NEW JERSEY WATER SUPPLY AUTHORITY

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March 31, 2023

Mr. David Guida
Recreation Director
Parks & Recreation Committee
2 West Main Street
PO Box 520
Brookside, NJ 07926

Re: Mosle Field Improvement

Dear Mr. Guida,

My name is Angela Mostwill. I am a Watershed Protection Specialist with the New Jersey Water Supply Authority assigned to monitor properties where the Authority has an ownership interest. We were recently contacted by a concerned neighbor regarding the proposed Mosle Field Improvements. As a joint owner with 20% stake in the property, I thought it best to reach out to you directly to address any issue of potential concern.

The Authority takes no position on the Recreation Department's decision to improve the athletic fields with lights. The original agreement with respect to funding and the assignment of interests document for the Mosle property states that all parties (Mendham 64% ownership, Authority 20% ownership, and Schiff 16% ownership) agreed to the Maintenance and Management Agreement (MM). The MM agreement states that, "MENDHAM shall be permitted to make such improvements and construct such, or utilize existing, structures that are appropriate to support such activities as determined by MENDHAM in its sole discretion, subject to applicable Environmental Infrastructure Financing Program and any other deed restrictions." Therefore, it is within Mendham Township's rights according to the MM to install permanent and temporary lights.

I note, however, that the Green Acres conservation restriction deed states that the excavation and removal of topsoil is permitted for recreation, but more than 5,000 square feet requires approval from the NJDEP commissioner. The structures also need to be approved by the NJDEP commissioner in writing for recreational improvements.

The ownership parties also agreed to a Property Management Plan detailed in the MM (please see attached). The Authority does have a concern that the proposed infrastructure investment at the Mosle property may lead to increased play pressure on the turf as several towns may share the fields. Maintaining quality turf will require improved management. The Authority would like confirmation that the BMPs specified in the Property Management plan are being implemented to protect the headwaters of the unnamed tributary of the Gladstone Brook in the 11.168 acres included in EIFP area (Map 1).

The EIFP area is, "designed to protect and preserve the surface and groundwater quality and quantity and other conservation values of the property in perpetuity within a defined area." Prohibited activities include that, "There shall be no pollution, alteration, depletion or extraction of surface water, natural water courses, lakes, ponds, marshes, subsurface water or any other water bodies on the EIFP Conservation Restriction Area, nor shall there be activities conducted on the EIFP Conservation Restriction Area which would be detrimental to water quality, water purity, drainage, flood control, water conservation, erosion control or soil conservation, or which could alter the natural water level and/or flow in, below or over the EIFP Conservation Restriction Area. This shall include ditching, draining, diking, filling, excavation or any other activity that alters the topography or hydrology of the EIFP Conservation Restriction Area."

Additionally, the March 7th presentation by the Recreation committee stated that the proposal included "A binding agreement with the leagues committing to no turf being installed for a minimum of 15 years." The Authority may not support a conversion to artificial turf in the future due to increased play pressure on the athletic fields as this change may not be aligned with the EIFP priorities to preserve groundwater

recharge (Map 2). The EIFP deed states that "water quality/quantity and other Conservation Values of the EIFP conservation Restriction Area will be conserved and maintained forever and that uses of the EIFP Conservation Restriction Area that are inconsistent with these Conservation Values will be prevented or corrected.

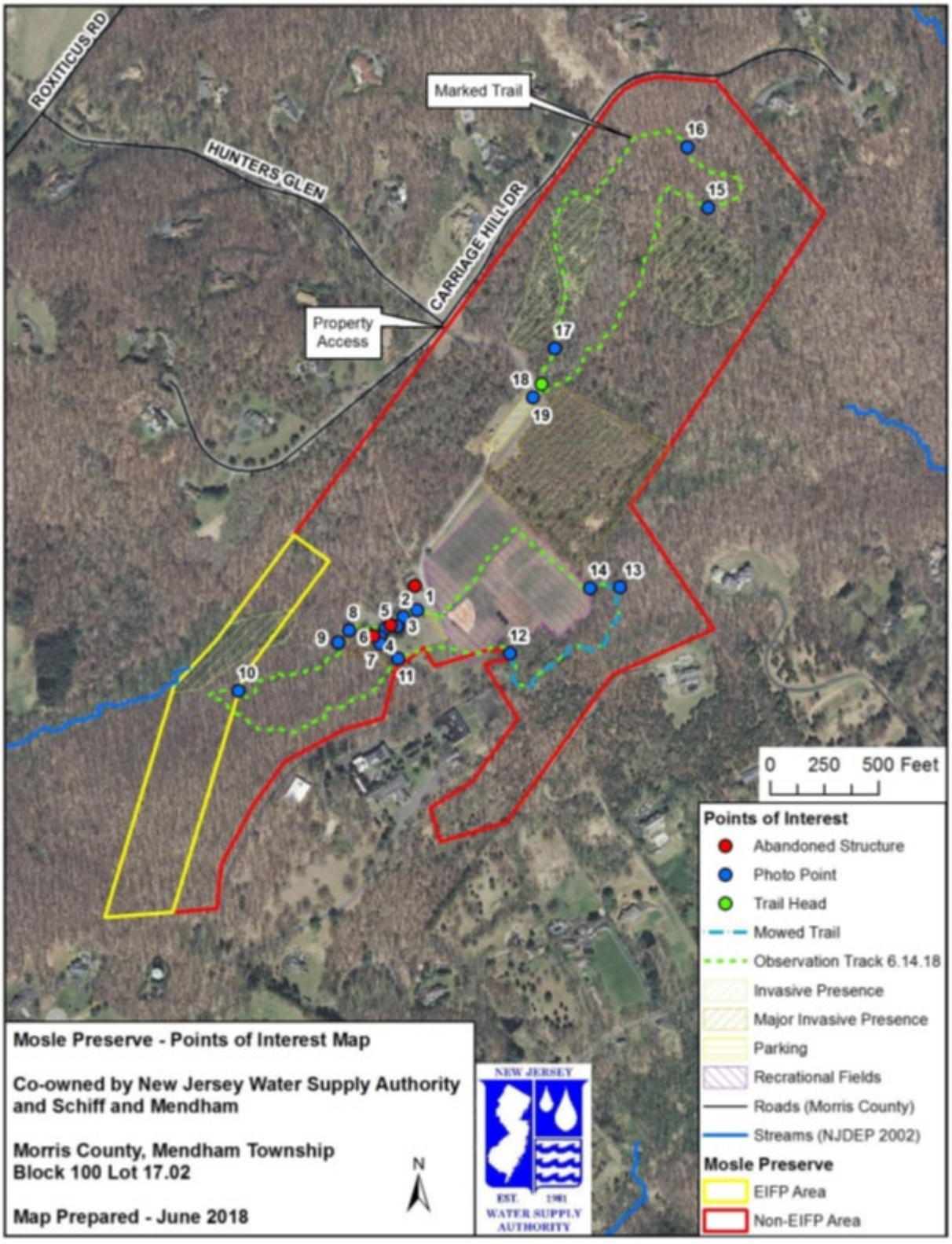
Another potential concern with artificial turf is that crumb rubber could potentially enter the unnamed tributary of the Gladstone Brook as surface runoff. Deed 2 states that, "No solid or liquid materials which pollute or otherwise adversely affect the flow or quality of the water in any watercourse within or near the Easement Areas shall be kept or stored within the Easement Areas or placed in or discharged into any watercourse traversing or protected by the Easement Areas.'

Finally, are the invasive species in the EIFP area being managed? This area has been forested since at least the 1930s and the invasive species that are encroaching on the headwaters of the Gladstone Brook should be addressed before they are widespread in this section of the property (Map 1).

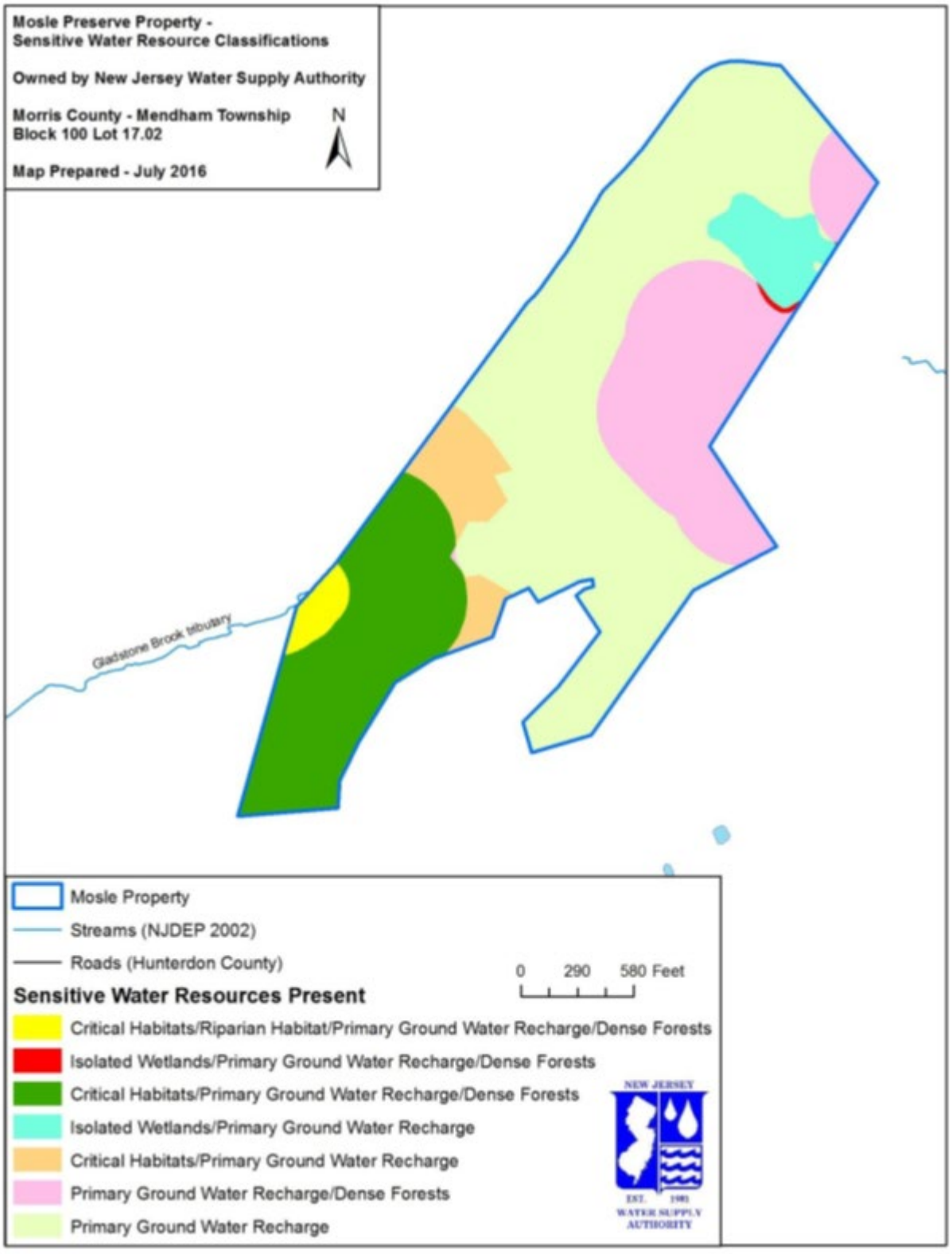
Please contact me at your convenience to discuss this further. I can be reached at extension 226 or by email at amostwill@raritanbasin.org.

Sincerely,

Angela Mostwill
Watershed Protection Specialist



Map 1: Point of interest map. The map shows highlights from field observations only over NJDEP 2012 aerial imagery.



Map 2: Sensitive Water Resource Criteria at the Mosle property developed by NJWSA.

Exhibit A

Property Management Plan

Current recreational field management (summary):
Soil test in April (but not clear if fertilization is based on this)
Fertilize April, May, June and September, November.
Broadleaf weed control applied April and June.
Grub control applied in June.
Aerate April, June, July, and September.
Overseed April, June, September.

Overall Goals
Conserve the ecosystem functions and natural resources of the property.
Protect and maintain the forest, wetlands and riparian areas of the property.
Manage noxious weeds using an integrated pest management approach.
Monitor natural resources through inventories and other tools.
Maintain and improve the natural diversity of vegetation types.
No disturbance shall be made within 300 feet of the property's wetlands or riparian areas.
Maintain and improve wildlife habitat and diversity.

Forest Management
All meadow, watershed and woodland management activities shall be conducted in accordance with a Resource Management Plan or Resource Stewardship Plan prepared either by the United States Department of Agriculture - Natural Resource Conservation Service or the Authority. The Plan shall be prepared with the aim of achieving the objectives of protecting, maintaining and enhancing the ecological value of meadows, woodlands and water resources on the Property and shall address the following criteria for the overall ecological and water resource value of the Property in association with neighboring properties; individual criteria shall not be assumed to have higher priority than other criteria:

A. Woodlands. (i) Minimization of the amount of forest edge, (ii) maintenance of numerous mature canopy trees to minimize the movement of invasive species into the understory, (iii) maintenance of a naturally occurring mix of native herb, seedling, shrub, sapling and under-story and canopy tree species for the natural re-propagation and evolution of the forest ecosystem, and (iv) inclusion of some standing-dead and fallen trees for species food and habitat.

B. Meadows. (i) Maintenance of an appropriate mix of native meadow species and (ii) removal of woody vegetation to maintain large, contiguous areas of grassland habitat. General. (i) Encouragement of the occurrence of native wildlife species that favor forest and meadow habitats, (ii) minimization of disturbance to forest or meadow soils, (iii) minimization of disturbance to riparian corridors, (iv) minimization of the occurrence of invasive species, (v) maintenance of contiguous areas of habitat, (vi) maintenance of habitat elements in proper amounts and locations to benefit desired species and water resources.

C. General. (i) Encouragement of the occurrence of native wildlife species that favor forest and meadow habitats, (ii) minimization of disturbance to forest or meadow soils, (iii) minimization of disturbance to riparian corridors, (iv) minimization of the occurrence of invasive species, (v) maintenance of contiguous areas of habitat, (vi) maintenance of habitat elements in proper amounts and locations to benefit desired species and water resources.

Recreational Field Management

Soil Testing
Soil should be tested at least every 3 years to determine pH and nutrient needs. Soil test results will provide recommendations for need and rate of lime application of lime and appropriate ratio of nitrogen, phosphorus and potassium in fertilizer and rate of application.

Liming
Any lime application shall be based on soil test results. Adjusting the pH of soil by liming will enable more efficient use of fertilizer.

Fertilization
The turf species, types of events, schedules and expectations must all be considered. The individual or organization responsible for managing the field must know how and when turf grass uses nutrients in order to develop a program that provides sufficient nutrients for turf health and minimize risks to water quality.

Phosphorus is important to the establishment and rooting pf plants. Nitrogen affects growth and susceptibility to certain pests and diseases. Potassium improves wear tolerance and disease tolerance.

There are many guidelines discussing frequency of fertilization. Heavily used fields may require 3 applications per year – spring, late summer and fall – to maintain high quality turf. Timing should be based on seasonal use. For example fields that receive intensive use in the spring may benefit from two applications in the late summer/early fall and a third application in the late spring. Fields that are intensively used in the fall should be fertilized several weeks prior to the period of heavy use, such as in late August.

All equipment should be calibrated prior to each use. A record should be kept of calibration activities.

Pesticide application
An integrated pest management program should be developed for the property. IMPM is defined as a problem solving approach to turf management. It relies on site-specific information about environmental conditions, including pest identification through monitoring and scouting. Tolerance levels for various pests – plant and insect – should be identified and pest control techniques specified. Spot treatment or mechanical control is preferable to widespread application.

For example, the Minneapolis Park and Recreation Board set a threshold level of 20% for weeds on athletic fields. When that percentage is reached or exceeded, a post-emergent herbicide is applied by spot spray at that location only. The Board also set a threshold level of 40% for turf insect pressure. When that threshold is reached or exceeded, an insecticide treatment is applied at that location as needed.

Mowing
Mowing height affects the speed of play, impact absorption, and appearance. Mowing at a higher height encourages deeper rooting of the turf, thus enabling the turf to use water and nutrients from

the soil more effectively. Mowing height may be adjusted based on the needs for field quality and the sport played. A typical guideline is to remove less than 1/3 of the leaf blade at any time and to maintain mowing height at two to three inches. In non-use times, mow at a higher height. Mowing patterns should be alternated, allowing the grass to grow upward and reducing soil compaction from the mower.

Irrigation
Irrigate only as needed to maintain proper soil moisture and avoid stress of the turf grass. Thorough watering once a week is preferable to multiple sprinklings. Most turf grasses need approximately one inch of water per week from rainfall or irrigation. Irrigation should occur early in the morning to allow for better soil penetration and reduced evaporation loss.

Aeration
Aeration is necessary to combat compaction of the soil. Compaction primarily occurs in the upper inch of soil and leads to reduced rooting depth and reduced total root growth. The intensity of use will determine the frequency of aeration. Fields that receive intensive use should receive two to four aeration treatments per year.

Seed selection
Seed selection must take into account soil characteristics, light, intensity of use and maintenance level. Rutgers Cooperative Extension recommends a seed mixture for athletic fields. Using seed mixtures enables turf grass managers to reduce the risk for damage from one particular pest and to get more seasonal coverage. Species can include Kentucky bluegrass, tall fescue and perennial ryegrass.

Water Quality Management

ACTION: Develop a turf management schedule, which details a month-by-month schedule of practices for the field.

ACTION: Establish and utilize a formal IPM plan that includes a decision tree entailing when to utilize pesticides and/or herbicides. An IPM plan includes encouraging naturally occurring biological control, using alternate plant species that resist pests, selecting pesticides with a lower toxicity to humans or non-target organisms, adoption of cultivating, fertilizing, maintenance or irrigation practices that reduce pest problems. Each area should have a turf quality threshold level set for disease, weeds and insects. Key components include knowing the key pests, planning, scouting and implementing management strategies. The plan should include goals to decrease pesticide use and identify opportunities to use less toxic alternatives. Other components of the plan could include:

- ✔ A map delineating high, medium, and low maintenance areas and the thresholds of pest damage that the course will accept for each area.
- ✔ Descriptions of the turf grass.
- ✔ Records that detect trends relating to pest monitoring activities, control measures used on problem areas, and the results of these controls.
- ✔ Identification of local disease, insect, and weed problems.
- ✔ Identification of "hot spots," problem areas requiring corrective action or spot treatments.
- ✔ Identification of aesthetic and functional thresholds for pest and disease.
- ✔ Listing of remedies used for pest and disease control.

ACTION: In areas where fertilizers are used, perform yearly soil tests to identify the proper levels of fertilization.

ACTION: Establish a record keeping and monitoring sheet to track implementation of IPM principles.

ACTION: Avoid fertilization of fields prior to rain events to prevent excess runoff into water bodies.

Wildlife & Habitat Enhancement

The forest habitats present on the Mosle property likely provide a refuge for a multitude of wildlife. Knowing what wildlife utilizes the variety of habitats will enable better decision-making regarding habitat enhancement. Enhancing available habitat increases biological diversity and increases the opportunity for golfers to see rare and/or uncommon wildlife, which results in repeated visits and excellent public relations.

ACTION: Perform a wildlife inventory of the course. Create a map to identify areas utilized by various species of wildlife. This will assist staff in better managing and creating proper habitats for wildlife.

ACTION: Develop a forest stewardship plan for the property. See components mentioned in the maintenance agreement.

Education & Outreach

ACTION: Signs offer visitors opportunities to understand what changes have been made as part of the River Friendly Program and the environmental benefits of those changes. Develop a design for signs to install where changes were made as part of the River Friendly process or where environmentally sensitive areas exist.

References:

Massachusetts Department of Food and Agriculture, Essex Conservation District, Commission of Soil, Water and Related Resources. Turf Management for Municipal Athletic Fields, 2nd edition.

Minneapolis Park & Recreation Board. Environmental Policies, Responsibilities and Guidelines – Turf Grass Integrated Pest Management.

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North Carolina State University Cooperative Extension. Water Quality for Golf Course Superintendents and Professional Turf Managers.

University of California, Riverside Turfgrass Research Program. 1999. Sports Turf Management Overview: I. Primary Maintenance Practices. UCRTRAC Newsletter: Better Turf Thru Agronomics.