

Kansas Department of Agriculture
 Division of Water Resources
CHANGE: P/U UMW WORKSHEET

Document Signature _____

1. File Number: 11279	2. Status Change Date: 2/25/2020	3. Change Num: C1	4. Field Office: 01	5. GMD:
6. Status: <input type="checkbox"/> Approved <input type="checkbox"/> Denied by DWR/GMD <input type="checkbox"/> Dismiss by Request/Failure to Return				7. Filing Date of Change: 20-JUL-2018
8a. Applicant(s) New to system <input type="checkbox"/> CITY OF MILFORD PO BOX 279 MILFORD, KS 66514		Person ID 11883 Add Seq# 1	8c. Landowner(s) New to system <input type="checkbox"/> Person ID _____ Add Seq# _____	
8b. Landowner(s) New to system <input type="checkbox"/> CITY OF MILFORD PO BOX 279 MILFORD, KS 66514		Person ID 11883 Add Seq# 1	8d. Landowner(s) New to system <input type="checkbox"/> Person ID _____ Add Seq# _____	
8e. WUC New to system <input type="checkbox"/> CITY OF MILFORD PO BOX 279 MILFORD, KS 66514		Person ID 11883 Add Seq# 1	8f. WUC New to system <input type="checkbox"/> CITY OF MILFORD PO BOX 279 MILFORD, KS 66514	
9. Documents and Enclosure(s): <input checked="" type="checkbox"/> DWR Meter(s) Date to Comply: 12/31/20 <input type="checkbox"/> N & P Date to Comply: _____				
<input type="checkbox"/> Anti-Reverse Meter <input type="checkbox"/> Meter Seal <input checked="" type="checkbox"/> Check Valve <input type="checkbox"/> N & P Form <input type="checkbox"/> Water Tube <input type="checkbox"/> Driller Copy <input type="checkbox"/> H & E Letter <input type="checkbox"/> Conservation Plan Date Required: _____ Date Approved: _____ Date to Comply: _____				
10. Use Made of Water From: MUN To: IRR				
Date Prepared: 02/05/20 By: RAK Date Entered: 2/27/2020 By: LMoody				

File No. 11,279	11. County: GE	Basin: REPUBLICAN RIVER	Stream: REPUBLICAN RIVER (27)	Formation Code:	Special Use:																			
12. Points of Diversion Rate and Quantity <input checked="" type="checkbox"/> MOD Authorized Additional DEL PDIV Rate Quantity Rate Quantity ENT Qualifier S T R ID 'N 'W Comment gpm af gpm af Overlap PD Files																								
IRR ENT 37821	SESESW	18 10 5E 1	115 3200	100 g.p.m 42.85 AF (13.965 m.g.y.)	100 g.p.m 42.85 AF (13.965 m.g.y.) NO																			
MUN DEL																								
13. Storage: Rate _____ NF Quantity _____ ac/ft Additional Rate _____ NF Additional Quantity _____ ac/ft																								
14. Limitation: _____ af/yr at gpm (_____ cfs) when combined with file number(s) _____ Limitation: _____ af/yr at _____ gpm (_____ cfs) when combined with file number(s) _____																								
15. 5YR Allocation: Allocation Type _____ Start Year _____ 5 YR Amount _____ Amount Unit _____ Base Acres _____ Comment _____																								
16. Place of Use <input checked="" type="checkbox"/>		NE¼				NW¼				SW¼				SE¼				Total	Owner	Chg?	Overlap Files			
MOD	DEL	ENT	PUSE	S	T	R	ID	NE ¼	NW ¼	SW ¼	SE ¼	NE ¼	NW ¼	SW ¼	SE ¼	NE ¼	NW ¼	SW ¼	SE ¼					
IRR ENT	18	10	5E	69871																				
IRR ENT	19	10	5E	69872				24.50								11.50					36.00	8B	NO	NO
MUN DEL 22221		18	10	5E 1	City of Milford and Vicinity																			
Comments:																								

KANSAS DEPARTMENT OF AGRICULTURE
Division of Water Resources
M E M O R A N D U M

TO: Files
DATE: February 5, 2020
FROM: Richelle A. Krueger
RE: Water Right
File Nos. 11,279 and 36,364

Brad Roether, on behalf of the City of Milford, Kansas, owner of the referenced water rights, filed applications for approval to change the place of use and use made of water from municipal use to irrigation use.

The referenced file numbers do not appear abandoned as per K.S.A. 82a-718.

File Nos. 11,279 and 36,364 are currently authorized a limited quantity and diversion rate of 21.4 million gallons (65.67 acre-feet) and 145 gallons per minute of surface water from the Republican River at Milford Reservoir for municipal use for the City of Milford and immediate vicinity. The referenced file numbers form a complete overlap in the authorized point of diversion and place of use. File No. 11,279 is authorized 13.965 million gallons per calendar year (42.85 acre-feet). It appears the City now primarily obtains water from Geary County Rural Water District No. 4, so the City proposes to convert the entire authorized quantity under File No. 11,279 from municipal use to irrigation use for ball fields and parks totaling 39.22 acres in Sections 18 and 19, Township 10 South, Range 5 East, Geary County. File No. 36,364 will be dismissed per the Voluntary Waiver of Hearing and Dismissal of Water Right request received in the office of the Chief Engineer on July 25, 2019 (the change application withdrawn).

The proposal appears to meet K.A.R. 5-5-3 *Change in consumptive use* and K.A.R. 5-5-8 *Standards for approval of an application for a change in the place of use and a change in the use made of water*. The proposed irrigation use appears to be a less consumptive use than the original municipal use, so no quantity reduction was required.

Information has been submitted to justify the quantity requested for irrigation of turf grass. The net irrigation requirement for the 80% chance of rainfall in Geary County with 85% efficiency is 1.1 acre-feet/acre. The total quantity of water proposed for irrigation use under File No. 11,279, 42.85 acre-feet, can potentially irrigate the proposed 39.22 acres with 1.1 acre-foot per acre, which appears reasonable.

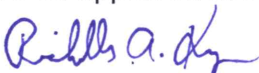
Nearby landowners located one-half (½) mile upstream and downstream from land owned or controlled by the applicant were not notified of the proposed change in place of use and use made of water.

The source of supply will remain the same.

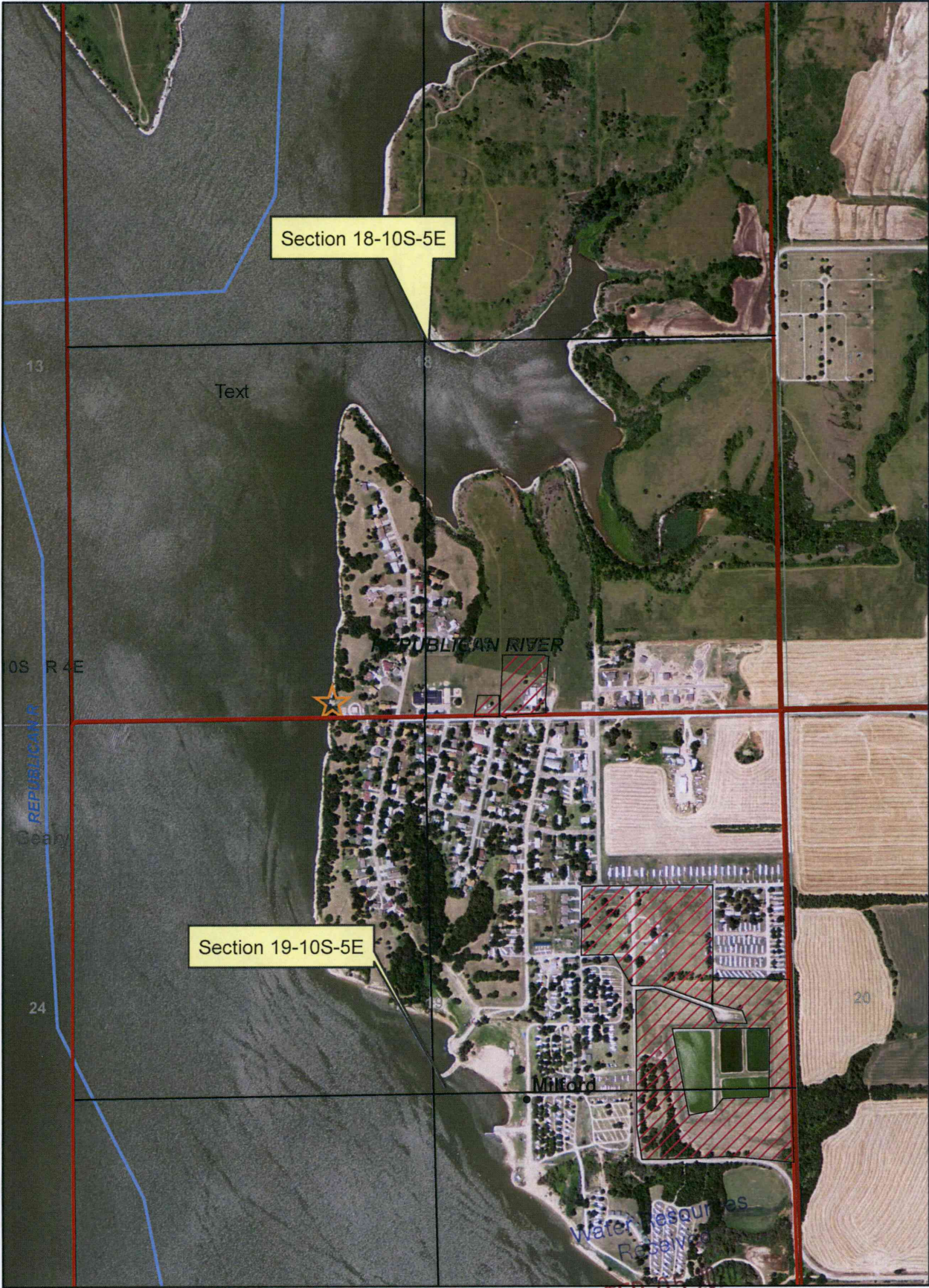
In an e-mail dated February 5, 2020, Katherine Tietsort, Water Commissioner of the Topeka Field Office, stated that she has no objection to approval of the referenced change application.

A water flow meter and check valve are required, if chemigating.

Based on the above discussion, that the changes are reasonable, that impairment to existing vested rights is unlikely, that no change in the local source of supply will occur, it is recommended that the change application for File No. 11,279 be approved and Water Right, File No. 36,364 be dismissed.


Richelle A. Krueger
Environmental Scientist

City of Milford



1:12,000

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IRRIGATION USE SUPPLEMENTAL SHEET

File No. 11,279

Name of Applicant (Please Print): CITY OF MILFORD

1. Please supply the name and address of each landowner, the legal description of the lands to be irrigated, and designate the actual number of acres to be irrigated in each forty acre tract or fractional portion thereof:

Landowner of Record NAME: CITY OF MILFORD
ADDRESS: PO BOX 279 MILFORD KS 66514

S	T	R	NE¼				NW¼				SW¼				SE¼				TOTAL
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
18	10S	5E															3.22	3.22	
19	10S	5E				24.5										11.5		36	
																		39.22	

Landowner of Record NAME: _____
ADDRESS: _____

S	T	R	NE¼				NW¼				SW¼				SE¼				TOTAL
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

Landowner of Record NAME: _____
ADDRESS: _____

S	T	R	NE¼				NW¼				SW¼				SE¼				TOTAL
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

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2. Please complete the following information for the description of the operation for the irrigation project. Attach supplemental sheets as needed.

a. Indicate the soils in the field(s) and their intake rates:

Soil Name	Percent of field (%)	Intake Rate (in/hr)	Irrigation Design Group
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Total:	100 %		

b. Estimate the average land slope in the field(s): _____%

Estimate the maximum land slope in the field(s): _____%

c. Type of irrigation system you propose to use (check one):

_____ Center pivot _____ Center pivot - LEPA _____ "Big gun" sprinkler

_____ Gravity system (furrows) _____ Gravity system (borders) _____ Sideroll sprinkler

Other, please describe: _____

d. System design features:

i. Describe how you will control tailwater:

ii. For sprinkler systems:

(1) Estimate the operating pressure at the distribution system: _____ psi

(2) What is the sprinkler package design rate? _____ gpm

(3) What is the wetted diameter (twice the distance the sprinkler throws water) of a sprinkler on the outer 100 feet of the system? _____ feet

(4) Please include a copy of the sprinkler package design information.

e. Crop(s) you intend to irrigate. Please note any planned crop rotations:

f. Please describe how you will determine when to irrigate and how much water to apply (particularly important if you do not plan a full irrigation).

You may attach any additional information you believe will assist in informing the Division of the need for your request.

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The requested quantity exceeds the maximum quantity for irrigation purposes in the County, however row crops are not being irrigated. This additional information (per K.A.R. 5-3-20) indicating that the additional water is necessary based on the types of turf grass (tall fescue) and anticipated water needs according to the Kansas State University Extension Service ("Managing Fescue Football Fields") and other grasses is provided in justification. The additional water is necessary for proper management, both to get any new grass established and to prevent the existing grass from being damaged. In addition, other grass projects in this area have also been approved for additional water based on similar supporting documentation including information. Normal precipitation is estimated to supply only a fraction of the necessary supply during the growing season, which is substantially less than the indicated need for grass requirements. Therefore, the requested quantity of water appears to be reasonable for the intended use.

TPI TURFGRASS PRODUCERS INTERNATIONAL

WATER - WHEN...HOW...HOW MUCH

Water is essential to all life...too little water and we die, too much and we drown. The same is true of the grass in our lawns. Water makes up 70% to 80% of the weight of our lawn grasses and the clippings alone are nearly 90% water. While most people are concerned about not watering their lawns enough, the fact is that more lawns are damaged or destroyed by over-watering. Newly installed turfgrass sod has very important watering needs. Proper watering immediately after installation will ensure the turf gets established, and it will also have an impact on how well the lawn continues to flourish for years to come.

WHEN To Water New Turfgrass Sod

Begin watering new turfgrass sod within a half hour after it is laid on the soil. Apply at least 2 to 3 cm. (1 inch) of water so that the soil beneath the turf is very wet. Ideally, the soil 7 to 10 cm. (3 to 4 inches) below the surface should be moist.

Watering Tip #1: pull back a corner of the turf and push a screwdriver or other sharp tool into the soil. It should push in easily and have moisture along the first 7 to 10 cm. (3 or 4 inches), or you need to apply more water.

Watering Tip #2: make absolutely certain that water is getting to all areas of your new lawn, regardless of the type of sprinkling system you use. Corners and edges are easily missed by many sprinklers and are particularly vulnerable to drying out faster than the center portion of your lawn. Also, areas near buildings dry-out faster because of reflected heat and may require more water.

Watering Tip #3: runoff may occur on some soils and sloped areas before the soil is adequately moist. To conserve water and ensure adequate soak-in, turn off the water when runoff begins, wait 30-minutes to an hour and restart the watering on the same area, repeating this start and stop process, until proper soil moisture is achieved.

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For the next two weeks keep the below-turf soil surface moist with daily (or more frequent) watering. Especially hot, dry or windy periods will necessitate increased watering amounts and frequency.

Watering Tip #4: as the turf starts to knit its new roots into the soil, it will be difficult, impossible and/or harmful to pull back a corner to check beneath the turf (Watering Tip #1), but you can still use a sharp tool to check moisture depth by pushing it through the turf and into the soil.

Watering Tip #5: water as early in the morning as possible to take advantage of the daily start of the grass's normal growing cycle, usually lower wind speeds and considerably less loss of water because of high temperature evaporation.

Watering Tip #6: if the temperature approaches 37(C (100(F), or high winds are constant for more than half of the day, reduce the temperature of the turf surface by lightly sprinkling (syringe) the area. This sprinkling does not replace the need for longer, deeper watering, which will become even more critical to continue during adverse weather conditions.

During the rest of the growing season most lawns will grow very well with a maximum total of one inch of water a week, coming either from rain or applied water. This amount of water, properly applied, is all that is required for the health of the grass, providing it is applied evenly and saturates the underlying soil to a depth of 10 to 15 cm (4 to 6 inches).

Watering Tip #7: Infrequent and deep watering is preferred to frequent and shallow watering because the roots will only grow as deeply as its most frequently available water supply. Deeply rooted grass has a larger "soil-water bank" to draw moisture from and this will help the grass survive drought and hot weather that rapidly dries out the upper soil layer

HOW To Water New Turfgrass Sod

Proper watering techniques are a critical aspect of lawn watering, equal in importance to the issues of when to water and how much to water. Here are several key factors to proper technique:

Avoid hand sprinkling because it cannot provide the necessary uniformity as most people do not have the patience, time or "eye" to adequately measure what is being applied across any larger areas of lawn. The only possible exception to this guideline would be the need to syringe the surface of the grass to cool it, or to provide additional water near buildings or other heat-reflecting surfaces.

Understand the advantages of different sprinkler designs, because each type has its advantages and disadvantages and its proper use will be determined by the type of sprinkler you select.

In-Ground Systems require professional design and installation and they require routine adjustments and regular maintenance to be most effective and efficient. The greatest mistake made with most in-ground systems is the "set it and forget it" philosophy that fails to account for the changing seasonal water requirements to maximize turf grown or even allowing the system to operate during or following a multi-inch rain storm. Another frequent problem is when heads

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get out of alignment and apply water to the sidewalk, street or house-siding, rather than to the lawn.

Hose-End Sprinklers range in complexity, cost and durability, but are highly portable and can provide uniform and consistent coverage, when properly placed on the yard and adequately maintained.

Sprinklers that do not throw the water high into the air are usually more efficient because prevailing winds are less disruptive of distribution patterns, the potential for evaporation loss is reduced and trees, shrubs and other plants do not block the pattern (or are very noticeable if they do).

Several times during the growing/watering season, routine maintenance to check for blocked outlets, leaking or missing gaskets, or mis-aligned sprinkler heads is important, regardless of the sprinkler design.

Select sprinklers and systems for uniformity of coverage across whatever area they are designed to water. Inexpensive hose-end sprinklers and in-ground irrigation systems can provide uniform coverage, but they can also be extremely variable and inconsistent in their coverage patterns.

Verify watering uniformity can be accomplished with a very simple and inexpensive method that uses only 4 to 6 flat-bottomed, straight-sided cans (tuna fish, cat food, etc.), a ruler and a watch.

Follow these steps:

Step #1: arrange the cans at random distances away from any sprinkler, but all within the area you assume is being covered;

Step #2: run the sprinkler for a specific amount of time, say a half-hour OR run the water until a specific amount of water is in at least one can, say a 1.5 cm (0.5 inches)

Step #3: measure the amount of water in each can, checking for uniformity. Some variation is expected, but a difference of 10-percent or more between any two cans must be addressed by replacing or adjusting the sprinkler or relocating the system.

This measuring method should be used across an entire lawn that has an in-ground irrigation system to assure maximum coverage and uniformity.

Watering difficult areas such as slopes and under trees requires some special attention to achieve maximum benefit and a beautiful lawn.

For Slopes, see Watering Tip #3

For Areas Under and Near Trees you need to know the water requirements for the specific trees, as well as for the grass. Despite having deep "anchor" roots, trees take up moisture and nutrients from the top six inches of soil...the same area as the grass. Trees and turf will compete for water. Watering sufficiently for the grass may over-water some varieties of trees and under-

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water others. A common solution is to not plant grass under the drip-line of trees, but rather use that area for perennial ground-covers, flower beds or mulch beds.

HOW MUCH Water Is Applied & Needed

The amount of water your lawn requires and receives will determine its overall health, beauty and ability to withstand use and drought. Keep in mind that too much water can ruin a lawn just as fast as too little. One inch a week is the standard water requirement established for most lawns; however, this will vary between different turf species and even among cultivars within a specie. There will also be varying water requirements for seasonal changes and still more differences brought about because of different soil types.

Look at your lawn to determine its water needs. Grass in need of water will have a grey-blue cast to it, rather than a blue-green or green color. Also, foot prints will still appear after a half-hour or more on a lawn in need of water, while on a well watered lawn foot-prints will completely disappear within minutes. Use a soil probe, such as a screwdriver or large spike to determine how dry your lawn is. If the probe can be pushed into the soil easily, it's probably still moist, but if it takes a lot of pressure to push in, it's time to water.

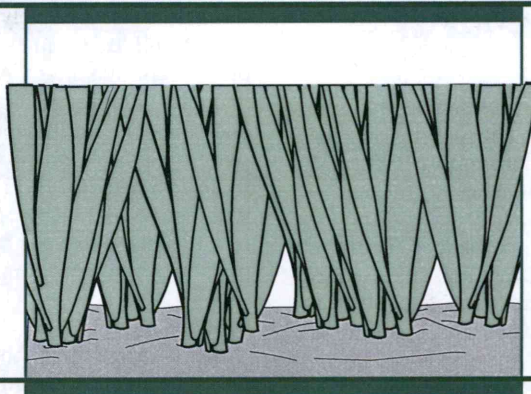
Verify watering quantities with the same measuring can method described above, except you will want to note the time it takes for the cans to collect a specific amount of water. For example, if 0.5 cm (0.25-inches) collects in 30 minutes, you can easily calculate that it will take one hour to apply 1 cm (0.5-inches) of water or two hours to apply 2.5 cm (1-inch).

Water timers can help provide consistency and even be programmed or set to turn-off when no one is awake or at home. Some timers measure just the amount of time water is flowing through the devise and you have to know or calculate how long to set the timer for (see item above). Other units measure the number of gallons of water flowing through it. Knowing that 600 gallons per 1,000 square feet equals one-inch of water will help you calculate the timer settings your lawn will require.

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BERMUDAGRASS FOOTBALL FIELDS

Turfgrass



Bermudagrass is a vigorous, wear-tolerant, warm-season turfgrass that provides an alternative to cool-season grasses for Kansas football fields. Potential risks and rewards of using bermudagrass for football fields are discussed here.

Advantages of Bermudagrass

Bermudagrass grows vigorously during the hot summer months when the field is being prepared or renovated for the football season. It has excellent drought and heat tolerance. Bermudagrass requires about 50 percent less water than cool-season grasses during the hot summer months. It has excellent wear tolerance and recovery when actively growing. There are relatively few pest problems.

Disadvantages of Bermudagrass

Bermudagrass may not survive harsh winters. Most cold-hardy cultivars are vegetative types, which are more expensive to establish than seeded types. It typically goes dormant in October. The last few games will be played on a dormant field unless overseeded with an appropriate cool-season grass. As bermudagrass goes dormant, wear tolerance and recovery are reduced.

The best bermudagrass varieties for Kansas are cold-hardy. These suffer winter injury under harsh conditions but are less prone to this problem than susceptible varieties. Because even the most cold-hardy bermudagrass cultivars are only marginally cold-hardy in Kansas, using bermudagrass makes more sense in some parts of the state than others. Northern and western counties will experience more winter injury to bermudagrass than southern counties. But bermudagrass football fields have performed well as far north as Manhattan and the Kansas City metropolitan area.

Even if some winter injury occurs there is plenty of time during the summer to renovate damaged areas. This works well with football fields, because they are not typically used until mid August or later.

Cultivar Selection

Midfield, *Midlawn* and *Quickstand* are the most cold-hardy bermudagrass cultivars for use in Kansas. Additionally, *Midiron* is an older variety that features good cold tolerance and is less expensive to plant. They are all vegetative cultivars. They must be planted by some means other than seeding, like sprigging or plugging. All four cultivars can provide a quality field, but there are some differences among them.

Aggressiveness

Aggressiveness is a desirable trait in an athletic field turfgrass because it determines how well the field recovers from traffic injury. *Quickstand* is the most aggressive of the four cultivars. *Midfield* was specifically developed for athletic field use, and is somewhat more aggressive than *Midlawn* or *Midiron*, even though these last two varieties still have adequate aggressiveness for athletic field use.

Visual attractiveness

Midlawn, *Midiron* and *Midfield* have a finer texture than *Quickstand*. Under good conditions they will provide a more attractive playing surface. But *Quickstand*, while coarser textured, can still produce a visually attractive field when well maintained. Density of all four cultivars is similar, but *Midiron*, *Midfield* and *Midlawn* tend to hold their color further into the fall than *Quickstand*.

While the above varieties represent the most cold-hardy for Kansas fields, an alternative is to annually replant an aggressive, but more cold-sensitive variety like *Tifway*, which is used in heavily trafficked areas in Arrowhead Stadium. Plant material from these varieties is less expensive, but replanting may need to be budgeted annually. Field managers and administrators should carefully consider the importance of cost, aesthetics and aggressiveness as it relates to their particular situation. For example, in

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heavily used fields, aggressiveness may be more important than visual appeal. On the other hand, for high-profile game fields, visual characteristics and cost of annual renovation may be given more weight in making the decision. If possible, personal visits to fields planted to each cultivar should be made before making a final decision.

Establishment and Care of New Fields

Planting

Sprigs are harvested segments of bermudagrass rhizome and stolon tissue that can be replanted. Units of measure for sprigs may differ with geographic location. A "Georgia" bushel is roughly equivalent to 0.25 cubic feet and should be planted at a rate of 450 to 600 bushels per acre, 10 to 15 bushels per 1,000 square feet. In comparison, a "Texas" bushel is roughly equivalent to 1 cubic foot and should only be planted at 150 to 200 bushels per acre, 3 to 5 bushels per 1,000 square feet. Be sure to find out which bushel measurement your supplier uses. In either case, sprigs should be evenly broadcast over the field, incorporated into the ground, and rolled to enhance sprig or soil contact. Patience is critical with sprigs because visible tissues will appear desiccated for one to two weeks following planting before new green growth appears. In the meantime, root and rhizome growth underground is very active.

Plugs are small pieces of sod and should be planted on 10 to 12-inch centers. Ideal planting dates for either sprigs, plugs or sod are between late May and mid June. Planting later than mid June may leave too little time for the field to become established before football season begins. At least eight weeks, and preferably 10 weeks, should be allowed to grow in a sprigged or plugged bermudagrass field before use begins. Sod will require only one to two weeks to root, but three to four weeks is advisable between sodding and field use.

Watering

Irrigation is critical to the successful establishment of the new field. Sprigs, especially, are susceptible to desiccation if not kept moist. The field should be kept constantly moist, but not water-logged, until the new sprigs or plugs have rooted and begun to send out runners. Then irrigation can gradually revert to a more normal program.

Crabgrass and Goosegrass Control

Until 100 percent cover is achieved, crabgrass and goosegrass should be controlled by applying the preemergence herbicide oxadiazon (*Ronstar*). This is the safest and most effective preemergence herbicide for newly sprigged or plugged bermudagrass because it does not inhibit new root growth. Other preemergence herbicides may inhibit both rooting and horizontal spread of new bermudagrass. Apply oxadiazon at a rate of 2 pounds active ingredient per acre at the time of planting and again about six weeks later.

As an alternative, quinclorac (*Drive*) or MSMA can be used at label rates to control existing crabgrass. Wait until the new sprigs or plugs have rooted before applying either of these herbicides. MSMA works best when crabgrass is fairly small, and it often requires a repeat application two weeks after the first. Quinclorac is extremely effective on

crabgrass, even crabgrass that has begun to tiller, but it is ineffective against goosegrass. MSMA has fair activity on goosegrass, but requires repeat applications. MSMA will also help suppress yellow nutsedge, also called nutgrass or watergrass, which can be a problem in new stands.

Fertilization

Fertilize aggressively with nitrogen until complete cover is achieved. Use a quick-release nitrogen source such as urea or ammonium sulfate. Apply 0.5 to 0.75 lb. of actual nitrogen per 1,000 square feet every week beginning at planting and continuing until complete cover is achieved. Before planting, apply phosphorus and potassium if soil test results indicate a need for these nutrients. A soil test will also reveal whether the pH needs adjustment. Bermudagrass grows best in soils with a pH between 6.0 and 7.0, but will tolerate pH's between approximately 5.5 and 7.5.

Mowing

Begin mowing as soon as the grass grows beyond the desired height. A reel mower is best, but a rotary mower can be used if the blades are kept sharp. Begin mowing at 1¼ to 1½ inches. Once full cover is achieved, the height can be raised up to two inches if desired.

Cultivation

Once the seedbed is prepared, no cultivation will be necessary during the establishment year.

Management of Established Fields

Mowing

Mow at a height of 1½ to 2 inches. A good reel mower is preferred and is necessary for mowing below 1½ inches. The blades must be kept sharp and adjusted properly. Bermudagrass looks best when mowed at 1¼ to 1½ inches. If you do not have a reel mower, mow at 1½ to 2 inches. Once again, keep the blades sharp. Mow frequently. Do not remove more than one-third of the foliage at any one time. This means you must mow when the grass is just shy of 2 inches for the 1¼ height, when it is 2¼ inches for the 1½-inch height and when it is 3 inches for the 2-inch height. Obviously, the lower you mow, the more frequently you will have to mow. Mowing at the proper frequency with a sharp blade is one of the most important practices for a quality field.

Irrigation

Bermudagrass will need about 1 inch of water each week during the summer, whether from rain or irrigation. In the spring and the fall it will require less. Soak the soil deeply with each irrigation. Schedule irrigations so that the field is on the dry side for games and other events. This will help prevent excessive compaction. A properly functioning, well-adjusted irrigation system is critical to a field's success. Traveling sprinklers, also called water cannons, can be used, but care must be taken to ensure water is applied uniformly and in sufficient amounts.

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Established bermudagrass football fields will require a monthly application of 1 pound nitrogen per 1,000 square feet, starting in mid-May and ending in mid-August. Quick-release nitrogen sources such as urea or ammonium sulfate can be used. Fertilizing after August 15 may predispose the turf to winter injury. Phosphorus and potassium should be applied based on soil test results. A soil test will also tell you whether you need to adjust the pH.

Cultivation

Core-aerate two or three times a year — early June and early July are the optimum times. Lightly verticutting following aeration will help break up the cores. Only core-aerate or power rake after August 15 if you overseed a cool-season turfgrass like perennial ryegrass into the field. Late summer cultivation without overseeding may predispose bermudagrass to winter injury. When core aerating, go over the field enough times so that cores are pulled about every 2 inches. The soil moisture level is very important for this operation. The soil should be moist enough so that it crumbles easily when worked between the fingers. It should not smear. If compaction becomes severe, one of the aerations should be done with a *Verti-Drain*, or similar unit that penetrates deeper into the soil.

Crabgrass/Goosegrass Control

Many preemergence herbicides are labeled for use on bermudagrass. If the middle of the field is thin from the intense play in the fall, oxadiazon (*Ronstar*) should be used in that area, and a less expensive product could be used for the rest of the field. All products except prodiamine (*Barri-cade*) and dithiopyr (*Dimension*) will require two applications, approximately April 1 and June 1 for most of Kansas, for season-long control. Quinclorac (*Drive*) or MSMA can be used at label rates to control existing crabgrass. MSMA works best when the crabgrass is fairly small, and it often requires a repeat application two weeks after the first. Quinclorac is extremely effective on crabgrass, even if it has begun to tiller. It is ineffective against goosegrass. MSMA has fair activity on goosegrass, but requires repeat applications. On established bermudagrass, metribuzin (*Sencor 75*) may be used for postemergence goosegrass control but may cause temporary discoloration.

Broadleaf Weed Control

Broadleaf weeds can be controlled on an as-needed basis with *Trimec*, *Confront*, or a similar product at label rates. Late September or October is the best time to treat perennial broadleaf weeds such as clover and dandelion, but with scheduled football games this may be difficult. Late March or early April is the next best time.

Other Weed Control Strategies

If winter annuals such as henbit, chickweed and speedwell are a recurring problem, they can be controlled with an appropriate preemergence herbicide applied in early September. Prostrate knotweed germinates in late winter and would also be controlled with this application. Alternatively, prostrate knotweed can be controlled with an application of *Trimec*, or a similar product, in early spring.

Perennial cool-season grasses, such as tall fescue, are best controlled with an application of the non-selective herbicide, glyphosate (*Roundup*), in late February when bermudagrass is fully dormant and will not be injured by glyphosate. It is important not to apply glyphosate if green growth is visible on bermudagrass.

Insect Control

Bermudagrass does not have many serious insect pests. Grubs are the major insect pest of bermudagrass in Kansas. Usually, bermudagrass will outgrow grub damage. However, grub damage to roots could lead to winter kill of areas. If annual grubs (chafers) become a problem, apply imidacloprid (*Merit*) or halofenozide (*Mach 2*) at label rates in early to mid July. Imidacloprid and halofenozide can be used in a rotation from year to year. If you see visible damage from grubs, that means the grubs are likely to be large and difficult to kill. Trichlorfon (*Dylox*, *Proxol*) is the insecticide recommended for such situations, as it has good "knock-down" properties and acts quickly. But trichlorfon has a short residual, so it should not be used for preventative applications.

Disease Control

Bermudagrass gets few diseases, so fungicides usually will not be necessary. Spring dead spot is the most important disease of bermudagrass, but the most cold-hardy cultivars, such as *Midlawn* and *Midfield*, seem to have somewhat better resistance. Research at K-State and other universities has demonstrated that aerating twice during summer, followed each time by verticutting to break up cores, can reduce the symptoms of spring dead spot. In addition, the use of acid-reacting fertilizers, such as ammonium sulfate, also reduce the severity of this disease.

Traffic Control

A quality field cannot be achieved and maintained if play is excessive. Most practices should be conducted on a separate field. Practices on the game field should be limited to the light practice the day before the game. More than one game field will be necessary if more than two teams use the field for games. Marching band practices should be conducted on a separate field. Marching bands often cause more damage to the field than the football team.

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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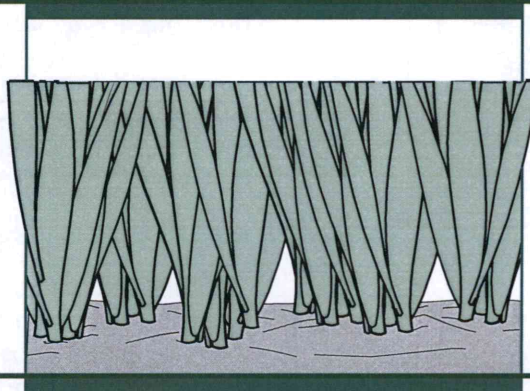
April 2001

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MANAGING FESCUE FOOTBALL FIELDS

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Turfgrass



A football field can be either a source of pride or embarrassment to a community when used for spectator sports and other activities. Without question, the most important aspect of the field is the playing surface. The turf should provide safe and even footing, cushion falls, and prevent mud and dust.

Maintaining a high-quality turf during the playing season presents special challenges to the field manager. Often, the turf in the center of the field wears out because of the play pattern of a football game. Once the center of the field becomes compacted, it is difficult to maintain a good turfgrass stand.

Maintaining a safe, attractive playing field requires an adequate budget, a competent sports field manager, cooperation on limiting the use of the field, and a good program of athletic field maintenance. Most problems can be avoided by following a complete turfgrass management program designed especially for the football field and its particular species of grass. It is important to have a written program that is adhered to by everyone involved.

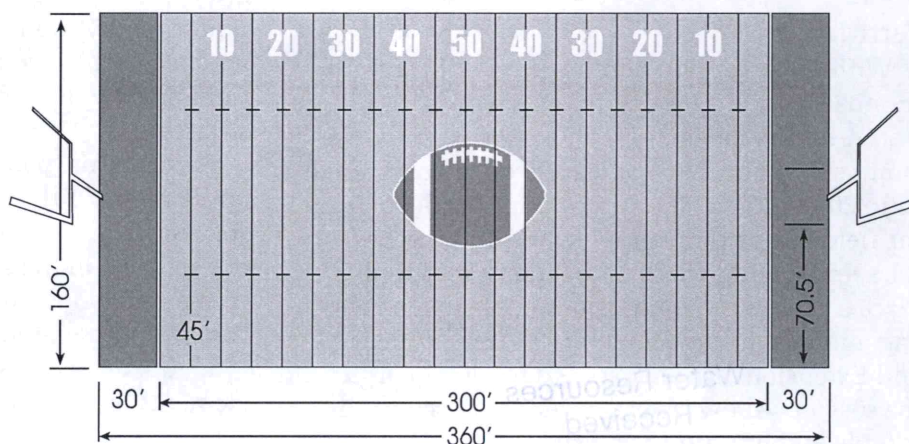
Fescue for Athletic Fields

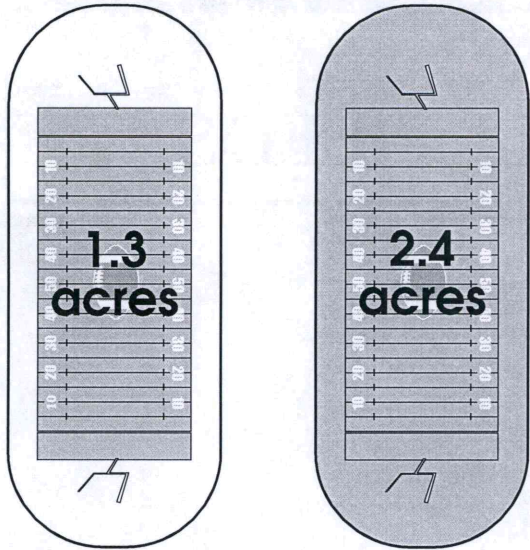
Tall fescue is the most popular turfgrass for football fields in Kansas. It is durable and remains green throughout the playing season. Tall fescue is a perennial, cool-season bunchgrass, but when seeded at the prescribed rate and managed properly, it forms a dense, attractive turf.

The new turf-type cultivars of tall fescue are an improvement over the pasture-type tall fescues such as Alta, Fawn and K-31. Cultivar recommendations are updated periodically based on K-State research results. Check your local K-State Research and Extension office for the latest recommendations.

The new turf-type fescues, like the older cultivars, require good management and proper care.

Diagram of a Regulation Football Field





Both types require similar care and management as outlined in this publication.

Marking the field: The line area should not be scalped or trenched because it causes uneven footing and a possibility of player injury. Instead, latex paint or other approved marking paint should be used. Lime can cause injury if it gets into a player's eye.

Field Dimensions: In order to accurately calculate and apply fertilizer, pesticides, seed, and other materials, the area to be treated must be known. There are 1.32 acres (57,600 square feet) within the boundaries of a standard 11-man football field. The total area within a standard running track is 2.39 acres (104,108 square feet). Subtract any large paved areas, such as the players' bench area, from these measurements when determining the amount of material to be applied.

Fertilizing

With the exception of nitrogen, fertilizer applications should be based on a reliable soil fertility test. A basic soil test (pH, phosphorus, and potassium) should be taken at least every 3 years. Take 15 to 20 random soil samples, 3 inches deep, from the field. Discard the grass leaves and thatch from the sample and mix them together thoroughly. Place a pint of the composite sample in a paper bag and take it to your county K-State Research and Extension Office. There is a modest charge for the service. Allow several weeks to process the sample and interpret the results.

Examples of Nitrogen Sources and Equivalent Rates

Analysis	Lbs. of product needed for football field	Lbs. of product needed for total area inside track
Ammonium nitrate 33-0-0	180	300
Ammonium sulfate 20-0-0	300	500
Urea 45-0-0	130	220
Ureaformaldehyde 38-0-0	160	265
IBDU 31-0-0	200	325
Sulfur coated urea 32-0-0	190	315

These nitrogen fertilizers are available under a variety of brand names. The number on the right denotes amount per application.

Other tests can be run at an additional charge if specific nutritional problems are suspected, but they are usually not necessary for tall fescue. A general soil fertility test only measures levels of specific nutrients and the pH (degree of acidity or alkalinity). It does not measure soil compaction, damage from insects, disease, pesticide residues, or other problems.

Keep in mind that fertilizing is only one aspect of a good turfgrass management program. Fertilizer alone will not produce the desired results. Fertilizing must be accompanied by proper watering, mowing, aerating, pest control, and other management practices.

Nitrogen is the most important fertilizer element for tall fescue. It promotes green color, density, and growth, and helps the turf resist wear and weed invasion. The amount of nitrogen fertilizer that is applied should be based on the quality expectation for the field, along with the budget, use, and available labor.

The fertilizer spreader must be carefully calibrated to apply the right amount of fertilizer uniformly, without skips or overlapping. Applying half the fertilizer in one direction and half at a right angle to the first will minimize skipping and streaking.

Phosphorus, potassium, or lime should be applied only if the need is indicated by a reliable soil test. These elements may already be sufficient or excessive in the soil, and adding more could create nutritional imbalances. Often, the phosphorus and potassium level for established tall fescue is adequate, and may be excessive. Adding these elements is of no benefit unless they are deficient.

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Nitrogen Fertilizing Schedule

Application	Time	Actual nitrogen ^a for field only (1.3 acres)	Actual nitrogen for both football field & area inside track (2.4 acres)
1st	Early September	60 lbs. soluble ^b	100 lbs. soluble
2nd	Early October	60 lbs. soluble	100 lbs. soluble
3rd	November	60 lbs. soluble	100 lbs. soluble
4th	Early May	60 lbs. insoluble ^c	100 lbs. insoluble
		or	or
		30 lbs. soluble ^d	50 lbs. soluble
5th (optional)	Early June	30 lbs. insoluble (preferred)	50 lbs. insoluble (preferred)
		or	or
		30 lbs. soluble	50 lbs. soluble

^a Pounds actual nitrogen (not pounds of product) to cover 1.3 acre football field.

Example: A 33-0-0 fertilizer contains 33% actual nitrogen. A football field would require 180 pounds of this product per application.

^b Soluble nitrogen sources: ammonium nitrate, ammonium sulfate, urea.

^c Insoluble nitrogen sources: Ureaformaldehyde, IBDU, sulfur-coated urea, Milorganite, Sustane.

^d If using soluble fertilizers in the spring, use a "spoon-feeding" approach (i.e., use the lighter rate given in the table).

Established tall fescue uses large quantities of nitrogen, only a small amount of phosphorus, and a moderate amount of potassium. These last two elements produce no visual response unless they are deficient. Tall fescue has a deep root system that extracts soil nutrients efficiently. A common mistake in fertilizing turfgrass is to use a balanced fertilizer such as 10-10-10, 12-12-12, 14-14-14, etc. Turfgrass does not use nutrients in this ratio. Established turfgrass uses nutrients in approximately a 4-1-2- ratio (nitrogen-phosphorus-potassium).

Although a pH of 6 to 7 is preferred, tall fescue will tolerate pHs ranging from 4.7 to 8.5, so it is seldom worthwhile to attempt major adjustments in the pH on an established field. Micronutrients such as iron or zinc seldom produce a response in tall fescue if the soil pH is in the acceptable range. Where the pH is above 7.0, acidifying fertilizers such as ammonium sulfate or sulfur-coated urea can be used in an effort to gradually lower the pH. The time to attempt major pH adjustments is when the field is being reestablished, and lime or sulfur can be mixed into the soil at appropriate rates. Lime is used to raise the pH and sulfur to lower the pH. Never add lime or sulfur unless soil tests indicate the need.

Fertilizing schedule: The following nitrogen fertilizing schedule is recommended for maintaining a good-quality tall fescue football field provided that it receives proper and timely maintenance.

1st application: 7 to 10 days before the first football game in September.

2nd application: Early October

3rd application: After the last regular game in November.

4th application: Early May, after spring flush of growth is over.

5th application: (optional) If nitrogen is depleted by frequent irrigation or rainfall, an early June application may be necessary to maintain color and vigor until September, especially if a soluble source is used in May.

Mowing

Frequent mowing, at the right height with a sharp blade, is a key factor in having a high-quality fescue turf. Mowing is often neglected, especially during the off-season. Do not mow a football field like a hay field, i.e. letting the grass get tall and mowing it down to a stubble. This results in a thin stand of stemmy turf that can be invaded by weeds, making it unattractive and of poor playing quality.

Tall fescue football fields should be mowed at a height of 2½ to 3½ inches in the spring and summer and 2 to 2½ inches during the playing season. Don't mow tall fescue shorter than 2 inches. Mowing at the higher end of the range will improve summer drought resistance by encouraging deeper roots.

For a thick, attractive turf, mow frequently enough so that no more than one-third of the foliage is removed at one time. For example, turf

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mowed at 2 inches should be mowed when the height reaches 3 inches, so no more than 1 inch is removed. When mowing at 3½ inches, the turf should be mowed when the height reaches about 5 inches.

Mowing frequency should be based on the rate of growth rather than on a set schedule such as once a week. Fescue grows fastest in the spring, slows down somewhat during the summer and resumes a moderate growth rate in the fall.

Removing the clippings is not necessary if the grass is mowed frequently enough so the clippings settle back into the turf. Clippings return much of the fertilizer nutrients back to the soil and do not contribute to thatch. It is more efficient to mow frequently so clippings do not have to be removed. This also results in better quality turf.

Tall fescue has a rather fibrous leaf that results in a ragged look if the mower has a dull blade. In hot weather, the frayed ends bleach out and give a whitish look to the turf. Check the blades for sharpness before every mowing.

Watering

Watering requires good judgement because of variable weather conditions. The need for irrigation is determined by temperature, sunlight, wind, humidity, and natural rainfall. Mowing and fertilizing also affect the water requirement.

Frequent watering wastes water and leads to shallow rooting, weeds, insect and disease problems, and soil compaction. Water only when needed, but do not let the field become severely water-stressed. Look for the first signs of visible wilt and then apply ¾ to 1 inch of water. When using this approach during hot summer weather, the field will probably require irrigation about every 4 to 7 days, barring rainfall.

A time clock that automatically activates the irrigation system according to a preset interval is not the most efficient way to irrigate because it does not take into account the changing weather conditions.

Overwatering in the spring can lead to a shallow-rooted turf that is ill-equipped to handle summer drought stress and fall traffic. Watering only when the grass needs it will encourage deeper rooting and lead to better summer performance and increased tolerance to the heavy use during the fall playing season.

Watering in the early morning hours is best (i.e., after about 4 a.m.). Water pressure is usually greatest at this time of day, wind is minimal, and the turf has a chance to dry out before nightfall so diseases are discouraged.

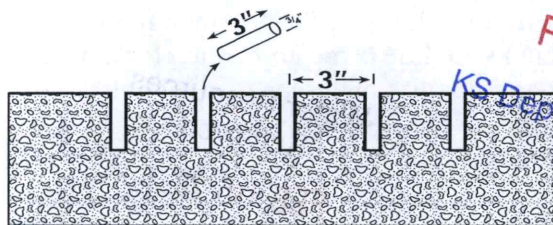
During the playing season, finish irrigating 24 to 48 hours before a game if possible. Although wet fields are soft to play on, they are very prone to soil compaction. When a field receives constant use, water immediately after the last game or practice of the day so the field can dry as long as possible before it is used the next day. Turfgrass will withstand the wear of a game better if it has adequate soil moisture. The soil should be neither soggy wet or so dry that the grass is beginning to wilt when subjected to heavy foot traffic or heavy equipment.

Core Aerating

Core aerating to reduce soil compaction is an essential management practice for athletic fields. Soil compaction of athletic fields cannot be completely avoided; it occurs in direct proportion to the amount of use a playing field receives. Compaction reduces the pore space in the soil which limits root growth and water penetration. The vigor of the turf gradually declines and will not respond well to good management. Weed invasion often follows.

A core aerating machine removes small plugs of soil from the turf. Aerating should not be confused with spiking, which only pokes small holes in the soil and may increase the compaction around the holes. Spiking will not substitute for aerating. Proper core aerating improves root growth by increasing water and nutrient infiltration and oxygen-carbon dioxide exchange in the upper soil surface.

Under normal conditions, a tall fescue athletic field should be aerated at least twice a year — immediately after the last game in the fall and again early in the spring. Severely compacted



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areas can be aerated more often (up to four or five times), but do not aerate just before or during the playing season, or during very hot weather. The alternative to core aerating is to till the soil, mix in amendments, and then reestablish the turf.

Aerifying the soil requires sufficient moisture for the tines to penetrate the soil, but not so much that they become clogged. If the tines clog, the aerator functions like a sheeps foot soil compactor and will actually increase soil compaction. The soil is at the correct moisture content when a plug crumbles apart easily when worked between the fingers. Some weight may have to be added to the machine for proper penetration, but be careful not to add so much weight that the tines bend.

The tines for aerifying athletic fields should be about $\frac{3}{4}$ inch in diameter. Ideally, the depth of penetration should be $2\frac{1}{2}$ to 3 inches, but this depth may not be achieved initially on compacted, clay soil. After a few years on an aerification program, the depth of penetration should gradually increase. The spacing of the aerifier holes should be about 3 inches apart. It may be necessary to go over the field two or three times to get the 3-inch hole spacing, depending on the machine.

It is not necessary to remove the soil cores. They will be broken up by mowing and watering, and will function as a topdressing. Some of the soil cores can be collected and used for the soil fertility test. If faster decomposition of the cores is desired, verticut the cores to break them up and lightly drag the field. Alternatively, dragging alone will speed break up of the cores if the moisture content is correct.

Slicing tines can be used during the playing season to aid in water penetration without disrupting the playing surface. A machine with interchangeable tines is best. The coring tines are used during the off-season, and the slicing tines during the playing season. Slicing should be done just before irrigating. It will have to be done before each irrigation on problem fields because the narrow slits will be closed after watering.

Deep-tine Aerification

Ideally, core-aeration would be supplemented by a deep-tine aerification every year, or every other year. There are several types of deep-tine aerifiers. Most penetrate the soil to a depth of about 10 to 16 inches. These units are effective in breaking through hard pans to improve drainage.

Also, because aerating at the same depth each time can result in a compaction pan, occasionally varying the depth of penetration is a good practice.

Gypsum and Wetting Agents

The question of using gypsum and wetting agents for compacted soils often arises. Gypsum is effective only on high-sodium soils. An exchangeable sodium test should be used to determine if gypsum will be effective. When gypsum is needed to solve an excessive sodium problem, it is most effective when thoroughly tilled into the soil. Surface applications to established turf are of limited value. In any case, reclaiming a high-sodium salt is a slow, difficult process.

Wetting agents in liquid or granular form are sold under a variety of trade names. Their main use is to aid water penetration into the soil. They do not reduce soil compaction or increase pore space, but may aid in alleviating dry spots.

Renovating the Field

Tall fescue football fields should be renovated after the last game in the fall. There is a natural tendency to forget the football field after the last game and often nothing is done until late in the spring or after school ends, which is too late for good results. Late spring seeding requires frequent watering for the seedling grass to survive the summer. Excessive watering favors weeds and disease. Even with adequate watering, root growth of tall fescue is minimal during summer months. Tall fescue makes most of its root growth during the spring and fall.

Renovating includes repairing the crown (if necessary), core aerating, fertilizing, seeding, and watering. Core aerating should be done as soon as possible, after the last game, and before fertilizing and seeding. Aerate the field thoroughly by going over it three or more times. Besides helping correct the compaction from the playing season, the holes provide a place for the seed to get into the soil. Fall is the best time for aerating because the winter freeze-thaw action in the holes loosens up surface compaction.

Don't be concerned if the field looks rough after a thorough aerating. It will settle down during the winter and the soil brought to the surface will help cover the seed. Fertilizing should follow core aerating. Depending on the date of the last game, seeding may need to be

delayed for a few weeks (see “Dormant Seeding” section below). Reseeding may be necessary only in the center of the field. It is best to use a grass drill for seeding. A drill places the seed in the soil so it is not eaten by birds or washed or blown away during the winter. It is important to water in the seed and fertilizer after they are applied.

Dormant Seeding: Some ask if it is risky to seed fescue in late fall. There are risks. If you seed too early, the seed may germinate in the fall leaving an immature plant, which may not survive the winter. Some of the seed could also be lost to birds, blowing, or washing away. But there are ways to safeguard against these problems. First, waiting until after Thanksgiving to seed should ensure that no seed will germinate in the fall or winter because soil temperatures will be cold enough to prevent germination. Second, drill-seeding (especially following intensive core aeration) places the seed beneath the soil surface where birds, wind, and washing are unlikely to affect it.

The benefit of dormant seeding is that the seed is in place and ready to germinate as soon as conditions are favorable in the spring. If getting out on the field to seed in late March or early April was guaranteed, then dormant seeding provides no advantage. In fact, it would be better to wait until spring. But soils are often wet and slow to dry out in the spring, so dormant seeding avoids the problem of dealing with wet spring soils.

Early-Spring Seeding: Early spring (late March or early April) seeding of tall fescue can often be successful. Fescue planted early has a longer growing time before it is used during the fall playing season. The most important point in spring seeding is to seed early so the seedlings can become well established before spring weeds begin to grow and before hot summer weather begins. Mature fescue will stand wear better than younger stands of grass.

Weed Control on New Stands: Tupersan (siduron) is the only crabgrass preventer that can be used in areas seeded in the late fall or spring. Any other crabgrass preventer will also prevent the grass seed from growing. Alternatively, Acclaim (fenoxaprop) is a very effective postemergence crabgrass herbicide that can be used on 1-month-old fescue. Acclaim is most effective when the weedy annual grasses are

young. Also, 2,4-D and other broadleaf weed killers should not be used within 1 month before seeding and not until after new grass has been mowed three times. The exception is Buctril (bromoxynil), which can be used on seedling grass, but it must be used while the broadleaf weeds are young and small. Using the wrong weed killer at the wrong time can kill the new grass.

Controlling Weeds, Insects, and Diseases

Weeds are often a problem in athletic fields because the turf thins out from heavy use and is invaded by weeds. Weed control requires considerable knowledge of herbicides, weed identification, proper application, and safety.

Knotweed is a common problem on football fields, especially in the center of the field where compaction is most severe. Knotweed is an indicator of a compaction problem. It is an annual broadleaf weed, but when it first emerges from the soil, it has the appearance of grass. Knotweed begins growth early in the season (late February to early March). It is a difficult weed to control when it matures, so early control is necessary. Buctril (bromoxynil) can be used if the knotweed is immature. Buctril also has little to no soil residual so it will not interfere with spring or fall seeding. Other products such as 2,4-D or Trimec will control immature knotweed, but they may damage young fescue seedlings, or interfere with seeding plans.

The local K-State Research and Extension office can assist with identifying weeds and recommending methods of control.

Annual white grubs are the primary insect of concern on tall fescue football fields. The grubs feed on the roots in August and September, causing loss of turf and poor footing just as the playing season is beginning. If these insects have been a recurring problem, Merit (imidacloprid) or Mach 2 (halofenozide) should be applied in early to mid July.

Sodwebworms, armyworms, and/or cutworms occasionally cause noticeable damage to fescue. A healthy stand of turfgrass will often outgrow damage from these insects. If they are encountered in damaging populations, treat with a labeled insecticide. Check with your county extension agent for recommended materials.

Brown patch is the major disease of tall fescue. It usually occurs during July and August when

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day and night temperatures and humidity are high. Avoiding excessive nitrogen fertilization in the spring, and avoiding irrigating in the evening or at night, will help discourage brown patch outbreaks. If an outbreak is severe, treat with the fungicide chlorothalonil (Daconil and others) to stop the progress of the disease.

When using any pesticide, follow label instructions carefully. Incorrect applications of pesticides can severely damage turfgrass. If pesticide applications are performed by school district staff, the applicators should become certified by attending pesticide applicator training. Check with your local K-State Research and Extension office for details.

Limiting Playing Field Use

No grass can withstand unlimited use. Football practice, band practice, games, and other activities all contribute to the wear and decline of the turf. Ideally, two or more practice fields should be provided for each main game field. Practice fields should be marked according to official regulations, reducing the need to practice on the main field.

Main fields should be used only for official games with the exception of one team and one band practice before each game. During football practice, as many of the scrimmage activities as possible should be conducted on the sides of the field, rather than in the center. Activities during the off-season also should be limited, especially during the summer when the grass is under heat stress. There is no exact number of games that can be played on the main field without excessive damage. That depends mainly on the type of soil and the condition of the grass. Generally, about 10 games can be played, but good judgment must be used. If the field continues to decline from season to season, further restrictions may have to be imposed on the use of the field.

It is normal for some damage to occur in the center of the field. There is no special kind of grass that will eliminate this problem. It should be part of the yearly maintenance schedule to renovate the center of the field at the end of each season or early the following spring.

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Fescue Football Fields

Management Highlights

Fertilizing:

Should be based on a soil test and done 7-10 days before first game in September

Early October, and after last game in November
Early May, after spring growth

Mowing:

2½-3½ inches in spring and summer
2-2½ inches in fall
Keep blade sharp

Mow frequently so clippings are short
Vary mowing pattern
Don't mow when turf is under drought stress

Watering:

Soak soil deeply
Water only when needed

Morning watering is best

Core aerating:

After last game and early spring
Use slicing tines during playing season

Use ¾-inch diameter tines
Hole spacing should be 3 inches apart and 3 inches deep
Periodic deep-tine cultivation is beneficial

Renovating field:

Renovate immediately after last game
Early spring, March or April, is second choice

Don't wait until late spring or summer

Pest control:

Use only approved pesticides
Apply according to label directions

Healthy stands of grass have fewer pest problems

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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September 2001

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See Map Received / 2-5-20



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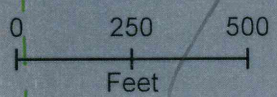
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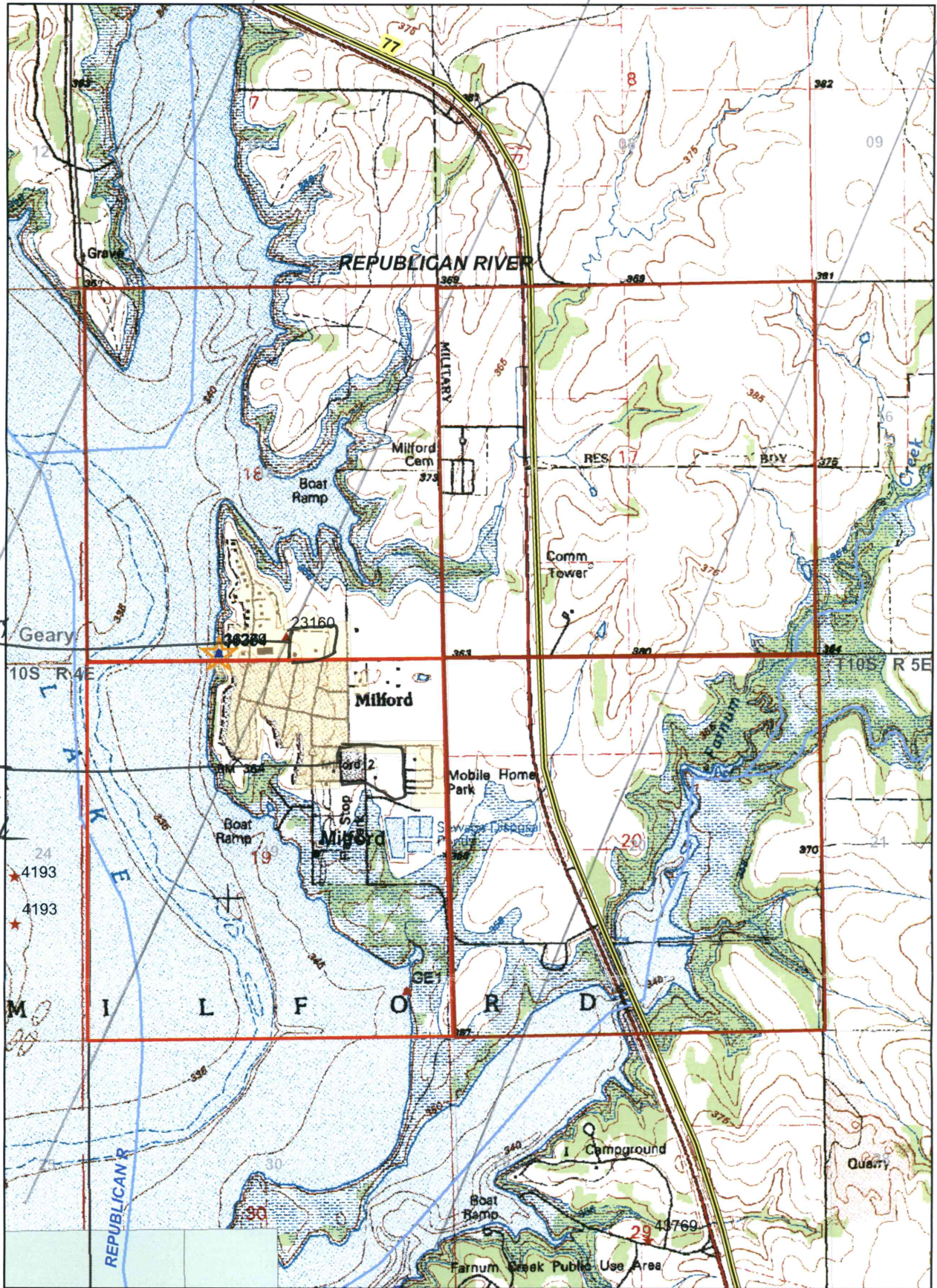
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Baseball field w/ catch field & City Park

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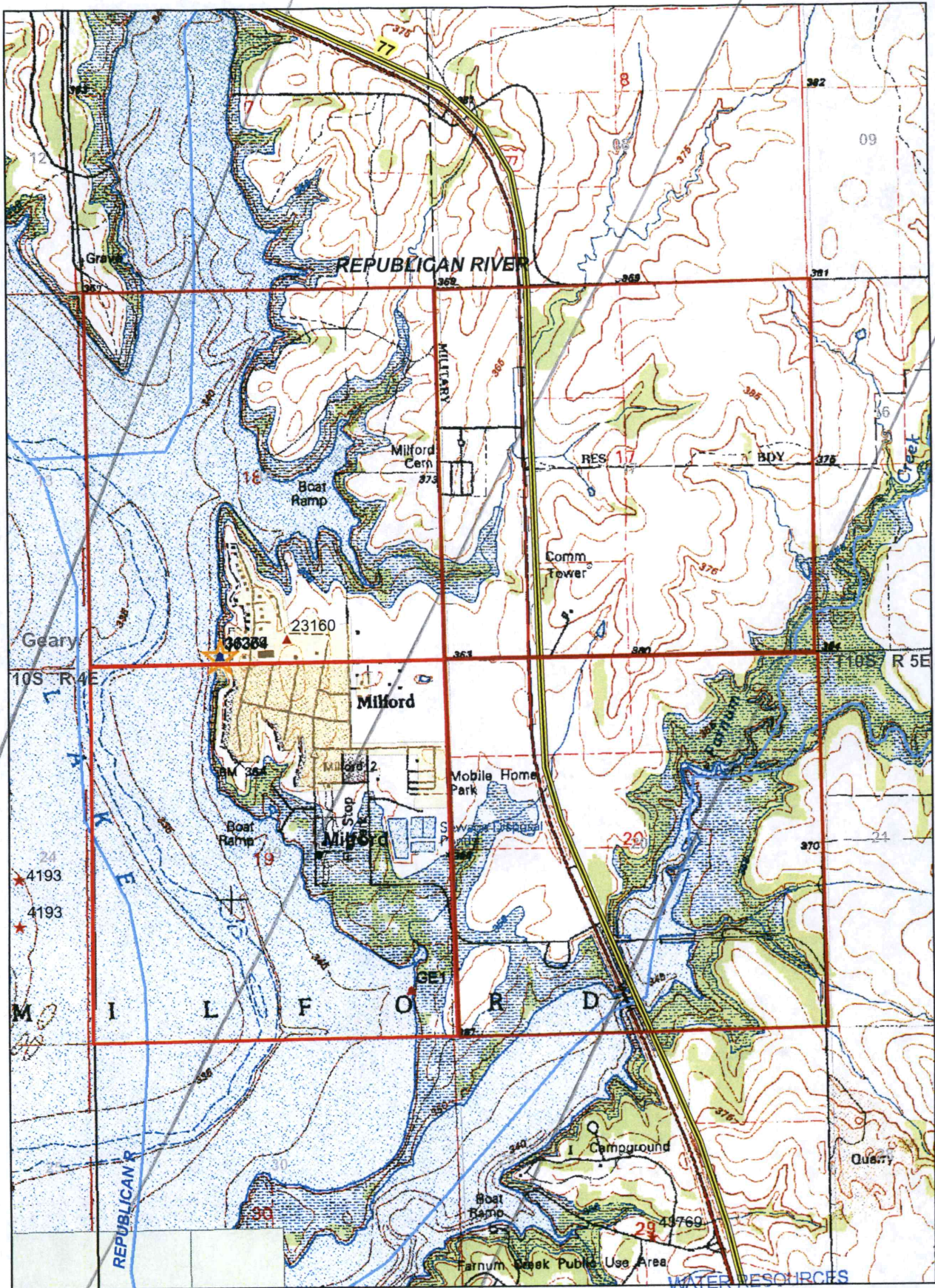
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Sent: Wednesday, February 5, 2020 9:12 AM
To: Krueger, Richelle [KDA]
Subject: RE: Request for Recommendation Change in PU UMW File No. 11279 City of Milford

Richelle,

Thanks for working through this file and the associated dismissal. The package does look ready to proceed forward now, it accomplishes what the City intended and cleans up their rights. IT appears to meet all applicable rules and regs.

Have a great day, Katie

Katie Tietsort
Water Commissioner

Katie.Tietsort@ks.gov
785-296-5733

Kansas Department of Agriculture
Division of Water Resources
Topeka Field Office
6531 S.E. Forbes Ave, Suite B
Topeka, KS 66619

From: Krueger, Richelle [KDA] <Richelle.Krueger@ks.gov>
Sent: Wednesday, February 5, 2020 8:55 AM
To: Tietsort, Katie [KDA] <Katie.Tietsort@ks.gov>
Subject: Request for Recommendation Change in PU UMW File No. 11279 City of Milford

Hi Katie,
Attached is a revised memo for the referenced change app, do you recommend approval?

Thanks,
Richelle

Turney, Brent [KDA]

From: Tim <cmilford@twinvalley.net>
Sent: Wednesday, September 25, 2019 3:05 PM
To: Turney, Brent [KDA]
Subject: Milford Map
Attachments: City of Milford[18151].pdf

EXTERNAL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Let me know if this will work?

Tim Himelick
Milford City Clerk
City Supernatant
City Fire Chief
(785) 463-5490

Water Resources
Received

SEP 30 2019

KS Dept Of Agriculture





Open Records for Kansas Appraisers - Geary County



12
Ac.(c)

14
2.9 Ac.(c)

411.3

13
301

201

TWELFTH STREET

8.14

89.52

138.14

102

8.81

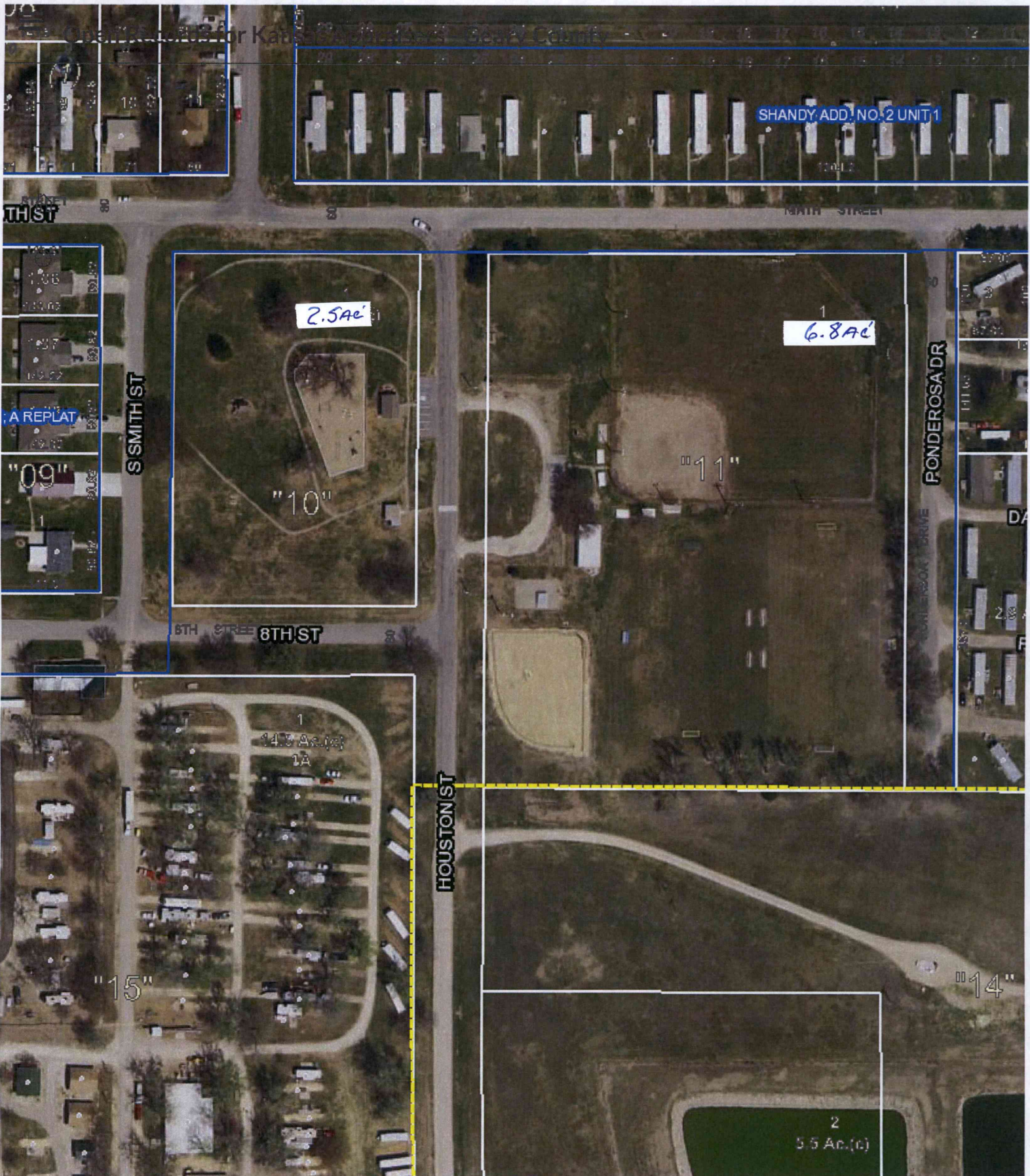
25.8

138.14

101

79

102



1320 Research Park Drive
Manhattan, KS 66502
785-564-6700
www.agriculture.ks.gov



900 SW Jackson, Room 456
Topeka, KS 66612
785-296-3556

Mike Beam, Secretary

Laura Kelly, Governor

CITY OF MILFORD
MAYOR BRAD ROETHER
P.O. BOX 279
MILFORD KS 66514

February 28, 2020

FILE COPY

RE: Change Approval, Water Right, File No. 11,279
Dismissal of Water Right, File No. 36,364

Dear Mayor Roether:

Enclosed is the order executed by the Chief Engineer, Division of Water Resources, Kansas Department of Agriculture, approving the application for change under Water Right, File No. 11,279.

Your attention is directed to the enclosures and to the terms, conditions, and limitations specified in this approval for change. A condition of this approval is that an acceptable water flow meter must be installed on the diversion works authorized under the referenced file number. Please return the required notification of completion of the diversion works and/or installation of the required meter as soon as these actions are completed.

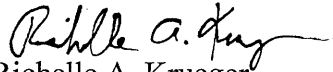
Since the order modifies the original document referred to above, it should be recorded with the Register of Deeds as other instruments affecting real estate.

In addition, in the voluntary dismissal request for Water Right, File No. 36,364, received on July 25, 2019, the Chief Engineer was advised that this water right has been abandoned and it was requested that the file be dismissed. According to State Law (K.S.A. 82a-718), a hearing must be held before any water right appropriation is declared abandoned. The voluntary dismissal described is considered a waiver of any such hearing. Therefore, File No. 36,364 is dismissed as of the date of the enclosed order.

This order should be also recorded with the Register of Deeds Office in the county wherein the place of use was located. The successful recording of this document could affect the property valuation of the former place of use thus reducing your tax assessment. Contact the local county appraiser for more information about this possibility.

If you have any questions, please contact this office. If you call, please reference the file number so we can help you more efficiently.

Sincerely,


Richelle A. Krueger
Environmental Scientist
Division of Water Resources

RAK
pc: Topeka Field Office

THE STATE OF KANSAS



KANSAS DEPARTMENT OF AGRICULTURE
Mike Beam, Secretary of Agriculture

DIVISION OF WATER RESOURCES
David W. Barfield, Chief Engineer

**APPROVAL OF APPLICATION
FOR
CHANGE IN PLACE OF USE
AND USE MADE OF WATER
WATER RIGHT
FILE NO. 11,279**

The Chief Engineer, Division of Water Resources, Kansas Department of Agriculture, after due consideration of the written application of Brad Roether, on behalf of the City of Milford, Kansas, P.O. Box 279, Milford, Kansas 66514, received in this office on July 20, 2018, for approval of a change in the location of the place of use and use made of water under the certificate of appropriation issued pursuant to the permit to appropriate water for beneficial use, finds that the change is reasonable and will not impair existing rights, and that the application should be and is hereby approved.

The effective date of the changes shall be the date this order is executed by the Chief Engineer, after which the authorized use made of water shall be:

Irrigation Use

and the authorized location of the place of use shall be:

Sec.	Twp.	Range	NE¼				NW¼				SW¼				SE¼				TOTAL ACRES
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
18	10S	5E															3.22	3.22	
19	10S	5E				24.50										11.50		36.00	

a total of 39.22 acres in Township 10 South, Range 5 East, Geary County, Kansas,

located substantially as shown on the map accompanying the application to change the place of use and use made of water.

All diversion works shall be equipped with an in-line, automatic, quick-closing check valve capable of preventing pollution of the source of the water supply. The type of valve installed shall meet specifications adopted by the Chief Engineer and shall be maintained in an operating condition satisfactory to the Chief Engineer.

The water right owner shall properly install an acceptable water meter on the diversion works authorized under this water right, prior to the use of water, in strict accordance with the Kansas Administrative Regulations 5-1-4 through 5-1-12 adopted by the Chief Engineer. The water right owner shall notify the Chief Engineer when installation of the water meter has been completed. The water right owner shall maintain the water meter in an operating condition satisfactory to the Chief Engineer, at all times during diversion of water and shall maintain records from which the total quantity of water diverted may be determined. The water right owner shall also report the reading of said water meter and the total quantity of water diverted annually to the Chief Engineer. Such records shall be furnished to the Chief Engineer by March 1 following the end of each calendar year.

In all other respects, the Certificate of Appropriation issued pursuant to Approval of Application, File No. 11,279, for permit to appropriate water for beneficial use, is as stated and set forth in the Certificate of Appropriation dated September 22, 1980.

RIGHT TO A HEARING AND TO ADMINISTRATIVE REVIEW

If you are aggrieved by this Order, then pursuant to K.S.A. 82a-1901, you may:

- 1) request an evidentiary hearing before the Chief Engineer, or
- 2) request administrative review by the Secretary of Agriculture.

Failure to request an evidentiary hearing before the Chief Engineer does not preclude your right to administrative review by the Secretary.

To obtain an evidentiary hearing before the Chief Engineer, a written request for hearing must be filed within 15 days after service of this Order as provided in K.S.A. 77-531 (i.e., within a total of 18 days after this Order was mailed to you), with the Kansas Department of Agriculture, Attn: Legal Section, 1320 Research Park Drive, Manhattan, Kansas 66502, or by FAX (785) 564-6777.

If you do not file a request for an evidentiary hearing before the Chief Engineer, you may petition for administrative review of the Order by the Secretary of Agriculture. A petition for review shall be in writing and state the basis for requesting administrative review. The request for review may be denied if the request fails to clearly establish factual or legal issues for review. See K.S.A. 77-527. The petition must be filed within 30 days after service of this Order as provided in K.S.A. 77-531 (i.e., within a total of 33 days after this Order was mailed to you), and be filed with the Secretary of Agriculture, Attn: Legal Division, Kansas Department of Agriculture, 1320 Research Park Drive, Manhattan, Kansas 66502, or by FAX (785) 564-6777.

If neither a request for an evidentiary hearing nor a petition for administrative review is filed as set forth above, then this Order shall be effective and become a final agency action as defined in K.S.A. 77-607(b). Failure to timely request either an evidentiary hearing or administrative review may preclude further judicial review under the Kansas Judicial Review Act.

Any request for hearing or petition for administrative review shall be in writing and shall be submitted to the attention of: Chief Legal Counsel, Kansas Department of Agriculture, 1320 Research Park Drive, Manhattan, Kansas 66502, Fax: (785) 564 - 6777.

Ordered this 25th day of February, 2020, in Manhattan, Riley County, Kansas.

Lane P. Letourneau
 Lane P. Letourneau, P.G.
 Program Manager
 Water Appropriation Program
 Division of Water Resources
 Kansas Department of Agriculture

State of Kansas)
) SS
 County of Riley)

The foregoing instrument was acknowledged before me this 25th day of February, 2020, by Lane P. Letourneau, P.G., Program Manager, Water Appropriation Program, Division of Water Resources, Kansas Department of Agriculture.



Katie Anderson
 Notary Public

CERTIFICATE OF SERVICE

On this ^{28th} day of *February*, 2020, I hereby certify that the attached Approval of Application for the Change in Place of Use and Use Made of Water, File No. 11,279, dated *February 25*, 2020 was mailed postage prepaid, first class, US mail to the following:

CITY OF MILFORD
PO BOX 279
MILFORD, KS 66514

With photocopies to:

Topeka Field Office

Kate Andersen

Division of Water Resources