FINAL REPORT FOR THE PROJECT

Pilot Implementation of an Environmental Phosphorus Assessment Tool for Iowa

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1. Project Goals

This project was a cooperative effort between Iowa State University, several Iowa farmers, the Iowa Natural Resources Conservation Service (NRCS), and several crop consultants. The general goal of the project was to educate stakeholders about the Iowa Phosphorus (P) Index and to identify practical problems related to its use that would be useful to consider when implementing it by state agencies or nutrient management planners and for future revisions. Objectives included comparing recommendations resulting from alternative nutrient management plans based on BMPs for crop production, identifying problems of P Index implementation, demonstrating various alternatives for P Index calculation, and conducting educational activities related to P Index and environmental P issues.

2. Background of Project Procedures

The work was conducted during three years based on information from 38 fields clustered at six areas of the State. These six areas were selected because they represent different landscape or land uses. Sometimes there was already an ongoing related Iowa State University (ISU) or state agency project in the area and sometimes a producer or nutrient management planner expressed interest in the project. The six areas will be referred to as the northeast (NE), southeast (SE), north (N), northwest (NW), west (W), and southwest (SW) clusters. The SW cluster was centered on the Lake Icaria watershed (Adams County). The SE cluster included fields in Washington, Jefferson, and Des Moines Counties and also included the Lake Darling watershed. The NE cluster fields were located in Buchanan County. The NW cluster followed the Floyd river watershed in Plymouth County. The North cluster surrounded Clear Lake (Cerro Gordo and Hancock Counties). The West cluster approximately coincided with the general area of a livestock initiative project in Crawford County.

At each cluster a preliminary team was established that consisted of the project personnel, the NRCS District Conservationists, local or area Iowa State University extension personnel, and other local leaders. This team put together a list of four or five farmers who might be interested in cooperating in the project. These producers were contacted, and if they were interested in cooperating, we visited several fields, and one to four of their fields were selected to be used in the project. The fields were selected to included diverse nutrient and soil conservation management practices and according to the likelihood of representing contrasting values of the different components of the P Index. Although 38 fields were used for the project, all portions of the work were developed for 33 fields. A few more fields that we could work on given the available budget were included to accommodate wishes of a farmer or local nutrient management planner but a minimum activity was conducted.

The cooperation from the local producers was voluntary, and most requested that individual data must remain confidential or without indication of names and field location. Therefore, in this report we use field codes and specify only the general location of the fields in Iowa.

3. Farm Fields Descriptions

Twelve fields were from cash-crop farms with very little history of manure usage, eight were from crop and livestock farms with a history of manure usage going back a number of years, eight were associated with modern swine production units which had heavy manure application in recent years, and ten were associated with cattle units (mainly cow-calf) involving grazed pastures part of the year. A majority of the fields (24) were managed with a corn-soybean rotation, two fields were managed with continuous corn, six were managed with long-term rotations with grain crops and hay, and six were permanent pastures.

Tillage has a large impact on the P Index because it is one of the main determinants of soil erosion and total P loss. Of the 32 row-cropped fields in this project, conventional tillage (chisel plow/disk) was used on 18 fields, some type of reduced tillage was used on 11 fields, and no-till was used on three fields. Most of the fields had P soil-test values in the very high range. Twenty-nine of the fields averaged very high, three fields tested high, two fields tested optimum, three fields tested low, and one field tested very low. Seven of the fields testing very high had soil-test P (Bray-1, 6-inch depth) higher than 100 ppm. The field average slope ranged from a very flat 1.1% slope to a steep 14% slope, and the highest slope value for soil map units within a field was 25%. The RUSLE (Revised Universal Soil Loss Equation) values calculated for the field average ranged from a low of 0.6 tons/acre to a high of 7.4 tons/acre with the highest soil loss being 19.2 tons/acre/year.

4. Nutrient Management Practices and Alternative Recommendations Criteria

This project looked at nutrient and manure management plans and how the different nutrient management strategies would affect manure application to individual fields. Four separate nutrient management strategies were developed for each field as follows: (1) Agronomic P recommendations for all the crops of the rotation used in each field according to the ISU Extension guidelines for fertilizer P (Pm-1688), (2) Agronomic N recommendations for the non-legume crops included in the rotations according to the ISU Extension guidelines for fertilizer (in Pm-1714 for corn), (3) P removal by all crops of the rotations, and (4) N removal by all crops of the rotation.

In order to compare fields and to use units that would relate to commonly used manure application rates, we also assumed that liquid swine manure would be used in scenarios for all fields. In order to simplify calculations, because most fields tested high or very high in P, and because current research is re-evaluating current estimates of crop availability of P in manures the total P content of manure was used for these scenarios. The estimates of crop availability of N in swine manure and of N losses used were those suggested in the ISU Extension publication Pm-1811. If the field operator was currently using swine manure with a recent nutrient analysis, the analysis result was used to calculate manure application in the nutrient plans. When no recent analysis was available or the farmer was not using swine manure, an average value (from the publication Pm-1811) for a swine finisher ration of 44 lb N and 32 lb P_2O_5 per 1000 gallons was used to calculate manure application. All the nutrient plans were developed using the

current cropping system, crop rotation, and assumed or expected crop yield that the farmers would normally use (often according to soil mapping units of the field). To simplify calculations, and because data was not available for all years of the crop rotations, we assumed no change in the soil-test P class.

The results for the nutrient management scenarios for each field were summarized in several tables. Tables 1 to 11 show results of the scenarios for each field (grouping several in each page), Tables 12 and 13 show averages for each field cluster, and Table 14 shows the overall average across the 38 fields and across fields managed with grain crops. Because of the need for space, a list of abbreviations used in these tables is included here.

General abbreviations:

Alf, Alfalfa; Brome, Bromegrass; ME, Most Erosive, N, Nitrogen; P, Phosphorus; SMU, Soil mapping unit; STP, Soil-Test Phosphorus; Cluster, Group of fields in areas of the State; NE, Northeast; SE, Southeast; SW, Southwest; W, West; NW, Northwest; N, North.

Crop Rotations:

CSbCSbCOMM -	An eight-year rotation of corn, soybeans, corn, soybeans, corn, oats, and two years of a hay crop (usually alfalfa).
Grass Pasture -	Permanent pasture dominated by cool-season grasses, which includes bromegrass, tall fescue, orchardgrass, and/or bluegrass.
Grass/legume -	Permanent pasture with a mixture of cool-season grasses and legumes (alfalfa, birdsfoot trefoil, or red clover).
Corn/Soybean -	A two year rotation of corn and soybeans.
Cont. Corn -	Corn grown continuously without rotating to another crop.
CCOMMM -	A six year rotation of two years of corn, one year of oats, followed by three years of a hay crop (usually alfalfa).

Farm Types:

Swine -	Farm raising crops but also includes a confinement swine enterprise which supplies liquid manure for fertilizing the cropland.
Cattle -	Farm raising crops but also includes grazing cattle on pasture or crop residue.
Livestock -	Combination crop and livestock farm with a variable history of manure usage.
Crop -	Crop only farm without access to manure.

Discussion of results for each field is not practical for this report, and only highlights of the results are discussed. The Agronomic P Recommendations strategy recommends application of P fertilizer or manure P equal to estimated P removal when soil-test P levels are in the optimum class, response and build-up based applications of P when soil-test levels are in the low and very low classes, and no additional P applied when soil-test levels are in the high and very high classes other than a small starter rate for corn and a small P rate for seeding-year alfalfa in fields that test in the high category. Because on average most fields used in this project tested high or very high in P (32 fields), very little manure was needed in our scenario to meet the P

requirements of the rotation. With this strategy, only the six fields that tested optimum or below would require P application. When averaged over all the 38 fields only 14 lb P_2O_5/acre/year would be required. The amount of swine manure needed to supply this P with the aforementioned assumptions would be only 373 gallons/acre/year.

Under the Agronomic N Recommendations strategy, the amount of N and manure applied in the scenarios are based on N recommendations for the non-legume crops in the rotation. With the aforementioned assumptions, the amount of liquid swine manure needed to provide the recommended amount of N for all fields would be 2389 gallons/acre/year. This amount of manure would supply 70 lb P_2O_5/acre/year averaged across all 38 fields.

The P Removal strategy is based on the amount of manure necessary to replace the P removed by the harvest of all the crops in the rotation. The P removed is averaged over the entire rotation to come up with an average amount of P removed per year. Under a P removal type system, soil-test P should neither increase nor decrease as the amount of P applied should equal the amount removed from the field. Calculations for this scenario showed an average P removal of 52 lb P_2O_5 per acre per year. It would require an average yearly application of 1796 gallons of manure to replace the amount of P that is removed by the crop harvest of the fields in this project.

The N Removal strategy bases the amount of manure applied on the amount needed to replace the N removed by the harvest of all the crops in the rotation. The amount of N removed is averaged over the entire rotation period to come up with an average amount of N removed per year. This strategy allows for manure applications higher than any of the other strategies. On average this strategy would require 5151 gallons of manure/acre/year to replace the N removed by the crop harvest. This amount of manure would supply 149 lb P_2O_5 per acre per year averaged over all the fields of this project.

The Agronomic P strategy results in little or no application of P and/or manure over all crops of the rotations in 32 of the 38 fields because soil-test P levels in most fields were high or very high. These results are very relevant because the majority of manured fields in Iowa test high or very high in soil-test P. The P Removal strategy results in much higher P or manure application in these fields because, in this scenario, P is applied at all soil-test P levels. In the other six fields, the Agronomic P strategy results in higher P or manure application than the P Removal strategy only when soil-test P levels were below optimum levels. These results would be different if a higher proportion of the fields would have tested low or very low in P.

In every field except one, the N Removal strategy requires the highest amount of manure. The one exception is a grass pasture which requires more N than the removal rate because yield (and thus, N removal) is low for that field plus not all N from manure is available in the application year according to publication Pm-1811. The N Removal strategy would result in a build-up of soil P in every field and in most cases this build-up would be fairly rapid. The Agronomic N recommendation strategy would also result in a build-up of soil P in several fields, but this build-up would be rather slow. In a few fields more P is removed than is applied by this strategy. The fastest soil P build-up occurs for fields under continuous corn because manure N can be applied

every year.

The most common nutrient management strategy used by producers with livestock is the P Removal or the Agronomic N recommendation strategies. For these strategies, and in most fields of the project, more P would be supplied by manure than is needed for optimum crop yield. However, for all fields, except the continuous corn fields, these two nutrient management strategies will not result in a fast build-up of soil P because the amount of P applied with the Agronomic N strategy is similar to or only slightly larger than the amount of P removed by crop harvest.

5. Results of Phosphorus Index Values

Phosphorus Index ratings were calculated for all fields of the project in different ways. The results are summarized into three major sections. These sections are Results of the Three Components of the Index, Phosphorus Index Calculation Methods, and Management Practices Effects on P Index Ratings. Because of the large amount of calculations and information, both summary tables with only the most relevant data were prepared for each field and across fields.

5.1 Results of the Three Components of the Index

The P Index is composed of three components: Erosion, Surface Runoff, and Subsurface Drainage. The resulting values for each component are summed to obtain an overall index value and risk rating. Briefly, the erosion component estimates the risk of sediment-bound P that is available to algae growth and is delivered to surface water with runoff. The value for this component is calculated based on gross erosion from the revised universal soil loss equation (RUSLE), ephemeral gullies, and classic gullies; sediment traps and sediment delivery estimates; filter strips, and total soil P (estimated from soil-test P). The surface runoff component estimates risk of dissolved P delivered to surface water in runoff. Values are calculated from estimates of precipitation, surface runoff flow, relationships between soil-test P and dissolved P in runoff, and various P application factors (including time and method of application). The subsurface drainage component estimates the potential P delivered to surface water with subsurface drainage, and values are calculated mainly from estimates of precipitation, subsurface water flow, and relationships between soil-test P and P in tile drainage.

It is important to note that all results in this report for the Erosion component of the P Index are based on RUSLE because calculations were done before 2005. In 2005 NRCS and the Iowa Index Team updated the Iowa P Index to use the last version of RUSLE, which is referred to as RUSLE 2. Although using RUSLE 2 would change somewhat the erosion estimates and values of the Erosion component of the P Index, these changes would be relatively minor and do not affect the comparisons nor conclusions of this project. Another recent modification to the Iowa P Index, which was allowing use of the ICP (inductively-coupled plasma) version of the Mehlich-3 P test, did not affect this project either.

The impact of each P Index component on the final P Index value and rating varied across fields.

The data for the 33 fields for which we could collect all the information necessary for calculation P Index ratings in different ways is shown in Tables 15 to 47. To facilitate a general view of the components impact across these fields, a summary is shown in Table 48. On average, the Erosion component accounted for 60% of the potential P delivered to surface waters, although for individual fields this value ranged from 21% to 96%. These numbers are for whole fields and using the erosion rate of the most erosive soil map unit. The Surface Runoff component accounted for 36% of the potential P loss, and the range within individual fields was 3% to 71%. The Subsurface Drainage component accounted for only 5% of the potential P delivered to surface waters, and the range within individual fields was 0% to 13%. These results clearly indicate that major efforts for reducing P loss from Iowa fields should address factors related mainly to erosion and surface runoff. Some of the important factors were amounts of gross erosion and surface runoff occurring on the field, whether or not there were sediment trap structures in the field, the field and landscape characteristics influencing sediment delivery (including distance to a stream), and soil-test P levels through their influence on dissolved and sediment-bound P.

5.2 Phosphorus Index Calculation Methods

For P Index calculation, nutrient management planners must decide between using estimated soil loss from the predominant soil map unit (SMU) in a field or the SMU with the highest erosion rate and also between calculating one P Index rating for a field or various for different zones within a field. These are major decisions that may greatly affect the P Index result and the effort nutrient management planners must dedicate to its implementation. Obviously, calculating the P Index for each SMU present in the field is not practical. Using the most predominant SMU may not be appropriate because small highly erosive areas are often responsible for a disproportionate amount of P loss from a field. Using the SMU of these highly erosive areas to calculate RUSLE values may provide more environmentally conservative P Index ratings but may overemphasize the actual risk of P loss from the field.

Therefore, a significant part of the effort was dedicated to the study of different criteria to establish the soil erosion values using RUSLE soil loss values to be used for calculation of the P Index ratings and to zone fields for P Index calculation. This study focused on two groups of criteria. One group consisted of different methods for using gross erosion estimates for SMUs within a field when calculating P Index ratings. The other group consisted of calculating P Index ratings for a field and various zones within each field. Because of the large amount of information, the summary table for each field (Tables 15 to 47) was subdivided in two halves that present the information for the two groups of criteria. For presentation clarity, however, the results for the Erosion component method of calculation are presented first and are followed by the zone calculations.

<u>Criteria to estimate soil loss for the P Index</u>.
Four different criteria were used. One method involved calculating weighted average soil loss for the field. In this method, the soil loss estimate to be used in the P Index is based on a weighted average value of slope steepness, slope length, and soil erodibility (the RUSLE K

factor) for all the soil mapping units within the field. These values are combined with the rainfall, cropping, and conservation practices factors (the RUSLE R, C, and P factors) to find an average soil loss value for the field. This method probably cannot be practically used by nutrient management planners but a good reference for this study because it gives the best estimate of soil loss from a field.

The second method calculates erosion based on the predominant soil mapping unit for the field. This is the method most users believe should be used, and often estimates soil loss very similar to that estimated by the weighted average method. The advantage of this method and any that use only one SMU is that it is quicker and easier to calculate the soil loss when using the slope steepness, slope length, and soil erodibility from only one SMU than to determine the values for all SMUs and averaging them.

The third method calculates erosion based on the most erosive soil mapping unit in the field. This method is preferred by those who weight heavily the fact that a major proportion of soil or P loss from a field is derived from usually small highly erosive areas within a field. Calculating the P Index from the erosion of the most erosive area would force the manure P management to be controlled by the areas most likely to lose P and, thus, could have the largest impact on reducing P loss from the field.

The fourth method is to calculate erosion based on the most erosive soil mapping unit that comprises at least 10% of the field area. Sometimes the most erosive SMU comprises such a small portion of the field that it does not make good sense to use the erosion from such a small area as the basis to classify the entire field. Using the most erosive SMU that comprises at least 10% of the field area is a workable compromise that still takes into account the proportionately higher P losses from highly erosive areas but does not base the P Index, and thus manure management, on too small areas.

The results for these four different methods of accounting for Erosion when calculating P Index ratings is shown in the left-hand side of Tables 15 to 47. This part of each table also includes another useful piece of information. This is how the P Index changes from one year to another when new soil-test data is available. Most farmers and crop consultants collect soil samples every four years. Therefore, it is of interest to see how a soil-test P change affects the P Index rating value. Because of limitations for the length and budget of the project, we estimated this change for soil samples from a second or third year for most fields and for P Index calculations using the erosion from the most erosive SMU comprising at least 10% of the field area. This erosion estimate and most other major inputs for the P Index did not change for these years.

Study of results summarized in the tables indicates that the weighted average and the predominant SMU methods were often similar, which is reasonable because the predominant SMU is the largest unit. These methods resulted in a different P Index rating class for only three fields, although sometimes there were significant differences in P Index values within the Medium and High classes (which are wider than the lower classes). This was an important result because it indicates that in many fields using the predominant SMU provided the most realistic

estimate of average soil loss. While the weighted average method calculates total field soil loss more accurately, the predominant SMU is easier to use and could be used without serious consequences in most fields. Neither of these two methods specifically targets small highly erosive areas with likely high total P loss.

Using the most erosive SMU that comprised at least 10% of the field method usually resulted in a P Index value slightly higher than the weighted average method. On average, using the most erosive SMU with at least 10% of the area resulted in P Index values 18% higher than the weighted average method. In 13 fields the increase was over 25%. In 13 fields the increase was over 0.5 units and in 11 fields using this method increased the P Index by one class. On average, using the most erosive SMU with at least 10% of the field area resulted in 21% higher P Index values than the predominant SMU method. In 14 fields the increase was over 25%. In 14 fields the increase is over 0.5 units and in nine fields this method increased the P Index by one class.

Using the most erosive SMU, no matter how small, resulted in equal to or higher P Index values than using the most erosive SMU with a size at least 10% of the field area. On average, the most erosive SMU method was 37% higher than the most erosive SMU with at least 10% of the field area. In 11 fields the increase was over 0.5 units, in 13 fields the increase was over 25%, and in 10 fields its use increased the P Index by one class.

Therefore, the results showed that in more than one-half of the fields the criteria used to estimate erosion for the P Index did not affect the P Index ratings much. However, there were large differences for a significant number of fields. The results suggest that using the most erosive SMU that comprises at least 10% of the field area is a reasonable method to use in the manure management plans. It avoids using too small areas, in many fields does not overestimate the risk of P loss to a significant degree in many fields, and does a reasonable job at accounting for the impact of the highly erosive areas in a significant number of problem fields.

Study of results of P Index calculations for second or third year using new soil-test information indicated that the changes in soil-test P resulted in very little change in P Index values and seldom changed the P Index class. This result is reasonable because soil-test P changes slowly over two or three years unless there is a major change in the P application strategy. In the few instances when soil-test P changed significantly, the difference was most likely due to large soil-test variability. Therefore, large changes in the P Index values over a period of two or three years will most likely result only if significant changes are made in other management practices, such as tillage system and soil conservation structures or practices.

Zoning fields for P Index calculation.

Field zones, usually referred to as *management zones*, were developed for each field. A separate P Index value was computed for each zone to help determine how splitting a field into management zones would affect the P Index and the resulting nutrient management of the field. Criteria were developed to split the fields into management zones. ArcView GIS software was used to delineate these zones. Management practices such as tillage or crop rotation differences

were the first criterions to be looked at. Presence or absence of terraces and other water control structures was the second criterion. Differences in slope and slope length, particularly when they cause large differences in erosion rates, was the third criterion. The last criterion was use of different soil mapping units when they caused differences in overland water flow or infiltration.

Once the boundaries of the zones were determined, the most erosive soil mapping unit comprising at least 10% of the zone area was identified and an erosion rate was calculated using values from this SMU. The original soil samples taken from inside the zone were averaged and the arithmetic mean used as the soil-test P input. Distance from the center of the zone to the nearest perennial or intermittent stream was measured, as well as all other variables needed for calculation of the P Index. A separate P Index value was calculated for each zone and those numbers are presented on the right-hand side of Tables 15 to 47. Examples of the zones delineated for a few representative fields are included in GIS maps included at the end of the report, after all the tables.

Nineteen fields showed at least one zone with a reduction of greater than 0.5 units in the P Index value when compared to the P Index value of the field as one unit. Because a 0.5-unit difference means more if the Index value is low than if it is high, we also calculated an average reduction for the lowest zone compared to the whole field as one unit. The average reduction for the zone with the lowest value was 41% or 1.2 units. Twenty-three fields showed a 25% or greater reduction, from the value of the field as one unit, in at least one zone. Thirteen fields had at least one zone with a P Index class lower than the field as one unit. Eleven fields showed at least one zone with an increase of greater than 0.5 units in the P Index value when compared to the Index value of the field as one unit. The average increase for the zone with the maximum value was 25% or 0.5 units. Eleven fields showed a 25% or greater increase over the field as one unit in at least one zone.

Field zoning identified areas that had a lower P Index value than for the field as one unit in approximately one-half of the fields, and areas that had a higher P Index value in about one-third of the fields. By using zones to identify areas within a field that are more likely to lose P to streams and lakes than the rest of the field, appropriate management strategies can be used to reduce the risk of P loss. Delineating zones for P Index implementation fully utilizes the P Index potential as an assessment tool that can be used to identify the most appropriate P and soil conservation management practices for reducing P loss from fields and water quality impairment.

5.3 Management Practices Effects on P Index Ratings

The P Index was designed to be a risk assessment tool that could also help producers and nutrient management planners understand how the management practices they implement on fields affect the potential loss of P delivery to surface water resources. Because the P Index is contained in a spreadsheet version, it is simple to use it to compare various management strategies in hypothetical scenarios. By studying the effect of a management practice change on all the fields we can determine what the average effect a particular management change will have

on the final P Index value. We did such a study for the fields of this project by calculating P Index change (for the total Index value and for selected components) when a hypothetical management practice change was introduced. Table 49 showed the average results for the fields of each project cluster.

A few major results are highlighted here, which confirm observations in previous sections where results for actual fields and practices were presented and discussed. The most important conclusion is that the changes that result in major P Index rating differences are those related to the erosion and surface runoff components. Within these components, the most important factors were those related to soil and water conservation, followed by soil-test P changes. The P application rate and the timing or methods of application had the smallest effects. These results confirm that erosion and surface runoff are as important or even more important than the P management in determining risk of P loss, and that work on these issues should have the largest impact in reducing the risk of P loss. However, it is important to understand that long-term use of inappropriate P application methods or excessive P rates likely have a larger impact on potential P loss than that suggested by a hypothetical change when using the P Index calculator. This is because the index considers the P rate, method, and timing only since the last soil test, which involves a short period of time and few applications.

6. Education, Outreach, and Opinions Concerning the Phosphorus Index Implementation

The project team developed numerous types of meetings with the project cooperators, nutrient management planners and general public over the length of the project. One type of meeting, to which much effort was dedicated, involved one-to-one meetings with each farmer cooperator. At these individual meetings, the project personnel, often together with the local District Conservationist, discussed field information, nutrient management issues, available results of calculations of P Index for his fields, explained the procedures, and discussed reasons for the ratings observed. At the same time, we conducted several meetings at each cluster (usually two or three at each cluster) for which we extended invitations to selected farmers, consultants, and local leaders to maintain the number of attendees to a maximum of about 35 to 40 people. This was done in order to conduct the meetings really “workshop" style as opposed to classic "presentation style" meetings. Most farmers preferred a personal explanation of the P-index risk value from their farm and were more willing to share their information and opinions at these small meetings. The results were excellent, and we got very good discussion and comments form the attendees. People asked all kind of questions related to the P index and its implementation that would not be asked at larger meetings, and gave us the opportunity of explaining issues better. As a matter of fact, in several meetings we also discussed and explained issues related to the Department of Natural Resources (DNR) P-based rules for manure management plans even before they were established. We also conducted several presentations (mainly the Project leader) at much larger meetings open to a broader audience to explain the P index and management practices that can reduce risk of P loss. These meetings often were developed in conjunction with ISU Extension, producers’ associations, or agribusiness, and included regional conferences in Iowa and also the main ICM Extension conference.

During the course of the project we collected numerous opinions from producers and nutrient management planners about the P Index implementation, mainly concerning its practical application. These opinions were gathered mainly during the one-to-one contacts with the project cooperators and the “by invitation” meetings conducted at each cluster. Listing all comments would be impractical. Therefore, in this section we summarize the most important opinions and observations from producers and nutrient management planners. We do not comment on these opinions, although obviously there were discussions with cooperators and thee opinions should be considered for future plans for index revision or its implementation.

1. The P Index is intimidating at first, giving the impression of being very complicated and difficult to understand and implement. However, after some study its usefulness is understood, it does not seem so complicated, and it seems to adapt well to specific field conditions.

2. The index calculator could include more choices to select from concerning crop and soil management histories and field characteristics. It is noteworthy that this opinion was provided several times early in the project, was shared with NRCS staff, and the P Index calculator was revised and already includes additional choices compared with the early version.

3. More specific guidelines are needed concerning what field area or soil map unit is used to develop the Index and how these areas should be defined and delineated. Why should I use the soil map unit with highest erosion instead of the soil map unit that predominates in the field?

4. Can I delineate zones based on soil-test P values from a 2.5-acre grid soil sampling?

5. The P Index focuses on long-term effects and uses many averages. Does it consider well the risk of P loss for specific practices or events? What about deviations from normal rainfall?

6. The RUSLE or RUSLE 2 software is very complex, need more training about its use, need lots of information to get the soil loss values. It is nice not having to take many measurements from the fields. But on the other hand, how should I use slope, slope length, and residue cover, for example, when I have actual maps or data from my fields instead of the suggested average values?

7. How should areas "protected" by practices such as terraces or tile lines be considered?

8. Are those sediment delivery ratios really appropriate for my field?

9. Why isn’t distance from the edge of the field used instead of the center of the field? Edge of field distance seems better and easier to estimate. What if a marsh is the closest thing to my field? Should I use the distance to open water?

10. The management practices and soil cover conditions included when calculating runoff curve numbers seem too general. Can or should we add more field specific information?

11. Why do effects of P rate and application method have such small effects in the P Index rating?

7. General Summary Comments

This project was conducted in cooperation with producers, private crop consultants, personnel from state agencies and Iowa State University Extension, and other local organizations. We especially recognize the efforts of the District Conservationists, coordinators of several NRCS and DNR special projects, and several local or area extension specialists. This cooperation resulted in an effective project development and much needed discussion of P Index implementation and environmental P issues. These discussions contributed to a better understanding of P Index issues from all parts. For example, early results of this project and input from cooperators had a major role in the discussions, general consensus, and decisions while DNR was developing P Index implementation rules for manure management plans and when NRCS made modifications to the P Index calculator.

The following points summarize the major outcomes of the project.

1. Producers and nutrient management planners consider the Iowa P Index a reasonable and field-specific risk assessment tool that is useful to suggest improved management practices. Most recognize that some level of complication is unavoidable for such a tool to be effective and that calculating the P Index rating is very easy after it is first implemented in a field.

2. The project demonstrated that use of nutrient and soil conservation “best management practices” (as suggested by Iowa State University Extension or NRCS) usually result in P Index values with a Medium or lower risk rating. When these practices are not followed, mainly appropriate soil conservation practices, P Index values often are in the High or Very High risk classes.

3. The P Index makes clear that factors related to soil and water loss with erosion and surface runoff are the most important in determining high risk levels in most fields, that the soil P level is intermediate, and that the P application rate and method of application have a lesser impact. Although the lesser impact of the P application rate, method, or timing surprises many at first, this is understood after explaining how the P Index considers short-term effects and long-term effects and that much of the P application rate effects are accounted for by the soil test. This issue underlines the importance of using a recent soil test for calculating the P Index.

4. Field zoning for P Index calculation is very important and goes a long way toward recognizing within-field variation in risk of P loss and in helping producers better utilize the manure resource. But the project demonstrated that more education and better guidelines are needed concerning how field zones should be delineated, and what is required or only suggested concerning what part of the field or zone is used to calculate the Erosion component of the P Index. Currently, both DNR and NRCS guidelines allow calculations of P Index ratings for field zones or NRCS conservation management units and explicitly or implicitly suggest using the soil

map unit with the highest erosion rate to calculate P Index ratings for a field or zone. Although these guidelines seem scientifically appropriate, the difficulty lies in confusion about its interpretation and different opinions by field staff and nutrient management planners concerning the degree of flexibility to use alternative criteria.

5. The results of this project and P Index issues in general have been discussed at large with nutrient management planners, producers, and both agency and extension staff. These discussions are already having a significant impact on ongoing education programs and also on research designed to validate various factors of the Index. Information from this project is already being used for training sessions for certified advisors, agency field staff, and university extension specialists.

Overall, this project has already had a significant impact on improving the understanding of the P Index and issues related to its need and use among stakeholders, extension and agency personnel, and researchers. Ultimately, we believe the project has made a significant contribution to efforts at implementing the P Index and better P management practices that should result in better water quality in Iowa.

Table 1. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (Southwest Cluster Fields A11, A12, A21, and A22).

	A11	A12	A21	A22
Assumed Yields				
Corn (bu)	137	143	na	na
SB (bu)	46	48	na	na
Alf/Brome (tons)	4.9	5.3	3.0	4.1
Nutrient Removal (lb/acre)				
P_2O_5 Removal				
Corn	51	54	na	na
Soybeans	36	39	na	na
Alf/Brome	62	66	37	51
N Removal				
Corn	164	172	na	na
Soybeans	173	184	na	na
Alf/Brome	246	264	149	205
Crop Rotation	CSbCSbCOMM	CSbCSbCOMM	Grass Pasture	Grass/Legume
Rotation P_2O_5 Removal (lb/acre)	397	421	37	51
Rotation Period (years)	8	8	1	1
P_2O_5 Removal lb/acre/year	50	53	37	51
$Bray_1$ (ppm)	218	73	12	8
STP Class	Very High	Very High	Low	Very Low
Agronomic Recommendations (rotation totals)				
Assuming no change in STP class during the rotation.				
P_2O_5 (lb/acre)	0	0	62	101
N (lb/acre)	405	405	140	0
Manure Analysis and Assumptions				
N lb / 1000 gal	44	44	44	44
P_2O_5 lb / 1000 gal	32	32	32	32
% N Lost by Denitrification	2%	2%	2%	2%
% N available 1st year	70	70	70	70
Average Manure Needed (Gal/acre/year)				
Based on P Recommendations	0	0	1941	3161
Based on N Recommendations	1677	1677	4638	0
Based on P Removal	1550	1646	1160	1598
Based on N Removal	4573	4854	3444	4745
P_2O_5 Supplied by Manure (lb/acre/year)				
Based on P Recommendations	0	0	62	101
Based on N Recommendations	54	54	148	0
Based on P Removal	50	53	37	51
Based on N Removal	146	155	110	152

Table 2. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (Southwest Cluster Fields A23, A24, A25, and A26).

	A23	A24	A25	A26
Assumed Yields				
Corn (bu)	na	na	na	na
SB (bu)	na	na	na	na
Alf/Brome (tons)	5.0	5.3	5.8	4.7
Nutrient Removal (lb/acre)				
P_2O_5 Removal				
Corn	na	na	na	na
Soybeans	na	na	na	na
Alf/Brome	62	66	72	59
N Removal				
Corn	na	na	na	na
Soybeans	na	na	na	na
Alf/Brome	250	265	289	237
Crop Rotation	Grass/Legume	Grass/Legume	Grass/Legume	Grass Pasture
Rotation P_2O_5 Removal (lb/acre)	62	66	72	59
Rotation Period (years)	1	1	1	1
P_2O_5 Removal lb/acre/year	62	66	72	59
$Bray_1$ (ppm)	12	18	19	85
STP Class	Low	Optimum	Optimum	Very High
Agronomic Recommendations (rotation totals)				
Assuming no change in STP class during the rotation.				
P_2O_5 (lb/acre)	87	66	72	0
N (lb/acre)	0	0	0	140
Manure Analysis and Assumptions				
N lb / 1000 gal	44	44	44	44
P_2O_5 lb / 1000 gal	32	32	32	32
% N Lost by Denitrification	2%	2%	2%	2%
% N available 1st year	70	70	70	70
Average Manure Needed (Gal/acre/year)				
Based on P Recommendations	2732	2071	2260	0
Based on N Recommendations	0	0	0	4638
Based on P Removal	1951	2071	2260	1852
Based on N Removal	5791	6148	6709	5497
P_2O_5 Supplied by Manure (lb/acre/year)				
Based on P Recommendations	87	66	72	0
Based on N Recommendations	0	0	0	148
Based on P Removal	62	66	72	59
Based on N Removal	185	197	215	176

Table 3. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (Northeast Cluster Fields B11, B21, and T11).

	B11	B21	T11
Assumed Yields			
Corn (bu)	146	178	160
SB (bu)	46	54	54
Alf/Brome (tons)	na	na	na
Nutrient Removal (lb/acre)			
P_2O_5 Removal			
Corn	55	67	60
Soybeans	36	44	43
Alf/Brome	na	na	na
N Removal			
Corn	176	213	192
Soybeans	173	207	205
Alf/Brome	na	na	na
Crop Rotation	Corn-Soybean	Corn-Soybean	Corn-Soybean
Rotation P_2O_5 Removal (lb/acre)	91	110	103
Rotation Period (years)	2	2	2
P_2O_5 Removal lb/acre/year	46	55	52
$Bray_1$ (ppm)	79	29	153
STP Class	Very High	High	Very High
Agronomic Recommendations (rotation totals)			
Assuming no change in STP class during the rotation.			
P_2O_5 (lb/acre)	0	0	0
N (lb/acre)	125	125	125
Manure Analysis and Assumptions			
N lb / 1000 gal	50	50	30
P_2O_5 lb / 1000 gal	40	34	20
% N Lost by Denitrification	5%	2%	5%
% N available 1st year	70	70	70
Average Manure Needed (Gal/acre/year)			
Based on P Recommendations		0	0
Based on N Recommendations	1880	1822	3133
Based on P Removal	1143	1621	2580
Based on N Removal	3675	4289	6755
P_2O_5 Supplied by Manure (lb/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	75	62	63
Based on P Removal	46	55	52
Based on N Removal	147	146	135

Table 4. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (Northeast Cluster Fields T12, T13, and T14).

Field	T12	T13	T14
Assumed Yields			
Corn (bu)	153	156	160
SB (bu)	51	52	54
Alf/Brome (tons)	na	6.1	6.6
Nutrient Removal (lb/acre)			
P_2O_5 Removal			
Corn	57	59	60
Soybeans	41	42	43
Alf/Brome	na	77	82
N Removal			
Corn	184	187	192
Soybeans	194	198	205
Alf/Brome	na	307	329
Crop Rotation	Corn-Soybean	CSbCSbCOMM	CSbCSbCOMM
Rotation P_2O_5 Removal (lb/acre)	98	472	496
Rotation Period (years)	2	8	8
P_2O_5 Removal lb/acre/year	49	59	62
$Bray_1$ (ppm)	87	95	42
STP Class	Very High	Very High	Very High
Agronomic Recommendations (rotation totals)			
Assuming no change in STP class during the rotation.			
P_2O_5 (lb/acre)	0	0	0
N (lb/acre)	125	405	405
Manure Analysis and Assumptions			
N lb / 1000 gal	30	30	30
P_2O_5 lb / 1000 gal	20	20	20
% N Lost by Denitrification	5%	5%	5%
% N available 1st year	70	70	70
Average Manure Needed (Gal/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	3133	2538	2538
Based on P Removal	2454	2948	3102
Based on N Removal	6418	7977	8390
P_2O_5 Supplied by Manure (lb/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	63	51	51
Based on P Removal	49	59	62
Based on N Removal	128	160	168

Table 5. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (West Cluster Fields C11, C12, and C13).

	C11	C12	C13
Assumed Yields			
Corn (bu)	128	154	139
SB (bu)	43	51	na
Alf/Brome (tons)	na	na	5.0
Nutrient Removal (lb/acre)			
P_2O_5 Removal			
Corn	48	58	52
Soybeans	34	41	na
Alf/Brome	na	na	63
N Removal			
Corn	140	169	153
Soybeans	162	196	na
Alf/Brome	na	na	252
Crop Rotation	Corn-Soybean	Cont. Corn	CCOMMM
Rotation P_2O_5 Removal (lb/acre)	48	99	357
Rotation Period (years)	1	2	6
P_2O_5 Removal lb/acre/year	48	49	59
$Bray_1$ (ppm)	70	130	103
STP Class	Very High	Very High	Very High
Agronomic Recommendations (rotation totals)			
Assuming no change in STP class during the rotation.			
P_2O_5 (lb/acre)	0	0	0
N (lb/acre)	175	125	380
Manure Analysis and Assumptions			
N lb / 1000 gal	44	44	44
P_2O_5 lb / 1000 gal	32	32	32
% N Lost by Denitrification	2%	2%	2%
% N available 1st year	70	70	70
Average Manure Needed (Gal/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	5798	2071	2098
Based on P Removal	1496	1544	1859
Based on N Removal	3256	4228	5087
P_2O_5 Supplied by Manure (lb/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	186	66	67
Based on P Removal	48	49	59
Based on N Removal	104	135	163

Table 6. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (West Cluster Fields C14, C15, and C21).

	C14	C15	C21
Assumed Yields			
Corn (bu)	159	139	158
SB (bu)	54	na	53
Alf/Brome (tons)	na	5.0	na
Nutrient Removal (lb/acre)			
P_2O_5 Removal			
Corn	60	55	59
Soybeans	43	na	43
Alf/Brome	na	65	na
N Removal			
Corn	175	162	174
Soybeans	204	na	202
Alf/Brome	na	260	na
Crop Rotation	Corn-Soybean	CCOMMM	Corn-Soybean
Rotation P_2O_5 Removal (lb/acre)	102	371	102
Rotation Period (years)	2	6	2
P_2O_5 Removal lb/acre/year	51	62	51
$Bray_1$ (ppm)	7	80	27
STP Class	Low	Very High	High
Agronomic Recommendations (rotation totals)			
Assuming no change in STP class during the rotation.			
P_2O_5 (lb/acre)	127	0	0
N (lb/acre)	125	380	125
Manure Analysis and Assumptions			
N lb / 1000 gal	44	44	44
P_2O_5 lb / 1000 gal	32	32	32
% N Lost by Denitrification	2%	2%	2%
% N available 1st year	70	70	70
Average Manure Needed (Gal/acre/year)			
Based on P Recommendations	1991	0	0
Based on N Recommendations	2071	2098	2071
Based on P Removal	1601	1931	1592
Based on N Removal	4389	5275	4362
P_2O_5 Supplied by Manure (lb/acre/year)			
Based on P Recommendations	64	0	0
Based on N Recommendations	66	67	66
Based on P Removal	51	62	51
Based on N Removal	140	169	140

Table 7. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (North Cluster Fields CG11, CG12, and CG21).

	CG11	CG12	CG21
Assumed Yields			
Corn (bu)	155	168	176
SB (bu)	50	54	56
Alf/Brome (tons)	na	na	na
Nutrient Removal (lb/acre)			
P_2O_5 Removal			
Corn	58	63	66
Soybeans	40	43	45
Alf/Brome	na	na	na
N Removal			
Corn	186	202	211
Soybeans	188	204	213
Alf/Brome	na	na	na
Crop Rotation	Corn-Soybean	Corn-Soybean	Corn-Soybean
Rotation P_2O_5 Removal (lb/acre)	98	106	111
Rotation Period (years)	2	2	2
P_2O_5 Removal lb/acre/year	49	53	55
$Bray_1$ (ppm)	226	135	78
STP Class	Very High	Very High	Very High
Agronomic Recommendations (rotation totals)			
Assuming no change in STP class during the rotation.			
P_2O_5 (lb/acre)	0	0	0
N (lb/acre)	125	125	125
Manure Analysis and Assumptions			
N lb / 1000 gal	44	44	44
P_2O_5 lb / 1000 gal	32	32	32
% N Lost by Denitrification	2%	2%	2%
% N available 1st year	70	70	70
Average Manure Needed (Gal/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	2071	2071	2071
Based on P Removal	1529	1657	1732
Based on N Removal	4343	4706	4919
P_2O_5 Supplied by Manure (lb/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	66	66	66
Based on P Removal	49	53	55
Based on N Removal	139	151	157

Table 8. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (North Cluster Fields CG21, CG22, and H11).

	CG22	CG23	H11
Assumed Yields			
Corn (bu)	143	168	127
SB (bu)	45	53	na
Alf/Brome (tons)	na	na	na
Nutrient Removal (lb/acre)			
P_2O_5 Removal			
Corn	53	63	48
Soybeans	36	43	na
Alf/Brome	na	na	na
N Removal			
Corn	171	201	152
Soybeans	173	203	na
Alf/Brome	na	na	na
Crop Rotation	Corn-Soybean	Corn-Soybean	Cont. Corn
Rotation P_2O_5 Removal (lb/acre)	90	106	48
Rotation Period (years)	2	2	1
P_2O_5 Removal lb/acre/year	45	53	48
$Bray_1$ (ppm)	47	50	118
STP Class	Very High	Very High	Very High
Agronomic Recommendations (rotation totals)			
Assuming no change in STP class during the rotation.			
P_2O_5 (lb/acre)	0	0	0
N (lb/acre)	125	125	175
Manure Analysis and Assumptions			
N lb / 1000 gal	44	44	44
P_2O_5 lb / 1000 gal	32	32	32
% N Lost by Denitrification	2%	2%	2%
% N available 1st year	70	70	70
Average Manure Needed (Gal/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	2071	2071	5798
Based on P Removal	1404	1651	1485
Based on N Removal	3988	4689	3526
P_2O_5 Supplied by Manure (lb/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	66	66	186
Based on P Removal	45	53	48
Based on N Removal	128	150	113

Table 9. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (Southeast Cluster Fields D11, D12, D13, and D14).

	D11	D12	D13	D14
Assumed Yields				
Corn (bu)	140	138	144	115
SB (bu)	47	47	48	38
Alf/Brome (tons)	na	na	na	na
Nutrient Removal (lb/acre)				
P_2O_5 Removal				
Corn	53	52	54	43
Soybeans	37	37	38	31
Alf/Brome	na	na	na	na
N Removal				
Corn	168	166	173	138
Soybeans	178	178	182	146
Alf/Brome	na	na	na	na
Crop Rotation	Corn-Soybean	Corn-Soybean	Corn-Soybean	Corn-Soybean
Rotation P_2O_5 Removal (lb/acre)	90	89	92	74
Rotation Period (years)	2	2	2	2
P_2O_5 Removal lb/acre/year	45	45	46	37
$Bray_1$ (ppm)	74	83	67	60
STP Class	Very High	Very High	Very High	Very High
Agronomic Recommendations (rotation totals)				
Assuming no change in STP class during the rotation.				
P_2O_5 (lb/acre)	0	0	0	0
N (lb/acre)	125	125	125	125
Manure Analysis and Assumptions				
N lb / 1000 gal	40	40	40	40
P_2O_5 lb / 1000 gal	25	25	25	25
% N Lost by Denitrification	20%	20%	20%	20%
% N available 1st year	70	70	70	70
Average Manure Needed (Gal/acre/year)				
Based on P Recommendations	0	0	0	0
Based on N Recommendations	2790	2790	2790	2790
Based on P Removal	1802	1784	1848	1478
Based on N Removal	5411	5366	5550	4440
P_2O_5 Supplied by Manure (lb/acre/year)				
Based on P Recommendations	0	0	0	0
Based on N Recommendations	70	70	70	70
Based on P Removal	45	45	46	37
Based on N Removal	135	134	139	111

Table 10. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (Southeast Cluster Fields J11, J12, W11, and W12).

	J11	J12	W11	W12
Assumed Yields				
Corn (bu)	182	146	171	153
SB (bu)	61	49	58	51
Alf/Brome (tons)	na	na	na	na
Nutrient Removal (lb/acre)				
P_2O_5 Removal				
Corn	68	55	64	57
Soybeans	49	39	46	41
Alf/Brome	na	na	na	na
N Removal				
Corn	218	175	205	183
Soybeans	231	187	219	195
Alf/Brome	na	na	na	na
Crop Rotation	Corn-Soybean	Corn-Soybean	Corn-Soybean	Corn-Soybean
Rotation P_2O_5 Removal (lb/acre)	117	94	110	98
Rotation Period (years)	2	2	2	2
P_2O_5 Removal lb/acre/year	58	47	55	49
$Bray_1$ (ppm)	30	57	89	99
STP Class	High	Very High	Very High	Very High
Agronomic Recommendations (rotation totals)				
Assuming no change in STP class during the rotation.				
P_2O_5 (lb/acre)	0	0	0	0
N (lb/acre)	125	125	125	125
Manure Analysis and Assumptions				
N lb / 1000 gal	27	27	44	44
P_2O_5 lb / 1000 gal	23	23	38	32
% N Lost by Denitrification	20%	20%	2%	2%
% N available 1st year	70	70	70	70
Average Manure Needed (Gal/acre/year)				
Based on P Recommendations	0	0	0	0
Based on N Recommendations	4134	4134	2071	2071
Based on P Removal	2541	2041	1452	1535
Based on N Removal	10406	8364	4926	4383
P_2O_5 Supplied by Manure (lb/acre/year)				
Based on P Recommendations	0	0	0	0
Based on N Recommendations	95	5	79	66
Based on P Removal	58	47	55	49
Based on N Removal	239	192	187	140

Table 11. Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans (Northwest Cluster Fields P11, P12, P21, and P22).

	P11	P12	P21	P22
Assumed Yields				
Corn (bu)	146	144	143	151
SB (bu)	55	54	54	56
Alf/Brome (tons)	na	na	na	na
Nutrient Removal (lb/acre)				
P_2O_5 Removal				
Corn	55	54	54	57
Soybeans	44	43	43	45
Alf/Brome	na	na	na	na
N Removal				
Corn	160	158	157	166
Soybeans	208	206	205	214
Alf/Brome	na	na	na	na
Crop Rotation	Corn-Soybean	Corn-Soybean	Corn-Soybean	Corn-Soybean
Rotation P_2O_5 Removal (lb/acre)	98	97	97	102
Rotation Period (years)	2	2	2	2
P_2O_5 Removal lb/acre/year	49	49	48	51
$Bray_1$ (ppm)	165	88	58	65
STP Class	Very High	Very High	Very High	Very High
Agronomic Recommendations (rotation totals)				
Assuming no change in STP class during the rotation.				
P_2O_5 (lb/acre)	0	0	0	0
N (lb/acre)	125	125	125	125
Manure Analysis and Assumptions				
N lb / 1000 gal	60	60	44	44
P_2O_5 lb / 1000 gal	30	30	32	32
% N Lost by Denitrification	2%	2%	2%	2%
% N available 1st year	70	70	70	70
Average Manure Needed (Gal/acre/year)				
Based on P Recommendations	0	0	0	0
Based on N Recommendations	1518	1518	2071	2071
Based on P Removal	1640	1623	1513	1590
Based on N Removal	3132	3100	4202	4410
P_2O_5 Supplied by Manure (lb/acre/year)				
Based on P Recommendations	0	0	0	0
Based on N Recommendations	46	46	66	66
Based on P Removal	49	49	48	51
Based on N Removal	94	93	134	141

Table 12. Average Amount of Manure and Phosphorus Applied in Fields of the Northeast, North, and Northwest Clusters Using Different Nutrient Management Plans.

	NE	North	NW
Assumed Yields			
Corn (bu)	159	156	146
SB (bu)	52	50	55
Alf/Brome (tons)	6.0	5.3	5.2
Nutrient Removal (lb/acre)			
P_2O_5 Removal			
Corn	60	59	55
Soybeans	41	40	44
Alf/Brome	75	66	65
N Removal			
Corn	191	188	160
Soybeans	197	189	208
Alf/Brome	298	264	260
Crop Rotation			
Rotation P_2O_5 Removal (lb/acre)	229	92	99
Rotation Period (years)	4	2	2
P_2O_5 Removal lb/acre/year	54	51	49
$Bray_1$ (ppm)	81	86	94
STP Class	Very High	Very High	Very High
Agronomic Recommendations (rotation totals)			
Assuming no change in STP class during the rotation.			
P_2O_5 (lb/acre)	0	0	0
N (lb/acre)	218	135	125
Manure Analysis and Assumptions			
N lb / 1000 gal	37	44	52
P_2O_5 lb / 1000 gal	26	32	31
% N Lost by Denitrification	6%	2%	2%
% N available 1st year	70	70	70
Average Manure Needed (Gal/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	2507	2816	1795
Based on P Removal	2308	1586	1591
Based on N Removal	6251	4366	3711
P_2O_5 Supplied by Manure (lb/acre/year)			
Based on P Recommendations	0	0	0
Based on N Recommendations	61	90	56
Based on P Removal	54	51	49
Based on N Removal	147	140	116

Table 13. Average amount of Manure and Phosphorus Applied in Fields of the West, Southwest, and Southeast Clusters Using Different Nutrient Management Plans.

	West	SW	SE
Assumed Yields			
Corn (bu)	148	114	153
SB (bu)	49	38	51
Alf/Brome (tons)	5.2	4.8	5.6
Nutrient Removal (lb/acre)			
P_2O_5 Removal			
Corn	55	43	57
Soybeans	40	31	41
Alf/Brome	65	60	70
N Removal			
Corn	162	137	184
Soybeans	188	146	196
Alf/Brome	260	238	280
Crop Rotation			
Rotation P_2O_5 Removal (lb/acre)	180	146	99
Rotation Period (years)	3	3	2
P_2O_5 Removal lb/acre/year	53	56	49
$Bray_1$ (ppm)	70	56	67
STP Class	Very High	Very High	Very High
Agronomic Recommendations (rotation totals)			
Assuming no change in STP class during the rotation.			
P_2O_5 (lb/acre)	21	49	0
N (lb/acre)	218	136	125
Manure Analysis and Assumptions			
N lb / 1000 gal	44	44	36
P_2O_5 lb / 1000 gal	32	32	28
% N Lost by Denitrification	2%	2%	13%
% N available 1st year	70	70	70
Average Manure Needed (Gal/acre/year)			
Based on P Recommendations	332	1521	0
Based on N Recommendations	2701	1579	3040
Based on P Removal	1670	1761	1810
Based on N Removal	4433	5220	6504
P_2O_5 Supplied by Manure (lb/acre/year)			
Based on P Recommendations	11	49	0
Based on N Recommendations	86	51	81
Based on P Removal	53	56	49
Based on N Removal	142	167	174

Table 14. Average Amount of Manure and Phosphorus Applied Using Different Nutrient Management Plans Across All Fields of all Clusters.

	Overall Average	Average for Fields with Grain Crops
Assumed Yields		
Corn (bu)	144	151
SB (bu)	48	51
Alf/Brome (tons)	5.3	5.4
Nutrient Removal (lb/acre)		
P_2O_5 Removal		
Corn	54	57
Soybeans	39	40
Alf/Brome	66	68
N Removal		
Corn	169	176
Soybeans	183	192
Alf/Brome	264	270
Crop Rotation		
Rotation P_2O_5 Removal (lb/acre)	140	156
Rotation Period (years)	3	3
P_2O_5 Removal lb/acre/year	52	51
$Bray_1$ (ppm)	77	87
STP Class	Very High	Very High
Agronomic Recommendations (rotation totals)		
Assuming no change in STP class during the rotation.		
P_2O_5 (lb/acre)	14	4
N (lb/acre)	158	179
Manure Analysis and Assumptions		
N lb / 1000 gal	42	42
P_2O_5 lb / 1000 gal	30	29
% N Lost by Denitrification	5%	6%
% N available 1st year	70	70
Average Manure Needed (Gal/acre/year)		
Based on P Recommendations	373	62
Based on N Recommendations	2389	2547
Based on P Removal	1796	1793
Based on N Removal	5151	5106
P_2O_5 Supplied by Manure (lb/acre/year)		
Based on P Recommendations	12	2
Based on N Recommendations	70	73
Based on P Removal	52	49
Based on N Removal	149	144

Table 15 Field A11

Summary of P-Index Values for Different Methods of Calculating Erosion

		Soil Erosion Calculation Method				
Cluster	South West					
Crop Rotation	CSCSCOMM					
Farm Type	Swine					
Tillage	Disk/Chisel					
Manure	N-based Swine	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	ApD2	ApD2	ApD2	ApD2
% of Field in SMU Used for Erosion		na	34%	34%	34%	34%
Slope (Soil Survey) (%)		10.0	12.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		5.62	6.72	6.72	6.72	6.72
Sediment Trap		inlet terrace	inlet terrace	inlet terrace	inlet terrace	inlet terrace
Distance to Perennial Stream (ft)		400	400	400	400	400
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		218	218	218	218	210
Erosion Index Component		**0.5**	**0.6**	**0.6**	**0.6**	**0.6**
Fertilizer Rate (P_2O_5 /acre /yr)		90	90	90	90	90
Application Method		injected	injected	injected	injected	injected
Runoff Index Component		**1.9**	**1.9**	**1.9**	**1.9**	**1.8**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Total P Index		**2.5**	**2.6**	**2.6**	**2.6**	**2.6**
P Index Class		**Medium**	**Medium**	**Medium**	**Medium**	**Medium**

Field A11

Summary of P-Index Values for Field Zones

			Zones		
Cluster	South West				
Crop Rotation	CSCSCOMM				
Farm Type	Swine				
Tillage	Disk/Chisel				
Manure	N-based Swine	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone Zone 1	Zone 2	Zone 3
Zone Name			Hilltop	Sidehill	Bottom
Soil Map Unit Used for Erosion		ApD2	SaC2	ApD2	CxB
Slope (Soil Survey) (%)		12.0	7.0	12.0	4.0
Erosion (RUSLE) (tons/acre/yr)		6.72	4.19	6.72	2.00
Sediment Trap		inlet terrace	inlet terrace	inlet terrace	inlet terrace
Distance to Perennial Stream (ft)		400	450	310	80
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		218	205	218	230
Erosion Index Component		**0.6**	**0.4**	**0.6**	**0.2**
Fertilizer Rate (P_2O_5 /acre /yr)		90	90	90	90
Application Method		injected	injected	injected	injected
Runoff Index Component		**1.9**	**1.2**	**1.9**	**1.4**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.2**	**0.2**	**0.2**	**0.2**
Total P Index		**2.6**	**1.8**	**2.6**	**1.7**
P Index Class		**Medium**	**Low**	**Medium**	**Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0093D2	ApD2	ADAIR-SHELBY COMPLEX	12.0	6.7	34%	25
0192D2	AcD2	ADAIR THIN SOLUM	12.0	6.7	10%	15
0370C2	SaC2	SHARPSBURG	7.0	4.2	16%	67
0370D2	SaD2	SHARPSBURG	12.0	6.7	25%	57
8011B1	CxB	COLO-GRAVITY COMPLEX	4.0	2.0	15%	68

Field Description: Mostly terraced sidehill (D slope) with some bottom ground.

Zone comparison to field	Field as a Single Unit	Zone with Lowest Value	Value Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	4.0	8.0	67%
Erosion (RUSLE) (tons/acre/yr)	6.7	2.0	4.7	70%
Total P Index	2.6	1.7	0.9	34%
		Zone with Highest Value	Value Increase	% Increase
Slope (Soil Survey) (%)		12.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		6.7	0.0	0%
Total P Index		2.6	0.0	0%

Table 16 Field A12

Summary of P-Index Values for Different Methods of Calculating Erosion

		Soil Erosion Calculation Method					
Cluster	SW						
Crop Rotation	CSCSCOMM						
Farm Type	Swine						
Tillage	Disk/Chisel						
Manure	N based Swine	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%	No Terrace ME SMU >10%
Soil Map Unit Used for Erosion		Avg	ShD2	ShD2	ShD2	ShD2	ShD2
% of Field in SMU Used for Erosion		na	83%	83%	83%	83%	83%
Slope (Soil Survey) (%)		10.7	12.0	12.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		6.01	6.72	6.72	6.72	6.72	6.72
Sediment Trap		Terrace	Terrace	Terrace	Terrace	Terrace	none
Distance to Perennial Stream (ft)		350	30	350	350	350	350
Buffer Strip		66 ft	66 ft	66 ft	66 ft	66 ft	66 ft
Residue Management		tillage	tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		73	73	73	73	80	73
Erosion Index Component		**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**3.7**
Fertilizer Rate (P_2O_5 /acre /yr)		90	90	90	90	90	90
Application Method		injected	injected	injected	injected	injected	injected
Runoff Index Component		**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**0.8**	**0.9**	**0.9**	**0.9**	**0.9**	**4.3**
P Index Class		**Very Low**	**Very Low**	**Very Low**	**Very Low**	**Very Low**	**Medium**

Field A12

Summary of P-Index Values for Field Zones

			Zones		
Cluster	SW				
Crop Rotation	CSCSCOMM				
Farm Type	Swine				
Tillage	Disk/Chisel				
Manure	N based Swine	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone Zone 1	Zone 2	Zone 3
Zone Name			Hilltop	Sidehill	Bottom
Soil Map Unit Used for Erosion		ShD2	SaC2	ShD2	CxB
Slope (Soil Survey) (%)		12.0	7.0	12.0	4.0
Erosion (RUSLE) (tons/acre/yr)		6.72	4.19	6.72	2.00
Sediment Trap		Inlet Terrace	Inlet Terrace	Inlet Terrace	Inlet Terrace
Distance to Perennial Stream (ft)		350	400	300	80
Buffer Strip		66 ft Buffer	none	none	66 ft Buffer
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		73	84	73	63
Erosion Index Component		**0.3**	**0.2**	**0.4**	**0.1**
Fertilizer Rate (P_2O_5 /acre /yr)		90	90	90	90
Application Method		injected	injected	injected	injected
Runoff Index Component		**0.5**	**0.6**	**0.5**	**0.6**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**0.9**	**0.9**	**0.9**	**0.7**
P Index Class		**Very Low**	**Very Low**	**Very Low**	**Very Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0024D2	ShD2	SHELBY	12.0	6.72	81%	48
0370C2	SaC2	SHARPSBURG	7.0	4.19	7%	67
8011B1	CxB	COLO-GRAVITY COMPLEX	4.0	2.00	11%	68

Field Description: Mostly terraced sidehill (D slope) with some bottom ground.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	4.0	8.0	67%
Erosion (RUSLE) (tons/acre/yr)	6.7	2.0	4.7	70%
Total P Index	0.9	0.7	0.1	15%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		12.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		6.7	0.0	0%
Total P Index		0.9	0.1	10%

Table 17 Field A21

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SW					
Crop Rotation	Grass Pasture					
Farm Type	Cattle					
Tillage	None	**Soil Erosion Calculation Method**				
Manure	Grazing Cattle	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	ApD3	ApD3	ApD3	ApD3
% of Field in SMU Used for Erosion		na	83%	83%	83%	83%
Slope (Soil Survey) (%)		12.0	12.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		2.04	2.04	2.04	2.04	2.04
Sediment Trap		None	None	None	None	None
Distance to Perennial Stream (ft)		200	200	200	200	200
Buffer Strip		none	none	none	none	none
Residue Management		pasture	pasture	pasture	pasture	pasture
$Bray_1$ STP (ppm)		12	12	12	12	28
Erosion Index Component		**1.5**	**1.5**	**1.5**	**1.5**	**1.6**
Fertilizer Rate (P_2O_5 /acre /yr)		25	25	25	25	25
Application Method		surface	surface	surface	surface	surface
Runoff Index Component		**0.2**	**0.2**	**0.2**	**0.2**	**0.3**
Tile Lines or Highly Permeable Soil		none	none	none	none	none
Subsurface Index Component		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total P Index		**1.6**	**1.6**	**1.6**	**1.6**	**1.9**
P Index Class		**Low**	**Low**	**Low**	**Low**	**Low**

Field A21

Summary of P-Index Values for Field Zones

Cluster	SW				
Crop Rotation	Grass Pasture				
Farm Type	Cattle		Zones		
Tillage	None				
Manure	Grazing Cattle	Total Field	Most Erosive SMU >10% in each Zone		
		Most Erosive SMU >10%	Zone 1	Zone 2	Zone 3
Zone Name					
Soil Map Unit Used for Erosion		ApD3		No Zones	
		83%			
Slope (Soil Survey) (%)		12.0			
Erosion (RUSLE) (tons/acre/yr)		2.04			
Sediment Trap		None			
Distance to Perennial Stream (ft)		200			
Buffer Strip		none			
Residue Management		pasture			
$Bray_1$ STP (ppm)		12			
Erosion Index Component		**1.5**			
Fertilizer Rate (P_2O_5 /acre /yr)		25			
Application Method		surface			
Runoff Index Component		**0.2**			
Tile Lines or Highly Permeable Soil		none			
Subsurface Index Component		**0.0**			
Total P Index		**1.6**			
P Index Class		**Low**			

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0093D2	ApD2	ADAIR-SHELBY COMPLEX	12.0	1.00	100%	20

Field Description: Pastured sidehill - Mostly D slope.

Zone comparison to field	Field as One Unit
Slope (Soil Survey) (%)	12.0
Erosion (RUSLE) (tons/acre/yr)	2.0
Total P Index	1.6

Not enough differences to create zones.

Slope (Soil Survey) (%)
Erosion (RUSLE) (tons/acre/yr)
Total P Index

Table 18 Field A22

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SW					
Crop Rotation	Grass/Legume					
Farm Type	Cattle	**Soil Erosion Calculation Method**				
Tillage	None					
Manure	Grazing Cattle	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	ApD3	ApD3	ApD3	ApD3
% of Field in SMU Used for Erosion		na	58%	58%	58%	58%
Slope (Soil Survey) (%)		10.9	12.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		0.87	1.00	1.00	1.00	1.00
Sediment Trap		None	None	None	None	None
Distance to Perennial Stream (ft)		250	250	250	250	250
Buffer Strip		none	none	none	none	none
Residue Management		pasture	pasture	pasture	pasture	pasture
$Bray_1$ STP (ppm)		8	8	8	8	24
Erosion Index Component		**0.6**	**0.7**	**0.7**	**0.7**	**0.7**
Fertilizer Rate (P_2O_5 /acre /yr)		25	25	25	25	25
Application Method		surface	surface	surface	surface	surface
Runoff Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.2**
Tile Lines or Highly Permeable Soil		none	none	none	none	none
Subsurface Index Component		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total P Index		**0.7**	**0.8**	**0.8**	**0.8**	**1.0**
P Index Class		**Very Low**	**Very Low**	**Very Low**	**Very Low**	**Very Low**

Field A22

Summary of P-Index Values for Field Zones

Cluster	SW				
Crop Rotation	Grass/Legume				
Farm Type	Cattle		Zones		
Tillage	None				
Manure	Grazing Cattle	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone Zone 1	Zone 2	Zone 3
Zone Name					
Soil Map Unit Used for Erosion		ApD3	SaC2	ApD3	
Slope (Soil Survey) (%)		12.0	7.0	12.0	
Erosion (RUSLE) (tons/acre/yr)		1.00	0.47	1.00	
Sediment Trap		None	None	None	
Distance to Perennial Stream (ft)		250	520	220	
Buffer Strip		none	none	none	
Residue Management		pasture	pasture	pasture	
$Bray_1$ STP (ppm)		8	8	8	
Erosion Index Component		**0.7**	**0.3**	**0.7**	
Fertilizer Rate (P_2O_5 /acre /yr)		25	25	25	
Application Method		surface	surface	surface	
Runoff Index Component		**0.1**	**0.1**	**0.1**	
Tile Lines or Highly Permeable Soil		none	none	none	
Subsurface Index Component		**0.0**	**0.0**	**0.0**	
Total P Index		**0.8**	**0.3**	**0.8**	
P Index Class		**Very Low**	**Very Low**	**Very Low**	

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0024D2	ShD2	SHELBY	12.0	0.87	15%	48
0093D2	ApD2	ADAIR-SHELBY COMPLEX	12.0	0.87	1%	25
0093D3	ApD3	ADAIR-SHELBY COMPLEX	12.0	1.00	63%	20
0370C2	SaC2	SHARPSBURG	7.0	0.47	21%	67

Field Description: Pastured hilltop and sidehill - Mostly D slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	7.0	5.0	42%
Erosion (RUSLE) (tons/acre/yr)	1.0	0.5	0.5	53%
Total P Index	0.8	0.3	0.5	60%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		12.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		1.0	0.0	0%
Total P Index		0.8	0.0	3%

Table 19 Field A23

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SW				
Crop Rotation	Grass/Legume				
Farm Type	Cattle	**Soil Erosion Calculation Method**			
Tillage	None				
Manure	Grazing Cattle				
		Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	ShD3	ShD3	ShD3	ShD3
% of Field in SMU Used for Erosion		na	85%	85%	85%	85%
Slope (Soil Survey) (%)		10.6	12.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		1.29	1.43	1.43	1.43	1.43
Sediment Trap		None	None	None	None	None
Distance to Perennial Stream (ft)		340	340	340	340	340
Buffer Strip		none	none	none	none	none
Residue Management		pasture	pasture	pasture	pasture	pasture
$Bray_1$ STP (ppm)		12	12	12	12	11
Erosion Index Component		**0.8**	**0.9**	**0.9**	**0.9**	**0.9**
Fertilizer Rate (P_2O_5 /acre /yr)		30	30	30	30	30
Application Method		surface	surface	surface	surface	surface
Runoff Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Tile Lines or Highly Permeable Soil		none	none	none	none	none
Subsurface Index Component		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total P Index		**0.9**	**1.0**	**1.0**	**1.0**	**1.0**
P Index Class		**Very Low**	**Very Low**	**Very Low**	**Very Low**	**Very Low**

Field A23

Summary of P-Index Values for Field Zones

Cluster	SW				
Crop Rotation	Grass/Legume				
Farm Type	Cattle	Zones			
Tillage	None				
Manure	Grazing Cattle	Total Field	Most Erosive SMU >10% in each Zone		
		Most Erosive SMU >10%	Zone 1	Zone 2	Zone 3
Zone Name					
Soil Map Unit Used for Erosion		ShD3	SaC2	ShD3	CxB
Slope (Soil Survey) (%)		12.0	7.0	12.0	4.0
Erosion (RUSLE) (tons/acre/yr)		1.43	0.47	1.43	0.25
Sediment Trap		None	None	None	None
Distance to Perennial Stream (ft)		340	620	300	70
Buffer Strip		none	none	none	none
Residue Management		pasture	pasture	pasture	pasture
$Bray_1$ STP (ppm)		12	12	12	12
Erosion Index Component		**0.9**	**0.3**	**0.9**	**0.2**
Fertilizer Rate (P_2O_5 /acre /yr)		30	30	30	30
Application Method		surface	surface	surface	surface
Runoff Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Tile Lines or Highly Permeable Soil		none	none	none	none
Subsurface Index Component		**0.0**	**0.0**	**0.0**	**0.0**
Total P Index		**1.0**	**0.3**	**1.0**	**0.4**
P Index Class		**Very Low**	**Very Low**	**Low**	**Very Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0024D3	SoD3	SHELBY SOILS	12.0	1.00	78%	45
0192C2	AcC2	ADAIR THIN SOLUM	7.0	0.47	2%	30
0370C2	SaC2	SHARPSBURG	7.0	0.47	8%	67
8011B1	CxB	COLO-GRAVITY COMPLEX	4.0	0.25	12%	68

Field Description: Pastured sidehill - Mostly D slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	4.0	8.0	67%
Erosion (RUSLE) (tons/acre/yr)	1.4	0.3	1.2	83%
Total P Index	1.0	0.3	0.6	66%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		12.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		1.4	0.0	0%
Total P Index		1.0	0.0	3%

Table 20 Field A24

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SW					
Crop Rotation	Grass/Legume					
Farm Type	Cattle	**Soil Erosion Calculation Method**				
Tillage	None					
Manure	Grazing Cattle	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	ShD2	ShD3	ShD2	ShD2
% of Field in SMU Used for Erosion		na	68%	8%	68%	68%
Slope (Soil Survey) (%)		10.6	12.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		0.77	0.87	1.00	0.87	0.87
Sediment Trap		None	None	None	None	None
Distance to Perennial Stream (ft)		700	700	700	700	700
Buffer Strip		none	none	none	none	none
Residue Management		pasture	pasture	pasture	pasture	pasture
Bray$_1$ STP (ppm)		18	18	18	18	22
Erosion Index Component		**0.4**	**0.5**	**0.5**	**0.5**	**0.5**
Fertilizer Rate (P_2O_5 /acre /yr)		15	15	15	15	15
Application Method		surface	surface	surface	surface	surface
Runoff Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Tile Lines or Highly Permeable Soil		none	none	none	none	none
Subsurface Index Component		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total P Index		**0.5**	**0.6**	**0.6**	**0.6**	**0.6**
P Index Class		**Very Low**	**Very Low**	**Very Low**	**Very Low**	**Very Low**

Field A24

Summary of P-Index Values for Field Zones

Cluster	SW				
Crop Rotation	Grass/Legume				
Farm Type	Cattle		Zones		
Tillage	None				
Manure	Grazing Cattle	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone Zone 1	Zone 2	Zone 3
Zone Name					
Soil Map Unit Used for Erosion		ShD2	SaC2	ShD3	CxB
Slope (Soil Survey) (%)		12.0	7.0	12.0	4.0
Erosion (RUSLE) (tons/acre/yr)		0.87	0.47	1.00	0.25
Sediment Trap		None	None	None	None
Distance to Perennial Stream (ft)		700	800	650	500
Buffer Strip		none	none	none	none
Residue Management		pasture	pasture	pasture	pasture
Bray$_1$ STP (ppm)		18	18	18	18
Erosion Index Component		**0.5**	**0.2**	**0.6**	**0.1**
Fertilizer Rate (P_2O_5 /acre /yr)		15	15	15	15
Application Method		surface	surface	surface	surface
Runoff Index Component		**0.1**	**0.1**	**0.1**	**0.2**
Tile Lines or Highly Permeable Soil		none	none	none	none
Subsurface Index Component		**0.0**	**0.0**	**0.0**	**0.0**
Total P Index		**0.6**	**0.3**	**0.6**	**0.3**
P Index Class		**Very Low**	**Very Low**	**Very Low**	**Very Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0024D2	ShD2	SHELBY	12.0	0.87	69%	48
0024D3	SoD3	SHELBY SOILS	12.0	1.00	8%	45
0192C2	AcC2	ADAIR THIN SOLUM	7.0	0.47	<1%	30
0370C2	SaC2	SHARPSBURG	7.0	0.47	11%	67
8011B1	CxB	COLO-GRAVITY COMPLEX	4.0	0.25	11%	68

Field Description: Pastured hilltop and sidehill - Mostly D slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	4.0	8.0	67%
Erosion (RUSLE) (tons/acre/yr)	0.9	0.3	0.6	71%
Total P Index	0.6	0.3	0.2	44%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		12.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		1.0	0.1	15%
Total P Index		0.6	0.1	14%

Table 21 Field A25

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SW					
Crop Rotation	Grass/Legume					
Farm Type	Cattle	**Soil Erosion Calculation Method**				
Tillage	None					
Manure	Grazing Cattle	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	SaC2	AcD2	AcD2	AcD2
% of Field in SMU Used for Erosion		na	70%	20%	20%	20%
Slope (Soil Survey) (%)		8.3	7.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		0.57	0.47	0.87	0.87	0.87
Sediment Trap		None	None	None	None	None
Distance to Perennial Stream (ft)		400	400	400	400	400
Buffer Strip		none	none	none	none	none
Residue Management		pasture	pasture	pasture	pasture	pasture
$Bray_1$ STP (ppm)		19	19	19	19	18
Erosion Index Component		**0.4**	**0.3**	**0.5**	**0.5**	**0.5**
Fertilizer Rate (P_2O_5 /acre /yr)		0	0	0	0	0
Application Method		none	none	none	none	none
Runoff Index Component		**0.1**	**0.1**	**0.2**	**0.2**	**0.2**
Tile Lines or Highly Permeable Soil		none	none	none	none	none
Subsurface Index Component		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total P Index		**0.4**	**0.4**	**0.7**	**0.7**	**0.7**
P Index Class		**Very Low**	**Very Low**	**Very Low**	**Very Low**	**Very Low**

Field A25

Summary of P-Index Values for Field Zones

Cluster	SW			
Crop Rotation	Grass/Legume			
Farm Type	Cattle		Zones	
Tillage	None			
Manure	Grazing Cattle	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone: Zone 1	Zone 2
Zone Name				
Soil Map Unit Used for Erosion		AcD2	SaC2	AcD2
Slope (Soil Survey) (%)		12.0	7.0	12.0
Erosion (RUSLE) (tons/acre/yr)		0.87	0.47	0.87
Sediment Trap		None	None	None
Distance to Perennial Stream (ft)		400	500	300
Buffer Strip		none	none	none
Residue Management		pasture	pasture	pasture
$Bray_1$ STP (ppm)		19	19	19
Erosion Index Component		**0.5**	**0.3**	**0.6**
Fertilizer Rate (P_2O_5 /acre /yr)		0	0	0
Application Method		none	none	none
Runoff Index Component		**0.2**	**0.1**	**0.2**
Tile Lines or Highly Permeable Soil		none	none	none
Subsurface Index Component		**0.0**	**0.0**	**0.0**
Total P Index		**0.7**	**0.4**	**0.8**
P Index Class		**Very Low**	**Very Low**	**Very Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0024D2	ShD2	SHELBY	12.0	0.87	3%	48
0192D2	AcD2	ADAIR THIN SOLUM	12.0	0.87	23%	15
0370C2	SaC2	SHARPSBURG	7.0	0.47	75%	67

Field Description: Pastured hilltop and sidehill - Mostly C slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	7.0	5.0	42%
Erosion (RUSLE) (tons/acre/yr)	0.9	0.5	0.4	46%
Total P Index	0.7	0.4	0.4	50%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		12.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		0.9	0.0	0%
Total P Index		0.8	0.0	6%

Table 22 Field A26

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SW					
Crop Rotation	Grass Pasture					
Farm Type	Cattle	**Soil Erosion Calculation Method**				
Tillage	None					
Manure	Grazing Cattle	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	ShD2	ShD3	ShD2	ShD2
% of Field in SMU Used for Erosion		na	47%	2%	47%	47%
Slope (Soil Survey) (%)		8.1	12.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		0.66	0.97	1.10	0.97	0.97
Sediment Trap		None	None	None	None	None
Distance to Perennial Stream (ft)		450	450	450	450	450
Buffer Strip		none	none	none	none	none
Residue Management		pasture	pasture	pasture	pasture	pasture
$Bray_1$ STP (ppm)		85	85	85	85	37
Erosion Index Component		**0.5**	**0.8**	**0.9**	**0.8**	**0.6**
Fertilizer Rate (P_2O_5 /acre /yr)		15	15	15	15	15
Application Method		surface	surface	surface	surface	surface
Runoff Index Component		**0.3**	**0.3**	**0.3**	**0.3**	**0.1**
Tile Lines or Highly Permeable Soil		none	none	none	none	none
Subsurface Index Component		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total P Index		**0.8**	**1.1**	**1.2**	**1.1**	**0.8**
P Index Class		**Very Low**	**Low**	**Low**	**Low**	**Very Low**

Field A26

Summary of P-Index Values for Field Zones

Cluster	SW				
Crop Rotation	Grass Pasture				
Farm Type	Cattle		Zones		
Tillage	None				
Manure	Grazing Cattle	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone Zone 1	Zone 2	Zone 3
Zone Name					Bottom + Gully
Soil Map Unit Used for Erosion		ShD2	ShD2	CxB	CxB
Slope (Soil Survey) (%)		12.0	12.0	4.0	4.0
Erosion (RUSLE) (tons/acre/yr)		0.97	0.97	0.35	1.25
Sediment Trap		None	None	None	None
Distance to Perennial Stream (ft)		450	570	400	400
Buffer Strip		none	none	none	none
Residue Management		pasture	pasture	pasture	pasture
$Bray_1$ STP (ppm)		85	85	85	85
Erosion Index Component		**0.8**	**0.8**	**0.3**	**1.1**
Fertilizer Rate (P_2O_5 /acre /yr)		15	15	15	15
Application Method		surface	surface	surface	surface
Runoff Index Component		**0.3**	**0.3**	**0.5**	**0.5**
Tile Lines or Highly Permeable Soil		none			
Subsurface Index Component		**0.0**	**0.0**	**0.0**	**0.0**
Total P Index		**1.1**	**1.0**	**0.8**	**1.6**
P Index Class		**Low**	**Low**	**Very Low**	**Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0024D2	ShD2	SHELBY	12.0	0.87	47%	48
0024D3	SoD3	SHELBY SOILS	12.0	1.00	<1%	45
0192C2	AcC2	ADAIR THIN SOLUM	7.0	0.47	10%	30
8011B1	CxB	COLO-GRAVITY COMPLEX	4.0	0.25	43%	68

Field Description:

Pastured bottomground and sidehill - Mostly B & D slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	4.0	8.0	67%
Erosion (RUSLE) (tons/acre/yr)	1.0	0.4	0.6	64%
Total P Index	1.1	0.8	0.3	24%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		12.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		1.3	0.3	29%
Total P Index		1.6	0.5	46%

Table 23 Field B11

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	NE					
Crop Rotation	Corn-Soybean					
Farm Type	Swine					
Tillage	Disk/Chisel					
Manure	N based Swine					
		Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 Most Erosive SMU >10%
Soil Map Unit Used for Erosion		Avg	391B	776C	83B	83B
% of Field in SMU Used for Erosion		na	50%	4%	20%	20%
Slope (Soil Survey) (%)		3.6	2.5	6.0	3.5	3.5
Erosion (RUSLE) (tons/acre/yr)		1.62	1.54	2.72	1.92	1.92
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		2075	2075	2075	2075	2075
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		79	79	79	79	89
Erosion Index Component		**0.7**	**0.7**	**1.1**	**0.9**	**0.9**
Fertilizer Rate (P_2O_5 /acre /yr)		74	74	74	74	74
Application Method		injected	injected	injected	injected	injected
Runoff Index Component		**1.0**	**1.0**	**1.0**	**0.8**	**0.8**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.9**	**1.8**	**2.3**	**1.8**	**1.8**
P Index Class		**Low**	**Low**	**Medium**	**Low**	**Low**

Field B11

Summary of P-Index Values for Field Zones

Cluster	NE					
Crop Rotation	Corn-Soybean					
Farm Type	Swine					
Tillage	Disk/Chisel					
Manure	N based Swine	Total Field	Most Erosive SMU >10% in each Zone			
		Most Erosive SMU >10%	Zone 1	Zone 2	Zone 3	Zone 4
Zone Name						
Soil Map Unit Used for Erosion		83B	391B	391B	83B	
Slope (Soil Survey) (%)		3.5	2.5	2.5	3.5	
Erosion (RUSLE) (tons/acre/yr)		1.92	1.54	1.54	1.92	
Sediment Trap		none	none	none	none	
Distance to Perennial Stream (ft)		2075	1950	1500	2350	
Buffer Strip		none	none	none	none	
Residue Management		tillage	tillage	tillage	tillage	
$Bray_1$ STP (ppm)		79	105	98	55	
Erosion Index Component		**0.9**	**0.4**	**0.4**	**0.4**	
Fertilizer Rate (P_2O_5 /acre /yr)		74	74	74	74	
Application Method		injected	injected	injected	injected	
Runoff Index Component		**0.8**	**1.3**	**1.2**	**0.6**	
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	
Subsurface Index Component		**0.1**	**0.2**	**0.1**	**0.1**	
Total P Index		**1.8**	**1.8**	**1.7**	**1.1**	
P Index Class		**Low**	**Low**	**Low**	**Low**	

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0083B1	83B	KENYON	4.0	1.92	20%	86
0241B1	241B	BURKHARDT-SAUDE COMPLX	4.0	1.36	24%	38
0391B1	391B	CLYDE-FLOYD COMPLEX	3.0	1.54	50%	76
0408B1	408B	OLIN	4.0	1.36	2%	67
0776C1	776C	LILAH	6.0	2.72	4%	8

Field Description:

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	3.5	2.5	1.0	29%
Erosion (RUSLE) (tons/acre/yr)	1.9	1.5	0.4	20%
Total P Index	1.8	1.1	0.7	39%

	Max Zone	Increase	% Increase
Slope (Soil Survey) (%)	3.5	0.0	0%
Erosion (RUSLE) (tons/acre/yr)	1.9	0.0	0%
Total P Index	1.8	0.0	0%

Table 24 Field B21

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	NE					
Crop Rotation	Corn-Soybean					
Farm Type	Livestock	**Soil Erosion Calculation Method**				
Tillage	Disk/Chisel					
Manure	P based Swine	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	391B	83B	83B	83B
% of Field in SMU Used for Erosion		na	42%	40%	40%	40%
Slope (Soil Survey) (%)		2.8	2.5	3.5	3.5	3.5
Erosion (RUSLE) (tons/acre/yr)		2.04	1.80	2.67	2.67	2.67
Sediment Trap		None	None	None	None	None
Distance to Perennial Stream (ft)		1600	1600	1600	1600	1600
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		29	29	29	29	34
Erosion Index Component		**0.4**	**0.4**	**0.5**	**0.5**	**0.5**
Fertilizer Rate (P_2O_5 /acre /yr)		105	105	105	105	105
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.5**	**0.5**	**0.4**	**0.4**	**0.4**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.0**	**0.9**	**1.0**	**1.0**	**1.0**
P Index Class		**Very Low**	**Very Low**	**Very Low**	**Very Low**	**Very Low**

Field B21

Summary of P-Index Values for Field Zones

Cluster	NE				
Crop Rotation	Corn-Soybean				
Farm Type	Livestock	Zones			
Tillage	Disk/Chisel				
Manure	P based Swine	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone: Zone 1	Zone 2	Zone 3
Zone Name			Hill	Old Farmyard	Low Ground
Soil Map Unit Used for Erosion		83B	83B	83B	391B
Slope (Soil Survey) (%)		3.5	3.5	3.5	2.5
Erosion (RUSLE) (tons/acre/yr)		2.67	2.67	2.67	1.80
Sediment Trap		None	None	None	None
Distance to Perennial Stream (ft)		1600	1900	1300	1000
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		29	30	170	27
Erosion Index Component		**0.5**	**0.5**	**1.0**	**0.4**
Fertilizer Rate (P_2O_5 /acre /yr)		105	105	105	105
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.4**	**0.4**	**1.5**	**0.5**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.2**	**0.1**
Total P Index		**1.0**	**1.0**	**2.6**	**0.9**
P Index Class		**Very Low**	**Very Low**	**Medium**	**Very Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0083B1	83B	KENYON	3.5	2.67	40%	86
0151A0	151	MARSHAN 24-32" TO S&G	1.0	0.74	4%	64
0225A1	225	LAWLER 24-32" TO S&G	1.0	0.74	1%	66
0391B1	391B	CLYDE-FLOYD COMPLEX	2.5	1.80	42%	76
0399A1	399	READLYN	2.0	1.19	9%	91
0407B1	407B	SCHLEY	2.5	1.95	4%	70
0408B1	408B	OLIN	3.5	1.89	1%	67

Field Description: Gently rolling - Mostly B with some A slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	3.5	2.5	1.0	29%
Erosion (RUSLE) (tons/acre/yr)	2.7	1.8	0.9	33%
Total P Index	1.0	0.9	0.1	6%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		3.5	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		2.7	0.0	0%
Total P Index		2.6	1.7	168%

Table 25 Field C11

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	West				
Crop Rotation	Cont. Corn				
Farm Type	Livestock				
Tillage	Disk/Chisel				
Manure	History				
		Soil Erosion Calculation Method			
		Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	JnB	IdF3	MaE3	MaE3
% of Field in SMU Used for Erosion		na	25%	6%	24%	24%
Slope (Soil Survey) (%)		12.0	4.0	25.0	17.0	17.0
Erosion (RUSLE) (tons/acre/yr)		7.43	1.68	17.81	11.09	11.09
Sediment Trap		None	None	None	None	None
Distance to Perennial Stream (ft)		1000	1000	1000	1000	1000
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		70	70	70	70	112
Erosion Index Component		**4.0**	**0.9**	**9.6**	**6.0**	**7.0**
Fertilizer Rate (P_2O_5 /acre /yr)		0	0	0	0	0
Application Method		none	none	none	none	none
Runoff Index Component		**0.5**	**0.5**	**0.5**	**0.5**	**0.8**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**4.6**	**1.5**	**10.1**	**6.5**	**7.9**
P Index Class		**Medium**	**Low**	**High**	**High**	**High**

Field C11

Summary of P-Index Values for Field Zones

Cluster	West				
Crop Rotation	Cont. Corn				
Farm Type	Livestock				
Tillage	Disk/Chisel				
Manure	History		Zones		
		Total Field	Most Erosive SMU >10% in each Zone		
		Most Erosive SMU >10%	Zone 1	Zone 2	Zone 3
Zone Name			Bottom	Sidehill	Hilltop
Soil Map Unit Used for Erosion		MaE3	JnB	IdF3	IdC3
Slope (Soil Survey) (%)		17.0	4.0	25.0	7.0
Erosion (RUSLE) (tons/acre/yr)		11.09	1.68	17.18	4.81
Sediment Trap		None	None	None	None
Distance to Perennial Stream (ft)		1000	400	700	1100
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		70	20	130	103
Erosion Index Component		**6.0**	**0.9**	**12.6**	**2.9**
Fertilizer Rate (P_2O_5 /acre /yr)		0	0	0	0
Application Method		none	none	none	none
Runoff Index Component		**0.5**	**0.2**	**0.9**	**0.7**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**6.5**	**1.2**	**13.6**	**3.7**
P Index Class		**High**	**Low**	**High**	**Medium**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0001C3	IdC3	IDA	7.0	4.81	3%	50
0001E3	IdE3	IDA	17.0	11.09	14%	30
0001F3	IdF3	IDA	25.0	17.18	6%	10
0009C2	MaC2	MARSHALL	7.0	3.61	15%	65
0009D2	MaD2	MARSHALL	12.0	6.44	1%	55
0009E2	MaE2	MARSHALL	17.0	8.32	10%	46
0009E3	MaE3	MARSHALL	16.0	11.09	24%	43
0010F3	MoF3	MONONA	16.0	17.18	1%	18
0024E3	SoE3	SHELBY	16.0	9.71	<1%	35
8011B1	JnB	JUDSON-COLO-NODAWAY	4.0	1.68	25%	68

Field Description:

Steep sidehill, hilltop and drainageways.
Much E slope but significant B slope also.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	17.0	4.0	13.0	76%
Erosion (RUSLE) (tons/acre/yr)	11.1	1.7	9.4	85%
Total P Index	6.5	1.2	5.4	82%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		25.0	8.0	47%
Erosion (RUSLE) (tons/acre/yr)		17.2	6.1	55%
Total P Index		13.6	7.1	109%

Table 26 Field C12

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	West				
Crop Rotation	Corn-Soybean				
Farm Type	Cattle	**Soil Erosion Calculation Method**			
Tillage	Disk/Chisel				
Manure	Grazed Stalks	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	MaD2	MaE2	MaE2	MaE2
% of Field in SMU Used for Erosion		na	36%	15%	15%	15%
Slope (Soil Survey) (%)		10.1	12.0	17.0	17.0	17.0
Erosion (RUSLE) (tons/acre/yr)		4.08	5.14	6.64	6.64	6.64
Sediment Trap		Terraced	Terraced	Terraced	Terraced	Terraced
Distance to Perennial Stream (ft)		750	750	750	750	750
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		130	130	130	130	23
Erosion Index Component		**0.3**	**0.4**	**0.5**	**0.5**	**0.3**
Fertilizer Rate (P_2O_5 /acre /yr)		52	52	52	52	52
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.9**	**0.9**	**0.9**	**0.9**	**0.2**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.3**	**1.4**	**1.5**	**1.5**	**0.6**
P Index Class		**Low**	**Low**	**Low**	**Low**	**Very Low**

Summary of P-Index Values for Field Zones

Field C12

Cluster	West			
Crop Rotation	Corn-Soybean			
Farm Type	Cattle		Zones	
Tillage	Disk/Chisel			
Manure	Grazed Stalks	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone Zone 1	Zone 2
Zone Name			Hilltop	Sidehill
Soil Map Unit Used for Erosion		MaE2	MaC2	MaE2
Slope (Soil Survey) (%)		17.0	7.0	17.0
Erosion (RUSLE) (tons/acre/yr)		6.64	2.88	6.64
Sediment Trap		Terraced	Terraced	Terraced
Distance to Perennial Stream (ft)		750	800	500
Buffer Strip		none	none	none
Residue Management		tillage	tillage	tillage
$Bray_1$ STP (ppm)		130	130	130
Erosion Index Component		**0.5**	**0.2**	**0.5**
Fertilizer Rate (P_2O_5 /acre /yr)		52	52	52
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.9**	**0.9**	**0.9**
Tile Lines or Highly Permeable Soil		yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**
Total P Index		**1.5**	**1.2**	**1.5**
P Index Class		**Low**	**Low**	**Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0009C1	MaC	MARSHALL	7.0	2.50	25%	67
0009C2	MaC2	MARSHALL	7.0	2.88	21%	65
0009D2	MaD2	MARSHALL	12.0	5.14	35%	55
0009E2	MaE2	MARSHALL	17.0	6.64	14%	46
0024E2	ShE2	SHELBY	16.0	6.64	<1%	38
8011B1	JnB	JUDSON-COLO-NODAWAY	4.0	1.34	4%	68

Field Description: Mostly hilltop - Half B & C, half D & E slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	17.0	7.0	10.0	59%
Erosion (RUSLE) (tons/acre/yr)	6.6	2.9	3.8	57%
Total P Index	1.5	1.2	0.3	17%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		17.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		6.6	0.0	0%
Total P Index		1.5	0.0	0%

Table 27 Field C13

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	West				
Crop Rotation	CCOMMM				
Farm Type	Cattle	**Soil Erosion Calculation Method**			
Tillage	Disk/Chisel				
Manure	Grazed Stalks	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	MaE2	MaE2	MaE2	MaE2
% of Field in SMU Used for Erosion		na	67%	67%	67%	67%
Slope (Soil Survey) (%)		13.8	17.0	17.0	17.0	17.0
Erosion (RUSLE) (tons/acre/yr)		4.24	5.20	5.20	5.20	5.20
Sediment Trap		none	none	none	none	Terraced
Distance to Perennial Stream (ft)		500	500	500	500	500
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		103	103	103	103	17
Erosion Index Component		**3.1**	**3.8**	**3.8**	**3.8**	**0.2**
Fertilizer Rate (P_2O_5 /acre /yr)		52	52	52	52	52
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.6**	**0.6**	**0.6**	**0.6**	**0.2**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**3.8**	**4.5**	**4.5**	**4.5**	**0.4**
P Index Class		**Medium**	**Medium**	**Medium**	**Medium**	**Very Low**

Field C13

Summary of P-Index Values for Field Zones

Cluster	West			
Crop Rotation	CCOMMM			
Farm Type	Cattle		Zones	
Tillage	Disk/Chisel			
Manure	Grazed Stalks	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone Zone 1	Zone 2
Zone Name			Sidehill	Bottom
Soil Map Unit Used for Erosion		MaE2	MaE2	JnB
Slope (Soil Survey) (%)		17.0	17.0	4.0
Erosion (RUSLE) (tons/acre/yr)		5.20	5.20	1.05
Sediment Trap		none	none	none
Distance to Perennial Stream (ft)		500	550	125
Buffer Strip		none	none	none
Residue Management		tillage	tillage	tillage
$Bray_1$ STP (ppm)		103	103	149
Erosion Index Component		**3.8**	**3.7**	**1.3**
Fertilizer Rate (P_2O_5 /acre /yr)		52	52	52
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.6**	**0.6**	**0.8**
Tile Lines or Highly Permeable Soil		yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**
Total P Index		**4.5**	**4.4**	**2.2**
P Index Class		**Medium**	**Medium**	**Medium**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0009C1	MaC	MARSHALL	7.0	1.96	3%	67
0009C2	MaC2	MARSHALL	7.0	2.26	1%	65
0009D2	MaD2	MARSHALL	12.0	4.03	13%	55
0009E2	MaE2	MARSHALL	17.0	5.20	67%	46
8011B1	JnB	JUDSON-COLO-NODAWAY	4.0	1.05	16%	68

Field Description: Terraced sidehill - Mostly E slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	17.0	4.0	13.0	76%
Erosion (RUSLE) (tons/acre/yr)	5.2	1.1	4.2	80%
Total P Index	4.5	2.2	2.3	51%

	Max Zone	Increase	% Increase
Slope (Soil Survey) (%)	17.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)	5.2	0.0	0%
Total P Index	4.4	-0.1	-2%

Table 28 Field C14

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	West				
Crop Rotation	Corn-Soybean				
Farm Type	Cattle	**Soil Erosion Calculation Method**			
Tillage	Disk/Chisel				
Manure	Grazed Stalks	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	JnB	MaE2	MaD2	MaD2
% of Field in SMU Used for Erosion		na	77%	9%	12%	12%
Slope (Soil Survey) (%)		6.1	4.0	17.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		3.60	2.12	10.52	8.15	8.15
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		350	350	350	350	350
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		7	7	7	7	12
Erosion Index Component		**1.8**	**1.1**	**5.4**	**4.2**	**4.3**
Fertilizer Rate (P_2O_5 /acre /yr)		52	52	52	52	52
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.2**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**2.0**	**1.3**	**5.6**	**4.4**	**4.5**
P Index Class		**Low**	**Low**	**High**	**Medium**	**Medium**

Field C14

Summary of P-Index Values for Field Zones

Cluster	West			
Crop Rotation	Corn-Soybean			
Farm Type	Cattle		Zones	
Tillage	Disk/Chisel			
Manure	Grazed Stalks	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone: Zone 1	Zone 2
Zone Name			Hilltop	Sidehill
Soil Map Unit Used for Erosion		MaD2	MaE2	JnB
Slope (Soil Survey) (%)		12.0	17.0	4.0
Erosion (RUSLE) (tons/acre/yr)		8.15	10.52	2.12
Sediment Trap		none	none	none
Distance to Perennial Stream (ft)		350	425	200
Buffer Strip		none	none	none
Residue Management		tillage	tillage	tillage
$Bray_1$ STP (ppm)		7	7	7
Erosion Index Component		**4.2**	**5.1**	**1.2**
Fertilizer Rate (P_2O_5 /acre /yr)		52	52	52
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.1**	**0.1**	**0.1**
Tile Lines or Highly Permeable Soil		yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**
Total P Index		**4.4**	**5.3**	**1.4**
P Index Class		**Medium**	**High**	**Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0009D2	MaD2	MARSHALL	12.0	8.15	12%	55
0009E2	MaE2	MARSHALL	17.0	10.52	8%	46
0024D2	ShD2	SHELBY	12.0	8.15	2%	48
8011B1	JnB	JUDSON-COLO-NODAWAY	3.0	2.12	75%	68
8220A0	No	NODAWAY	1.0	0.58	3%	85

Field Description: Bottom ground - Mostly B slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	4.0	8.0	67%
Erosion (RUSLE) (tons/acre/yr)	8.2	2.1	6.0	74%
Total P Index	4.4	1.4	2.9	67%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		17.0	5.0	42%
Erosion (RUSLE) (tons/acre/yr)		10.5	2.4	29%
Total P Index		5.3	1.0	22%

Table 29 Field C21

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	West				
Crop Rotation	Corn-Soybean				
Farm Type	Crop	**Soil Erosion Calculation Method**			
Tillage	No-till				
Manure	History	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	MaD2	MaD3	MaD3	MaD3
% of Field in SMU Used for Erosion		na	30%	11%	11%	11%
Slope (Soil Survey) (%)		7.6	12.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		2.24	3.41	4.55	4.55	4.55
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		600	600	600	600	600
Buffer Strip		none	none	none	none	none
Residue Management		no-till	no-till	no-till	no-till	no-till
$Bray_1$ STP (ppm)		27	27	27	27	16
Erosion Index Component		**1.2**	**1.9**	**2.5**	**2.5**	**2.3**
Fertilizer Rate (P_2O_5 /acre /yr)		121	121	121	121	121
Application Method		surface	surface	surface	surface	surface
Runoff Index Component		**0.3**	**0.3**	**0.3**	**0.3**	**0.2**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.6**	**2.2**	**2.8**	**2.8**	**2.6**
P Index Class		**Low**	**Medium**	**Medium**	**Medium**	**Medium**

Field C21

Summary of P-Index Values for Field Zones

Cluster	West				
Crop Rotation	Corn-Soybean				
Farm Type	Crop	Zones			
Tillage	No-till				
Manure	History	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone Zone 1	Zone 2	Zone 3
Zone Name			Bottom	Sidehill	Hilltop
Soil Map Unit Used for Erosion		MaD3	JdB	MaD3	MaC2
Slope (Soil Survey) (%)		12.0	4.0	12.0	7.0
Erosion (RUSLE) (tons/acre/yr)		4.55	0.88	4.55	1.91
Sediment Trap		none	none	none	none
Distance to Perennial Stream (ft)		600	300	550	900
Buffer Strip		none	none	none	none
Residue Management		no-till	no-till	no-till	no-till
$Bray_1$ STP (ppm)		27	25	32	18
Erosion Index Component		**2.5**	**0.6**	**2.6**	**0.9**
Fertilizer Rate (P_2O_5 /acre /yr)		121	121	121	121
Application Method		surface	surface	surface	surface
Runoff Index Component		**0.3**	**0.3**	**0.3**	**0.2**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**2.8**	**0.9**	**3.0**	**1.2**
P Index Class		**Medium**	**Very Low**	**Medium**	**Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0009B2	MaB2	MARSHALL	4.0	1.03	6%	79
0009C2	MaC2	MARSHALL	7.0	1.91	23%	65
0009D2	MaD2	MARSHALL	12.0	3.41	30%	55
0009D3	MaD3	MARSHALL	12.0	4.55	11%	53
8008B1	JdB	JUDSON	4.0	0.88	16%	82
8054A+	Zo	ZOOK OVERWASH	1.0	0.32	9%	75
8133A+	Co	COLO OVERWASH	1.0	0.24	4%	85

Field Description: Rolling - Mostly D with some A, B, & C slope - Notill.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	4.0	8.0	67%
Erosion (RUSLE) (tons/acre/yr)	4.6	0.9	3.7	81%
Total P Index	2.8	0.9	1.9	68%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		12.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		4.6	0.0	0%
Total P Index		3.0	0.1	5%

Table 30 Field CG11

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	North				
Crop Rotation	Corn-Soybean				
Farm Type	Livestock	**Soil Erosion Calculation Method**			
Tillage	Disk/Chisel				
Manure	P-based swine	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	138B	138C2	138C2	138C2
% of Field in SMU Used for Erosion		na	27%	27%	27%	27%
Slope (Soil Survey) (%)		3.7	4.0	7.0	7.0	7.0
Erosion (RUSLE) (tons/acre/yr)		4.16	4.20	9.26	9.26	9.26
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		4700	4700	4700	4700	4700
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		226	226	226	226	187
Erosion Index Component		**0.5**	**0.5**	**1.0**	**1.0**	**0.9**
Fertilizer Rate (P_2O_5 /acre /yr)		105	105	105	105	105
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**1.9**	**1.9**	**1.9**	**1.9**	**1.6**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**2.5**	**2.5**	**3.1**	**3.1**	**2.7**
P Index Class		**Medium**	**Medium**	**Medium**	**Medium**	**Medium**

Field CG11

Summary of P-Index Values for Field Zones

Cluster	North			
Crop Rotation	Corn-Soybean			
Farm Type	Livestock		Zones	
Tillage	Disk/Chisel			
Manure	P-based swine	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zor Zone 1	Zone 2
Zone Name			Hill	Bottom
Soil Map Unit Used for Erosion		138C2	138C2	95
Slope (Soil Survey) (%)		7.0	7.0	2.0
Erosion (RUSLE) (tons/acre/yr)		9.26	9.26	1.94
Sediment Trap		none	none	none
Distance to Perennial Stream (ft)		4700	4700	4700
Buffer Strip		none	none	none
Residue Management		tillage	tillage	tillage
$Bray_1$ STP (ppm)		226	280	173
Erosion Index Component		**1.0**	**1.2**	**0.2**
Fertilizer Rate (P_2O_5 /acre /yr)		105	105	105
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**1.9**	**2.3**	**1.9**
Tile Lines or Highly Permeable Soil		yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**
Total P Index		**3.1**	**3.6**	**2.2**
P Index Class		**Medium**	**Medium**	**Medium**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0095A1	95	HARPS	2.0	1.94	17%	62
0138B1	138B	CLARION	4.0	4.20	39%	80
0138C2	138C2	CLARION	7.0	9.26	39%	63
0329A0	329	WEBSTER-NICOLLET COMP	2.0	2.30	<1%	83
0507A0	507	CANISTEO	1.0	1.19	5%	78

Field Description: Gently rolling - Half A, half B & C slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reductior
Slope (Soil Survey) (%)	7.0	2.0	5.0	71%
Erosion (RUSLE) (tons/acre/yr)	9.3	1.9	7.3	79%
Total P Index	3.1	2.2	0.9	28%

	Max Zone	Increase	% Increase
Slope (Soil Survey) (%)	7.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)	9.3	0.0	0%
Total P Index	3.6	0.6	18%

Table 31 Field CG12

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	North				
Crop Rotation	Corn-Soybean				
Farm Type	Livestock	**Soil Erosion Calculation Method**			
Tillage	Disk/Chisel				
Manure	P-based swine	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	507	138C2	138B	138B
% of Field in SMU Used for Erosion		na	36%	7%	24%	24%
Slope (Soil Survey) (%)		2.5	1.0	7.0	4.0	4.0
Erosion (RUSLE) (tons/acre/yr)		2.83	1.19	9.26	4.20	4.20
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		5000	5000	5000	5000	5000
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		135	135	135	135	65
Erosion Index Component		**0.2**	**0.1**	**0.8**	**0.4**	**0.3**
Fertilizer Rate (P_2O_5 /acre /yr)		105	105	105	105	105
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**1.2**	**1.5**	**1.2**	**1.2**	**0.6**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.6**	**1.7**	**2.1**	**1.7**	**1.0**
P Index Class		**Low**	**Low**	**Medium**	**Low**	**Very Low**

Field CG12

Summary of P-Index Values for Field Zones

Cluster	North					
Crop Rotation	Corn-Soybean					
Farm Type	Livestock		Zones			
Tillage	Disk/Chisel					
Manure	P-based swine	Total Field	Most Erosive SMU >10% in each Zone			
		Most Erosive SMU >10%	Zone 1	Zone 2	Zone 3	Zone 4
Zone Name			South B	Central B	Hill	North
Soil Map Unit Used for Erosion		138B	55	507	138C2	177B
Slope (Soil Survey) (%)		4.0	2.0	1.0	7.0	4.0
Erosion (RUSLE) (tons/acre/yr)		4.20	1.94	1.19	9.26	4.20
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		5000	5100	4900	4600	3950
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		135	169	135	102	102
Erosion Index Component		**0.4**	**0.2**	**0.1**	**0.7**	**0.3**
Fertilizer Rate (P_2O_5 /acre /yr)		105	105	105	105	105
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**1.2**	**1.8**	**1.5**	**0.9**	**0.9**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.7**	**2.2**	**1.7**	**1.8**	**1.4**
P Index Class		**Low**	**Medium**	**Low**	**Low**	**Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0055A1	55	NICOLLET	2.0	1.94	10%	88
0107A1	107	WEBSTER	1.0	1.19	<1%	83
0138B1	138B	CLARION	4.0	4.20	25%	80
0138C2	138C2	CLARION	7.0	9.26	7%	63
0177B1	177B	SAUDE	4.0	4.20	5%	58
0329A0	329	WEBSTER-NICOLLET COMP	2.0	2.30	15%	83
0507A0	507	CANISTEO	1.0	1.19	37%	78

Field Description: Flat - Mostly A with some B slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	4.0	1.0	3.0	75%
Erosion (RUSLE) (tons/acre/yr)	4.2	1.2	3.0	72%
Total P Index	1.7	1.4	0.3	16%
		Max Zone	**Increase**	**% Increase**
Slope (Soil Survey) (%)		7.0	3.0	75%
Erosion (RUSLE) (tons/acre/yr)		9.3	5.1	120%
Total P Index		2.2	0.5	29%

Table 32 Field CG21

Summary of P-Index Values for Different Methods of Calculating Erosion

		Soil Erosion Calculation Method				
Cluster	North					
Crop Rotation	Corn-Soybean					
Farm Type	Crop					
Tillage	Disk/Chisel					
Manure	None	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	138B	62D3	138B	138B
% of Field in SMU Used for Erosion		na	55%	3%	55%	55%
Slope (Soil Survey) (%)		3.1	4.0	12.0	4.0	4.0
Erosion (RUSLE) (tons/acre/yr)		2.01	2.43	15.07	2.43	2.43
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		4400	4400	4400	4400	4400
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		34	34	34	34	32
Erosion Index Component		**0.1**	**0.1**	**0.9**	**0.1**	**0.1**
Fertilizer Rate (P_2O_5 /acre /yr)		78	78	78	78	78
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**0.6**	**0.6**	**1.3**	**0.6**	**0.6**
P Index Class		**Very Low**	**Very Low**	**Low**	**Very Low**	**Very Low**

Field CG21

Summary of P-Index Values for Field Zones

			Zones	
Cluster	North			
Crop Rotation	Corn-Soybean			
Farm Type	Crop			
Tillage	Disk/Chisel			
Manure	None	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone Zone 1	Zone 2
Zone Name			Bottom	Upland
Soil Map Unit Used for Erosion		138B	107	138B
Slope (Soil Survey) (%)		4.0	1.0	4.0
Erosion (RUSLE) (tons/acre/yr)		2.43	0.69	2.43
Sediment Trap		none	none	none
Distance to Perennial Stream (ft)		4400	4400	4400
Buffer Strip		none	none	none
Residue Management		tillage	tillage	tillage
$Bray_1$ STP (ppm)		34	36	33
Erosion Index Component		**0.1**	**0.0**	**0.1**
Fertilizer Rate (P_2O_5 /acre /yr)		78	78	78
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.4**	**0.5**	**0.4**
Tile Lines or Highly Permeable Soil		yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**
Total P Index		**0.6**	**0.6**	**0.6**
P Index Class		**Very Low**	**Very Low**	**Very Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0055A1	55	NICOLLET	2.0	1.13	24%	88
0062D3	62D3	STORDEN	12.0	15.07	2%	36
0107A1	107	WEBSTER	1.0	0.69	17%	83
0138B1	138B	CLARION	4.0	2.43	54%	80
0507A0	507	CANISTEO	1.0	0.69	3%	78

Field Description: Gently rolling - Mostly B slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	4.0	1.0	3.0	75%
Erosion (RUSLE) (tons/acre/yr)	2.4	0.7	1.7	72%
Total P Index	0.6	0.6	0.0	1%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		4.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		2.4	0.0	0%
Total P Index		0.6	0.0	4%

Table 33 Field CG22

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	North				
Crop Rotation	Corn-Soybean				
Farm Type	Crop	**Soil Erosion Calculation Method**			
Tillage	Disk/Chisel				
Manure	None				
		Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	621	62D3	138B	138B
% of Field in SMU Used for Erosion		na	29%	8%	12%	12%
Slope (Soil Survey) (%)		2.4	1.0	12.0	4.0	4.0
Erosion (RUSLE) (tons/acre/yr)		2.63	0.40	19.18	3.10	3.10
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		3800	3800	3800	3800	3800
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		47	47	47	47	40
Erosion Index Component		**0.2**	**0.0**	**1.3**	**0.2**	**0.2**
Fertilizer Rate (P_2O_5 /acre /yr)		78	78	78	78	78
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.8**	**0.8**	**0.5**	**0.5**	**0.4**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.0**	**0.9**	**1.8**	**0.8**	**0.7**
P Index Class		**Very Low**	**Very Low**	**Low**	**Very Low**	**Very Low**

Field CG22

Summary of P-Index Values for Field Zones

Cluster	North				
Crop Rotation	Corn-Soybean				
Farm Type	Crop	Zones			
Tillage	Disk/Chisel				
Manure	None	Total Field	Most Erosive SMU >10% in each Zone		
		Most Erosive SMU >10%	Zone 1	Zone 2	Zone 3
Zone Name			Swamp	Low	Hill
Soil Map Unit Used for Erosion		138B	621	95	62D3
Slope (Soil Survey) (%)		4.0	1.0	2.0	12.0
Erosion (RUSLE) (tons/acre/yr)		3.10	0.49	1.43	19.18
Sediment Trap		none	none	none	none
Distance to Perennial Stream (ft)		3800	3700	3900	4200
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		47	47	47	47
Erosion Index Component		**0.2**	**0.0**	**0.1**	**1.2**
Fertilizer Rate (P_2O_5 /acre /yr)		78	78	78	78
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.5**	**0.8**	**0.6**	**0.5**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**0.8**	**0.9**	**0.8**	**1.8**
P Index Class		**Very Low**	**Very Low**	**Very Low**	**Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0006A0	6	OKOBOJI	1.0	1.01	26%	57
0062D3	62D3	STORDEN	12.0	19.18	8%	36
0095A1	95	HARPS	2.0	1.43	13%	62
0107A1	107	WEBSTER	1.0	0.87	12%	83
0138B1	138B	CLARION	4.0	3.10	12%	80
0621A0	621	HOUGHTON	1.0	0.49	29%	25

Field Description: Flat - much of field ponded at times

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	4.0	1.0	3.0	75%
Erosion (RUSLE) (tons/acre/yr)	3.1	0.5	2.6	84%
Total P Index	0.8	0.8	0.0	-3%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		12.0	8.0	200%
Erosion (RUSLE) (tons/acre/yr)		19.2	16.1	519%
Total P Index		1.8	1.0	135%

Table 34 Field CG23

Summary of P-Index Values for Different Methods of Calculating Erosion

		Soil Erosion Calculation Method				
Cluster	North					
Crop Rotation	Corn-Soybean					
Farm Type	Crop					
Tillage	Disk/Chisel					
Manure	None					
		Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	507	63D3	138B	138B
% of Field in SMU Used for Erosion		na	43%	2%	19%	19%
Slope (Soil Survey) (%)		2.2	1.0	12.0	4.0	4.0
Erosion (RUSLE) (tons/acre/yr)		1.50	0.69	15.07	2.43	2.43
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		4700	4700	4700	4700	4700
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		50	50	50	50	65
Erosion Index Component		**0.1**	**0.0**	**0.9**	**0.2**	**0.2**
Fertilizer Rate (P_2O_5 /acre /yr)		78	78	78	78	78
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.6**	**0.6**	**0.5**	**0.5**	**0.6**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**0.8**	**0.8**	**1.5**	**0.7**	**0.8**
P Index Class		**Very Low**	**Very Low**	**Low**	**Very Low**	**Very Low**

Field CG23

Summary of P-Index Values for Field Zones

			Zones		
Cluster	North				
Crop Rotation	Corn-Soybean				
Farm Type	Crop				
Tillage	Disk/Chisel				
Manure	None	Total Field	Most Erosive SMU >10% in each Zone		
		Most Erosive SMU >10%	Zone 1	Zone 2	Zone 3
Zone Name			Low 1	Low 2	Hill
Soil Map Unit Used for Erosion		138B	507	236B1	138B
Slope (Soil Survey) (%)		4.0	1.0	4.0	4.0
Erosion (RUSLE) (tons/acre/yr)		2.43	0.69	2.43	2.43
Sediment Trap		none	none	none	none
Distance to Perennial Stream (ft)		4700	5100	4700	4300
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		50	72	72	41
Erosion Index Component		**0.2**	**0.0**	**0.2**	**0.1**
Fertilizer Rate (P_2O_5 /acre /yr)		78	78	78	78
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.5**	**0.9**	**0.7**	**0.4**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**0.7**	**1.0**	**0.9**	**0.7**
P Index Class		**Very Low**	**Very Low**	**Very Low**	**Very Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0006A0	6	OKOBOJI	1.0	0.79	5%	57
0055A1	55	NICOLLET	2.0	1.13	16%	88
0062D3	62D3	STORDEN	12.0	15.07	2%	36
0095A1	95	HARPS	2.0	1.13	7%	62
0138B1	138B	CLARION	4.0	2.43	19%	80
0236B1	236B	LESTER	4.0	2.43	7%	75
0507A0	507	CANISTEO	1.0	0.69	43%	78

Field Description: Flat - Mostly A slope.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	4.0	1.0	3.0	75%
Erosion (RUSLE) (tons/acre/yr)	2.4	0.7	1.7	72%
Total P Index	0.7	0.7	0.1	10%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		4.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		2.4	0.0	0%
Total P Index		1.0	0.2	34%

Table 35 Field H11

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	North					
Crop Rotation	Cont. Corn					
Farm Type	Crop	**Soil Erosion Calculation Method**				
Tillage	Disk/Chisel					
Manure	None	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	641E2	62E3	641E2	641E2
% of Field in SMU Used for Erosion		na	36%	4%	36%	36%
Slope (Soil Survey) (%)		10.3	16.0	16.0	16.0	16.0
Erosion (RUSLE) (tons/acre/yr)		4.06	5.45	9.60	5.45	5.45
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		1800	1800	1800	1800	1800
Buffer Strip		66 ft buffer	66 ft buffer	66 ft buffer	66 ft buffer	66 ft buffer
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		118	118	118	118	135
Erosion Index Component		**0.3**	**0.5**	**0.8**	**0.5**	**0.5**
Fertilizer Rate (P_2O_5 /acre /yr)		100	100	100	100	100
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.8**	**0.8**	**0.8**	**0.8**	**0.9**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.3**	**1.4**	**1.8**	**1.4**	**1.6**
P Index Class		**Low**	**Low**	**Low**	**Low**	**Low**

Field H11

Summary of P-Index Values for Field Zones

Cluster	North						
Crop Rotation	Cont. Corn						
Farm Type	Crop	Zones					
Tillage	Disk/Chisel						
Manure	None	Total Field	Most Erosive SMU >10% in each Zone				
		Most Erosive SMU >10%	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Zone Name			W Bottom	E Bottom	W Sidehill	E Sidehill	Hilltop
Soil Map Unit Used for Erosion		641E2	107	485B	641E2	62E3	138C2
Slope (Soil Survey) (%)		16.0	1.0	3.5	16.0	16.0	7.0
Erosion (RUSLE) (tons/acre/yr)		5.45	0.43	1.49	5.45	9.60	3.39
Sediment Trap		none	none	none	none	none	none
Distance to Perennial Stream (ft)		1800	900	230	450	2300	1200
Buffer Strip		66 ft buffer	66 ft buffer	none	66 ft buffer	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		118	225	79	100	101	86
Erosion Index Component		**0.5**	**0.1**	**0.5**	**0.9**	**0.9**	**0.4**
Fertilizer Rate (P_2O_5 /acre /yr)		100	100	100	100	100	100
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.8**	**1.9**	**0.6**	**0.7**	**0.7**	**0.6**
Tile Lines or Highly Permeable S(		yes	no	no	yes	yes	no
Subsurface Index Component		**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**
Total P Index		**1.4**	**2.0**	**1.1**	**1.8**	**1.8**	**1.0**
P Index Class		**Low**	**Low**	**Low**	**Low**	**Low**	**Very Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0027B1	27B	TERRIL	3.5	1.67	1%	85
0062C3	62C3	STORDEN	7.0	4.57	2%	46
0062E3	62E3	STORDEN	16.0	9.60	4%	26
0107A1	107	WEBSTER	1.0	0.43	4%	83
0138B1	138B	CLARION	3.5	1.49	<1%	80
0138C2	138C2	CLARION	7.0	3.39	28%	64
0485B1	485B	SPILLVILLE	3.5	1.49	13%	85
0640C2	640C2	SUNBURG	7.0	2.87	1%	39
0640E2	640E2	SUNBURG	16.0	5.45	3%	19
0641D2	641D2	CLARION-SUNBURG COMPLX	11.5	4.61	6%	44
0641E2	641E2	CLARION-SUNBURG COMPLX	16.0	5.45	36%	34
1221A0	1221	PALMS PONDED	0.5	0.31	2%	5

Field Description: Steep sidehill (E slope) and hilltop (C slope).

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	16.0	3.5	12.5	78%
Erosion (RUSLE) (tons/acre/yr)	5.5	1.5	4.0	73%
Total P Index	1.4	1.0	0.4	30%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		16.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		9.6	4.2	76%
Total P Index		1.8	0.4	26%

Table 36 Field D11

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SE				
Crop Rotation	Corn-Soybean				
Farm Type	Swine	**Soil Erosion Calculation Method**			
Tillage	Disk/Chisel				
Manure	N-based swine	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%
Soil Map Unit Used for Erosion		Avg	131B	179E	131C2
% of Field in SMU Used for Erosion		na	80%	1%	18%
Slope (Soil Survey) (%)		4.1	3.5	16.0	7.0
Erosion (RUSLE) (tons/acre/yr)		3.90	3.38	11.64	6.31
Sediment Trap		none	none	none	none
Distance to Perennial Stream (ft)		400	400	400	400
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		74	74	74	74
Erosion Index Component		**2.7**	**2.3**	**8.0**	**4.3**
Fertilizer Rate (P_2O_5 /acre /yr)		113	113	113	113
Application Method		incorp (24hr)	incorp (24hr)	incorp (24hr)	incorp (24hr)
Runoff Index Component		**1.0**	**1.0**	**1.0**	**1.0**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**3.8**	**3.4**	**9.1**	**5.4**
P Index Class		**Medium**	**Medium**	**High**	**High**

Field D11

Summary of P-Index Values for Field Zones

Cluster	SE			
Crop Rotation	Corn-Soybean			
Farm Type	Swine		Zones	
Tillage	Disk/Chisel			
Manure	N-based swine	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone Zone 1	Zone 2
Zone Name			Hilltop	Sidehill
Soil Map Unit Used for Erosion		131C2	131B	131C2
Slope (Soil Survey) (%)		7.0	3.5	7.0
Erosion (RUSLE) (tons/acre/yr)		6.31	3.38	6.31
Sediment Trap		none	none	none
Distance to Perennial Stream (ft)		400	400	225
Buffer Strip		none	none	none
Residue Management		tillage	tillage	tillage
$Bray_1$ STP (ppm)		74	68	80
Erosion Index Component		**4.3**	**2.3**	**5.1**
Fertilizer Rate (P_2O_5 /acre /yr)		113	113	113
Application Method		incorp (24hr)	incorp (24hr)	incorp (24hr)
Runoff Index Component		**1.0**	**0.9**	**1.1**
Tile Lines or Highly Permeable Soil		yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**
Total P Index		**5.4**	**3.3**	**6.3**
P Index Class		**High**	**Medium**	**High**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0131B1	131B	PERSHING	3.5	3.38	81%	67
0131C2	131C2	PERSHING	7.0	6.31	18%	44
0179E1	179E	GARA	16.0	11.64	<1%	35
0362A1	362	HAIG	1.0	0.70	1%	70

Field Description: Broad hill tops with C slopes on the side-hills.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	7.0	3.5	3.5	50%
Erosion (RUSLE) (tons/acre/yr)	6.3	3.4	2.9	46%
Total P Index	5.4	3.3	2.1	39%

	Max Zone	Increase	% Increase
Slope (Soil Survey) (%)	7.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)	6.3	0.0	0%
Total P Index	6.3	0.9	16%

Table 37 Field D12

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SE				
Crop Rotation	Corn-Soybean				
Farm Type	Swine	**Soil Erosion Calculation Method**			
Tillage	Disk/Chisel				
Manure	N-based swine	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%
Soil Map Unit Used for Erosion		Avg	131B	65E	131C2
% of Field in SMU Used for Erosion		na	57%	1%	18%
Slope (Soil Survey) (%)		3.9	3.5	16.0	7.0
Erosion (RUSLE) (tons/acre/yr)		3.65	3.38	12.61	6.31
Sediment Trap		none	none	none	none
Distance to Perennial Stream (ft)		800	800	800	800
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		83	83	83	83
Erosion Index Component		**2.2**	**2.0**	**7.5**	**3.8**
Fertilizer Rate (P_2O_5 /acre /yr)		113	113	113	113
Application Method		incorp (24hr)	incorp (24hr)	incorp (24hr)	incorp (24hr)
Runoff Index Component		**1.1**	**1.1**	**1.1**	**1.1**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**3.4**	**3.2**	**8.7**	**5.0**
P Index Class		**Medium**	**Medium**	**High**	**Medium**

Field D12

Summary of P-Index Values for Field Zones

Cluster	SE				
Crop Rotation	Corn-Soybean				
Farm Type	Swine	Zones			
Tillage	Disk/Chisel				
Manure	N-based swine	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone: Zone 1	Zone 2	Zone 3
Zone Name			Hilltop	Hill	Sidehill
Soil Map Unit Used for Erosion		131C2	130	131B	131C2
Slope (Soil Survey) (%)		7.0	1.0	3.5	7.0
Erosion (RUSLE) (tons/acre/yr)		6.31	0.81	3.38	6.31
Sediment Trap		none	none	none	none
Distance to Perennial Stream (ft)		800	700	800	350
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		83	100	90	70
Erosion Index Component		**3.8**	**0.5**	**2.1**	**4.4**
Fertilizer Rate (P_2O_5 /acre /yr)		113	113	113	113
Application Method		incorp (24hr)	incorp (24hr)	incorp (24hr)	incorp (24hr)
Runoff Index Component		**1.1**	**1.5**	**1.2**	**1.0**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.2**	**0.1**	**0.1**
Total P Index		**5.0**	**2.2**	**3.4**	**5.5**
P Index Class		**Medium**	**Medium**	**Medium**	**High**

oil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0065E1	65E	LINDLEY	16.0	12.61	1%	30
0130A1	130	BELINDA	1.0	0.81	16%	63
0131B1	131B	PERSHING	3.5	3.38	58%	67
0131C2	131C2	PERSHING	7.0	6.31	18%	44
0132B1	132B	WELLER	3.5	3.95	<1%	60
0132C2	132C2	WELLER	7.0	7.37	2%	40
0179E1	179E	GARA	16.0	11.64	1%	35
0364B1	364B	GRUNDY	2.5	2.42	5%	75

Field Description: Broad hill tops with C slopes on the side-hills.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	7.0	1.0	6.0	86%
Erosion (RUSLE) (tons/acre/yr)	6.3	0.8	5.5	87%
Total P Index	5.0	2.2	2.7	55%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		7.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		6.3	0.0	0%
Total P Index		5.5	0.5	10%

Table 38 Field D13

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SE				
Crop Rotation	Corn-Soybean				
Farm Type	Swine				
Tillage	Disk/Chisel				
Manure	N-based swine				
			Soil Erosion Calculation Method		
		Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%
Soil Map Unit Used for Erosion		Avg	131B	179E	131C2
% of Field in SMU Used for Erosion		na	54%	1%	21%
Slope (Soil Survey) (%)		4.0	3.5	16.0	7.0
Erosion (RUSLE) (tons/acre/yr)		3.76	3.38	11.64	6.31
Sediment Trap		none	none	none	none
Distance to Perennial Stream (ft)		500	500	500	500
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		67	67	67	67
Erosion Index Component		**2.4**	**2.1**	**7.3**	**4.0**
Fertilizer Rate (P_2O_5 /acre /yr)		113	113	113	113
Application Method		incorp (24hr)	incorp (24hr)	incorp (24hr)	incorp (24hr)
Runoff Index Component		**0.9**	**0.9**	**0.9**	**0.9**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**3.4**	**3.1**	**8.4**	**5.0**
P Index Class		**Medium**	**Medium**	**High**	**Medium**

Field D13

Summary of P-Index Values for Field Zones

Cluster	SE				
Crop Rotation	Corn-Soybean				
Farm Type	Swine		Zones		
Tillage	Disk/Chisel				
Manure	N-based swine	Total Field	Most Erosive SMU >10% in each Zone		
		Most Erosive SMU >10%	Zone 1	Zone 2	Zone 3
Zone Name			Top	Hilltop	Sidehill
Soil Map Unit Used for Erosion		131C2	364B	131B	131C2
Slope (Soil Survey) (%)		7.0	2.5	3.5	7.0
Erosion (RUSLE) (tons/acre/yr)		6.31	2.42	3.38	6.31
Sediment Trap		none	none	none	none
Distance to Perennial Stream (ft)		500	750	500	250
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		67	69	94	31
Erosion Index Component		**4.0**	**1.4**	**2.4**	**4.0**
Fertilizer Rate (P_2O_5 /acre /yr)		113	113	113	113
Application Method		incorp (24hr)	incorp (24hr)	incorp (24hr)	incorp (24hr)
Runoff Index Component		**0.9**	**1.0**	**1.2**	**0.5**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**5.0**	**2.4**	**3.7**	**4.6**
P Index Class		**Medium**	**Medium**	**Medium**	**Medium**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0131B1	131B	PERSHING	3.5	3.38	55%	67
0131C2	131C2	PERSHING	7.0	6.31	21%	44
0179E1	179E	GARA	16.0	11.64	<1%	35
0362A1	362	HAIG	1.0	0.70	1%	70
0364B1	364B	GRUNDY	2.5	2.42	23%	75

Field Description: Broad hill tops with C slopes on the side-hills.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	7.0	2.5	4.5	64%
Erosion (RUSLE) (tons/acre/yr)	6.3	2.4	3.9	62%
Total P Index	5.0	2.4	2.6	51%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		7.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		6.3	0.0	0%
Total P Index		4.6	-0.4	-8%

Table 39 Field D14

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SE				
Crop Rotation	Corn-Soybean				
Farm Type	Swine				
Tillage	Disk/Chisel				
Manure	N-based swine				
		Soil Erosion Calculation Method			
		Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%
Soil Map Unit Used for Erosion		Avg	131C2	179E	179E
% of Field in SMU Used for Erosion		na	55%	38%	38%
Slope (Soil Survey) (%)		10.5	7.0	16.0	16.0
Erosion (RUSLE) (tons/acre/yr)		9.29	7.00	12.89	12.89
Sediment Trap		none	none	none	none
Distance to Perennial Stream (ft)		175	175	175	175
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		60	60	60	60
Erosion Index Component		**7.4**	**5.6**	**10.3**	**10.3**
Fertilizer Rate (P_2O_5 /acre /yr)		113	113	113	113
Application Method		incorp (24hr)	incorp (24hr)	incorp (24hr)	incorp (24hr)
Runoff Index Component		**0.7**	**0.7**	**0.7**	**0.7**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**8.2**	**6.4**	**11.1**	**11.1**
P Index Class		**High**	**High**	**High**	**High**

Field D14

Summary of P-Index Values for Field Zones

Cluster	SE			
Crop Rotation	Corn-Soybean			
Farm Type	Swine		Zones	
Tillage	Disk/Chisel			
Manure	N-based swine	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zor Zone 1	Zone 2
Zone Name			Hilltop	Sidehill
Soil Map Unit Used for Erosion		179E	131C2	179E
Slope (Soil Survey) (%)		16.0	7.0	16.0
Erosion (RUSLE) (tons/acre/yr)		12.89	7.00	12.89
Sediment Trap		none	none	none
Distance to Perennial Stream (ft)		175	175	100
Buffer Strip		none	none	none
Residue Management		tillage	tillage	tillage
$Bray_1$ STP (ppm)		60	60	60
Erosion Index Component		**10.3**	**5.6**	**11.8**
Fertilizer Rate (P_2O_5 /acre /yr)		113	113	113
Application Method		incorp (24hr)	incorp (24hr)	incorp (24hr)
Runoff Index Component		**0.7**	**0.7**	**0.7**
Tile Lines or Highly Permeable Soil		yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**
Total P Index		**11.1**	**6.4**	**12.6**
P Index Class		**High**	**High**	**High**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0131B1	131B	PERSHING	3.5	3.75	1%	67
0131C2	131C2	PERSHING	7.0	7.00	60%	44
0179E1	179E	GARA	16.0	12.89	39%	35

Field Description: Hill top and steep side-hills.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reductior
Slope (Soil Survey) (%)	16.0	7.0	9.0	56%
Erosion (RUSLE) (tons/acre/yr)	12.9	7.0	5.9	46%
Total P Index	11.1	6.4	4.7	42%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		16.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		12.9	0.0	0%
Total P Index		12.6	1.5	14%

Table 40 Field J11

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SE				
Crop Rotation	Corn Soybean				
Farm Type	Crop	**Soil Erosion Calculation Method**			
Tillage	Disk/Chisel				
Manure	History				
		Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	280B	223C2	571C2	571C2
% of Field in SMU Used for Erosion		na	40%	2%	11%	11%
Slope (Soil Survey) (%)		3.8	4.0	7.0	7.0	7.0
Erosion (RUSLE) (tons/acre/yr)		2.14	2.35	4.72	4.38	4.38
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		500	500	500	500	500
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		30	30	30	30	20
Erosion Index Component		**1.1**	**1.2**	**2.5**	**2.3**	**2.2**
Fertilizer Rate (P_2O_5 /acre /yr)		115	115	115	115	115
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.3**	**0.3**	**0.5**	**0.3**	**0.2**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.5**	**1.6**	**3.0**	**2.7**	**2.5**
P Index Class		**Low**	**Low**	**Medium**	**Medium**	**Medium**

Field J11

Summary of P-Index Values for Field Zones

Cluster	SE					
Crop Rotation	Corn Soybean					
Farm Type	Crop	Zones				
Tillage	Disk/Chisel					
Manure	History	Total Field	Most Erosive SMU >10% in each Zone			
		Most Erosive SMU >10%	Zone 1	Zone 2	Zone 3	Zone 4
Zone Name			Top	E Hill	W Hill	Sidehill
Soil Map Unit Used for Erosion		571C2	280	75B	280B	223C2
Slope (Soil Survey) (%)		7.0	1.0	4.0	4.0	7.0
Erosion (RUSLE) (tons/acre/yr)		4.38	0.64	2.68	2.35	4.72
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		500	800	500	550	525
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		30	16	38	59	10
Erosion Index Component		**2.3**	**0.3**	**1.5**	**1.4**	**2.2**
Fertilizer Rate (P_2O_5 /acre /yr)		115	115	115	115	115
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.3**	**0.2**	**0.5**	**0.4**	**0.3**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**2.7**	**0.6**	**2.0**	**1.9**	**2.6**
P Index Class		**Medium**	**Very Low**	**Medium**	**Low**	**Medium**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0075B1	75B	GIVIN	4.0	2.68	4%	81
0076B1	76B	LADOGA	4.0	1.88	15%	85
0076C2	76C2	LADOGA	7.0	3.50	5%	65
0223C2	223C2	RINDA	7.0	4.72	2%	22
0279A1	279	TAINTOR	1.0	0.59	12%	88
0280A1	280	MAHASKA	1.0	0.55	11%	95
0280B1	280B	MAHASKA	4.0	2.35	40%	90
0571C2	571C2	HEDRICK	7.0	3.94	11%	62

Field Description: Rolling with some terraces.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	7.0	1.0	6.0	86%
Erosion (RUSLE) (tons/acre/yr)	4.4	0.6	3.7	85%
Total P Index	2.7	0.6	2.1	79%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		7.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		4.7	0.3	8%
Total P Index		2.6	-0.1	-4%

Table 41 Field J12

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SE					
Crop Rotation	Corn Soybean					
Farm Type	Crop	**Soil Erosion Calculation Method**				
Tillage	Disk/Chisel					
Manure	History	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%	Without Terraces Most Erosive SMU >10%
Soil Map Unit Used for Erosion		Avg	281B	179D2	179D2	179D2	179D2
% of Field in SMU Used for Erosion		na	26%	18%	18%	18%	18%
Slope (Soil Survey) (%)		6.8	4.0	12.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		4.20	2.68	8.44	8.44	8.44	8.44
Sediment Trap		Inlet Terrace	Inlet Terrace	Inlet Terrace	Inlet Terrace	Inlet Terrace	none
Distance to Perennial Stream (ft)		500	500	500	500	500	500
Buffer Strip		66 ft buffer	66 ft buffer	66 ft buffer	66 ft buffer	66 ft buffer	66 ft buffer
Residue Management		tillage	tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		57	57	57	57	54	57
Erosion Index Component		**0.2**	**0.1**	**0.3**	**0.3**	**0.3**	**3.9**
Fertilizer Rate (P_2O_5 /acre /yr)		115	115	115	115	115	115
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.4**	**0.4**	**0.6**	**0.6**	**0.6**	**0.6**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**0.7**	**0.6**	**1.0**	**1.0**	**1.0**	**4.6**
P Index Class		**Very Low**	**Very Low**	**Low**	**Low**	**Low**	**Medium**

Field J12

Summary of P-Index Values for Field Zones

Cluster	SE				
Crop Rotation	Corn Soybean				
Farm Type	Crop	Zones			
Tillage	Disk/Chisel				
Manure	History	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone: Zone 1	Zone 2	Zone 3
Zone Name			Top	Between T	Sidehill
Soil Map Unit Used for Erosion		179D2	281B	281C2	179D2
Slope (Soil Survey) (%)		12.0	4.0	7.0	12.0
Erosion (RUSLE) (tons/acre/yr)		8.44	2.68	3.07	8.44
Sediment Trap		Inlet Terrace	Inlet Terrace	Inlet Terrace	Inlet Terrace
Distance to Perennial Stream (ft)		500	850	450	250
Buffer Strip		66 ft buffer	none	none	66 ft buffer
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		57	40	23	109
Erosion Index Component		**0.3**	**0.1**	**0.1**	**0.4**
Fertilizer Rate (P_2O_5 /acre /yr)		115	115	115	115
Application Method		incorp (1wk)	incorp (1wk)	incorp (1wk)	incorp (1wk)
Runoff Index Component		**0.6**	**0.3**	**0.2**	**1.1**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.2**
Total P Index		**1.0**	**0.5**	**0.5**	**1.6**
P Index Class		**Low**	**Very Low**	**Very Low**	**Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0013B1	13B	0LMITZ-VESSER-ZOOK COM	3.0	1.51	2%	60
0076C2	76C2	LADOGA	7.0	3.75	3%	65
0179D2	179D2	GARA	12.0	8.44	18%	43
0222C2	222C2	CLARINDA	7.0	3.54	10%	25
0223C2	223C2	RINDA	7.0	5.05	16%	22
0280A1	280	MAHASKA	1.0	0.80	4%	95
0280B1	280B	MAHASKA	4.0	2.68	2%	90
0281B1	281B	OTLEY	4.0	2.68	26%	90
0281C2	281C2	OTLEY	7.0	3.07	19%	70

Field Description: Rolling with terraces.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	4.0	8.0	67%
Erosion (RUSLE) (tons/acre/yr)	8.4	2.7	5.8	68%
Total P Index	1.0	0.5	0.6	56%
		Max Zone	**Increase**	**% Increase**
Slope (Soil Survey) (%)		12.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		8.4	0.0	0%
Total P Index		1.6	0.6	57%

Table 42 Field W11

Summary of P-Index Values for Different Methods of Calculating Erosion

		Soil Erosion Calculation Method				
Cluster	SE					
Crop Rotation	Corn Soybean					
Farm Type	Swine					
Tillage	No-till					
Manure	N-based Swine	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	281B	192C2	281C2	281C2
% of Field in SMU Used for Erosion		na	37%	5%	18%	18%
Slope (Soil Survey) (%)		5.0	3.5	7.0	7.0	7.0
Erosion (RUSLE) (tons/acre/yr)		1.03	0.46	2.55	2.21	2.21
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		2000	2000	2000	2000	2000
Buffer Strip		none	none	none	none	none
Residue Management		no-till	no-till	no-till	no-till	no-till
$Bray_1$ STP (ppm)		89	89	89	89	70
Erosion Index Component		**0.6**	**0.3**	**1.4**	**1.2**	**1.1**
Fertilizer Rate (P_2O_5 /acre /yr)		175	175	175	175	175
Application Method		surface	surface	surface	surface	surface
Runoff Index Component		**0.8**	**0.8**	**1.1**	**0.8**	**0.7**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.4**	**1.1**	**2.6**	**2.1**	**1.9**
P Index Class		**Low**	**Low**	**Medium**	**Medium**	**Low**

Summary of P-Index Values for Field Zones

			Zones							
Cluster	SE									
Crop Rotation	Corn Soybean									
Farm Type	Swine									
Tillage	No-till									
Manure	N-based Swine	Total Field ME SMU >10%	Most Erosive SMU >10% in each Zone: Zone 1	Zone 4	Zone 5	Zone 6	Zone 7	Zone 2	Zone 3
Zone Name			S1	S4	S5	S6	S7	S2	S3
Soil Map Unit Used for Erosion		281C2	571C2	281C2	281B	192C2	43	76C3	294D2
Slope (Soil Survey) (%)		7.0	7.0	7.0	3.5	7.0	1.0	7.0	11.5
Erosion (RUSLE) (tons/acre/yr)		2.21	1.30	1.30	0.46	2.55	0.28	1.76	2.33
Sediment Trap		none	basin	none	none	none	none	basin	basin
Distance to Perennial Stream (ft)		2000	1400	2100	1800	1600	1500	1600	2200
Buffer Strip		none	none	none	none	none	none	none	none
Residue Management		no-till	no-till	no-till	no-till	no-till	no-till	no-till	no-till
$Bray_1$ STP (ppm)		89	92	105	91	81	75	113	74
Erosion Index Component		**1.2**	**0.3**	**0.7**	**0.3**	**1.4**	**0.2**	**0.5**	**0.6**
Fertilizer Rate (P_2O_5 /acre /yr)		175	175	175	175	175	175	175	175
Application Method		surface	surface	surface	surface	surface	surface	surface	surface
Runoff Index Component		**0.8**	**0.8**	**0.9**	**0.8**	**1.0**	**1.0**	**0.9**	**0.7**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.2**	**0.1**	**0.1**	**0.1**	**0.2**	**0.1**
Total P Index		**2.1**	**1.2**	**1.8**	**1.1**	**2.5**	**1.2**	**1.6**	**1.3**
P Index Class		**Medium**	**Low**	**Low**	**Low**	**Medium**	**Low**	**Low**	**Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0007B1	7B	WIOTA	3.0	0.78	1%	90
0043A0	43	BREMER	1.0	0.28	8%	82
0076B1	76B	LADOGA	3.5	0.50	<1%	85
0076C3	76C3	LADOGA	7.0	1.76	1%	60
0087B1	87B	COLO-ZOOK SICL	1.5	0.58	3%	60
0088A0	88	NEVIN	1.0	0.26	8%	90
0192C2	192C2	ADAIR	7.0	2.03	5%	30
0281B1	281B	OTLEY	3.5	0.46	36%	90
0281C2	281C2	OTLEY	7.0	1.76	18%	70
0294C2	294C2	LADOGA-BILLETT COMPLEX	7.0	1.30	5%	50
0294D2	294D2	LADOGA-BILLETT COMPLEX	11.5	2.33	10%	40
0571C2	571C2	HEDRICK	7.0	1.30	3%	62
0876C2	876C2	LADOGA BENCHES	7.0	2.21	1%	65

Field Description: Rolling - Mostly B and C slope - Notill.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	7.0	1.0	6.0	86%
Erosion (RUSLE) (tons/acre/yr)	2.2	0.3	1.9	87%
Total P Index	2.1	1.1	0.9	45%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		7.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		2.6	0.3	15%
Total P Index		2.5	0.4	22%

Table 43 Field W12

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	SE				
Crop Rotation	Corn Soybean				
Farm Type	Crop	**Soil Erosion Calculation Method**			
Tillage	No-till				
Manure	History	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	54	76D3	76D3	76D3
% of Field in SMU Used for Erosion		na	23%	17%	17%	17%
Slope (Soil Survey) (%)		4.2	1.0	12.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		0.99	0.33	3.11	3.11	3.11
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		700	700	700	700	700
Buffer Strip		none	none	none	none	none
Residue Management		no-till	no-till	no-till	no-till	no-till
$Bray_1$ STP (ppm)		99	99	99	99	92
Erosion Index Component		**0.7**	**0.2**	**2.2**	**2.2**	**2.2**
Fertilizer Rate (P_2O_5 /acre /yr)		16	16	16	16	16
Application Method		injected	injected	injected	injected	injected
Runoff Index Component		**0.7**	**1.1**	**0.7**	**0.7**	**0.7**
Tile Lines or Highly Permeable Soi		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.5**	**1.4**	**3.0**	**3.0**	**2.9**
P Index Class		**Low**	**Low**	**Medium**	**Medium**	**Medium**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0007B1	7B	WIOTA	3.0	0.52	6%	90
0041C1	41C	SPARTA	5.5	1.28	3%	25
0043A0	43	BREMER	1.0	0.28	3%	82
0054A0	54	ZOOK	1.0	0.33	23%	70
0076B1	76B	LADOGA	3.5	0.42	3%	85
0076C3	76C3	LADOGA	7.0	1.49	11%	60
0076D3	76D3	LADOGA	12.0	3.11	17%	50
0088A0	88	NEVIN	1.0	0.26	7%	90
0453A1	453	TUSKEEGO	1.0	0.33	17%	53
0520B1	520B	COPPOCK	3.5	0.39	3%	60
0687B1	687B	WATKINS	3.0	0.78	<1%	80
0876C2	876C2	LADOGA BENCHES	7.0	1.11	3%	65
2242A0	2242	NODAWAY-AMANA SIL	1.0	0.28	3%	75

Field W12

Summary of P-Index Values for Field Zones

Cluster	SE										
Crop Rotation	Corn Soybean										
Farm Type	Crop	Zones									
Tillage	No-till										
Manure	History	Total Field ME SMU >10%	Most Erosive SMU >10% in each Zone								
			Zone 3	Zone 4	Zone 6	Zone 7	Zone 8	Zone 1	Zone 2	Zone 5	Zone 9
Zone Name			S10	S11	S13	S14	S15	S8	S9	S12	S16
Soil Map Unit Used for Erosion		76D3	76D3	7B	453	41C	54	76C3	76D3	520B	54
Slope (Soil Survey) (%)		12.0	12.0	3.0	1.0	5.5	1.0	7.0	12.0	3.5	1.0
Erosion (RUSLE) (tons/acre/yr)		3.11	3.11	0.39	0.33	1.28	0.33	1.49	3.11	0.39	0.33
Sediment Trap		none	terrace	none	none	none	none	terrace	terrace	none	none
Distance to Perennial Stream (ft)		700	800	400	700	600	800	1400	1200	800	500
Buffer Strip		none	none	none	none	none	none	none	none	none	none
Residue Management		no-till	no-till	no-till	no-till	no-till	no-till	no-till	no-till	no-till	no-till
$Bray_1$ STP (ppm)		99	162	56	56	78	107	109	154	115	57
Erosion Index Component		**2.2**	**0.3**	**0.3**	**0.2**	**0.9**	**0.2**	**0.1**	**0.3**	**0.3**	**0.2**
Fertilizer Rate (P_2O_5 /acre /yr)		16	16	16	16	16	16	16	16	16	16
Application Method		injected	injected	injected	injected	injected	injected	injected	injected	injected	injected
Runoff Index Component		**0.7**	**1.2**	**0.4**	**0.7**	**0.3**	**1.2**	**0.8**	**1.1**	**0.8**	**0.7**
Tile Lines or Highly Permeable Soi		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.2**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**
Total P Index		**3.0**	**1.6**	**0.8**	**1.0**	**1.3**	**1.6**	**1.1**	**1.5**	**1.3**	**1.0**
P Index Class		**Medium**	**Low**	**Very Low**	**Very Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Very Low**

Field Description: Rolling - Mostly B and C slope - Notill.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	12.0	1.0	11.0	92%
Erosion (RUSLE) (tons/acre/yr)	3.1	0.3	2.8	89%
Total P Index	3.0	0.8	2.3	74%

	Max Zone	Increase	% Increase
Slope (Soil Survey) (%)	12.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)	3.1	0.0	0%
Total P Index	1.6	-1.5	-48%

Table 44 Field P11

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	NW						
Crop Rotation	Corn Soybean						
Farm Type	Swine	**Soil Erosion Calculation Method**					
Tillage	Disk/Chisel						
Manure	N-based Swine	Weighted Avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%	Terraces ME SMU >10%
Soil Map Unit Used for Erosion		Avg	310B	310D2	310C2	310C2	310C2
% of Field in SMU Used for Erosion		na	64%	8%	24%	24%	24%
Slope (Soil Survey) (%)		5.4	4.0	12.0	7.0	7.0	7.0
Erosion (RUSLE) (tons/acre/yr)		1.57	0.93	4.83	2.23	2.23	2.23
Sediment Trap		none	none	none	none	none	Level Terrace
Distance to Perennial Stream (ft)		3000	3000	3000	3000	3000	3000
Buffer Strip		none	none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		165	165	165	165	173	165
Erosion Index Component		**0.9**	**0.5**	**2.9**	**1.3**	**1.4**	**0.0**
Fertilizer Rate (P_2O_5 /acre /yr)		120	120	120	120	120	120
Application Method		injected	injected	injected	injected	injected	injected
Runoff Index Component		**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.8**	**1.5**	**3.8**	**2.2**	**2.3**	**0.9**
P Index Class		**Low**	**Low**	**Medium**	**Medium**	**Medium**	**Very Low**

Field P11

Summary of P-Index Values for Field Zones

Cluster	NW				
Crop Rotation	Corn Soybean				
Farm Type	Swine	Zones			
Tillage	Disk/Chisel				
Manure	N-based Swine	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone: Zone 1	Zone 2	Zone 3
Zone Name			Above T	Below T	Below wo/T
Soil Map Unit Used for Erosion		310C2	310B	310D2	310D2
Slope (Soil Survey) (%)		7.0	4.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		2.23	0.93	4.83	4.83
Sediment Trap		none	none	Level Terrace	none
Distance to Perennial Stream (ft)		3000	1700	2700	2700
Buffer Strip		none	none	none	none
Residue Management		tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		165	230	121	121
Erosion Index Component		**1.3**	**0.7**	**0.0**	**2.5**
Fertilizer Rate (P_2O_5 /acre /yr)		120	120	120	120
Application Method		injected	injected	injected	injected
Runoff Index Component		**0.8**	**1.1**	**0.6**	**0.6**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**2.2**	**1.9**	**0.7**	**3.3**
P Index Class		**Medium**	**Low**	**Very Low**	**Medium**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0310B1	310B	GALVA	4.0	0.93	64%	68
0310C2	310C2	GALVA	7.0	2.23	24%	51
0310D2	310D2	GALVA	12.0	4.83	8%	42
0467B1	467B	RADFORD	4.0	1.07	4%	72

Field Description: Rolling with terraces.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	7.0	4.0	3.0	43%
Erosion (RUSLE) (tons/acre/yr)	2.2	0.9	1.3	58%
Total P Index	2.2	0.7	1.5	68%

	Max Zone	Increase	% Increase
Slope (Soil Survey) (%)	12.0	5.0	71%
Erosion (RUSLE) (tons/acre/yr)	4.8	2.6	117%
Total P Index	3.3	1.0	46%

Table 45 Field P12

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	NW					
Crop Rotation	Corn Soybean					
Farm Type	Swine	**Soil Erosion Calculation Method**				
Tillage	Disk/Chisel					
Manure	N-based Swine	Weighted Avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%	Terraces ME SMU >10%
Soil Map Unit Used for Erosion		Avg	310B	310D2	310C2	310C2	310C2
% of Field in SMU Used for Erosion		na	46%	7%	42%	42%	42%
Slope (Soil Survey) (%)		5.8	4.0	12.0	7.0	7.0	7.0
Erosion (RUSLE) (tons/acre/yr)		1.74	0.93	4.83	2.23	2.23	2.23
Sediment Trap		none	none	none	none	none	Level Terrace
Distance to Perennial Stream (ft)		2400	2400	2400	2400	2400	2400
Buffer Strip		none	none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		88	88	88	88	90	88
Erosion Index Component		**0.8**	**0.4**	**2.3**	**1.1**	**1.1**	**0.0**
Fertilizer Rate (P_2O_5 /acre /yr)		120	120	120	120	120	120
Application Method		injected	injected	injected	injected	injected	injected
Runoff Index Component		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.4**	**1.1**	**2.9**	**1.7**	**1.7**	**0.6**
P Index Class		**Low**	**Low**	**Medium**	**Low**	**Low**	**Very Low**

Field P12

Summary of P-Index Values for Field Zones

Cluster	NW					
Crop Rotation	Corn Soybean					
Farm Type	Swine	Zones				
Tillage	Disk/Chisel					
Manure	N-based Swine	Total Field Most Erosive SMU >10%	Most Erosive SMU >10% in each Zone: Zone 1	Zone 2	Zone 3	Zone 4
Zone Name			Top	Top w/ T	Sidehill	Sidehill w/ T
Soil Map Unit Used for Erosion		310C2	310C2	310C2	310D2	310D2
Slope (Soil Survey) (%)		7.0	7.0	7.0	12.0	12.0
Erosion (RUSLE) (tons/acre/yr)		2.23	2.23	2.23	4.83	4.83
Sediment Trap		none	none	Level Terrace	none	Level Terrace
Distance to Perennial Stream (ft)		2400	1200	1200	1800	1800
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		88	117	117	81	81
Erosion Index Component		**1.1**	**1.4**	**0.0**	**2.4**	**0.0**
Fertilizer Rate (P_2O_5 /acre /yr)		120	120	120	120	120
Application Method		injected	injected	injected	injected	injected
Runoff Index Component		**0.6**	**0.7**	**0.7**	**0.5**	**0.5**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.7**	**2.2**	**0.8**	**3.0**	**0.6**
P Index Class		**Low**	**Medium**	**Very Low**	**Medium**	**Very Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0310B1	310B	GALVA	4.0	0.93	46%	68
0310C2	310C2	GALVA	7.0	2.23	42%	51
0310D2	310D2	GALVA	12.0	4.83	6%	42
0467B1	467B	RADFORD	4.0	1.07	5%	72

Field Description: Rolling with terraces.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	7.0	7.0	0.0	0%
Erosion (RUSLE) (tons/acre/yr)	2.2	2.2	0.0	0%
Total P Index	1.7	0.6	1.1	65%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		12.0	5.0	71%
Erosion (RUSLE) (tons/acre/yr)		4.8	2.6	117%
Total P Index		3.0	1.3	76%

Table 46 Field P21

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	NW						
Crop Rotation	Corn Soybean						
Farm Type	Swine	Soil Erosion Calculation Method					
Tillage	Disk/Chisel						
Manure	N-based Swine	Weighted Avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%	Terraces ME SMU >10%
Soil Map Unit Used for Erosion		Avg	T310B	317C2	317C2	317C2	317C2
% of Field in SMU Used for Erosior		na	34%	19%	19%	19%	19%
Slope (Soil Survey) (%)		5.2	3.5	9.5	9.5	9.5	9.5
Erosion (RUSLE) (tons/acre/yr)		1.25	0.69	2.62	2.62	2.62	2.62
Sediment Trap		none	none	none	none	none	Level Terrace
Distance to Perennial Stream (ft)		1300	1300	1300	1300	1300	1300
Buffer Strip		none	none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage	tillage
Bray$_1$ STP (ppm)		58	58	58	58	65	58
Erosion Index Component		**0.5**	**0.3**	**1.0**	**1.0**	**1.0**	**0.0**
Fertilizer Rate (P_2O_5 /acre /yr)		135	135	135	135	135	135
Application Method		injected	injected	injected	injected	injected	injected
Runoff Index Component		**0.3**	**0.3**	**0.3**	**0.3**	**0.4**	**0.3**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**0.8**	**0.6**	**1.3**	**1.3**	**1.4**	**0.4**
P Index Class		**Very Low**	**Very Low**	**Low**	**Low**	**Low**	**Very Low**

Field P21

Summary of P-Index Values for Field Zones

Cluster	NW							
Crop Rotation	Corn Soybean							
Farm Type	Swine	Zones						
Tillage	Disk/Chisel							
Manure	N-based Swine	Total Field ME SMU >10%	Most Erosive SMU >10% in each Zone					
			Zone 1	Zone 2	Zone 3	Zone 3a	Zone 4	Zone 5
Zone Name			Bottom	Drainageways	Sidehill	Sidehill w/ T	Hilltop	Benches
Soil Map Unit Used for Erosion		317C2	133	467B	317C2	317C2	310C2	T310B
Slope (Soil Survey) (%)		9.5	1.0	3.5	9.5	9.5	7.0	3.5
Erosion (RUSLE) (tons/acre/yr)		2.62	0.28	0.80	2.62	2.62	1.65	0.69
Sediment Trap		none	none	none	none	Terrace	none	none
Distance to Perennial Stream (ft)		1300	240	1200	700	700	1400	1000
Buffer Strip		none	none	none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage	tillage	tillage
Bray$_1$ STP (ppm)		58	69	63	44	44	61	69
Erosion Index Component		**1.0**	**0.2**	**0.4**	**1.4**	**0.0**	**0.8**	**0.4**
Fertilizer Rate (P_2O_5 /acre /yr)		135	135	135	135	135	135	135
Application Method		injected	injected	injected	injected	injected	injected	injected
Runoff Index Component		**0.3**	**0.5**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**
Tile Lines or Highly Permeable Soil		yes	no	no	yes	yes	no	no
Subsurface Index Component		**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**
Total P Index		**1.3**	**0.7**	**0.7**	**1.7**	**0.3**	**1.1**	**0.7**
P Index Class		**Low**	**Very Low**	**Very Low**	**Low**	**Very Low**	**Low**	**Very Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0310B1	310B	GALVA	3.5	0.69	11%	68
0310C2	310C2	GALVA	7.0	1.65	21%	51
0317C2	317C2	GALVA-WADENA COMPLEX	9.5	2.62	19%	36
0467B1	467B	RADFORD	3.5	0.80	10%	72
0810B1	T310B	GALVA BENCHES	3.5	0.69	34%	69
7133A0	133	COLO	1.0	0.28	5%	71

Field Description: Rolling with terraces.

Zone comparison to field	Field as One Unit	Min Zone	Reduction	% Reduction
Slope (Soil Survey) (%)	9.5	1.0	8.5	89%
Erosion (RUSLE) (tons/acre/yr)	2.6	0.3	2.3	89%
Total P Index	1.3	0.3	1.0	76%
		Max Zone	Increase	% Increase
Slope (Soil Survey) (%)		9.5	0.0	0%
Erosion (RUSLE) (tons/acre/yr)		2.6	0.0	0%
Total P Index		1.7	0.3	25%

Table 47 Field P22

Summary of P-Index Values for Different Methods of Calculating Erosion

Cluster	NW				
Crop Rotation	Corn Soybean				
Farm Type	Swine	**Soil Erosion Calculation Method**			
Tillage	Disk/Chisel				
Manure	N-based Swine	Weighted avg of all SMU	Predominant SMU	Most Erosive SMU	Most Erosive SMU >10%	Year 2 ME SMU >10%
Soil Map Unit Used for Erosion		Avg	133	317C2	133	133
% of Field in SMU Used for Erosion		na	97%	1%	97%	97%
Slope (Soil Survey) (%)		1.1	1.0	9.5	1.0	1.0
Erosion (RUSLE) (tons/acre/yr)		0.86	0.81	7.71	0.81	0.81
Sediment Trap		none	none	none	none	none
Distance to Perennial Stream (ft)		600	600	600	600	600
Buffer Strip		none	none	none	none	none
Residue Management		tillage	tillage	tillage	tillage	tillage
$Bray_1$ STP (ppm)		65	65	65	65	66
Erosion Index Component		**0.4**	**0.4**	**3.5**	**0.4**	**0.4**
Fertilizer Rate (P_2O_5 /acre /yr)		135	135	135	135	135
Application Method		injected	injected	injected	injected	injected
Runoff Index Component		**0.6**	**0.6**	**0.5**	**0.6**	**0.7**
Tile Lines or Highly Permeable Soil		yes	yes	yes	yes	yes
Subsurface Index Component		**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total P Index		**1.1**	**1.1**	**4.1**	**1.1**	**1.1**
P Index Class		**Low**	**Low**	**Medium**	**Low**	**Low**

Field P22

Summary of P-Index Values for Field Zones

Cluster	NW	
Crop Rotation	Corn Soybean	
Farm Type	Swine	
Tillage	Disk/Chisel	
Manure	N-based Swine	Total Field Most Erosive SMU >10%
Zone Name		
Soil Map Unit Used for Erosion		133
Slope (Soil Survey) (%)		1.0
Erosion (RUSLE) (tons/acre/yr)		0.81
Sediment Trap		none
Distance to Perennial Stream (ft)		600
Buffer Strip		none
Residue Management		tillage
$Bray_1$ STP (ppm)		65
Erosion Index Component		**0.4**
Fertilizer Rate (P_2O_5 /acre /yr)		135
Application Method		injected
Runoff Index Component		**0.6**
Tile Lines or Highly Permeable Soil		yes
Subsurface Index Component		**0.1**
Total P Index		**1.1**
P Index Class		**Low**

Summary of Soil Mapping Units in this Field

SMU	Label	Soil Name	SLOPE	RUSLE	% of Field	CSR
0317C2	317C2	GALVA-WADENA COMPLEX	9.5	7.71	<1%	36
0467A0	467	RADFORD	1.0	0.94	1%	74
0467B1	467B	RADFORD	3.5	2.34	2%	72
0810B1	T310B	GALVA BENCHES	3.5	2.03	<1%	69
7133A0	133	COLO	1.0	0.81	97%	71

Field Description: Level bottom ground.

Zone comparison to field	Field as One Unit
Slope (Soil Survey) (%)	1.0
Erosion (RUSLE) (tons/acre/yr)	0.8
Total P Index	1.1

Slope (Soil Survey) (%)
Erosion (RUSLE) (tons/acre/yr)
Total P Index

Table 48. Summary of P Index components contribution for 33 Iowa fields.

		P Index Values				Component Contribution		
Cluster	Field	Total	Erosion	Runoff	Subsurface	Erosion	Runoff	Subsurface
						---------- % ----------		
SW	A11	2.6	0.6	1.9	0.2	23	71	6
	A12	0.9	0.3	0.5	0.1	33	58	9
	A21	1.6	1.5	0.2	0.0	90	10	0
	A22	0.8	0.7	0.1	0.0	83	17	0
	A23	1.0	0.9	0.1	0.0	92	8	0
	A24	0.6	0.5	0.1	0.0	84	16	0
	A25	0.7	0.5	0.2	0.0	74	26	0
	A26	1.1	0.8	0.3	0.0	73	27	0
NE	B11	1.8	0.9	0.8	0.1	50	44	6
	B21	1.0	0.5	0.4	0.1	54	38	8
W	C11	6.5	6.0	0.5	0.1	91	8	1
	C12	1.5	0.5	0.9	0.1	31	60	9
	C13	4.5	3.8	0.6	0.1	84	13	3
	C14	4.4	4.2	0.1	0.1	96	3	2
	C21	2.8	2.5	0.3	0.1	87	10	2
N	CG11	3.1	1.0	1.9	0.1	34	61	5
	CG12	1.7	0.4	1.2	0.1	21	70	9
	CG21	0.6	0.1	0.4	0.1	24	63	13
	CG22	0.8	0.2	0.5	0.1	27	63	10
	CG23	0.7	0.2	0.5	0.1	21	69	10
	H11	1.4	0.5	0.8	0.1	32	59	10
SE	D11	5.4	4.3	1.0	0.1	80	19	1
	D12	5.0	3.8	1.1	0.1	76	22	2
	D13	5.0	4.0	0.9	0.1	80	19	2
	D14	11.1	10.3	0.7	0.1	93	7	1
	J11	2.7	2.3	0.3	0.1	87	10	3
	J12	1.0	0.3	0.6	0.1	32	60	8
	W11	2.1	1.2	0.8	0.1	58	38	4
	W12	3.0	2.2	0.7	0.1	73	24	3
NW	P11	2.2	1.3	0.8	0.1	59	36	5
	P12	1.7	1.1	0.6	0.1	63	33	4
	P21	1.3	1.0	0.3	0.1	71	24	4
	P22	1.1	0.4	0.6	0.1	34	60	6

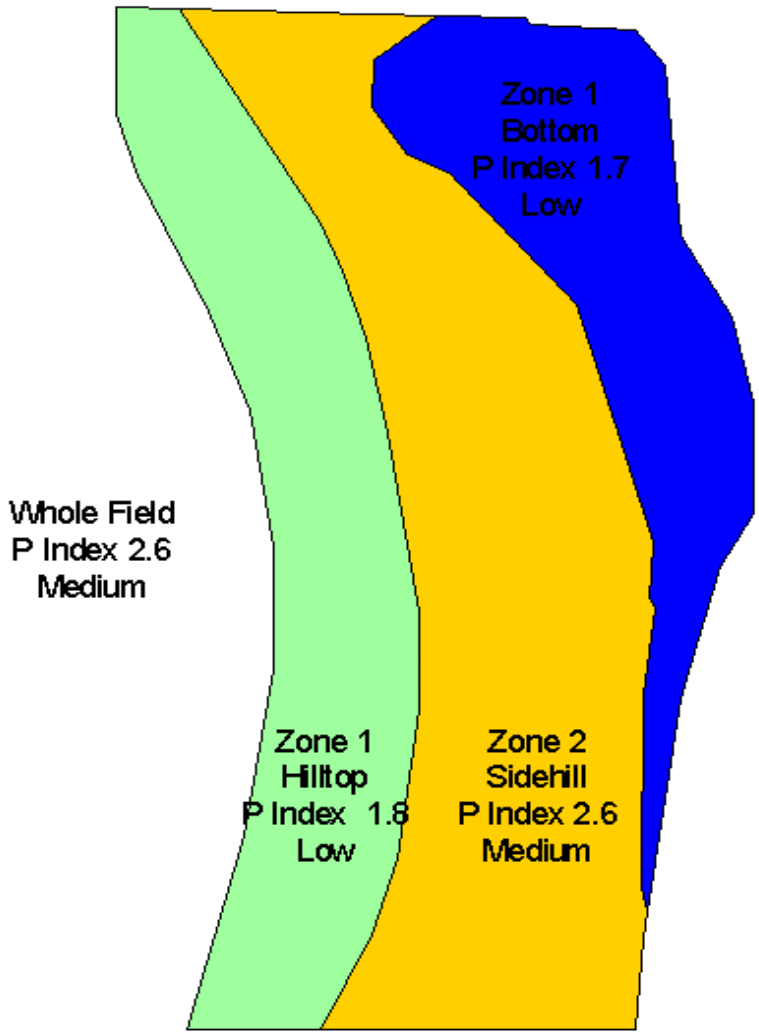
Table 49. Change in P-index Value for the Fields of the Project Due to Hypothetical Changes in Management Practices.

Management Practice Introduced	Total or Partial	Change of Total or Partial P Index Value						
		Northeast	North	Northwest	West	Southwest	Southeast	Average †
Reducing Erosion 1 ton/a/year	Total	-0.43	-0.09	-0.64	-0.66	-0.39	-0.57	-0.47
Sediment Control Basin	Total	-0.92	-0.33	-2.48	-3.82	-6.86	-2.80	-2.56
Tile Inlet Terrace	Total	-1.09	-0.40	-2.94	-4.54	-8.14	-3.33	-3.03
Filter Strip 20 to75 ft	Total	-0.35	-0.18	-0.62	-1.26	-0.78	-0.76	-0.67
Filter Strip Wider Than 75 ft	Total	-0.58	-0.30	-1.03	-2.10	-1.30	-1.27	-1.12
Increase Bray-1 P 10 ppm	Erosion	0.05	0.01	0.08	0.20	0.08	0.10	0.09
	Runoff	0.11	0.08	0.05	0.06	0.07	0.10	0.08
	Total	0.16	0.09	0.19	0.26	0.15	0.20	0.18
Decrease 10 ppm Bray-1 P	Erosion	-0.04	-0.02	-0.08	-0.2	-0.08	-0.10	-0.09
	Runoff	-0.11	-0.08	-0.06	-0.1	-0.80	-0.10	-0.2
	Total	-0.15	-0.10	-0.14	-0.27	-0.88	-0.20	-0.29
Fertilizer Management								
Additional 50 lb P_2O_5	Total	0.03	0.03	0.01	0.02	0.02	0.03	0.02
No P application	Total	0.00	-0.03	-0.03	0.00	0.00	0.00	-0.03
From Surface Application to:								
Injection within 1week	Total	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
No incorporation	Total	0.03	0.03	0.01	0.01	0.01	0.03	0.02
Frozen/saturated soil	Total	0.06	0.05	0.03	0.02	0.03	0.06	0.04

† Average across clusters for fields managed with at least one grain crop in the rotation.

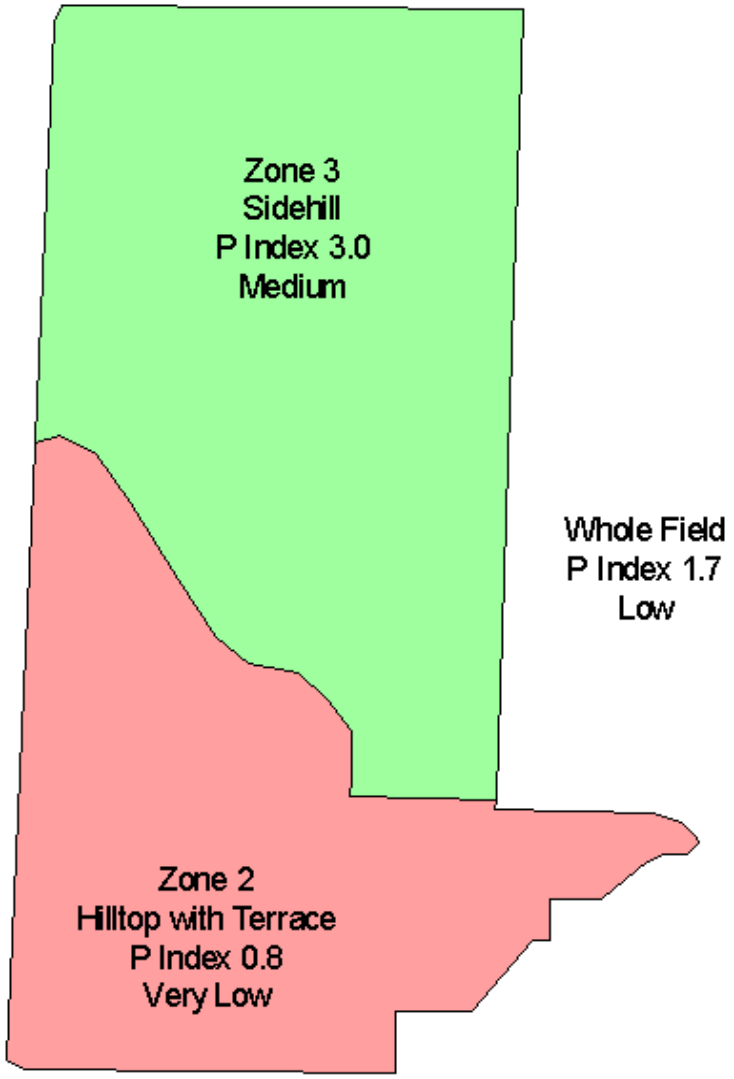
P INDEX PROJECT

Example of field zones for field A11



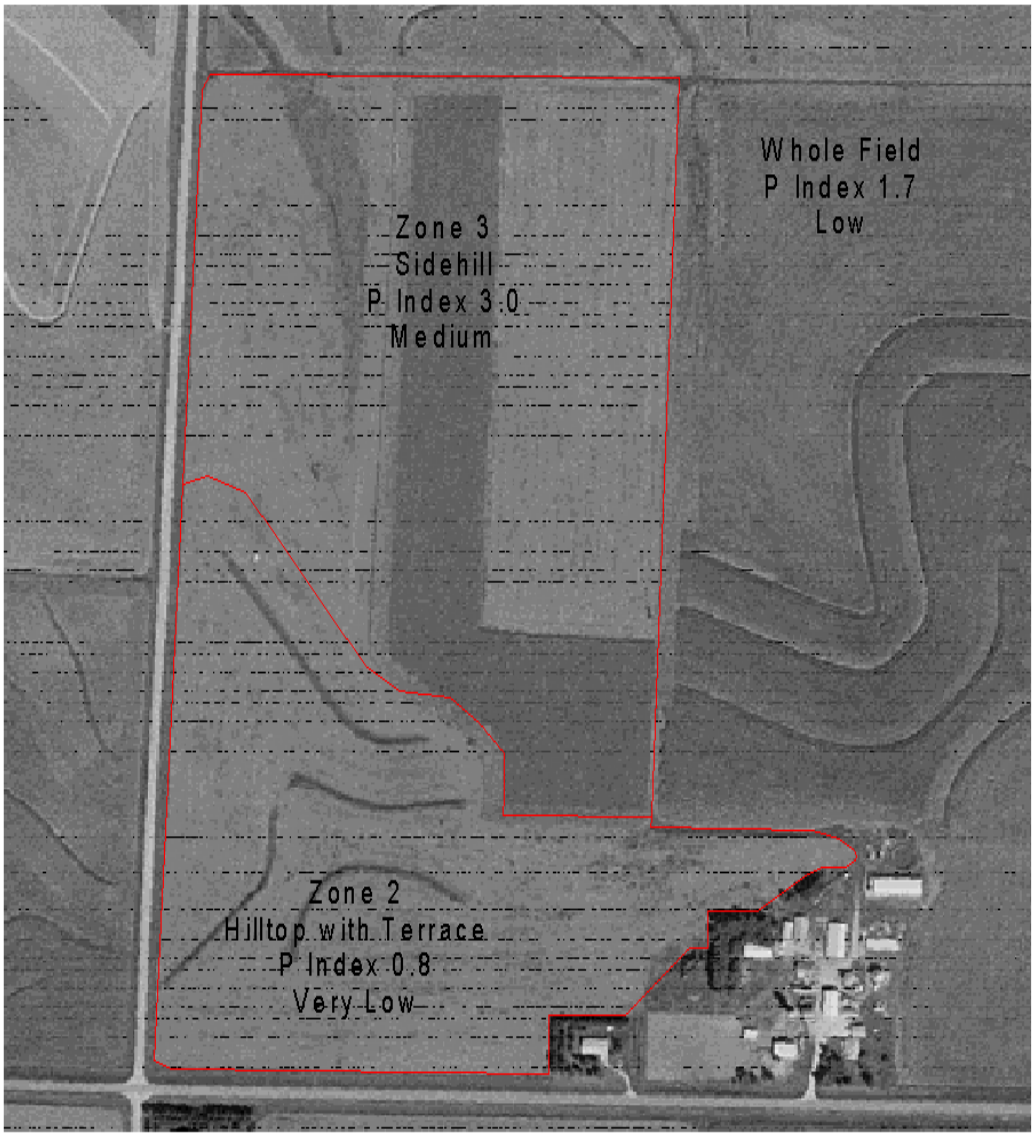
P INDEX PROJECT

Example of field zones for field P12



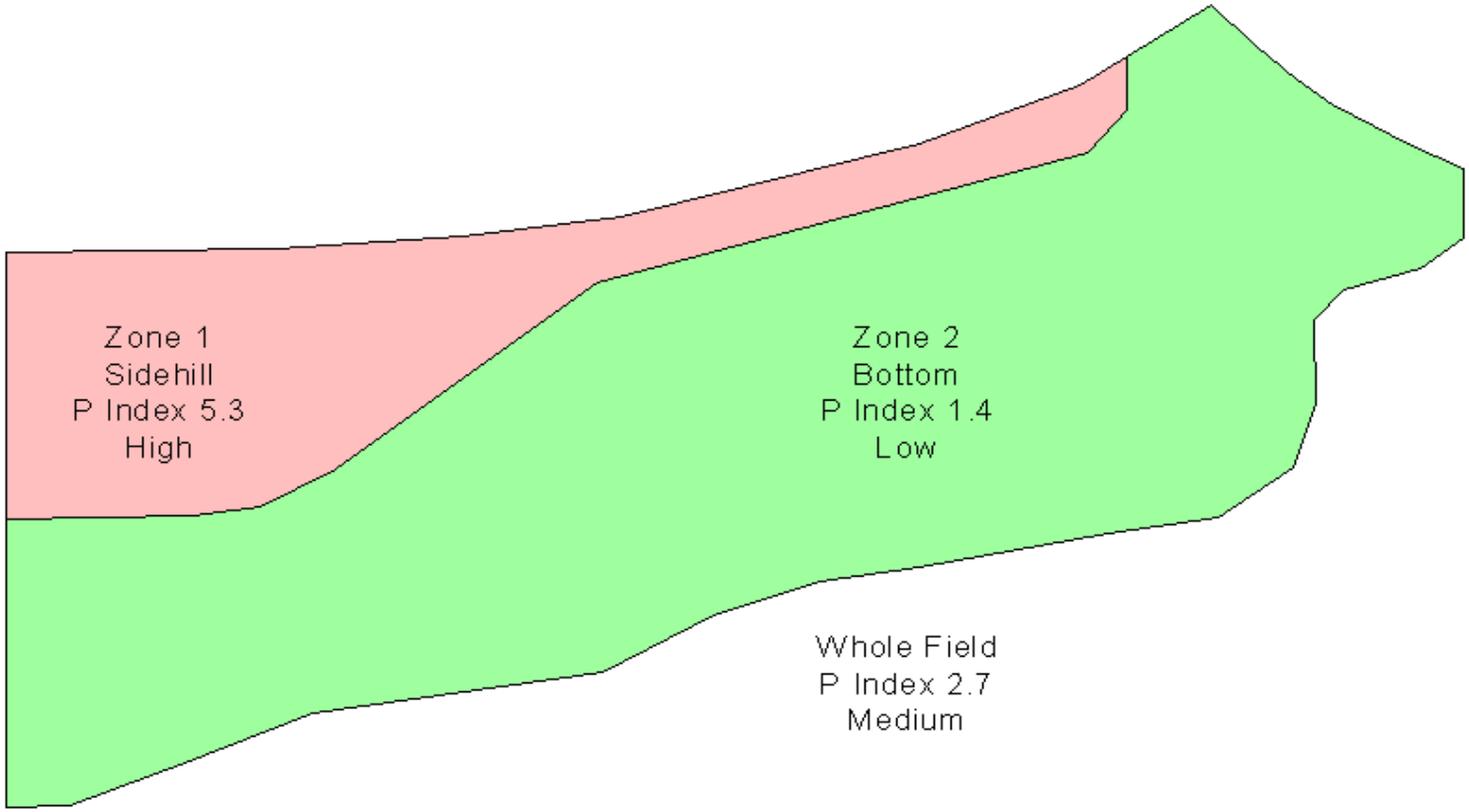
P INDEX PROJECT

Example of field zones for field P12



P INDEX PROJECT

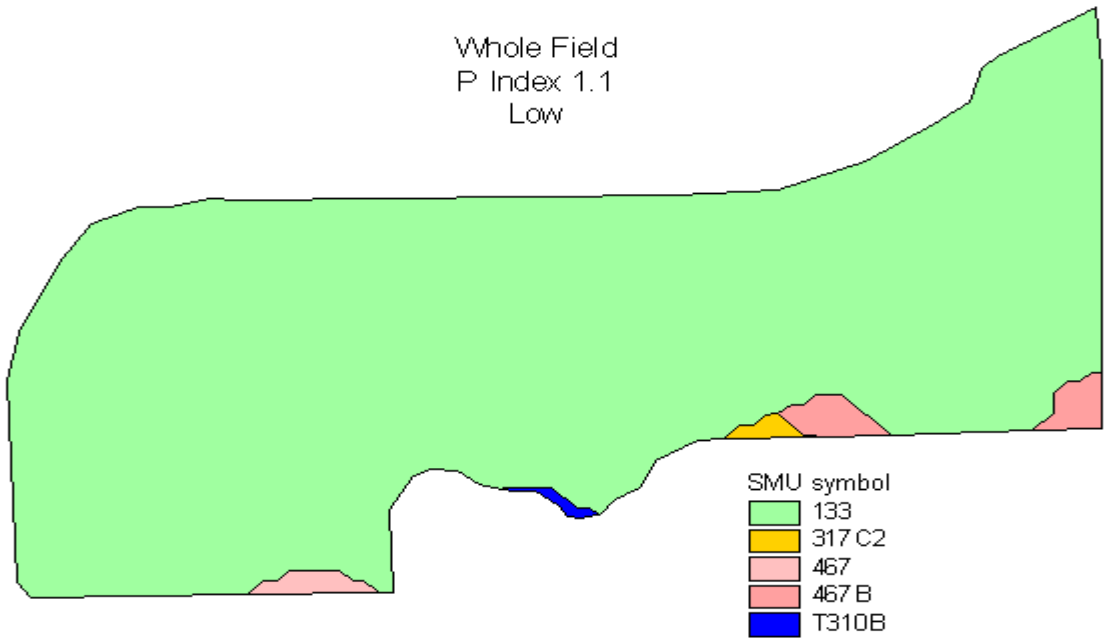
Example of field zones for field C14



P INDEX PROJECT

Example of field zones for field P22

Ninety-seven % of Field 22 is one SMU so more than one zone does not make sense



P INDEX PROJECT

Example of field zones for field J11