV
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	TI
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-18
BSED-9
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Specific Conductance	190	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	61.	%	0.10	30	2540G		02-Aug	JI
pH	6.4	SU	-	1	9045C		28-Jul	RT
Nitrogen, Total Kjeldahl	ND	mg/kg	84.	30	4500N-C		02-Aug	EI
Phosphorus, Total	340	mg/kg	9.8	30	4500P-E		01-Aug	J'
Total Metals				1	3051			
Arsenic, Total	0.86	mg/kg	0.65	1	6010B	01-Aug	03-Aug	R'
Barium, Total	28.	mg/kg	0.65	1	6010B	01-Aug	03-Aug	R'
Cadmium, Total	ND	mg/kg	0.65	1	6010B	01-Aug	03-Aug	R'
Chromium, Total	2.1	mg/kg	0.65	1	6010B	01-Aug	03-Aug	R'
Copper, Total	6.7	mg/kg	0.65	1	6010B	01-Aug	03-Aug	R
Iron, Total	7500	mg/kg	3.2	1	6010B	01-Aug	03-Aug	R
Lead, Total	18.	mg/kg	3.2	1	6010B	01-Aug	03-Aug	R
Magnesium, Total	440	mg/kg	6.5	1	6010B	01-Aug	03-Aug	R
Manganese, Total	110	mg/kg	0.65	1	6010B	01-Aug	03-Aug	R
Mercury, Total	ND	mg/kg	0.41	1	7471A	03-Aug	04-Aug	A
Nickel, Total	2.4	mg/kg	1.6	1	6010B	01-Aug	03-Aug	R
Selenium, Total	ND	mg/kg	1.3	1	6010B	01-Aug	03-Aug	R
Silver, Total	ND	mg/kg	0.65	1	6010B	01-Aug	03-Aug	R
Thallium, Total	ND	mg/kg	1.3	1	6010B	01-Aug	03-Aug	R
Zinc, Total	48.	mg/kg	3.2	1	6010B	01-Aug	03-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-19
BSW-10
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.72	mg/l	0.15	30	4500N-C		04-Aug	EI
Phosphorus, Total	0.16	mg/l	0.01	30	4500P-E		01-Aug	DI
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Barium, Total	0.02	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Copper, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Iron, Total	2.1	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Magnesium, Total	2.0	mg/l	0.10	1	6010B	31-Jul	02-Aug	RI
Manganese, Total	0.28	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	AC
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	RI
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RI
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RI
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	TI
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-20
BSED-10
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Specific Conductance	180	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	6.6	%	0.10	30	2540G		02-Aug	JI
pH	6.2	SU	-	1	9045C		28-Jul	R:
Nitrogen, Total Kjeldahl	9000	mg/kg	1100	30	4500N-C		02-Aug	EI
Phosphorus, Total	1300	mg/kg	120	30	4500P-E		01-Aug	J'
Total Metals				1	3051			
Arsenic, Total	19.	mg/kg	6.0	1	6010B	01-Aug	03-Aug	R'
Barium, Total	270	mg/kg	6.0	1	6010B	01-Aug	03-Aug	R'
Cadmium, Total	6.1	mg/kg	6.0	1	6010B	01-Aug	03-Aug	R'
Chromium, Total	48.	mg/kg	6.0	1	6010B	01-Aug	03-Aug	R
Copper, Total	170	mg/kg	6.0	1	6010B	01-Aug	03-Aug	R
Iron, Total	52000	mg/kg	30.	1	6010B	01-Aug	03-Aug	R
Lead, Total	520	mg/kg	30.	1	6010B	01-Aug	03-Aug	R
Magnesium, Total	2100	mg/kg	60.	1	6010B	01-Aug	03-Aug	R
Manganese, Total	3600	mg/kg	6.0	1	6010B	01-Aug	03-Aug	R
Mercury, Total	ND	mg/kg	3.8	1	7471A	03-Aug	04-Aug	A
Nickel, Total	28.	mg/kg	15.	1	6010B	01-Aug	03-Aug	F
Selenium, Total	ND	mg/kg	12.	1	6010B	01-Aug	03-Aug	F
Silver, Total	ND	mg/kg	6.0	1	6010B	01-Aug	03-Aug	F
Thallium, Total	ND	mg/kg	12.	1	6010B	01-Aug	03-Aug	F
Zinc, Total	860	mg/kg	30.	1	6010B	01-Aug	03-Aug	I

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-21
BSW-11
Sample Matrix: WATER

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	1.9	mg/l	0.15	30	4500N-C		04-Aug	ED
Phosphorus, Total	0.30	mg/l	0.01	30	4500P-E		01-Aug	DI
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RW
Barium, Total	0.11	mg/l	0.01	1	6010B	31-Jul	02-Aug	RW
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RW
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RW
Copper, Total	0.01	mg/l	0.01	1	6010B	31-Jul	02-Aug	RW
Iron, Total	8.6	mg/l	0.05	1	6010B	31-Jul	02-Aug	RW
Lead, Total	0.04	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Magnesium, Total	3.0	mg/l	0.10	1	6010B	31-Jul	02-Aug	RI
Manganese, Total	2.7	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	AC
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	RI
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RI
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	RI
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	TI
Zinc, Total	0.14	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0006158-22
BSED-11
Sample Matrix: SOIL

Date Collected: 28-JUL-2000
Date Received : 28-JUL-2000
Date Reported : 08-AUG-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Specific Conductance	280	umhos/cm	10.	1	9050A		28-Jul	RS
Solids, Total	8.6	%	0.10	30	2540G		02-Aug	JF
pH	6.8	SU	-	1	9045C		28-Jul	RT
Nitrogen, Total Kjeldahl	6900	mg/kg	650	30	4500N-C		02-Aug	EI
Phosphorus, Total	1500	mg/kg	69.	30	4500P-E		01-Aug	J?
Total Metals				1	3051			
Arsenic, Total	9.8	mg/kg	1.2	1	6010B	01-Aug	03-Aug	RI
Barium, Total	180	mg/kg	1.2	1	6010B	01-Aug	03-Aug	RI
Cadmium, Total	4.0	mg/kg	1.2	1	6010B	01-Aug	03-Aug	RI
Chromium, Total	110	mg/kg	1.2	1	6010B	01-Aug	03-Aug	RI
Copper, Total	120	mg/kg	1.2	1	6010B	01-Aug	03-Aug	RI
Iron, Total	31000	mg/kg	5.8	1	6010B	01-Aug	03-Aug	RI
Lead, Total	410	mg/kg	5.8	1	6010B	01-Aug	03-Aug	R
Magnesium, Total	1300	mg/kg	12.	1	6010B	01-Aug	03-Aug	R
Manganese, Total	1900	mg/kg	1.2	1	6010B	01-Aug	03-Aug	R
Mercury, Total	ND	mg/kg	2.9	1	7471A	03-Aug	04-Aug	A
Nickel, Total	47.	mg/kg	2.9	1	6010B	01-Aug	03-Aug	R
Selenium, Total	ND	mg/kg	2.3	1	6010B	01-Aug	03-Aug	R
Silver, Total	ND	mg/kg	1.2	1	6010B	01-Aug	03-Aug	R
Thallium, Total	ND	mg/kg	2.3	1	6010B	01-Aug	03-Aug	R
Zinc, Total	660	mg/kg	5.8	1	6010B	01-Aug	03-Aug	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

Laboratory Job Number: L0006158

Parameter	Value 1	Value 2	RPD	Units
Specific Conductance for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (L0006158-22, WG60280)				
Specific Conductance	280	280	0	umhos/cm
Solids, Total for sample(s) 02,04,06,08,10,12,14,16,18,20 (L0006177-01, WG60569)				
Solids, Total	91.	92.	1	%
Solids, Total for sample(s) 22 (L0006145-01, WG60600)				
Solids, Total	83.	83.	0	%
pH for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (L0006158-22, WG60269)				
pH	6.8	6.8	0	SU
Nitrogen, Total Kjeldahl for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (L0006064-01, WG604				
Nitrogen, Total Kjeldahl	ND	5000	27	mg/kg
Nitrogen, Total Kjeldahl for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (L0006158-21, WG605				
Nitrogen, Total Kjeldahl	1.9	1.9	0	mg/l
Phosphorus, Total for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (L0006158-21, WG60433)				
Phosphorus, Total	0.30	0.27	11	mg/l
Phosphorus, Total for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (L0006158-08, WG60517)				
Phosphorus, Total	1700	1900	11	mg/kg
Total Metals for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (L0006158-01, WG60406)				
Arsenic, Total	ND	ND	NC	mg/l
Barium, Total	0.02	0.02	4	mg/l
Cadmium, Total	ND	ND	NC	mg/l
Chromium, Total	ND	ND	NC	mg/l
Copper, Total	0.02	0.02	0	mg/l
Iron, Total	0.78	0.83	6	mg/l
Lead, Total	ND	ND	NC	mg/l
Magnesium, Total	2.8	2.8	0	mg/l
Manganese, Total	0.35	0.35	0	mg/l
Nickel, Total	ND	ND	NC	mg/l
Selenium, Total	ND	ND	NC	mg/l
Silver, Total	ND	ND	NC	mg/l
Thallium, Total	ND	ND	NC	mg/l
Zinc, Total	ND	ND	NC	mg/l
Total Metals for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (L0006158-02, WG60551)				
Arsenic, Total	17.	14.	19	mg/kg
Barium, Total	160	160	0	mg/kg
Cadmium, Total	ND	ND	NC	mg/kg
Chromium, Total	67.	58.	14	mg/kg
Copper, Total	65.	61.	6	mg/kg
Lead, Total	430	430	0	mg/kg
Magnesium, Total	2400	1600	40	mg/kg
Manganese, Total	930	870	7	mg/kg

Laboratory Job Number: L0006158

Continued

Parameter	Value 1	Value 2	RPD	Units
Total Metals for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (L0006158-02, WG60551)				
Nickel, Total	32.	27.	17	mg/kg
Selenium, Total	ND	ND	NC	mg/kg
Silver, Total	ND	ND	NC	mg/kg
Thallium, Total	ND	ND	NC	mg/kg
Zinc, Total	470	430	9	mg/kg
Total Metals for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (L0006158-01, WG60479)				
Mercury, Total	0.0006	0.0006	0	mg/l
Total Metals for sample(s) 02,04,06,08,10,12 (L0006258-01, WG60577)				
Mercury, Total	0.32	0.37	14	mg/kg
Total Metals for sample(s) 14,16,18,20,22 (L0006165-01, WG60704)				
Mercury, Total	ND	ND	NC	mg/kg

Laboratory Job Number: L0006158

Parameter	% Recovery
Specific Conductance LCS for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (WG60280)	
Specific Conductance	100
Specific Conductance LCS for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (WG60280)	
Specific Conductance	100
pH LCS for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (WG60269)	
pH	100
Nitrogen, Total Kjeldahl LCS for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (WG60451)	
Nitrogen, Total Kjeldahl	100
Nitrogen, Total Kjeldahl LCS for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (WG60572)	
Nitrogen, Total Kjeldahl	100
Phosphorus, Total LCS for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (WG60433)	
Phosphorus, Total	100
Phosphorus, Total LCS for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (WG60517)	
Phosphorus, Total	100
Total Metals LCS for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (WG60406)	
Arsenic, Total	98
Barium, Total	110
Cadmium, Total	105
Chromium, Total	100
Copper, Total	100
Iron, Total	100
Lead, Total	100
Magnesium, Total	100
Manganese, Total	100
Nickel, Total	101
Selenium, Total	105
Silver, Total	96
Thallium, Total	104
Zinc, Total	110
Total Metals LCS for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (WG60551)	
Arsenic, Total	86
Barium, Total	93
Cadmium, Total	93
Chromium, Total	95
Copper, Total	100
Iron, Total	110
Lead, Total	92
Magnesium, Total	94
Manganese, Total	110
Nickel, Total	90
Selenium, Total	76

Laboratory Job Number: L0006158

Continued

Parameter	% Recovery
Total Metals LCS for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (WG60551)	
Silver, Total	88
Thallium, Total	88
Zinc, Total	95
Total Metals LCS for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (WG60479)	
Mercury, Total	103
Total Metals LCS for sample(s) 14,16,18,20,22 (WG60704)	
Mercury, Total	108
Total Metals LCS for sample(s) 02,04,06,08,10,12 (WG60577)	
Mercury, Total	104
Nitrogen, Total Kjeldahl SPIKE for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (L0006064-01,	
Nitrogen, Total Kjeldahl	128
Nitrogen, Total Kjeldahl SPIKE for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (L0006158-01,	
Nitrogen, Total Kjeldahl	99
Phosphorus, Total SPIKE for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (L0005932-04, WG60433	
Phosphorus, Total	100
Phosphorus, Total SPIKE for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (L0006158-02, WG60517	
Phosphorus, Total	100
Total Metals SPIKE for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (L0006158-03, WG60406)	
Arsenic, Total	99
Barium, Total	99
Cadmium, Total	101
Chromium, Total	100
Copper, Total	110
Iron, Total	110
Lead, Total	100
Magnesium, Total	96
Manganese, Total	100
Nickel, Total	98
Selenium, Total	100
Silver, Total	93
Thallium, Total	103
Zinc, Total	110
Total Metals SPIKE for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (L0006158-06, WG60551)	
Arsenic, Total	95
Barium, Total	90
Cadmium, Total	89
Chromium, Total	96
Copper, Total	100
Iron, Total	1200

Laboratory Job Number: L0006158

Continued

Parameter	% Recovery
Total Metals SPIKE for sample(s) 02,04,06,08,10,12,14,16,18,20,22 (L0006158-06, WG60551)	
Lead, Total	80
Magnesium, Total	100
Manganese, Total	170
Nickel, Total	86
Selenium, Total	80
Silver, Total	24
Thallium, Total	100
Zinc, Total	35
Total Metals SPIKE for sample(s) 01,03,05,07,09,11,13,15,17,19,21 (L0006158-03, WG60479)	
Mercury, Total	128
Total Metals SPIKE for sample(s) 02,04,06,08,10,12 (L0006258-02, WG60577)	
Mercury, Total	86
Total Metals SPIKE for sample(s) 14,16,18,20,22 (L0006165-02, WG60704)	
Mercury, Total	123

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0006158

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Blank Analysis for sample(s) 02,04,06,08,10,12,14,16,18,20,22								
Nitrogen, Total Kjeldahl	ND	mg/kg	0.15	30	4500N-C		02-Aug	EI
Blank Analysis for sample(s) 01,03,05,07,09,11,13,15,17,19,21								
Nitrogen, Total Kjeldahl	ND	mg/l	0.15	30	4500N-C		04-Aug	EI
Blank Analysis for sample(s) 01,03,05,07,09,11,13,15,17,19,21								
Phosphorus, Total	ND	mg/l	0.01	30	4500P-E		01-Aug	DI
Blank Analysis for sample(s) 02,04,06,08,10,12,14,16,18,20,22								
Phosphorus, Total	ND	mg/kg	1.0	30	4500P-E		01-Aug	J'
Blank Analysis for sample(s) 01,03,05,07,09,11,13,15,17,19,21								
Total Metals				1	3015			
Arsenic, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Barium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Cadmium, Total	ND	mg/l	0.005	1	6010B	31-Jul	02-Aug	RI
Chromium, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Copper, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Iron, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	RI
Lead, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Magnesium, Total	ND	mg/l	0.10	1	6010B	31-Jul	02-Aug	RI
Manganese, Total	ND	mg/l	0.01	1	6010B	31-Jul	02-Aug	RI
Nickel, Total	ND	mg/l	0.025	1	6010B	31-Jul	02-Aug	R
Selenium, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	R
Silver, Total	ND	mg/l	0.010	1	6010B	31-Jul	02-Aug	R
Thallium, Total	ND	mg/l	0.001	1	7841	31-Jul	04-Aug	T
Zinc, Total	ND	mg/l	0.05	1	6010B	31-Jul	02-Aug	R
Blank Analysis for sample(s) 02,04,06,08,10,12,14,16,18,20,22								
Total Metals				1	3051			
Arsenic, Total	ND	mg/kg	0.40	1	6010B	01-Aug	02-Aug	F
Barium, Total	ND	mg/kg	0.40	1	6010B	01-Aug	02-Aug	F
Cadmium, Total	ND	mg/kg	0.40	1	6010B	01-Aug	02-Aug	F
Chromium, Total	ND	mg/kg	0.40	1	6010B	01-Aug	02-Aug	F
Copper, Total	ND	mg/kg	0.40	1	6010B	01-Aug	02-Aug	F
Iron, Total	3.4	mg/kg	2.0	1	6010B	01-Aug	02-Aug	F
Lead, Total	ND	mg/kg	2.0	1	6010B	01-Aug	02-Aug	F
Magnesium, Total	ND	mg/kg	4.0	1	6010B	01-Aug	02-Aug	F
Manganese, Total	ND	mg/kg	0.40	1	6010B	01-Aug	02-Aug	F
Nickel, Total	ND	mg/kg	1.0	1	6010B	01-Aug	02-Aug	F
Selenium, Total	ND	mg/kg	0.80	1	6010B	01-Aug	02-Aug	F
Silver, Total	ND	mg/kg	0.40	1	6010B	01-Aug	02-Aug	F

Laboratory Job Number: L0006158

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 02,04,06,08,10,12,14,16,18,20,22								
Total Metals				1	3051			
Thallium, Total	ND	mg/kg	0.80	1	6010B	01-Aug	02-Aug	RW
Zinc, Total	ND	mg/kg	2.0	1	6010B	01-Aug	02-Aug	RW
Blank Analysis for sample(s) 01,03,05,07,09,11,13,15,17,19,21								
Total Metals								
Mercury, Total	ND	mg/l	0.0005	1	7470A	01-Aug	02-Aug	AC
Blank Analysis for sample(s) 02,04,06,08,10,12								
Total Metals								
Mercury, Total	ND	mg/kg	0.25	1	7471A	02-Aug	03-Aug	AC
Blank Analysis for sample(s) 14,16,18,20,22								
Total Metals								
Mercury, Total	ND	mg/kg	0.25	1	7471A	03-Aug	04-Aug	AC

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

№ 2200 Sheet _____ of _____

ALPHA Job #: L0006658

Date Rec'd in Lab: 7/28

Date Due: 8/4 5 day turn

Client Name: BETA Engineering
Client Address: 6 Blackstone Valley Place, Lincoln, RI 02865
Phone #: (401) 333-2382 FAX #: (401) 333-3225

Project Name: Whitman's Pond
Project Location: Weymouth, MA
Project #: —
Project Manager: Nicole Wilkerson

Report To:
Bill To:
PO#:

☐ Standard TAT
☐ RUSH TAT
☐ FAX Results
☐ State Forms
☐ Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)

* As, Ba, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Ni, Se, Ag, Th, Zn
** use water on top of sediment jar (no preservative)
*** NO Shaw data. to meet Mass. DW

ALPHA Lab #	Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Soluble: Field Filtered? (Y/N)	Total Hydrocarbons *	TKN	T Phos	pH **	Conductivity **					
6658-1	BSW-1	GW	7/26/00	12:10	KW	N	X	X	X							
-2	BSED-1	B		↓						X	X					
-3	BSW-1A	GW		12:55												
-4	BSED-1A	B		↓						X	X					
-5	BSW-2	GW		10:35												
-6	BSED-2	B		↓						X	X					
-7	BSW-3	GW		12:35												
-8	BSED-3	B		↓						X	X					
-9	BSW-4	GW		3:25												
-10	BSED-4	B		↓						X	X					
-11	BSW-5	GW	↓	11:10	↓	N	↓	↓	↓							
	# of Containers:						11	11	11	5	5					
	Container Type: *						P/G	P/G	P/G	G	G					
							P/A	P/A	P/A	A	A					

ANALYSIS REQUEST

	Time	Date
Transfers Accepted By:	4:00	7/26/00
Transfers Relinquished By:		7/28

All samples submitted are subject to Alpha's standard Terms and Conditions.

* See Reverse side for Matrix, Container, and Preservative Codes.

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

№ 2202 Sheet _____ of _____

ALPHA Job #: L0006658

Date Rec'd in Lab: 7/28

Date Due: 8/4 5pm Tues

Client Name: BETA Engineering
Client Address: 60 Blackstone Valley Place, Lincoln, RI 02865
Phone #: (401) 333-2382 FAX #: (401) 333-9225

Project Name: Whitman's Pond
Project Location: Weymouth, MA
Project #: —
Project Manager: Nicole W. Keenan

Report To:
Bill To:
PO#:

☐ Standard TAT
☐ RUSH TAT
☐ FAX Results
☐ State Forms
☐ Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)

* As, Ba, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Ni, Se, Ag, Tl, Zn
** Use water on top of sediment jar
*** MRL needs to meet Mass. DEP Standard

ANALYSIS REQUEST

ALPHA Lab #	Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	Total Metals *	TKN	TPhos	OH ***	Cadmium, Silver **					
-12	BSED-5	B	7/25/00	11:10	JR/NW	N	X	X	X	X	X					
-13	BSW-6	GW		10:05												
-14	BSED-6	B		↓						X	X					
-15	BSW-7	GW		1:20												
-16	BSED-7	B		↓						X	X					
-17	BSW-9	GW		2:35												
-18	~~BSED~~ BSED-9	B		↓						X	X					
-19	BSW-10	GW		2:50												
-20	BSED-10	B		↓						X	X					
-21	BSW-11	GW		11:45												
-22	BSED-11	B	↓	↓	↓	↓	↓	↓	↓	X	X					
	# of Containers:						11	11	11	6	6					
	Container Type: *						P/G	P/G	P/G	G	G					
	Preservative: *						A/C	D/A	D/A	A	A					

Transfers Accepted By: Beth Vincent / NKeenan — Date: 7/28/00 — Time: 4:00 pm

Transfers Relinquished By: Beth Vincent — Date: 7/28/00 — Time: 4:00 pm

All samples submitted are subject to Alpha's standard Terms and Conditions.

See Reverse side for Matrix, Container, and Preservative Codes.

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65 NY:11148

CERTIFICATE OF ANALYSIS

Client: Beta Engineering, Inc.

Address: 6 Blackstone Valley Place
Lincoln, RI 02865

Attn: Nicole Wilkinson

Project Number: 1826

Site: WHITMANS

Laboratory Job Number: L0008409

Invoice Number: 41833

Date Received: 22-SEP-00

Date Reported: 29-SEP-00

Delivery Method: Alpha

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0008409-01	SED6	WEYMOUTH, MA
L0008409-02	SW6	WEYMOUTH, MA
L0008409-03	SED2	WEYMOUTH, MA
L0008409-04	SW2	WEYMOUTH, MA
L0008409-05	SED5	WEYMOUTH, MA
L0008409-06	SW5	WEYMOUTH, MA
L0008409-07	SED11	WEYMOUTH, MA
L0008409-08	SW11	WEYMOUTH, MA
L0008409-09	SED1	WEYMOUTH, MA
L0008409-10	SW1	WEYMOUTH, MA
L0008409-11	SW9	WEYMOUTH, MA
L0008409-12	SED3	WEYMOUTH, MA
L0008409-13	SW3	WEYMOUTH, MA
L0008409-14	SED1A	WEYMOUTH, MA
L0008409-15	SW1A	WEYMOUTH, MA
L0008409-16	SED7	WEYMOUTH, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized by: James B. Bates for

Scott McLean - Laboratory Director

Laboratory Job Number: L0008409
Date Reported: 29-SEP-00

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0008409-17	SW7	WEYMOUTH, MA
L0008409-18	SED4	WEYMOUTH, MA
L0008409-19	SW4	WEYMOUTH, MA
L0008409-20	SED10	WEYMOUTH, MA
L0008409-21	SW10	WEYMOUTH, MA
L0008409-22	SED9	WEYMOUTH, MA

Laboratory Job Number: L0008409

Alpha Report L0008409:

The spike recoveries for Antimony, Cadmium, Selenium, and Thallium were outside of our normally acceptable range. The post-spike produced acceptable results of Antimony at 98%, Cadmium at 86%, Selenium at 94%, and Thallium at 84%.

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-01
SED6
Sample Matrix: SOIL

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Solids, Total	15.	%	0.10	30	2540G		27-Sep	DM
Nitrogen, Total Kjeldahl	6200	mg/kg	280	30	4500N-C		29-Sep	EL
Phosphorus, Total	1500	mg/kg	49.	30	4500P-E		28-Sep	JT
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	13.	1	6010B	25-Sep	27-Sep	RW
Arsenic, Total	6.6	mg/kg	2.6	1	6010B	25-Sep	27-Sep	RW
Beryllium, Total	ND	mg/kg	1.3	1	6010B	25-Sep	27-Sep	RW
Cadmium, Total	4.2	mg/kg	2.6	1	6010B	25-Sep	27-Sep	RW
Chromium, Total	62.	mg/kg	2.6	1	6010B	25-Sep	27-Sep	RW
Copper, Total	180	mg/kg	2.6	1	6010B	25-Sep	27-Sep	RW
Lead, Total	880	mg/kg	13.	1	6010B	25-Sep	27-Sep	RW
Mercury, Total	ND	mg/kg	1.7	1	7471A	27-Sep	28-Sep	DV
Nickel, Total	41.	mg/kg	6.5	1	6010B	25-Sep	27-Sep	RI
Selenium, Total	ND	mg/kg	5.2	1	6010B	25-Sep	27-Sep	RI
Silver, Total	ND	mg/kg	2.6	1	6010B	25-Sep	27-Sep	RI
Thallium, Total	ND	mg/kg	5.2	1	6010B	25-Sep	27-Sep	RI
Zinc, Total	790	mg/kg	13.	1	6010B	25-Sep	27-Sep	RI

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-02
SW6
Sample Matrix: WATER

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.99	mg/l	0.15	30	4500N-C		29-Sep	ED
Phosphorus, Total	0.06	mg/l	0.01	30	4500P-E		27-Sep	JT
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	RW
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	RW
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	RW
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Copper, Total	0.02	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Lead, Total	0.06	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	DY
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	RW
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	TT
Zinc, Total	0.17	mg/l	0.05	1	6010B	25-Sep	28-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-03
SED2
Sample Matrix: SOIL

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Solids, Total	12.	%	0.10	30	2540G		27-Sep	DM
Nitrogen, Total Kjeldahl	10000	mg/kg	470	30	4500N-C		29-Sep	EI
Phosphorus, Total	ND	mg/kg	340	30	4500P-E		28-Sep	JT
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	17.	1	6010B	25-Sep	27-Sep	RV
Arsenic, Total	20.	mg/kg	3.3	1	6010B	25-Sep	27-Sep	RV
Beryllium, Total	2.4	mg/kg	1.7	1	6010B	25-Sep	27-Sep	RV
Cadmium, Total	3.4	mg/kg	3.3	1	6010B	25-Sep	27-Sep	RV
Chromium, Total	110	mg/kg	3.3	1	6010B	25-Sep	27-Sep	RV
Copper, Total	100	mg/kg	3.3	1	6010B	25-Sep	27-Sep	RV
Lead, Total	350	mg/kg	17.	1	6010B	25-Sep	27-Sep	RI
Mercury, Total	ND	mg/kg	2.1	1	7471A	27-Sep	28-Sep	D'
Nickel, Total	61.	mg/kg	8.3	1	6010B	25-Sep	27-Sep	RI
Selenium, Total	ND	mg/kg	6.6	1	6010B	25-Sep	27-Sep	RI
Silver, Total	ND	mg/kg	3.3	1	6010B	25-Sep	27-Sep	RI
Thallium, Total	ND	mg/kg	6.6	1	6010B	25-Sep	27-Sep	R'
Zinc, Total	810	mg/kg	17.	1	6010B	25-Sep	27-Sep	R'

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-04
SW2
Sample Matrix: WATER

Condition of Sample: Satisfactory

Number & Type of Containers: 2-Plastic

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Nitrogen, Total Kjeldahl	0.34	mg/l	0.15	30	4500N-C		29-Sep	EI
Phosphorus, Total	0.01	mg/l	0.01	30	4500P-E		27-Sep	J'
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	R
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	R
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	R
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	R
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	R
Copper, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	R
Lead, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	R
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	D
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	R
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	R
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	R
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	T
Zinc, Total	ND	mg/l	0.05	1	6010B	25-Sep	28-Sep	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-05
SED5
Sample Matrix: SOIL

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Solids, Total	15.	%	0.10	30	2540G		27-Sep	DM
Nitrogen, Total Kjeldahl	4600	mg/kg	380	30	4500N-C		29-Sep	EL
Phosphorus, Total	1600	mg/kg	51.	30	4500P-E		28-Sep	JT
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	13.	1	6010B	25-Sep	27-Sep	RV
Arsenic, Total	10.	mg/kg	2.7	1	6010B	25-Sep	27-Sep	RV
Beryllium, Total	1.5	mg/kg	1.3	1	6010B	25-Sep	27-Sep	RV
Cadmium, Total	3.7	mg/kg	2.7	1	6010B	25-Sep	27-Sep	RV
Chromium, Total	110	mg/kg	2.7	1	6010B	25-Sep	27-Sep	RV
Copper, Total	230	mg/kg	2.7	1	6010B	25-Sep	27-Sep	RV
Lead, Total	560	mg/kg	13.	1	6010B	25-Sep	27-Sep	RV
Mercury, Total	ND	mg/kg	1.7	1	7471A	27-Sep	28-Sep	DY
Nickel, Total	46.	mg/kg	6.6	1	6010B	25-Sep	27-Sep	RI
Selenium, Total	ND	mg/kg	5.3	1	6010B	25-Sep	27-Sep	RI
Silver, Total	ND	mg/kg	2.7	1	6010B	25-Sep	27-Sep	RI
Thallium, Total	ND	mg/kg	5.3	1	6010B	25-Sep	27-Sep	RI
Zinc, Total	810	mg/kg	13.	1	6010B	25-Sep	27-Sep	RI

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-06
SW5
Sample Matrix: WATER

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.26	mg/l	0.15	30	4500N-C		29-Sep	ED
Phosphorus, Total	0.02	mg/l	0.01	30	4500P-E		27-Sep	JT
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	RW
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	RW
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	RW
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Copper, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Lead, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	DY
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	RW
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	TI
Zinc, Total	ND	mg/l	0.05	1	6010B	25-Sep	28-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-07
SED11
Sample Matrix: SOIL

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Solids, Total	20.	%	0.10	30	2540G		27-Sep	DM
Nitrogen, Total Kjeldahl	3600	mg/kg	320	30	4500N-C		29-Sep	ED
Phosphorus, Total	1600	mg/kg	34.	30	4500P-E		28-Sep	JT
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	9.9	1	6010B	25-Sep	27-Sep	RW
Arsenic, Total	24.	mg/kg	2.0	1	6010B	25-Sep	27-Sep	RW
Beryllium, Total	2.4	mg/kg	0.99	1	6010B	25-Sep	27-Sep	RW
Cadmium, Total	3.1	mg/kg	2.0	1	6010B	25-Sep	27-Sep	RW
Chromium, Total	170	mg/kg	2.0	1	6010B	25-Sep	27-Sep	RW
Copper, Total	120	mg/kg	2.0	1	6010B	25-Sep	27-Sep	RW
Lead, Total	640	mg/kg	9.9	1	6010B	25-Sep	27-Sep	RW
Mercury, Total	ND	mg/kg	1.2	1	7471A	27-Sep	28-Sep	DY
Nickel, Total	59.	mg/kg	4.9	1	6010B	25-Sep	27-Sep	RW
Selenium, Total	ND	mg/kg	3.9	1	6010B	25-Sep	27-Sep	RW
Silver, Total	ND	mg/kg	2.0	1	6010B	25-Sep	27-Sep	RW
Thallium, Total	ND	mg/kg	3.9	1	6010B	25-Sep	27-Sep	RW
Zinc, Total	610	mg/kg	9.9	1	6010B	25-Sep	27-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-08
SW11
Sample Matrix: WATER

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.44	mg/l	0.15	30	4500N-C		29-Sep	ED
Phosphorus, Total	0.02	mg/l	0.01	30	4500P-E		27-Sep	JT
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	RW
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	RW
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	RW
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Copper, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Lead, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	DY
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	RW
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	TT
Zinc, Total	ND	mg/l	0.05	1	6010B	25-Sep	28-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-09
SED1
Sample Matrix: SOIL

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Solids, Total	1.9	%	0.10	30	2540G		28-Sep	MA
Nitrogen, Total Kjeldahl	38000	mg/kg	2800	30	4500N-C		29-Sep	ED
Phosphorus, Total	14000	mg/kg	360	30	4500P-E		28-Sep	JT
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	52.	1	6010B	25-Sep	27-Sep	RW
Arsenic, Total	37.	mg/kg	10.	1	6010B	25-Sep	27-Sep	RW
Beryllium, Total	6.2	mg/kg	5.2	1	6010B	25-Sep	27-Sep	RW
Cadmium, Total	ND	mg/kg	10.	1	6010B	25-Sep	27-Sep	RW
Chromium, Total	390	mg/kg	10.	1	6010B	25-Sep	27-Sep	RW
Copper, Total	290	mg/kg	10.	1	6010B	25-Sep	27-Sep	RW
Lead, Total	1400	mg/kg	52.	1	6010B	25-Sep	27-Sep	RW
Mercury, Total	ND	mg/kg	13.	1	7471A	27-Sep	28-Sep	DS
Nickel, Total	140	mg/kg	26.	1	6010B	25-Sep	27-Sep	RW
Selenium, Total	ND	mg/kg	21.	1	6010B	25-Sep	27-Sep	RW
Silver, Total	ND	mg/kg	10.	1	6010B	25-Sep	27-Sep	RW
Thallium, Total	ND	mg/kg	21.	1	6010B	25-Sep	27-Sep	RW
Zinc, Total	1600	mg/kg	52.	1	6010B	25-Sep	27-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-10
SW1
Sample Matrix: WATER

Condition of Sample: Satisfactory

Number & Type of Containers: 2-Plastic

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.36	mg/l	0.15	30	4500N-C		29-Sep	ED
Phosphorus, Total	0.02	mg/l	0.01	30	4500P-E		27-Sep	JT
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	RW
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	RW
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	RW
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Copper, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Lead, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	DY
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	RW
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	TT
Zinc, Total	ND	mg/l	0.05	1	6010B	25-Sep	28-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-11
SW9
Sample Matrix: WATER

Condition of Sample: Satisfactory

Number & Type of Containers: 2-Plastic

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.96	mg/l	0.15	30	4500N-C		29-Sep	ED
Phosphorus, Total	0.08	mg/l	0.01	30	4500P-E		27-Sep	JT
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	RW
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	RW
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	RW
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Copper, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Lead, Total	0.01	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	DY
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	RW
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	TT
Zinc, Total	0.07	mg/l	0.05	1	6010B	25-Sep	28-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-12
SED3
Sample Matrix: SOIL

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Solids, Total	22.	%	0.10	30	2540G		27-Sep	DM
Nitrogen, Total Kjeldahl	2100	mg/kg	250	30	4500N-C		29-Sep	ED
Phosphorus, Total	1100	mg/kg	44.	30	4500P-E		28-Sep	JT
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	9.0	1	6010B	25-Sep	27-Sep	RW
Arsenic, Total	7.8	mg/kg	1.8	1	6010B	25-Sep	27-Sep	RW
Beryllium, Total	1.7	mg/kg	0.90	1	6010B	25-Sep	27-Sep	RW
Cadmium, Total	2.2	mg/kg	1.8	1	6010B	25-Sep	27-Sep	RW
Chromium, Total	100	mg/kg	1.8	1	6010B	25-Sep	27-Sep	RW
Copper, Total	88.	mg/kg	1.8	1	6010B	25-Sep	27-Sep	RW
Lead, Total	320	mg/kg	9.0	1	6010B	25-Sep	27-Sep	RW
Mercury, Total	ND	mg/kg	1.1	1	7471A	27-Sep	28-Sep	DY
Nickel, Total	43.	mg/kg	4.5	1	6010B	25-Sep	27-Sep	RW
Selenium, Total	ND	mg/kg	3.6	1	6010B	25-Sep	27-Sep	RW
Silver, Total	ND	mg/kg	1.8	1	6010B	25-Sep	27-Sep	RW
Thallium, Total	ND	mg/kg	3.6	1	6010B	25-Sep	27-Sep	RW
Zinc, Total	630	mg/kg	9.0	1	6010B	25-Sep	27-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-13
SW3
Sample Matrix: WATER

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.28	mg/l	0.15	30	4500N-C		29-Sep	ED
Phosphorus, Total	0.02	mg/l	0.01	30	4500P-E		27-Sep	JT
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	RW
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	RW
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	RW
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Copper, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Lead, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	DV
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	RW
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	TT
Zinc, Total	ND	mg/l	0.05	1	6010B	25-Sep	28-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-14
SED1A
Sample Matrix: SOIL

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Solids, Total	26.	%	0.10	30	2540G		27-Sep	DM
Nitrogen, Total Kjeldahl	1300	mg/kg	220	30	4500N-C		29-Sep	ED
Phosphorus, Total	500	mg/kg	35.	30	4500P-E		28-Sep	JT
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	7.6	1	6010B	27-Sep	29-Sep	RW
Arsenic, Total	11.	mg/kg	1.5	1	6010B	27-Sep	29-Sep	RW
Beryllium, Total	1.1	mg/kg	0.76	1	6010B	27-Sep	29-Sep	RW
Cadmium, Total	ND	mg/kg	1.5	1	6010B	27-Sep	29-Sep	RW
Chromium, Total	51.	mg/kg	1.5	1	6010B	27-Sep	29-Sep	MG
Copper, Total	46.	mg/kg	1.5	1	6010B	27-Sep	29-Sep	RW
Lead, Total	220	mg/kg	7.6	1	6010B	27-Sep	29-Sep	MG
Mercury, Total	ND	mg/kg	0.96	1	7471A	27-Sep	28-Sep	DY
Nickel, Total	41.	mg/kg	3.8	1	6010B	27-Sep	29-Sep	RW
Selenium, Total	ND	mg/kg	3.0	1	6010B	27-Sep	29-Sep	RW
Silver, Total	ND	mg/kg	1.5	1	6010B	27-Sep	29-Sep	RW
Thallium, Total	ND	mg/kg	3.0	1	6010B	27-Sep	29-Sep	RW
Zinc, Total	480	mg/kg	7.6	1	6010B	27-Sep	29-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-15
SW1A
Sample Matrix: WATER

Condition of Sample: Satisfactory

Number & Type of Containers: 2-Plastic

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	0.57	mg/l	0.15	30	4500N-C		29-Sep	ED
Phosphorus, Total	0.01	mg/l	0.01	30	4500P-E		27-Sep	JT
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	RW
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	RW
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	RW
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Copper, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Lead, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	DY
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	RW
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	TT
Zinc, Total	ND	mg/l	0.05	1	6010B	25-Sep	28-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-16
SED7
Sample Matrix: SOIL

Condition of Sample: Satisfactory

Number & Type of Containers: 2-Amber

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Solids, Total	56.	%	0.10	30	2540G		27-Sep	DN
Nitrogen, Total Kjeldahl	1000	mg/kg	81.	30	4500N-C		29-Sep	EI
Phosphorus, Total	390	mg/kg	16.	30	4500P-E		28-Sep	JT
Total Metals				1	3051			
Antimony, Total	2.7	mg/kg	1.8	1	6010B	25-Sep	27-Sep	RV
Arsenic, Total	2.3	mg/kg	0.35	1	6010B	25-Sep	27-Sep	RV
Beryllium, Total	0.44	mg/kg	0.18	1	6010B	25-Sep	27-Sep	RV
Cadmium, Total	0.51	mg/kg	0.35	1	6010B	25-Sep	27-Sep	RV
Chromium, Total	25.	mg/kg	0.35	1	6010B	25-Sep	27-Sep	RV
Copper, Total	19.	mg/kg	0.35	1	6010B	25-Sep	27-Sep	RV
Lead, Total	58.	mg/kg	1.8	1	6010B	25-Sep	27-Sep	RV
Mercury, Total	ND	mg/kg	0.45	1	7471A	27-Sep	28-Sep	DT
Nickel, Total	18.	mg/kg	0.88	1	6010B	25-Sep	27-Sep	RV
Selenium, Total	ND	mg/kg	0.71	1	6010B	25-Sep	27-Sep	RV
Silver, Total	ND	mg/kg	0.35	1	6010B	25-Sep	27-Sep	RV
Thallium, Total	ND	mg/kg	0.71	1	6010B	25-Sep	27-Sep	RV
Zinc, Total	160	mg/kg	1.8	1	6010B	25-Sep	27-Sep	RV

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-17
SW7
Sample Matrix: WATER

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	2.2	mg/l	0.15	30	4500N-C		29-Sep	EI
Phosphorus, Total	0.16	mg/l	0.02	30	4500P-E		27-Sep	JT
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	RV
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RV
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	RV
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	RV
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RV
Copper, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RV
Lead, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	RV
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	DV
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	RV
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RV
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RV
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	TV
Zinc, Total	ND	mg/l	0.05	1	6010B	25-Sep	28-Sep	RV

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-18
SED4
Sample Matrix: SOIL

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Solids, Total	14.	%	0.10	30	2540G		27-Sep	DI
Nitrogen, Total Kjeldahl	12000	mg/kg	300	30	4500N-C		29-Sep	EI
Phosphorus, Total	1800	mg/kg	52.	30	4500P-E		28-Sep	J'
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	14.	1	6010B	25-Sep	27-Sep	RI
Arsenic, Total	6.3	mg/kg	2.8	1	6010B	25-Sep	27-Sep	RI
Beryllium, Total	1.5	mg/kg	1.4	1	6010B	25-Sep	27-Sep	RI
Cadmium, Total	ND	mg/kg	2.8	1	6010B	25-Sep	27-Sep	R'
Chromium, Total	200	mg/kg	2.8	1	6010B	25-Sep	27-Sep	RI
Copper, Total	120	mg/kg	2.8	1	6010B	25-Sep	27-Sep	R'
Lead, Total	280	mg/kg	14.	1	6010B	25-Sep	27-Sep	R'
Mercury, Total	ND	mg/kg	1.8	1	7471A	27-Sep	28-Sep	D
Nickel, Total	22.	mg/kg	7.0	1	6010B	25-Sep	27-Sep	R'
Selenium, Total	ND	mg/kg	5.6	1	6010B	25-Sep	27-Sep	R
Silver, Total	ND	mg/kg	2.8	1	6010B	25-Sep	27-Sep	R
Thallium, Total	ND	mg/kg	5.6	1	6010B	25-Sep	27-Sep	R
Zinc, Total	190	mg/kg	14.	1	6010B	25-Sep	27-Sep	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-19
SW4
Sample Matrix: WATER

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Nitrogen, Total Kjeldahl	9.2	mg/l	0.15	30	4500N-C		29-Sep	ED
Phosphorus, Total	1.1	mg/l	0.05	30	4500P-E		27-Sep	JT
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	RW
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	RW
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	RW
Chromium, Total	0.02	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Copper, Total	0.03	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Lead, Total	0.05	mg/l	0.01	1	6010B	25-Sep	28-Sep	RW
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	DY
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	RW
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	RW
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	TT
Zinc, Total	0.20	mg/l	0.05	1	6010B	25-Sep	28-Sep	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-20
SED10
Sample Matrix: SOIL

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Solids, Total	79.	%	0.10	30	2540G		27-Sep	DI
Nitrogen, Total Kjeldahl	330	mg/kg	56.	30	4500N-C		29-Sep	EI
Phosphorus, Total	280	mg/kg	11.	30	4500P-E		28-Sep	J'
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	2.5	1	6010B	26-Sep	27-Sep	R
Arsenic, Total	3.4	mg/kg	0.50	1	6010B	26-Sep	27-Sep	R
Beryllium, Total	ND	mg/kg	0.25	1	6010B	26-Sep	27-Sep	R
Cadmium, Total	ND	mg/kg	0.50	1	6010B	26-Sep	27-Sep	R
Chromium, Total	4.8	mg/kg	0.50	1	6010B	26-Sep	27-Sep	R
Copper, Total	7.5	mg/kg	0.50	1	6010B	26-Sep	27-Sep	R
Lead, Total	27.	mg/kg	2.5	1	6010B	26-Sep	27-Sep	R
Mercury, Total	ND	mg/kg	0.32	1	7471A	27-Sep	28-Sep	D
Nickel, Total	3.8	mg/kg	1.2	1	6010B	26-Sep	27-Sep	R
Selenium, Total	ND	mg/kg	1.0	1	6010B	26-Sep	27-Sep	R
Silver, Total	ND	mg/kg	0.50	1	6010B	26-Sep	27-Sep	R
Thallium, Total	ND	mg/kg	1.0	1	6010B	26-Sep	27-Sep	R
Zinc, Total	38.	mg/kg	2.5	1	6010B	26-Sep	27-Sep	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-21
SW10
Sample Matrix: WATER

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	TI
Nitrogen, Total Kjeldahl	4.9	mg/l	0.15	30	4500N-C		29-Sep	EI
Phosphorus, Total	0.26	mg/l	0.02	30	4500P-E		27-Sep	J'
Total Metals				1	3015			
Antimony, Total	ND	mg/l	0.006	1	6010B	25-Sep	28-Sep	R'
Arsenic, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	R'
Beryllium, Total	ND	mg/l	0.004	1	6010B	25-Sep	28-Sep	R'
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	28-Sep	R'
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	R
Copper, Total	ND	mg/l	0.01	1	6010B	25-Sep	28-Sep	R
Lead, Total	0.01	mg/l	0.01	1	6010B	25-Sep	28-Sep	R
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	D
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	28-Sep	R
Selenium, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	R
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	28-Sep	R
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	T
Zinc, Total	0.10	mg/l	0.05	1	6010B	25-Sep	28-Sep	R

Comments: Complete list of References and Glossary of Terms found in Addendum I

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008409-22
SED9
Sample Matrix: SOIL

Date Collected: 21-SEP-2000
Date Received : 22-SEP-2000
Date Reported : 29-SEP-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Amber

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Solids, Total	77.	%	0.10	30	2540G		27-Sep	DM
Nitrogen, Total Kjeldahl	140	mg/kg	55.	30	4500N-C		29-Sep	EI
Phosphorus, Total	280	mg/kg	7.8	30	4500P-E		28-Sep	JT
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	2.6	1	6010B	26-Sep	27-Sep	RI
Arsenic, Total	1.4	mg/kg	0.52	1	6010B	26-Sep	27-Sep	RI
Beryllium, Total	ND	mg/kg	0.26	1	6010B	26-Sep	27-Sep	RI
Cadmium, Total	ND	mg/kg	0.52	1	6010B	26-Sep	27-Sep	RI
Chromium, Total	5.4	mg/kg	0.52	1	6010B	26-Sep	27-Sep	RI
Copper, Total	10.	mg/kg	0.52	1	6010B	26-Sep	27-Sep	RI
Lead, Total	15.	mg/kg	2.6	1	6010B	26-Sep	27-Sep	RI
Mercury, Total	ND	mg/kg	0.32	1	7471A	27-Sep	28-Sep	DI
Nickel, Total	5.9	mg/kg	1.3	1	6010B	26-Sep	27-Sep	RI
Selenium, Total	ND	mg/kg	1.0	1	6010B	26-Sep	27-Sep	RI
Silver, Total	ND	mg/kg	0.52	1	6010B	26-Sep	27-Sep	RI
Thallium, Total	ND	mg/kg	1.0	1	6010B	26-Sep	27-Sep	RI
Zinc, Total	54.	mg/kg	2.6	1	6010B	26-Sep	27-Sep	RI

Comments: Complete list of References and Glossary of Terms found in Addendum I

Laboratory Job Number: L0008409

Parameter	Value 1	Value 2	RPD	Units
Solids, Total for sample(s) 01,03,05,07,12,14,16,18,20,22 (L0008458-01, WG65873)				
Solids, Total	94.	94.	0	%
Solids, Total for sample(s) 09 (L0008409-09, WG65907)				
Solids, Total	1.9	1.9	0	%
Nitrogen, Total Kjeldahl for sample(s) 01,03,05,07,09,12,14,16,18,20,22 (L0008405-01, WG657				
Nitrogen, Total Kjeldahl	17000	12000	34	mg/kg
Nitrogen, Total Kjeldahl for sample(s) 02,15,21 (L0008416-03, WG66065)				
Nitrogen, Total Kjeldahl	12.	11.	9	mg/l
Nitrogen, Total Kjeldahl for sample(s) 04,06,08,10-11,13,17,19 (L0008316-12, WG65866)				
Nitrogen, Total Kjeldahl	19.	19.	0	mg/l
Phosphorus, Total for sample(s) 02,04,06,08,10-11,13,15,17,19,21 (L0008409-19, WG65906)				
Phosphorus, Total	1.1	1.0	10	mg/l
Phosphorus, Total for sample(s) 01,03,05,07,09,12,14,16,18,20,22 (L0008409-07, WG66087)				
Phosphorus, Total	1600	1600	0	mg/kg
Total Metals for sample(s) 20,22 (L0008443-03, WG65763)				
Antimony, Total	ND	ND	NC	mg/kg
Arsenic, Total	9.9	8.8	12	mg/kg
Beryllium, Total	0.31	0.28	10	mg/kg
Cadmium, Total	ND	ND	NC	mg/kg
Chromium, Total	4.8	4.8	0	mg/kg
Copper, Total	9.7	9.6	1	mg/kg
Lead, Total	5.2	5.2	0	mg/kg
Nickel, Total	3.0	3.0	0	mg/kg
Selenium, Total	ND	ND	NC	mg/kg
Silver, Total	ND	ND	NC	mg/kg
Thallium, Total	ND	ND	NC	mg/kg
Zinc, Total	16.	15.	6	mg/kg
Total Metals for sample(s) 02,04,06,08,10-11,13,15,17,19,21 (L0008406-01, WG65624)				
Antimony, Total	ND	ND	NC	mg/l
Arsenic, Total	ND	ND	NC	mg/l
Beryllium, Total	ND	ND	NC	mg/l
Cadmium, Total	ND	ND	NC	mg/l
Chromium, Total	ND	ND	NC	mg/l
Copper, Total	ND	ND	NC	mg/l
Lead, Total	ND	ND	NC	mg/l
Nickel, Total	ND	ND	NC	mg/l
Selenium, Total	ND	ND	NC	mg/l
Silver, Total	ND	ND	NC	mg/l
Zinc, Total	ND	ND	NC	mg/l

Continued

Parameter	Value 1	Value 2	RPD	Units
Total Metals for sample(s) 01,03,05,07,09,12,16,18 (L0008406-06, WG65653)				
Antimony, Total	ND	ND	NC	mg/kg
Arsenic, Total	2.0	2.1	5	mg/kg
Beryllium, Total	ND	ND	NC	mg/kg
Cadmium, Total	ND	ND	NC	mg/kg
Chromium, Total	2.7	2.8	4	mg/kg
Copper, Total	5.4	5.2	4	mg/kg
Lead, Total	3.4	3.4	0	mg/kg
Nickel, Total	4.2	4.1	2	mg/kg
Selenium, Total	ND	ND	NC	mg/kg
Silver, Total	ND	ND	NC	mg/kg
Thallium, Total	ND	ND	NC	mg/kg
Zinc, Total	15.	14.	7	mg/kg
Total Metals for sample(s) 02,04,06,08,10-11,13,15,17,19,21 (L0008409-02, WG65634)				
Mercury, Total	ND	ND	NC	mg/l
Total Metals for sample(s) 01,03,05,07,09,12,14,16,18,20,22 (L0008409-07, WG65822)				
Mercury, Total	ND	ND	NC	mg/kg

Laboratory Job Number: L0008409

Parameter	% Recovery
Nitrogen, Total Kjeldahl LCS for sample(s) 01,03,05,07,09,12,14,16,18,20,22 (WG65794)	
Nitrogen, Total Kjeldahl	94
Nitrogen, Total Kjeldahl LCS for sample(s) 04,06,08,10-11,13,17,19 (WG65866)	
Nitrogen, Total Kjeldahl	100
Nitrogen, Total Kjeldahl LCS for sample(s) 02,15,21 (WG66065)	
Nitrogen, Total Kjeldahl	100
Phosphorus, Total LCS for sample(s) 02,04,06,08,10-11,13,15,17,19,21 (WG65906)	
Phosphorus, Total	100
Phosphorus, Total LCS for sample(s) 01,03,05,07,09,12,14,16,18,20,22 (WG66087)	
Phosphorus, Total	95
Total Metals LCS for sample(s) 20,22 (WG65763)	
Antimony, Total	99
Arsenic, Total	110
Beryllium, Total	100
Cadmium, Total	93
Chromium, Total	100
Copper, Total	99
Lead, Total	95
Nickel, Total	95
Selenium, Total	100
Silver, Total	95
Thallium, Total	99
Zinc, Total	110
Total Metals LCS for sample(s) 02,04,06,08,10-11,13,15,17,19,21 (WG65624)	
Antimony, Total	80
Arsenic, Total	103
Beryllium, Total	82
Cadmium, Total	84
Chromium, Total	80
Copper, Total	80
Lead, Total	110
Nickel, Total	86
Selenium, Total	101
Silver, Total	84
Thallium, Total	91
Zinc, Total	86
Total Metals LCS for sample(s) 01,03,05,07,09,12,16,18 (WG65653)	
Antimony, Total	91
Arsenic, Total	88
Beryllium, Total	96
Cadmium, Total	87
Chromium, Total	96

Laboratory Job Number: L0008409

Continued

Parameter	% Recovery
Total Metals LCS for sample(s) 01,03,05,07,09,12,16,18 (WG65653)	
Copper, Total	96
Lead, Total	90
Nickel, Total	94
Selenium, Total	93
Silver, Total	87
Thallium, Total	95
Zinc, Total	94
Total Metals LCS for sample(s) 14 (WG65891)	
Antimony, Total	98
Arsenic, Total	95
Beryllium, Total	100
Cadmium, Total	98
Chromium, Total	95
Copper, Total	110
Lead, Total	100
Nickel, Total	100
Selenium, Total	100
Silver, Total	97
Thallium, Total	98
Zinc, Total	110
Total Metals LCS for sample(s) 02,04,06,08,10-11,13,15,17,19,21 (WG65634)	
Mercury, Total	109
Total Metals LCS for sample(s) 01,03,05,07,09,12,14,16,18,20,22 (WG65822)	
Mercury, Total	99
Nitrogen, Total Kjeldahl SPIKE for sample(s) 01,03,05,07,09,12,14,16,18,20,22 (L0008405-01,	
Nitrogen, Total Kjeldahl	83
Nitrogen, Total Kjeldahl SPIKE for sample(s) 02,15,21 (L0008409-15, WG66065)	
Nitrogen, Total Kjeldahl	99
Nitrogen, Total Kjeldahl SPIKE for sample(s) 04,06,08,10-11,13,17,19 (L0008316-10, WG65866)	
Nitrogen, Total Kjeldahl	94
Phosphorus, Total SPIKE for sample(s) 02,04,06,08,10-11,13,15,17,19,21 (L0008409-06, WG6590	
Phosphorus, Total	99
Phosphorus, Total SPIKE for sample(s) 01,03,05,07,09,12,14,16,18,20,22 (L0008409-05, WG6608	
Phosphorus, Total	99
Total Metals SPIKE for sample(s) 20,22 (L0008443-05, WG65763)	
Antimony, Total	93
Arsenic, Total	82
Beryllium, Total	110
Cadmium, Total	82

Laboratory Job Number: L0008409

Continued

Parameter	% Recovery
Total Metals SPIKE for sample(s) 20,22 (L0008443-05, WG65763)	
Chromium, Total	72
Copper, Total	89
Lead, Total	94
Nickel, Total	91
Selenium, Total	82
Silver, Total	89
Thallium, Total	99
Zinc, Total	89
Total Metals SPIKE for sample(s) 02,04,06,08,10-11,13,15,17,19,21 (L0008406-03, WG65624)	
Antimony, Total	100
Arsenic, Total	99
Beryllium, Total	103
Cadmium, Total	104
Chromium, Total	95
Copper, Total	100
Lead, Total	110
Nickel, Total	107
Selenium, Total	104
Silver, Total	98
Zinc, Total	110
Total Metals SPIKE for sample(s) 01,03,05,07,09,12,16,18 (L0008406-07, WG65653)	
Antimony, Total	50
Arsenic, Total	75
Beryllium, Total	110
Cadmium, Total	69
Chromium, Total	90
Copper, Total	90
Lead, Total	77
Nickel, Total	77
Selenium, Total	46
Silver, Total	70
Thallium, Total	39
Zinc, Total	75
Total Metals SPIKE for sample(s) 02,04,06,08,10-11,13,15,17,19,21 (L0008409-04, WG65634)	
Mercury, Total	122
Total Metals SPIKE for sample(s) 01,03,05,07,09,12,14,16,18,20,22 (L0008481-02, WG65822)	
Mercury, Total	91

Laboratory Job Number: L0008409

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	II
Blank Analysis for sample(s) 09								
Solids, Total	ND	%	0.10	30	2540G		28-Sep	M
Blank Analysis for sample(s) 01,03,05,07,09,12,14,16,18,20,22								
Nitrogen, Total Kjeldahl	0.15	mg/kg	0.15	30	4500N-C		29-Sep	EI
Blank Analysis for sample(s) 04,06,08,10-11,13,17,19								
Nitrogen, Total Kjeldahl	0.28	mg/l	0.15	30	4500N-C		29-Sep	EI
Blank Analysis for sample(s) 02,15,21								
Nitrogen, Total Kjeldahl	ND	mg/l	0.15	30	4500N-C		29-Sep	EI
Blank Analysis for sample(s) 02,04,06,08,10-11,13,15,17,19,21								
Phosphorus, Total	ND	mg/l	0.01	30	4500P-E		27-Sep	J
Blank Analysis for sample(s) 01,03,05,07,09,12,14,16,18,20,22								
Phosphorus, Total	ND	mg/kg	1.0	30	4500P-E		28-Sep	J
Blank Analysis for sample(s) 20,22								
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	2.0	1	6010B	26-Sep	27-Sep	R
Arsenic, Total	ND	mg/kg	0.40	1	6010B	26-Sep	27-Sep	R
Beryllium, Total	ND	mg/kg	0.20	1	6010B	26-Sep	27-Sep	R
Cadmium, Total	ND	mg/kg	0.40	1	6010B	26-Sep	27-Sep	R
Chromium, Total	ND	mg/kg	0.40	1	6010B	26-Sep	27-Sep	R
Copper, Total	ND	mg/kg	0.40	1	6010B	26-Sep	27-Sep	R
Lead, Total	ND	mg/kg	2.0	1	6010B	26-Sep	27-Sep	R
Nickel, Total	ND	mg/kg	1.0	1	6010B	26-Sep	27-Sep	R
Selenium, Total	ND	mg/kg	0.80	1	6010B	26-Sep	27-Sep	R
Silver, Total	ND	mg/kg	0.40	1	6010B	26-Sep	27-Sep	R
Thallium, Total	ND	mg/kg	0.80	1	6010B	26-Sep	27-Sep	R
Zinc, Total	ND	mg/kg	2.0	1	6010B	26-Sep	27-Sep	R
Blank Analysis for sample(s) 02,04,06,08,10-11,13,15,17,19,21								
Total Metals								
Antimony, Total	ND	mg/l	0.05	1	6010B	25-Sep	26-Sep	I
Arsenic, Total	ND	mg/l	0.005	1	6010B	25-Sep	26-Sep	I
Beryllium, Total	ND	mg/l	0.005	1	6010B	25-Sep	26-Sep	I
Cadmium, Total	ND	mg/l	0.005	1	6010B	25-Sep	26-Sep	I
Chromium, Total	ND	mg/l	0.01	1	6010B	25-Sep	26-Sep	I
Copper, Total	ND	mg/l	0.01	1	6010B	25-Sep	26-Sep	

Laboratory Job Number: L0008409

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 02,04,06,08,10-11,13,15,17,19,21								
Total Metals								
Lead, Total	ND	mg/l	0.05	1	6010B	25-Sep	26-Sep	RW
Nickel, Total	ND	mg/l	0.025	1	6010B	25-Sep	26-Sep	RW
Selenium, Total	ND	mg/l	0.005	1	6010B	25-Sep	26-Sep	RW
Silver, Total	ND	mg/l	0.010	1	6010B	25-Sep	26-Sep	RW
Thallium, Total	ND	mg/l	0.002	1	7841	25-Sep	28-Sep	TT
Zinc, Total	ND	mg/l	0.05	1	6010B	25-Sep	26-Sep	RW
Blank Analysis for sample(s) 01,03,05,07,09,12,16,18								
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	2.0	1	6010B	25-Sep	27-Sep	RW
Arsenic, Total	ND	mg/kg	0.40	1	6010B	25-Sep	27-Sep	RW
Beryllium, Total	ND	mg/kg	0.20	1	6010B	25-Sep	27-Sep	RW
Cadmium, Total	ND	mg/kg	0.40	1	6010B	25-Sep	27-Sep	RW
Chromium, Total	ND	mg/kg	0.40	1	6010B	25-Sep	27-Sep	RW
Copper, Total	ND	mg/kg	0.40	1	6010B	25-Sep	27-Sep	RW
Lead, Total	ND	mg/kg	2.0	1	6010B	25-Sep	27-Sep	RW
Nickel, Total	ND	mg/kg	1.0	1	6010B	25-Sep	27-Sep	RW
Selenium, Total	ND	mg/kg	0.80	1	6010B	25-Sep	27-Sep	RW
Silver, Total	ND	mg/kg	0.40	1	6010B	25-Sep	27-Sep	RW
Thallium, Total	ND	mg/kg	0.80	1	6010B	25-Sep	27-Sep	RW
Zinc, Total	ND	mg/kg	2.0	1	6010B	25-Sep	27-Sep	RW
Blank Analysis for sample(s) 14								
Total Metals				1	3051			
Antimony, Total	ND	mg/kg	2.0	1	6010B	27-Sep	28-Sep	RW
Arsenic, Total	ND	mg/kg	0.40	1	6010B	27-Sep	28-Sep	RW
Beryllium, Total	ND	mg/kg	0.20	1	6010B	27-Sep	28-Sep	RW
Cadmium, Total	ND	mg/kg	0.40	1	6010B	27-Sep	28-Sep	RW
Chromium, Total	ND	mg/kg	0.40	1	6010B	27-Sep	29-Sep	MW
Copper, Total	ND	mg/kg	0.40	1	6010B	27-Sep	28-Sep	RW
Lead, Total	ND	mg/kg	2.0	1	6010B	27-Sep	29-Sep	MW
Nickel, Total	ND	mg/kg	1.0	1	6010B	27-Sep	28-Sep	RW
Selenium, Total	ND	mg/kg	0.80	1	6010B	27-Sep	28-Sep	RW
Silver, Total	ND	mg/kg	0.40	1	6010B	27-Sep	28-Sep	RW
Thallium, Total	ND	mg/kg	0.80	1	6010B	27-Sep	28-Sep	RW
Zinc, Total	ND	mg/kg	2.0	1	6010B	27-Sep	28-Sep	RW
Blank Analysis for sample(s) 02,04,06,08,10-11,13,15,17,19,21								
Total Metals								
Mercury, Total	ND	mg/l	0.0005	1	7470A	25-Sep	26-Sep	IM

Laboratory Job Number: L0008409

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 01,03,05,07,09,12,14,16,18,20,22								
Total Metals								
Mercury, Total	ND	mg/kg	0.25	1	7471A	27-Sep	28-Sep	DY

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

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We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

Volatile Organics by Method 8260B

surrogate spike % recovery	AQ Limits		Soil Limits	
	LCL	UCL	LCL	UCL
1,2-Dichloroethane-d_4	75%	125%	75%	125%
4-Bromofluorobenzene	75%	125%	75%	125%
Toluene-d_8	75%	125%	75%	125%
Dibromofluoromethane	75%	125%	75%	125%

matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds	
Trichloroethene	71%	120%	62%	137%	20%	30%
Chlorobenzene	75%	130%	60%	133%		
Benzene	76%	127%	66%	142%		
Toluene	76%	125%	59%	139%		

Volatile Organics by Method 8021B

surrogate spike % recovery	AQ Limits		Soil Limits	
	LCL	UCL	LCL	UCL
4-Bromochlorobenzene	70%	110%	70%	120%
4-Bromofluorobenzene	70%	110%	70%	120%

matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds	
Trichloroethene	70%	130%	70%	130%	20%	30%
Chlorobenzene	70%	130%	70%	130%		
Benzene	70%	130%	70%	130%		
Toluene	70%	130%	70%	130%		
Ethylbenzene	70%	130%	70%	130%		

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits		Soil Limits	
	LCL	UCL	LCL	UCL
Nitrobenzene-d_5	23%	120%	23%	120%
Phenol-d_6	10%	120%	10%	120%
2-Fluorophenol	21%	120%	25%	120%
2-Fluorobiphenyl	43%	120%	30%	120%
p-Terphenyl-d_{14}	33%	120%	18%	120%
2,4,6-Tribromophenol	10%	120%	19%	120%

matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds	
Acenaphthene	46%	118%	31%	137%	40%	50%
2,4-Dinitrotoluene	24%	96%	28%	89%		
Pyrene	26%	127%	35%	142%		
N-Nitroso-di-n-propylamine	41%	116%	41%	126%		
1,4-Dichlorobenzene	36%	97%	28%	104%		
Pentachlorophenol	9%	103%	17%	109%		
Phenol	12%	110%	26%	90%		
2-Chlorophenol	27%	123%	25%	102%		
4-Chloro-3-methylphenol	23%	97%	26%	103%		
4-Nitrophenol	10%	80%	11%	114%		

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits		Soil Limits		
	LCL	UCL	LCL	UCL	
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%	
Decachlorobiphenyl	40%	120%	40%	120%	
matrix spike / matrix spike duplicate	**percent recovery**				**duplicate and/or MSD**
(MS/MSD) & lab control sample (LCS)	**AQ Limits**		**Soil Limits**		**AQ Limits Soil Limits**
	LCL	**UCL**	**LCL**	**UCL**	**RPD RPD**
Lindane	56%	123%	46%	127%	all target compounds
Heptachlor	40%	131%	35%	130%	30% 50%
Aldrin	40%	120%	34%	132%	
Dieldrin	52%	126%	31%	134%	
Endrin	56%	121%	42%	139%	
4,4'-DDT	38%	127%	23%	134%	
Aroclor 1242/1016	40%	140%	40%	140%	
Aroclor 1260	40%	140%	40%	140%	

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	**AQ Limits**		**Soil Limits**		
	LCL	**UCL**	**LCL**	**UCL**	
2,5-Dibromotoluene	70%	130%	70%	130%	
laboratory control sample (LCS)	**percent recovery**				**duplicate**
	AQ Limits		**Soil Limits**		**AQ Limits Soil Limits**
	LCL	**UCL**	**LCL**	**UCL**	**RPD RPD**
all compounds	70%	130%	70%	130%	50% 50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	**AQ Limits**		**Soil Limits**		
	LCL	**UCL**	**LCL**	**UCL**	
Chloro-octadecane	40%	140%	40%	140%	
ortho-Terphenyl	40%	140%	40%	140%	
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%	
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%	
laboratory control sample (LCS)	**percent recovery**				**duplicate**
	AQ Limits		**Soil Limits**		**AQ Limits Soil Limits**
	LCL	**UCL**	**LCL**	**UCL**	**RPD RPD**
all compounds	40%	140%	40%	140%	50% 50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits		Soil Limits		duplicate AQ Limits	duplicate Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
ortho-Terphenyl	40%	140%	40%	140%	40%	40%

TPH by Method 418.1

matrix spike (MS)	percent recovery				duplicate	
& laboratory control sample (LCS)	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
TPH	60%	140%	60%	140%	40%	40%

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
phenol	70%	130%	65%	135%	20%	30%

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

№ 2201 Sheet 1 of 2

ALPHA Job #: L0008409

Date Rec'd in Lab: 9/22 | Date Due: 9/29

Client Name: BETA GROUP, INC
Client Address: 6 Blackstone Valley Dr Lincoln, RI 02865
Phone #: 401 333 2382 FAX #: 401 3339225

Project Name: Whitmans
Project Location: Weymouth, MA
Project #: 1826
Project Manager: Sean Sicilly

Report To: Nicole Wilkinson
Bill To: BETA
PO#:

☒ Standard TAT
☐ RUSH TAT
☐ FAX Results
☐ State Forms
☐ Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

ALPHA Lab #	Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Soluble: Field Filtered? (Y/N)	T TKN	T TPhos	T Metals (Priority Poll 13)
01	SED6	B	9/21	10:10	SR	N	✓	✓	✓
02	SW6	L		10:10					
03	SED2	B		10:30					
04	SW2	L		10:30					
05	SED5	B		11:00					
06	SW5	L		11:00					
07	SED11	B		11:20					
08	SW11	L		11:20					
09	SED1	B		11:40					
10	SW1	L		11:40					
11	SW7	L		2:30					
	# of Containers:						10	10	10
	Container Type: *						P/G	P/G	P/G
	Preservative: *						P/A	P/A	C/A

Transfers Accepted By: Date 9/22 Time 8:23 AM

Transfers Relinquished By:

All samples submitted are subject to Alpha's standard Terms and Conditions.

* See Reverse side for Matrix, Container, and Preservative Codes.

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

№ 2966 Sheet 2 of 2

ALPHA Job #: L0008[illegible]
Date Rec'd in Lab: 9/22
Date Due: 9/25

Client Name: BETA Group
Client Address: 6 Riverside Park Drive Suite 1 Lincoln RI
Phone #: 333-2336 FAX #: 3339225

Project Name: Whitmans
Project Location:
Project #: 1826
Project Manager: Sean Sally

Report To: Nicole
Bill To: BETA
PO#:

☒ Standard TAT 5
☐ RUSH TAT
☐ FAX Results
☐ State Forms
☐ Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

ALPHA Lab #	Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	TKN	TPhos	T Metals
L0008[illegible]12	SED 3	B	9/21	11:50	PW/JR	N	✓	✓	✓
13	SW 3	L		11:50					
14	SED 1A	B		12:05					
15	SW 1A	L		12:05					
16	SED 1	B		12:25					
17	SW 1	L		12:25					
18	SED 4	B		1:40					
19	SW 4	L		1:40					
20	SED 10	B		2:10					
21	SW 10	L		2:10					
22	SED 9	B		2:30					
# of Containers:							11	11	11
Container Type: *							P/G	P/G	P/G
Preservative: *							P/A	P/A	C/A

Transfers Accepted By: — Date: 9/22 Time: 9/25

Transfers Relinquished By: — Date: 9/22 Time: 1205

All samples submitted are subject to Alpha's standard Terms and Conditions.

* See Reverse side for Matrix, Container, and Preservative Codes.

APPENDIX C

BOS July 2000

Dy	MxT	MnT	AvT	HDDay	AvDP	1HrP	TPcpn	WxType	PDir	AvSp	Dir	MxS	SkyC	MxR	MnR	A
1	77	63	70		57.8		0.00		120	9.2	120	17	1.9	78	52	
2	84	63	74		61.0		0.00		210	8.7	200	13	1.2	90	47	
3	87*	68	78		62.6		0.00	H	220	11.2	240	23	7.7	90	42	
4	83	68	76		67.4	0.00	T	FH	220	9.0	280	21	7.3	93	60	
5	84	64	74		54.5		0.00		290	12.8	290	25	1.6	81	29	
6	79	59	69		51.0		0.00		300	7.0		21	4.3	73	38	
7	73	58	66		52.6	0.09	0.12	RT	320	8.6	300	21	6.2	83	46	
8	79	55*	67		49.0		0.00		310	11.3	300	24	3.0	77	33	
9	81	64	73		56.8	0.23	0.47	RF	250	9.7	200	23	9.0	100	37	
10	86	68	82		64.8	0.00	T	RFH	270	15.1	290	25	7.7	93	45	
11	82	64	73		51.5		0.00		310	12.3	280	24	0.5	68	34	
12	85	62	74		51.7		0.00		310	9.4	010	21	0.1	67	31	
13	83	67	75		56.4		0.00		310	10.2	230	22	4.6	62	40	
14	83	66	75		59.4		0.00		210	12.1	190	18	5.1	93	36	
15	76	65	71		63.4	0.47	0.56	RF	110	14.5	100	31	8.4	100	64	
16	72	63	68		65.1	0.50	0.97	RF	100	12.9	100	26	9.1	100	84	
17	68	59	64	1	60.7	0.00	T	LF	110	8.8	100	13	7.9	100	84	
18	83	65	74		64.0	0.21	0.60	RWTFH	210	11.9	210	31*	6.0	100	55	
19	70	61	66		55.4		0.00		280	10.0	260	14	9.2	87	60	
20	68	58	63	2	51.3		0.00		100	8.8	080	15	2.3	81	52	
21	81	59	70		59.5	0.02	0.03	RF	210	11.2	210	22	3.6	90	52	
22	81	64	73		61.0	0.07	0.14	RTF	260	9.5	260	23	6.7	97	46	
23	80	62	71		56.6		0.00		290	8.7	290	17	4.7	84	49	
24	75	63	69		61.3		0.00		090	6.1	110	13	6.5	90	62	
25	70	64	67		61.9	0.00	T	R	090	7.3	080	10	9.8	97	70	
26	65	61	63	2	62.5	0.08	0.40	LRF	070	13.4	080	21	10.0	100	90	
27	65	62	64	1	62.9	0.29	1.35	LRF	020	13.8	050	29	10.0	100	93	
28	70	62	66	[illegible]	62.8	0.01	0.01	LF	250	7.6	030	12	6.9	100	87	
29	79	63	71		65.1	0.01	T		210	7.2	180	12	7.1	97	69	
30	74	65	70		65.7	0.01	0.04	LRF	090	8.7	090	14	9.2	100	84	
31	66	63	65		63.2	0.15	0.51	LRF	090	10.4	090	15	10.0	100	90	
mo	77.1	62.8	70.0	6	59.3		5.20			10.2			6.1			
dp	-4.7	-2.3	-3.5				2.36									

Daily Climate Data

BOS August 2000

Dy	MxT	MnT	AvT	HDDay	AvDP	1HrP	TPcpn	WxType	PDir	AvSp	Dir	MxS	SkyC	MxR	MnR	A
1	66	63	65		64.2	0.04	0.06	LRF	070	10.3	080	16	10.0	100	97	
2	73	64	68		66.2	0.00	T	RF	070	5.3	120	9	8.6	100	87	
3	82	69	76		72.0	0.05	0.07	RFH	220	11.8	220	23	9.5	100	74	
4	81	67	74		65.6	0.00	T	RF	250	7.9	240	13	7.2	93	52	
5	78	65	72		59.2		0.00		130	6.6	120	12	4.7	93	48	
6	81	64	73		62.2	0.01	0.01		210	9.6	200	16	7.8	93	51	
7	89*	68	79		72.1	0.01	0.01	RFH	210	13.3	240	32*	7.4	100	61	
8	88	75	82							10.2	260	25				
9	88	71	80		68.4	0.00	T	RH	220	12.4	240	31	6.1	87	55	10
10	85	70	78		64.6	0.08	0.08	RTF	300	8.7	320	22	3.6	90	48	10
11	76	67	72		64.6		0.00		080	9.9	070	15	4.3	93	68	10
12	72	64	68		60.2		0.00		050	13.9	050	28	7.6	90	70	10
13	71	61	66		61.6	0.04	0.11	RF	040	12.9	060	17	8.1	97	81	10
14	66	62	64	1	62.8	0.19	0.41	LRF	030	14.6	030	23	9.9	100	93	10
15	71	63	67		64.3	0.01	0.01	LF	020	8.5	070	13	9.8	100	81	10
16	80	65	73		62.9	0.72	0.91	RTFH	270	9.8	270	24	6.8	100	50	10
17	74	60	67		53.6		0.00		280	11.6	300	23	1.3	75	51	10
18	71	56	64	1	57.3	0.05	0.13	RF	190	7.0	170	14	6.1	100	64	10
19	75	62	69		60.6	0.03	0.05	RF	340	7.6	080	13	6.5	100	62	10
20	72	58	65		48.7		0.00		310	12.1	310	22	1.5	75	42	10
21	75	56*	66		51.5		0.00		300	9.0	320	20	0.9	75	46	10
22	78	59	69		54.2		0.00		300	8.6	250	13	2.0	78	39	10
23	75	61	68		59.6	0.26	0.37	RF	210	13.4	200	24	6.9	100	55	10
24	78	63	71		63.8		0.00	F	250	8.0	240	13	3.8	97	60	10
25	77	63	70		58.1		0.00		320	8.2	110	14	0.9	84	54	10
26	79	62	71		62.4		0.00		210	7.5	120	16	0.2	87	62	10
27	85	63	74		63.3		0.00		250	8.7	270	22	5.6	93	48	10
28	72	62	67		61.1		0.00		090	8.6	080	15	2.8	93	70	10
29	72	58	65		58.5		0.00		100	7.6	090	16	2.8	96	59	10
30	75	58	67		64.1		0.00		200	6.0	130	10	3.4	97	81	10
31	86	67	77		70.0		0.00	F	220	10.0	240	18	1.7	100	55	10
mo	77.1	63.4	70.3	2	61.9		2.22			9.7			5.3			
dp	-2.7	-0.6	-1.6				-1.02									

Daily Climate Data

BOS September 2000

Dy	MxT	MnT	AvT	HDDay	AvDP	1HrP	TPcpn	WxType	PDir	AvSp	Dir	MxS	SkyC	MxR	MnR	A
1	87*	73	80		71.4		T		250	12.7	230	21	3.9	97	59	10
2	76	61	69		65.3	0.40	0.66	RF	020	8.8	020	16	10.0	100	87	10
3	69	61	65		63.4	0.00	0.00	F	100	5.5	120	14	9.8	100	87	10
4	74	58	66		62.6	0.06	0.07	LRF	060	9.4	350	24	9.8	100	60	10
5	62	49	56	9	43.3		0.00		360	10.7	360	21	0.8	77	48	10
6	62	49	56	9	45.1		0.00		010	9.8	030	13	0.1	80	56	10
7	75	51	63	2	51.0		0.00		230	10.4	230	16	2.8	87	44	10
8	80	56	68		58.6		0.00		240	13.7	230	23	4.2	96	49	10
9	83	68	76		62.2		0.00		300	8.1	320	14	5.2	84	49	10
10	70	60	65		58.6		0.00		070	7.8	080	13	0.5	97	66	10
11	76	59	68		59.7		0.00	F	190	7.7	090	14	6.8	100	55	10
12	83	61	72		64.5		0.00		200	12.5	200	17	4.7	93	59	10
13	80	63	72		63.6	0.05	0.10	RF	220	9.7	210	17	4.5	100	42	10
14	73	57	65		57.9		0.00		150	8.0	100	17	1.7	90	64	10
15	70	60	65		59.8	0.31	0.94	RTF	270	10.5	130	32	6.2	100	65	10
16	68	53	61	4	46.0		0.00		280	12.7	280	25	1.2	83	40	10
17	70	50	60	5	47.7		T		240	14.5	240	25	2.2	81	46	10
18	78	59	69		54.8		0.00		250	11.5	260	20	3.7	87	46	10
19	78	61	70		62.5	0.26	0.52	RTF	200	9.5	120	16	8.1	100	54	10
20	81	63	72		65.6	0.26	0.01	RF	320	7.7	300	18	6.0	100	69	10
21	78	60	69		56.9	0.01	0.01	RF	280	14.5	290	33*	3.7	93	44	10
22	68	55	62	3	47.3		0.00		260	10.4	270	21	2.2	77	47	10
23	70	51	61	4	56.4	0.00	T		210	8.0	200	18	7.7	97	63	10
24	75	54	65		61.3	0.00	T	R	330	11.9	350	24	8.7	100	67	10
25	60	48	54	11	45.6		0.00		320	9.5	320	15	6.9	86	62	10
26	56	51	54	11	50.1	0.13	0.56	RF	060	13.8	060	26	10.0	100	66	10
27	68	47	58	7	48.6		0.00		240	9.4	240	14	0.7	96	47	10
28	61	42	52	13	46.3		0.00		340	10.5	340	17	3.7	93	57	10
29	53	38*	46	19	35.7		0.00		330	8.6	040	16	0.6	86	50	10
30	65	43	54	11	45.5		0.00		220	11.0	230	22	0.0	93	50	10
mo	71.6	55.4	63.5	108	55.2		2.87			10.3			4.5			
dp	-1.2	-1.4	-1.3				-0.19									