

Committee Meeting of
January 19, 2011

Joint TUSD and City Council Citizen Enrichment
and Development Operations Committee
Cultural Arts Center
Torrance, California

Members of the Committee:

SUBJECT: Community Services – Turf Management Plan Report

Introduction

The City of Torrance currently has 33 parks totaling 278 acres. Of this total park acreage, approximately 165 acres is turf. This turf offers visitors a variety of general use recreational opportunities as well as more specific sporting use functions. Turf provides a forgiving and resilient surface for many recreational activities and is the traditional “green carpet” visitors associate with parks.

In the last fifteen years, that “green carpet” has experienced a “Use Explosion” because of organized soccer that, in popularity, has increased 60% faster than the population growth. Due to this increase, public agencies are all facing the challenges of over used and under maintained sporting fields. The general use recreational turf that you see in our neighborhood parks has also suffered because of impromptu sports play or practice. This turf has not been impacted as significantly as the sports fields because it is not permitted for use or scheduled on a regular basis. To mitigate the impact to the turf within the City of Torrance parks, a comprehensive Turf Management Plan has been developed.

What is a Turf Management Plan? A Turf Management Plan is a road map for producing sustainable turf that is healthy, deep rooted and provides a safe playing surface that meets the needs of various users.

Why is a Turf Management Plan Important? A well thought out plan also assures a greener and more uniform turf that can quickly recuperate from injury. It provides better quality turf in high use areas, such as park sports fields where it is especially needed. The basic premise for having sustainable turf is that you must grow turf as fast as you wear it off. This is why a comprehensive Turf Management Plan is necessary. Lastly, it allows staff to identify and track the cost of providing sustainable turf on our city parks.

Background

Over the years, staffing reductions within the Park Services Division have taken place causing staff to express concern that our park turf and sports fields cannot be maintained at a sustainable level in order to meet the demand of our community.

As part of the budget process, the City Council recognized these challenges that the department faces in order to provide sustainable turf. On November 20, 2007 they allocated \$170,000 of one time funds for additional turf maintenance services beyond that which is currently provided by the Park Services Division. Given that this was one-time money, staff prioritized the usage of this funding to address improving the turf on our programmed park sports fields. This decision was made because these fields experience the greatest level of programmed and impromptu use, and should receive a higher level of maintenance for the safety of our users.

In 2008, staff entered into a turf maintenance contract to provide fertilization and weed control for our programmed park sports fields. Unfortunately, staff did not clearly define the scope and services for this contract and was required to cancel this contract and step back to re-evaluate how we could get the biggest bang from this funding. At the present time, there is a balance of \$118,562 remaining within this fund.

With the hiring of the new Park Services Manager in 2010, staff focused their attention on developing a comprehensive Turf Management Plan. This plan will provide a roadmap for providing healthy and sustainable turf on all of our park sites. After considerable review, it became evident that the highest priority of attention for this plan needed to be on the programmed park sports fields within our sport focused parks. This decision was based on the increased departmental programming and overall general sport use and wear that takes place on these fields, as well as the concern for safety of our users.

In order to develop a turf maintenance program for these sports fields, it is necessary to create a detailed specification for turf maintenance that would provide sustainable turf. Staff contracted with PRZ Sports Turf Consulting to review these sport fields and provide options that would provide staff with the highest level of success for sustainable turf.

Lastly, at the September 27, 2010 meeting of the Joint TUSD & City Council Citizen and Development and Enrichment Committee, staff was asked to provide an update of this Turf Management Plan. In addition, as an efficiency, John H. Hull Middle School was added as part of the investigative process.

Analysis

As referenced above, the City of Torrance Park Services Division is responsible for 33 parks 6 of which are classified specifically as sports parks. These parks will be referred to as Category I Parks. The balance of the 27 parks have been classified as general use parks, and will be referred to as Category II Parks.

Category I Parks

The 6 parks identified within this category are Wilson, Columbia, El Nido, Torrance, McMaster and Walteria Parks. The sports fields within these parks account for approximately 30 acres or 18% of our total turf acreage. These fields experience the greatest level of programmed and impromptu sport use, and should receive a higher level of maintenance to achieve sustainable turf and for the safety of our users. In addition, these fields were not intentionally designed and built to withstand the excessive use and wear that they are currently receiving from the various organized and rogue user groups.

Even though organized sports have grown dramatically, the funding and labor to maintain sports fields and park turf areas have declined. However, the demand for safe, playable sports fields with quality turf has been continuously increasing. When a user fee is charged, the expectation of healthy, green, and playable turf is even greater.

Category II Parks

The 27 parks identified within this category are all general use parks. (Attachment A) It is suggested that these parks be maintained by using industry standard's best management practices, such as:

Annual Maintenance

- Aeration
- fertilization
- de-thatching
- pest management
- over seeding (if necessary)

Bi-weekly Maintenance

- mowing, edging and blowing
- pest management (if necessary)

As you are aware this Turf Management Plan does not address the general use turf on the Category I parks and the general use turf on all Category II parks. Staff will be providing an addendum to this plan within a couple of months with

the costs of maintenance that will be needed to support the remaining parks, and use the science that has been provided from our Category I parks sports fields as a general guidance in order to make our assumptions.

Planning

For the purpose of developing a comprehensive Turf Management Plan, staff have divided this plan into three phases:

- **Phase 1 - Data accumulation, analysis, and suggested maintenance practices** - This phase will focus on analysis of the data accumulated from our six park sports fields, and provide staff with the level of maintenance required to create sustainable turf on these fields.
- **Phase 2 - Development of an Athletic Field Use and Allocation Policy and Development of a Request For Proposal** - This phase will engage each of the various user groups in order to gain agreement on specific usage and reasonable rest periods throughout the year on these park sports fields. In addition, this phase will allow staff to develop a Request For Proposal for implementing maintenance services via a qualified turf maintenance contractor.
- **Phase 3 - Monitor and Documentation** - This phase will monitor and document the success of the Turf Management Plan.

Phase I - Data accumulation, analysis, and suggested maintenance practices

As this phase calls out for data accumulation, analysis, and the development of sustainable maintenance practices, staff felt that it would be most prudent to contract with a professional organization that has experience providing these services. After some research, staff contracted with PRZ Sports Turf Consulting to provide a detailed report on current conditions of our Category I parks sports fields (Attachment B). The contractor also provided a separate report on the condition of the turf for the John H. Hull Middle School Playfield (Attachment C).

The reports provided by PRZ Sports Turf Consulting were based on data received from soil and tissue samples from each site, analysis of water chemistry data for both our reclaimed and potable water, a physical audit of each field, an equipment audit, information regarding current maintenance practices, and a wear audit based upon the field use by sports groups and special events.

The information below provides a general list of results that have been provided by the consultant for our Category I parks sports fields:

- The soil, grading, irrigation and drainage of these park sports fields was not originally engineered and designed to sustain turf under the current conditions of excessive use and wear.
- The average depth of the root zone on our category I park sports fields was 2 inches. This is too shallow to have sustainable turf given the excessive wear these fields experience. To have sustainable sports field turf you must have a root zone of 8-10 inches.
- Our park sports fields have exceptionally high wear and overuse which has led to most of the current problems on our Category I park sports fields. Even though our soil type is predominantly a sandy loam, there is still enough silt and clay to compact under the heavy use that our park sports fields experience. Overuse is the greatest contributor to the soil compaction on these fields and the resulting damage to our turf.
- There is a direct correlation between the wear level on our fields, and our maintenance level. The wear level on our fields is an average of 3.67 on a scale of 1-5, 5 being the highest wear. The maintenance level on our fields is an average of .5 with 5 being the highest. The difference between our wear level and our maintenance level has created un-sustainability on our park sports fields.
- The irrigation systems at Columbia and Torrance need to be modified.
- Our fields have poor to fair grades that can make these fields less safe to play on and especially difficult to maintain when combined with our excessive wear.
- Our reclaimed irrigation water is beginning to cause sodium to accumulate in the soil at the two sites where this water is being used. (McMaster and Columbia Parks) As sodium accumulates in the soil, it slows down the percolation of water which carries oxygen through the soil. If there is little oxygen moving down deeper into the soil, the end result is shallow rooted turf.

The list below provides options provided by the consultant to create sustainable turf on our park sports fields:

- Raise our maintenance level from .5 to 3.67 to match our wear level.
- Lower our wear level to match our maintenance level.
- Add additional fields to spread our wear over a larger area.
- Add artificial turf fields.
- Do a combination of the above options

In order to provide a cost estimate to raise our maintenance level on our Category I parks sports fields from .5 to 3.67 using in house staff, the following costs have been provided:

- Labor - Additional labor of approximately 1,488 hrs. or .71 FTE of a Lead Maintenance Worker totaling \$60,472.
- Materials – Additional materials and supplies needed would be for fertilizer, seed, topdressing and other materials for an annual cost of approximately \$78,265.
- Capital Equipment Purchase - Additional equipment needed would be purchase of an aerifier, seeder, and mower for a one time cost of approximately \$96,000.
- Total costs in order to go from maintenance level .5 to the recommended maintenance level of 3.67 will require an additional annual amount of \$137,738 with a one time cost of approximately \$96,000.

In order to provide a cost estimate to raise our maintenance level on our Category I parks sports fields from .5 to 3.67 using contracted staff, the following costs have been provided:

- In order to estimate the cost of this implementation by Contract Services, staff contacted several landscape maintenance contractors requesting they provide rough cost estimates based on the consultant's maintenance specifications (Attachment D). It is important to keep in mind that until a detailed Request for Proposal is developed and a commitment to a level of service is established, these are very rough estimates only.
- Total costs in order to go from maintenance level .5 to the recommended maintenance level of 3.67 from a qualified landscape contractor ranges from approximately \$208,000 to \$570,000 annually. All of these are approximate costs and subject to change depending on the desired maintenance levels and the economy.

Phase II - Development of an Athletic Field Use and Allocation Policy and Development of a Request for Proposal

This phase calls out for development of an Athletic Field Use and Allocation Policy and Development of a Request for Proposal. Staff envisions that once decisions are made on Phase I, it is imperative to engage each of the various user groups in order to gain agreement on specific usage and reasonable rest periods throughout the year on these park sports fields. In addition, this phase will allow staff to develop a Request for Proposal for implementing maintenance services from a qualified turf maintenance contractor. Both of these actions can

take place simultaneously as they are on separate tracks and are not dependent upon each other with the exception of the finalized implementation dates that need to be agreed upon by all user groups.

In order to put this all into perspective, staff have provided some rough target dates below if Phase I is approved and funding identified:

- Development of a comprehensive Athletic Field Use and Allocation Policy - Engage all of the major user groups of our Category I parks sports fields to discuss their willingness to agree to down time for field renovation and rest, as well as agreement on field use. With these proposed improvements, this may be the appropriate time to discuss the concept of them sharing in the cost of the increased maintenance levels needed to provide sustainable turf for them to play on. The target date for completion of this action is February 2012.
- Development of a comprehensive Request for Proposal based upon a level of service that the City and user groups agree upon, and have this Request for Proposal completed and ready for bid by February 2012.
- Implementation of the Turf Management Plan will be the third quarter of 2012.

Phase III - Monitor and Documentation

This phase calls out for the monitoring and documentation of the success of the Turf Management Plan. Indicators of success will be; extended root zones on the Category I parks sports fields, diminished broadleaf weed count, increased turf growth and coverage, color and thickness, and overall health of the turf.

In order to insure success of the Turf Management Plan, the monitoring and documenting of the increased level of maintenance will begin immediately after implementation. Soil coring will be done monthly on each field to document root growth. If the maintenance is done via a contractor, weekly meetings with the contractor will be required and the contractor will have to provide documentation showing quantities of materials and labor used to perform specified tasks. Frequencies of tasks performed and rates of materials used will also be required documentation.

Summary

In conclusion, staff anticipates the following steps to be conducted:

- Develop an addendum to the Turf Management Plan by the middle of March 2011 to include the costs of maintenance that will be needed to implement

industry standard's best management practices for the remaining parks of Category I and Category II.

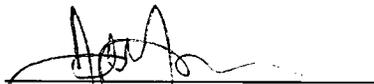
- Develop funding options for implementing the Turf Management Plan.
- Bring an agenda item in April 2011 to the Parks and Recreation Commission for review and approval of the entire Turf Management Plan.
- Bring an agenda item in June 2011 to the City Council for review and approval of the entire Turf Management Plan.

Respectfully submitted,

John Jones
Community Services Director


By: Robert Carson
Park Services Manager

CONCUR:


John Jones
Community Services Director

NOTED:

LeRoy J. Jackson
City Manager

Attachments:

- A. Category II Parks
- B. PRZ Sports Turf Consulting Report
- C. John Hull Middle School Playfield Overview Assessment Report
- D. Consultant's Maintenance Specifications Rough Cost Estimates

CATEGORY II PARKS

ALTA LOMA
DE PORTOLA
DELTHORNE
DESCANSO
DISCOVERY
EL PRADO
EL RETIRO
ENTRADERO
GREENWOOD
GUENSER
HICKORY
LA CARRETERA
LA PALOMA
LA ROMERIA
LAGO SECO
LOS ARBOLES
MIRAMAR
OSAGE
PARADISE
PEQUENO
PUEBLO
RIVIERA
SEA AIRE
SEASIDE HEROES
SUNNYGLEN
SUR LA BREA
VICTOR

CITY OF TORRANCE

INTEROFFICE COMMUNICATION

DATE: January 19, 2011

TO: Joint TUSD and City Council Citizen Enrichment
and Development Operations Committee

FROM: John Jones, Community Services Director

**SUBJECT: JOHN H. HULL MIDDLE SCHOOL PLAYFIELD OVERVIEW
ASSESSMENT**

Per your request on September 27, 2010, at the meeting of the Joint TUSD & City Council Citizen and Development and Enrichment Committee, staff are providing you an overview assessment of the John H. Hull Middle School Playfield.

PRZ Sports Turf Consulting has provided a report on this facility with general comments listed below:

- The John H. Hull Middle School playfield is approximately 172,000 sq. ft and has had a new Tiffway II hybrid bermuda playfield installed sometime in April-May 2010.
- The consultants report is based on data received from soil and tissue samples from this site, a physical audit of the playfield, information provided by the maintenance contractor about current maintenance practices and a wear audit based upon information provided by TUSD staff regarding field usage by organized sports groups and special events.
- The grade on the field undulates and shows high and low spots.
- At this time, the root zone is 2 inches which is too shallow to withstand the projected wear the playfield will experience when the school reopens.
- The east end of the field was totally saturated and standing water was also noticed.
- There are weeds growing in the turf that need to be chemically removed.

- There is fungus, large patch that will need to be treated. See Dr. Wong's report that is attached.
- A program of increased mowing, aerating, over-seeding and fertilizing is being recommended.
- Costs to maintain this field in its current state are approximately \$12,000 per year.
- The cost to implement a program to increase the maintenance level .5 to the projected wear level 3.0 is approximately \$12,210 per year.

The playfield overview assessment for the John H. Hull Middle School Playfield is attached for your review.

Respectfully submitted,



John Jones
Community Services Director

NOTED:

LeRoy J. Jackson
City Manager

Field Overview Assessment Hull Field

Current Conditions of the site

The 2" root zone depth is too shallow to sustain turf at the projected wear level you will have at this site. This is a brand new field that was not graded properly when it was built. This is why it has some low spots and high spots. It was also observed that there were some weeds growing in the Hybrid Bermuda that need to be sprayed out. Fungus was observed which will require applications of an appropriate fungicide.

INITIAL SITE SURVEY

SITE	ROOT	FIELD	% BARE	%	% Compacted	IRRIGATION	% WORN	HIGH/LOW
	DEPTH	GRADE	SPOTS	WEEDS	Areas %	SYSTEM	AREAS	SPOTS
Hull School		Poor		X		Good		X

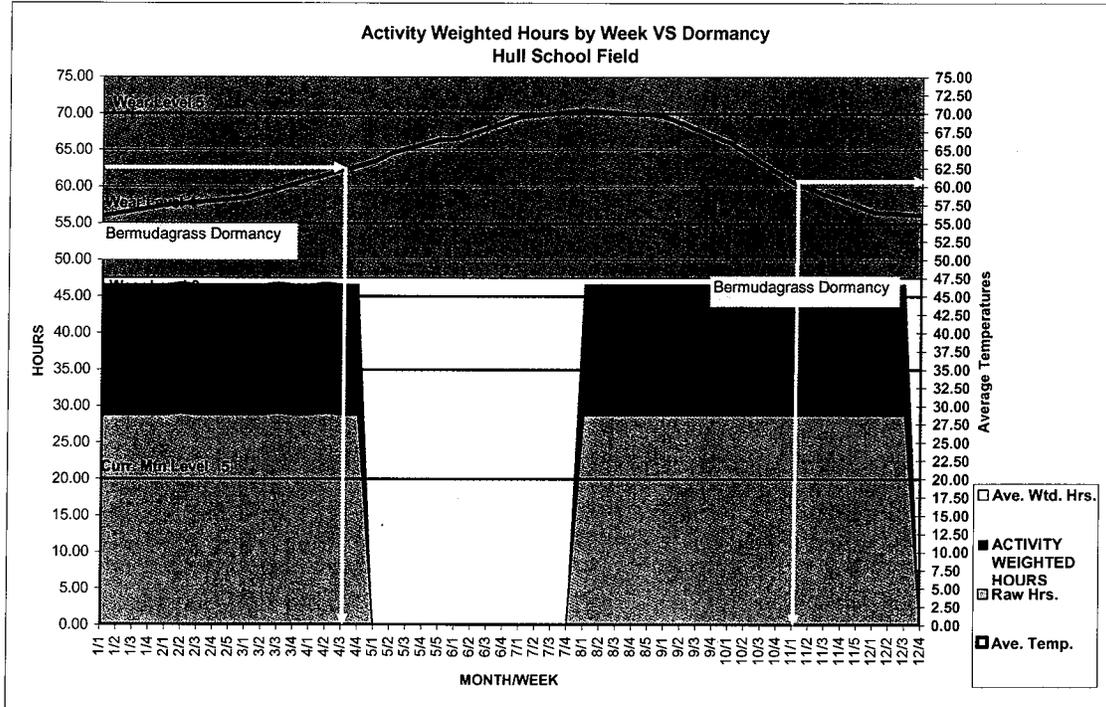
The Causes of the Current Conditions

- Poor Construction has** contributed to the few problems on this field. Your wear will probably be the greatest contributor to compacted soils and the resulting damage to your turf in the future on this site. The Wear Index In Hours Per Week table below shows that this field has **47.5** activity-weighted hours of play per week. This is wear level **3** and the maintenance level is **.5**. The amount of play is scaled into levels 1-5, 5 being the highest and there is a direct correlation between wear and maintenance. This difference equals unsustainable turf over time.

WEAR INDEX IN HOURS PER WEEK

SITE	SQ. FT	WEEKS	ACTIVITY	MAINT.	CURRENT
			#	WEIGHTED	LEVEL NEEDED
			HOURS/ WK	CATEGORY	LEVEL
Hull School	172000	52	47.5	3.00	0.50

Note on the following page the Activity Weighted Hours by Week Chart for this field. The heaviest wear on this field will take place from August through May (47.5 activity weighted hours per week). The yellow lines indicate the dormancy of the Bermuda grass and this is why we are recommending the over-seeding with a rye grass during the dormant season. This over seeding will not provide all of the protection the Bermuda grass will need to prevent injury. For future consideration might include transitioning the Hybrid Bermuda out by a systematic over-seeding with Hybrid Bluegrass because there would be no dormancy at your location and this grass mends year round.



2. The Current Maintenance Level of the Field

The Wear Index shows this field has a category 3.0 wear and your current maintenance level is .5. Note that the Maintenance Frequency chart below shows the tasks necessary for your turf to be sustainable under your current conditions of wear, soils and growing conditions. The biggest increase is in mowings, aerations and fertilizations. If you follow our recommendations you will be able to offset these increases with savings in manpower, fertilizer and water.

MAINTENANCE FREQUENCY

CATEGORY		MOWINGS		AERATIONS		TOP-DRESS		OVERSEED		FERTILIZE		
Level		PER YEAR										
CURR LEVEL	NEW LEVEL	CURR LEVEL	NEW LEVEL	CURR LEVEL	NEW LEVEL	CURR LEVEL	NEW LEVEL	CURR LEVEL	NEW LEVEL	CURR LEVEL	NEW LEVEL	
Hull School	0.50	3.00	50	12	0	12	0	0	0	1	0	6

3. The Soil Analysis:

The soils in this root-zone are Sandy Loam and have 76% sand and 24% silt and clay. These silt and clay particles will compact under heavy wear and moisture conditions and again, compaction is your worst enemy. This field will require nitrogen, and potassium this next season and these needs will be met by the fertilization program we recommend in the maintenance calendar.

FIELD: **Hull School** SOIL ANALYSIS

pH	SALT	LIME	ORGAN. %	NIT. N PPM	PHOS. P PPM	POTAS. K PPM	SULF. S PPM	CALC. Ca PPM	MAGN. Ma PPM	SOD. Na PPM	ZINC Zn PPM	IRON Fe PPM	MANG. Mn PPM	Boron Cu PPM		
7.90	0.25	No	Sandy Loam	2.50	1.00	130	217	20	1826	214	74	9.00	79.00	23.00	2.60	
Recommended			LOW	S.LOAM	3.5%+	50 PPM	212.00	12 PPM	1300 PPM	135 PPM	35 PPM	.5 PPM	15 PPM	2 PPM	.4 PPM	<1
LBS/ 1000 SQ FT. NEEDED							0.00		0.00		0.00	0.00	0.00	0.00		

<800

CATION EXCHANGE CAPACITY

%CEC	%H	%K	%Ca	%Mg	%Na	Chlor
12	0%	5%	77%	15%	3%	40.00

Costs of Solving Your Problems

1. Manpower

The wear index chart below indicates that by increasing your maintenance level from .5 to 3.0 you will add 151 additional annual man-hours or approximately \$6,137 annually in maintenance costs on this site based on your current wages & benefits if you do this in house. This figure doesn't include the additional materials such as fertilizer, seed, and topdressing.

WEAR INDEX IN HOURS PER WEEK

SITE	SQ. FT	WEEKS	HOURS/WK	CATEGORY	LEVEL	CURRENT HOURS	CURRENT ANN. MTN. HOURS	NEEDED ANN. MTN. HOURS	ADDITIONAL HOURS	CURRENT MTN.COST	NEW APPROX. MTN.COST	INCREASE \$
Hull School	172000	52	47.5	3.00	0.50	72	223	151		\$2,907	\$9,045	\$6,137

2. Fertilizer Costs

The 2011 is for a granule / liquid program rather than the fertigation program we are recommending

TURF NUTRIENTS REQUIRED FOR 2011 GRANULE / LIQUID PROGRAM

Nutrient Product Formulation Form	Nitrogen	Phosphorus	Potassium	Sulfur	Sodium	Primo	
	Lbs	Lbs.	Lbs	Gallons	Gallons	Gallons	
Hull School	2293	0	0	0	0	8	
Cost Each	0.46	0.65	0.50	16.50	199.64	316.85	
Total Cost	\$1,055	\$0	\$0	\$0	\$0	\$2,541	\$3,596

3. Annual Maintenance Costs-

Scenario #1 below shows your current maintenance level and the \$12,289 it will cost you in 2011 to maintain this field. This is \$3,112 per acre per year. Scenario #2 shows the \$24,498 in costs which is \$12,209 more in manpower and materials for raising your current maintenance from level .5 to level 3. This is \$6,204 per acre per year. Scenario #3 shows your 1 time annual cost of \$24,607 including new fertigation equipment that is needed. Scenario #4 shows the \$15,447 in annual costs of maintaining your fields after the purchase of the new equipment. This is \$3,912 per acre per year which is in the low range for mid wear fields in your climate.

SCENARIO COST ANALYSIS

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
Hull School	2010	2011	2011	2012
	Current	Current	Current	Current
	Wear	Wear	Wear	Wear
	Mtn Level	Mtn Level	Mtn Level	Mtn Level
	0.50	3.0	3.0	3.0
	No New	No New	Purchase	
	Equipment	Equipment	New	
			Equipment	
	\$3,112	\$6,204	\$6,232	\$3,912
Square Feet	172,000	172,000	172,000	172,000
ANNUAL TOTALS:	\$12,289	\$24,498	\$24,607	\$15,447
Top dressing	\$0	\$0	\$0	\$0
Spread top dressing-Contractor	\$0	\$0	\$0	\$0
Grass Seed	\$0	\$2,258	\$2,258	\$1,129
Slit Seed- Contractor	\$0	\$0	\$0	
Fertilizer	\$0	\$3,815	\$962	\$962
Deeptine aeration- Contractor	\$0	\$0	\$0	\$0
Contractor Mobilization	\$0	\$0	\$0	\$0
Manpower	\$2,907	\$9,045	\$5,852	\$5,852
Water Costs	\$9,381	\$9,381	\$9,381	\$7,505
Irrigation Parts	\$0	\$0	\$0	\$0
Primo			\$2,406	
Fertigation			\$3,749	

Sports Field Management System Manual

This calendar below is the preliminary one for the recommended maintenance plan. Once you decide what recommendations you will be able to implement for the 2011 maintenance year, this will be changed to reflect your capabilities. It currently calls for a granule / liquid program instead of the fertigation program we are recommending. It also calls for spraying the Primo product monthly during the growing season.

DATE: SQ.FT: 180000

Hull School

12/29/10

APPLICATION SCHEDULE: City of Torrance

WEEK OF	30-5-10	11-52-0	0-0-50	Mowings/ Week W/O Primo	Mowings/Week With Primo	SHARPER TINE	KNIFE Aerate	PLUG Aerate
	LBS	LBS	LBS					
01/01/11	0	0	0	3	2.0			
01/08/11				3	2.0		X	
01/15/11				3	2.0			
01/22/11				3	2.0			
01/29/11	400	0	0	3	1.5		X	
02/05/11				3	1.5			
02/12/11				3	1.5			
02/19/11				3	1.5			
02/26/11	0	0	229	3	1.5		X	
03/05/11				3	1.5			
03/12/11				3	1.5			
03/19/11				3	1.5			
03/26/11	400	0	0	3	1.5		X	
04/02/11				3	1.5			
04/09/11				3	1.5			
04/16/11				3	1.5			
04/23/11	0	0	229	3	1.5		X	
04/30/11				1	1.0			
05/07/11				1	1.0			
05/14/11				1	1.0			
05/21/11				1	1.0			
05/28/11	400	0	0	1	1.0	X	X	X
06/04/11				1	1.0			
06/11/11				1	1.0			
06/18/11				1	1.0			
06/25/11	0	0	0	1	1.0		X	
07/02/11				1	1.0			
07/09/11				1	1.0			
07/16/11				1	1.0			
07/23/11				1	1.0			
07/30/11	400	0	0	3	1.5		X	
08/06/11				3	1.5			
08/13/11				3	1.5			
08/20/11				3	1.5			
08/27/11	0	0	0	3	1.5		X	
09/03/11				3	1.5			
09/10/11				3	1.5			
09/17/11				3	1.5			
09/24/11	400	0	0	3	1.5		X	
10/01/11				3	1.5			
10/08/11				3	1.5			
10/15/11				3	1.5			
10/22/11	0	0	0	3	1.5		X	
10/29/11				3	1.5			
11/05/11				3	1.5			
11/12/11				3	1.5			
11/19/11				3	1.5			
11/26/11	400	0	0	3	1.0		X	
12/03/11				1	1.0			
12/10/11				1	1.0			
12/17/11				1	1.0			
12/24/11								

Nitrogen 30-5-10 2400 gls .5 Mowings per week= Mowing every 14 days
 11-52-0 0 lbs 1 Mowing per week= Mowing every 7 days
 0-0-50 457 lbs 1.5 Mowings per week = Mowing every 5 days
 Primo 8.39 gls 2 mowings per week= Mowing every 4 days
 2.5 Mowings per week= Mowing every 3 days

MANAGING SPORTS FIELD WEAR

The Field Usage/Availability Analysis chart below shows that at your current maintenance level of .5 (the yellow bar across the chart) you currently have 919 Activity weighted hours more play annually than this field can tolerate. With PE rated at 1.5 this means you are playing on this site 612 more hours annually than the turf can tolerate. By increasing your maintenance tasks to level 3 (the recommended levels in this assessment), you will have sustainable turf at this site.

FIELD USAGE / AVAILABILITY ANALYSIS

Hull School		Square Ft. 172000 Total													
Type of Grass:	Weeks/ YR	38	Hours Average	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Hybrid Bermuda Grass	Weeks/ mo			4	5	4	4	5	4	4	5	4	4	4	4
Field Availability (Numbers represent activity-weighted hours per week)															
Current Maint. Level	Hours Allowed	821	16.1	10.4	11.6	12.8	16.2	18.0	19.8	19.8	19.4	19.8	19.8	15.0	10.4
0.50	Hours Available							18.0	19.8	19.8					
	Excess hours of usage	919		36.4	35.2						27.4			31.8	27.0
Maint. Level 2.00	Hours Allowed	1437	28.1	18.2	20.3	22.4	28.4	31.5	34.7	34.7	34.0	34.7	34.7	26.3	18.2
	Hours Available							31.5	34.7	34.7					
	Excess hours of usage	303	8.0	28.6	26.5	24.4	18.5				12.8	12.1	12.1	20.5	19.2
Maint. Level 3.00	Hours Allowed	1847	36.2	23.4	26.1	28.8	36.5	40.5	44.6	44.6	43.7	44.6	44.6	33.8	23.4
	Hours Available							40.5	44.6	44.6					
	Excess hours of usage			23.4	20.7	18.0	10.4				3.1	2.2	2.2	13.0	14.0
Maint. Level 4.00	Hours Allowed	2258	44.2	28.6	31.9	35.2	44.6	49.5	54.5	54.5	53.4	54.5	54.5	41.3	28.6
	Hours Available							49.5	54.5	54.5	6.6	7.7	7.7		
	Excess hours of usage	518													
				18.2	14.9	11.6	2.3							5.5	8.8
Maint. Level 5.00	Hours Allowed	2874	56.3	36.4	40.6	44.8	56.7	63.0	69.3	69.3	67.9	69.3	69.3	52.5	36.4
	Hours Available						9.9	63.0	69.3	69.3	21.2	22.6	22.6	5.8	
	Excess hours of usage	1134													
				10.4	6.2	2.0									1.0

Maintenance Frequencies-Annual Requirement			Activity Weighting Scale		Determining Field Availability
	Current	Needed	Walking on field/Softball	1.00	Use the following steps to evaluate requests for additional field time: 1. Determine the actual hours of additional use requested. 2. Multiply the total hours of proposed use by the appropriate activity weight. 3. Locate the column for the month when the proposed additional use would occur. 4. Determine if there are available hours at the current maintenance level. If there are, you can schedule the activity. 5. If not, see if sufficient hours can be made available by increasing the maintenance level. 6. If sufficient hours can be made available, and you can handle and afford the additional maintenance, you can schedule the activity.
Maint. Level	0.50	3.0	Baseball	1.25	
Mowings/ Yr	50	121	PE	1.50	
Aerations/Yr	0	12	Parked Cars	1.50	
Top Dress/Yr	0	0	Marching Band	1.75	
Over Seed/Yr	0	1	Soccer Games	1.85	
Fertilization/Yr	0	6	Football Games	1.85	
Sweeping	0	0	Soccer & Football Practices	2.00	
Deep Tine/Yr	0	1	Adult Soccer & Football Ga	2.13	
Verticuttings/yr	0	0	Adult Soccer & Football Pr	2.25	
Annual Costs	\$12,289	\$24,498	Lacrosse & Field Hockey	2.25	
Ann. Increase		\$12,210	Rugby	2.50	
Cost/month	\$237	\$472	Sports Clinics & Tourname	2.50	
Cost/week	\$59	\$118	Current Wear Level	3.00	
			Current Maintenance Level	0.50	
			Needed Maint. Level-Weather Adjusted	3.0	

This concludes our Sports Field Assessment for these 7 sites. We are here to help with the implementation of these recommendations and any phone conversations or email responses are included in our assessment fee.

Maintenance Specification For City of Torrance

City of Torrance Sports Field Maintenance Specification

Park Site	Turf Acres	Mow/ Yr	Slice Aerate/ Yr	Fracture Aerate/ Yr	Top Dress/ Yr	Sodium Block Trips	Primo Max Trips	Over Seed/ Yr	Dry Fert. Apps.	Other Dry Fert. Apps.	Lbs N/ 1K/ Yr	Lbs 30-5-10 Yr	Gls/ Yr Sodium Blocker	Gls/ Yr Primo Max	Lbs 0-0-50 Yr	Lbs Gypsum Yr	Lbs Kmag Yr
Columbia Park	16.68	88	12	1	1	12	10	1	6	3	6	14533	200	23.46		27466	
Wilson Park	7.18	85	12	1	1	12	10	1	6	4	6	5100	91	8.78	1665		1391
McMaster Park	2.06	52	12	1	1	12	0	1	6	1	3.25	972	23	0	152		
El Nido Park	1.9	72	12	1	1	12	10	1	6	0	6	1680	23	4.29			
Torrance Park	1.3	100	12	1	1	0	0	1	8	0	3	567	0	0	150		
Walteria Park	1.2	71	12	1	1	12	10	1	6	0	4	728	15	2.79			
Hull School	4.13	70	12	1	1	0	10	1	6	0	4	2400	0	9.2			

PART 3 - EXECUTION

3.01 FIELD MAINTENANCE

Field maintenance begins _____ for as the City wishes to retain contractor.

- A. **Mowing**
 - 1. All sports fields to be mowed by 16' Triplex or larger (five to seven rotary mower) 1-2 times per week based on the calendars and the chart above at a cutting height of 2-2.5" and leave the clippings behind.

- B. **Annual Fracture Tine Aerway Aeration**
 - 1. This shall be redone annually during maintenance window provided by owner according to calendar provided by PRZ Sports Turf Consulting
 - 2. The shatter tine aerator should be set at the most aggressive angle to make holes large enough to top dress into without leaving plugs at the surface that could foul the drainage system.

- C. **Monthly Aerway Slice aeration with turf tines**
 - 1. On any field where soccer will be played, slice aerate only in one direction to prevent cleats from ripping up the sod where one knife slice crosses another
 - 2. On all other fields slice aerate in two directions

- D. **Monthly Liquid Spray Applications of Sodium Blocker and Primo Max Liquids**
 - 1. These products cannot be mixed in the same tank
 - 2. Agitator must be on continuously during spraying operation and do not stop on turf areas to fix fouled spray nozzles with sprayers still on
 - 3. Spray tanks must have turf tires or 3 point mounted tanks must be on a tractor with turf tires.

- E. **Every 8 Week Applications of dry fertilizers**
 - 1. Dry fertilizers shall be spread 1/2 of total pounds in each of two directions
 - 2. Fertilizer spreader shall have turf tires

- F. **Top Dressing**
 - 1. This shall be redone annually during maintenance window provided by owner according to calendar provided by PRZ Sports Turf Consulting.
 - 2. The top dressing mix the first year shall be a 1/4" mixture of 80% sand/ 20% composted organics, screened to 1/4" minus. See approved mix and local supplier. The material should be premixed at the top dressing supplier's site the day before delivery to site. Separating the sand and compost would mean going over the site twice.
 - 3. Top dressing mix shall be mixed dry the night before, delivered dry and spread dry,

as moisture will clog the top dresser and cause uneven application.

4. Contractor shall provide at least 2 men for this function.
5. Spread the material in 1 pass so as to prevent re-driving over the same area, making sure that there is a slight overlap.

G. Dragging in top dressing

1. After spreading all the top dressing, begin dragging the material into the holes slowly with 1.5-2" drag mat so as to carry excess material into low spots and level the field. It will be necessary to go over the same spot at least 6-7 times to completely fill the holes.

H. Slit or over seeding

1. This shall be redone annually during maintenance window provided by owner according to calendar provided by PRZ Sports Turf Consulting.
2. Slit seeding shall be done in two directions putting 1/2 of the specified seed mix in each direction. See turf grass seed specification.

I. Top Dressing material shall be an 80% sand, 20% compost mixture.

1. Sand specifications are for a washed USGA sand with 100% passing a #12 screen and no more than 1% passing a #200 screen.
2. Sand Supplier- West Coast Aggregate- Mike Dickens-760-399-1891, West Coast Sand & Gravel- Dante-800-734-3053. The last two are capable of mixing compost and sand and delivering them to you that way.
3. Compost needs to be screened to 1/4" minus, have a carbon to nitrogen ratio of under 20/1, have a pH less than 8.5 and a dry organic % above 30%. Supplier – Greenway's Environmental-Kevin-949-380-8301
4. Quantities of mixture 1/4" the first year. or .775 cubic yards /1,000 sq. ft. of the above mixture.

J. Seed: Texas Bluegrass and Kentucky Blue grass mix with 4 varieties 30% Spit Fire Hybrid Blue grass, 30% Bandera hybrid Blue grass, 25% Touche' Mid Atlantic type Blue grass and 15% Emblem a High Density type Blue grass all from Seed Research of Oregon.

1. Seed shall be applied with a slit seeder, not broad cast seeding.
2. Quantities are, 1.5lbs/1,000 sq. ft for over-seeding and 3.5 lbs per 1,000 sq. ft on new areas.
3. Shall be slit seeded at 1/4" depth at .75lbs per 1,000 square feet in each of two directions.
4. Suppler shall be CPS-Chris 760-594-1385

K. Fertilizers: Both granule and liquid products:

TURF NUTRIENTS REQUIRED FOR 2011 GRANULE / LIQUID PROGRAM

Nutrient	Nitrogen	Phos	Potassium	Primo	Sodium		Magnesium	Calcium	
Product				Max	Blocker		KMAG	Gypsum	
Formulation	10-10	0-40-0	0-0-50		N/A				
Form	Lbs	Lbs.	Lbs	Gallons	Gallons	Gallons	Lbs.	Lbs./bags	
All Fields	27000	0	1940	49	330	0	1799	20600	
Cost Each	0.46	0.30	0.50	316.85	16.00	0.70	0.19	0.16	
Total Cost	\$12,420	\$0		\$15,378	\$5,278		\$349	\$3,249	\$37,642

1. Gypsum-23% calcium ,

2. K MAG magnesium-11%
3. Primo Max substitute- Provair PGR or T-Nex 1 AQ, Active ingredient 11.3% Trinexapac-ethyl-
 - A. Suppler shall be CPS-Chris 760-594-1385
4. Sodium Blocker (moves sodium out of the root-zone, reduces soil pH, increases soil percolation, reduces sodium EC %, allows reclaimed water to be used on salt intolerant blue grasses)- Supplier-Turf Feeding Systems-Michael Chaplinsky-713-504-0750

K. Equipment Specification for these sites

1. Over seeder
 - A. Over seeder should be wheel driven not PTO driven (3 times faster than PTO)
 - B. Recommended Seeder-Redexim-Charterhouse Model #1575 (60"
 - C. California dealer-Turf & Industrial Supply- Santa Clara-Jim Sherman-405-595-7358
2. Top Dresser
 - A. The Top-dresser should be a 4 yard machine
 - B. Top dresser should have the 6 foot broom for throwing material straight down on sports fields verses spinner that spreads very lightly 30 foot wide.
 - C. Recommended top-dresser-Tycrop TD-460 or MH-460 (material handler).
 - D. Recommended dealer- Now handled by Toro Company-Turf Star-Hayward CA-800-585-8001.
3. Aerator
 - A. Same machine shall have interchangeable fracture tines, slicing tines and plug pulling tines
 - B. Recommended size of machine 90" or larger for best production.
 - C. Recommended machine Aerway equipped with greens roller, 100 gallon tank and the 3 types of tines above.