
STORMWATER, EROSION AND SEDIMENTATION CONTROL PLAN

April 2013

The erosion of soil is caused when soil particles lose their attachment with other particles through the movement of water, gravity, and wind. This plan will analyze, describe, and when implemented, mitigate the effects of soil erosion while controlling stormwater at the proposed Wildwood Disk Golf Course in Readfield, Maine.

Sedimentation, which is a consequence of erosion, is caused when the water flow velocity is reduced to the point that the particles are deposited. This plan will analyze, describe, and when implemented, address potential sedimentation issues at this project site.

Project Narrative

Description of Development Plan

Eben and Cindy Dumaine own an 8.54 acre parcel on the east side of the South Road in Readfield. Currently, their lot can be described as having three distinctly different areas; the house and driveway, the woodlot to the east and the fenced horse area to the south. To the east, beyond the home and horse fencing, the lot becomes wooded and slopes downhill before leveling out. This wooded stand is a mix of hardwood trees and scattered but larger hemlock and white pine. The Dumaine's are proposing to add an 18 hole disk golf business to their lot and make the upgrades needed to run a successful operation.

The site planning is best understood when broken down into two parts as shown on *Attachment A*, Wildwood Disk Golf - Site Plan and *Attachment B*, Wildwood Disk Golf - Course Site Plan.

Site Plan A – Parking, Screening, Stormwater & Site Work

Vehicle parking will be increased by adding thirteen 10' x 20' parking spaces along the south side of the driveway in the locations indicated on Attachment A. Two existing trees will be removed immediately adjacent to the driveway on the south side to make room for the parking area. In addition, up to ten trees will be removed to the south of the parking area so a vegetated drainage swale can be installed to move stormwater away from the parking and driveway areas. Beyond the location of the drainage swale is an existing wooded buffer with a mix of small and large trees that will remain intact with the exception of the 10 trees removed for the swale. Along the north side of the driveway, two existing trees will be removed so the driveway may be widened 4' allowing for easier entrance and exit of the parking area to the south. Five additional parking spaces will be available on the north side of the driveway near the clubhouse.

Site work needed to create the new parking area and upgrade the driveway will include excavation of up to 461 cubic yards of material. Areas that are excavated will be rebuilt using woven geotextile fabric, new base material and surface gravel. Excavated material will be used on-site to fill an area leading to the course behind the clubhouse. The top of the fill area will feature a path used for players coming and going from Holes # 1 and 18. Fill extensions on the side slopes of the fill area will be a minimum of 3:1 enabling the entire area to successfully vegetate once it is seeded and mulched. The driveway and parking areas will be crowned to shed

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water toward the vegetated swale to the south where it will be carried to the existing ditch along South Road. The end of the swale will feature a 5' x 8' shallow depression used to slow stormwater before it drops into the ditch. This area will be armored with 6" riprap and is identified on the plan.

Additional parking will be available in the area identified as overflow parking on Attachment A. This area is currently a firm, stable, grassed area with room for up to fifteen additional parking spaces. No alterations are needed in this area for it to be used as overflow parking. This area will also allow for busses to turn around on the property and provide a circular route for vehicles. The total number of parking spaces available for customers is 33.

The owners will install several trees along the north side of the driveway including two flowering crabapples and three maples to screen the parking area from South Road. In addition, six 3' – 6' shrubs will be installed along the southwest boundary adjacent to South Road filling in gaps in the existing vegetation. A 16' x 20' vegetative buffer will be installed to the south of the driveway entrance. The two functions of this buffer will be to provide a visual screen of the parking area from the South Road and to help treat any stormwater that sheets off the driveway and parking area in that direction. See the Buffer Planting Detail for specifics of plant varieties to be installed.

A 20'x14' clubhouse will be located beyond the driveway in the approximate location of an existing portable garage. This area is flat and a new building constructed in this area should not cause any stormwater or erosion problems. 46 cubic yards of base material will be installed for the new structure to sit on.

Site Plan B – Course – Erosion Control & Setbacks

The t-box and basket structures are designed to minimize impacts on the site and eliminate the use of permanent concrete configurations. The baskets used will be a single structure with a concrete footing attached. The structure sits in place on the existing ground and the entire item, including the attached concrete footing, can be moved to a new location if the need arises. The t-boxes will be rectangular and 4'x 6' in size. Typical designs utilize poured concrete pads for these areas however other options exist that have less impact and are pervious, allowing water to pass through. The course will use a product called GravelPave2 or a similar design from another manufacturer. These products utilize a sand base layer, the plastic grid with fabric to contain the aggregate and several inches of pea stone gravel. Once in use the t-boxes will provide a stable surface for players to stand on and allow water to pass through the entire 4'x 6' area.

In addition to the t-boxes and baskets, the disk golf course is made up of *walking paths* connecting the various holes and *fairways* between holes. In some cases, players will walk the fairway to reach the next t-box to begin playing the next hole and in others, players will walk a path adjacent to the fairway to reach the t-box. Arbitrary, continuous foot traffic over the course has the potential to cause soil erosion and sedimentation. Defining foot paths and directing foot traffic on stable surfaces and appropriate areas will alleviate the potential for erosion to occur. Using arrows or other signage directing players where to walk as well as defining foot paths with woodchips or erosion control mulch (ECM) will keep erosion to a minimum. The proposed use is not unlike a summer camp situation where foot traffic from many campers can remove the natural duff layer exposing bare soil. Stabilizing designated paths with proper materials such as

ECM will work very well at this site. In locations where players must climb a steeper section of path, to avoid erosion, log steps will be installed, keyed in and back filled with either crushed stone or ECM.

The course design calls for removing very few trees for installation of the fairways and paths. Keeping the majority of the wooded area undisturbed, as the course design shows, leaves the tree canopy intact to intercept rain and provide an important element of stormwater and erosion control.

All paths and fairways have been sighted to avoid natural drainages. The fill that will be added behind the clubhouse will end just short of a slight swale that carries runoff from precipitation when it occurs and will not interfere. A larger drainage is present to the east of the Dumaine property with the 14th fairway coming closest to the drainage. This eastern edge of the fairway will be located >75' from the drainage.

Soil Types

Soils on the site have been mapped according to the *Soil Survey of Kennebec County, Maine* by the U.S. Department of Agriculture, Soil Conservation Services as well as the Maine Office of GIS. The site has been mapped as Paxton-Charleton fine sandy loams, with 3–8% slopes and Paxton-Charleton very stony fine sandy loams with 15 – 30% slopes. There are no limitations of these soils that would be of concern to the proposed use so long as proper Best Management Practices (BMP'S) are used to control erosion.

Protected Natural Resources

This parcel has not been identified as a resource protection area and does not lie within the Shoreland Zone. (*Review against DEP, IFW, SHPO, FEMA, FAA, DOC*).

Critical Areas & Temporary Erosion Control

A critical area, in terms of erosion control, is an area where a change in the volume of stormwater, in the velocity of the runoff, in the type of soils and vegetation, or in the flow path of the stormwater could create an adverse effect on the water quality or erosion hazard downstream.

The only areas of concern the course site poses are the wearing of the foot paths and especially foot paths on the steeper slopes. Work to mitigate these issues will include stabilizing paths with wood chips or ECM and installing log steps along the paths on steep slopes.

Site work on the parking area and driveway will require properly installed silt fence or other suitable BMP (ECM berm or staked hay bales) to protect against erosion and siltation while the site is open. These temporary BMP controls will need to be installed prior to earth disturbance in order to mitigate the erosion hazard. Temporary erosion control measures shall be exercised by the contractor during the entire duration of construction in accordance with the *Maine Erosion and Sediment Control: Best Management Practices (2003)* and the construction contract documents.

Properly installed silt fencing or other BMP shall be located down gradient of all areas to be disturbed by construction. Only after all site work was been completed and the site is completely stable, should the temporary erosion controls be removed. Natural vegetation shall be protected to the greatest extent possible.

Disturbed areas shall be limited in size, kept bare for a short duration, and shall be temporarily mulched when not undergoing backfilling.

Any areas disturbed during construction or areas of fill shall be seeded and mulched at the earliest time practical to prevent erosion of topsoil. Between September 15th and April 15th, the disturbed areas shall receive a double mulching and a seeding of winter rye. Otherwise, a perennial seed shall be used at a rate of 0.9 lbs/1000 s.f. and a depth of ¼”.

Permanent Erosion Control

Permanent erosion and sediment control measures shall be installed by the contractor prior to the substantial completion of construction in accordance with the *Maine Erosion and Sediment Control: Best Management Practices (2003)*.

All disturbed areas shall be permanently seeded and mulched at the earliest time practical to prevent erosion of topsoil, but no later than August 6th. Between August 6th and September 20th, temporary seeding shall commence. Between September 20th and April 15th, the disturbed areas shall receive a double mulching and a seeding of winter rye. Seeding mixture shall consist of 0.46 lb/1000 s.f. of Creeping Red Fescue, 0.05 lb/1000 s.f. of Red Top, and 0.46 lb/1000 s.f. of Tall Fescue. Hay mulch shall be applied at 2 bales/1000 s.f. for a single layer of mulching.

Construction Timing and Sequence

The trees identified on Site Plan A should be removed prior to the beginning of any construction. Prior to any excavation or soil disturbance, the contractor shall install silt fencing, other BMP's and any sediment control devise as described in the Temporary Erosion Control. After any rain event of greater than .5 inches all temporary erosion control measures shall be inspected and fixed if damaged by the event.

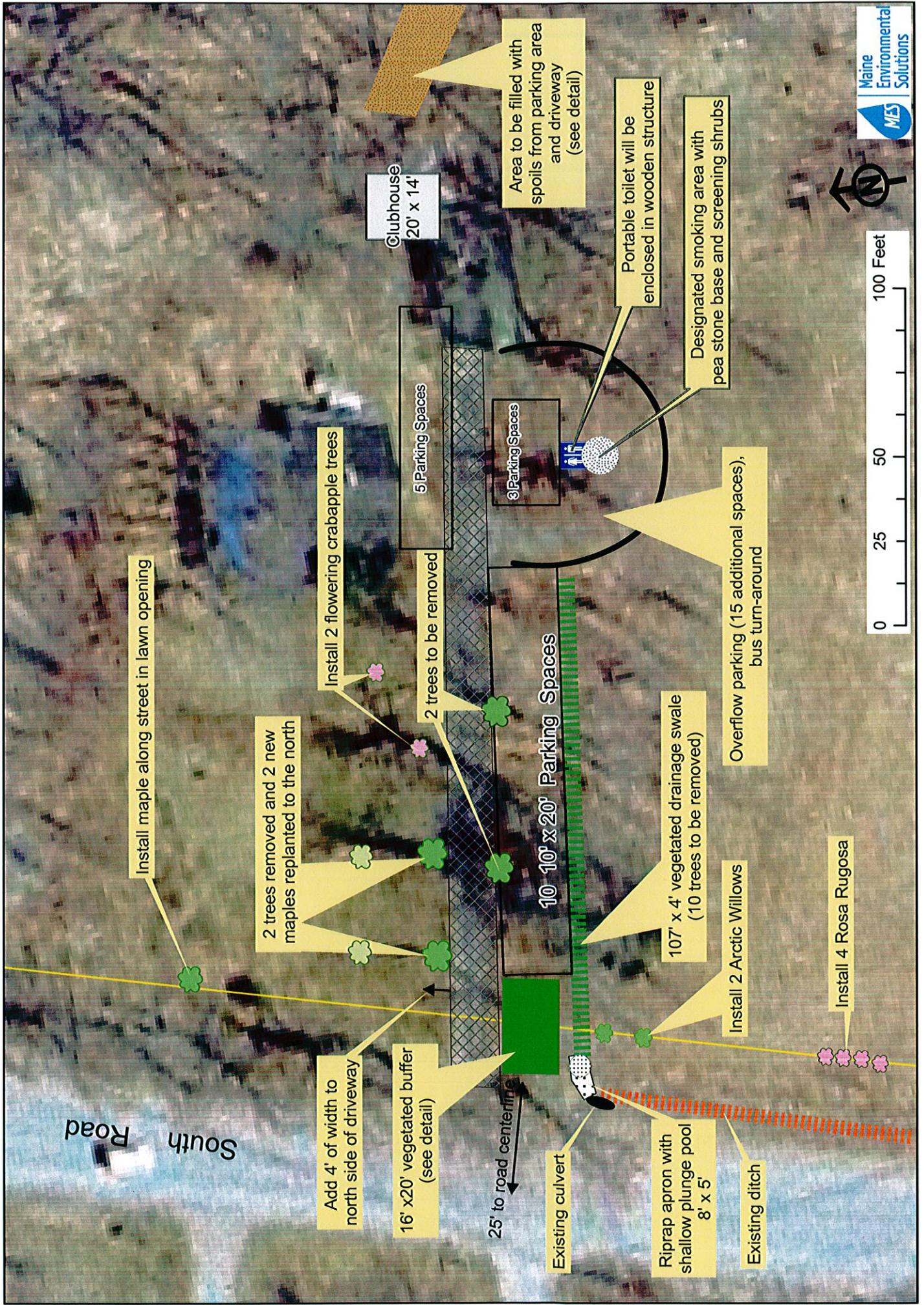
Once erosion controls are installed, construction shall precede with excavation for the parking area, shaping the drainage swale, improving the driveway and preparing the clubhouse site. Excavated fill material will be moved to the location behind the clubhouse site and stabilized at the earliest possible time.

Permanent erosion controls shall be installed and made operational prior to substantial completion of the project.

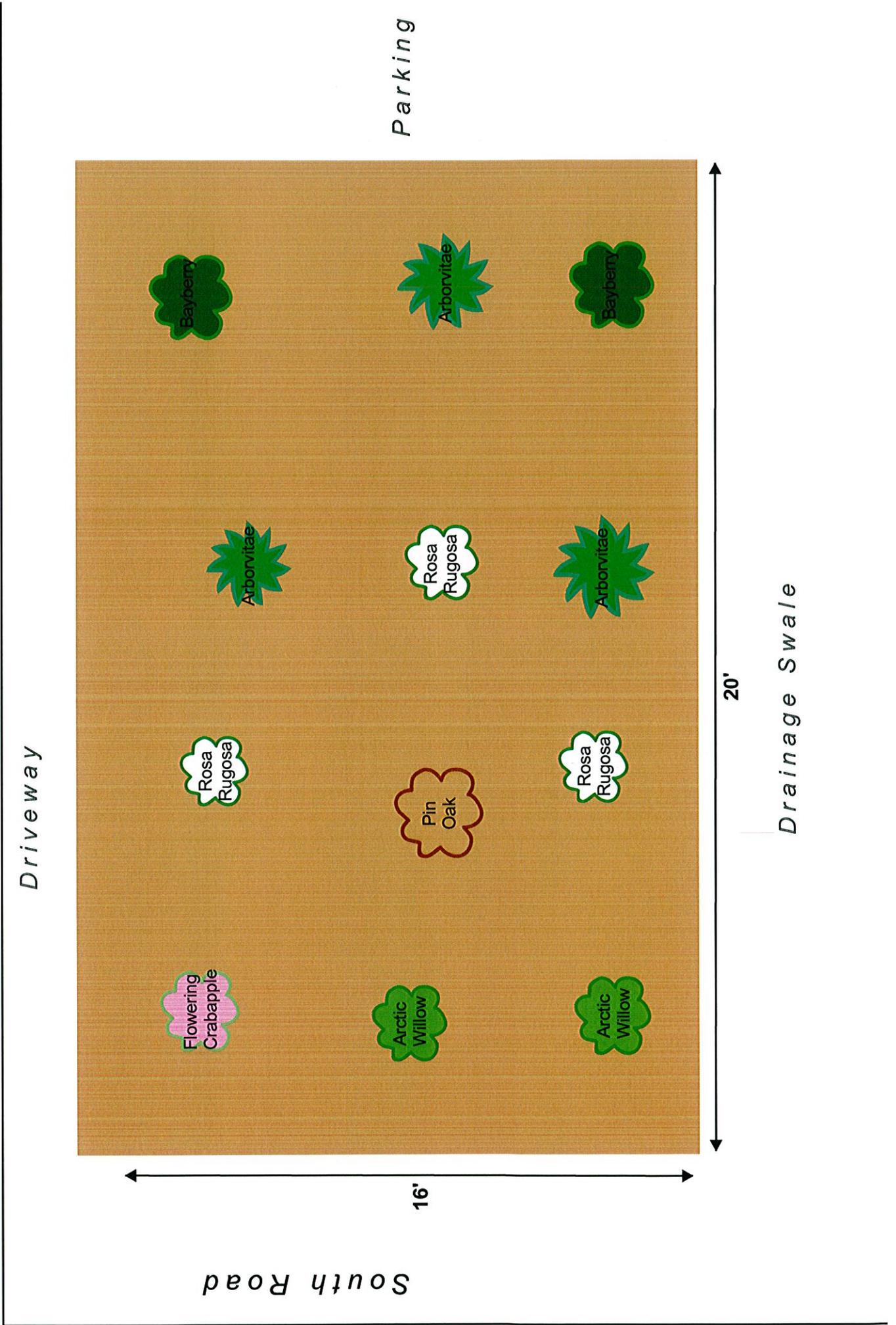
***Plan developed by Maine Environmental Solutions – 3 Blake Ave, Hallowell, Me 04347
www.mesmaine.com 207-441-9366**



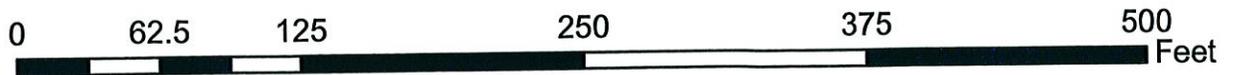
Site Plan A - Wildwood Disc Golf



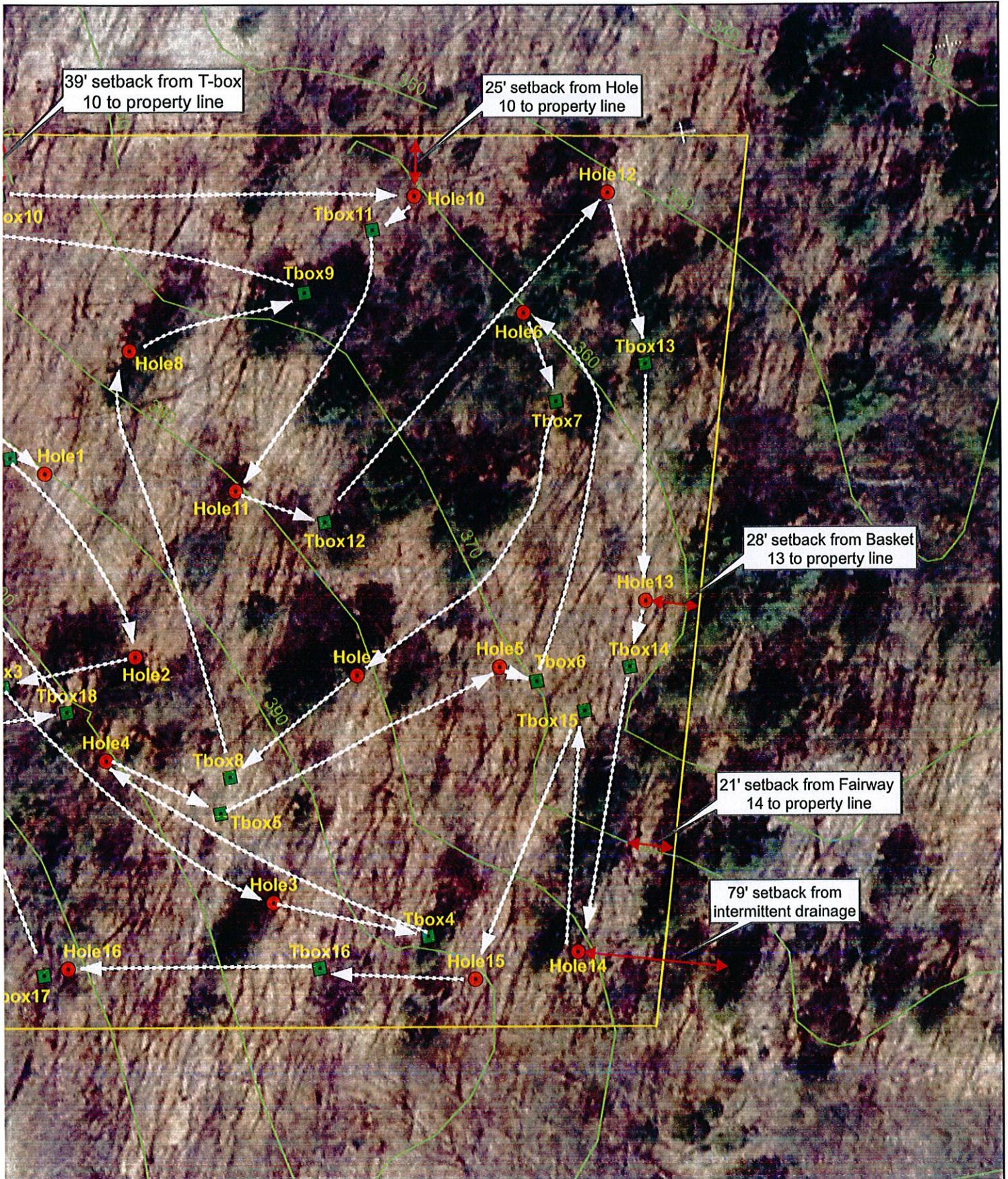
Buffer Planting Detail



Site Plan B - Wi



Wood Disc Golf



■ T-Box ~ 10' Contours
● Basket

Property lines are approximate
 April 11, 2013



Wildwood Disc Golf Operations plan

Wildwood Disc Golf will be open Seasonally, ground conditions permitting, approx April-November

Hours of Operation:

10am - 6pm spring and fall

8am-8pm summer

7 days/wk

Closing times will vary due to decreasing daylight hours.

An employee of Wildwood Disc golf will be on site when course is open.

All players must check in at the office.

Wildwood Disc Golf will not be organizing tournaments.

If parking area, including overflow, is full, any arriving players will be asked to return later when there is space for parking on site (no parking will be allowed on roadway).

Rules of the course will be posted, anyone not following the rules will be given one verbal warning(or asked to leave immediately if behavior warrants it), anyone not compliant after verbal warning will be asked to leave. Assistance will be called in if necessary.

Wildwood Disc Golf LLC. Rules of Use:

- █ Absolutely no parking on the street, if lot is full, you will need to come back later.
- █ Please park straight so cars can fit and get in/out easier. Give the right of way to those pulling onto property to keep traffic from gathering on roadway.
- █ We are a family friendly course, respect our neighbors;
 - █ Use appropriate language
 - █ use a minimum tone of voice/noise level
- █ Keep our course clean
 - █ use the trash barrels provided for all trash.
 - █ use the port o' potty for all your 'business'
 - █ smoking is permitted in designated 'off course' area only and butts must be placed in receptacle provided, not on ground.
- █ No alcohol
- █ play is not allowed when course is closed.

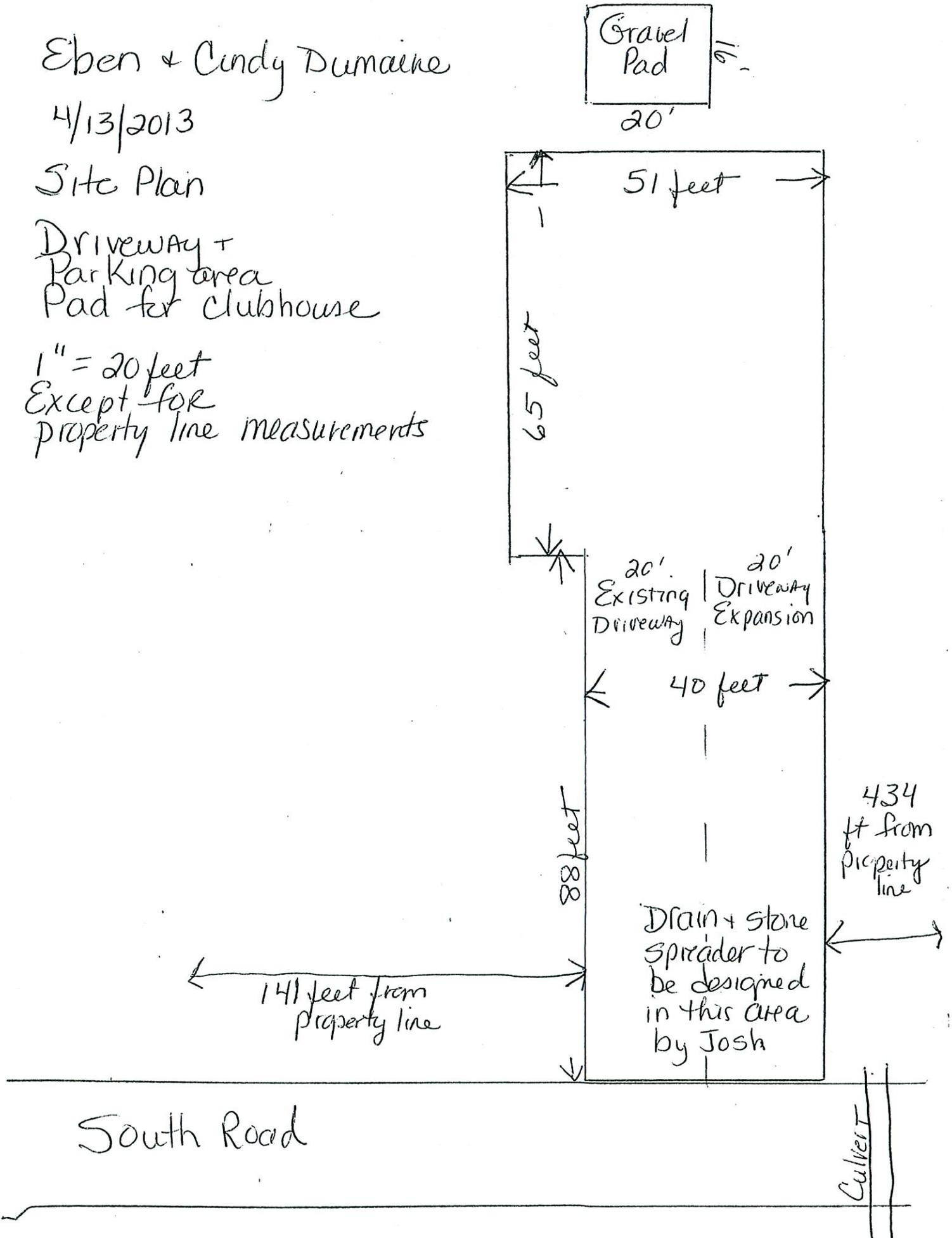
Eben + Cindy Dumaine

4/13/2013

Site Plan

Driveway +
Parking area
Pad for clubhouse

1" = 20 feet
Except for
property line measurements



By: Reau Excavation + Trucking Inc