VILLAGE OF BARRINGTON HILLS

Board of Health

NOTICE OF MEETING

Wednesday, November 12, 2014 ~ 7:30 pm
MacArthur Room - 112 Algonquin Road

AGENDA

1. Organizational
   1.1 Call to Order
   1.2 Roll Call
2. [Approve] Minutes
3. [Approve] Public Comment Rules
4. [Discussion] Water Quality Study
5 Public Comment
6. Adjournment

Chairman: Gwynne Johnston

Next Regular Meeting Tuesday, December 9, 2014

NOTICE AS POSTED

VILLAGE OF BARRINGTON HILLS
BOARD OF HEALTH MEETING
October 22, 2014

The regular meeting of the Village of Barrington Hills Board of Health was called to order at 7:30 p.m. by Chairman Johnston.

Board of Health Members Present:	Gwynne Johnston, Chairman Frank J. Konicek, M.D., Vice Chairman Anne Majewski, M.D.
Board of Health Members Absent:	Shirley Conibear, M.D.
Others Present:	Dan Strahan, Village Engineer Peder Finnberg, Heritage Land Consultants Randy Stevenson, Resident Jim Hammond, Resident Pamela Cools, Resident

APPROVAL OF MINUTES: Dr. Majewski made a motion to approve the minutes of the September 9th, 2014 meeting of the Board of Health. The motion was seconded by Dr. Konicek and approved unanimously.

SEPTIC VARIANCE (42 OTIS ROAD): Peder Finnberg, the design engineer for the property owner, presented a request for variance with regard to the proposed septic system. Mr. Finnberg noted that the Village septic code requires a minimum separation of 24" between the bottom of the septic system and the limiting layer. Based on soil tests performed at the site the depth to the limiting layer was found to be 25"deep in the area of the proposed septic system, precluding the possibility of a traditional trench system. To meet the setback requirement, Mr. Finnberg proposed an at-grade mound system designed in accordance with the mound design standards of the Lake County Health Department.

Village Engineer Dan Strahan noted that GHA had reviewed the plans and recommended approval of the variance.

After discussion Dr. Majewski made a motion, seconded by Dr. Konicek, for approval of the request for a septic variance to construct a Type IV at-grade mound system. The motion was approved by all members present.

MOUND & AT-GRADE SYSTEMS REPORT: Mr. Strahan introduced the item, noting that at their September meeting the Board of Health had requested a report and recommendation regarding potential amendments to the Village Code to address the frequent variance requests for

mound and at-grade mound systems. Mr. Strahan summarized information received from Lake and McHenry Counties regarding the frequency of mound and at-grade systems constructed in the past two years. Mr. Strahan noted that given the acceptance of mound and at-grade mound systems technology and the anticipated frequency of variance requests given the 2013-2014 amendments to the state septic code pertaining to soil testing, the recommendation of the Village Engineer is to consider amendments to the Village Code to allow this technology without a variance.

Various considerations were discussed, including the possibility of requiring additional soil testing for new construction permits to verify whether better soils may be present on a particular site.

After discussion Dr. Konicek made a motion, seconded by Dr. Majewski, to recommend that the Village Engineer prepare a draft amendment to the Village Code for consideration by the Board of Health. The motion was approved by all members present.

PUBLIC COMMENT RULES: A draft set of rules governing public participation and public comments during Board of Health meetings was distributed and discussed. Chairman Johnston inquired as to what had brought this forward to the Board of Health. Mr. Strahan indicated that during the course of updating other such policies Village staff had noted that there were no adopted rules governing public comments at Board of Health meetings. Mr. Jim Hammond commented that part of the reason for the topic was a recent change that clarified that people offering public comment did not need to provide their address.

After discussion, a motion was made to table consideration of the Public Comment rules until further information could be provided regarding consistency with similar policies adopted by other boards. The motion was made by Dr. Majewski, seconded by Dr. Koniceck, and approved by all members present.

PUBLIC COMMENT: Mr. Jim Hammond commented regarding discussions being held by the Zoning Board of Appeals with regard to horse boarding. Mr. Hammond noted that certain members of the ZBA had represented that the Board of Health had reviewed the impact of horse boarding on groundwater and had concluded that there was no impact. Mr. Hammond presented various data he had found on this topic. Chairman Johnston clarified that the Board had considered this topic approximately a year and a half ago and concluded that there was insufficient data available to draw any conclusions. Chairman Johnston noted that the Board of Health would be interested in any accumulated data on the topic for consideration at the next meeting.

Ms. Pamela Cools requested that the Board of Health document this clarification on the topic of horse boarding in writing. Dr. Majewski agreed with this request and suggested that written clarification be provided to Trustee Harrington for distribution to the Village Board and ZBA. Chairman Johnston noted he would draft this clarification and provide before the October Village Board meeting.

Dr. Majewski noted that she would like confirmation regarding whether the police department has sufficient personal medical protective equipment to handle potential Ebola cases. It was requested that Village Adminstrator Bob Kosin review with the polic chief and report back to the Board. All members present expressed agreement with this course of action.

ADJOURNMENT: Dr. Konicek motioned to adjourn at 8:21 PM. Dr. Majewski seconded the motion. All present said aye.

BOARD OF HEALTH

PUBLIC PARTICIPATION

Any person has the right to speak to an item on the agenda after the Public Meeting is opened and confirmation of the public notice is entered into the hearing record but before action is taken. Time is scheduled on the agenda to allow the public to provide input as testimony to the Board of Health on a particular subject that is the purpose of the Public Meeting or of interest to the Board of Health.

This is not a question and answer time.

The Board will consider all testimony after the conclusion of a presentation.

PROCEDURE FOR PARTICIPATION

1) Sign up on the sheets provided.

2) When recognized, please proceed to podium.

3) State your name.

4) Please limit your comments to THREE MINUTES.

You may submit your written comments to the Village Clerk.

Comments of a personal nature directed towards individual Board members, employees of the Village or any other individual are not permitted. It is the prerogative of the Presiding Officer of the Board to limit the discussion of any speaker to allow for broad and diverse public participation. Speakers may submit materials, written testimony, or pictures to the Village Clerk for the consideration of the Board.

Date of Adoption

Robert Kosin <rkosin@barringtonhills-il.gov>

Rules for Public Comment at Open Public Meetings

Sean Conway <seanconway@bond-dickson.com> Thu, Oct 23, 2014 at 2:03 PM
To: Robert Kosin <rkosin@barringtonhills-il.gov>, wfriesen@barringtonhills-il.gov

Hi Bob and Wendi,

As a result of two binding Illinois Public Access Counselor ("PAC") Opinions that have recently been issued (attached hereto), I think it is a good time to review the Open Meetings Act ("OMA") requirements applicable to public body rules on public comment.

OMA Requirements

In 2011 the Illinois Legislature added Section 2.06(g) to the OMA providing that "[a]ny person shall be permitted an opportunity to address public officials ***under the rules established and recorded by the public body***."

Section 2.06(g) does not require a public body to adopt rules for public comment; however, a public body is prohibited from enforcing a rule as to public comment that is based on "custom and practice" and has not been formally adopted and promulgated by the public body. Any such effort amounts to an OMA violation under the reasoning of the PAC Opinions attached.

In addition, any such formal rules must be reasonable which is determined on a rule by rule basis under Illinois case law.

Legal Recommendation

We recommend that all legislative and advisory bodies of the Village formally adopt written procedural rules governing public comment to the extent such Village bodies seek to enforce any rules that have been informally established through custom and practice to remain compliant under the OMA.

We also recommend that there be a legal review of any such proposed formal rules to ensure that the rules are reasonable in light of established case law and binding PAC Opinions.

If you have any thoughts or questions concerning this Recommendation, do not hesitate to contact me.

Best regards,

Sean P. Conway
Bond, Dickson & Associates, P.C.
400 S. Knoll Street, Unit C
Wheaton, IL 60187
Phone: (630) 681-1000
Fax: (630) 681-1020

2 attachments

PAC Opinion (Formal Rules for Public Comment) 2014 PAC 30194.pdf
316K

PAC Opinion (Formal Rule for Public Comment not Reasonable) 2014 PAC 30194.pdf
316K

OFFICE OF THE ATTORNEY GENERAL
STATE OF ILLINOIS

Lisa Madigan
ATTORNEY GENERAL

September 4, 2014

PUBLIC ACCESS OPINION 14-009
(Request for Review 2014 PAC 29739)

OPEN MEETINGS ACT:
Information Required of
Speakers Wishing to
Provide Public Comment

Ms. Janet Hughes
1283 Abbey Oaks Drive
Lemont, Illinois 60439

The Honorable Brian K. Reaves
Mayor, Village of Lemont
418 Main Street
Lemont, Illinois 60439

RE: OMA Request for Review – 2014 PAC 29739

Dear Ms. Hughes and Mayor Reaves:

This is a binding opinion issued pursuant to section 3.5(e) of the Open Meetings Act (OMA) (5 ILCS 120/3.5(e) (West 2012)). For the following reasons, this office concludes that the Lemont Village Board (Board) violated OMA during the public comment portion of its April 14, 2014, regular meeting by requiring Ms. Janet Hughes to state her home address in order to address the Board.

BACKGROUND

On June 6, 2014, Ms. Hughes submitted a Request for Review alleging that the Board, acting through Mayor Brian Reaves and Village Attorney Jeff Stein, "pressured" and "forced" her to state her home address for the record prior to being permitted to provide public

comment during the Board's April 14, 2014, meeting.[1] In support of her allegation, Ms. Hughes appended an affidavit in which a witness stated, "[d]uring the public Board meeting, I witnessed Mayor Brian Reaves and Village Attorney Jeff Stein force Janet Hughes to state her home address for the record in order for her to participate during public comments."[2] The Public Access Bureau interpreted this Request for Review as an allegation that the Board violated section 2.06(g) of OMA (5 ILCS 120/2.06(g) (West 2012)), which provides that "[a]ny person shall be permitted an opportunity to address public officials under the rules established and recorded by the public body[,]" by predicating Ms. Hughes' right to address the Board on the public disclosure of her home address.

On June 13, 2014, the Public Access Bureau sent a copy of Ms. Hughes' Request for Review to the Mayor and asked for a written response to the allegations, a copy of the Board's rules governing public comment, and the agenda and minutes of the April 14, 2014, Board meeting. In addition, if the Board had adopted a rule requiring an individual wishing to make a public comment at a Board meeting to publicly state his or her home address, the Public Access Bureau requested that the Board explain its rationale for such a rule. In the absence of such a rule, then the Public Access Bureau asked for an explanation for requiring Ms. Hughes to provide her home address at the April 14, 2014, meeting.[3]

Counsel for the Village, Mr. Andrew S. Paine, responded in a letter dated June 30, 2014. Mr. Paine furnished copies of the agenda and minutes from the April 14, 2014, meeting and a copy of the Village ordinance governing public comment at Board meetings. Mr. Paine explained that the Board "has a long standing custom and practice of asking any member of the public wishing to address the Board to provide his or her address."[4] Mr. Paine also asserted that although Ms. Hughes initially declined the Mayor's request to state her home address for the record at the April 14, 2014, meeting, Ms. Hughes "provided her address by her own volition and not as a requirement to speak before the Board" and was "afforded the opportunity to address the

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[1]E-mail from Janet Hughes to Sarah Pratt, Public Access Counselor, Office of the Attorney General (June 6, 2014).

[2]Affidavit of Victor R. Fisher, ¶ 5 (June 5, 2014).

[3]Letter from Timothy O'Brien, Assistant Attorney General, Public Access Bureau, Office of the Attorney General, to Mayor Brian K. Reaves, Village of Lemont (June 13, 2014).

[4]Letter from Andrew S. Paine, Tressler LLP, to Timothy O'Brien, Assistant Attorney General, Public Access Bureau (June 30, 2014), at 2.

Mayor and the Board, an opportunity to which she took full advantage."[5] Mr. Paine further stated that Ms. Hughes "ha[d] followed [the rules and customs] in the past without objection."[6]

On July 9, 2014, this office forwarded the Village's response to Ms. Hughes.[7] On July 22, 2014, Ms. Hughes replied via e-mail and provided a video recording of the relevant portion of the April 14, 2014, meeting as an attachment in mp4 format. Ms. Hughes stated that Village Ordinance O-84-10 does not require a participant to provide a home address in order to publicly address the Board. Ms. Hughes also asserted that "customs and practices" do not constitute "rules" within the meaning of section 2.06(g) of OMA. Finally, Ms. Hughes reiterated that a person's home address is private information, and claimed that she does not recall publicly stating her address at prior public meetings.[8] The Board's attorney was copied on Ms. Hughes' response.

ANALYSIS

This office has reviewed the video recording of the exchange among Ms. Hughes, Mayor Reaves, and Mr. Stein during the April 14, 2014, Board meeting. The video shows Mayor Reaves introducing the "audience participation" period by asking anyone who wished to participate to approach the podium and state his or her name and address for the record. Mayor Reaves also reminded the attendees to limit their comments to three minutes and to confine their comments to new areas.

Ms. Hughes approached the podium, stated her name, and said that she was a taxpayer from Lemont. At that point, Mayor Reaves stated, "I need your address, too[.]"[9] Ms. Hughes provided the name of her street and the nearest intersection to her home, and then began her comments. The Mayor again stated that he needed her full address. Ms. Hughes attempted to continue her comments without providing her address, but Mayor Reaves said "I have been

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[5]Letter from Andrew S. Paine, Tressler LLP, to Timothy O'Brien, Assistant Attorney General, Public Access Bureau (June 30, 2014), at 2.

[6]Letter from Andrew S. Paine, Tressler LLP, to Timothy O'Brien, Assistant Attorney General, Public Access Bureau (June 30, 2014), at 2.

[7]Letter from Timothy O'Brien, Assistant Attorney General, Public Access Bureau to Janet Hughes (July 9, 2014).

[8]Letter from Janet Hughes to Timothy O'Brien, Assistant Attorney General, Public Access [Counselor], Office of the Illinois Attorney General (July 22, 2014).

[9] Video Recording: Village of Lemont Village Board, Regular Meeting, April 14, 2014 (on file with the Public Access Bureau).

instructed by counsel that I need the exact address for public record for public conversations."[10] Ms. Hughes responded that she was "not comfortable" providing her complete address.[11] Mayor Reeves then publicly sought the counsel of Mr. Stein. The audio portion of the off-camera remarks of Mr. Stein is not entirely clear. However, Mr. Stein can be heard stating that a person's refusal to provide an address would not bar an individual from providing comment, but that it is "helpful."[12] Mr. Stein also noted that if Ms. Hughes did not wish to provide her address, the Board should allow her to speak and "take it for what it is."[13] Following this exchange, Ms. Hughes stated her home address and continued addressing the Board.

Prior to January 1, 2011, the OMA did not guarantee members of the public the right to address public bodies. Instead, any right to do so was derived from statutes governing specific governmental entities or policies adopted by them. Section 2.06(g) of OMA, which was added by Public Act 96-1473, effective January 1, 2011, now requires that all public bodies subject to the Act provide an opportunity for members of the public to address public officials at open meetings.

The right to address a public body is not without limits, however. To the contrary, section 2.06(g) expressly provides that public comment is subject to the "rules established and recorded by the public body." Although OMA does not specifically address the types of rules that a public body may adopt, public bodies may generally promulgate reasonable "time, place and manner" regulations which are necessary to further a significant governmental interest. *See, e.g,. I.A. Rana Enterprises, Inc. v. City of Aurora*, 630 F. Supp. 2d 912, 922 (N.D. Ill. 2009) (examining whether the application of city council's rules for public comment violated plaintiffs' rights). "City Councils have legitimate reasons for having rules to maintain decorum at public meetings[ ]" and "to assure that the meetings can be efficiently conducted." *Timmon v. Wood*, 633 F. Supp. 2d 453, 465 (W.D. Mich. 2008). For example, a public body may prescribe time limits for public comment. *See Wright v. Anthony*, 733 F.2d 575, 577 (8th Cir. 1984) (finding that a time limit for speakers at a public hearing served a significant governmental interest in conserving time and in ensuring that others had an opportunity to speak, thus did not violate the speaker's first amendment rights).

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[10]Video Recording: Village of Lemont Village Board, Regular Meeting, April 14, 2014 (on file with the Public Access Bureau).

[11]Video Recording: Village of Lemont Village Board, Regular Meeting, April 14, 2014 (on file with the Public Access Bureau).

[12]Video Recording: Village of Lemont Village Board, Regular Meeting, April 14, 2014 (on file with the Public Access Bureau).

[13]Video Recording: Village of Lemont Village Board, Regular Meeting, April 14, 2014 (on file with the Public Access Bureau).

The Village's ordinance governing public comment provides:

> Persons who wish to address the Board on any matter may request recognition prior to the meeting, or during Audience Participation, or if the matter relates to a specific agenda item, during the discussion of that item. The President will attempt to accommodate such requests to the extent practicable by directing that such requests shall be heard during Audience Participation or during debate on a specific agenda item. The President may in his discretion set a time limit for each person's address, taking into account the number of persons wishing to be heard on a matter and the amount of village business requiring attention. The President or a majority of the Trustees present may extend the limitation of time or grant additional time to individual speakers and the President's denial of or limitation on any request may be overruled by a majority of the Trustees present. Provided, any failure to adhere to the provisions of this section, and any such restriction or limitation upon any speaker, shall not impair or affect any ordinance, resolution, motion or other action of the Board.[14]

The ordinance does not require that a member of the public state his or her home address before speaking at public meetings of the Board. In response to this office's inquiry, the Board confirmed that it has not promulgated such a rule.[15] Rather, the Board referred to requiring members of the public to provide their home addresses before speaking at public meetings as a "custom and practice."[16]

The plain language of section 2.06(g) of OMA provides that individuals are entitled to address a public body subject only to a public body's established and recorded rules. Section 2.06(g) does not recognize conditions on speaking arising out of "custom and practice," unless those conditions are incorporated into the public body's rules. Here, the Board's established and recorded rules governing public comment do not include a requirement that an individual publicly state his or her home address before speaking at public meetings. At the

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[14]Village of Lemont, Illinois, Municipal Code ch. 2, § 2.08.060 (2011).

[15]Letter from Andrew S. Paine, Tressler LLP, to Timothy O'Brien, Assistant Attorney General, Public Access Bureau (June 30, 2014), at 2.

[16]Letter from Andrew S. Paine, Tressler LLP, to Timothy O'Brien, Assistant Attorney General, Public Access Bureau (June 30, 2014), at 2.

April 14, 2014, meeting, however, the Mayor stated that those individuals wishing to speak should approach the podium and give their names and addresses. Further, the video recording shows that the Mayor specifically requested that Ms. Hughes state her address and repeated that request when she attempted to begin her public comments without first providing her address. The Mayor then asked the Village Attorney how to proceed, and he indicated that the Board should allow Ms. Hughes to speak without providing her address. After the Attorney's comments, however, Ms. Hughes went ahead and stated her address, then provided her comments.

While it is not clear that the Board would have continued to request her address after the Village Attorney responded to the Mayor's request for guidance, it does appear that the requests for her address had the effect of making Ms. Hughes feel that she needed to state her complete home address before she could provide public comments. Further, in its response to this office the Board described asking for home addresses of speakers as a "longstanding custom and practice" of the Village, "along with countless other public bodies."[17] Even if the Mayor had allowed Ms. Hughes to address the Board without providing her complete home address in this instance, this scenario raises an important issue – whether requiring, either by "custom and practice" or by rule, that individuals provide home addresses before addressing a public body is consistent with OMA. Because it appears that many public bodies have such a requirement, clarification of the law in this area is warranted.

The Board notes that requiring individuals to state their addresses for the record prior to providing public comment allows for more accurate meeting minutes, permits the Board to determine whether the comments are raised by residents, and enables the Board to follow up on issues raised by members of the public. While the rules governing public comment under section 2.06(g) of OMA may assist in accurate recordkeeping, their primary purpose is to accommodate a speaker's statutory right to address the public body while ensuring that order and decorum are maintained at public meetings. *See Rana Enterprises, Inc.*, 630 F. Supp. 2d at 923-25. It is understandable that a public body would seek to make sure it is keeping accurate minutes, hearing from residents and other interested parties, and responding effectively to concerns raised at public meetings. Overall, in considering whether it is good policy to ask members of the public to provide their addresses when making public comments, there are reasonable arguments on both sides. Nothing prohibits a speaker from voluntarily providing his or her home address in response to the public body's request. However, the language of section 2.06(g) does not support a requirement that a person must provide his or her complete home

[17]Letter from Andrew S. Paine, Tressler LLP, to Timothy O'Brien, Assistant Attorney General, Public Access Bureau (June 30, 2014), at 2.

address prior to being allowed to make a public comment. Section 2.06(g) specifically provides that "*[a]ny person* shall be permitted an opportunity to address public officials[,]" (emphasis added) therefore a person's right to comment at an open meeting is not contingent upon where he or she resides. In this case, the Board violated section 2.06(g) of OMA by placing a condition on the making of a public comment that is not part of its established and recorded rules. But, even if the Board had established and recorded a rule requiring speakers to provide their home addresses prior to speaking, we would conclude that such a rule would impermissibly exceed the scope of the rulemaking contemplated by section 2.06(g). Requiring a member of the public to provide his or her complete home address prior to speaking may have a chilling effect on individuals who wish to speak at public meetings. Therefore, we conclude that requiring speakers to state their home addresses prior to addressing public bodies violates section 2.06(g) of OMA, even if such a rule is established and recorded by the public body.[18]

FINDINGS AND CONCLUSIONS

After full examination and giving due consideration to the arguments of the parties, the Public Access Counselor's review, and the applicable law, the Attorney General finds that:

1) On April 14, 2014, Ms. Janet Hughes attended an open meeting of the Lemont Village Board.

2) On June 6, 2014, Ms. Hughes submitted a Request for Review to the Public Access Counselor alleging that Village of Lemont officials "pressured" her to state her home address for the record prior to being permitted to provide public comment at an open Board meeting. Ms. Hughes' Request for Review was timely filed and otherwise complies with the requirements of section 3.5(a) of OMA (5 ILCS 120/3.5(a) (West 2012)).

3) The Attorney General properly extended the time to issue a binding opinion by 21 business days, to September 4, 2014, pursuant to section 3.5(e) of OMA. Therefore, the Attorney General may properly issue a binding opinion with respect to Ms. Hughes' Request for Review.

[18]The Board and Ms. Hughes disagree whether she had given her home address prior to public comment at previous meetings. Even if Ms. Hughes had previously stated her address at an open meeting in order to be allowed to speak, however, that disclosure would not waive her right to protest this practice or affect the invalidity of such a rule.

4) Section 2.06(g) of OMA provides that "[a]ny person shall be permitted an opportunity to address public officials under the rules established and recorded by the public body."

5) Although the Board is authorized under section 2.06(g) of OMA to establish and record rules related to public comment, the Board did not establish or record a rule that a speaker must provide a home address prior to providing public comment.

6) Prior to the audience participation portion of the April 14, 2014, meeting, the Mayor directed that persons wishing to address the Board approach the podium and state their name and address for the record.

7) When Ms. Hughes attempted to address the Board without providing her exact home address, she was asked three more times to state her complete home address.

8) The Village Attorney advised the Mayor that Ms. Hughes should be allowed to address the Board without providing her complete home address. Ms. Hughes, however, did finally state her full home address before addressing the Board.

9) The Attorney General concludes that the Board violated section 2.06(g) of OMA when it stated that Ms. Hughes must provide her complete home address for the record before addressing the Board, although this requirement was not an established and recorded rule. Further, even if the Board had established and recorded such a rule, the rule would violate OMA because it is not reasonably related to promoting meeting order or decorum, or ensuring that other speakers have an opportunity to address the public body.

Therefore, it is the opinion of the Attorney General that the Lemont Village Board violated the Open Meetings Act when it tried to require Ms. Hughes to state her home address for the record prior to addressing the Board. In accordance with these findings of fact and conclusions of law, the Board is directed to take appropriate action to comply with this opinion by conducting its future meetings in full compliance with OMA.

This opinion shall be considered a final decision of an administrative agency for the purposes of administrative review under the Administrative Review Law. 735 ILCS 5/3-101 *et. seq.* (West 2012). An aggrieved party may obtain judicial review of the decision by filing a

complaint for administrative review in the Circuit Court of Cook or Sangamon County within 35 days of the date of this decision naming the Attorney General of Illinois and Ms. Janet Hughes as defendants. *See* 5 ILCS 120/7.5 (West 2012).

Very truly yours,

LISA MADIGAN
ATTORNEY GENERAL

By: 
Michael J. Luke
Counsel to the Attorney General

OFFICE OF THE ATTORNEY GENERAL
STATE OF ILLINOIS

Lisa Madigan
ATTORNEY GENERAL

September 30, 2014

PUBLIC ACCESS OPINION 14-012
(Request for Review 2014 PAC 30194)

OPEN MEETINGS ACT:
Rules for Public Comment

Mr. Bob Grogan, CPA, CFE
DuPage County Auditor
418 Bunning Drive
Downers Grove, Illinois 60516

Mr. Mark D. Messman
Assistant State's Attorney
McLean County State's Attorney's Office
Government Center
115 East Washington Street, Room 401
P.O. Box 2400
Bloomington, Illinois 61702-2400

RE: OMA Request for Review – 2014 PAC 30194

Dear Mr. Grogan and Mr. Messman:

This is a binding opinion issued pursuant to section 3.5(e) of the Open Meetings Act (OMA) (5 ILCS 120/3.5(e) (West 2012)). For the reasons discussed below, this office concludes that the McLean County Board (Board) violated OMA by prohibiting Mr. Bob Grogan from addressing the Board at its June 17, 2014, meeting because he did not submit a written request to appear before the Board at least five working days prior to the meeting.

BACKGROUND

On July 1, 2014, Mr. Grogan submitted a Request for Review alleging that the Board's advance sign-up requirement, which contemplates that persons wishing to address the Board must request permission to do so in writing five working days before the meeting, violates OMA. Specifically, Mr. Grogan stated, "I wanted to speak at public comment to the McLean County Board regarding the issue of a proposed referendum at their June 17th meeting and was denied the opportunity because of their board rule which calls for 5 days written advance notice."[1] In support of his allegation, Mr. Grogan submitted a copy of his June 11, 2014, e-mail to Mr. William Wasson, McLean County Administrator, requesting to speak during public comment at the June 17, 2014, meeting, as well as a copy of Mr. Wasson's June 11, 2014, e-mail response denying his request. Mr. Wasson responded:

> Unfortunately, your request for appearance by a non-member(s) before the Board was not made in compliance with County Board Rule] 5.14-7(B)[.] * * * Therefore, your request to appear under Appearance by Members of the Public and County Employees on the County Board Agenda cannot be recognized for the June 17, 2014 County Board Meeting commencing at 9:00 AM.
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> I have also advised the County Board Chairman of your request and that under the provisions of [County Board Rule]5.14-7(B), your request has been declined.[2]

Mr. Grogan's Request for Review also stated that "[d]espite the email * * * telling me that I was ineligible, I went to their board meeting on June 17th and requested verbally the right to speak that day and was denied again by Mr. Wasson."[3]

On July 8, 2014, the Public Access Bureau sent a copy of Mr. Grogan's Request for Review to Mr. Wasson and asked for a written response to the allegations, a copy of the Board's rules governing public comment, and the agenda, minutes, and any video or audio

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[1]E-mail from Bob Grogan, DuPage County Auditor, to Sarah Pratt, Public Access Counselor, Office of the Attorney General (July 1, 2014).

[2]E-mail from William R. (Bill) Wasson, County Administrator, McLean County Administrator's Office, to Bob [Grogan] (June 11, 2014).

[3]E-mail from Bob Grogan, DuPage County Auditor, to Sarah Pratt, Public Access Counselor, Office of the Attorney General (July 1, 2014).

recordings of the June 17, 2014, Board meeting.[4] Counsel for the Board, Mr. Mark D. Messman, responded to this office in a letter dated July 17, 2014,[5] and furnished copies of the agenda and minutes from the meeting and a copy of the Board's rules governing public comment. Mr. Messman acknowledged that the Board does "not deny that Mr. Grogan was not permitted to appear before the McLean County Board at its meeting on July 17, 2014."[6] He asserted, however, that the Board did not violate OMA because Mr. Grogan's request was properly denied under the Board's established rules for public comment:

> The County Board allows non-members to appear and speak at County Board and Committee [meetings] pursuant to its rules. County Board Rule 14-7 applies to requests to make an appearance at County Board meetings. This rule provides two mechanisms through which members of the public may speak at a County Board meeting. Subsection (B) provides that any person wishing to speak may submit a request to the County Administrator not less than five days prior to the meeting. Alternatively, under subsection (A) a County Board member may request that person[sic] be allowed to speak at a meeting without any requirement for advance notice. As is evident from the emails provided to you, Mr. Grogan attempted to follow Section 14-7(B) and submitted a request to the County Administrator. Unfortunately, his request was not timely made and therefore the County Administrator lacked authority to grant that request."[7]

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[4]Letter from Matt Hartman, Assistant Attorney General, Public Access Bureau, to William Wasson, County Administrator, McLean County Administrator's Office (July 8, 2014).

[5]Letter from Mark D. Messman, Assistant State's Attorney, Civil Division, McLean County State's Attorney, to Matt Hartman, Assistant Attorney General, Public Access Bureau, Office of the Illinois Attorney General (July 17, 2014).

[6]Letter from Mark D. Messman, Assistant State's Attorney, Civil Division, McLean County State's Attorney, to Matt Hartman, Assistant Attorney General, Public Access Bureau, Office of the Illinois Attorney General (July 17, 2014), at 1.

[7]Letter from Mark D. Messman, Assistant State's Attorney, Civil Division, McLean County State's Attorney, to Matt Hartman, Assistant Attorney General, Public Access Bureau, Office of the Illinois Attorney General (July 17, 2014), at 1-2.

Mr. Messman noted that another individual from the Illinois County Auditor's Association, of which he believed Mr. Grogan to be a member, submitted a timely request and was granted five minutes to speak at the meeting.[8] Mr. Messman also emphasized that "[t]he statute provides no guidance and contains no requirements for * * * what the rules must provide. For example, there is no requirement that the public be allowed to speak to matters on the agenda. Nor, is there any prohibition against imposing a deadline for requesting permission to appear."[9]

On July 22, 2014, this office forwarded the Board's response to Mr. Grogan.[10] He did not reply. On August 28, 2014, the Public Access Counselor properly extended the time to issue a binding opinion by 21 business days pursuant to section 3.5(e) of OMA.[11]

ANALYSIS

Section 2.06(g) of OMA (5 ILCS 120/2.06(g) (West 2012)) provides that "[a]ny person shall be permitted an opportunity to address public officials under the rules established and recorded by the public body."

The Board's rules governing public comment provide:

> 5.14-7 Appearance by Non-Members
>
> (A) Any member may request that a County Officer or employee, or other persons, be permitted to appear before the Board on matters of County business, and such request shall be granted by the Chairman unless there is objection by any member, in which event Board action will be required to overrule the Chairman.

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[8]Letter from Mark D. Messman, Assistant State's Attorney, Civil Division, McLean County State's Attorney, to Matt Hartman, Assistant Attorney General, Public Access Bureau, Office of the Illinois Attorney General (July 17, 2014), at 2.

[9]Letter from Mark D. Messman, Assistant State's Attorney, Civil Division, McLean County State's Attorney, to Matt Hartman, Assistant Attorney General, Public Access Bureau, Office of the Illinois Attorney General (July 17, 2014), at 2-3.

[10]Letter from Matthew Hartman, Assistant Attorney General, Public Access Bureau, to Bob Grogan (July 22, 2014).

[11]Letter from Matt Hartman, Assistant Attorney General, Public Access Bureau, to Bob Grogan and Mark D. Messman, Assistant State's Attorney, McLean County State's Attorney (August 28, 2014).

> (B) All requests by non-members of the Board for appearance before the Board shall be made to the Administrator, in writing with the subject matter stated, not less than five working days before the next scheduled Board meeting. Such appearance with regard to any particular topic shall be limited to a time not to exceed three minutes for each individual, five minutes for a representative spokesman of a group and fifteen minutes total. The Chairman may act to prevent repetition or digression, to maintain decorum and to exclude discussion of matters which have had a previous public hearing conducted according to law, discussion of matters where public comment would interfere with the due process of law or discussion of matters which would be in direct conflict with restrictions placed upon the Board by other applicable law.[12]

Prior to January 1, 2011, OMA did not guarantee members of the public the right to address public bodies. Instead, any right to do so was derived from statutes governing specific governmental entities or policies adopted by them. Section 2.06(g) of OMA, which was added by Public Act 96-1473, effective January 1, 2011, requires that all public bodies subject to the Act provide an opportunity for members of the public to address public officials at open meetings.

The right to address public bodies at open meetings is not without limits, however. To the contrary, section 2.06(g) expressly provides that public comment is subject to the "rules established and recorded by the public body." Although OMA does not specifically address the types of rules that a public body may adopt, public bodies may generally promulgate reasonable "time, place and manner" regulations that are necessary to further a significant governmental interest. *See, e.g.. I.A. Rana Enterprises, Inc. v. City of Aurora*, 630 F. Supp. 2d 912, 922 (N.D. Ill. 2009) (examining whether the application of city council's rules for public comment violated plaintiffs' rights). "City councils have legitimate reasons for having rules to maintain decorum at public meetings[ ]" and "to ensure that the meetings can be efficiently conducted." *Timmon v. Wood*, 633 F. Supp. 2d 453, 465 (W.D. Mich. 2008). For example, a public body may legitimately prescribe reasonable time limits for public comment. *See Wright v. Anthony*, 733 F.2d 575, 577 (8th Cir. 1984) (finding that because a time limit for speakers at a

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[12] *See* Rules of the County Board of McLean County, Illinois, ch. 5, § 5.14-7 (adopted December 6, 2010); *see also* Proceedings of the County Board of McLean County, Illinois, December 3, 2012, Resolution of the McLean County Board to Continue the Rules of the County Board of McLean County (approved December 3, 2012) at 25.

public hearing served a significant governmental interest in conserving time and in ensuring that others had an opportunity to speak, the time limit did not violate the speaker's rights under the first amendment to the United States Constitution).

The parties agree that the Board followed its established rules when it denied Mr. Grogan's request to address the Board, but Mr. Grogan asserts that those rules violate OMA. The Board states that OMA does not provide guidance or requirements concerning written rules for public comment, and further asserts that OMA does not contain "any prohibition against imposing a deadline for requesting permission to appear."[13] However, as stated above, the primary purpose of adopting rules governing public comment pursuant to section 2.06(g) of OMA is to accommodate the speaker's statutory right to address the public body, while ensuring that the public body can maintain order and decorum at public meetings. *See Rana Enterprises, Inc.*, 630 F. Supp. 2d at 923-25. By requiring that a member of the public either obtain the recommendation of a Board member or submit a written request to address the Board not less than five working days before the meeting, Rule 5.14-7 does not take into account the fact that the public has a statutory *right* to address the Board, subject only to reasonable limitations necessary to further a significant governmental interest.

The first sentence of Rule 5.14-7(B), pursuant to which Mr. Grogan's request to address the Board was denied, contains four requirements. A request must be made: (1) to the County Administrator; (2) in writing; (3) with the subject matter stated; (4) not less than five working days before the next scheduled Board meeting. These requirements impose substantial obstacles for those who wish to speak at the Board's meetings. Requiring written notice "five working days" before a meeting means that a person must submit his or her request to address the Board a full week before a scheduled meeting. However, section 2.02(a) of OMA (5 ILCS 120/2.02(a) (West 2012)) does not require the Board to post an agenda more than 48 hours in advance of the meeting. Accordingly, under the Board's rules, a person must request permission to speak and provide the topic of his or her comments *before* the Board is required to post its meeting agenda. Consequently, by the time members of the public have an opportunity to review the agenda to determine whether they wish to comment, they may be time-barred from submitting a request to address the Board. The Board has not provided any explanation of why five working days' advance notice is reasonably necessary to protect a significant governmental interest. Rather than accommodating public comment, this rule appears to unreasonably restrict members of the public from exercising their statutory right to address the Board.

In responding to this office, Mr. Messman also argued that when the Board denied Mr. Grogan's request to speak as untimely under subsection (B) of Rule 5.14-7, Mr. Grogan

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[13]Letter from Mark D. Messman, Assistant State's Attorney, Civil Division, McLean County State's Attorney, to Matt Hartman, Assistant Attorney General, Public Access Bureau, Office of the Illinois Attorney General (July 17, 2014), at 2-3.

could still have attempted to address the Board by asking for a Board member to request permission on his behalf as provided for in Board Rule 5.14-7(A).[14] Mr. Messman emphasized that "under subsection (A) a County Board member may request that a person be allowed to speak at a meeting without any requirement for advance notice."[15] Because the Board did not rely on Rule 5.14-7(A) in declining his request to speak, we do not have any information demonstrating how that portion of the rule works in practice and, as a result, how easy or difficult it is for a member of the public to rely on that portion of the rule when seeking to comment at a Board meeting.[16] Thus, we forego findings relating to Rule 5.14-7(A).

In this instance, Mr. Grogan submitted his request to address the Board to the County Administrator on June 11, 2014 – four working days before the June 17, 2014, meeting. The Board has not asserted that it was unable to accommodate his request, that doing so would have made it more difficult for the Board to maintain meeting order or decorum, or that denying the request was reasonably necessary to further another significant public interest. Nevertheless, the Board declined to permit Mr. Grogan to address the Board because he failed to submit a written request at least five working days before the meeting as required by Board Rule 5.14-7(B). This rule unnecessarily restricts individuals from addressing the Board and, therefore, is not a reasonable rule within the meaning of section 2.06(g) of OMA.. Accordingly, this office concludes that the first sentence of Board Rule 5.14-7(B) violates section 2.06(g) of OMA.

FINDINGS AND CONCLUSIONS

After full examination and giving due consideration to the arguments presented, the Public Access Counselor's review, and the applicable law, the Attorney General finds that:

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[14]Letter from Mark D. Messman, Assistant State's Attorney, Civil Division, McLean County State's Attorney, to Matt Hartman, Assistant Attorney General, Public Access Bureau, Office of the Illinois Attorney General (July 17, 2014), at 2.

[15]Letter from Mark D. Messman, Assistant State's Attorney, Civil Division, McLean County State's Attorney, to Matt Hartman, Assistant Attorney General, Public Access Bureau, Office of the Illinois Attorney General (July 17, 2014), at 2.

[16]It is important to note, however, that when he denied Mr. Grogan's request, the County Administrator did not direct Mr. Grogan to subsection A of the rule or indicate that Mr. Grogan could still obtain permission to speak at the meeting by making his request to a Board member. *See* E-mail from William R. (Bill) Wasson, County Administrator, McLean County Administrator's Office, to Bob [Grogan] (June 11, 2014). Additionally, Mr. Grogan attended the meeting and again asked for permission to provide public comment, but the County Administrator denied this request. It does not appear that when Mr. Grogan attended the meeting, he was informed that he could ask a Board member to request that he be allowed to speak.

1) On June 11, 2014, Mr. Bob Grogan sent a written request via e-mail to Mr. William Wasson, McLean County Administrator, asking to speak during the public comment portion of the June 17, 2014, McLean County Board regular meeting.

2) On June 11, 2014, Mr. Wasson advised Mr. Grogan via e-mail that he would not be permitted to speak at the June 17, 2014, Board meeting because his request to address the Board did not comply with the Board's rule requiring that such requests be submitted not less than five working days before a Board meeting.

3) On June 17, 2014, Mr. Grogan attended the open meeting of the Board. Mr. Grogan's verbal request to speak during the public comment period was also denied by Mr. Wasson.

4) On July 1, 2014, Mr. Grogan submitted a Request for Review to the Public Access Counselor alleging that the Board's rule requiring that requests to address the Board be made in writing at least five working days prior to a meeting violates the requirements of OMA. Mr. Grogan's Request for Review was timely filed and otherwise complies with the requirements of section 3.5(a) of OMA (5 ILCS 120/3.5(a) (West 2012)).

5) The Attorney General properly extended the time to issue a binding opinion by 21 business days, to September 30, 2014, pursuant to section 3.5(e) of OMA. Therefore, the Attorney General may properly issue a binding opinion with respect to Mr. Grogan's Request for Review.

6) Section 2.06(g) of OMA provides that "[a]ny person shall be permitted an opportunity to address public officials under the rules established and recorded by the public body."

7) Board Rule 5.14-7(B) provides, in part, that "[a]ll requests by non-members of the Board for appearance before the Board shall be made to the Administrator, in writing with the subject matter stated, not less than five working days before the next scheduled Board meeting." The Board cited this portion of its rules when it denied Mr. Grogan's request to address the Board.

8) The Attorney General concludes that the first sentence of Board Rule 5.14-7(B), quoted above, violates section 2.06(g) of OMA because the Board has not demonstrated that requiring a person to request to speak at a public meeting five working days in advance of the meeting is reasonably calculated to further a significant governmental interest, such as promoting meeting order or decorum. To the contrary, requiring a person to submit a written

request to speak at a public meeting multiple days before a public body is obligated to post the agenda for the meeting is not a reasonable requirement.

Therefore, it is the opinion of the Attorney General that the McLean County Board violated the Open Meetings Act when, pursuant to County Board Rule 5.14-7(B), it denied Mr. Grogan's requests to address the Board at its June 17, 2014, meeting. In accordance with these findings of fact and conclusions of law, the Board is directed to amend its rules governing public comment to comply with OMA and to conduct its future meetings in full compliance with OMA. The Board shall take necessary action as soon as practical to comply with this directive.

This opinion shall be considered a final decision of an administrative agency for the purposes of administrative review under the Administrative Review Law. 735 ILCS 5/3-101 *et. seq.* (West 2012). An aggrieved party may obtain judicial review of the decision by filing a complaint for administrative review in the Circuit Court of Cook or Sangamon County within 35 days of the date of this decision naming the Attorney General of Illinois and Mr. Bob Grogan as defendants. *See* 5 ILCS 120/7.5 (West 2012).

Very truly yours,

LISA MADIGAN
ATTORNEY GENERAL

By: Michael J. Luke
Michael J. Luke
Counsel to the Attorney General

cc: Mr. William R. Wasson
County Administrator
McLean County Administrator's Office
115 East Washington Street, Room 401
Bloomington, Illinois 617

To: The Trustees and President of The Village of Barrington Hills

From: Gwynne Johnston, Chairman, on behalf of the Board of Health, Village of Barrington Hills

Effect of grazing density on sub-surface water Quality

Dear Trustees,

It has come to our attention that certain statements are being attributed to policies and positions of the Board of Health in regard to the effects of grazing density on the quality of sub-surface water within the Village. Specifically, we are being told that the Board of Health maintains a position that there is no effect of grazing density, specifically in regard to horses, on sub-surface water quality. This is a false statement and totally mis-represents the position of the Board of Health.

Approximately 15 months ago, the Board of Health reviewed water quality data from BACOG. At the same time, we received correspondence requesting a ruling on horse density in regards to the effect on sub-surface water quality. After review, it was the unanimous decision of the Board of Health that we could not rule on horse density, even if we had the authority, because we had and still do not have specific data to support any short or long term effects on water quality. Our Board is unanimous in its concerns about any potential threats to the health and quality of life of residents in the Village. As a result, we debated several options for securing water quality data from BACOG or other sources that would permit a correlation between water quality and density of animal/horse grazing. These options included the possibilities for financial incentives to residents that would support the accumulation of specific water quality data and mapping on a long term basis. All of the options considered to date have been considered “too difficult” due to privacy concerns or legal exposure of the Village. We continue to search for options.

So the position of the Board of Health, in regard to the effect of horse density on sub-surface water quality, is that we have no data to support any effect, either positive or negative, on water quality. We continue to look for ways in which we might obtain this data and remain concerned that our vigilance must be to protect and sustain the long term quality of health and the environment within the Village.

We welcome your discussion and guidance in regards to this topic and, specifically, any suggestions whereby we might, as a Village, start to collect data that can be used to guide policy decisions.

October 23, 2014

HANDOUTS

November 10, 2014

To: Zoning Board of Appeals, Village of Barrington Hills
Board of Trustees, Village of Barrington Hills
From: Pamela A. Cools, D.D.S.
32 Little Bend Road, Barrington Hills, IL

I would like to comment on two aspects of the proposed Anderson Amendment.

1) With regard to the subject of horse density per acre as it relates to horse boarding, the Chairperson of this Board referred to density as an "emotional" issue. I would beg to disagree. With my personal background as a dentist and having a bachelor's degree in biology, I would say the issue is a really a scientific one.

I have sought out advice from experts in the field of Animal Sciences and from fourteen equine rescue groups in Illinois, Indiana, Kentucky and Wisconsin regarding their recommendations for best practices as they relate to horse density. (Spreadsheet follows.)

I contacted Dr. Kevin Kline, Professor of Animal Sciences at the University of Illinois, who stated his recommendation was for no more than 1 horse per 2-3 acres as a reasonable stocking density for a permanent pasture.

I also contacted Liv Sandberg, Equine Extension Specialist at the University of Wisconsin. She stated, "Most states recommend 3 acres per horse for pasture and exercise."

My correspondence with the equine rescue groups showed a consensus of 1 acre per horse as the absolute minimum, with many recommending 2 acres per horse.

One factor that the university and rescue experts also agreed on was that the specific soil type on a property was a very strong determinant of how many horses could be supported in an economical and environmentally friendly way. The University of Kentucky provides a tool to calculate a specific property's animal carrying capacity, based upon the specific soil types that are on the land in question. I went through the exercise for my own property and was surprised that the carrying capacity was just 1.7 horses on 5 acres, and that was without considering non-grazable land composed of the home, driveway, or proximity to the well head. Of course, supplemental feed would change that number, but the point to be learned is that all properties are different, with unique characteristics.

Therefore, it seems unwise to propose an arbitrary number of 2 pasture-boarded horses per acre.

2) Despite the apparent position of this Board that it is unclear if waste products from horses pose any hazards to water supplies, I would like to refer you to passages from an EPA publication, as well as excerpts from two university publications.

First, from an EPA Publication titled "Pollution Control for Horse Stables and Backyard Livestock"

"Whenever large animals are stabled on small pieces of property, their wastes are concentrated. Animal wastes contain nutrients… as well as bacteria or other pathogens…and can make the water unfit for drinking without treatment. With each rain, these wastes can wash off the land and into the

nearest creek, stream, lake, pond, or wet area. These pollutants can also contaminate groundwater supplies, especially if shallow or improperly cased wells are downslope from the animals or their waste."

"Many of the same communities that allow backyard livestock also get their drinking water from private on-site wells…Public water systems (that serve 25 or more people) must be periodically tested, but individual well-owners are often not well-regulated."

From the Michigan State University Extension publication "Manure and Water Don't Mix":

"*Because they spend so much time around it, horse owners may not consider that horse manure contains pollutants and, under the right circumstances, can pose a threat to humans and the environment. A source of nutrients such as nitrogen and phosphorus, horse manure may also contain pathogens (including E. coli) that can be hazardous to human health. When manure is not managed properly, these contaminants can make their way into our water and cause problems."*

And, from Extension.com publication "Horse Manure Management":

"*Environmental and Health Impacts*
Many horse owners do not have enough land or vegetative cover to properly apply large amounts of manure and nutrients. If not managed properly, manure can deposit excess nutrients into the environment via surface runoff or as a leachate, or water-contaminated with manure, from improper manure storage and land application. This can negatively impact water quality and subject landowners to investigation, and in some cases, legal action under an Agricultural Stewardship Act."

Because of these reasons, I believe we must err on the side of caution --and science -- and deal with large-scale commercial horse boarding on the basis of Special Use Permit only. In this way, the unique characteristics of each property can be assessed, and the optimal horse density, documented manure management protocols and groundwater protections (including mandatory annual well water testing) can be determined on a case-by-case basis in the best interests of the horses, the land, the aquifers and the neighboring homeowners.

Sincerely,

Pamela A. Cools

P.S. PDF copies of the documents cited are attached to my email to the Village Clerk.

UNIVERSITY & HORSE RESCUE RECOMMENDATIONS ON HORSE DENSITY

Name of Institution/Animal Rescue	Website	Location	Recommendation
University of Illinois (Dr. Kevin Kline)	http://ansci.illinois.edu/directory/kkline	Champaign, IL	1 horse per 2-3 acres, maximum
University of Wisconsin Animal Sciences (Liv Sandberg, MS	www.ansci.wisc.edu	Madison, WI	3 acres per horse for pasture and exercise (most states)
Kentucky Equine Humane Center	www.kyehc.org	Nicholasville, KY	1 acre per horse; 2 horses on 5 acres comfortably
Society for Hooved Animals' Rescue and Emergency	www.s-h-a-r-e.net	Champaign, IL	At least 1 acre per horse, may need 2 acres per horse
Maker's Mark Secretariat Center	www.thoroughbredadoption.com	Lexington, KY	2 acres per horse ideally
Saint Francis Horse Rescue	www.stfrancishorserescue.com	Mellen, WI	1 acre per horse, possibly 1 horse per 1/2 acre
Midwest Horse Welfare Foundation	www.equineadoption.com	Pittsville, WI	1 acre per horse at least, two if possible
Crosswinds Equine Rescue	www.cwer.org/	Sidell, IL	1 horse per grazable acre, at most 2 per acre
Extension.org	www.extension.org	National	No more than two per acre
Indiana Horse Rescue	www.indianahorserescue.com	Owensville, IN	One acre of pasture per horse
American Standardbred Adoption Program	www.4thehorses.com	DeSoto, WI	1 acre of pasture per horse
Amazing Grace Equine Sanctuary	www.rescuehorses.org	Elkhart Lake, WI	1 acre per horse
Stony Ridge Retirement Farm	www.freewebs.com/stonyridgefarm/contactus.htm	Bonnieville, KY	1 horse per 5 acres up to 1 per acre, depends on soil type
Arabian Rescue Mission	www.arabianrescuemission.org	Glasgow, KY	2-4 horses per 4 grazable acres
Mountain View Rescue	www.mountainviewrescue.com	Columbia, KY	No more than one per acre
Buckland Equine Rescue	www.bucklandequinerescue.org	Carlisle, KY	1-1.5 acres per horse

Pamela A. Cools
to Barrington Hills Board of Trustees, October 27, 2014

Manure and Pasture Management for Recreational Horse Owners

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For More Information

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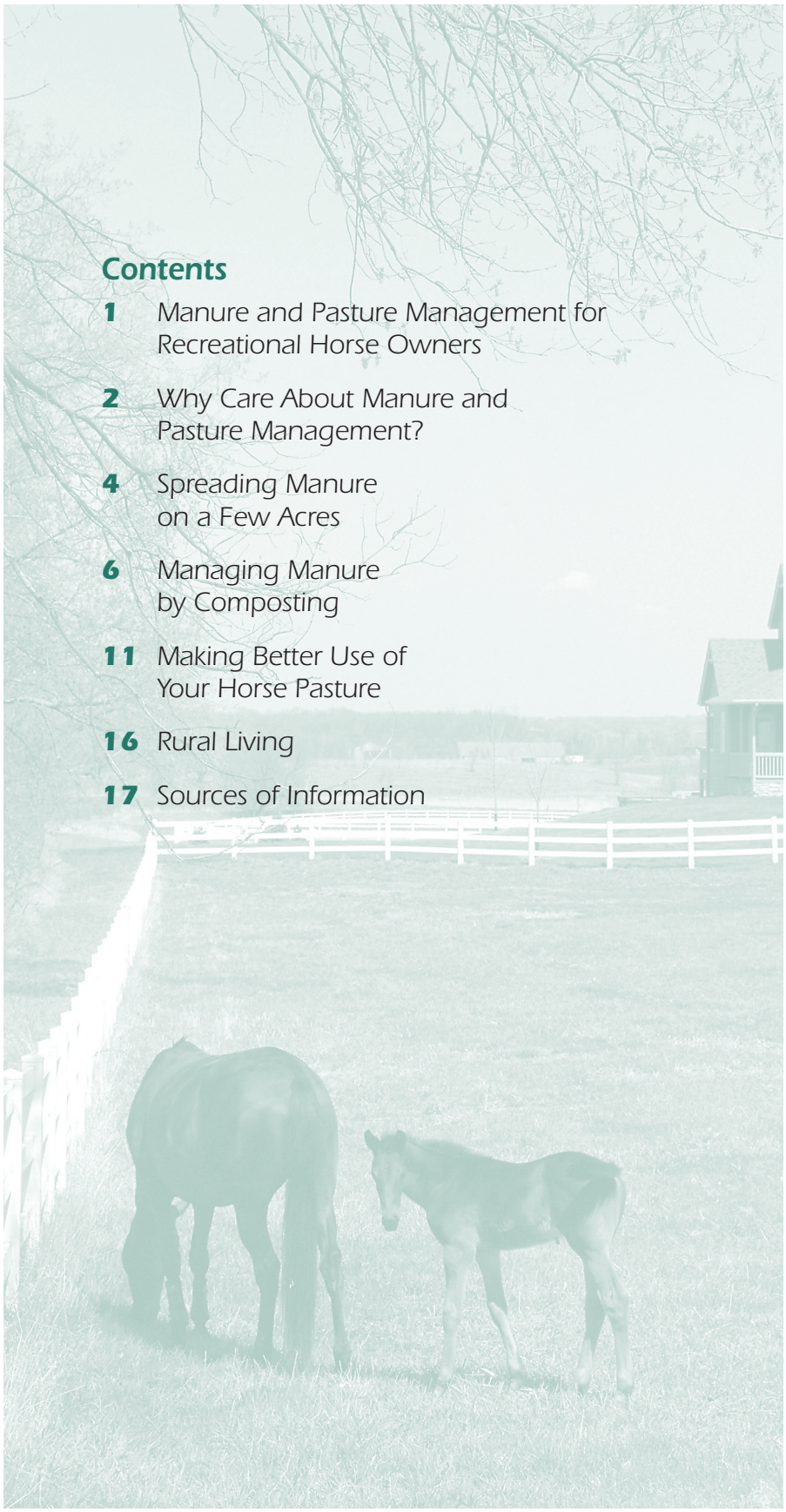


Manure and Pasture Management for Recreational Horse Owners

Horses are a common sight along Minnesota's roads. No one knows how many horses there are in the state, but most enthusiasts would agree that the popularity of horses continues to rise. At the same time, new residents keep arriving, especially in the Twin Cities metro area, where forecasters estimate 600,000 more people will live by 2020.

As a result of these trends, Twin Cities recreational horse owners increasingly find themselves in the middle of urban or rapidly growing suburban areas, where they often receive more scrutiny from their local government and neighbors than do their counterparts in rural areas. To maintain good relationships and minimize the need for regulation, it is critical they know and practice proper manure and pasture management.

This publication is intended to help recreational horse owners better manage manure and pastures. It describes two options for manure management: land spreading and composting. It also offers guidelines for improving pasture productivity, and it provides practical management suggestions for owners in urban or rapidly growing suburban areas.

Hennepin County is home to more than 500 recreational horse owners and 2,800 horses, as well as more than 1 million people in 46 cities. Most horse owners in Hennepin County live in the western half of the county and care for 5 to 10 horses. Many own fewer than 20 acres of land, including buildings, exercise areas, pastures, and other crop fields. As a result, some lack the pasture, cropland, and/or equipment needed to benefit from the plant nutrients contained in their horses' manure. They also may lack the knowledge needed to prevent soil erosion from overgrazed pastures or denuded exercise lots and to prevent nutrient runoff as a result of overapplication, improper incorporation, or application of manure at the wrong time or in the wrong place.

TIP: A typical horse, which weighs about 1,000 pounds, produces between 45 and 55 pounds of manure per day, or around nine tons per year. Hennepin County's 2,800 horses have the potential to produce 50 million pounds of manure annually.

Why Care About Manure and Pasture Management?

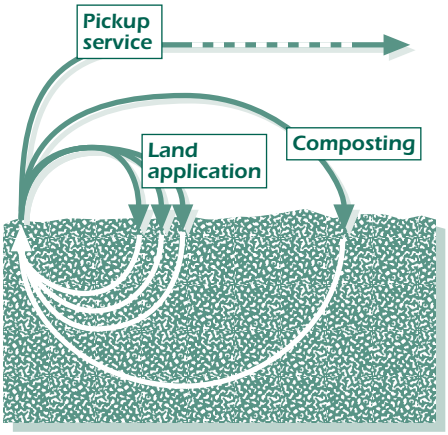


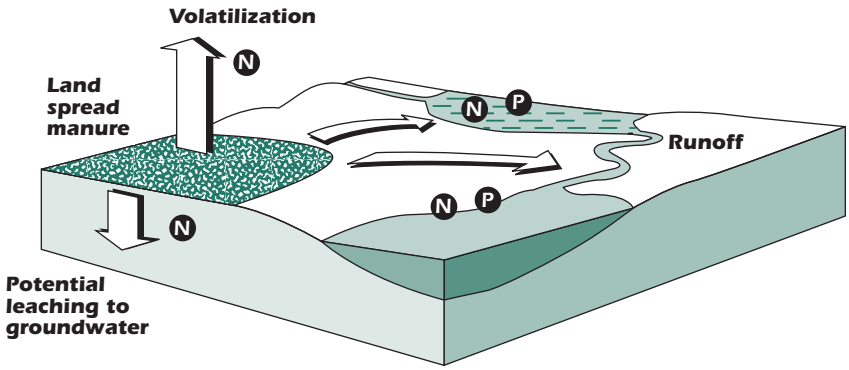
Figure 1.
Manure management options

Proper manure management is important for the health of horses and the environment. Ideally, manure should be removed from stalls daily. If allowed to accumulate in stalls, it can attract flies, harbor parasites and pathogens, increase the risk of thrush and other hoof-related problems, and generate offensive odors. Exercise paddocks may need weekly cleaning.

Manure should be spread evenly on cropland and incorporated into the soil to maximize its nutritional benefits to crops and minimize odor pollution. However, some horse owners may not have enough land to spread manure without overapplying, which creates a pollution hazard. If this is the case, rotationally grazing horses in pastures can help minimize manure buildup and manure-handling costs. If you have very little land, you might need to compost manure to reduce its nitrogen content and volume. Or you may wish to hire a pickup service or find a nearby landowner or farmer who can make productive use of your horse's manure (Figure 1).

Figure 2.
How nitrogen (N) & phosphorus (P) enter water supplies

Adapted from Category Solid: Commercial Animal Waste Technician Training Manual, University of Minnesota Extension Service, 1999.



Horse manure is an excellent nutrient source for pastures and other field crops when properly applied at the optimum time and in the correct amounts. It contains nitrogen, phosphorus, potassium, sulfur, and micronutrients, and is high in organic matter. Proper application of manure's nutrients can help reduce the need for costly supplemental fertilizers. Organic matter provided by manure enhances soil structure and water- and nutrient-holding capacity, reducing the soil's susceptibility to erosion. Overall soil quality is enhanced with manure applications.

Environmental Concerns

The nutrients in manure that boost plant growth can be a pollution hazard if the manure is improperly handled (Figure 2). For example, if manure is overapplied to fields, nitrogen in the form of nitrates can move into the soil and eventually into groundwater, a major source of drinking water for many rural homes and communities. Consumption of water with high nitrate levels can reduce the oxygen-carrying capacity of blood (methemoglobinemia). Nitrate consumption has also been linked to cancer. In light of this health risk, the Minnesota Pollution Control Agency (MPCA) explicitly prohibits the overapplication of nitrogen on pastures and other field crops.

Horse manure also contains phosphorus. When phosphorus enters lakes, rivers, and other surface waters, it stimulates the growth of algae, aquatic plants, and other vegetation. One

pound of phosphorus can produce up to 500 pounds of aquatic plants. When these plants decay, they reduce oxygen to levels where many fish species cannot survive. Generally, phosphorus moves into surface waters when manure applied or stored on the soil surface is moved laterally, usually by rainstorms, into a drainage flow system toward the water. Even manure that has been worked into the soil can be a concern if the soil erodes into the water body throughout the year. Currently, no Minnesota law limits the amount of phosphorus that can be applied to cropland or pastures.

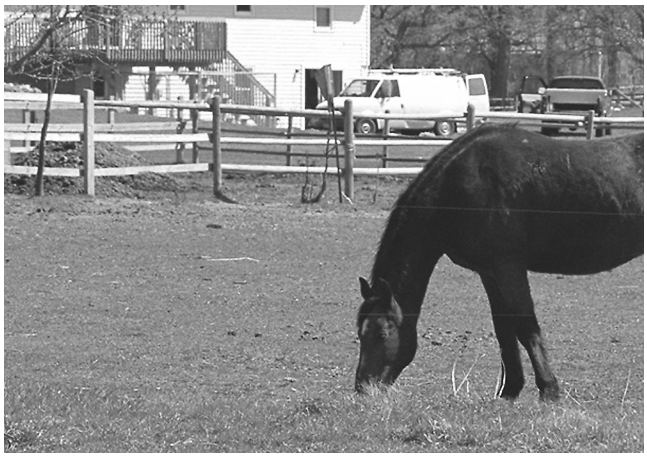
Feedlot Permits

Minnesota's feedlot program, created in 1971, helps protect the state's waters from improperly managed manure. The MPCA, which administers the program, defines a feedlot as "any animal confinement area where a vegetative cover cannot be maintained, including poultry ranges, zoos, and race tracks and fur farms." Many recreational horse owners do not need to apply for a feedlot permit. You will need to apply for a feedlot permit if you operate a feedlot, manage 50 or more horses (in shoreland areas, 10 or more horses), and any of the following conditions exist:

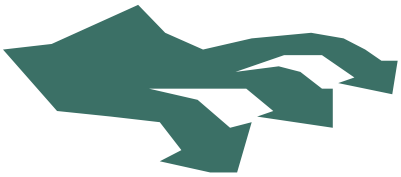
- A new feedlot is proposed.
- A site that has been abandoned for five years or more is restocked.
- An existing feedlot is expanded or modified.
- The ownership of an existing feedlot changes.
- A National Pollution Discharge Elimination System (NPDES) permit is required under state or federal rules.
- Investigation of a complaint on a feedlot reveals a pollution problem.

More than half of Minnesota counties have accepted delegated authority under the MPCA's feedlot program. In these counties, the county feedlot officer (CFO) is responsible for enforcing regulations and issuing permits for most feedlots. Hennepin County has not requested this administrative authority, so it is under the direct jurisdiction of the MPCA. Check with your county environmental officer or the MPCA regarding how state feedlot rules apply to your operation.

The Minnesota feedlot rule is currently under public review. Under the proposed rule, horse owners may need to register with the MPCA and abide by new land-spreading rules. In addition, the minimum number of horses for a feedlot designation may change. Check with the MPCA feedlot program hotline, (651) 296-7327 or (877) 333-3508, if you have questions about whether you need to register or apply for a permit.



Recreational horse owners need to know how to properly manage manure and bedding.



Spreading Manure on a Few Acres

TIP: Many horse owners lack the equipment to load, handle, haul, and spread manure. Purchasing a tractor and manure spreader may be too expensive for your individual needs. If this is your situation, consider hiring neighbors who own the proper equipment or jointly purchasing equipment.

TIP: To temporarily store manure, surround the pile with a narrow ledge or berm to guard against nutrient or pathogen runoff and prevent nutrient leaching. Avoid stockpiling in or near wetlands or surface waters. Keep the stockpile 300 feet from surface drainage inlets. Do not store manure for more than one year.

Even if you don't need a feedlot permit, you still need to understand and employ proper practices when spreading manure. Limit manure application to agronomic rates (rates that are equal to or less than what the existing plants can use in a year), and ensure that the manure does not pollute water. Do not apply manure on shoreline property.

The MPCA prohibits manure spreading

- on soils with a high water table;
- on floodplains;
- on lakes, intermittent streams (streams flowing after certain rainfall events), seasonal streams (streams flowing only during snowmelt), and ditches;
- on grassed waterways;
- on frozen soils with slopes greater than 15 percent; and
- near direct groundwater conduits (e.g., wellheads and quarries).

Check with your local soil and water conservation district or Natural Resources Conservation Service office to help identify these special protection areas on your land and on bordering properties.

Land Application Guidelines

Proper manure application generally requires a series of decisions and some additional information gathering.

If all of the manure will be applied to existing pasture, the horses can do a fairly good job of distributing it themselves. Unfortunately, the droppings from the horses are often quite concentrated and can suffocate or stunt plants underneath them. To maximize pasture production, drag or harrow the pasture to break up the droppings and more evenly spread the manure.

If stockpiled manure is to be spread onto a field, you need to know the nutrient content so the application matches the nutrient needs of the crop. Although each source of horse manure will vary, a standard "N-P-K" value (Table 1) can be used to determine the number of acres needed to properly spread the horse manure.

When using stored manure in place of purchased fertilizer, you may wish to have a more accurate estimate of its nutrient content. Manure can be sampled, packaged, and sent to a soil-testing laboratory for nutrient analysis. Check with the University of Minnesota

Table 1. Nutrient content of horse manure

Manure (tons/year)	Percent Solids	Nutrient Content (lb./year)		
		Nitrogen (N)	Phosphate (P_2O_5)	Potash (K_2O)
9.3	21.0	110	59	110

Livestock Waste Facilities Handbook, MidWest Plan Service 1993, Table 2-2, p. 2.2.

Extension Service (Extension) office in your county for bulletins with sampling procedures for manure and interpretation guidelines.

Not all of the nutrients in manure are available for plant use. For example, the percentage of the total nitrogen available is a function of the method of manure application and management as well as the chemical composition of the manure. For horse manure, typical nitrogen availabilities range from 35 percent of the total nitrogen if the manure is spread and left on the soil surface, to 60 percent if the manure is spread and worked into the soil within a day. Availabilities of phosphorus from phosphate (P_2O_5) and potassium from potash (K_2O) are commonly set at 80 percent and 90 percent of totals, respectively.

After estimating the manure's nutrient content, select the field/crop targeted for application. Certain fields and portions of fields must be excluded from manure application based on environmental precautions. Some guidelines are listed in Tables 2 and 3.

The amount of nutrients to be applied to a field depends on the crop to be grown, its expected yield, soil test levels, and other credits. For more information contact your University of Minnesota Extension Service county office.

Calculating manure application rates is a mathematical exercise that aligns the nutrients supplied in the manure and the nutrient demands of the crops. Although it sounds quite simple to take a manure analysis, account for availability, and then match this to crop needs, several decision aids are available upon request.

After you determine application rates, you need to make some decisions about method of application. The primary goal is to uniformly apply manure throughout the field. This takes time and effort on the part of the person driving the applicator. It is also important to know the actual rate of manure application and how to modify the tractor speed to achieve the desired rate. Several bulletins are available for making this calculation.

The timing of the manure application is also important. The ideal scenario is to spread manure in the spring. This supplies nutrients for the upcoming growing season and minimizes the amount of time for potential losses before crop uptake. An alternative is to spread manure in the fall. Avoid applying manure in winter. Manure applied in this fashion is highly susceptible to movement if it rains.

Table 2. Recommended separation distance (feet)

	Surface spreading (no incorporation)	Incorporation
Streams or rivers	*	*
Lakes	*	*
Water wells	200	200
Sinkholes	100	50
Individual dwelling**	100	50
Residential development	300	300
Public roadways	25	10

* See Table 3

** Distance may be reduced with permission of owner

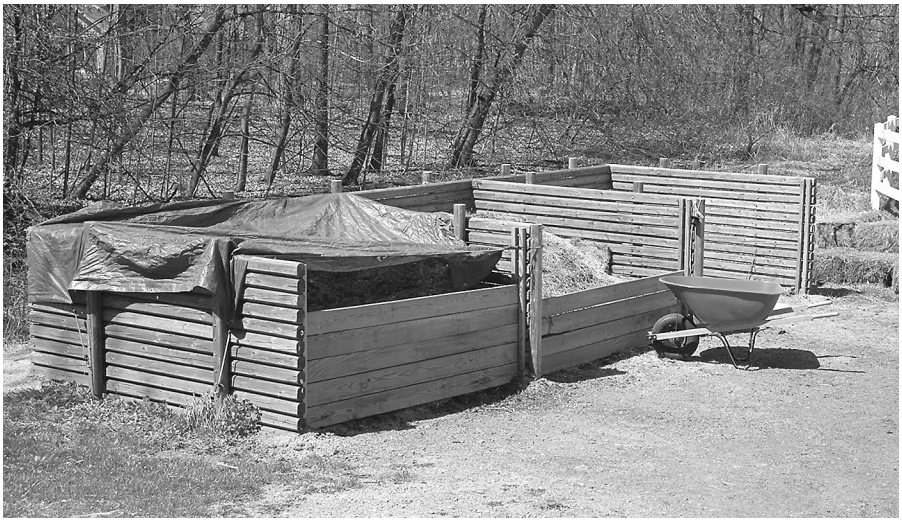
Adapted from Running Your Feedlot for Farm Economy and Water Resource Protection, MPCA, 1993.

Table 3. Separation distance from streams, rivers, and lakes for land spreading of manure (feet)

Slope (%)	Soil texture	Time of year	Minimum separation (feet)
0–6	Coarse	May to October	100
0–6	Coarse	November to April	200
0–6	Medium to fine	May to October	200
0–6	Medium to fine	November to April	300
Over 6	Coarse	May to October	200
Over 6	Medium to fine	May to October	300
Over 6	All soils	November to April	Not recommended

Adapted from Running Your Feedlot for Farm Economy and Water Resource Protection, MPCA, 1993.

Managing Manure by Composting



Composting requires several bins.

Another way to manage horse manure is to compost it. Composting is managed, accelerated decomposition. In decomposition, microorganisms—including bacteria, actinomycetes, and fungi—break organic materials into smaller particles and build new molecules. In doing so they give off carbon dioxide, water vapor, and heat. Composting accelerates decomposition by promoting the growth of microorganisms. It kills weed seeds and reduces pathogens, odors, and volume. The finished compost is a valuable soil amendment.

Composting is often slightly more expensive than land spreading manure. However, many people who have become avid composters believe that the added benefits of composting far outweigh the costs.

Most people have at least some familiarity with composting through campaigns that encourage backyard composting of grass clippings or leaves. Composting of horse manure differs only in the type and volume of materials composted.

Horse manure and bedding contain the carbon and nitrogen necessary for successful composting. The challenge is to ensure the proper proportions of the materials. The type and typical daily volume of bedding will substantially affect the ease and rate of composting. Different types of organic materials compost differently. You'll need to customize the process to fit your specific combination of manure, bedding, and other organic materials. You can find the best mixture by developing a clear understanding of the process, accurately measuring materials, and going through some trial and error.

Composting is a balancing act. Providing ideal environmental conditions for microbial growth accelerates the process. Just enough water, air, carbon, and nitrogen getting piled, turned, and aged without contaminants makes for good compost. Some things to consider for successful composting:

Air. Approximately two-thirds of the pile's initial volume must be interconnected free air space. Air space allows oxygen to move into and carbon dioxide and water vapor to leave the pile. Too little air space reduces the oxygen available to the microorganisms; too much air space dries the pile out and prevents it from reaching temperatures high enough to compost.

Manure without bedding, or manure with sawdust or wood shavings, may create a pile with too little air space. Measure air space using

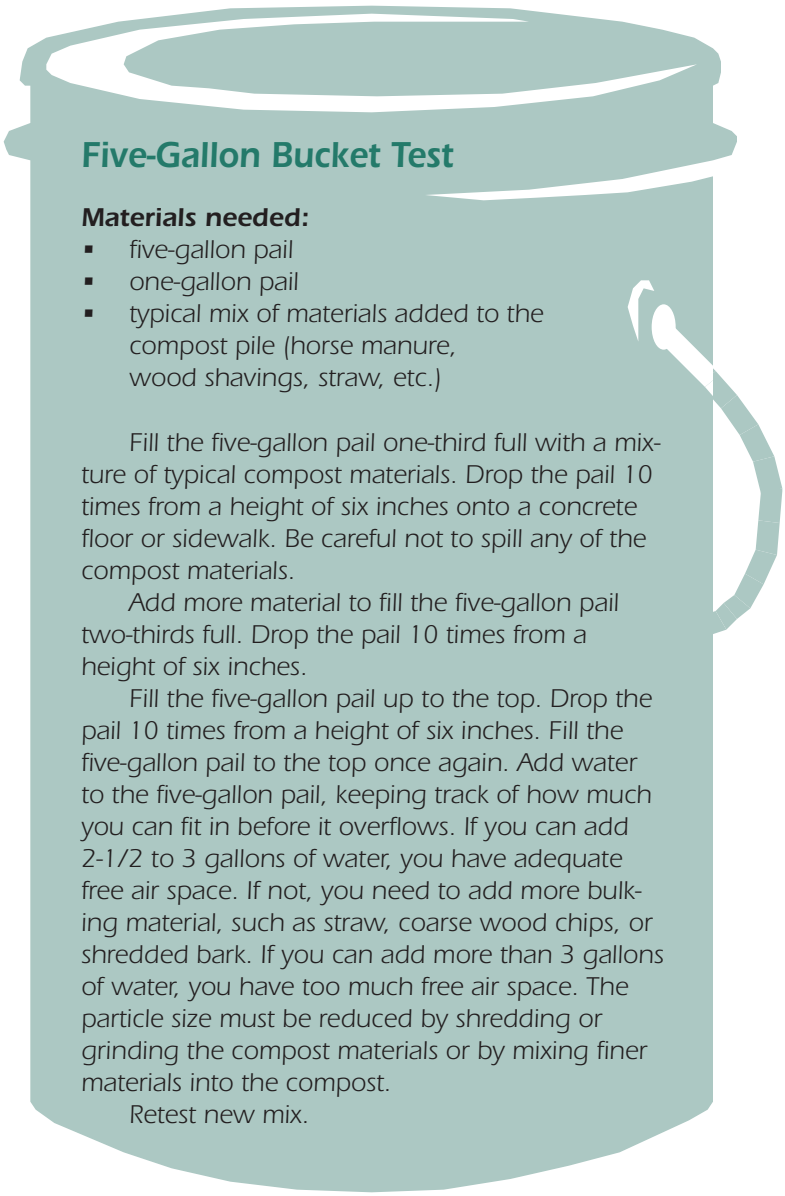
the "five-gallon bucket test" (see right). Add bulking materials, such as shredded wood, bark, or dry straw, to increase air space.

Water. Water is required for good composting. Microorganisms grow best with moisture around 50 percent. If the compost feels like a freshly wrung out sponge, the pile most likely contains the proper amount of moisture. If water runs out of the pile or if you can squeeze water from a handful of compost, it is too wet. In this case you will need to add straw, fall tree leaves, corncobs, shredded bark, or chipped brush to dry the pile.

Closely monitor the moisture level, especially during hot, windy summer days when as much as 5 percent (water equivalent) of the pile's total dry weight can be lost. Adding a little water each day is much better than letting the pile get dusty and dry, then trying to rewet it back to the 50 percent range.

Size and construction. Size of the pile does matter. Bins 4′ x 4′ x 5′ tall seem to work best for horse manure. Bins constructed from 2″ x 6″ (untreated) boards and heavy-duty posts will hold up the best. Bins with a wooden floor with small spaces between boards that allow air to move from underneath the pile perform better than bins built directly on the ground. Laying flat drain tile on the wooden floor will further enhance airflow. Each of these bins should easily hold 1.5 tons of horse manure. If your horse manure fills up more than six bins of this size, you may want to consider a windrow composting system.

Temperature. Temperatures of 131° F to 150° F are ideal. Hotter or cooler temperatures will slow down the process. Maintain these temperatures for at least 21 days



Five-Gallon Bucket Test

Materials needed:

- five-gallon pail
- one-gallon pail
- typical mix of materials added to the compost pile (horse manure, wood shavings, straw, etc.)

Fill the five-gallon pail one-third full with a mixture of typical compost materials. Drop the pail 10 times from a height of six inches onto a concrete floor or sidewalk. Be careful not to spill any of the compost materials.

Add more material to fill the five-gallon pail two-thirds full. Drop the pail 10 times from a height of six inches.

Fill the five-gallon pail up to the top. Drop the pail 10 times from a height of six inches. Fill the five-gallon pail to the top once again. Add water to the five-gallon pail, keeping track of how much you can fit in before it overflows. If you can add 2-1/2 to 3 gallons of water, you have adequate free air space. If not, you need to add more bulking material, such as straw, coarse wood chips, or shredded bark. If you can add more than 3 gallons of water, you have too much free air space. The particle size must be reduced by shredding or grinding the compost materials or by mixing finer materials into the compost.

Retest new mix.

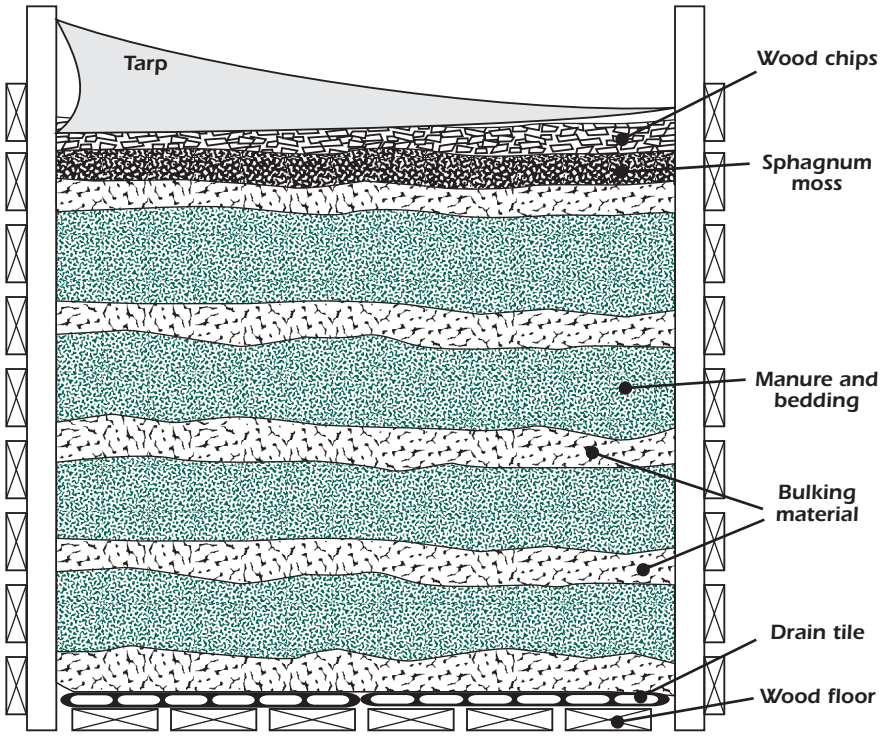
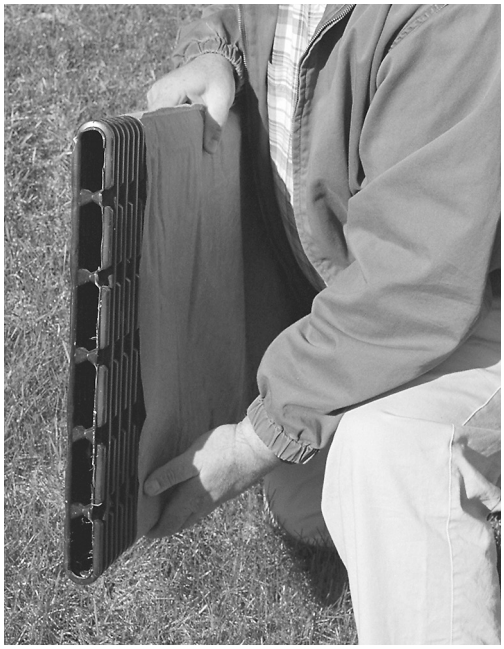


Figure 3.
Layering the compost pile

Adapted from Composting Fish Waste: An Alternative for Minnesota Resorts, Minnesota Sea Grant College Program and Minnesota Extension Service, 1991.



Line the bottom of each compost bin with flat drain tile.

to reduce pathogens and kill weed seeds.

A three-foot-long, nonmercury compost thermometer, available at some hardware stores, is useful for taking pile temperatures. Recording daily temperatures will help you become a better composter. If pile temperatures far exceed 150° F, reduce the size of the pile and check to make sure it has adequate free air space.

Location. Locate your bins at least 100 to 150 feet away from wells, ditches, streams, and lakes. Leave a buffer strip of taller grasses, wildflowers, and shrubs between the compost bins and any drainage way or water feature to keep manure from washing down a slope and into a water body during a heavy rainstorm. Place your bins in a dry area near the point of manure collection. Try to locate them out of view and downwind from neighbors. Bridal wreath spirea works well as a visual screening plant in most soils in this climate. Check with your local municipality for any additional regulations.

Building a Compost Pile

Start by creating a base layer that will allow air to flow into the bottom of the pile. Lay down 6 to 8 inches of wood chips or flat drain tile directly on the wooden floor of the bin. (If you use drain tile, cover it with a thin layer of a synthetic polyester material to prevent the holes from plugging up.) The bin is now ready for the manure and bedding mixture, along with any bulking materials, such as wood chips or shredded bark, needed to provide free air space.

Build the pile by alternating layers of manure and bulking materials (Figure 3). Separate manure layers with 6 inches of bulking material. The finer the bedding material, the more likely the manure layer will benefit from additional bulking

material, and the thinner the manure layer should be. The manure layer should be from 6 to 24 inches thick. To ensure good composting, add a bucket of mature compost or soil little by little as you build the pile.

Build the pile to a height of 5 feet and cover with a 4-inch layer of sphagnum peat moss to control odors and top it off with a 4-inch layer of wood chips. A tarp placed 2 to 10 inches above and covering only the top of the pile will prevent it from quickly drying out or receiving too much moisture from rain and snow. You can easily attach a tarp by extending the corner posts of the bin with short lengths of two-by-four.

The higher the bedding-to-manure ratio, the more likely it is that you will need supplemental nitrogen. If you have the proper amount of water and free air space and the pile still doesn't heat up, add one-third cup of a commercial nitrogen fertilizer such as ammonium nitrate or ammonium sulfate or another high-nitrogen fertilizer
(33-4-2) to the pile each day.

Turning mixes the pile's cooler, outside layer with the hotter center and enhances the composting. Once you have your pile built, wait 7 to 28 days before turning so it can "cook." Try turning again at 24, 72, and 120 days. Three to seven turns during the life of the pile are common. Base the turning schedule on the pile's materials, weather, and the anticipated use of the compost. When piles have the right amount of moisture and air space, a temperature of
120° F or lower usually indicates the need to turn the pile so it can reheat.

Frequently Asked Questions About Composting

Does the compost pile need a starter or activator to get the composting process going?
No. Just add a five-gallon pail of fertile soil or mature compost to the pile as you build it. That should provide enough microorganisms to ensure composting.

Can backyard materials go into the pile?
Yes, but limit grass clippings to layers of one or two inches. Dry fall leaves work well as bulking materials.

How long does it take to make good, mature compost?
It depends. With average management and most conditions achieved most of the time, good, mature compost will take about six months. Measure six months from the day you completely fill a bin.

How will I know that the composting is done?
The compost is done when the pile no longer reheats after turning and the volume has decreased to half its original size. Mature compost should look more like soil than bedding material and manure.

How do I prepare the pile for winter?
If you have an entire bin available, build a six-to eight-inch layer of wood chips. Next, put down three feet of leaves and then alternate layers of manure and bulking materials. By spring the leaves will have decomposed and the pile will need some turning, but it should be nearly finished.

Composting Hints

When cleaning the horse stalls, put the manure and bedding directly onto the compost pile. This is also the best time to add water if needed.

Sawdust contains very little nitrogen and a lot of carbon. In small quantities (less than 10 to 15 percent) it can help prevent compaction in compost piles. However, this is only true of coarse sawdust from sawmills or chain saws. The very fine sawdust from carpentry and cabinetwork—often preferred by horse owners—may actually compact so tightly so as to make a compost pile almost airless. If you use fine sawdust for bedding, you will most likely need to also add bulking material to prevent compaction and provide free air space so oxygen can get to the microorganisms.

Wood shavings provide more air space than sawdust but still require the addition of more bulking material to achieve the proper amount of free air space. Straw bedding can sometimes meet the requirement for air space. Use the bucket test to find out if you have adequate free air space. Remember to add the bulking material as you build the compost pile.

If you can't build enough bins to hold all of your manure for the roughly six months it takes to create mature compost, you may instead choose to produce immature compost. If you set up and properly manage your bins, you can expect to reduce the volume of manure up to 50 percent and produce immature compost in six to eight weeks when outside air temperatures are above 50° F.

Immature compost provides organic matter, retains moisture, and can work quite well as mulch in home gardens. Do not apply in excess of ½ to 1 inch thick because it will likely create a nitrogen deficiency in plants for 4 to 10 weeks after application.

Using Compost

Making compost is really only a start. You need to think about how you will use the finished compost. Will you use it yourself? Sell it to your neighbors? Market it to a wider geographical area? By using compost to grow plants we complete the organic matter cycle.

Good quality compost should be applied only at recommended rates and to plants and soils that can use the nutrients. As a rule of thumb, good quality horse manure compost can be applied ½ to 1 inch thick (approximately 24 to 57 tons per acre) and then mixed well into the soil.

Making Better Use of Your Horse Pasture

Improving the productivity of your pasture offers several benefits. Pasturing can:

- ***Reduce the amount of purchased hay.*** If you have only a few acres to dedicate solely to pasture, the total substitution of pasture for purchased hay may be an unattainable goal. However, you can reduce the amount of purchased hay by improving the productivity of your pasture. An ideally managed, highly productive pasture can potentially provide a large portion of a horse's forage requirements from May through September.

- ***Distribute manure in the field and reduce time spent cleaning stalls.*** Horses grazing managed paddocks will drop their manure in different parts of the pasture instead of concentrating it in stalls, feedlots, exercise lots, and loafing areas. This reduces the volume of manure in stalls and lots as well as the time needed to clean these areas.

- ***Reduce the labor and equipment used to harvest forage.*** Think about your pasture as a crop that horses harvest by grazing. When grazing, horses eliminate the time needed to cut, rake, bale, store, and feed the forage and the cost of buying, operating, and maintaining machinery.

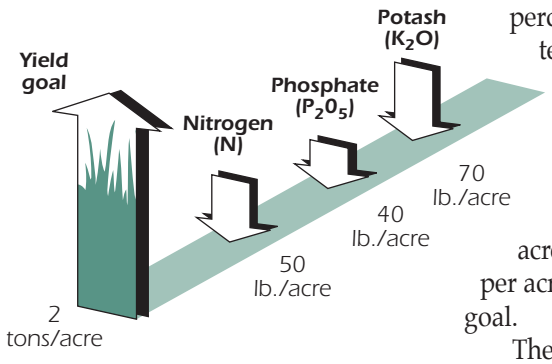
- ***Reduce the amount of purchased fertilizers.*** Manure recycles nutrients beneficial to pasture plants. The more nutrients manure provides, the fewer pounds of supplemental fertilizer are required. To ensure that pasture plants can more easily use the manure's nutrients, frequently drag or rake the manure deposited in the pasture. This will more evenly distribute the manure and promote its breakdown while also reducing the potential exposure of horses to internal parasites.

- ***Enhance community viewsheds.*** The term "viewsheds" refers to fields alongside roads in primarily residential areas that allow drivers and residents to enjoy open views of bordering landscapes. Providing a bucolic scene like horses grazing on pasture can build goodwill with neighbors.

Pasturing horses offers numerous benefits to recreational owners.

TIP: *To protect water quality and shorelines, horses should not have free access to waterways, ponds, lakes, or wetlands. Do not allow animals to graze in public waters. Check with your local government about regulations governing acceptable sites for pastures.*

Figure 4.
Recommended fertilizer application for a grass pasture



Pasturing horses also has some disadvantages. It can increase time and expense of fencing, monitoring pasture growth, and moving horses; potential for neglecting horses; risk of danger to horses from toxic weeds, escape, or injury on fencing; potential for horse damage to trees; and potential exposure to internal parasites, disease-carrying insects, ticks, and mosquitoes.

Pasture Improvement

Horse pastures must be carefully managed in order to maximize their productivity. Some things to consider:

Soil fertility. Fertility refers to the level of essential nutrients present and available for pasture plants (forages). You can test your pasture's soil to determine if additional nutrients must be applied to yield the volume of grasses and legumes desired. If a soil test reveals a deficiency, you will need to apply additional nutrients using horse manure and/or commercial fertilizers.

You can get a soil test kit from any University of Minnesota Extension office or private soil testing laboratory. Follow the instructions for collecting a sample to send in for analysis. Request tests that measure the levels of phosphorus (P) and potassium (K), soil pH, percent organic matter, and soil texture. Note on the test form whether the pasture consists of grasses or a mixture of grasses and legumes. Additionally, provide a desired yield goal (tons of forage per acre) for the pasture. Two tons per acre is an easily attainable yield goal.

The test results will include fertilizer recommendations in the form of nitrogen (N), phosphate (P_2O_5), and potash (K_2O). Pastures may need additional nutrients that are best applied in early spring (mid April to early May). You may need to add lime to acid soils to adjust the pH.

Although fertilizer application should be based on a soil test, Figure 4 offers some general guidelines for the amount of fertilizer to apply to a primarily grass pasture.

Most of the phosphorus and potassium consumed by horses will be returned to the pasture through their manure. Periodic soil tests on the pastures will confirm this nutrient recycling. Nitrogen will likely need to be annually applied to pastures consisting of primarily grass with few legumes.

Weeds. Weeds compete with legumes and grasses for soil moisture, sunlight, and nutrients. Grazing will keep some weeds out of pastures, but cannot eliminate all weed problems. Positive identification of weed species is the first step in determining the appropriate control strategy. Horse owners should be most concerned about toxic weeds (e.g., hoary alyssum) but should strive to control other weeds in order to further improve their pasture's productivity. You can control weeds by rotational grazing, mowing, hand pulling, or chemically treating weeds when the horses are elsewhere.

Species mix. Pastures can provide feed for horses from May through September. Generally speaking, grasses prosper during the cooler days at the beginning and end of the growing season, while legumes such as alfalfa and other clovers are most productive in the warmer, midsummer months. Additionally, legumes add protein to the pasture's feed value and provide nitrogen for the grasses through nitro-

gen fixation.

If you do not choose to devote a high level of management to your pastures, it may not be worth the extra expense of including legumes. Additionally, the durability of grasses helps the pasture resist extensive trampling by the horses. When starting a new pasture, research from the University of Minnesota suggests the following mix for horses (per-acre basis):

- 8 pounds alfalfa
- 6 pounds smooth bromegrass
- 2 pounds orchard grass
- ½ pound white clover (if desired)

Close and continuous grazing of pastures with this mix will likely result in the survival of only bluegrass and thistles. If you choose to allow your horses to continuously graze the pastures, substitute bluegrass and white clover for alfalfa. Bluegrass can withstand close grazing and forms a sod that can better tolerate horses' hooves.

Overgrazing. Continuous grazing, or allowing horses access to the entire pasture from spring through fall, will make existing weed problems even worse. If allowed to continuously graze a pasture, horses can seriously reduce the forages' productivity. Under continuous grazing, forages never get a chance to recover and outgrow the weeds. Legumes such as alfalfa and other clovers will not survive if continuously grazed. Grasses such as Kentucky bluegrass can tolerate continuous grazing but will be less productive than if managed under a rotational grazing plan.

Carefully monitor your horses' grazing to maximize feed value. Continuous, close grazing, when horses eat the plants down to very short levels, will seriously stunt the regrowth of the plants and allow weeds such as

Rotational Grazing

Healthy forage plants are more productive if given an opportunity to regrow between grazings. You can enhance forage growth by dividing a pasture into at least four separately fenced paddocks and rotating your horses among them (Figure 5).

Since grass pasture plants grow most rapidly in spring and slow down in the fall, you will need to experiment to come up with an optimum rotation length. Start with three to four weeks of rest per paddock during summer, maybe fewer in spring and more in fall.

The stocking rate per acre does not change under a rotational grazing plan. The general rule of thumb is to start your horses grazing in a paddock when the forages are at least 6 to 10 inches long; move your horses after they have grazed the forage to an average height of 3 to 4 inches. (If bluegrass is the dominant forage, horses can graze it down to 2 inches and then get turned back into the pasture when it has reached a height of 6 to 8 inches.)

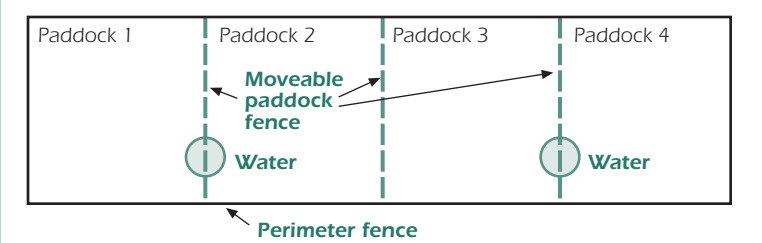


Figure 5. Rotational grazing paddock layout

For example, say you have two horses and four acres of pasture with uniform soil type, topography, plant species, and yield throughout the entire area. You could divide the pasture into four one-acre paddocks and graze the horses for one week per paddock. This will give each paddock three weeks to regrow. If regrowth is slower, you'll need to supplement the pasture with hay. If the growth is faster, you'll need to rotate more often or make hay from the paddock.

Undergrazing (grazing too few horses on too large of a paddock for too short of a grazing period) can encourage horses to selectively graze and result in a lot of underutilized forage requiring clipping or hay making.

Lightweight electric fencing consisting of polywire strung on lightweight plastic or fiberglass posts work well for dividing a pasture into paddocks. These materials are easily connected to perimeter fences and allow you to modify the paddock size or shape depending on forage growth.

thistles and other less desirable species such as bluegrass to get ahead of the desirable forages. Well-timed rotations through several, smaller-sized paddocks will help desirable plants reestablish themselves.

Water. Like urban lawns and other field crops, horse pastures benefit from adequate water throughout the growing season. However, purchasing and maintaining irrigation equipment can be much more costly than occasionally purchasing supplemental forage. Healthy plants that have not been overgrazed will be more productive during drought.

Pasture Management Summary

Table 4 summarizes management activities for grass pastures. Well-managed grass/legume pastures will not need supplemental nitrogen. After you have gotten to know how much your horses' grazing reduces the soil nutrients, you will not need to annually test your soil.

Table 4. Pasture management calendar

Dates (approximate)	Pasture Activity
March 1	Animals out of pasture
April	Soil test and fertilize (end of month)
mid-April	Apply supplemental nitrogen (grass pastures)
May 1–15	Begin grazing
June	Cut surplus forage for hay
mid-June	Apply supplemental nitrogen (grass pastures)
early July	Cut weeds and mature plants
mid-August	Apply supplemental nitrogen (grass pastures)
September	Cut or spray perennial weeds
September/October	Let plants recover
winter	Snow cover

Frequently Asked Questions About Pastures

How much pasture should I allow per horse?

Stocking rates depend on your horses' feed needs and the pasture's yield. As a general rule, horses eat about 1 to 2 percent of their body weight per day in the form of pasture forage. Assume that a 1,000 pound horse will eat about 15 to 20 pounds of pasture forage per day.

Stocking rates of one horse per two to four acres may be easily achieved with a little attention to fertility, weeds, and forage mix. Higher rates could result in the horses trampling much of the pasture and damaging forage. However, well-managed pastures (those with adequate fertility, few weeds, and the appropriate plant mix) can be rotationally grazed at higher stocking rates.

What should I do about uneven grazing?

Since horses selectively graze younger pasture plants, you may need to clip the mature grasses and legumes still standing after the horses have grazed the pasture to induce them to regrow. Allowing the ungrazed plants to remain standing without clipping could stunt the regrowth of the other forages by shading them out. If you need to clip your pastures, leave a four-inch stubble. Clipping the pasture too frequently will encourage short, less productive forages such as bluegrass.

How can I renovate existing pasture?

An overgrazed, underfertilized, weedy pasture will become more productive when managed effectively. One of the most common ways to renovate existing pastures is to directly seed legumes into the standing forages. You can do this by scattering the seeds on the soil surface, interseeding with a conventional grain drill, or interseeding with a heavy grain or no-till drill. Some county soil and water conservation districts rent seeders for a nominal fee.

To give the newly seeded forages the best chance of establishing themselves, University of Minnesota research recommends a spring seeding when the pasture grasses are five to six inches tall. Since new seedlings can't compete with established plants without help, consider applying a glyphosate herbicide like Roundup® at a reduced dosage (about two-thirds strength) before seeding to suppress the standing grasses just enough to allow new seeds to get started. Grass pastures may benefit from adding nitrogen over the course of the growing season. If soil tests indicate a nitrogen deficiency, consider applying urea in mid-April, June, and August.

Can grazing legumes lead to bloat?

Pastures with a large percentage of legumes can lead to bloat. To help prevent bloat, introduce horses to fresh, lush grass/legume pasture a little bit at a time. Do not turn hungry horses into a lush grass/legume pasture. Provide dry hay and plenty of salt and water to newly pastured horses.

What can I do about pocket gophers?

Pastures may suffer from an infestation of pocket gophers. Pocket gophers feed on forages and their hills can smother plants. Horses can trip on their mounds and mound entrances.

One way to eradicate pocket gophers is to rotate pastures to crops such as small grains that effectively eliminate their food source. If rotation is not an option, you can use repellants, toxicants, and traps to control

A no-till drill can be used to interseed directly into existing pasture.

Rural Living

Urban neighbors may know very little about managing horses.

Most state regulations regarding livestock and agriculture do not cover owners of small numbers of recreational horses. Some communities, especially those becoming more suburban, have adopted ordinances to fill this apparent regulatory void. Such ordinances may limit the number of horses allowed per grazable acre, require horse owners to draw up and abide by a manure management plan, or simply request the owner to ensure that the operation does not have a potential pollution problem.

If you live in an urban or rapidly growing suburban area, you will likely receive more scrutiny from your neighbors and municipality than recreational horse owners living in rural areas. By taking the initiative to be a good neighbor, you can demonstrate responsible management and share the joy of horses with your community.

Some suggestions:

- Acquire and display a working knowledge of the potential environmental and health impacts of your operation.
- Keep manure off roadways when transporting to distant fields.
- Consider wind direction when spreading manure. Incorporate manure as soon as possible to minimize odor pollution.
- If stockpiling manure, pay special attention to odors and flies.
- Keep current on proposed local ordinances and state regulations.
- Host an open house to inform your neighbors and demonstrate how to properly manage your land, pasture, and manure.
- Encourage and help other horse enthusiasts to learn and practice proper manure and pasture management.

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February 1994

Pollution Control for Horse Stables and Backyard Livestock

As more people move to suburban communities and begin to keep horses or other large animals on their property, pollution control for livestock waste is an increasing concern. Owners of only a few acres often find handling and disposing of animal manure and bedding difficult. Locating a community of small landowners with livestock near a more urban development whose owners and users are less tolerant of the odors and flies associated with even the most meticulous facility is also becoming common. Keeping peace with one's neighbors is certainly an important reason to manage backyard manure properly, but environmental and health reasons are also important.

Whenever large animals are stabled on small pieces of property, their wastes are concentrated. Animal wastes contain nutrients—nitrogen and phosphorus—as well as bacteria or other pathogens. With each rain, these wastes can wash off the land and into the nearest creek, stream, lake, pond, or wet area. The wastes travel by overland flow or through storm sewers that are not routed through a wastewater treatment plant. In the water, phosphorus and nitrogen fertilize aquatic plants and weeds. As the plants and weeds proliferate and decay, the dissolved oxygen that fish need to survive is depleted. The bacteria and other pathogens associated with animal waste can make the water unfit for drinking without treatment. They can also make the water unsafe for human contact and recreational sports such as fishing, swimming, or skiing.

These pollutants can also contaminate groundwater supplies, especially if shallow or improperly cased wells are downslope from the animals or their waste. High nitrates, a form of nitrogen, in drinking water are especially dangerous to babies, and bacteria is harmful to everyone. Many of the same communities that allow backyard livestock also get their drinking water from private on-site wells or small water systems. Public water systems that serve 25 or more people must be periodically tested, but individual well-owners are often not regulated.

Confining large animals to small lots

presents another environmental concern for backyard livestock owners. Regardless of the amount of supplemental feed provided, large animals will continue grazing until all palatable vegetation is gone. On especially small lots (one or two acres), the animals that are allowed free and continuous access to vegetation quickly graze-out and trample pasture grasses and forbs. These areas are then replaced by noxious weeds and brush, and even these less palatable species can be trampled into oblivion. The resulting bare ground is more subject to erosion from wind and water, and the sediment and contaminants from these lots can enter waterbodies and interfere with fish and wildlife habitat.

Management Techniques

Owners or managers of backyard livestock facilities have limited options to control animal waste because their operations are small. An animal waste management system designed to protect water quality generally consists of these components:

- correct siting and design of facility;
- collection, storage, and disposal or use of the waste;
- pasture management; and
- exercise or barn lot management.

While different types of livestock produce different quantities and chemical compositions of waste, managers of a limited number of horses, cattle, swine, poultry, goats, or donkeys can generally follow similar guidelines.

Siting and Design

One of the best methods to prevent pollution from backyard livestock is to site barns, corrals, paddocks or lots, and pasture fences properly. A good rule is to keep as much filtering vegetation as possible between animals or animal wastes and any waterbody. Siting barns and other high-use areas on the portion of the property that drains away from the nearest water is also beneficial. Never site high-use areas adjacent to creeks, streams, or wet areas because pollution is difficult to control from these areas. Disease prevention and pest control are also more difficult when high-use areas are located too close to water.

Properly placing barns, paddocks, pasture fences, and water supplies on the property is a simple way to prevent pollution. Drainage, confinement, and fences are important factors to include in the design and placement of these facilities as illustrated in Figure 1.

Drainage must be adequate to keep animals dry and disease free. Runoff should not be allowed to discharge directly into a stream, creek, or other waterbody. Placing a diversion terrace above a high-use area may prevent outside runoff from flowing across the bare or manure-containing paddock and storage areas. A diversion placed below the high-use area will help direct runoff from the lot away from water or wet areas. The terraces must outlet to an area with well-established vegetation that is sufficiently large to filter the flow. Sometimes a vegetated berm, placed around the three upslope sides of the paddock, works as well as a diversion (see p. 5, Lot or Paddock Care).

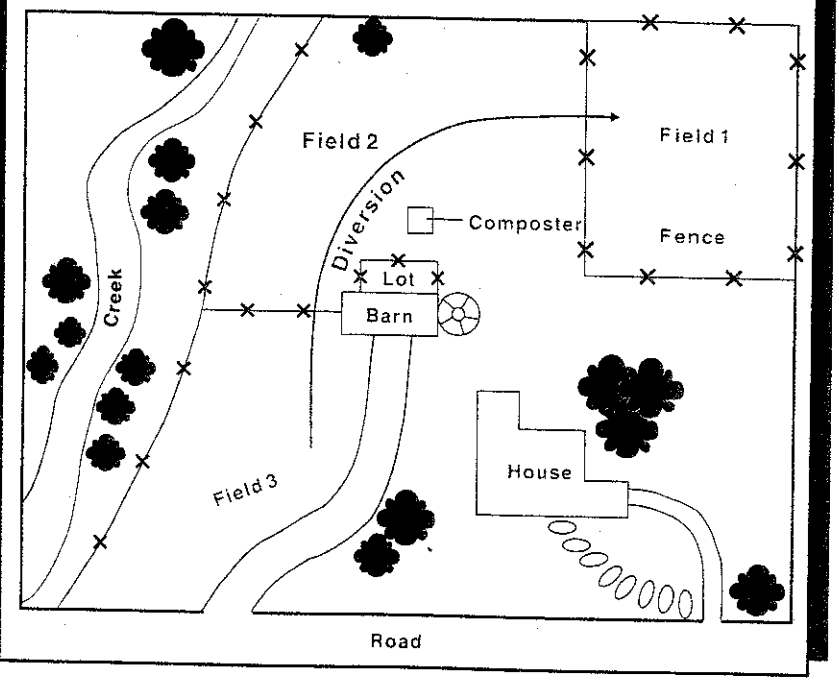
A properly fenced area that confines the animals most of the day and night is essential to protect the pastures, grasses, and forbs on small properties. Horses need adequate exercise to stay healthy, and they can be let out daily for limited periods to exercise and graze. If they are allowed free and continuous access, horses will degrade the pastures.

A small property grazed by livestock needs two pastures or lot areas divided by a sturdy, safe fence. Pastures should not contain a creek or other waterbody. Allowing livestock access to the creek will break down the streambank and deposit waste directly into the water.

Collection and Storage

Collect manure and soiled bedding daily from stalls and paddocks and place in temporary or long-term storage. Expensive collection equipment and storage facilities are not required. Collection may be with a fork, manure shovel and wheelbarrow, or a small tractor, depending on the size of the barn and paddock and the number of livestock.

Figure 1.—Properly designed backyard livestock facility.



Protect the storage facility from rainfall and surface runoff so that the runoff does not carry pollutants to the nearest waterbody. Storage units should be designed to hold a certain amount of waste for a specific period. Regardless of the storage facility chosen, it should be sturdy and resistant to insects, rodents, and other disease-carrying creatures. Effective storage units include

- plastic garbage cans with lids,
- fly-tight wooden or concrete storage sheds,
- pits or level trenches lined with an impermeable layer and covered,
- composters, and
- outdoor storage of manure in piles on top of, and covered with, dark plastic.

Average manure production rates for various livestock can be used to estimate the size of storage units. As a rule, values from Table 1 may be used.

Table 1.—Average waste production rates per day for livestock.

LIVESTOCK	MANURE PRODUCED	BEDDING USED (APPROXIMATIONS)
Horse	0.7 cu. ft./1,000 lbs bodyweight	3-5 gal shavings 1-3 gal sand
Cattle	1.1 cu.ft./1,000 lbs bodyweight	3-6 gal sand
Sheep	0.65 cu. ft./1,000 lbs live weight	1 gal sand
Swine	0.5 cu. ft./1,000 lbs bodyweight	1-4 gal sand 2-6 gal straw
Goat	0.6 cu. ft./1,000 lbs live weight	1 gal sand

Source: Midwest Plan Service

Disposal and Use

The disposal or use method for manure and other waste should be part of the solution, not part of the problem. Ensure that the selected method does not merely transfer the waste from one part of the property to another. Instead, allow the safe and efficient treatment, containment, or uptake of the nutrients, bacteria, and sediment associated with backyard livestock production.

■ **Pasture and cropland fertilization.** Manure or manure and bedding can be spread on pasture or cropland as fertilizer. Soil nutrient levels should be measured before adding the material to determine an application rate that will protect water quality and provide efficient nutrient uptake. The nutrient content of the manure will vary depending on the types of livestock and the feed ratio. Horse manure averages 0.6 percent nitrogen and 0.1 percent phosphorous. It is generally dry and easy to handle.

Apply horse manure or compost to pastures at least two to three weeks before they will be grazed by horses. The application of raw horse manure to land that is being grazed may spread

internal parasites. In some cases, properly composted material may be used. Even with composted material, many horses will not graze pastures with freshly applied material, so the flexibility of a two or more pasture system is essential (see rotational grazing). As with any fertilizer, do not apply the material during or just before rainstorms or to frozen ground. Many suburban lots do not have enough land to properly dispose of their animal waste. An agreement with neighbors to apply the waste to their farms or pastureland may be needed.

■ **Lawn fertilization.** Lawns can be fertilized with raw manure, although composted material is preferred because it is easy to handle and has less odor. As with pasture fertilization, a soil test should be used to set application rates. On lawns that require high maintenance and many nutrients, manure is not likely to meet the nitrogen requirement without exceeding the recommended phosphorus rate. Therefore, some lawns will need an additional application of plain commercial nitrogen fertilizer.

■ **Mushrooms.** Some commercial mushroom growers use composted horse manure as a growing media. These operations need a reliable source and adequate quantities of the material. A single suburban owner with two or three horses would not provide enough material. A group of horse owners, however, might form a cooperative to contract with local mushroom growers for delivery dates and amounts.

■ **Nursery and greenhouse use.** Some containerized nurseries and greenhouses use composted horse manure and bedding as potting material. Nurseries must sterilize the material to eliminate any disease-causing organisms; thus, the price received for the material will likely be low. This option might better be viewed as an environmentally protective disposal and reuse method rather than as a profit generator.

■ **Gardens.** Composted manure is especially valuable as a soil amendment for gardens. It can be incorporated into the garden before spring and fall plantings and to the garden surface at other times during the growing season. Compost improves soil aeration, provides food for beneficial earthworms, increases water infiltration, improves soil tilth and fertility, and over time can even improve soil structure. Composted manure can be used in home gardens, landscape planting beds, commercial truck farms, community gardens, botanical parks, or anywhere the soil would benefit from increased organic matter. As with any soil amendment, proper incorporation and timing are important to prevent runoff and water contamination.

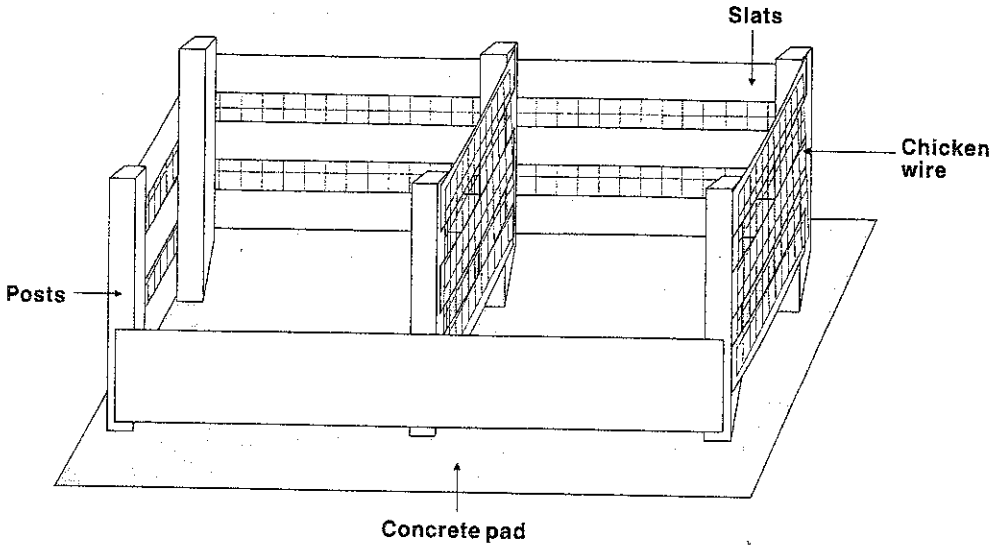
Composting

Composting is a natural process that reduces the bulk, odors, and bacteria in raw manure. While composting results in a product that is easy to handle and transport, it is not a disposal method. Compared to commercial fertilizer, compost nutrient value is low. Thus, it is primarily used as a soil amendment or as supplemental nutrition for plants. Composted material can still be a source of water pollution and, therefore, requires proper storage and protection from rainfall or runoff. Composting is simple and inexpensive.

Detailed guidance on composting is available from books, government publications, and local agricultural agents. Several commercial composting bins are available at discount stores and lawn and garden centers. The local Cooperative Extension Service agent can also provide plans and specifications for homeowners and managers who prefer to build their own compost bins. Composting may also be done by piling materials on a plastic cover that protects the ground. A containment area made of pressure treated lumber is also recommended. A two-bin system is ideal for composting, since once the process begins, no new manure should be added. The second bin can be used as storage for new manure. Piles or bins should be at least 3 feet square and 3 feet deep to maintain the proper composting temperature of at least 160 degrees Fahrenheit.

Mixtures of litter—manure, urine, bedding (shavings, straw, etc.) or other bulking material such as dry leaves, grass clippings, or sawdust—should be combined in the bin. Maintain moisture levels of approximately 50 percent, and aerate the pile by turning it every other day. A batch of compost is completed in about two to six weeks, depending on the season. Bins that are covered and turned correctly and that maintain the proper high temperature are not attractive to insects or rodents. Ammonia odors, large numbers of flies, or small rodents are signs that the composter is not working properly. Figure 2 is an example of a two-bin composter.

Figure 2.—Two-bin composter.



Lot or Paddock Care

To ensure that animal waste deposited in paddocks and stalls will not cause a water quality problem is as simple as frequent and periodic removal of waste and storage in a protected location. Paddock stabilizing and management practices help to prevent erosion and sediment movement from a normally bare area. A vegetative border, diversion terrace, or berm may also help pollution control.

Filter strips and borders of closely spaced perennial grass plants trap sediment moving from the paddock or lot. These areas must be protected from grazing to maintain vegetation height and density. Planting the borders outside the paddock fence, far enough away so that the horse cannot nibble them, is important. Runoff should flow across the border as a shallow sheet.

A diversion terrace that hinders the flow of runoff across the lot also protects the paddock. A different diversion can be used to direct runoff originating in the paddock or lot to a well-vegetated area for further filtering. In this case, a level spreader is required to ensure the flow is not concentrated; if it is, the filter strip is not effective.

Berms may be helpful if vegetated and placed on the upslope perimeter of the paddock. Take special care, though, not to turn the paddock into a pond. A well drained, dry lot is essential to maintaining equine health.

Pasture Care

Pastures and fields in poor condition are a common sight in semirural or suburban areas with backyard livestock. Attempting to graze large animals, especially horses, on small pastures usually results in overuse of pasture grasses and invasion by noxious weeds. Because horses have both upper and lower incisor teeth, they are particularly damaging to grasses when they exceed the areas' recommended stocking rate—the number of animals per acre that can safely graze in a particular climate and grass area. Horses can nip plants at ground level and easily pull plants and their roots from the soil.

Backyard livestock cannot be allowed continuous access to pasture if the number of animals per acre exceeds the recommended stocking rate. Confining animals to lots and pens and providing proper pasture care and use are essential to maintain a steady supply of grass and a noneroding pasture. Local conservation district officials, the U.S. Department of Agriculture Soil Conservation Service offices, and Cooperative Extension Service offices can provide assistance and guidance to private individuals and horse

stable operators on proper stocking rates for local pastures.

Interseeding and rotational grazing are especially effective in maintaining pasture health and vigor. In areas with sufficient moisture, grasses with different growing requirements—such as season of growth or nutrient uptake rate—can be interseeded in existing pastures. This practice provides two benefits—an extended season of use and additional nutrient uptake for pollution control. A warm season pasture, such as coastal bermuda grass, can be overseeded with an annual cool season grass, such as rye, to extend the time livestock have access to green, growing grass. The cool season annual is also effective in using nutrients from compost applied to the land when the warm season grass is no longer absorbing these potential pollutants.

Rotational grazing divides pasture or range land into smaller pastures or units and moves livestock from one area to another before grass supplies become stressed. Many suburban horse owners do not have enough pasture land to graze the area continuously, even with rotational grazing practices. When horses or other livestock are allowed pasture access for only brief periods, grass plants are more uniformly grazed and livestock are assured fresh growing grass.

Where to Get Help

Contact the following list of agencies or groups to help you answer additional questions on pollution control for horse stables.

- Your local Cooperative Extension Service offices (The 4-H youth horse program has excellent materials applicable to all ages)
- Your local Soil and Water Conservation District offices
- Your local U.S. Department of Agriculture Soil Conservation Service offices
- Breed associations often have written materials and technical information available to members and nonmembers
- Many local high schools have a vocational agriculture department that often maintains textbooks and files on various production and agribusiness practices and opportunities
- Your local library has a number of books on horse and pasture care

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Horse Manure Management

Horses, Animal Manure Management - November 06, 2014

With proper planning, manure management can be beneficial to both the farm and the environment. This article provides information on environmental and health impacts of manure as well as proper manure storage and management.

J.G. Davis, A. M. Swinker, and Crystal Smith

Introduction

Manure management is a vital part of modern day horse ownership. Many horses spend a significant portion of their day in stalls, accumulating large amounts of manure and stall waste. Horse owners generally have a limited amount of time to spend caring for their equine charges; thus, efficient manure removal and disposal is crucial. Additionally, horse facilities are often managed on relatively small acreage, limiting manure storage and application options.

The intent of this publication is to educate horse owners on the effective management of horse manure. Horse owners will first gain a thorough understanding of the quantity and characteristics of manure produced by horses. Finally, on-site options for handling, storing and treating manure will be discussed, keeping in mind sound facility management and environmental stewardship.

Managing horse manure can be a complex topic, and the principles presented here should be tailored to your specific situation. Please contact your local extension agent or natural resources conservation service field office for technical support.

Horse Manure Production and Characteristics

Horses (/sites/default/files/w/2/2a/EXtStallCleaning200px.JPG)

produce large amounts of manure. In fact, if the manure produced from one horse were allowed to pile up in a 12-foot-by-12-foot box stall for one year, it would accumulate to a height of 6 feet. On any given day, the average 1,000-pound horse will produce approximately 50 pounds of manure. This amounts to about 8.5 tons per year.

Manure is not the only material being removed when stalls are cleaned. Wet and soiled bedding material must also be removed and can equal almost twice the volume of the manure itself. The amount of bedding material removed will vary by type -- shavings, sawdust, straw -- but on average, totals between 8 and 15 pounds. Total stall waste produced averages between 60 and 70 pounds per day, which amounts to approximately 12 tons of stall waste per year.

When managed properly, horse manure can be a valuable resource. Manure is a source of nutrients for pasture production and can be utilized as part of a pasture management strategy to improve soil quality. The fertilizer value of the 8.5 tons of

manure produced annually from a 1,000-pound horse can amount to 102 pounds of nitrogen (N), 43 pounds of phosphorous (P_2O_5) and 77 pounds of potash (K_2O). Nutrient values for manure vary widely. The type and quantity of bedding material included also affects the overall fertilizer value. If a more accurate measure of nutrient content is needed, contact your local cooperative extension office for a list of laboratories that perform manure analysis.

Environmental and Health Impacts

Many horse owners do not have enough land or vegetative cover to properly apply large amounts of manure and nutrients. If not managed properly, manure can deposit excess nutrients into the environment via surface runoff or as a leachate, or water-contaminated with manure, from improper manure storage and land application. This can negatively impact water quality and subject landowners to investigation, and in some cases, legal action under an Agricultural Stewardship Act. For these reasons, horse operations are encouraged to use best management practices and develop a nutrient management plan. Nutrient management plans describe the farm's manure production, soil fertility and recommended manure application and removal rates. For more information on designing a plan specific to your farm's needs or identifying other conservation resources, contact your local cooperative extension office.

Internal parasites, insects, rodents and odors can be manure-related health concerns on horse farms. These issues can be minimized through carefully planned manure storage and handling. Internal parasites may be found in horse manure and can compromise the health and welfare of the horses stabled or grazing the land. Composting manure and properly timed land application can limit the risk of parasite exposure. Insects, especially flies, become a nuisance on farms where stockpiled manure serves as fly larvae habitat. Flies breed when spring temperatures rise above 65-degrees F. Flies deposit their eggs in the top few inches of moist manure, and these eggs can hatch in as little as seven days under optimal temperature and moisture conditions. Therefore, fewer flies will develop if you remove manure from the site or make it undesirable for fly breeding through processes such as composting within a maximum seven-day cycle. Naturally occurring fly predators can also be used to limit the fly population at the manure pile but are no replacement for sound management practices. Rodents can be a problem when manure is stockpiled for extended periods of time, providing them with a warm, safe environment. Additionally, nuisance odor from manure piles can result in strained relationships with neighbors. Composting or timely removal of manure piles will help keep odors to a minimum. Finally, keep in mind that large piles of manure are not aesthetically pleasing to your neighbors or those visiting your farm. Keeping the manure storage site screened with vegetation or fencing or by location will help to enhance the beauty of your farm.

Horse Manure Storage and Utilization

The average horse produces between 60 and 70 pounds of stall waste per day. Multiply this by several horses, and it is easy to see the importance of having methods in place to manage the manure produced on a daily basis. Letting manure pile up in stalls and paddock areas leads to a host of problems. It is not only unhealthy for your horse -- inviting for pests and odors -- and aesthetically unpleasing, but the sheer amount of manure produced will overwhelm you. Many handling and storage options exist, but it's up to you to choose the method that best suits your horse operation.

Horse operations with available land may choose to apply stall waste to pastures as fertilizer. This should be done based on soil-test results and nutrient needs. A soil analysis is needed to determine the fertility needs of a pasture. Soil analysis is provided through your land-grant university's soil testing laboratory for agricultural operations, which include horse farms, free of charge. Contact your local cooperative extension office for instructions on how to take a soil sample. There are also private laboratories that offer soil-testing services.

In many situations, manure can be picked directly from the stall, deposited into a manure spreader, applied to the pasture and harrowed into the soil. Barns not constructed with a management scheme allowing for stall access by a manure spreader require manure to be carted from the stall to the manure spreader some distance away. In this case, ramps or dropped spreader parking can be helpful to avoid lifting the heavy, cumbersome stall waste. Keep in mind that when spreading manure from stalls bedded with sawdust or shavings, the applied stall waste can stunt plant growth. Wood products contain carbon that soil microbes use for energy but not enough nitrogen to build proteins. The microbes draw nitrogen from the soil to make up for this deficit to such a degree that they can actually limit plant growth. To manage this nitrogen deficiency, nitrogen fertilizer can be applied. Or, to avoid the problem completely, manure can be composted

before it is applied to the land.

When direct pasture application is not an option, manure storage facilities become a necessity. The storage facility should be convenient to the barn. A general rule of thumb is to plan for 180 days of long-term manure storage. This allows operations the flexibility to store manure when conditions are not ideal for manure application, as when fields are frozen or wet. This storage area should be accessible to the equipment that will ultimately remove the accumulated stall waste. Manure storage facilities should also be downwind and screened from nearby homes to avoid potential complaints about odors and aesthetics. The size, type and location of manure storage facilities will vary by horse operation based on the amount of manure produced, length of time the manure will be stored and available land area. Always be sure to contact your local authorities regarding zoning regulations and additional restrictions.

Minimum separation distances commonly recommended for composting and manure-handling activities. Source: On-Farm Composting Handbook, NRAES-54

Sensitive Area	Minimum Seperation Distance (feet)
Property Line	50-100
Residence or place of business	200-500
Private well or other potable water source	100-200
Wetlands or surface water (streams, ponds, lakes)	100-200
Subsurface drainage pipe or drainage ditch discharging to a natural water source	25
Water Table (seasonal high)	2-5
Bedrock	2-5

Manure Storage Construction

Manure storage should be designed to limit the chance of leachate entering surface and groundwater resources. Ideally, storage piles should be placed on gravel, hardened clay or concrete pads that slope inward. The construction of manure storage sites will vary, based on individual situations and soil types. For instance, concrete pads may be necessary in areas with sandy soils where contaminants are more likely to reach groundwater. Storage piles should not be placed in low-lying or flood-prone areas, and care should be taken to direct water from higher elevations away from the site. The natural resources conservation service or local soil and water conservation district offices can provide individualized manure storage design specifications.

Composting

Composting horse manure is relatively simple but does involve more than simply piling the water. While many farms stockpile their manure, few truly compost. Composting is essentially managed decomposition. Managing the process can virtually eliminate odor, flies, weed seeds and internal parasites found in horse manure and create a valuable soil amendment for resale or for pasture application. To manage a compost pile, the following factors must be taken into consideration: carbon to nitrogen ratio, oxygen, moisture and temperature.

The microorganisms found in compost are most active when their diet contains about 30 times more carbon than nitrogen, or a C:N ratio of 30:10. Horse manure's C:N ratio is typically 40:1 due to the large amounts of bedding mixed with it but generally doesn't require additional nitrogen provided it has enough moisture and oxygen.

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Compost Pile

Composting is an aerobic process, that is, it requires oxygen. If a compost pile doesn't get enough oxygen, these anaerobic conditions can result in unpleasant odors, such as those normally associated with stockpiling manure, and slowed decomposition. There are several ways to provide oxygen to a compost pile. The most common way is to turn the pile. For large piles or windrows, turning is generally done using the bucket of a tractor or front-end loader. For smaller piles, a pitchfork will certainly get the job done; but for these operations, you may want to consider using an aerated, static-pile design, which doesn't require turning.

Typical horse-stall waste tends to be dry and will need added moisture to create the ideal conditions for compost microbes. The moisture content should be about 50 percent, or roughly the consistency of a wrung-out sponge. If rainfall does not provide enough additional moisture, the pile may need to be watered periodically. On the other hand, too much water can also be detrimental, displacing oxygen inside the pile and causing anaerobic conditions. If environmental conditions such as rain or snow are providing too much water, the pile may need to be covered. Some compost-storage designs call for permanent roofs, but properly anchored plastic tarps can be just as effective.

Compost Trouble Shooting

Problem	Possible Cause	Remedy
Fresh manure, but pile won't heat up.	The pile is: 1) too dry, 2) too wet; and/or 3) Outside temp is too cold.	1) Add water evenly to pile. 2) Aerate and cover. 3) Wait for warmer temps and turn as needed.
Pile was hot, but now temps are falling.	1) Pile is settling. 2) Moisture is less than 50 percent.	1) Turn pile; and/or 2) Add water evenly to pile.
Pile is more than 160-degrees F and has gray ash-like mold.	Pile is too dry.	Add water evenly to pile.
Pile has gone through two or more heat cycles but still has some material that has not decomposed.	Wood shavings decompose slowly.	Ensure pile has proper moisture content, add water if needed.
Pile emits bad odor.	Pile is too wet and has become anaerobic inside.	Turn to aerate and increase water evaporation, apply cover to limit additional rainwater.

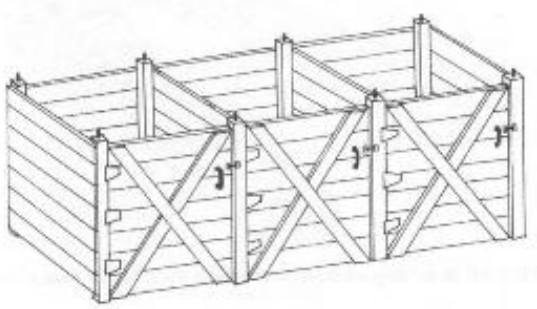
** Table does not include all scenarios, see resources/references for more in-depth publications on the subject.*

One of the best ways to monitor your compost pile is by using a thermometer. Compost thermometers should have a probe at least 36 inches long and are available through many garden supply stores. The goal is to have sustained temperatures of 130- to 150-degrees F in the pile interior. This will optimize decomposition and also kill pathogens and weeds.

Compost-pile design and storage facilities will depend on the size of the operation and the equipment available. For a farm with two to six horses, small static piles, which use perforated PVC pipes to draw in air and don't require turning, may be ideal. While not necessary, the use of multiple bins can allow separation of distinct batches. In this situation, horse manure should be piled approximately 5 to 8 feet high with a base that is two times the width and length of the height. For example, a 10-foot by 10-foot bin could accommodate a pile that is 5 feet high. PVC pipes should be placed after the pile is about 1

foot high so that the ends remain visible as more manure is added.

(/sites/default/files/w/3/38/Manure_management_figure_1.JPG)



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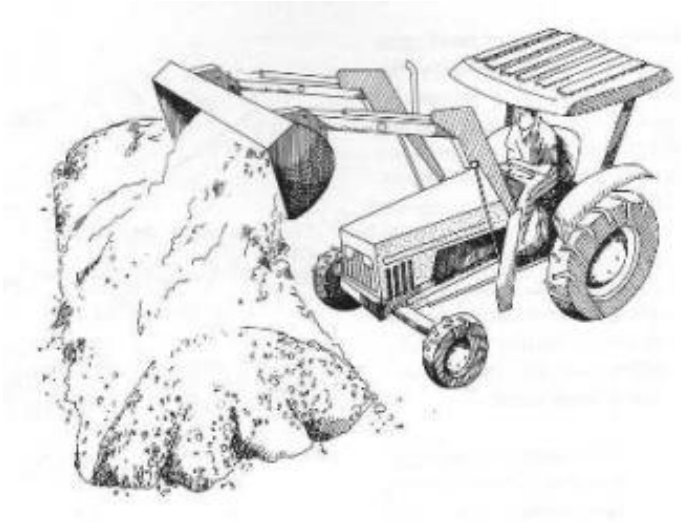


For larger farms with access to bucket loaders, manure spreaders and/or specialized composting equipment, larger piles or windrows may be the most efficient design options. These piles may be slightly larger in height and width and considerably longer but will require periodic tuning.

(/sites/default/files/w/e/e8/Manure_management_figure_3.JP
Example of mixing / storage area with buckwall

Compost will decompose more efficiently if the mix is uniform. Starting with a uniform mix is even more important in the case of static piles, since they will not be turned during the decomposition process. Some farms utilize a temporary storage and mixing area to aid in this process.

Benefits of Composting

- Creates valuable soil amendment
- Stabilizes nitrogen into a slow release form
- Avoids the problem of nitrogen immobilization
- Reduces manure volume by 50 percent
- Destroys weed seeds, fly larvae and internal parasites
- Eliminates or reduces the cost of off-site disposal

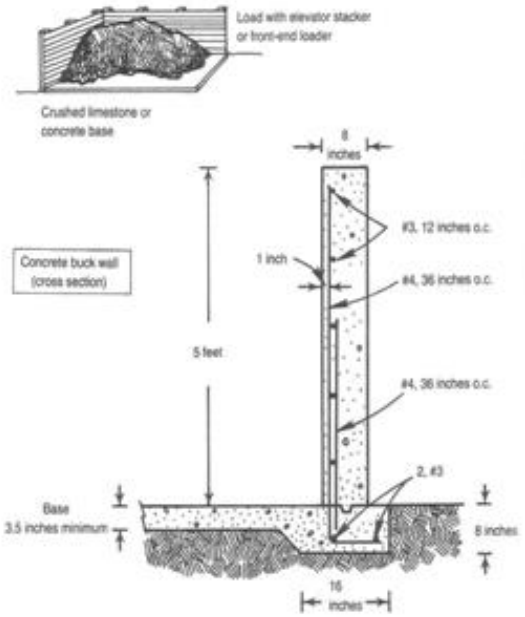
Conclusion

With careful planning, proper manure management not only protects the environment and increases the efficiency and aesthetics of your farm, but might also save you money while enhancing your pastures. The following resources provide more information on composting and additional facility design specifications.

Field Guide to On-Farm Composting and the On-Farm Composting Handbook, available from the Natural Resource, Agriculture, and Engineering Service(NRAES) at www.NRAES.org (http://www.nraes.org) .

Horse Facilities Handbook, available from the MidWest Plan Service at www.mwpshq.org (http://www.mwpshq.org) .

Check out your local university's agronomy handbook containing information on soil production, soil sampling, nutrient management, utilization of organic waste and more.



› Nutrition Basics ›

How Many Horses Can Your Farm Hold?

By University of Kentucky College of Agriculture, Food, and Environment • May 21, 2014 • Article #33905

Photo: Thinkstock

As many of us know, horse ownership is like eating potato chips; you can't have just one! The definition of too many horses depends on who you are asking and what parameters you are considering.

Before trying to decide if your checkbook can stand to take on one more horse, ask yourself, "Is my land capable?"

More specifically, can the land you have support the horses you own in an economical and environmentally friendly way? There are tools to answer this question, one of which is the National Cooperative Soil Survey (NCSS) program.

National Cooperative Soil Survey

The NCSS program began in 1896 as an attempt to survey and map soils in the United States. The program started small, surveying only 2.8 million acres in Maryland, Connecticut, Utah, and New Mexico. Today, soil survey data is available online for the entire country as the Web Soil Survey (WSS) and is maintained by the USDA-NRCS (United States Department of Agriculture, Natural Resources Conservation Service). The NCSS has a wealth of information and uses, both in and out of agriculture.

Using Web Soil Survey

One of the many features of WSS is the ability to calculate your farm's carrying capacity, answering the question of "How many horses can my farm hold?"

Below is a step-by-step guide to viewing soil characteristics for any piece of land in the United States. A PowerPoint presentation has also been created to graphically walk you through each step and can be found on the **UK Horse Pasture Evaluation Facebook page**.

For this example, we will select roughly 80 acres of prime horse pasture located on the University of Kentucky Research Farm near Lexington, Kentucky.

1. **Navigate** to the Web Soil Survey at **http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm** or search for "web soil survey." Click the green "START WSS" button.
2. **Enter Address.** Click the dropdown arrows, enter the address, and click view.
3. **Find Your Area.** Entering an address in WSS is like using a GPS--it isn't always completely accurate. Use the "+" magnifying glass to zoom in, the "-" magnifying glass to zoom out, and the "hand tool" to move the map left, right, up, or down.
4. **Select Your Farm.** Use the "AOI" button on the right to select your farm by clicking on points outlining the farm. The program will connect the points with a straight line. Double click on the last point to complete the area. If you make a mistake and need to try again, simply click the "AOI" button again to start over. When you are finished, the total acres selected will appear on the left.
5. **View Your Soil Map.** Click the "Soil Map" tab at the very top (above the map). This will show a map of the selected area with each soil type outlined. A table containing all soil types in the selected area will be displayed on the left. To view this as a PDF or to print, click "Printable Version" on the far right. In the table, you can click on the soil types to learn more about that series.
6. **View Soil Ratings.** Click "Soil Data Explorer," then the dropdown arrows for

"Vegetative productivity." Click "Yields of Non-Irrigated Crops (Map Unit)" and select "Pasture" from the dropdown menu. Finally, click "View Rating." You will now see a map of the selected area with soil types colored in. Click "Printable Version" in the right corner to view as a PDF or to print. Scrolling down will show a table of the soil types and the ratings for each type in Animal Unit Months (AUM). This unit tells us how many months one acre of this soil type can carry a 1,000-pound animal with average precipitation and recommended fertilization.

Interpreting Soil Ratings

As stated, AUM soil ratings indicate how many months one acre of land can carry one animal unit. This is useful for other livestock species whose numbers will fluctuate throughout the year, such as farms where calves are bought in the spring and sold in the fall. Generally, horse numbers are more stable, especially on nonbreeding farms. Therefore, those ratings are converted to acres per horse per year (AHY).

1. **Adjusting for Horses.** An animal unit is defined as 1,000 pounds. The average horse's weight is closer to 1,200 pounds, so divide the AUM rating by 1.2 to get the adjusted AUM rating. Obviously, the horse's breed and age has a significant impact on the animal's average weight, so you might need to use a different adjustment factor. Light breeds (ponies) that average only 800 pounds would adjust by 0.8, while draft breeds that average 1,600 pounds might adjust by 1.6.
2. **Converting Months to Year.** Divide 12 by the adjusted AUM rating to convert years. This gives acres per horse per year (AHY).
3. **Carrying Capacity by Soil Type.** Dividing the number of acres you have of the soil type by the AHY will tell you the number of horses you can carry for a year on that soil type.
4. **Total Farm Carrying Capacity.** You can repeat the calculations for each soil type and add the number of horses each soil type can carry to determine your farm's total carrying capacity.

For example, 80 acres on the UK Research farm in Lexington, which included 12 acres of Huntington silt loam, would be calculated as follows:

9.5 (AUM rating) / 1.2 (adjustment factor) = 7.92 (adjusted rating)
12 (months) / 7.92 (adjusted AUM rating) = 1.5 (acres per horse per year)

Now we know that we need 1.5 acres of this Huntington silt loam to carry one horse for one

year. Now we can calculate how many horses we can have on 12 acres:

12 (acres of Huntington silt loam) / 1.5 (AHY) = 8 horses

This tells us that we can carry eight horses on 12 acres of Huntington silt loam. We can repeat this process for each soil series present to calculate how many horses the entire farm can carry.

Uses and Limitations

Understanding a property's soil types is valuable in many ways. Consider the production potential of a piece of land before a rent or purchase decision. Use carrying capacity to estimate the land's profitability based on the number of horses you could house for boarding, training, or breeding purposes. Plan buildings, roads, and fencing to utilize the best soils on your farm for pasture and understand what challenges you will face managing the land.

Proper soil fertility is key in obtaining maximum production. Permanent pastures benefit from recycled nutrients in manure and urine. Pastures should be soil sampled every three years and fertilized according to laboratory recommendations. Cutting hay from pastures removes many more nutrients; therefore hay fields should be soil sampled every year and fertilized accordingly to maintain production. For more information on soil sampling, see the UK publication "**Taking a Soil Sample**" or contact your local county extension agent.

Just like making a budget and sticking to a budget are two different things, so is determining the capacity of your farm and implementing it. When rating soil types, the WSS makes a few key assumptions. The rating assumes that you will practice good pasture management, including maintaining good grass cover, managing weeds, using rotational grazing, and maintaining soil fertility. WSS also assumes average weather conditions. Events such as a late spring, hard winter, or dry summer will all impact the carrying capacity. Keep in mind that these are yearlong averages; in most years there will be excessive pasture growth in the spring that will require clipping and hay feeding that will be needed in the winter. Year-round grazing is possible in some areas but requires intense management. Finally, most horse farms will also have roads, barns, and common areas that are not included in pasture; remember to account for these nonproductive areas when determining your farm's carrying capacity.

Knowing the production potential and limitations of the soil under your farm is key to reducing feeding costs when managing horses and being a good land steward.

Krista Lea, MS, UK's Department of Plant and Soil Sciences provided this information.

Want more articles like this? Sign up for the **Bluegrass Equine Digest e-Newsletter**.

More information on **Gluck Equine Research Center** and **UK Ag Equine Programs**.

Seek the advice of a qualified veterinarian before proceeding with any diagnosis, treatment, or therapy.