LAKE GARDA

DREDGE STUDY AND INVESTIGATION

PREPARED FOR

LAKE GARDA IMPROVEMENT ASSOCIATION

BURLINGTON & FARMINGTON, CT

PREPARED BY

MACCHI ENGINEERS, LLC

44 GILLETT ST
HARTFORD, CT

JANUARY 2012

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

In recent years, the Lake Garda Improvement Association (LGIA) has spearheaded a number of projects to improve the quality of Lake Garda and recreational opportunities for its members. As part of this goal, LGIA retained Macchi Engineers, LLC to perform a dredge study to determine the feasibility of dredging Lake Garda. The study included a comprehensive field sediment survey, collection and laboratory analysis of sediment, and an environmental assessment of the lake and associated wetlands.

Macchi Engineers performed a sediment field survey in November and December of 2011 to determine the quantity of sediment accumulation in the lake. A surveying firm, Messier and Associates, assisted Macchi Engineers in the fieldwork. The sediment survey indicated that there is approximately 85,500 cubic yards (CY) of sediment in Lake Garda. A total project cost for removal of all the sediment is estimated to be $2,300,000. Due to the high costs associated with a complete dredge, Macchi Engineers recommends one of two options. Either a limited dredge project can be undertaken at problematic areas, or the dredge can be postponed for a period of years with an additional sediment survey performed seven to ten years from now to better determine the rate of sediment accumulation. Three limited dredge scenarios are presented in this report with project costs ranging from $300,000 to $850,000 depending on the quantity of sediment removal.

During the sediment survey, Macchi Engineers collected sediment from various locations around Lake Garda and sent the samples to Averill Environmental Laboratory for analysis. The analysis was undertaken to ensure the material was free of any contaminants that would make a dredge project potentially harmful or more difficult and costly. Results from the laboratory determined that the levels of elements and compounds in the testing parameter fell below regulatory threshold limits and the sediment is therefore considered to be clean and usable as general fill material.

Macchi Engineers has also investigated various weed control methods to address growing concerns from LGIA regarding the extent of weed growth in the lake. The weed growth has become quite extensive during the summer months primarily at the southern portion of Lake Garda. Currently LGIA has been chemically treating the weeds, however, Macchi

Engineers recommends that LGIA initiate a winter drawdown weed control program with removal of all vegetative debris before refilling.

The last element of the study addressed the environmental issues and concerns associated with a dredge project. Macchi Engineers retained the services of Environmental Planning Services to study potential impacts to wetlands. In addition, a preliminary screening application was sent to the Connecticut Department of Energy and Environmental Protection for the presence of any endangered, threatened or species of special concern. Screening results found the Eastern Box Turtle, a species of special concern, to be located within the vicinity of the site. Special precautions must be taken during any dredge project to ensure the animal's well being.

2.0 INTRODUCTION

Lake Garda is a 42.6 acre lake straddling the Burlington-Farmington border in the Farmington River Valley portion of Connecticut. (See Figure 1 – Location Map, on page 3). The lake was constructed in the 1920's by the land's owner, Harry Battistoni, who built a dam across what was then known as Rose Brook to impound the flows that created the lake. Subsequent repairs were made in the 1930's to increase the height of the dam and size of the pond and again in the 1940's after reports that the dam was unsafe. Soon after, the Lake Garda Improvement Association (LGIA) was formulated and in 1943 was chartered by the State of Connecticut for the purpose of providing various services for the property owners around the lake. Ownership of the lake and the dam shifted back and forth over the years between various corporations owned by Battistoni and Ron-Day Inc., a developer of the properties surrounding the lake. Finally in 1997, ownership of the lake and dam was purchased by LGIA. (See Appendix E – History Chronology)

Since becoming owner, LGIA has taken great strides in improving the quality of the lake, the dam and surrounding areas. This includes the commission of a study by Macchi Engineers in 1995 to repair the dam and spillway and the subsequent repairs to the dam in 1999, which included rebuilding the spillway and providing a pedestrian bridge linking the west side of the lake to Moore Beach. Additionally, LGIA has taken an active role in

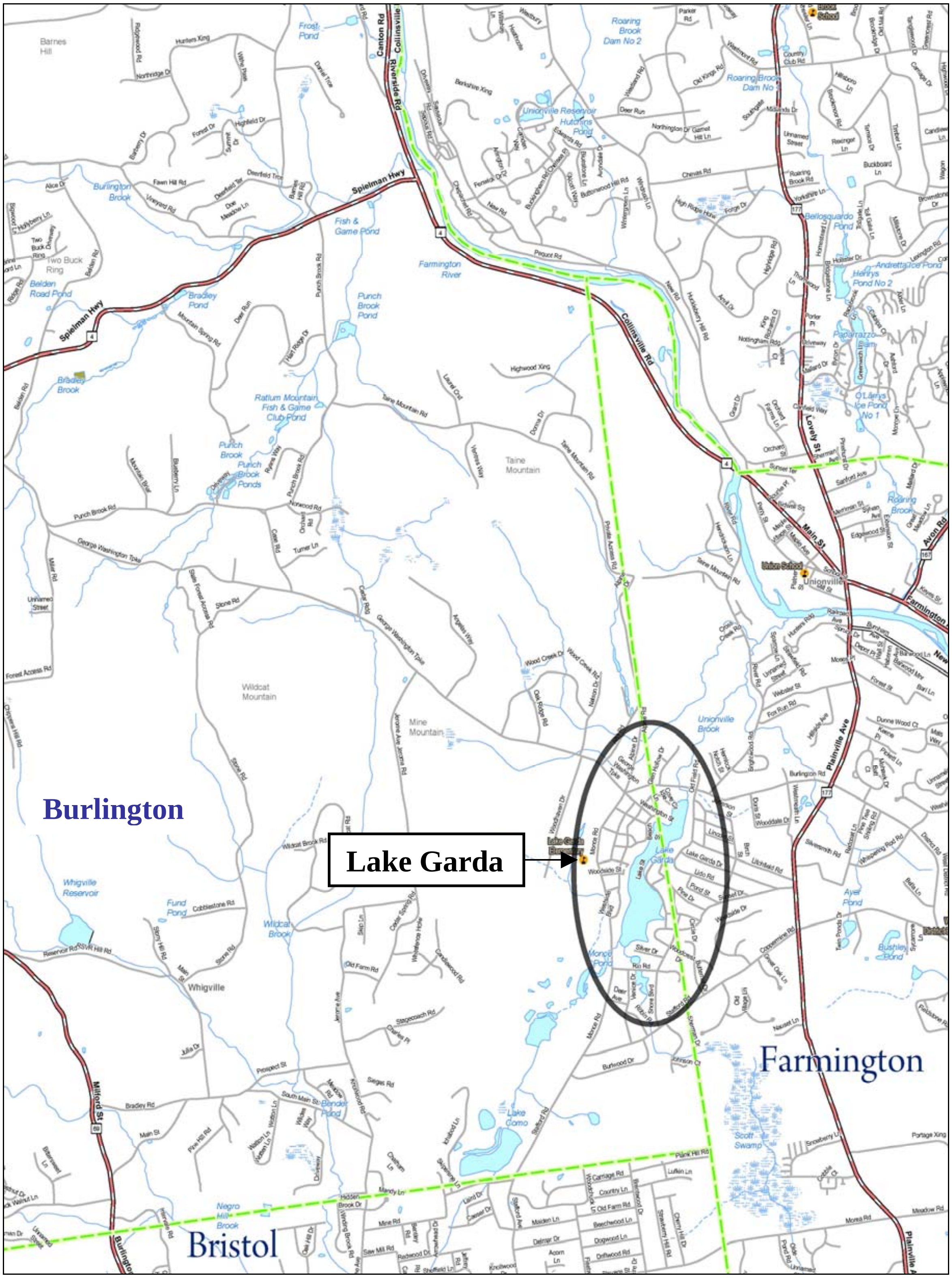


Figure 1 - Location Map

purchasing undeveloped property around the lake to be used as common areas, most notably the eight acres at the southern end of the lake purchased in 2001. The current dredge study is another example of LGIA's stewardship and their commitment to maintaining the health of the lake for future generations.

Lake Garda is very long and linear, almost ¾ of a mile in length by an average of only 525 feet in width. The lake is impounded by a man-made dam located on the northern end. The lake is an integral part of LGIA and is used for year-round activities. In addition, the lake is home to a variety of aquatic and reptilian species and the long-term life of the pond is essential to their habitat. Presently, sediment and vegetation has been noticeably accumulating in the lake, primarily at the southern end. In an effort to increase the lifespan of the lake and maintain continued success of the facility, LGIA hired Macchi Engineers, LLC to perform a study and investigation to determine the feasibility of dredging the lake.

This report discusses the existing conditions, the sedimentation process, dredging recommendations, weed control options, and environmental concerns, as well as other critical elements of a dredge project.

3.0 LAKE SEDIMENTATION PROCESS

All reservoirs formed by dams on natural watercourses are subject to some degree of sedimentation. Sources of sediment can include natural organic material and leaf accumulation in the lake, erosion of the shoreline by wave action undercutting banks, erosion of nearby land due to lack of vegetation to protect against stormwater runoff, and road sand and other pollutants deposited in the tributary river from storm drains or street runoff. There are many factors that determine the rate of accumulated sediment in the lake including the amount and intensity of rain, soil type, ground cover, adjacent land use and topography. The most visible aspects of the current problems affecting the lake are the shallowness of the southern end and the large annual lily blooms that have reduced the recreational area of the lake. (See Figure 2 - Arial Photograph of Lake Garda, page 6).

This natural aging process of a lake is known as eutrophication. With time, as organic remains begin to be deposited, plant and animal life will initially flourish. As the plants die, they sink to the bottom where they are decomposed. Since the decomposition process uses oxygen, it could potentially lead to fish kills and die-offs of other species. As the lake grows shallower and warmer from increased sedimentation and decomposition, marsh plants take root and begin to fill in the basin. Eventually, the lake will give way to a small pond and then a bog, finally becoming just the natural brook or watercourse flowing through dry land. This natural aging process may span hundreds of years; however, human activities can greatly accelerate the process. These activities may include pollution, nitrate and phosphate runoff from fertilizers, and increased development within the watershed area, which in turn leads to increased stormwater runoff.

The main benefits of a dredging project are to provide a larger area for boating and recreation activity, discourage weed growth in shallow areas, and to provide storage for future sedimentation, thereby increasing the life of the pond. Although the intended scope of this portion of our study was to investigate potential dredging options, it should be noted that dredging is not the only method to increase the lifespan of the lake. An additional alternative is to create a watershed management plan, the objective of which would be to reduce the amount of sediment currently entering the lake. While this method will not make the lake more useable for recreation, it will slow the eutrophication process. Watershed management concerns are discussed in further detail later in this report (See Section 9.0, page 23).

**Figure 2 -Aerial Photograph of Lake Garda
Dated Spring 2010**

4.0 SEDIMENTATION ANALYSIS

In November and December of 2011, Macchi Engineers performed a sedimentation study to determine the quantity and composition of the sediment in Lake Garda. To begin the study, a number of survey traverse points were set up around the lake so that all areas of the lake were visible from the shoreline. A grid pattern was then superimposed over the lake in cross-sections that averaged less than 50 feet on center. A 2-man team paddled out to each of the grid intersections and took two measurements using a long calibrated metal rod. For the first reading, the rod was lowered to the bottom of the lake until resistance was felt to determine the current depth of the water and elevation of the top of the sediment. The rod was then pushed through the soft sediment until the hard bottom of the pond was reached. This reading was measured and recorded to determine the actual sediment depth. At the same time as the measurements were being made, a survey crew was pinpointing the locations of the readings from the traverse points on shore. In all, nearly 2,000 measurements were made at 1,000 different data points around the lake.

The data points were then plotted with a larger 100 foot grid pattern overlaid across the lake. Sediment and water depth measurements in each grid were averaged and tabulated. (See Sediment and Water Depth Calculations in Appendix A). The total volume of sediment in the lake was determined to be 85,500 CY with an average depth of 15 inches and a maximum depth of 5'-2". (See Figure 3 – Sediment Depths, page 8). The average water depth was calculated to be 5'-3" with a maximum depth of 14'-6". (See Figure 4 – Water Depths, page 9)

A review of the sediment depths in Figure 3 indicates two areas with higher than average sediment totals. The first area is a strip just north of the Monce Pond inflow culvert roughly 800 feet by 100 feet in size containing nearly 5,200 CY of sediment. The second location is a 120,000 square foot area immediately north of Battistoni Beach holding approximately 8,000 CY of sediment. Together the two areas constitute over 15% of the total sediment in the lake.

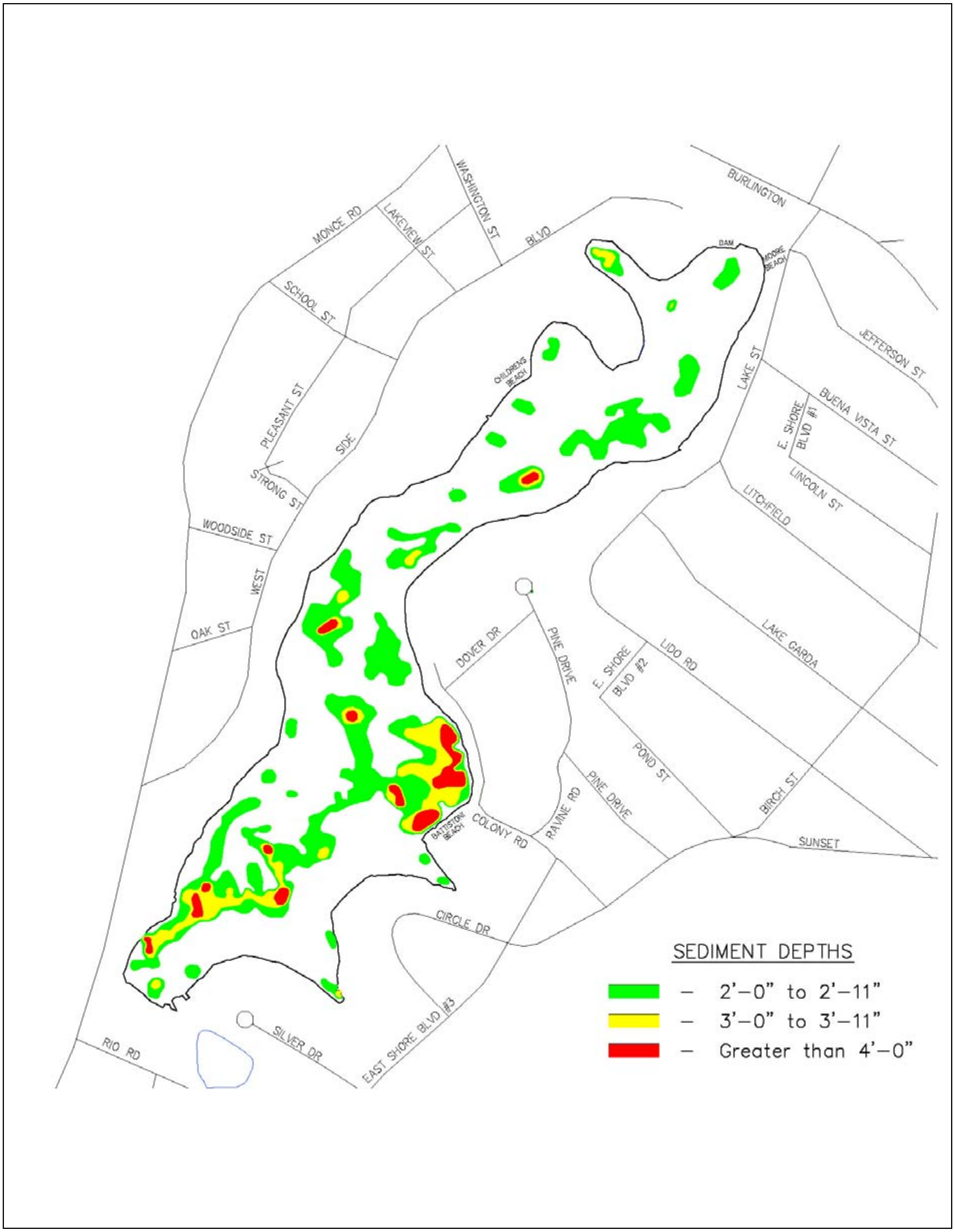


Figure 3 – Sediment Depths

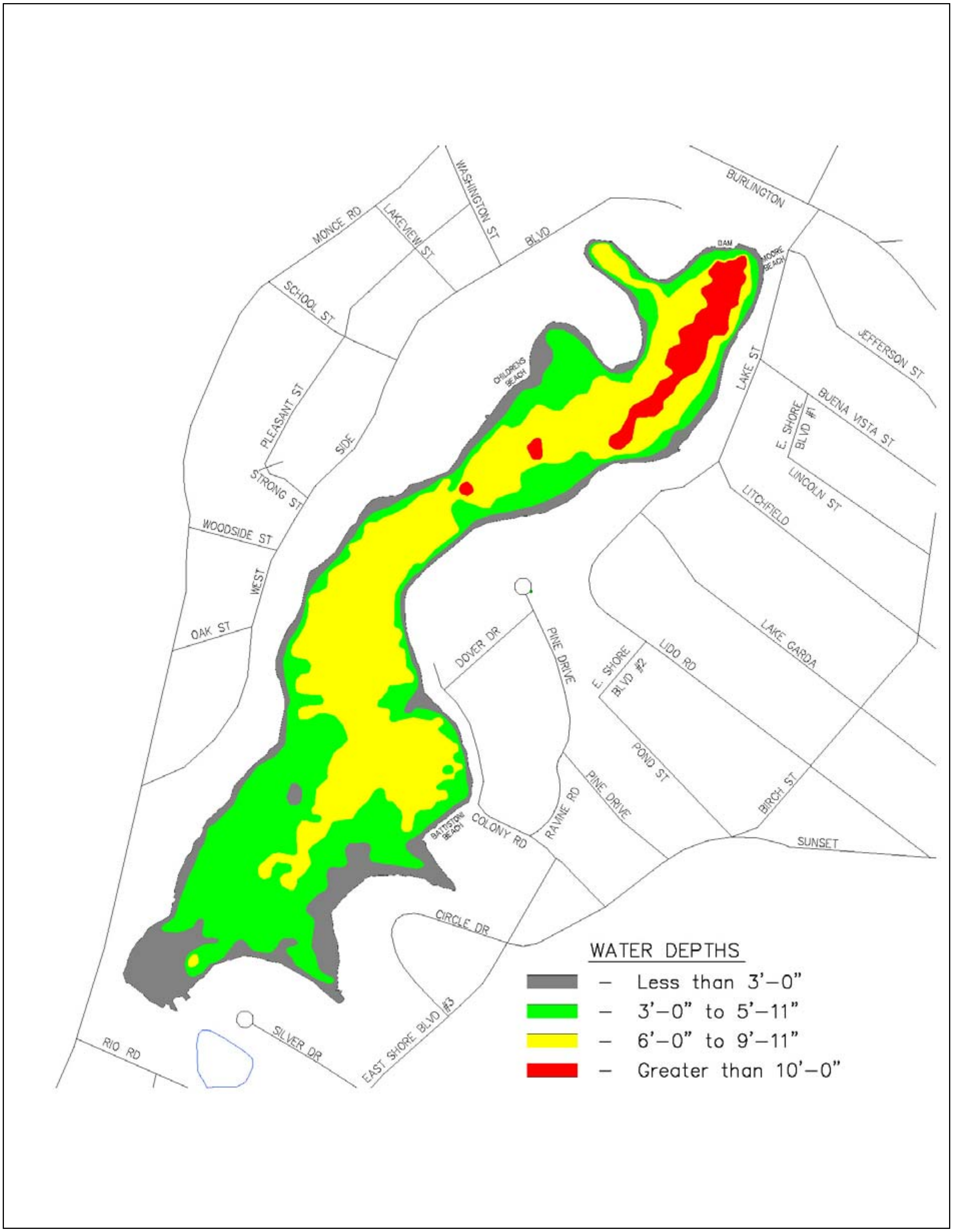


Figure 4 – Water Depths

5.0 SEDIMENT LABORATORY TESTING

As part of the fieldwork, sediment samples were taken from various areas around the lake and brought to a laboratory for chemical analysis to determine if the sediment contained any toxic or hazardous compounds. Tainted samples could potentially make a dredging project unfeasible due to the high costs for hazardous material remediation, transportation to an off-site facility willing to accept such material, and the risk of toxins potentially contaminating a wider area during the dredge process. Samples were taken from six locations around the lake. Since street stormwater runoff has a tendency to carry higher levels of pollutants, sample locations #1 - #4 were chosen due to their proximity to sources of inflow into the lake. Sample #5 focused on an isolated area of deeper sediment deposits, while sample #6 was chosen due to its closeness to a Lake Association beach area. (See Figure 5 – Sediment Testing Locations, page 11).

The samples were tested for various heavy metals such as mercury, arsenic, barium, selenium, cadmium, chromium, lead and silver. In addition, the samples were tested for petroleum hydrocarbons and volatile organic compounds. Results from the laboratory determined that the levels of elements and compounds in the testing parameter fell below regulatory threshold limits and the sediment is therefore considered to be clean and usable as general fill material. A complete printout of the testing results from each location can be found in Appendix B**.**

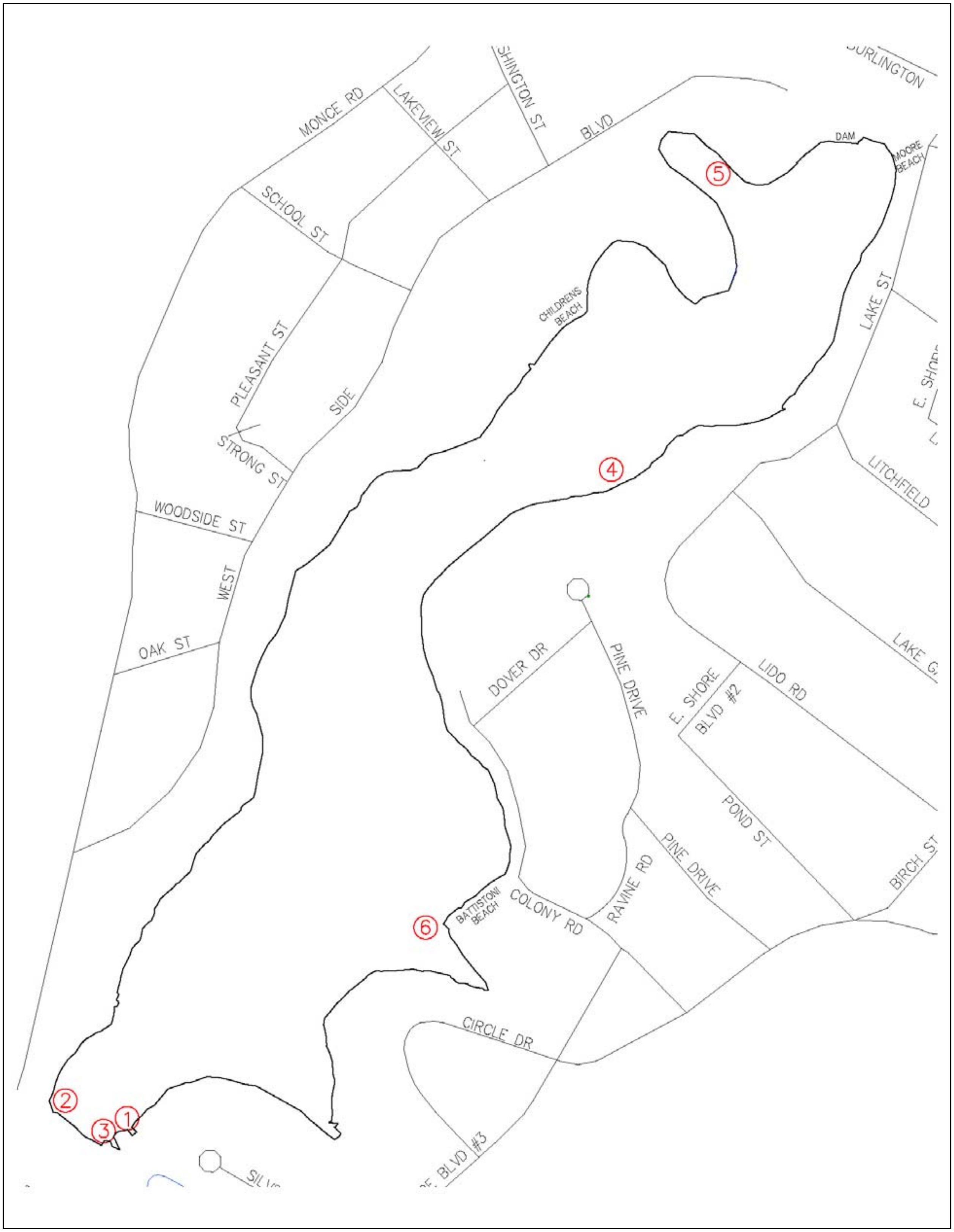


Figure 5 – Sediment Testing Locations

6.0 DREDGING

Many benefits can be attained from undertaking a pond or lake dredging project. First, it removes the existing sediments and organic matter that leads to water quality degradation and weed growth. Also, the deeper lake improves fish habitat with a refuge of cool water and will help reduce light penetration to the pond bottom to inhibit weed growth. Lastly, increasing the pond depth in shallow areas will provide better recreational opportunities such as swimming and boating in currently unavailable areas.

There are two primary methods to dredge a lake, mechanical or hydraulic dredging. Each method has its benefits and drawbacks, with costs for each method varying substantially depending on the size of the lake, amount of material to be removed, access to the lake and location of a disposal site.

Mechanical dredging methods utilize draglines, bulldozers or backhoes to remove the sediment. Typically, the lake is partially or completely drained. This can temporarily impact fish, reptile, amphibian and other lake species and needs to be seriously considered during the permitting phase of the design process. A complete drawdown of the lake can also affect any local homeowner who may have a shallow well. The accumulated sediment can be excavated and either loaded directly onto trucks or stockpiled and allowed to dry. The direct load method of disposal can reduce costs for re-handling of the material. However, this cost will be offset by increased transportation costs because the haul trucks will require liners or need to be sealed to prevent the liquid material from seeping onto city streets or across haul roads. Direct loading can be the only option on a limited sized site where no room exists for stockpiling the material to dry. Mechanical dredging tends to be more popular in Connecticut because of the availability of excavation contractors able to perform this service.

Hydraulic dredging utilizes a very large pump and a collection system mounted on a boat or barge. The pump pulls the material off the bottom and pumps it through a pipe to locations that can be nearby or up to several thousand feet away. Water is used as a carrier to move the accumulated material to a settling basin. The water and the sediment must be separated and the water either returned to the lake or left to settle and evaporate. Typically the water to sediment removal rate can be as much as nine times, requiring the settling basin area to be quite large. Where there is limited area to create a disposal site geotextile bags can be used to contain the material. The sediment is pumped into large bags where the sediment is trapped and clear water returned to the lake. However, the use of geotextile bags would only be suitable on a small-scale dredge project. A prohibiting factor for hydraulic dredging at Lake Garda would be the extreme shallowness of the lake at its southern end, which would preclude a boat or a barge from reaching these areas.

Many factors will determine if a dredge project is feasible for Lake Garda at this time. First and foremost is the cost. In addition to the quantity of sediment requiring removal, the largest cost factor with a dredge project of any size is the distance to the disposal area. Having an on-site disposal area can limit the dredge portion of the project's cost to less than $10 per cubic yard. Requiring the dredge material to be transported off-site through city streets will greatly increase the project's overall cost. Depending on the length of travel or the degree of material saturation, the dredge costs can increase to $25 per cubic yard or more. The sediment analysis of Lake Garda indicated there to be 85,500 cubic yards of material in the lake. For a full-scale dredge project at Lake Garda, the dredge costs alone would start at $850,000 and, depending on the disposal site, balloon to over $2,000,000. Other construction cost factors would include mobilization, siltation and erosion controls, staging area construction, dewatering and water control, construction access roads, and temporary site protection. These items will add a minimum of $150,000 to the base costs making a best case scenario of roughly $1,000,000 for a full-scale dredge construction project. There are also engineering design fees, preparation of permits and permitting fees to consider as well, which will add an additional 10% on to the overall cost. After factoring in these incidentals, total project costs for a full dredge project at Lake Garda would range from $1.1 million to $2.3 million depending on the disposal site. Figure 6 on page 14 depicts the water depths that can be attained if a full-scale dredge were performed. This can be compared to Figure 4 on page 9, which illustrates the current water depths.

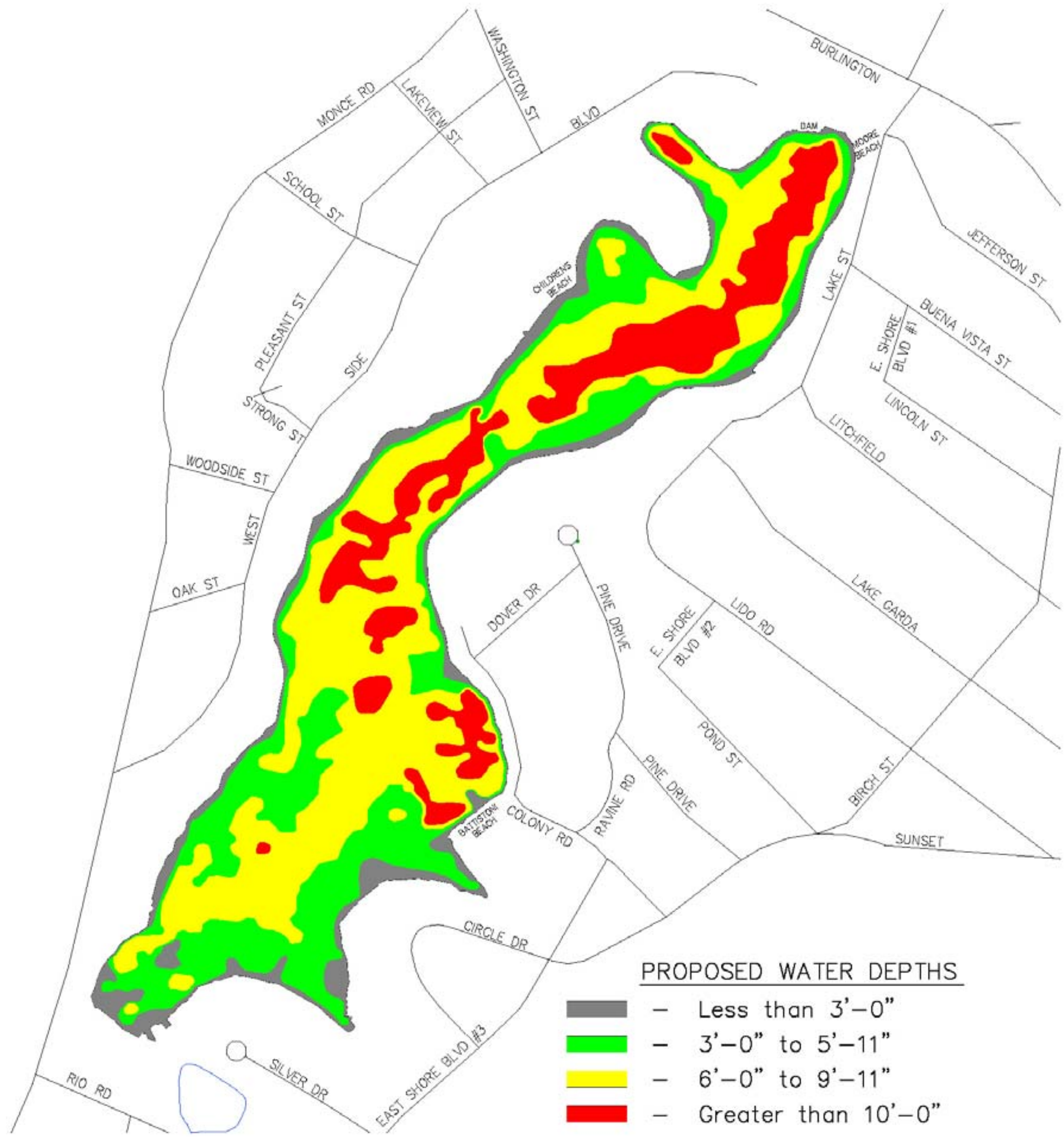


Figure 6 – Proposed Water Depths With Full Dredge

This best case cost scenario assumes an on-site location to reduce the transportation costs. Currently LGIA owns an eight acre parcel at the southern end of the lake. A good portion of this parcel was found to be wetlands, which would be unusable as a disposal area. Also, the site is wooded and would need to be cleared at an additional expense. Without an accurate boundary survey, it is uncertain how much of this parcel is available for storage. If a conservative estimate of four acres is assumed usable, storing 85,500 cubic yards of material on the site would stack to over 13 feet high making an on-site storage location for a full dredge project completely unfeasible. Off-site disposal will push the costs for a full dredge option toward the $2.3 million value previously mentioned.

The sediment analysis revealed the average depth of sediment to be approximately 15 inches. Macchi Engineers does not consider this amount of sediment accumulation to warrant the costs associated with conducting a full-scale dredge at this time. If the sediment were deposited at a continuous rate, a 90-year old lake would be accumulating sediment at a rate of roughly 1/8 inch per year. This is a very general observation since sediment does not accumulate in this fashion. Many factors contribute to sedimentation including upstream development and flooding. The majority of the current sedimentation may have come from a handful of events and not necessarily from an evenly distributed timeline. One recommendation would be to wait a period of 7 to 10 years and conduct an additional sediment analysis for comparison purposes to determine the rate of change. Additional analyses may reveal little to no change due to an increased effort in pollution controls, storm drainage construction, limited use of road sand during winter, and other advancements. A dredge program could be planned for a later date if the additional sediment study showed increasing rates of sediment deposition.

A compromise to the full scale dredge or the wait and see approach is to perform only a limited dredge at this time. Macchi Engineers has looked at three options for a partial dredge. The first is to dredge the shallow areas at the southern end of the pond to potentially help the weed growth problem. (See Section 7.0 for additional information regarding weed control.) A study of the aerial photograph (Figure 2 on page 6) shows the majority of visible weeds to be south of Battistoni Beach. If the dredge were limited to all areas in the southern 550 to 600 feet of the pond, there would be approximately 25,000 cubic yards of sediment to remove. Storage on the usable land south of the lake would stack to almost four feet high, which, while less than the full dredge option is still unfeasible. Therefore, this option will require off site transportation and incur the higher cost of transportation. An estimated project cost for this option would be approximately $850,000.

A second partial dredge option would be to address the two areas shown on the sediment depth plan (Figure 3, page 8) to have higher concentrations of sediment accumulation. This would include the strip north of the Monce Pond inlet and the area immediately north of Battistoni Beach. A limited dredge confined to these areas would remove approximately 13,000 cubic yards of sediment. On-sight storage would produce a layer of sediment just over two feet in height. This is a more reasonable alternative, but still probably not feasible for on-site storage. Project costs for this option would be approximately $550,000.

Field measurements determined that although the Battistoni Beach area had accumulated over 8,000 cubic yards of sediment, the water depths were still quite reasonable averaging 6 to 9 feet deep. A further savings could be achieved by merely removing the 5,000 cubic yards of sediment in the strip just north of the Monce Road inlet. This may be the best option for a partial dredge because a lake drawdown can be limited to the shallow areas at the extreme southern edge of the pond. Additionally, spreading of 5,000 cubic yards in the potential on-site storage area would stack to only nine inches, thereby making this option feasible. Construction costs associated with this option would be approximately $300,000.

7.0 WEED CONTROL

Aquatic plants growing in ponds and lakes can be beneficial for fish and wildlife. They provide food, dissolved oxygen, and spawning and nesting habitat for fish and waterfowl. Additionally, aquatic plants can trap excessive nutrients and detoxify chemicals. However, dense growths (over 25% of the surface area) of algae and other water plants can seriously interfere with pond recreation and threaten aquatic life. Water plants can restrict swimming, boating, fishing, and other water sports as well as detract from the aesthetic appeal of the lake. Water plants can impart unpleasant taste, decaying vegetation emits offensive odors, and algae can discolor pond waters. Since green plants produce oxygen in sunlight but consume oxygen at night, dense growths of plants can cause nighttime oxygen depletion and lead to fish kills. Decomposing water weeds can also deplete the oxygen supply, resulting in sport fish kills from suffocation. Limiting fertilizer use around the pond is a first step in the prevention of weed growth. Once established, there are several effective ways to manage weed growth in lakes.

Sediment Basins

Construction of a sediment basin at the upstream headwaters of the lake will trap out soil and maintain pond depth. Soil erosion and fertilizer runoff are the two major causes of water weeds. Soil erosion magnifies the weed problems. Eroded soil particles not only make the pond shallower and allow rooted weeds to quickly invade, but soil particles also transport absorbed nitrogen and phosphorus that further stimulates weed growth. (See Section 9.0 – Watershed Management for further information on sedimentation basins.)

Dredging

Removing pond bottom sediments and building steep pond bank slopes can be helpful methods to control rooted aquatic plants in shallow ponds, although not always 100% effective. Dredging can reduce aquatic plant problems directly by removing the plants, bottom sediment, and associated nutrients. Dredging and deepening shallow shoreline areas limits weed growth indirectly by exposing a soil layer that may be nutrient poor or impervious to plant roots, and by decreasing the amount of sunlight available to plant life.

Winter Drawdown

Lowering the water level of a pond can be an easy and effective way to control nuisance aquatic plants. Pond drawdown, particularly during the winter months, exposes weeds to harsh conditions including freezing, desiccation, strong wind action, and bottom sediment compaction. Frost heaving of the frozen sediments uproots the weeds and aids in their destruction. Additionally, exposure of sediments to freezing and thawing action can kill the underground rhizomes of many aquatic weeds. To ensure its effectiveness, the bottom mud should freeze to a depth of four to six inches for several weeks or longer. Over winter drawdown is especially effective against cattails, but some weed species are not controlled by this method. Vegetation exposed by lowering the water level should be collected and removed from the pond basin or the rotting plants will contribute nutrients that promote new growths when the water level is raised. An additional benefit to winter drawdown is the improvement of fishing quality as the reduced level of the lake will concentrate the fish thereby increasing the predation of the smaller fish by the larger ones.

Harvesting

Physical removal of aquatic plants is known as harvesting. Harvesting consists of cutting or uprooting the weeds, and collecting and removing the cut plants from the pond. A small scale pond harvesting program usually involves physical labor where plants are removed by hand, cut by sickle or with a hoe and removed from the pond with rakes and forks. A large-scale operation can entail cutting machines some of which can be mounted to boats. Whole plant removal is generally a better option than cutting because many plants can reproduce from cutting. Also, cut plants left in the water will decay and release nutrients that stimulate future growth. Decomposing plants use oxygen and can cause fish kills.

Chemical Control

Herbicides are commonly used to manage weed growth. Herbicides are relatively easy to apply but should be used with caution, as some chemical applications can be toxic to fish and other aquatic life. It is important to note, that when weeds are killed by chemicals, they rot and release the nutrients into the lake, stimulating future weed growth and thus requiring more treatment. It is very important when considering chemical control to identify the type of nuisance plant requiring the application since many herbicides are selective. What may be effective for algae may not work on floating, submersed or emerged plants. Late spring is usually the best time to apply herbicides. The plants are young and actively growing and most susceptible to herbicides. If herbicides are applied in late summer, a serious risk of fish kill is possible. By that time the vegetation is usually extensive and thick with the water warm and still. Killing of vegetation at this time could seriously deplete the water of its oxygen.

Aeration

Aeration has been publicized as another method for weed control. Although aeration is beneficial for fish life and can help prevent fish kills from oxygen deprivation, there is conflicting evidence on its ability to inhibit weed growth. Some believe that aeration exhausts the carbon dioxide into the air reducing it to such a low level that the weeds virtually starve.

Shading and Chemical Dyes

Small areas of weed infestation can sometimes be controlled with shading where black plastic sheeting attached to Styrofoam floats are positioned in the water. The plastic sheets can be moved easily from one place to another, although they should remain in one place for at least a month in order to be effective. In lieu of sheets, non-toxic water dyes can be used to color the water and inhibit the light penetration required for photosynthesis by underwater plants. This technique is more effective if applied in the spring at the start of the growing season before the weeds have become established and if the dye concentration is maintained.

Liners

Covering the existing sediment with black plastic sheeting and a layer of sand can sometimes be effective in eliminating water weeds. This method eliminates the plants' ability to reach the nutrient rich soil and will eliminate rooted type weeds. Plastic sheets should be perforated to permit the escape of gases produced by decomposition and to prevent ballooning of the sheets. This method should not be used in important wetland habitats, fish spawning areas or waterfowl nesting areas. Additionally, introducing a layer of sand into the watercourse would require DEEP approval.

Biological Controls

Introducing animals that eat water weeds is another control method. Animals such as turtles, fish, ducks, geese and swans can be stocked to consume plants. The Grass Carp has been effective at many areas around the country. These fish try to migrate up or downstream so a barrier needs to be constructed to prevent the fish from leaving. Barriers applied to the spillway outflow can interfere with the normal operation of the dam and spillway and should be carefully designed and will require approvals from the DEEP dam safety division. In addition, only the DEEP can authorize the importation, possession and liberation of grass carp into the lake.

Of the options presented here, Macchi Engineers recommends winter drawdown coupled with removal of the vegetative debris. This method can be highly effective and can be done with little or no cost if LGIA volunteers are used to collect and remove the plants.

8.0 SPECIES OF SPECIAL CONCERN

The Connecticut Department of Energy and Environmental Protection's Bureau of Natural Resources compiles information about the status and location of the state's rare plants, animals and significant natural communities. The purpose of the program is to conserve, protect, restore and enhance state listed species populations and their habitats. The locations of endangered, threatened, and species of special concern and significant natural communities are depicted on the State's Natural Diversity Data Base Maps. The locations are based on data collected over the years by DEEP staff, scientists, conservation groups, and landowners. In some cases an occurrence represents a location derived from literature, museum records and specimens. The general locations of species and communities are symbolized as shaded on the maps. The exact locations have been masked to protect sensitive species from collection and disturbance and to protect landowner's rights whenever species occur on private property. The Data Base Map for the Lake Garda area can be seen in Figure 7 found on page 21.

Species are listed according to their level of risk, and their status is reviewed every five years. An endangered species means any native species documented by biological research and inventory to be in danger of eradication throughout all or a significant portion of its range within the state and to have no more than five occurrences in the state. A threatened species refers to any native species documented by biological research and inventory to be likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range within the state and to have no more than nine occurrences in the state. A species of special concern is any native plant species or any native non-harvested wildlife species documented by scientific research and inventory to have a naturally restricted range or habitat in the state, to be at a low population level, to be in such high demand by man that its unregulated taking would be detrimental to the conservation of its population or has been eradicated from the state.

As part of the Bureau of Natural Resources Natural Diversity program, Macchi Engineers submitted a preliminary screening application to the DEEP for the Lake Garda area (See Appendix C). The DEEP review indicated the presence of a species of special concern on

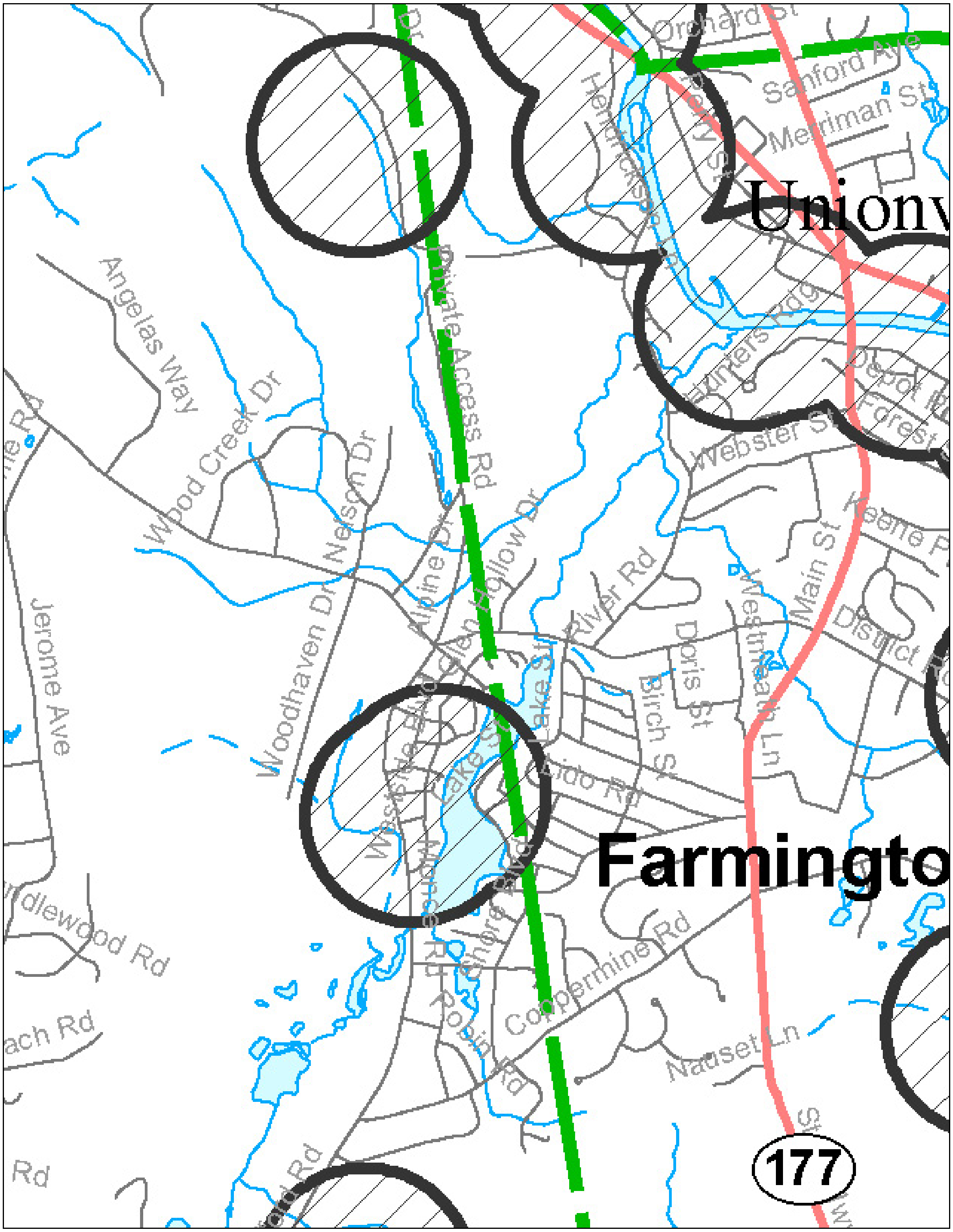


Figure 7 -CT Natural Diversity Data Base Areas
Dated July 2011

or within the vicinity of the site. The species in question is the eastern box turtle (*Terrapene carolina carolina*). Eastern box turtles prefer deciduous or mixed forest habitats, with a moderately moist floor that has good drainage. Bottomland forest is preferred over hillsides and ridges. They can also be found in open grasslands, pastures, or under fallen logs or in moist ground. They are also found near small streams and ponds and have been know to bathe during hot periods. The adults are terrestrial but young are semi-aquatic, and hibernate on land by digging in the soil from October to April.

The Wildlife Division of the Bureau of Natural Resources believes that the species could be impacted if work is conducted during summer or fall. Therefore they recommend that any work be conducted out of these seasons. Additionally, if work must be done in the summer or fall, the following guidelines should be met:

- Silt fencing shall be installed around the work area prior to construction.
- After silt fencing is installed and prior to construction, conduct a sweep of the work area to look for turtles.
- Apprise workers of the possible presence of turtles, and provide a description of the species.
- Any turtles that are discovered shall be moved, unharmed, to an area immediately outside of the fenced area, and position in the same direction that it was walking.
- No vehicles or heavy machinery shall be parked in any turtle habitat.
- Work conducted during early morning and evening hours shall occur with special care not to harm basking or foraging individuals.

All silt fencing shall be removed after work is completed and soils are stable so that reptile and amphibian movement between uplands and wetlands is not restricted.

Note that if any dredge project is not completed within one year of the initial review date of November 30, 2011, the DEEP will require an additional screening to determine if any changes to the Natural Diversity Data Base have been reported.

9.0 WATERSHED MANAGEMENT

Although the intended scope of this portion of our study was to investigate potential dredging options, it should be noted that dredging is not the only method to increase the life or health of the lake. An additional alternative is to create a watershed management plan, the objective of which would be to reduce the amount of sediment currently entering the lake. While this method will not make the lake more usable for recreation, it will slow the eutrophication process.

Methods to reduce sediment inflow can include the following:

- Increased maintenance program of upstream storm drains.
- Encourage and require the retention of natural pervious surfaces such as contiguous open spaces, open space wetlands and watercourse corridors.
- Minimize the removal of natural vegetation around the pond.
- Minimize impervious surfaces in the watershed area.
- Prohibit development of adjacent slopes.

One very effect method to reduce sedimentation is to construct upstream sedimentation traps or basins. A sedimentation basin consisting of a small wetland with various wetland plantings would create a natural barrier for sediment flows. Typically, wetlands in the watershed area are significant factors in reducing the nutrient transport and sediment loadings to the lake. Wetlands accomplish nutrient, sediment and organic and non-organic material reductions mainly due to the ability of wetland plants to act as filters and to fix or remove these pollutants from surface waters. In addition to naturally occurring wetlands, another type of sediment basin is a forebay. A forebay is a small pool constructed near the lake headwaters designed as an initial storage area. A properly designed forebay will allow reductions in pollutants by permitting water to be retained in general motionless conditions, causing removal of suspended sediments and reducing turbid lake conditions.

Lake Garda has two primary inflows and both these areas may have potential for a forebay to be constructed. These areas include the inflow from Monce Pond Road and the area just to the east where inflows from the Rio Road area and storm drainage from Silver Drive converge. The forebays could be constructed in the existing lake area and be sized based on engineering calculations of inflows into the lake. Besides encroaching on the footprint of the lake, an additional drawback of a forebay is that routine maintenance must be performed in order to keep the forebay clean of sediment. This will require access roads for construction vehicles such as a backhoe and dump truck to routinely remove the sediment. An additional drawback is the cost of construction, which could exceed $150,000 depending on the size of the forebay required, coupled with the access road construction.

One positive feature of Lake Garda is that Monce Pond and the ponds at Rio Road act as natural sedimentation basins. Both ponds are only a few hundred feet upstream of Lake Garda. Under normal flow conditions, the majority of sediments traveling throughout the drainage area will naturally settle out in both ponds before reaching Lake Garda. Because of this feature and the drawbacks previously discussed with the construction of a forebay, Macchi Engineers believes the construction of a sediment basin or forebay at Lake Garda to be unnecessary.

10.0 WETLANDS

There are many environmental issues to be considered when planning a potential dredge project as these will factor heavily into the various permits that will be required by State, Federal and Local agencies. As part of this study, Macchi Engineers retained the services of Environmental Planning Services to review some of these issues, including wetland delineation, characteristics and functions. In addition, an aquatic vegetation study was undertaken for the weedy areas at the southern end of the lake. Environmental Planning Services full report can be found in Appendix D.

One of the primary environmental concerns is potential wetland disturbance. The cost associated with delineating and characterizing all the wetlands surrounding Lake Garda was deemed to be excessive for a study and investigation phase. Therefore, Macchi Engineers chose four critical areas that were determined to be suitable either as construction staging areas or as access locations into the lake for dredge and construction equipment. (See Figure 8 – Wetland Analysis Areas).

Figure 8 – Wetland Analysis Areas

Wetland 1 is directly adjacent to and including Battistoni Beach, Wetland 2 is the grassy median strip at the bottom of Dover Drive, Wetland 3 includes Children's Beach, and Wetland 4 is located at the southern end of the lake at the end of the Silver Drive cul-de-sac. Wetland extents were flagged at each of these four areas and the locations picked up and plotted by the surveying crew.

Three distinct classes of wetland vegetation were found in the survey area. The first of these, aquatic beds, consists of permanently flooded water bodies with a bed of vegetation and refers primarily to the lake itself. Wet meadow and emergent marshes are dominated by persistent and non-persistent grasses, sedges, rushes, and other herbaceous grass-like plants and can be found at wetland areas 2, 3 and 4. The last wetland class, shrub and scrub wetland, are dominated by woody vegetation shrubs with some scattered stunted trees. This wetland type was found in areas 1 and 4.

Wetlands have many positive attributes that can be classified as either principal or secondary functions. The principal wetland functions identified for Lake Garda included flood flow alteration, sediment retention, nutrient attenuation and recreation. Some of the secondary functions associated with the Lake Garda wetlands included groundwater recharge, fish and wildlife habitat, and shoreline stabilization.

11.0 PERMITTING PROCESS

The extents of permitting for a dredge project will be dependent on the amount of dredge material removed and the area of the pond dredged. The Connecticut Department of Energy and Environmental Protection (DEEP) has two types of permits for dredging, General and Individual. A General Permit is required for dredged projects not exceeding 6,000 cubic yards of material and covering a lake area not exceeding 1 acre. All other inland dredge projects must receive an Individual Permit. Individual Permits are much more extensive than General Permits. They usually require a Water Quality Certificate, a Water Diversion Permit, engineering documentation including a Hydrologic and Hydraulic Consistency Worksheet, and a Flood Contingency Plan. Once issued, an Individual Permit is valid for three years before expiring. Therefore, if a full dredge is planned to be completed as part of a multi-phased project, all phases must be completed in three years or the permit will require renewal.

Likewise, the Army Corps of Engineers (ACOE) permitting process works in a similar fashion. The Army Corp of Engineers as part of the Connecticut Programmatic General Permit categorizes dredging projects based primarily on the amount of dredged material. Maintenance dredging below 1,000 cubic yards is classified as Category I and would not be subjected to review. Dredge removal between 1,000 and 10,000 cubic yards falls under Category II. All Category II projects are discussed with various Federal resource agencies at a screening meeting. The meeting determines whether the project is acceptable as submitted, requires additional information, requires project modifications or mitigation to minimize impacts and protect the aquatic environment, or is ineligible. It also may determine that an individual permit review is required. Dredging projects greater than 10,000 cubic yards do not fall under either category and will require an individual permit review by the Corps.

Local permits from the towns of Farmington and Burlington may also be required. Typically DEEP Individual Permits are required to be sent to local town agencies for notification. This usually covers the local approval process as well; however, some local agencies have been known to require additional information.

The approval process from all agencies can be a lengthy procedure. For a small dredge project requiring only a General Permit, approval can take as much as 6 months with Individual Permits requiring between 6 months to a year. If the time required for the engineering design, drawings specifications, completion of the permit application process, and bidding phase is added to the approval times from the regulatory agencies, a dredge project could take between one and two years from the initial onset of the project to the start of construction.

12.0 POTENTIAL CONSTRUCTION ISSUES

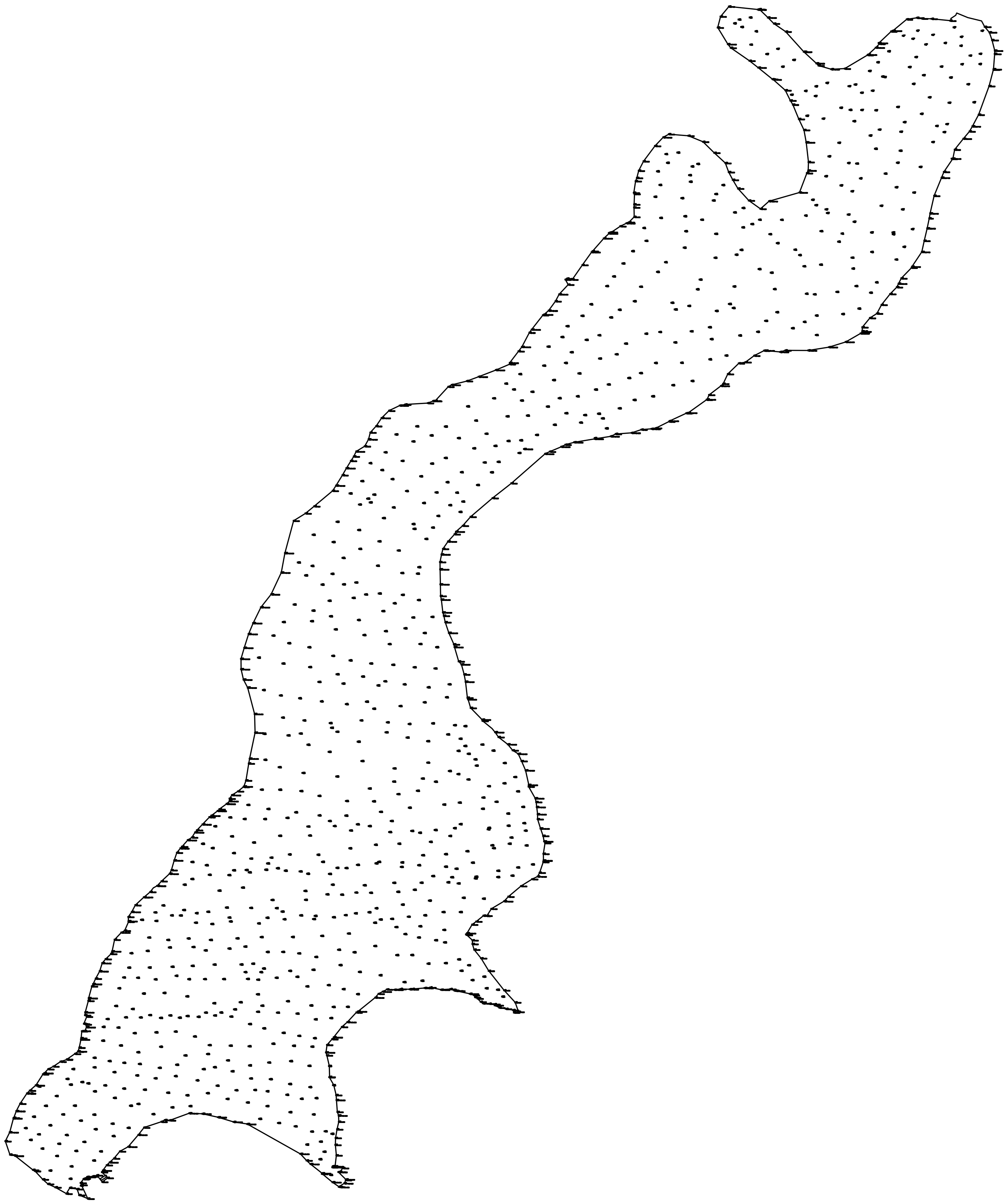
As described previously, the biggest construction hurdle will be the location of sediment disposal. In order to accurately forecast a budget and cost estimate, this should be identified during the design phase. If left to be chosen by the contractor during the bidding phase, bid prices may vary tremendously from one contractor to another. Additionally, bid prices may end up being much higher than the estimated budget, potentially jeopardizing the project. In addition to the on-site scenario presented earlier, there are two other options LGIA may want to consider. Macchi Engineers has had other dredge projects in the Farmington area where sediment was taken to Dunning Sand & Gravel on Brickyard Road for their use. Dunning mixes the material and sells it for topsoil. The second option is to haul the material to the Marinelli property just southwest of the lake on Monce Road. In May of 2009, Fred Marinelli received a special permit from the Town of Burlington to conduct a sand and gravel operation on his property just south of the Deer Avenue intersection. If this operation is still in progress when a dredge project is undertaken and if negotiations can be made with the owner, it could present considerable cost savings.

Another costly issue to consider is water control. The extent of water control will depend on the scale of the dredge project chosen and whether the lake needs to be completely drained or can be left partially filled. Leaving the lake partially filled is a benefit in terms of the impacts related to wildlife and fish and will help in the permit process. However, a partially filled lake will limit the amount of storage space available for potentially large storms that may strike during the construction process and potentially impact completed work areas. It will also require an increased erosion and sediment control process to avoid passing sediment from the work into the partially remaining lake. A partial lake drawdown will require the sluice gate to remain partially open during construction. This is a delicate give and take procedure where the contractor will have to diligently monitor flows to ensure a filling pond does not impact the work or conversely if an emptying pond does not drain leaving fish and other wildlife negatively impacted. The contractor should have adequate pumps and other equipment on-site to monitor the situation and adjust as deemed necessary. Additionally, flows through the pond may require a temporary diversion during the dredge process in order to adequately complete the dredge without construction equipment traversing the remaining watercourse. The contractor chosen for the work should demonstrate that they have adequate experience dealing with these important issues, since these items will all add to water control construction costs for the project and can substantially impact the project's schedule and lead to cost overruns.

Timing of construction is an important factor that has the potential to impact costs. Obviously the optimum time of the year to undertake a project where controlling water is a primary issue would be in the dry summer months. Inflows are normally much lower, while exposed and stacked sediment will dry quickly. A summer project, however, will impact the best recreational time period of the lake. Additionally, as mentioned in Section 8.0, a summer construction period could negatively impact the Eastern Box turtle species. Moving the project to winter can have its advantages. Working with frozen sediment can be a much cleaner and easier process, both with the actual excavation and with the access through the pond. Many times, however, a winter project brings a freeze/thaw cyclical process where the sediment freezes overnight then the upper few inches thaw in the daytime sunlight. Since the underlying ground remains frozen, the thawed top surface does not drain well creating very difficult construction travel and working conditions. Spring months should be avoided if at all possible. Thawing ground, snow runoffs and spring rains would add significant water control issues to the project. Construction timing will be dependent on the size of the dredge project chosen. A full dredge project may take the better part of a year to complete limiting the ability to choose, whereas a small-scale 5,000 cubic yard sediment removal project can be coordinated into a single season time frame.

APPENDIX A

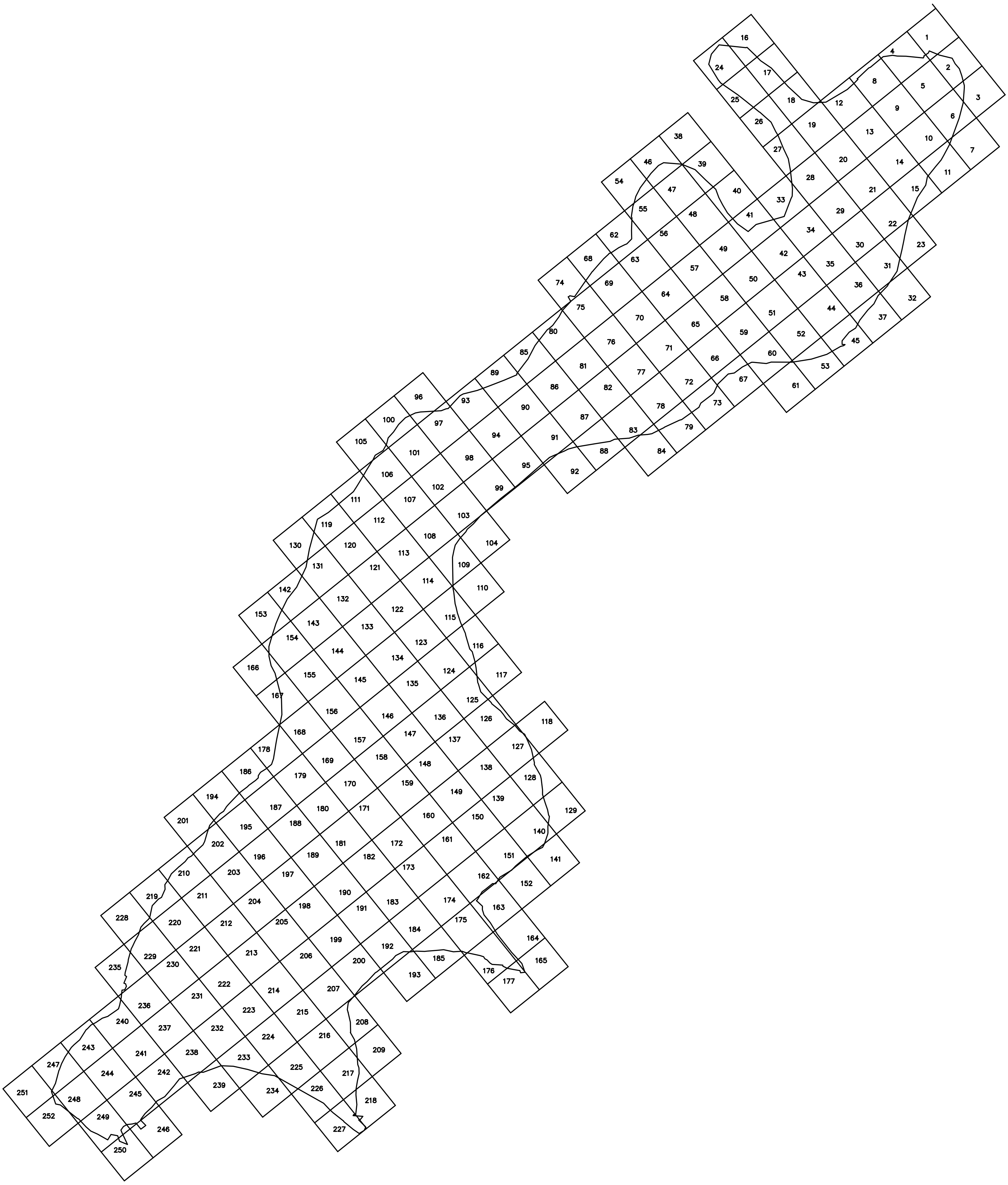
Sediment Calculations and Field Notes



SEDIMENT SURVEY POINTS

N

Macchi Engineers 44 Gillett Street Hartford, CT 06105 Phone: (860) 549-6190 Fax: (860) 524-5088	PROJECT: LAKE GARDA SEDIMENT STUDY SKETCH TITLE: SEDIMENT SURVEY POINTS	DRN BY: J.F.B. CHKD: J.B. DATE: 12/22/11 SCALE: NONE	SKETCH NO: 1



SEDIMENT SURVEY GRID

N

Macchi Engineers
44 Gillett Street
Hartford, CT 06105
Phone: (860) 549-6190
Fax: (860) 524-5088

PROJECT:
LAKE GARDA
SEDIMENT STUDY

SKETCH TITLE:
SEDIMENT SURVEY GRID

DRN BY: J.F.B.

CHKD: J.B.

DATE: 12/22/11

SCALE: NONE

SKETCH NO: 2

SEDIMENT SURVEY w/ GRID

Macchi Engineers 44 Gillett Street Hartford, CT 06105 Phone: (860) 549-6190 Fax: (860) 524-5088	PROJECT: **LAKE GARDA** **SEDIMENT STUDY** SKETCH TITLE: **SEDIMENT SURVEY w/ GRID**	DRN BY: J.F.B. CHKD: J.B. DATE: 12/22/11 SCALE: NONE	SKETCH NO: 3

SEDIMENT & WATER DEPTH CALCULATIONS

Grid #	Sub-Region Area (SF)	Ave. Sediment Depth (FT)	Total Sediment (CY)	Ave. Water Depth (FT)	Total Water (CF)
1	392.21	0.00	0.00	0.08	31
2	4,234.98	0.00	0.00	0.17	720
3	851.29	0.00	0.00	1.17	996
4	5,322.11	0.92	180.36	3.31	17,616
5	10,000.00	0.99	366.67	9.72	97,200
6	7,778.66	0.11	31.69	5.74	44,650
7	80.01	0.00	0.00	0.08	6
8	8,565.83	0.69	218.90	4.75	40,688
9	10,000.00	1.05	388.89	10.67	106,700
10	10,000.00	0.54	200.00	9.27	92,700
11	2,806.84	0.47	48.86	1.98	5,558
12	8,307.66	0.41	126.15	5.58	46,357
13	10,000.00	0.56	207.41	8.50	85,000
14	10,000.00	0.94	348.15	10.87	108,700
15	6,627.82	0.46	112.92	5.48	36,334
16	1,981.65	1.27	93.21	4.29	8,501
17	4,933.82	1.67	305.17	4.48	22,104
18	6,448.32	0.33	78.81	4.16	26,825
19	9,980.56	0.77	284.63	5.36	53,496
20	10,000.00	1.15	425.93	7.65	76,500
21	10,000.00	0.85	314.81	11.00	110,000
22	9,923.49	0.72	264.63	7.58	75,220
23	2,828.41	0.01	1.05	1.50	4,243
24	6,302.16	1.93	450.49	5.17	32,582
25	6,446.89	1.80	429.79	5.32	34,297
26	4,562.20	0.15	25.35	3.19	14,553
27	6,313.62	0.22	51.44	3.44	21,719
28	9,798.34	0.43	156.05	5.90	57,810
29	10,000.00	0.74	274.07	8.82	88,200
30	10,000.00	1.46	540.74	9.76	97,600
31	9,241.87	0.68	232.76	4.80	44,361
32	187.99	0.00	0.00	0.25	47
33	3,578.91	0.11	14.58	2.61	9,341
34	10,000.00	0.37	137.04	8.56	85,600
35	10,000.00	0.42	155.56	9.86	98,600
36	10,000.00	0.60	222.22	7.01	70,100
37	2,096.78	0.11	8.54	1.13	2,359
38	0.18	0.00	0.00	0.08	0
39	1,853.73	0.17	11.67	1.13	2,095
40	1,943.10	0.13	9.36	1.17	2,273
41	5,340.44	0.19	37.58	2.68	14,312
42	10,000.00	0.86	318.52	8.07	80,700
43	10,000.00	1.48	548.15	9.92	99,200
44	10,000.00	0.78	288.89	5.83	58,300
45	4,343.64	0.44	70.79	1.46	6,342
46	2,899.96	0.40	42.96	1.42	4,118

Grid #	Sub-Region Area (SF)	Ave. Sediment Depth (FT)	Total Sediment (CY)	Ave. Water Depth (FT)	Total Water (CF)
47	10,000.00	0.92	340.74	3.71	37,100
48	10,000.00	0.82	303.70	4.43	44,300
49	10,000.00	0.74	274.07	5.54	55,400
50	10,000.00	1.26	466.67	8.08	80,800
51	10,000.00	1.85	685.19	9.86	98,600
52	10,000.00	1.11	411.11	6.33	63,300
53	3,052.72	0.04	4.52	0.96	2,931
54	1,203.40	0.29	12.93	0.63	752
55	9,558.10	1.24	438.96	1.36	12,999
56	10,000.00	1.35	500.00	4.06	40,600
57	10,000.00	1.23	455.56	6.83	68,300
58	10,000.00	1.02	377.78	8.77	87,700
59	10,000.00	1.21	448.15	9.65	96,500
60	6,683.68	0.53	131.20	3.62	24,195
61	18.06	0.00	0.00	0.08	1
62	3,629.89	0.08	10.76	1.13	4,102
63	10,000.00	0.75	277.78	3.30	33,000
64	10,000.00	0.88	325.93	7.93	79,300
65	10,000.00	1.19	440.74	9.33	93,300
66	10,000.00	0.92	340.74	6.06	60,600
67	2,573.19	0.08	7.62	0.64	1,647
68	2,912.88	0.45	48.55	0.99	2,884
69	10,000.00	1.61	596.30	4.72	47,200
70	10,000.00	0.83	307.41	8.04	80,400
71	10,000.00	1.62	600.00	8.75	87,500
72	10,000.00	0.19	70.37	3.55	35,500
73	3,603.50	0.08	10.68	0.77	2,775
74	716.84	0.00	0.00	0.25	179
75	9,916.85	0.93	341.58	3.13	31,040
76	10,000.00	1.14	422.22	8.22	82,200
77	10,000.00	2.22	822.22	7.14	71,400
78	10,000.00	0.17	62.96	3.50	35,000
79	3,188.61	0.12	14.17	0.75	2,391
80	8,141.29	0.67	202.02	3.93	31,995
81	10,000.00	1.24	459.26	8.07	80,700
82	10,000.00	1.77	655.56	7.84	78,400
83	9,300.09	0.17	58.56	1.75	16,275
84	619.38	0.00	0.00	0.25	155
85	5,468.35	0.56	113.42	2.94	16,077
86	10,000.00	0.95	351.85	7.99	79,900
87	10,000.00	0.68	251.85	5.98	59,800
88	5,472.94	0.14	28.38	1.20	6,568
89	4,976.31	1.35	248.82	3.46	17,218
90	10,000.00	1.04	385.19	7.78	77,800
91	9,774.92	0.51	184.64	3.38	32,990
92	400.61	0.00	0.00	0.08	32
93	8,057.34	0.52	155.18	3.88	31,222
94	10,000.00	1.14	420.37	8.56	85,600
95	9,647.02	0.99	353.72	4.92	47,463

Grid #	Sub-Region Area (SF)	Ave. Sediment Depth (FT)	Total Sediment (CY)	Ave. Water Depth (FT)	Total Water (CF)
96	1,086.66	0.31	12.48	1.75	1,902
97	9,507.72	0.60	211.28	4.88	46,398
98	10,000.00	1.50	555.56	8.46	84,600
99	9,801.83	1.33	482.83	5.05	49,499
100	2,691.29	0.23	22.93	2.79	7,509
101	10,000.00	0.92	340.74	5.40	54,000
102	10,000.00	1.53	566.67	8.05	80,500
103	9,984.72	1.99	735.91	6.31	63,004
104	444.07	0.00	0.00	0.25	111
105	254.23	0.00	0.00	0.25	64
106	9,646.50	0.24	85.75	4.83	46,593
107	10,000.00	0.84	311.11	8.43	84,300
108	10,000.00	1.31	485.19	7.81	78,100
109	4,661.91	0.57	98.42	2.90	13,520
110	5.32	0.00	0.00	0.08	0
111	7,039.54	0.99	258.12	3.32	23,371
112	10,000.00	1.85	685.19	7.90	79,000
113	10,000.00	1.57	581.48	8.18	81,800
114	10,000.00	1.30	481.48	6.61	66,100
115	7,472.39	0.96	265.68	3.70	27,648
116	3,694.21	0.36	49.26	1.56	5,763
117	318.33	0.47	5.54	2.03	646
118	13.20	0.33	0.16	0.16	2
119	6,412.34	1.67	396.62	2.65	16,993
120	10,000.00	2.31	855.56	7.33	73,300
121	10,000.00	1.06	392.59	8.48	84,800
122	10,000.00	1.25	462.96	8.47	84,700
123	10,000.00	2.07	766.67	7.35	73,500
124	10,000.00	1.80	666.67	6.37	63,700
125	9,089.77	0.52	175.06	1.69	15,362
126	8,928.84	1.21	400.14	3.45	30,804
127	9,443.11	2.87	1,003.77	4.11	38,811
128	6,044.24	1.60	358.18	3.63	21,941
129	1,372.84	1.75	88.98	1.89	2,595
130	1,549.57	0.00	0.00	0.16	248
131	9,479.29	1.54	540.67	5.83	55,264
132	10,000.00	3.41	1,262.96	7.46	74,600
133	10,000.00	1.30	481.48	7.86	78,600
134	10,000.00	1.98	733.33	8.01	80,100
135	10,000.00	1.17	433.33	6.80	68,000
136	10,000.00	1.13	418.52	4.55	45,500
137	10,000.00	2.39	885.19	6.89	68,900
138	10,000.00	2.62	970.37	6.68	66,800
139	10,000.00	4.18	1,548.15	5.88	58,800
140	9,340.79	2.76	954.84	3.55	33,160
141	80.06	0.58	1.72	0.25	20
142	5,676.88	0.79	166.10	3.65	20,721
143	10,000.00	1.63	603.70	7.01	70,100
144	10,000.00	1.36	503.70	7.25	72,500

Grid #	Sub-Region Area (SF)	Ave. Sediment Depth (FT)	Total Sediment (CY)	Ave. Water Depth (FT)	Total Water (CF)
145	10,000.00	1.17	433.33	7.62	76,200
146	10,000.00	2.33	862.96	7.62	76,200
147	10,000.00	1.97	729.63	7.20	72,000
148	10,000.00	1.18	437.04	7.12	71,200
149	10,000.00	2.71	1,003.70	6.65	66,500
150	10,000.00	2.75	1,018.52	6.37	63,700
151	9,799.40	2.01	729.51	4.20	41,157
152	2.20	0.00	0.00	0.08	0
153	1,317.10	0.88	42.68	0.08	105
154	9,537.99	1.17	413.31	4.29	40,918
155	10,000.00	0.90	333.33	5.88	58,800
156	10,000.00	1.30	481.48	6.43	64,300
157	10,000.00	1.37	507.41	6.42	64,200
158	10,000.00	1.63	603.70	7.11	71,100
159	10,000.00	1.74	644.44	6.89	68,900
160	10,000.00	2.36	874.07	6.35	63,500
161	10,000.00	2.42	896.30	6.11	61,100
162	9,833.63	2.35	855.89	3.42	33,631
163	1,369.87	1.50	76.10	0.54	740
164	526.76	1.69	32.97	1.00	527
165	181.36	0.67	4.50	0.75	136
166	1,127.41	0.83	34.66	1.46	1,646
167	5,633.80	0.92	191.97	3.23	18,197
168	9,998.72	1.40	518.45	5.13	51,293
169	10,000.00	0.83	307.41	4.87	48,700
170	10,000.00	1.10	407.41	6.22	62,200
171	10,000.00	1.94	718.52	6.56	65,600
172	10,000.00	1.24	459.26	5.68	56,800
173	10,000.00	0.82	303.70	4.27	42,700
174	10,000.00	1.23	455.56	3.79	37,900
175	9,925.76	1.14	419.09	2.26	22,432
176	5,925.26	1.03	226.04	0.83	4,918
177	631.10	1.13	26.41	0.67	423
178	5,777.03	0.50	106.98	2.35	13,576
179	10,000.00	0.68	251.85	5.07	50,700
180	10,000.00	0.75	277.78	4.61	46,100
181	10,000.00	1.23	455.56	6.93	69,300
182	10,000.00	1.11	411.11	6.17	61,700
183	10,000.00	0.80	296.30	3.99	39,900
184	10,000.00	0.83	307.41	3.20	32,000
185	5,526.73	0.81	165.80	1.10	6,079
186	2,558.21	0.78	73.90	1.94	4,963
187	10,000.00	1.35	500.00	4.44	44,400
188	10,000.00	1.19	440.74	3.39	33,900
189	10,000.00	1.20	444.44	5.50	55,000
190	10,000.00	1.71	633.33	6.36	63,600
191	10,000.00	0.83	307.41	2.52	25,200
192	8,879.68	0.75	246.66	0.89	7,903
193	32.19	0.25	0.30	0.16	5

Grid #	Sub-Region Area (SF)	Ave. Sediment Depth (FT)	Total Sediment (CY)	Ave. Water Depth (FT)	Total Water (CF)
194	1,638.79	0.82	49.77	1.80	2,950
195	10,000.00	1.24	459.26	3.95	39,500
196	10,000.00	1.39	514.81	4.03	40,300
197	10,000.00	1.04	385.19	5.11	51,100
198	10,000.00	2.25	833.33	6.18	61,800
199	10,000.00	1.46	540.74	4.46	44,600
200	9,076.63	1.22	410.13	1.57	14,250
201	156.92	0.67	3.89	0.25	39
202	8,621.16	1.32	421.48	2.15	18,535
203	10,000.00	1.46	540.74	4.50	45,000
204	10,000.00	2.49	922.22	5.03	50,300
205	10,000.00	2.45	907.41	6.06	60,600
206	10,000.00	1.13	418.52	5.49	54,900
207	9,996.93	1.22	451.71	2.26	22,593
208	4,461.83	1.58	261.10	1.33	5,934
209	405.54	1.79	26.89	0.63	255
210	6,964.94	1.21	312.13	2.08	14,487
211	10,000.00	1.63	603.70	3.78	37,800
212	10,000.00	1.42	525.93	4.90	49,000
213	10,000.00	1.65	611.11	5.58	55,800
214	10,000.00	3.28	1,214.81	5.07	50,700
215	10,000.00	1.20	444.44	3.76	37,600
216	10,000.00	0.90	333.33	2.91	29,100
217	8,456.65	0.70	219.25	1.27	10,740
218	1,334.11	2.09	103.27	1.50	2,001
219	3,766.70	1.28	178.57	1.55	5,838
220	10,000.00	1.93	714.81	4.47	44,700
221	10,000.00	1.44	533.33	4.58	45,800
222	10,000.00	2.41	892.59	4.95	49,500
223	10,000.00	1.00	370.37	3.75	37,500
224	10,000.00	0.53	196.30	2.87	28,700
225	9,379.48	0.75	260.54	2.69	25,231
226	5,850.42	1.00	216.68	2.17	12,695
227	3,460.61	1.20	153.80	1.10	3,807
228	403.47	0.25	3.74	0.08	32
229	9,285.23	1.30	447.07	2.68	24,884
230	10,000.00	2.85	1,055.56	3.79	37,900
231	10,000.00	1.55	574.07	3.71	37,100
232	10,000.00	0.40	148.15	3.49	34,900
233	7,079.60	0.38	99.64	1.86	13,168
234	657.95	0.50	12.18	0.44	289
235	3,107.51	1.61	185.30	1.22	3,791
236	9,929.48	3.33	1,224.64	3.07	30,484
237	10,000.00	0.94	348.15	2.92	29,200
238	9,568.23	0.30	106.31	2.73	26,121
239	648.57	0.30	7.21	0.92	597
240	7,837.55	2.46	714.09	2.21	17,321
241	10,000.00	0.66	244.44	2.28	22,800
242	8,534.24	0.94	297.12	3.05	26,029

Grid #	Sub-Region Area (SF)	Ave. Sediment Depth (FT)	Total Sediment (CY)	Ave. Water Depth (FT)	Total Water (CF)
243	7,682.86	2.14	608.94	0.52	3,995
244	10,000.00	1.01	374.07	2.44	24,400
245	9,346.23	0.64	221.54	1.53	14,300
246	297.97	0.33	3.64	0.50	149
247	4,202.62	1.25	194.57	0.62	2,606
248	9,803.84	1.33	482.93	1.50	14,706
249	7,135.48	1.33	351.49	0.88	6,279
250	298.00	0.83	9.16	1.08	322
251	57.45	0.92	1.96	0.08	5
252	423.08	0.92	14.42	0.25	106
	42.64 Lake Acres	1.24 Sed Ave. depth (FT)	85,483 Total Sediment (CY)	5.22 Water Ave Depth (FT)	222.50 Total Water (Ac-FT)

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
Friday 11/11/11 thru Friday 12/2/11				Work East -West Grid from North to South
1	0-2	0-2	0-0	Edge of Pond @ Moore Beach
2	0-3	0-3	0-0	
3	12-10	11-4	1-6	
4	4-9	4-8	0-1	
5	4-0	3'-8	0-4	
6	7-0	5-2	1-10	
7	7-2	5-4	1-10	
8	9-0	7-10	1-2	
9	13-0	11-6	1-6	
10	13-6	11-6	2-0	
11	12-10	11-6	1-4	
12	10-4	9-6	0-10	
13	3-6	3-6	0-0	
14	0-0	0-0	0-0	Edge of Pond East Side
15	0-0	0-0	0-0	Edge of Pond East Side
16	4-0	4-0	0-0	
17	12-2	11-0	1-2	
18	13-0	11-0	2-0	
19	10-6	9-10	0-8	
20	4-6	4-6	0-0	
21	6-0	5-0	1-0	Approx. 30' from stairs - West Side
22	8-4	8-4	0-0	
23	8-2	8-2	0-0	
24	13-2	11-0	2-2	
25	12-8	11-8	1-0	
26	6-8	6-4	0-4	
27	3-8	3-8	0-0	Approx. 20 from East Shore
28	10-2	10-0	0-2	
29	12-8	12-2	0-6	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
30	11-10	10-10	1-0	
31	8-8	8-8	0-0	
32	4-11	4-9	0-2	
33	5-3	5-1	0-2	Approx 50 from West Shore
34	8-6	8-5	0-1	
35	9-7	9-0	0-7	
36	11-6	11-4	0-2	
37	9-1	9-0	0-1	
38	0-0	0-0	0-0	Edge of Pond @ East Shore
39	0-0	0-0	0-0	Edge of Pond @ East Shore (Fence Timber)
40	9-4	7-11	1-5	
41	12-3	10-10	1-5	
42	13-0	12-6	0-6	
43	9-3	8-3	1-0	
44	8-4	8-0	0-4	
45	5-1	5-0	0-1	
46	6-10	6-0	0-10	West Side Middle of Inlet Entrance
47	8-1	7-4	0-9	
48	9-6	8-10	0-8	
49	13-2	12-4	0-10	
50	11-8	10-4	1-4	
51	0-0	0-0	0-0	Edge of Pond - East (storm sewer)
52	0-0	0-0	0-0	Edge of Pond East Shore
53	9-8	9-2	0-6	
54	11-5	11-0	0-5	
55	8-8	8-0	0-8	
56	8-4	7-4	1-0	
57	5-6	4-10	0-8	
58	0-0	0-0	0-0	Edge of Pond West Shore
59	7-2	6-8	0-6	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
60	8-0	7-8	0-4	
61	11-4	10-2	1-2	
62	12-1	10-8	1-5	
63	9-7	8-3	1-4	
64	0-0	0-0	0-0	Edge of Pond - East Shore
65	10-2	9-10	0-4	
66	12-5	10-3	2-2	
67	11-0	10-0	1-0	
68	9-10	9-0	0-10	
69	8-2	7-10	0-4	
70	0-0	0-0	0-0	Edge of Pond - West Shore
71	0-0	0-0	0-0	Edge of Pond - West Shore
72	8-6	8-3	0-3	
73	9-8	9-2	0-6	
74	9-6	9-6	0-0	
75	11-10	9-10	2-0	
76	10-6	9-2	1-4	
77	4-8	4-6	0-2	
78	0-0	0-0	0-0	Edge of Pond - East Shore
79	0-0	0-0	0-0	Edge of Pond - East Shore
80	4-6	4-6	0-0	
81	10-6	9-2	1-4	
82	10-1	10-0	0-1	
83	10-3	9-6	0-9	
84	8-0	7-6	0-6	
85	4-10	4-10	0-0	NW Inlet - South Side near Dock
86	6-11	5-10	1-1	NW Inlet
87	7-5	7-1	0-4	NW Inlet
88	0-0	0-0	0-0	NW Inlet - @ Edge of Pond
89	0-0	0-0	0-0	NW Inlet - @ Edge of Pond

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
90	5-4	5-3	0-1	NW Inlet - Center of Inlet
91	5-3	5-2	0-1	NW Inlet
92	1-1	1-1	0-0	NW Inlet (Near Shore)
93	0-0	0-0	0-0	NW Inlet @ Edge of Pond
94	7-0	6-6	0-6	NW Inlet
95	6-6	5-2	1-4	NW Inlet
96	0-0	0-0	0-0	NW Inlet @ Edge of Pond
97	10-2	8-9	1-5	NW Inlet
98	10-10	8-8	2-2	NW Inlet
99	0-0	0-0	0-0	NW Inlet @ Edge of Pond
100	12-0	8-9	3-3	NW Inlet
101	12-9	9-2	3-7	NW Inlet
102	0-0	0-0	0-0	NW Inlet @ Edge of Pond
103	0-0	0-0	0-0	NW Inlet @ Edge of Pond
104	9-6	8-0	1-6	NW Inlet
105	12-6	9-6	3-0	NW Inlet
106	0-0	0-0	0-0	NW Inlet @ Edge of Pond
107	10-0	6-7	3-5	NW Inlet
108	9-8	8-1	1-7	NW Inlet
109	1-0	1-0	0-0	Main Pond - West Shore
110	7-4	7-2	0-2	
111	10-4	10-3	0-1	
112	9-3	9-1	0-2	
113	6-9	5-6	1-3	
114	0-9	0-9	0-0	Edge of Pond - East Shore
115	0-0	0-0	0-0	Edge of Pond - East Shore
116	6-6	5-2	1-4	
117	9-3	8-8	0-7	
118	12-0	11-10	0-2	
119	11-8	9-8	2-0	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
120	8-10	7-10	1-0	
121	6-1	5-4	0-9	
122	4-4	4-3	0-1	
123	3-9	3-6	0-3	
124	5-0	4-6	0-6	
125	4-2	4-0	0-2	
126	0-0	0-0	0-0	Swampy - Edge of Pond West Shore
127	6-1	4-0	2-1	
128	6-0	4-9	1-3	
129	5-11	5-1	0-10	..
130	6-6	6-1	0-5	
131	10-6	9-6	1-0	
132	12-6	11-8	0-10	
133	6-0	6-0	0-0	
134	4-10	4-6	0-4	
135	9-0	8-3	0-9	Gap Filler - Near Pt #60
136	9-2	6-2	3-0	Gap Filler - Btwn Pt #46 & 47
137	8-2	7-4	0-10	Gap Filler - South Pt #136
138	11-0	10-0	1-0	Gap Filler - Near Pt #55
139	12-9	12-6	0-3	Gap Filler - Near Pt #54
140	12-3	10-6	1-9	Gap Filler - Btwn Pt #54 & #62
141	5-10	5-6	0-4	Gap Filler - Btwn Pt #110 & #120
142	9-3	8-10	0-5	Gap Filler - Near Pt #111
143	8-11	8-9	0-2	Gap Filler - Near Pt #117
144	3-6	2-10	0-8	
145	12-2	8-10	2-4	
146	11-10	10-0	1-10	
147	9-1	8-0	1-1	
148	6-8	6-0	0-8	
149	5-8	5-0	0-8	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
150	6-2	4-6	1-8	
151	4-6	3-1	1-5	West Side 30' from Shore
152	3-8	2-6	1-2	West Side 40' from Shore
153	5-1	4-10	0-3	
154	6-2	5-4	0-10	
155	11-2	9-10	1-4	
156	11-1	9-10	1-3	
157	4-1	3-0	1-1	
158	0-0	0-0	0-0	Edge of Pond - East Shore
159	0-0	0-0	0-0	Edge of Pond - East Shore
160	8-6	7-2	1-4	
161	12-0	9-10	2-2	
162	11-10	9-4	2-6	
163	7-2	6-6	0-8	
164	5-1	4-0	1-1	
165	6-0	4-2	1-10	
166	4-10	2-3	2-7	
167	3-0	1-6	1-6	
168	5-0	4-0	1-0	
169	8-0	7-0	1-0	
170	11-11	9-10	2-1	
171	10-3	8-1	2-2	
172	4-0	3-10	0-2	
173	0-0	0-0	0-0	Edge of Pond - East Shore
174	0-0	0-0	0-0	Edge of Pond - East Shore
175	10-10	9-1	1-9	
176	12-5	10-0	2-5	
177	11-0	9-4	1-8	
178	9-4	8-0	1-4	
179	5-1	3-10	1-3	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
180	4-10	3-3	1-7	
181	2-6	2-3	0-3	35' off Children's Beach
182	6-2	5-1	1-1	
183	10-0	9-0	1-0	
184	10-1	9-3	0-10	
185	9-11	9-0	0-11	
186	0-0	0-0	0-0	Edge of Pond - East Shore
187	0-0	0-0	0-0	Edge of Pond - East Shore
188	8-1	6-0	2-1	Sediment is sandy-gravel
189	11-4	9-4	2-0	
190	10-7	9-3	1-4	
191	6-6	5-10	0-8	
192	4-0	3-6	0-6	
193	0-0	0-0	0-0	Edge of Pond - Children's Beach
194	0-0	0-0	0-0	Edge of Pond - West (Edge of Cat tail's)
195	5-8	4-2	1-6	
196	7-1	6-3	0-10	
197	10-2	9-5	0-9	
198	5-3	4-8	0-7	Sediment is sandy-gravel
199	4-0	3-10	0-2	
200	0-0	0-0	0-0	Edge of Pond - East Shore (near dock)
201	3-10	3-9	0-1	
202	7-9	6-0	1-9	
203	9-11	9-4	0-7	
204	8-0	6-9	1-3	
205	5-10	3-9	2-1	
206	0-0	0-0	0-0	Edge of Pond - West Shore
207	0-0	0-0	0-0	Edge of Pond - West Shore
208	6-0	4-11	1-1	
209	9-1	8-3	0-10	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
210	10-7	9-0	1-7	
211	4-1	3-9	0-4	
212	3-4	3-1	0-3	
213	0-3	0-3	0-0	Edge of Pond - East Shore Retaining Wall
214	0-6	0-3	0-3	Edge of Pond - East Shore Retaining Wall
215	3-7	3-6	0-1	
216	4-11	3-11	1-0	
217	11-11	10-2	1-9	
218	8-6	7-10	0-8	
219	7-2	5-6	1-8	
220	0-0	0-0	0-0	Edge of Pond - West Shore
221	8-0	6-4	1-8	
222	9-7	8-3	1-4	
223	10-3	9-1	1-2	
224	9-0	5-0	4-0	Sediment is sandy-gravel
225	3-9	3-6	0-3	
226	2-10	2-4	0-6	Edge of Pond - East Shore 30" RCP
227	0-0	0-0	0-0	Edge of Pond - East Shore
228	3-9	3-6	0-3	Stoney
229	10-1	5-11	4-2	Sediment is sandy-gravel
230	10-0	8-9	1-3	
231	10-0	8-7	1-5	
232	9-2	6-11	2-3	
233	0-0	0-0	0-0	Edge of Pond - West Shore
234	0-0	0-0	0-0	Edge of Pond - West Shore
235	9-0	7-6	1-6	
236	8-11	7-1	1-10	
237	9-9	8-1	1-8	
238	10-0	7-8	2-4	Sediment is sandy-gravel
239	3-11	3-6	0-5	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
240	0-0	0-0	0-0	Edge of Pond - East Shore
241	0-0	0-0	0-0	Edge of Pond - East Shore
242	4-2	4-0	0-2	
243	10-1	8-0	2-1	
244	10-11	9-11	1-0	
245	8-3	7-3	1-0	
246	9-7	8-1	1-6	
247	0-0	0-0	0-0	Edge of Pond - West Shore
248	0-0	0-0	0-0	Edge of Pond - West Shore
249	9-0	8-8	1-0	
250	8-5	8-0	0-5	
251	8-3	7-9	0-6	
252	4-6	4-0	0-6	Stoney / Mud
253	0-0	0-0	0-0	Edge of Pond - East Shore
254	0-0	0-0	0-0	Edge of Pond - East Shore
255	7-11	7-3	0-8	
256	8-0	6-10	1-2	Sediment is sandy-gravel
257	8-2	7-10	0-4	Stone Bottom - Cobbles
258	8-0	7-0	1-0	
259	0-0	0-0	0-0	Edge of Pond - West Shore
260	0-0	0-0	0-0	Edge of Pond - West Shore
261	5-0	3-9	1-3	
262	15-11	14-6	1-5	
263	9-6	8-0	1-6	
264	6-4	5-0	1-4	
265	0-0	0-0	0-0	Edge of Pond - East Shore
266	0-0	0-0	0-0	Edge of Pond - East Shore
267	3-3	3-0	0-3	Sediment is sandy-gravel
268	4-3	4-3	0-0	Sediment is sandy-gravel
269	10-0	8-0	2-0	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
270	5-2	5-2	0-0	
271	10-2	9-0	1-2	
272	0-0	0-0	0-0	Edge of Pond - West Shore
273	0-3	0-3	0-0	Edge of Pond - West Shore
274	9-4	8-0	1-4	
275	10-0	9-4	0-8	
276	10-0	8-9	1-3	
277	9-11	7-7	2-4	
278	9-0	7-9	1-3	Approx. 40' off East Shore
279	9-10	8-0	1-10	
280	9-11	9-6	0-5	
281	9-3	8-0	1-3	
282	8-3	7-6	0-9	
283	0-0	0-0	0-0	Edge of Pond - West shore - Marshy
284	0-0	0-0	0-0	Edge of Pond - West Shore
285	7-10	7-3	0-7	
286	9-4	8-1	1-3	
287	10-11	8-10	2-1	
288	10-2	8-1	2-1	
289	8-0	7-0	1-0	
290	10-1	7-2	2-11	
291	9-7	8-0	1-7	
292	10-4	9-3	1-1	
293	7-11	7-0	0-11	
294	6-2	5-3	0-11	
295	0-0	0-0	0-0	Edge of Pond - West Shore
296	0-0	0-0	0-0	Edge of Pond - West Shore
297	6-6	5-7	0-11	
298	8-2	7-0	1-2	
299	10-11	8-10	2-1	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
300	8-10	7-9	1-1	
301	10-10	7-6	3-4	
302	9-0	8-0	1-0	
303	6-9	4-10	1-11	
304	10-10	7-0	3-10	
305	9-6	7-3	2-3	
306	11-0	9-6	1-6	
307	8-0	7-3	0-9	
308	8-0	7-2	0-10	
309	0-0	0-0	0-0	Edge of Pond - West Shore
310	0-0	0-0	0-0	Edge of Pond - West Shore
311	6-11	5-11	1-0	
312	8-6	8-3	0-3	
313	8-1	8-0	0-1	
314	10-1	8-6	1-7	
315	10-3	7-4	2-11	
316	8-9	7-2	1-7	
317	0-0	0-0	0-0	Edge of Pond - East Shore
318	0-0	0-0	0-0	Edge of Pond - East Shore
319	8-7	7-3	1-4	
320	9-5	7-11	1-6	
321	9-10	8-2	1-8	
322	9-1	9-1	0-0	
323	7-9	7-2	0-7	
324	0-2	0-2	0-0	Edge of Pond - West Shore, Retaining Wall
325	0-0	0-0	0-0	Edge of Pond - West Shore, Retaining Wall
326	7-0	5-0	2-0	
327	9-3	8-3	1-0	
328	9-6	9-0	0-6	
329	10-0	8-2	1-10	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
330	8-6	7-11	0-7	
331	0-0	0-0	0-0	Edge of Pond - East Shore (Brush)
332	0-0	0-0	0-0	Edge of Pond - East Shore
333	8-5	7-2	1-3	
334	9-0	7-3	1-9	Sediment is sandy-gravel
335	10-1	9-1	1-0	
336	10-2	8-0	2-2	
337	10-0	7-2	2-10	
338	3-11	3-5	0-6	
339	9-10	8-6	1-4	
340	9-9	7-6	2-3	
341	10-1	8-7	1-6	
342	9-10	8-6	1-4	
343	8-10	7-3	1-7	
344	0-0	0-0	0-0	Edge of Pond - East Shore
345	0-0	0-0	0-0	Edge of Pond - East Shore
346	7-6	6-10	0-8	
347	9-9	7-9	2-0	
348	10-10	9-5	1-5	
349	9-6	7-7	1-11	
350	10-0	7-1	2-11	
351	8-8	7-3	1-5	
352	6-9	6-3	0-6	
353	0-0	0-0	0-0	Edge of Pond - West Shore
354	1-8	0-4	1-4	Edge of Pond - West Shore
355	8-10	6-9	2-1	
356	9-11	7-2	2-9	
357	10-1	10-1	0-0	
358	8-6	8-2	0-4	
359	10-0	8-5	1-7	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
360	9-0	7-0	2-0	
361	7-6	6-2	1-4	
362	0-0	0-0	0-0	Edge of Pond - East Shore
363	0-0	0-0	0-0	Edge of Pond - East Shore
364	8-6	6-6	2-0	
365	9-10	7-0	2-10	
366	8-7	7-4	1-3	
367	8-11	8-2	0-9	
368	9-10	7-0	2-10	
369	12-4	8-2	4-2	
370	9-11	7-3	2-8	
371	0-4	0-4	0-0	Edge of Pond - West Shore
372	0-0	0-0	0-0	Edge of Pond - West Shore
373	7-6	7-0	0-6	
374	10-1	7-7	2-6	
375	9-3	7-7	1-8	
376	9-3	8-6	0-9	
377	10-2	8-2	2-0	
378	10-6	7-0	2-6	
379	7-8	6-3	1-5	
380	0-0	0-0	0-0	Edge of Pond - East Shore
381	0-0	0-0	0-0	Edge of Pond - East Shore
382	8-11	6-3	2-8	
383	9-0	7-6	1-6	
384	10-4	7-11	2-5	
385	9-11	8-0	1-11	
386	9-1	7-10	1-3	
387	9-4	7-3	2-1	
388	9-0	7-2	1-10	
389	8-0	7-1	0-11	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
390	7-4	6-0	1-4	
391	6-4	5-0	1-4	
392	7-4	5-10	1-6	
393	8-1	7-3	0-10	
394	8-11	7-10	1-1	
395	9-8	8-2	1-6	
396	9-11	7-10	2-1	
397	8-4	7-3	1-1	
398	9-6	7-3	2-3	
399	7-6	6-1	1-5	
400	0-0	0-0	0-0	Edge of Pond - East Shore
401	0-4	0-4	0-0	Edge of Pond - East Shore
402	3-6	3-0	0-6	
403	5-11	4-9	1-2	
404	6-5	6-0	0-5	
405	9-6	8-3	1-3	
406	8-11	7-3	1-8	
407	8-10	8-6	0-4	Vegetation Mat @ Pond Bottom
408	6-3	6-3	0-0	
409	7-2	6-6	0-8	Vegetation Mat @ Pond Bottom
410	6-2	5-4	0-8	
411	0-0	0-0	0-0	Edge of Pond - West Shore
412	7-2	5-6	1-8	
413	6-7	5-11	0-8	
414	8-4	6-2	2-2	Vegetation Mat @ Pond Bottom
415	9-2	7-0	2-2	
416	9-8	7-9	1-11	
417	6-6	5-11	0-7	
418	3-10	3-0	0-10	
419	3-1	1-11	1-3	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
420	1-10	1-6	0-4	
421	0-0	0-0	0-0	Edge of Pond - East Shore
422	0-0	0-0	0-0	Edge of Pond - East Shore
423	5-0	4-9	0-3	
424	6-4	5-3	1-1	
425	8-10	7-3	1-7	
426	8-6	6-6	2-0	
427	9-1	6-2	2-11	
428	8-9	7-0	1-9	
429	10-1	7-10	2-3	
430	9-3	7-3	2-0	
431	8-10	6-3	2-7	
432	7-0	6-0	1-0	
433	7-0	6-0	1-0	
434	6-1	4-6	1-7	
435	1-6	0-10	0-8	Edge of Pond - West Shore
436	1-2	1-0	0-2	Edge of Pond - West Shore
437	6-10	4-9	2-1	
438	6-2	5-3	0-11	
439	5-2	4-4	0-10	
440	6-1	5-9	0-4	
441	9-1	7-1	2-0	
442	8-3	7-3	1-0	
443	8-6	6-7	1-11	
444	10-1	7-0	3-1	
445	9-8	6-0	3-8	
446	10-0	6-6	3-6	
447	0-4	0-1	0-3	Edge of Pond - East Shore
448	0-6	0-2	0-4	Edge of Pond - East Shore
449	10-6	5-6	5-0	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
450	9-9	7-2	2-7	
451	10-0	7-0	3-0	
452	8-9	7-2	1-7	
453	8-2	6-9	1-5	
454	8-9	8-0	0-9	Vegetation
455	9-1	7-2	1-11	Vegetation Mat @ Pond Bottom
456	9-4	7-10	1-6	
457	5-6	4-0	1-6	
458	5-10	4-9	1-1	
459	5-6	5-2	0-4	
460	6-0	5-9	0-3	
461	0-3	0-3	0-0	Pond Edge - West Shore
462	0-2	0-0	0-2	Pond Edge - West Shore
463	0-4	0-4	0-0	Pond Edge - West Shore
464	5-9	4-5	1-4	
465	6-0	5-2	0-10	
466	5-6	5-0	0-6	
467	6-0	5-3	0-9	
468	7-11	6-11	1-0	
469	8-6	6-6	2-0	
470	7-5	7-0	0-5	
471	7-11	6-6	1-5	
472	8-3	6-11	1-4	
473	9-0	6-10	2-2	
474	10-2	6-0	4-2	
475	10-8	5-9	4-11	
476	0-0	0-0	0-0	Edge of Pond - East Shore
477	0-0	0-0	0-0	Edge of Pond - East Shore
478	8-0	6-3	1-9	
479	10-1	6-9	3-4	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
480	8-11	6-9	2-2	
481	10-0	6-6	3-6	
482	9-6	6-6	3-0	
483	8-9	6-10	1-11	
484	8-7	6-10	1-9	
485	9-0	6-1	2-11	
486	9-1	7-0	2-1	
487	7-4	6-10	0-6	
488	6-3	5-3	1-0	
489	5-6	4-10	0-8	
490	6-0	5-2	0-10	
491	5-4	4-6	0-10	
492	5-3	3-10	1-5	
493	6-3	4-2	2-1	
494	6-7	4-10	1-9	
495	4-6	3-6	1-0	
496	5-8	4-11	0-9	
497	7-10	6-6	1-4	
498	8-3	7-1	1-2	
499	9-1	6-8	2-5	
500	8-10	7-0	1-10	
501	9-11	6-11	3-0	
502	9-10	6-8	3-2	
503	9-3	6-0	3-3	
504	10-0	5-9	4-3	
505	0-3	0-3	0-0	Edge of Pond - East Shore
506	0-0	0-0	0-0	Reading taken 10' from 12 RCP @ Edge
507	0-4	0-4	0-0	Edge of Pond - East Shore
508	9-2	7-2	2-0	
509	10-2	5-2	5-0	Vegetation Mat @ Pond Bottom

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
510	9-10	6-4	3-6	
511	9-9	6-10	2-11	
512	9-1	6-8	2-5	
513	9-0	7-0	2-0	
514	8-5	6-3	2-2	
515	7-9	6-11	0-10	
516	8-0	7-1	0-11	
517	4-9	4-2	0-7	
518	3-1	2-3	0-10	
519	5-9	4-11	0-10	
520	5-11	4-9	1-2	
521	5-5	3-11	1-6	
522	5-3	4-3	1-0	
523	5-11	4-0	1-11	
524	5-0	4-2	0-10	
525	3-1	2-2	0-11	
526	5-10	4-10	1-0	
527	7-0	6-7	0-5	
528	7-5	6-9	0-8	
529	9-3	8-6	0-9	
530	8-0	6-0	2-0	
531	7-2	5-11	1-3	
532	10-9	6-1	4-8	
533	8-9	6-3	2-6	
534	8-11	6-10	2-1	
535	10-4	6-3	4-1	
536	10-0	6-4	3-8	
537	10-2	5-3	4-11	Vegetation Mat @ Pond Bottom
538	0-4	0-2	0-2	Edge of Pond - East Shore
539	0-5	0-3	0-2	Edge of Pond - East Shore

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
540	9-9	5-1	4-8	
541	10-1	5-2	4-11	
542	10-10	5-9	5-1	
543	8-0	6-8	1-4	
544	9-1	6-4	2-9	
545	8-11	6-2	2-9	
546	9-2	6-2	3-0	
547	6-2	5-2	1-0	Sediment is sandy-gravel
548	8-10	6-0	2-10	
549	8-6	6-0	2-6	
550	8-3	6-0	2-3	
551	7-10	7-0	0-10	
552	5-10	5-0	0-10	
553	3-10	2-6	1-4	
554	3-9	1-4	2-5	
555	5-5	3-10	1-7	
556	5-10	4-0	1-10	
557	5-11	3-11	2-0	
558	5-11	3-4	2-7	
559	0-8	0-3	0-5	Edge of Pond - West Shore
560	0-4	0-2	0-2	Gap Filler - West Edge North of Pt #559
561	0-11	0-3	0-8	Gap Filler - West Edge North of Pt #559
562	1-0	0-8	0-4	Gap Filler - West Edge North of Pt #559
563	1-5	0-6	0-11	Gap Filler - West Edge North of Pt #559
564	2-1	1-0	1-1	Gap Filler - West Edge North of Pt #559
565	0-5	0-2	0-3	Gap Filler - West Edge North of Pt #559
566	0-9	0-4	0-5	Gap Filler - West Edge North of Pt #559
567	1-0	0-8	0-4	Gap Filler - West Edge North of Pt #559
568	5-3	3-4	1-11	Gap Filler - Btwn Pt #522 & #560
569	3-4	3-0	0-4	Gap Filler - Btwn Pt #521 & #562

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
570	5-3	3-10	1-5	Gap Filler - Btwn Pt #493 & #564
571	0-9	0-7	0-2	Edge of Pond - West Shore
572	5-6	3-6	2-0	
573	6-2	4-5	1-9	
574	4-2	3-9	0-5	
575	5-11	3-11	1-2	Sediment is sandy-gravel
576	8-0	6-2	1-10	
577	9-4	6-7	2-9	
578	7-0	6-10	0-2	
579	5-0	4-10	0-2	
580	5-11	5-1	0-10	
581	8-9	6-6	2-3	
582	8-1	6-4	1-9	
583	9-9	6-3	3-6	
584	9-3	5-4	3-11	
585	6-5	3-11	2-6	
586	0-6	0-3	0-3	Edge of Pond - East Shore
587	0-10	0-3	0-7	Edge of Pond - East Shore
588	8-2	5-1	3-1	
589	4-4	4-3	0-1	Sediment is sandy-gravel
590	9-11	6-5	3-6	
591	9-3	6-6	2-9	
592	8-11	6-10	2-1	
593	10-1	6-0	4-1	
594	4-6	3-9	0-9	Sediment is sandy-gravel
595	4-5	4-0	0-5	
596	5-0	5-0	0-0	
597	7-11	6-5	1-6	
598	7-7	6-3	1-4	
599	8-11	7-5	1-6	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
600	8-1	5-11	2-2	
601	6-9	5-10	0-11	
602	4-11	4-0	0-11	
603	5-8	4-3	1-5	
604	6-2	5-1	1-1	
605	4-1	3-11	0-2	
606	5-9	3-1	2-8	
607	0-5	0-2	0-3	Edge of Pond - West Shore
608	0-2	0-0	0-2	Edge of Pond - West Shore
609	5-2	3-10	1-4	
610	5-0	3-2	1-10	
611	6-3	4-6	1-9	
612	5-11	3-11	2-0	
613	5-4	4-9	0-7	
614	7-7	6-0	1-7	
615	7-2	6-5	0-9	
616	6-6	5-6	1-0	Sediment is sandy-gravel
617	5-3	4-7	0-8	
618	6-0	5-3	0-9	
619	5-2	4-0	1-2	
620	10-1	5-3	4-10	
621	10-0	5-3	4-9	
622	0-0	0-0	0-0	Edge of Pond - Battistoni Beach
623	0-4	0-0	0-4	Edge of Pond - East Shore
624	10-1	5-9	4-4	
625	10-0	6-1	3-11	
626	4-8	3-8	1-0	
627	5-1	4-6	0-7	
628	5-10	4-9	1-1	
629	4-9	4-1	0-8	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
630	5-3	4-5	0-10	
631	6-0	5-4	0-8	
632	7-2	5-11	1-3	
633	7-11	6-11	1-0	
634	9-0	6-2	2-10	
635	7-1	6-1	1-0	
636	5-7	4-10	0-9	
637	6-0	4-9	1-3	
638	6-11	5-1	1-10	
639	6-6	4-3	2-3	
640	5-9	3-11	1-10	
641	5-7	3-0	2-7	
642	5-3	3-11	1-4	
643	2-0	0-1	1-11	Edge of Pond - West Shore
644	1-4	0-0	1-4	Edge of Pond - West Shore
645	5-6	3-5	2-1	
646	5-1	3-10	1-3	
647	5-2	4-5	0-9	
648	7-11	5-2	2-9	
649	7-0	5-6	1-6	
650	6-11	5-6	1-5	
651	9-0	6-6	2-6	
652	8-3	5-4	2-11	
653	5-3	4-11	0-4	
654	4-0	3-10	0-2	
655	5-2	4-3	0-11	
656	4-11	4-2	0-9	
657	3-10	3-0	0-10	
658	1-0	0-0	1-0	Edge of Pond - East Shore (Marshy)
659	4-1	2-9	1-4	South East Cove Entrance

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
660	4-5	3-1	1-4	
661	4-7	3-8	0-11	
662	3-5	3-4	0-1	
663	4-3	3-0	1-3	
664	3-3	2-0	1-3	
665	3-10	2-5	1-5	
666	4-11	4-4	0-7	
667	8-11	5-7	3-4	
668	7-8	5-7	2-1	
669	8-1	6-11	1-2	
670	8-10	5-11	2-11	
671	8-3	5-6	2-9	
672	10-0	5-4	4-8	
673	7-2	5-4	1-10	
674	6-3	4-5	1-10	
675	5-0	4-1	0-11	Vegetation Mat @ Pond Bottom
676	6-0	4-1	1-11	
677	5-2	4-2	1-0	
678	0-2	0-1	0-1	Edge of Pond - West Shore
679	0-4	0-1	0-3	Edge of Pond - West Shore
680	5-9	3-10	1-11	
681	6-0	3-4	2-8	
682	4-6	3-11	0-7	
683	5-2	4-10	0-4	
684	7-5	5-10	1-7	
685	8-4	6-1	2-3	
686	9-0	6-1	2-11	
687	8-7	6-0	2-7	
688	5-4	4-9	0-7	
689	4-0	3-0	1-0	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
690	1-9	1-4	0-5	
691	1-9	1-4	0-5	
692	2-6	1-5	1-1	
693	0-7	0-2	0-5	Edge of Pond - Southeast Cove
694	0-6	0-1	0-5	Edge of Pond - Southeast Cove
695	0-6	0-1	0-5	Edge of Pond - Southeast Cove
696	0-5	0-0	0-5	Edge of Pond - Southeast Cove
697	0-5	0-2	0-3	Edge of Pond - Southeast Cove
698	0-9	0-4	0-5	Edge of Pond - Southeast Cove
699	0-3	0-1	0-2	Edge of Pond - Southeast Cove
700	2-0	0-11	1-1	
701	3-3	1-4	1-11	
702	3-4	2-0	1-4	
703	4-11	3-10	1-1	
704	6-1	5-10	0-3	
705	8-6	7-1	1-5	
706	8-0	5-10	2-2	
707	8-11	5-7	3-4	
708	7-9	6-0	1-9	
709	7-0	5-0	2-0	
710	4-11	4-0	0-11	
711	5-0	4-4	0-8	
712	5-3	4-3	1-0	
713	6-1	4-1	2-0	
714	6-4	4-6	1-10	
715	0-2	0-0	0-2	Edge of Pond - West Shore
716	0-3	0-1	0-2	Edge of Pond - West Shore
717	6-0	4-1	1-11	
718	5-2	4-9	0-5	
719	7-9	5-0	2-9	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
720	6-3	5-0	1-3	
721	7-2	5-2	2-0	
722	7-4	5-11	1-5	
723	8-1	6-0	2-1	
724	5-2	4-9	0-5	
725	4-4	3-3	1-1	
726	3-5	2-0	1-5	
727	3-1	2-2	0-11	
728	2-0	0-3	1-9	Edge of Pond - East Shore
729	0-3	0-3	0-0	Edge of Pond - East Shore
730	3-2	1-9	1-5	
731	4-0	2-6	1-6	
732	4-2	3-2	1-0	
733	5-6	4-11	0-7	
734	9-2	5-1	4-1	
735	7-1	5-11	1-2	
736	7-1	5-6	1-7	
737	6-6	4-11	1-7	
738	6-11	5-4	1-7	
739	8-3	4-10	3-5	
740	8-0	5-2	2-10	
741	8-5	4-4	4-1	
742	7-2	4-9	2-5	
743	1-0	0-4	0-8	Edge of Pond - West Shore
744	0-6	0-2	0-4	Edge of Pond - West Shore
745	7-0	3-2	3-10	
746	7-9	4-2	3-7	
747	8-0	4-3	3-9	
748	7-1	4-9	2-4	
749	7-1	5-1	2-0	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
750	8-5	5-4	3-1	
751	7-9	5-7	2-2	
752	8-3	4-11	3-4	
753	9-8	5-2	4-6	
754	7-2	5-5	1-9	
755	3-11	3-0	0-11	
756	4-6	2-10	1-8	
757	3-3	1-11	1-4	
758	0-8	0-1	0-7	Edge of Pond - East Shore
759	0-4	0-1	0-3	Edge of Pond - East Shore
760	3-6	2-1	1-5	
761	3-10	2-6	1-4	
762	4-11	4-2	0-9	
763	7-6	4-9	2-9	
764	7-5	4-9	2-8	
765	3-8	3-1	0-7	
766	7-1	4-8	2-5	
767	7-6	4-6	3-0	
768	7-6	4-0	3-6	
769	6-9	3-4	3-5	
770	8-1	3-9	4-4	
771	6-8	3-4	3-4	
772	2-0	1-3	0-9	Edge of Pond - West Shore
773	1-9	0-0	1-9	Edge of Pond - West Shore
774	6-6	3-11	2-7	
775	8-8	3-6	5-2	
776	6-6	3-4	3-2	
777	3-7	3-4	0-3	
778	4-0	3-8	0-4	
779	4-8	3-11	0-9	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
780	4-0	3-5	0-7	
781	3-8	3-0	0-8	
782	6-5	4-7	1-10	
783	4-10	3-1	1-9	
784	3-5	2-6	0-11	
785	1-9	0-9	1-0	1'-0" from East Pond Edge - Marshy
786	3-7	0-9	2-10	4'-0" from East Pond Edge Marshy
787	3-5	2-2	1-3	
788	4-5	3-5	1-0	
789	5-0	4-0	1-0	
790	4-1	3-8	0-5	
791	3-11	3-0	0-11	
792	4-0	3-7	0-5	
793	5-1	3-10	1-3	
794	3-10	3-9	0-1	
795	3-11	3-5	0-6	
796	4-0	3-2	0-10	
797	3-6	2-6	1-0	
798	6-8	3-7	3-1	
799	5-11	3-4	2-7	
800	0-6	0-0	0-6	Edge of Pond - West Shore
801	6-1	3-4	2-9	
802	6-3	3-3	3-0	
803	2-9	2-4	0-5	Sediment is sandy-gravel
804	3-11	3-1	0-10	
805	3-10	3-5	0-5	
806	3-11	3-8	0-3	
807	4-0	3-8	0-4	
808	3-10	3-6	0-4	
809	3-10	3-10	0-0	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
810	1-10	1-10	0-0	
811	3-10	2-10	1-0	
812	5-1	4-2	0-11	
813	3-7	2-9	0-10	
814	2-7	2-1	0-6	
815	1-3	0-6	0-9	Edge of Pond - East end of Cove
816	1-1	0-0	1-1	Edge of Pond - East Shore
817	2-6	2-0	0-6	
818	4-9	4-2	0-7	
819	4-2	3-6	0-8	
820	2-3	1-4	0-11	
821	4-1	3-9	0-4	
822	3-5	3-5	0-0	
823	2-6	2-4	0-2	
824	3-7	3-6	0-1	
825	3-4	2-11	0-5	
826	3-0	2-7	0-5	
827	2-10	2-6	0-4	
828	4-0	1-11	2-1	
829	5-2	1-11	3-3	
830	0-3	0-0	0-3	Edge of Pond - South Shore
831	0-3	0-3	0-3	Edge of Pond - South Shore
832	0-2	0-0	0-2	Edge of Pond - South Shore
833	0-5	0-0	0-5	Edge of Pond - South Shore
834	4-0	2-8	1-4	
835	3-6	3-0	0-6	
836	4-10	3-5	1-5	
837	2-9	2-3	0-6	
838	2-1	1-9	0-4	
839	2-9	1-0	1-9	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
840	2-3	1-11	0-4	
841	4-0	3-1	0-11	
842	0-8	0-0	0-8	Edge of Pond - Southeast Cove
843	0-3	0-0	0-3	Edge of Pond - Southeast Cove
844	0-7	0-0	0-7	Edge of Pond - Southeast Cove
845	0-10	0-6	0-4	Edge of Pond - Southeast Cove
846	0-7	0-0	0-7	Edge of Pond - Southeast Cove
847	0-9	0-9	0-0	Edge of Pond - Southeast Cove
848	0-10	0-7	0-3	Edge of Pond - Southeast Cove
849	4-0	0-9	3-3	Edge of Pond - Southeast Cove
850	1-0	0-6	0-6	Edge of Pond - Southeast Cove
851	4-2	1-3	2-11	Edge of Pond - Southeast Cove
852	4-3	2-11	1-4	Southeast Cove
853	5-3	2-6	2-9	Southeast Cove
854	5-2	3-6	1-8	Southeast Cove
855	0-11	0-0	0-11	Edge of Pond - Cove South of Beach
856	0-3	0-0	0-3	Edge of Pond - Cove South of Beach
857	0-3	0-1	0-2	Edge of Pond - Cove South of Beach
858	0-3	0-0	0-3	Edge of Pond - Cove South of Beach
859	4-3	3-0	1-3	Cove South of Beach
860	4-1	2-2	1-11	Cove South of Beach
861	3-3	2-0	1-3	Cove South of Beach
862	3-0	1-0	2-0	Cove South of Beach
863	2-10	1-0	1-10	Cove South of Beach
864	2-3	1-0	1-3	Cove South of Beach - Marshy
865	3-1	1-1	2-0	Cove South of Beach - Marshy
866	0-9	0-5	0-4	Edge of Pond - South Shore
867	3-6	3-1	0-5	
868				Point Void
869	3-2	3-0	0-2	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
870	3-0	2-9	0-3	
871	2-8	2-3	0-5	
872	0-3	0-1	0-2	Edge of Pond South
873	3-3	3-0	0-3	
874	2-5	2-4	0-1	
875	2-6	1-11	0-7	
876	6-1	2-11	3-2	
877	6-3	2-10	3-5	
878	1-1	0-1	1-0	Edge of Pond - West Shore
879	0-2	0-0	0-2	Edge of Pond - West Shore
880	5-5	1-1	4-4	
881	6-3	2-6	3-9	
882	3-3	2-11	0-4	
883	3-0	2-9	0-3	
884	7-3	6-3	1-0	
885	6-7	5-9	0-10	
886	0-11	0-1	0-10	Edge of Pond - South Shore
887	0-9	0-1	0-8	Edge of Pond - South Shore
888	5-3	3-2	2-1	
889	3-1	2-9	0-4	
890	3-0	2-9	0-3	
891	4-0	2-10	1-2	
892	6-2	2-2	4-0	
893	0-0	0-0	0-0	Edge of Pond - West Shore
894	2-10	1-1	1-9	
895	1-1	0-2	0-11	Edge of Pond - West Shore
896	2-4	1-3	1-1	
897	5-1	2-2	2-11	
898	2-11	2-1	0-10	
899	3-1	2-2	0-11	

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
900	3-1	2-1	1-0	
901	0-2	0-0	0-2	Edge of Pond - South Shore
902	0-4	0-0	0-4	Edge of Pond - South Shore (near bridge)
903	2-5	1-8	0-9	
904	3-1	2-1	1-0	
905	2-6	1-11	0-7	
906	2-11	2-1	0-10	
907	3-7	1-3	2-4	
908	1-1	0-0	1-1	Edge of Pond -Southwest corner
909	1-3	0-5	0-10	Edge of Pond -Southwest corner
910	2-7	1-10	0-9	
911	2-11	1-11	1-0	
912	5-1	1-2	3-11	
913	2-11	1-10	1-1	
914	0-3	0-1	0-2	Edge of Pond - South Shore
915	1-11	1-1	0-10	South End of Pond Near Inlet Pipe
916	2-1	1-0	1-1	Marshy Area
917	3-3	1-0	2-3	Marshy Area
918	1-0	0-1	0-11	Edge of Pond - Southwest corner
919	8-9	6-0	2-9	Gap Filler - Grid Box #205
920	9-0	5-6	3-6	Gap Filler - Grid Box #205
921	7-11	5-5	2-6	Gap Filler - Grid Box #205
922	8-3	7-0	1-3	Gap Filler - Grid Box #205
923				Point Void
924	2-11	1-4	1-7	Gap Filler - Grid Box 185
925	2-7	2-4	0-3	Gap Filler - Grid Box 174
926	4-9	3-1	1-8	Gap Filler - Grid Box 174
927	4-5	3-6	0-11	Gap Filler - Grid Box 174
928	5-5	4-7	0-10	Gap Filler - Grid Box 184
929	9-7	6-1	3-6	Gap Filler - Grid Box 138

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
930	10-0	6-9	3-3	Gap Filler - Grid Box 138
931	4-6	3-0	1-6	Gap Filler - Grid Box 126
932	3-7	2-3	1-4	Gap Filler - Grid Box 136
933	6-3	5-1	1-2	Gap Filler - Grid Box 136
934	8-3	6-6	1-9	Gap Filler - Grid Box 136
935	10-2	7-11	2-3	Gap Filler - Grid Box 146
936	11-3	7-2	4-1	Gap Filler - Grid Box 146
937	6-6	5-6	1-0	Gap Filler - Grid Box 157
938	6-10	5-9	1-1	Gap Filler - Grid Box 156
939	7-9	6-9	1-0	Gap Filler - Grid Box 144
940	8-0	7-3	0-9	Gap Filler - Grid Box 145
941	10-0	8-2	1-10	Gap Filler - Grid Box 134
942	9-0	7-3	1-9	Gap Filler - Grid Box 145
943	11-3	7-1	4-2	Gap Filler - Grid Box 132
944	10-1	8-1	2-0	Gap Filler - Grid Box 121
945	10-3	9-0	1-3	Gap Filler - Grid Box 122
946	9-1	8-0	1-1	Gap Filler - Grid Box 107
947	8-10	7-9	1-1	Gap Filler - Grid Box 112
948	10-1	6-6	3-7	Gap Filler - Grid Box 120
949	0-10	0-3	0-7	Gap Filler - Grid Box 154
950	0-9	0-0	0-9	Gap Filler - Grid Box 166
951	1-6	0-2	1-4	Gap Filler - Grid Box 166
952	0-9	0-4	0-5	Gap Filler - Grid Box 166
953	0-10	0-6	0-4	Gap Filler - Grid Box 154
954	0-10	0-2	0-8	Gap Filler - Grid Box 153
955	1-1	0-0	1-1	Gap Filler - Grid Box 153
956	2-7	2-4	0-3	Gap Filler - Grid Box 95
957	0-3	0-0	0-3	Gap Filler - Grid Box 95
958	4-3	4-0	0-3	Gap Filler - Grid Box 87
959	3-11	3-9	0-2	Gap Filler - Grid Box 88

Lake Garda Sediment Survey - Field Notes

(depths shown are in feet - inches)

No.	Total depth	Water depth	Sediment depth	Notes
960	2-9	2-3	0-6	Gap Filler - Grid Box 88
961	11-3	9-1	2-2	Gap Filler - Grid Box 71
962	10-4	9-6	0-10	Gap Filler - Grid Box 65
963	10-7	9-9	0-10	Gap Filler - Grid Box 66
964	10-2	9-9	0-5	Gap Filler - Grid Box 58
965	11-0	10-4	0-8	Gap Filler - Grid Box 59
966	6-10	5-1	1-9	Gap Filler - Grid Box 57
967	0-5	0-2	0-3	Gap Filler - Grid Box 8
968	0-8	0-5	0-3	Gap Filler - Grid Box 8
969	1-4	1-3	0-1	Gap Filler - Grid Box 8
970	2-0	1-10	0-2	Gap Filler - Grid Box 12

APPENDIX B

Sediment Laboratory Test Results

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 | 100 Northwest Drive, Plainville, Connecticut 06062 | MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study

Sample Matrix: Solid

Sample ID: Soil Sample

Collect Date: 11/21/2011

AEL Lab#: AEL11008364 **Client Sample ID#:** 1

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Total Solids, %	76.6	%	MAP	11/29/2011	SM 2540G
Mercury	<0.0372	mg/kg Dry Wt	JM	11/29/2011	SW-846 7471A
Arsenic	<1.96	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Barium	26.9	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Selenium	<1.96	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Cadmium	<0.392	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Chromium, Total	3.92	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Lead	2.31	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Silver	<1.96	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
eTPH	<45	mg/kg Dry Wt	LWA	11/29/2011	CT eTPH
Acetone	<330	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Acrylonitrile	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Benzene	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromobenzene	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Butylbenzene	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
sec-Butylbenzene	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
tert-Butylbenzene	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromodichloromethane	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromoform	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromomethane	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl ethyl ketone	<65	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon disulfide	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon Tetrachloride	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chlorobenzene	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroethane	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroform	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloromethane	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Chlorotoluene	<33	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Chlorotoluene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromochloromethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dibromo-3-chloropropane (DBCP)	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008364 **Client Sample ID#:** 1

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Ethylene Dibromide (EDB)	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromomethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichlorobenzene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichlorobenzene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Dichlorobenzene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,4-Dichloro-2-butene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dichlorodifluoromethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloroethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethylene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,2-Dichloroethylene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,2-Dichloroethylene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloropropane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichloropropane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2,2-Dichloropropane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloropropylene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,3-Dichloropropylene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,3-Dichloropropylene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Ethylbenzene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Hexachlorobutadiene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2-Hexanone	<25	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Isopropylbenzene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
p-Isopropyltoluene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methylene chloride	<25	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl iso-butyl ketone	<25	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl tert-butyl ether	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Naphthalene	19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Propylbenzene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Styrene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1,2-Tetrachloroethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2,2-Tetrachloroethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 | 100 Northwest Drive, Plainville, Connecticut 06062 | MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study

Sample Matrix: Solid

Sample ID: Soil Sample

Collect Date: 11/21/2011

AEL Lab#: AEL11008364 **Client Sample ID#:** 1

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Tetrachloroethylene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Tetrahydrofuran	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Toluene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichlorobenzene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trichlorobenzene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1-Trichloroethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2-Trichloroethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichloroethylene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorofluoromethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichloropropane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorotrifluoroethane	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trimethylbenzene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3,5-Trimethylbenzene	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Vinyl chloride	<13	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Xylenes (Total)	<38	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008365 **Client Sample ID#:** 2

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Total Solids, %	80.8	%	MAP	11/29/2011	SM 2540G
Mercury	<0.0390	mg/kg Dry Wt	JM	11/29/2011	SW-846 7471A
Selenium	<2.00	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Arsenic	<2.00	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Barium	27.8	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Cadmium	<0.401	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Chromium, Total	5.39	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Lead	14.1	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Silver	<2.00	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
eTPH	<43	mg/kg Dry Wt	LWA	11/29/2011	CT eTPH
Acetone	<100	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Acrylonitrile	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Benzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromobenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Butylbenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
sec-Butylbenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
tert-Butylbenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromodichloromethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromoform	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromomethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl ethyl ketone	<21	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon disulfide	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon Tetrachloride	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chlorobenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroform	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloromethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Chlorotoluene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Chlorotoluene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromochloromethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dibromo-3-chloropropane (DBCP)	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.
CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study

Sample Matrix: Solid

Sample ID: Soil Sample

Collect Date: 11/21/2011

AEL Lab#: AEL11008365 **Client Sample ID#:** 2

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Ethylene Dibromide (EDB)	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromomethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichlorobenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichlorobenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Dichlorobenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,4-Dichloro-2-butene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dichlorodifluoromethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloroethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethylene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,2-Dichloroethylene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,2-Dichloroethylene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloropropane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichloropropane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2,2-Dichloropropane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloropropylene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,3-Dichloropropylene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,3-Dichloropropylene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Ethylbenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Hexachlorobutadiene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2-Hexanone	<21	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Isopropylbenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
p-Isopropyltoluene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methylene chloride	<21	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl iso-butyl ketone	<21	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl tert-butyl ether	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Naphthalene	14	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Propylbenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Styrene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1,2-Tetrachloroethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2,2-Tetrachloroethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008365 **Client Sample ID#:** 2

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Tetrachloroethylene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Tetrahydrofuran	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Toluene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichlorobenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trichlorobenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1-Trichloroethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2-Trichloroethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichloroethylene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorofluoromethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichloropropane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorotrifluoroethane	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trimethylbenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3,5-Trimethylbenzene	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Vinyl chloride	<10	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Xylenes (Total)	<31	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513

(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904

Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008366 **Client Sample ID#:** 3

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Total Solids, %	81.6	%	MAP	11/29/2011	SM 2540G
Mercury	<0.0468	mg/kg Dry Wt	JM	11/29/2011	SW-846 7471A
Arsenic	<2.25	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Selenium	<2.25	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Barium	17.7	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Cadmium	<0.450	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Chromium, Total	2.39	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Lead	<2.25	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Silver	<2.25	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
eTPH	<42	mg/kg Dry Wt	LWA	11/29/2011	CT eTPH
Acetone	<72.8	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Acrylonitrile	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Benzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromobenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Butylbenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
sec-Butylbenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
tert-Butylbenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromodichloromethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromoform	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromomethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl ethyl ketone	<15	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon disulfide	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon Tetrachloride	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chlorobenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroform	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloromethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Chlorotoluene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Chlorotoluene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromochloromethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dibromo-3-chloropropane (DBCP)	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008366 **Client Sample ID#:** 3

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Ethylene Dibromide (EDB)	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromomethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichlorobenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichlorobenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Dichlorobenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,4-Dichloro-2-butene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dichlorodifluoromethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloroethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethylene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,2-Dichloroethylene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,2-Dichloroethylene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloropropane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichloropropane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2,2-Dichloropropane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloropropylene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,3-Dichloropropylene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,3-Dichloropropylene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Ethylbenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Hexachlorobutadiene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2-Hexanone	<15	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Isopropylbenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
p-Isopropyltoluene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methylene chloride	<15	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl iso-butyl ketone	<15	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl tert-butyl ether	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Naphthalene	9.0	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Propylbenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Styrene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1,2-Tetrachloroethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2,2-Tetrachloroethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 | 100 Northwest Drive, Plainville, Connecticut 06062 | MA Laboratory ID No. M-CT0513

(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904

Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study

Sample Matrix: Solid

Sample ID: Soil Sample

Collect Date: 11/21/2011

AEL Lab#: AEL11008366 **Client Sample ID#:** 3

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Tetrachloroethylene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Tetrahydrofuran	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Toluene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichlorobenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trichlorobenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1-Trichloroethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2-Trichloroethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichloroethylene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorofluoromethane	8.1	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichloropropane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorotrifluoroethane	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trimethylbenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3,5-Trimethylbenzene	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Vinyl chloride	<7.3	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Xylenes (Total)	<22	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.
CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008367 **Client Sample ID#:** 4

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Total Solids, %	48.7	%	MAP	11/29/2011	SM 2540G
Mercury	<0.0616	mg/kg Dry Wt	JM	11/29/2011	SW-846 7471A
Arsenic	<3.79	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Barium	59.1	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Selenium	<3.79	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Cadmium	<0.757	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Chromium, Total	9.61	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Lead	9.92	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Silver	<3.79	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
eTPH	<71	mg/kg Dry Wt	LWA	11/29/2011	CT eTPH
Acetone	<180	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Acrylonitrile	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Benzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromobenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Butylbenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
sec-Butylbenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
tert-Butylbenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromodichloromethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromoform	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromomethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl ethyl ketone	<36	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon disulfide	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon Tetrachloride	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chlorobenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroform	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloromethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Chlorotoluene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Chlorotoluene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromochloromethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dibromo-3-chloropropane (DBCP)	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 | 100 Northwest Drive, Plainville, Connecticut 06062 | MA Laboratory ID No. M-CT0513

(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904

Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008367 **Client Sample ID#:** 4

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Ethylene Dibromide (EDB)	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromomethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichlorobenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichlorobenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Dichlorobenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,4-Dichloro-2-butene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dichlorodifluoromethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloroethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethylene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,2-Dichloroethylene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,2-Dichloroethylene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloropropane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichloropropane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2,2-Dichloropropane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloropropylene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,3-Dichloropropylene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,3-Dichloropropylene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Ethylbenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Hexachlorobutadiene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2-Hexanone	<36	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Isopropylbenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
p-Isopropyltoluene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methylene chloride	<36	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl iso-butyl ketone	<36	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl tert-butyl ether	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Naphthalene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Propylbenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Styrene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1,2-Tetrachloroethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2,2-Tetrachloroethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.
CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study

Sample Matrix: Solid

Sample ID: Soil Sample

Collect Date: 11/21/2011

AEL Lab#: AEL11008367 **Client Sample ID#:** 4

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Tetrachloroethylene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Tetrahydrofuran	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Toluene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichlorobenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trichlorobenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1-Trichloroethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2-Trichloroethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichloroethylene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorofluoromethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichloropropane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorotrifluoroethane	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trimethylbenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3,5-Trimethylbenzene	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Vinyl chloride	<18	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Xylenes (Total)	<54	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

(agj)
Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513

(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904

Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008368 **Client Sample ID#:** 5

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Total Solids, %	71.2	%	MAP	11/29/2011	SM 2540G
Mercury	<0.0486	mg/kg Dry Wt	JM	11/29/2011	SW-846 7471A
Selenium	<2.46	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Arsenic	<2.46	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Barium	28.9	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Cadmium	<0.491	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Chromium, Total	4.37	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Lead	3.86	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Silver	<2.46	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
eTPH	<48	mg/kg Dry Wt	LWA	11/29/2011	CT eTPH
Acetone	<110	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Acrylonitrile	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Benzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromobenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Butylbenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
sec-Butylbenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
tert-Butylbenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromodichloromethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromoform	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromomethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl ethyl ketone	<23	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon disulfide	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon Tetrachloride	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chlorobenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroform	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloromethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Chlorotoluene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Chlorotoluene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromochloromethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dibromo-3-chloropropane (DBCP)	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008368 **Client Sample ID#:** 5

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Ethylene Dibromide (EDB)	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromomethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichlorobenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichlorobenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Dichlorobenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,4-Dichloro-2-butene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dichlorodifluoromethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloroethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethylene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,2-Dichloroethylene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,2-Dichloroethylene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloropropane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichloropropane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2,2-Dichloropropane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloropropylene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,3-Dichloropropylene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,3-Dichloropropylene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Ethylbenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Hexachlorobutadiene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2-Hexanone	<23	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Isopropylbenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
p-Isopropyltoluene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methylene chloride	<23	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl iso-butyl ketone	<23	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl tert-butyl ether	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Naphthalene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Propylbenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Styrene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1,2-Tetrachloroethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2,2-Tetrachloroethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 | 100 Northwest Drive, Plainville, Connecticut 06062 | MA Laboratory ID No. M-CT0513

(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904

Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study

Sample Matrix: Solid

Sample ID: Soil Sample

Collect Date: 11/21/2011

AEL Lab#: AEL11008368 **Client Sample ID#:** 5

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Tetrachloroethylene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Tetrahydrofuran	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Toluene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichlorobenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trichlorobenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1-Trichloroethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2-Trichloroethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichloroethylene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorofluoromethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichloropropane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorotrifluoroethane	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trimethylbenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3,5-Trimethylbenzene	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Vinyl chloride	<11	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Xylenes (Total)	<34	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 | 100 Northwest Drive, Plainville, Connecticut 06062 | MA Laboratory ID No. M-CT0513

(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904

Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008369 **Client Sample ID#:** 6

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Total Solids, %	48.1	%	MAP	11/29/2011	SM 2540G
Mercury	<0.0727	mg/kg Dry Wt	JM	11/29/2011	SW-846 7471A
Arsenic	<3.72	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Selenium	<3.72	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Barium	16.9	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Cadmium	<0.744	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Chromium, Total	3.91	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Lead	6.29	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
Silver	<3.72	mg/kg Dry Wt	JM	11/30/2011	SW-846 6010C
eTPH	<70	mg/kg Dry Wt	LWA	11/29/2011	CT eTPH
Acetone	<190	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Acrylonitrile	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Benzene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromobenzene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Butylbenzene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
sec-Butylbenzene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
tert-Butylbenzene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromodichloromethane	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromoform	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Bromomethane	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl ethyl ketone	<38	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon disulfide	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Carbon Tetrachloride	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chlorobenzene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroethane	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloroform	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Chloromethane	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Chlorotoluene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Chlorotoluene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromochloromethane	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dibromo-3-chloropropane (DBCP)	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513 | 100 Northwest Drive, Plainville, Connecticut 06062 | MA Laboratory ID No. M-CT0513

(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904

Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study

Sample Matrix: Solid

Sample ID: Soil Sample

Collect Date: 11/21/2011

AEL Lab#: AEL11008369 **Client Sample ID#:** 6

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Ethylene Dibromide (EDB)	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dibromomethane	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichlorobenzene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichlorobenzene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,4-Dichlorobenzene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,4-Dichloro-2-butene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Dichlorodifluoromethane	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethane	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloroethane	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloroethylene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,2-Dichloroethylene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,2-Dichloroethylene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2-Dichloropropane	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3-Dichloropropane	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2,2-Dichloropropane	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1-Dichloropropylene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
cis-1,3-Dichloropropylene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
trans-1,3-Dichloropropylene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Ethylbenzene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Hexachlorobutadiene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
2-Hexanone	< 38	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Isopropylbenzene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
p-Isopropyltoluene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methylene chloride	< 38	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl iso-butyl ketone	< 38	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Methyl tert-butyl ether	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Naphthalene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
n-Propylbenzene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Styrene	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1,2-Tetrachloroethane	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2,2-Tetrachloroethane	< 19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

AVERILL ENVIRONMENTAL LABORATORY, INC.
CT Laboratory ID No. PH-0513 100 Northwest Drive, Plainville, Connecticut 06062 MA Laboratory ID No. M-CT0513
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Macchi Engineers
44 Gillett St.
Hartford, CT 06105

Report No: AEL11R-13354.0
Report Date: Wednesday, December 07, 2011
ATTN: John Brochu
Collected By: Client

Source: Lake Garda Dredge Study **Sample Matrix:** Solid

Sample ID: Soil Sample **Collect Date:** 11/21/2011

AEL Lab#: AEL11008369 **Client Sample ID#:** 6

Received Date: 11/21/2011

Test	Result	Units	Analyst	Analysis Date	Analysis Method
Tetrachloroethylene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Tetrahydrofuran	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Toluene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichlorobenzene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trichlorobenzene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,1-Trichloroethane	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,1,2-Trichloroethane	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichloroethylene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorofluoromethane	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,3-Trichloropropane	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Trichlorotrifluoroethane	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,2,4-Trimethylbenzene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
1,3,5-Trimethylbenzene	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Vinyl chloride	<19	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C
Xylenes (Total)	<56	ug/kg Dry Wt	MTK	11/13/2011	SW-846 8260C

The results recorded in this report relate only to the samples as received on the date and time noted.

(agj)

Laboratory Director

APPENDIX C

Natural Diversity Documentation

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Bureau of Natural Resources
Wildlife Division
Natural History Survey – Natural Diversity Data Base

November 30, 2011

Mr. John Brochu
Macchi Engineers, LLC
44 Gillett Street
Hartford, CT 06105

Regarding: Lake Garda, Burlington/Farmington - Dredging
Natural Diversity Data Base 201106941

Dear Mr. Brochu:

In response to your request for a Natural Diversity Data Base (NDDB) Review of State Listed Species for the Lake Garda in Burlington/Farmington, our records for this site indicate the following extant populations of species on or within the vicinity of the site:

Eastern box turtle (*Terrapene carolina Carolina*) Status: Species of Special Concern

Habitat and Ecology: Eastern Box Turtles require old field and deciduous forest habitats, which can include power lines and logged woodlands. They are often found near small streams and ponds. The adults are completely terrestrial but the young may be semiaquatic, and hibernate on land by digging down in the soil from October to April. They have an extremely small home range and can usually be found in the same area year after year. Eastern Box Turtles have been negatively impacted by the loss of suitable habitat. Some turtles may be killed directly by construction activities, but many more are lost when important habitat areas for shelter, feeding, hibernation, or nesting are destroyed. As remaining habitat is fragmented into smaller pieces, turtle populations can become small and isolated.

Recommendation: Eastern box turtles could be impacted if work is conducted during summer or fall, therefore work should be done outside of these seasons. If work must be done in the summer or fall then the following guidelines shall be met:

- Silt fencing shall be installed around the work area prior to construction;
- After silt fencing is installed and prior to construction, conduct a sweep of the work area to look for turtles;
- Apprise workers of the possible presence of turtles, and provide a description of the species;
- Any turtles that are discovered shall be moved, unharmed, to an area immediately outside of the fenced area, and position in the same direction that it was walking;
- No vehicles or heavy machinery shall be parked in any turtle habitat;

- Work conducted during early morning and evening hours shall occur with special care not to harm basking or foraging individuals; and

- All silt fencing shall be removed after work is completed and soils are stable so that reptile and amphibian movement between uplands and wetlands is not restricted.

The Natural Diversity Data Base includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available. If the project is not implemented within 12 months, then another Natural Diversity Data Base review should be requested for up-to-date information.

Please be advised a more detailed review may be conducted as part of any subsequent environmental permit applications submitted to the Department of Energy and Environmental Protection for the proposed site. Should state involvement occur in some other manner, specific restrictions or conditions relating to the species discussed above may apply.

Thank you for consulting the Natural Diversity Data Base. If you have further questions, I can be reached by email at Elaine.hinsch@ct.gov or by phone at (860) 424-3011.

Sincerely,

Elaine Hinsch

Elaine Hinsch
Program Specialist II
Wildlife Division

Connecticut Department of
Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division

CPPU USE ONLY	
App #:______________	
Doc #:______________	
Check #: No fee required	
Program: Natural Diversity Database Endangered Species	
Hardcopy _____	Electronic _____

Request for Natural Diversity Data Base (NDDB) State Listed Species Review

Please complete this form in accordance with the instructions (DEP-INST-007) to ensure proper handling of your request.
There are no fees associated with NDDB Reviews.

Part I: Preliminary Screening

Before submitting this request, you must review the Natural Diversity Data Base "State and Federal Listed Species and Significant Natural Communities Maps" found on the DEEP website. Follow the instructions on the map or in this form's instruction document. These maps are updated twice a year, usually in June and December.

Does your site, including all affected areas, meet the screening criteria according to the instructions:

☒ Yes ☐ No

Enter the date of the map reviewed for pre-screening: **July 2011**

Part II: Requester Information

If the requester is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, the company name shall be stated **exactly as it is registered with the Secretary of State. This information can be accessed at CONCORD.*

If the requester is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

1. Requester Company Name*: **Macchi Engineers, LLC**

Name: **John Brochu**

Address: **44 Gillett Street**

City/Town: **Hartford** State: **ct** Zip Code: **06105**

Business Phone: **860-549-6190** ext. **104** Fax: **860-524-5088**

E-mail: **jbrochu@macchiengineers.com**

By providing this email address you are agreeing to receive official correspondence from the department, at this electronic address, concerning this request. Please remember to check your security settings to be sure you can receive emails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes.

Requester can best be described as:

☒ Business Entity ☐ Federal Agency ☐ Municipal govt. ☐ State agency ☐ Individual
☐ Tribe ☐ Other (specify):

Acting as (Affiliation), pick one:

☐ Property owner ☒ Consultant ☐ Engineer ☐ Facility owner ☐ Applicant
☐ Biologist ☐ Pesticide Applicator ☐ Other representative:

Part II. Requester Information (continued)

2. List Primary Contact to receive Natural Diversity Data Base correspondence and inquiries, if different from requester.

Company:

Contact Person: Title:

Mailing Address:

City/Town: State: Zip Code:

Business Phone: ext. Fax:

E-mail:

By providing this email address you are agreeing to receive official correspondence from the department, at this electronic address, concerning this request. Please remember to check your security settings to be sure you can receive emails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes.

Part III: Site Information

This request can only be completed for one site. A separate request must be filed for each additional site.

1. SITE NAME AND LOCATION

Site Name or Project Name: **Lake Garda**

Town(s): **Burlington / Farmington**

Street Address or Location Description:
Southeast of Burlington Rd. and Monce Rd. Intersection

Size in acres, or site dimensions: **42 acres**

Latitude and longitude of the center of the site in decimal degrees (e.g., 41.23456 -71.68574):

Latitude: **41.7393** Longitude: **-72.9044**

Method of coordinate determination (check one):

☐ GPS ☐ Photo interpolation using CTECO map viewer ☒ Other (specify): **itouchmap.com**

2a. Describe the current land use and land cover of the site.

Lake Garda is a 42 acre recreational lake for the Lake Garda Improvement Association. Surrounding area around the lake is primarily residential.

b. Check all that apply and enter the size in acres or % of area in the space after each checked category.

☐ Industrial/Commercial _____ ☐ Residential _____ ☐ Forest _____

☐ Wetland _____ ☐ Field/grassland _____ ☐ Agricultural _____

☒ Water 100 ☐ Utility Right-of-way _____

☐ Transportation Right-of-way _____ ☐ Other (specify): _____

Part IV: Project Information

1. **PROJECT TYPE:**

   Choose Project Type: Dredging , If other describe: ________

2. Is the subject activity limited to the maintenance, repair, or improvement of an existing structure within the existing footprint? ☐ Yes ☒ No If yes, explain.

3. Give a detailed description of the activity which is the subject of this request and describe the methods and equipment that will be used.

   Project is a study and investigation phase for a potential dredging project of the lake. At this point no means, methods or equipment have been established. Additionally, extent of dredging has yet to be determined. Study may determine that dredge should be limited only to a portion of the lake. At this point, strictly looking to identify species in project area and what effect this may have on proceeding with the project.

4. Provide a contact for questions about the project details if different from Part II primary contact.

   Name:

   Phone:

   E-mail:

Part V: Request Type and Associated Application Type

Check *one* box from either Group 1 *or* Group 2, indicating the appropriate category for this request.

Group 1. If you check one of these boxes, fill out Parts I – VII of this form and submit the required attachments A and B.

- ☐ Preliminary screening was negative but an NDDB review is still requested
- ☐ Request regards a municipally regulated or unregulated activity (no state permit/certificate needed)
- ☒ Request regards a preliminary site assessment or project feasibility study
- ☐ Request relates to land acquisition or protection
- ☐ Request is associated with a *renewal* of an existing permit, with no modifications

Group 2. If you check one of these boxes, fill out Parts I – VII of this form and submit required attachments A, B, *and* C.

- ☐ Request is associated with a *new* state or federal permit application
- ☐ Request is associated with modification of an existing permit
- ☐ Request is associated with a permit enforcement action
- ☐ Request regards site management or planning, requiring detailed species recommendations
- ☐ Request regards a state funded project, state agency activity, or CEPA request

If you are filing this request as part of a state or federal permit application enter the application information below.

Permitting Agency and Application Name: ______________________________

State DEEP Application Number, if known: ______________________________

State DEEP Enforcement Action Number, if known: ______________________________

State DEEP Permit Analyst/Engineer, if known: ______________________________

Is this request related to a previously submitted NDDB request? ☐ Yes ☐ No

Enter the previous NDDB Request Number(s), if known: _____

Part VI: Supporting Documents

Check each attachment submitted as verification that *all* applicable attachments have been supplied with this request form. Label each attachment as indicated in this part (e.g., Attachment A, etc.) and be sure to include the requester's name, site name and the date. **Please note that Attachments A and B are required for all requesters.** Attachment C (DEP-APP-007C) is supplied at the end of this form.

☒ Attachment A:	**Overview Map:** an 8 1/2" X 11" print/copy of the relevant portion of a USGS Topographic Quadrangle Map clearly indicating the exact location of the site.
☒ Attachment B:	**Detailed Site Map:** fine scaled map showing site boundary details on aerial imagery with relevant landmarks labeled. (Site boundaries in GIS [ESRI ArcView shapefile, in NAD83, State Plane, feet] format can be substituted for detailed maps, see instruction document)
☐ Attachment C:	**Supplemental Information, Group 2 requirement (attached, DEP-APP-007C)** ☐ Section i: Supplemental Site Information and supporting documents ☐ Section ii: Supplemental Project Information and supporting documents

Part VII: Requester Certification

The requester *and* the individual(s) responsible for actually preparing the request must sign this part. A request will be considered incomplete unless all required signatures are provided.

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief."

Signature of Requester	Date
Name of Requester (print or type)	Title (if applicable)
Signature of Preparer (if different than above)	Date
Name of Preparer (print or type)	Title (if applicable)

Note: Please submit the completed Request Form and all Supporting Documents to:

CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

Or email request to: **dep.nddbrequest@ct.gov**

BRISTOL QUADRANGLE
CONNECTICUT
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey
Revised in cooperation with Connecticut Highway Department

Control by USGS, NOS/NOAA, and Connecticut Geodetic Survey

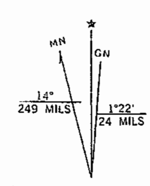
Topography by planetable surveys 1943. Revised 1966

Polyconic projection. 10,000-foot grid ticks based on Connecticut coordinate system
1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 5 meters south and 37 meters west as shown by dashed corner ticks

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

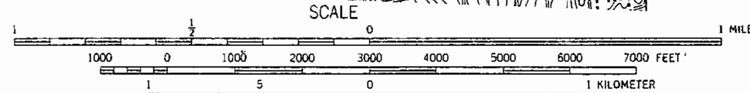
Red tint indicates area in which only landmark buildings are shown

There may be private inholdings within the boundaries of the National or State reservations shown on this map



UTM GRID AND 1984 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE

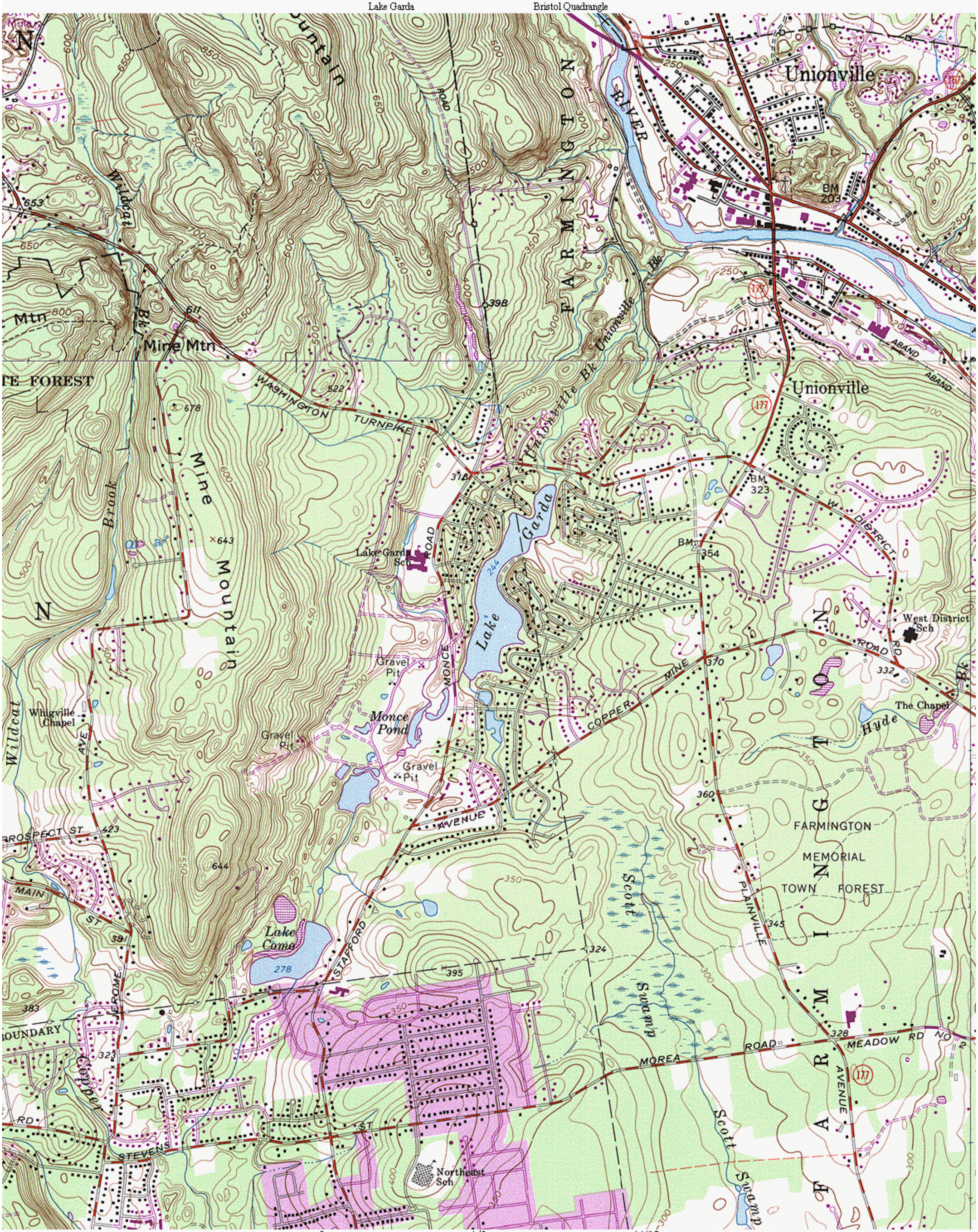


CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Revisio
coopera
photogi
informa

Purple



MN TN 15°

0 1/2 1 MILE

1000 0 1000 2000 3000 4000 FEET

APPENDIX D

Environmental Planning Services Report

Wetland Delineation and Functional Assessment

Lake Garda Dredging Feasibility
Burlington, CT

Submitted To:

Macchi Engineers
44 Gillett Street
Hartford, CT 06105

Submitted By:

Michael S. Klein
Registered Soil Scientist
Certified Professional Wetland Scientist

January 6,, 2012

89 Belknap Road
West Hartford, CT 06117
Phone 860-236-1578 Fax
michael.klein@epsct.com

116 Smith Road
East Haddam, CT 06423
Phone 860-873-9119 Fax
eric.davison@epsct.com

138 Mystic Road
North Stonington, CT 06359
Phone 860-535-0625 Fax
james.cowen@epsct.com

1.0 INTRODUCTION

This report documents the results of investigations conducted by Environmental Planning Services (EPS) at the site of a proposed dredging operation in Burlington, Connecticut. The Lake Garda Lake Improvement Association is conducting an initial feasibility study to assess the engineering and environmental issues associated with removal of accumulated sediment from Lake Garda.

Field surveys were conducted on November 8, 2011 by EPS Wetland, Biological and Soil Scientists. The purpose of field surveys was to conduct state and federal wetland delineations and to gather data on wetland and aquatic resources. A wetland functions and values assessment was conducted for wetlands adjacent to and including the lake. Our analysis also included an aquatic vegetation survey in the southern portion of the lake, as well as evaluating the significance of the site in relation to the entire watershed using GIS software (*ArcMap* v.10.0) and data obtained from the CT Department of Energy and Environmental Protection as well as other publically available sources. This watershed-scale approach is critical to understanding the site's overall natural resource value.

2.0 SITE DESCRIPTION

Site resources are summarized in Table 1. Lake Garda is located within the towns of Farmington and Burlington (see Figure 1). Our project work was conducted solely within the portions of the Lake located in Burlington (see Figure 2). Lake Garda is located in middle reaches of local watershed #4300-20, a 1,405 acre watershed draining to the Farmington River. Lake Garda forms the headwaters to Unionville Brook which outlets at the northern end of the lake and drains to the Farmington River approximately one mile downstream. Lake Garda is fed by two small streams, one which drains from Mine Mountain and Monce Pond and another which originates along Sherman Drive south of Stafford Road.

Table 1: Summary of site characteristics, Lake Garda

RESOURCE	SITE CHARACTERISTICS
Site Location (USGS quadrangle)	Bristol, Conn
Local / Subregional Drainage Basin Location	4300-20 / Farmington River
Upland Soil Types Present	Hinckley, Windsor
Wetland Soil Types Present	Raypol, Aquents
Wetland Habitat Types Present on the Site	Wet meadow/emergent marsh, aquatic beds, shrub-scrub swamp types
Upland Habitat Types Present on the Site	Wooded (mature), lawn, early-successional woodland
Surficial Geology	Sand
Source: CT DEP GIS data as well as field observations	

3.0 WETLAND DELINEATION

State and federal wetlands were delineated on November 8, 2011. The delineation methodology followed by all wetland/soil scientists was consistent with both the Connecticut Inland Wetlands and Watercourses Act (P.A. 155) and the 1987 Corps of Engineers Wetland Delineation Manual and the 2009 Interim Regional Supplement to the COE Wetland Delineation Manual: North central and Northeast Region. Wetlands were delineated at four areas along the margin of the lake as illustrated on Figure 3. Wetlands on the site were demarcated with the following flagging sequences:

Table 2: Wetland delineation sequences, Lake Garda

Flag Number	Wetland #	Location	Photos
1-21	Wetland 1	Lake Association Beach, eastern shore	1-2
1X-5X	Wetland 2	Eastern shore	3-4
6X-12X	Wetland 3	Boat launch, northwestern shore	5-6
22-46, 47-63, 1Y-4Y, 5Y-12Y	Wetland 4	Southernmost shore	7-8

The state and federal wetland boundaries are identical at this site. Four COE wetland delineation transects were documented at the site on November 8, 2011. The location of these transects are illustrated on Figure 3. Data forms for each transect point are included in the appendix.

4.0 WETLAND CHARACTERISTICS

This section describes wetland vegetation, soils and observed hydrology. Four separate wetland areas were evaluated as summarized in Table 3 and illustrated on Figure 2. These four wetland units consist of the lake boundary as well as narrow flanking wetlands and backwater bordering the boundary of the lake.

Table 3: Summary of wetland characteristics, Lake Garda

Wetland #	Characteristics
Wetland 1	Lake association beach under mature pine grove includes shallow backwater inlet, and a narrow scrub-shrub swamp and emergent vegetation
Wetland 2	Maintained lawn area (fill) leading to lake margin with a very narrow emergent marsh shelf
Wetland 3	Lake association boat launch consisting of deposited/maintained sandy area and lawn with narrow emergent marsh/scrub-shrub bordering lake margin.
Wetland 4	Lake margin consists of broad emergent marsh, shallow backwater inlet with bordering sloping wooded swamp/scrub-shrub wetland. Two streams outlet into the lake at this location, one from Mine Mountain/Monce Pond and the other from Sherman Drive

Vegetation

Three classes of wetland vegetation are present in the 4 wetland units and in the aquatic survey area**.**

Aquatic Beds - Permanently flooded water bodies, such as ponds, have beds of aquatic vegetation covering all or part of their surfaces or bottoms.

Wet Meadow/Emergent Marsh - Wet meadows and emergent marshes are dominated by persistent and non-persistent grasses, sedges, rushes, and other herbaceous grass-like plants.

Shrub-Scrub Wetland - Shrub-scrub wetlands are dominated by woody vegetation, shrubs with some scattered stunted trees, less than 20 feet (6 m) in height.

Wetland 1 has an open shrub scrub layer consisting predominantly of Speckled Alder *(Alnus incana)* and Red Maple *(Acer rubrum)*, with Highbush Blueberry *(Vaccinium corymbosum)*, Silky Dogwood *(Cornus amomum)*, Arrowwood *(Viburnum dentatum)*, and Common Elderberry *(Sambucus canadensis) also present*. The extensive herb layer is largely Tussock Sedge *(Carex stricta)*, Softstem Bulrush *(Schoenoplectus tabernaemontani)*, Rough-stemmed Goldenrod *(Solidago rugosa)*, Jewelweed *(Impatiens capensis)*, Sensitive Fern *(Onoclea sensibilis)*, Common Cattail *(Typha latifolia)* and some Common Reed**(Phragmites australis)*.

Wetland 2 is wet meadow and a narrow emergent marsh which is mostly mowed turf grasses *(Poaceae spp.)*, Rice Cutgrass *(Leersia oryzoides)*, and Softstem Bulrush.

Wetland 3 is wet meadow and a narrow emergent marsh which is mostly mowed turf grasses *(Poaceae spp.)*, Common Cattail, sedges *(Carex spp.)*, and Softstem Bulrush with a few shrubs of Speckled Alder and Multiflora Rose* *(Rosa multiflora)*.

Wetland 4 is shrub-scrub pond shore with patches of emergent marsh. The open shrub scrub layer consists mostly of Speckled Alder, Glossy Buckthorn* *(Frangula alnus)*, Red Maple, Weeping Willow *(Salix babylonica)*, Silky Dogwood, Pussy Willow *(Salix discolor)*, Japanese Barberry* *(Berberis thunbergii)*, and Multiflora Rose*. The herb layer is composed mainly of grasses, including Japanese Stiltgrass* *(Microstegium vimineum)*, sedges, Softstem Bulrush, Rough-stemmed Goldlenrod, Grass-leaved Goldenrod *(Euthamia graminifolia)*, Swamp Dewberry *(Rubus hispidus)*, Cinnamon Fern *(Osmunda cinnamomea)*, Purple Loosestrife* *(Lythrum salicaria)*, burrreed *(Sparganium sp.)*, and Poison Ivy *(Toxicodendron radicans)*. The vine layer is Fox Grape *(Vitis labrusca)*.

Wetland Soils

According to the NRCS digital soil survey and confirmed via field observations, wetland soil types present include Aquents as well as Raypol soils. The native wetland soils are Raypol. Aquents are present within portions of each of the four wetland units.

The Raypol series consists of very deep, poorly drained soils formed in loamy over sandy and gravelly glacial outwash. They are nearly level to gently sloping soils in shallow drainageways and low-lying positions on terraces and plains. The soils have a water table at or near the surface much of the year.

Aquents soils denote man-made or man-disturbed areas that are wet. These soils have an aquic soil moisture regime and can be expected to support hydrophytic vegetation. Typically, these soils occur in places where less than 2 feet of earthen material have been placed over poorly or very poorly drained soils; areas where the natural soils have been mixed so that the natural soil layers are not identifiable; or where the soil materials have been excavated to the water table.

Wetland Hydrology

A dam is located at the northern end of the lake and is operated and maintained by the Lake association under permit from the CT DEEP. Wetland hydrology ranges from seasonally-saturated[1] at the wetland-upland interface to seasonally-flooded[2] in the wetlands bordering the boundary of the lake to permanently-ponded within the narrow backwater wetlands and within

[1] Seasonally-saturated wetlands are saturated to the surface, especially early in the growing season, but unsaturated conditions prevail by the end of the season in most years. Surface water is absent except for groundwater seepage and overland flow.
[2] Seasonally-flooded wetlands have surface water present for extended periods, especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.

Lake Garda itself. The hydrology of backwater wetlands and wetlands located at the immediate lake margin are directed influenced by the outlet control structure.

5.0 NATURAL DIVERSITY DATABASE REVIEW

The Connecticut Department of Energy & Environmental Protection's Natural Diversity Database program represents current documented data showing the known locations of any endangered, threatened or special concern species and significant natural communities. Submission to the database for information regarding a given site is done if the subject site:

- Occurs within a designated NDDB area
- Overlaps a water body that has been designated a NDDB area
- Is upstream or downstream (by less than ½ a mile) from a NDDB area

The most recent NDDB mapping was reviewed (dated December 2011). A NDDB record overlaps the southern two-thirds of the lake. An informational request was submitted by Macchi Engineers and a response letter was received dated November, 30, 2011 indicating that the Eastern Box Turtle (*Terrapene carolina*), a state-listed species of special concern, occurs in the vicinity of the project site (see appendix). Eastern Box Turtles inhabit old field habitat and deciduous forest ecotones, including powerline cuts and logged woodlands. Although strictly terrestrial, this species is seldom fond far from water. Box turtle are widely distributed from sea level up to an elevation of 500 feet, becoming scarce and localized to an elevation maximum of just above 700 feet (Klemens, 1993:191). Provisions will be required to protect box turtles during any dredging and dewatering operations.

As noted below, several genera of aquatic and emergent plants observed on the site could not be identified to species level. The following genera present in the surveyed areas include CT state-listed species: *Schoenoplectus* aka *Scirpus*, *Myriophyllum*, and *Potamogeton*. A growing season survey would be necessary to confirm their identifications.

6.0 AQUATIC VEGETATION SURVEY

An aquatic vegetation survey (in the study area shown on Figure 4) was conducted by EPS botanist James Cowen on November 8, 2011. Aquatic vegetation was dormant and had partially died back. Conditions were sunny and 60 degrees F. Plant identification was limited to persistent vegetation. Since plants were dormant the maximum extent of coverage during the growing season could not be fully determined. Based on observation by kayak and analysis of the 2009 leaf off aerial photo the extent of aquatic vegetation is estimated at 63%[3]. Aquatic vegetation is patchy and widely dispersed throughout the study area. Dominant species are a mix of native and invasive species and include: White Waterlily *(Nymphaea odorata)*, Yellow Pond Lily *(Nuphar lutea)*, Eurasian Milfoil* *(Myriophyllum spicatum)*, water milfoil *(Myriophyllum sp.)*, pondweeds *(Potamogeton spp.)*, starwort *(Callitriche sp.)*, burr reed *(Sparganium sp.)*, and Coontail *(Ceratophyllum demersum)*.

Warm water fish were observed using the aquatic vegetation for cover etc.

7.0 WETLAND FUNCTIONS AND VALUES ASSESMENT

Over the last three decades, ecologists, wetland scientists, biologists, hydrologists, and environmental engineers have recognized not all wetlands perform the same functions, or provide the same values for their various functions.

There are many methods of evaluating wetlands and these methods have often chosen different parameters to evaluate. This study uses *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach* issued by the US Army Corps of Engineers New England District (ACOE NED), September 1999. This evaluation provides a qualitative approach in which wetland functions can be considered principal, secondary, or unlikely to be provided at a significant level. Functions and values can be principal if they are an important physical component of a wetland ecosystem (function only), and/or are considered of special value to society, from a local, regional, and/or national perspective. The ACOE NED recommends that wetland values and functions be determined through "best professional judgment" based on a qualitative description of the physical attributes of wetlands and the functions and values exhibited.

The Highway Methodology recognizes the following 13 separate wetland functions and values: groundwater recharge/discharge, floodwater storage, fish and shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization, wetland wildlife habitat, recreational value, educational/scientific value, uniqueness, visual/aesthetic quality and threatened and endangered species habitat.

[3] Visual plant cover percentage was estimated using the cover range midpoint method as described in "Delineating Bordering Vegetated Wetlands" , page 12

The degree to which a wetland provides each of these functions is determined by one or more of the following factors: landscape position, substrate, hydrology, vegetation, history of disturbance, and size. Each wetland may provide one or more of the listed functions at significant levels.

The determining factors that affect the level of function provided by a wetland can often be broken into two categories. The <u>effectiveness</u> of a wetland to provide a specified function is generally dependent on factors within the wetland whereas the <u>opportunity</u> to provide a function is often influenced by the wetland's position in the landscape and adjacent land uses. For example, a depressed wetland with a restricted outlet may be considered highly effective in trapping sediment due to the long residence time of runoff water passing through the system. If this wetland is located in gently sloping woodland, however, there is no significant source of sediment in the runoff therefore the wetland is considered to have a small opportunity of providing this function.

Wetland principal and secondary functions and values for each of the wetland types are summarized in Table 4. Four principal wetland functions were identified for the entire Lake Garda system: (1) floodflow alteration; (2) sediment retention, (3) nutrient attenuation and (4) recreation. These functions are directly attributable to the fact that the lake is man-made is maintained by a water control structure.

Wetland Type	Groundwater Recharge/ Discharge	Floodflow Alteration	Fish & Shellfish Habitat	Sediment/Toxicant/ Pathogen Retention	Nutrient Removal/Attenuation	Production Export	Sediment/Shoreline Stabilization	Wildlife Habitat	Recreation	Educational/Scientific Value	Uniqueness/Heritage	Visual Quality/Aesthetics	Endangered Species Habitat
Wetland 1	S	P	S	P	P	S	S	S	P	S	-	S	S*
Wetland 2	-	S	-	S	S	S	S	-	-	S	-	S	S*
Wetland 3	-	S	-	S	S	S	S	-	P	S	-	S	S*
Wetland 4	S	P	S	P	P	S	S	S	-	S	-	S	S*

<u>KEY</u>
S = Secondary Function/Value
P = Principal Function/Value
- = Not a Significant Function/Value
* = The state-listed species of special concern Eastern Box Turtle is known to occur in the vicinity of the lake

One principal function provided by this system is flood flow alteration. The lake is able to capture and store (i.e., desynchronize) flows from its two feeder streams and slowly release water downstream to the Farmington River, thereby moderating stream flashiness and reducing downstream flooding in the heavily developed Farmington Valley. It should be noted, however that the efficiency of this function is dependent upon the water level of the lake in relation to the elevation of the outlet structure during periods of flooding. If the lake is at full capacity during periods of flooding, then additional floodwater storage is not occurring.

Other principal functions, sediment retention and nutrient attenuation, are also attributable to the lake's design as a man-made water body. The lake captures and stores sediment from its two feeder streams; however this function has been diminished due to existing level of accumulated sediment present in the lake. The presence of emergent vegetation along the lake's border and submergent aquatic vegetation beds provide opportunities for nutrient uptake and pollutant retention.

Recreation was also identified as a principal function due to the fact that the lake is used heavily for active recreation, including boating, fishing and swimming.

Notable secondary functions include wetland wildlife habitat and fish/shellfish habitat. The lake likely serves as migratory waterfowl habitat during ice-free periods. The immediate shoreline and lands surrounding the lake are heavily developed. This is a major limiting factor with respect to providing habitat for wetland-associated species which might utilize the lake periodically for feeding or hydration but would otherwise inhabit uplands surrounding the lake. While the lake is suitable habitat for warm-water fish species, such as Bluegill (*Lepomis macrochirus*) and Bass (*Micropterus sp.*), their presence has undoubtedly had a negative effect on the native coldwater fishery value of Unionville Brook due to thermal impacts, habitat loss and stream fragmentation.

8.0 REFERENCES

Mitsch, W.J. and Gosselink, J.G. 2007. Wetlands, fourth edition. John Wiley and Sons, Inc.

Bevier, L. R. and DiGiorgio M. 1994. The Atlas of Breeding Birds of Connecticut. CT DEP Bullletin 113

Calhoun, A.J.K. and M. W. Klemens. 2002. Best Development Practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

CT Department of Environmental Protection. A Field Guide to Freshwater Mussels of Connecticut.

Degraaf, R. M. and Yamasaki, M. 2001. New England Wildlife: Habitat, Natural History and Distribution. University Press of New England.

Hammerson, G. A. 2004. Connecticut Wildlife – Biodiversity, Natural History, and Conservation. University Press of New England.

Klemens, M. W. 1993. Amphibians of Connecticut and Adjacent Regions. CT DEP Bulletin 112.

U.S. Army Corp of Engineers. 1995. The Highway Methodolgy Workbook – Wetland Functions and Values: *A Descriptive Approach*.

Whitaker, J. O. and Hamilton, W.J. 1998. Mammals of the Eastern United States. Cornell University Press, Ithaca, London.

APPENDICES

(1) Figures 1-4
(2) Site photos
(3) CT DEEP NDDB response letter, November 30, 2011
(4) Federal wetland delineation transect forms

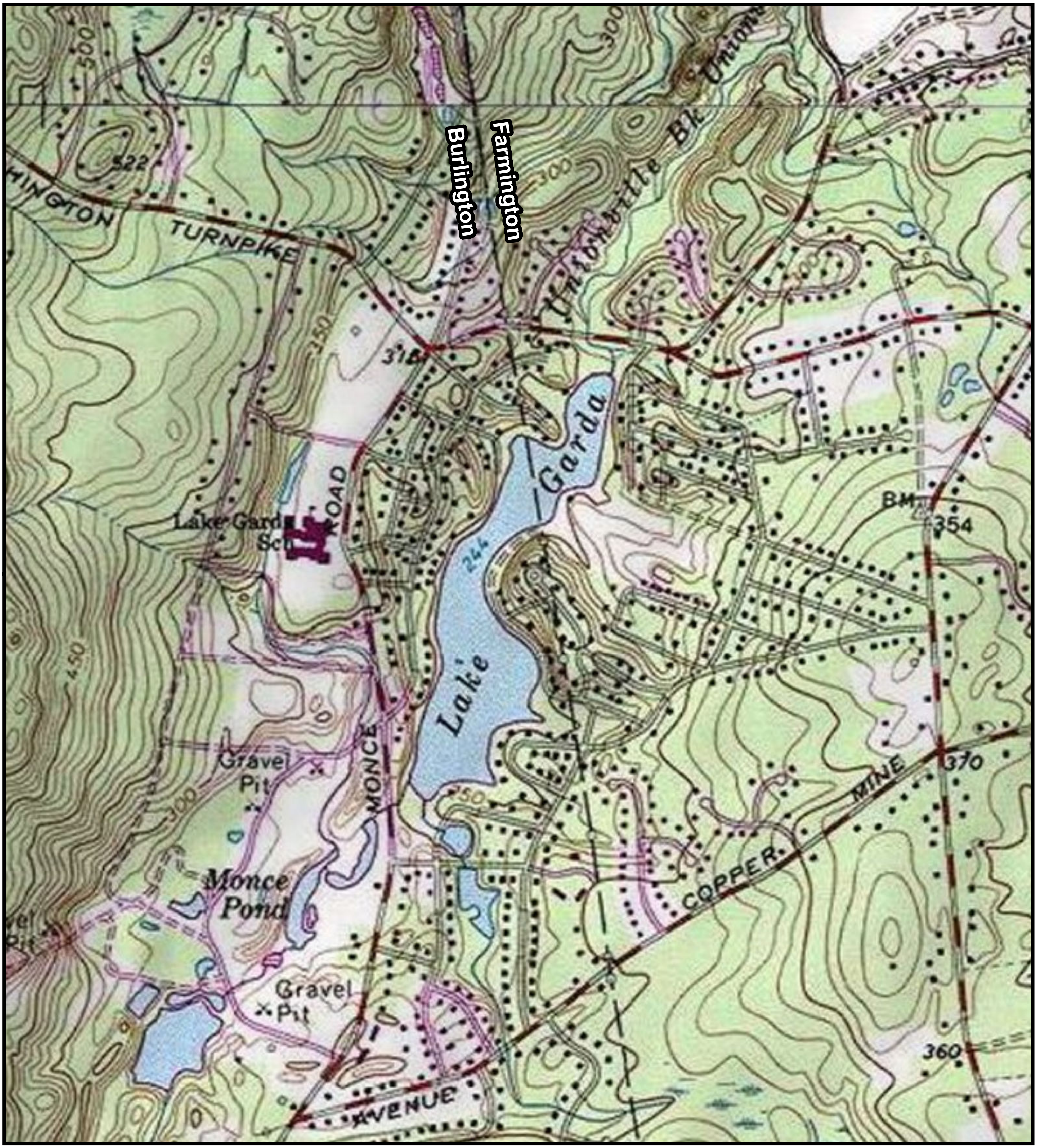


FIGURE 1
USGS Topographic Map
Lake Garda
Burlington, CT

SCALE
0 250 500 1,000 Feet
1 inch = 1,000 feet

N

Prepared by:
Environmental Planning Services
89 Belknap Road
West Hartford, CT 06117
www.epsct.com

December 2011

FIGURE 2
Aerial Photograph (2009)
Lake Garda
Burlington, CT

Approximate boundary of wetlands/lake margin surveyed show in in yellow hatch.

SCALE
0 200 400 Feet
1 inch = 450 feet

N

Prepared by:
Environmental Planning Services
89 Belknap Road
West Hartford, CT 06117
www.epsct.com

December 2011

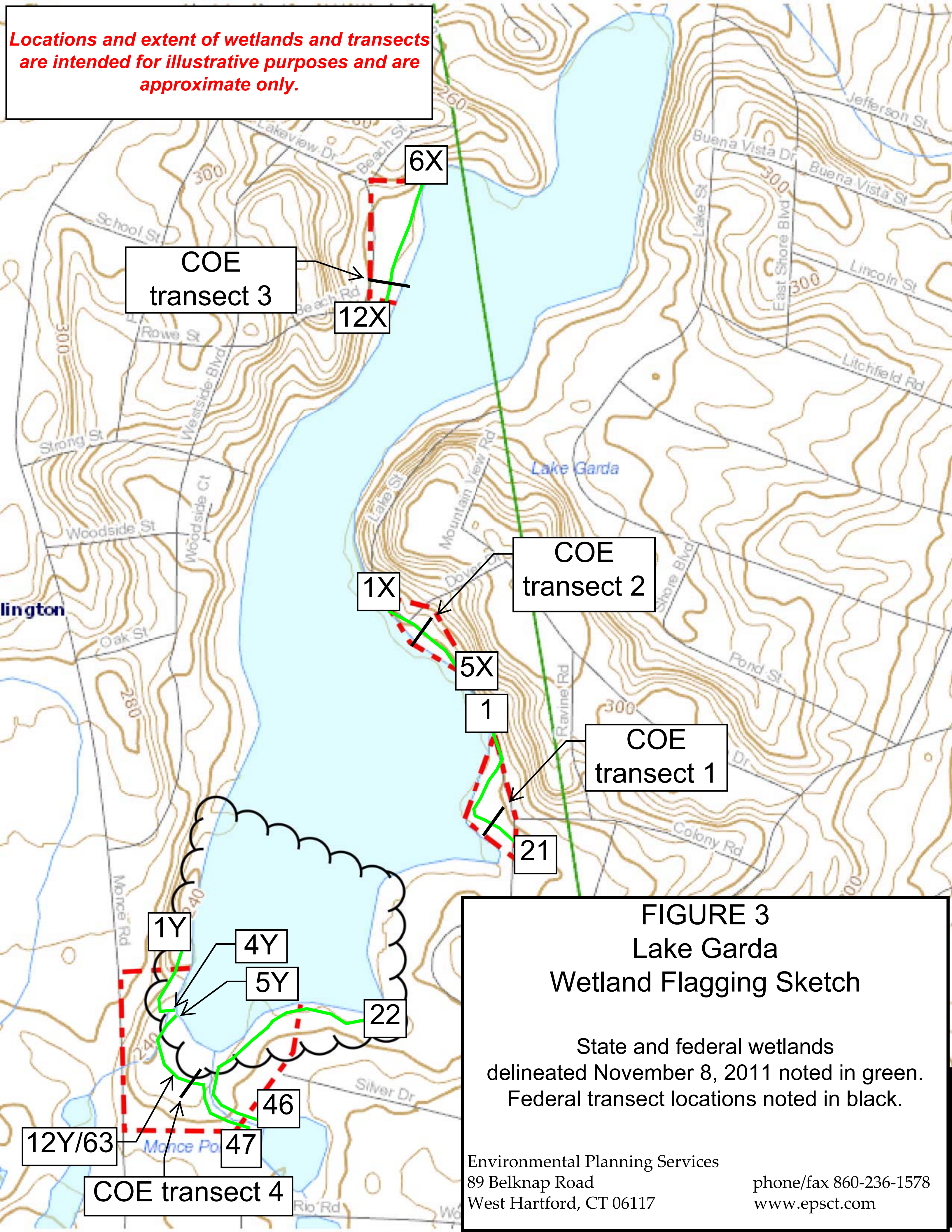


FIGURE 3
Lake Garda
Wetland Flagging Sketch

State and federal wetlands delineated November 8, 2011 noted in green. Federal transect locations noted in black.

Environmental Planning Services
89 Belknap Road
West Hartford, CT 06117
phone/fax 860-236-1578
www.epsct.com

FIGURE 4
Aquatic Vegetation Survey Area
Lake Garda
Burlington, CT

Aerial photograph (2009) showing the area of aquatic vegetation surveys (in blue) conducted by an EPS botanist in November 2011.

SCALE

0 50 100 Feet

1 inch = 125 feet

N

Prepared by:
Environmental Planning Services
89 Belknap Road
West Hartford, CT 06117
www.epsct.com

December 2011

Lake Garda site photographs taken November 8, 2011

Photo 1: Wetland 1 looking north across Lake Association Beach

Photo 2: Wetland 1 looking south across wooded swamp and cove

Lake Garda site photographs taken November 8, 2011

Photo 3: Wetland 2 looking north

Photo 4: Wetland 2 looking south

Lake Garda site photographs taken November 8, 2011

Photo 5: Wetland 3 looking south

Photo 6: Wetland 3 looking east

Lake Garda site photographs taken November 8, 2011

Photo 7: Wetland 4 looking east

Photo 8: Wetland 4 looking north

APPENDIX E

History Chronology

1920, Jan. – J. D. Williams, Engineer develops plans for a proposed dam on Rose Brook in Farmington for Harry J. Battistoni. The dam is built soon after and Battistoni names the impoundment created by the dam Lake Garda.

1929 – Reportedly the spillway was raised 4 feet, although this is unconfirmed.

1936, May – The Lake Garda Company, owned by Battistoni, conveys 200 acres of land surrounding and including Lake Garda to Ron-Day, Inc., the developer of the area.

1936, May – Plan prepared to raise dam and lake elevation.

1943 – Lake Garda Improvement Association chartered by the State of Connecticut Legislature.

1943, Apr. – Complaint to the State Board of Supervision of Dams that the dam was unsafe.

1943, May – Ron-Day, Inc. quitclaims various land to LGIA, including Children's Beach.

1945, Apr. – Battistoni submits an application for the construction of a small dam upstream of Lake Garda to impound approximately 10 acres in order to maintain water for a convalescing hospital and for fire protection.

1945, Apr. – Additional complaints to the State Board of Supervision of Dams that the Lake Garda Dam is unsafe.

1945, Oct. – Ron-Day, Inc. conveys the lots it had been unable to sell together with the lake back to Harry Battistoni.

1946, May- State Board of Supervision of Dams inspected dam as a result of on-going repairs being performed by Battistoni.

1946, Jun. – State Water Commission determines drainage area of Lake Garda for the State Board of Supervision of Dams as a result of the repairs being performed.

1946, Jun. – State Board of Supervision issues letter stating that plans were never received for on-going repair work and that work is being performed without certification.

1946, Jun. – Battistoni conveys the former Ron-Day, Inc. property to the Lake Garda Company, of which he is president.

1957, Jun. – Buck & Buck Engineers develop plans for spillway widening. Repairs never completed.

1962, Mar. – Lake Garda Company quitclaims Children's Beach to the Lake Garda Water Company. Note that Battistoni is owner of both companies.

1962, Apr. – Battistoni bulldozes several docks extending into Lake Garda. He claims he owns the lake and wants rental fees to be paid for the docks.

1964, Feb. – Court case to resolve dock issue.

1971, Feb. – Court case to resolve ownership of Children's Beach area, which Battistoni claims is owned by his Lake Garda Water Company. Court rules in favor of LGIA.

1974, Aug.- Plans prepared by Town of Farmington for sanitary sewer on west side of Lake Garda from Washington Circle to West Side Boulevard. 20 foot R.O.W. in lake for sanitary line. Similarly, plans prepared for sanitary sewer on east side of Lake Garda. 20' R.O.W. in lake extends through the dam east of the spillway.

1979 – Minor repairs completed on spillway training walls.

1979, Jul. – Department of the Army New England Division Corps of Engineers releases its Phase I Inspection Report that states the Lake Garda Dam is in poor condition.

1981, Dec. – State of Connecticut issued an administrative order for repairs to be made to the dam.

1983, Aug. – Superior Court orders owners (Lake Garda Water Co. and Lake Garda Company) to complete engineering study for repair or removal by Jan. 1, 1984, correction of deficiencies by Mar. 1, 1984, and the submission of an Operation and Maintenance Manual and Emergency Operation Plan for the dam by Mar. 1, 1984.

1984, Feb. – Court order issued for owners to repair dam with modifications made to the above dates. Study by Mar. 1, 1984, repairs, O & M manual and EOP by Jun. 1, 1984.

1984, Mar. – Luzzi Engineering & Surveying submits a report for dam repair recommendations.

1984, May – Permit submitted for repairs to dam.

1984, May – Review of permit found it to be insufficient. Letter sent to Luzzi Engineering asking for further information.

1984, May - Battistoni begins repairs to the dam. State informed owner that construction was being performed illegally due to lack of permit approval. Ordered Battistoni to drawdown impoundment, cease all dam repair activities, submit a permit for repairs completed to date and those planned, and the installation of sediment and erosion controls. Repair work continued despite orders.

1986, Jan. – State issues letter to owner regarding dam deficiency.

1986, Jul. – Roger H. Whitney, Inc., a consulting engineering firm, submitted a report on the dam. Stated dam was not sufficient.

1986, Sept. – Roger H. Whitney, Inc. described seepage from the dam and further need for investigation regarding seepage.

1986, Sept. – State determines a drawdown of Lake Garda is necessary due to the deficiencies and seepage in the dam.

1986, Oct. – Lake Garda Company quitclaims remaining property to Lake Garda Liquidating Trust.

1989, Aug. – Battastoni re-diverted a brook that was originally diverted to Lake Garda during Woodhaven Drive development. The re-diversion was done without any permits. State of CT DEP ordered Battastoni to restore brook to its former course or submit diversion permit.

1989, Aug.- State determines that repairs on dam were not satisfactory completed.

1989, Oct. – Letter issued for outstanding court order regarding unsatisfactory repairs.

1990, Jun. – State Dam Safety Division performs inspection of dam and issues recommendations.

1992, Aug. – Szewczak Associates Consulting Engineers inspects the dam and provides estimated cost for repairs to LGIA.

1995, Feb. - Macchi Engineers, LLC submitted a study to LGIA for repairs of the dam.

1997, Feb. – Lake Garda Water Co. sells the lake and dam to LGIA.

1998, Jul. - Macchi Engineers, LLC prepares plans and specifications for improvements to the dam.

1998, Dec. – D'Amato Construction Co. begins repairs to the dam. Repairs include new spillway, outflow channel, timber pedestrian bridge, and downstream toe drains to control seepage.

1999, Jun. – Repairs completed.

2001 – LGIA purchases +/- 8 acres southwest side of lake on corner of Monce Rd. and Rio Rd.