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consumption projections serve as the foundation for evaluating and identifying recommended improvements to the water and sanitary sewer systems. Chapter 3 discusses existing and expected future land uses and community growth. The assumptions and conclusions presented in Chapter 3 were used to develop projections of water requirements that are presented in Chapter 4.

A review of existing water system facilities is presented in Chapter 5. Chapter 6 summarizes the evaluation of the water system. A summary of recommended water system improvements is presented in Chapter 7.

A review of the existing sanitary sewer collection system is presented in Chapter 8. Chapter 9 summarizes the evaluation of the sanitary sewer system. A summary of recommended sanitary sewer system improvements is presented in Chapter 10.

A review of the existing storm water system is presented in Chapter 11. Chapter 12 summarizes the evaluation of the storm water facilities and storm sewer system. A recommended storm water management plan is presented in Chapter 13.

Chapter 14 presents the overall recommended Comprehensive Utility capital improvements plan (CIP) for the Sister Bay planning area.

Last chapter of existing version replaced with 1.3 and 1.4 (this added an additional page)

1.3 SCHEDULING OF FUTURE IMPROVEMENTS

Based on input from Village staff, a recommended CIP for the infrastructure systems has been developed. The CIP for the Sister Bay Comprehensive Utilities Plan is broken down into short-term and long-term improvements. Short term improvements generally include improvements that are needed to address existing deficiencies. Short term improvements can also include improvements to accommodate future development in areas where development is relatively cost effective, such as areas that do not need to be served by a new water system pressure zones or sanitary sewer lift stations and force mains. Long term improvements typically include providing service to future expansion areas that are located farther from the existing infrastructure systems and are more expensive to construct.

The timing of recommended future infrastructure improvements will be influenced by a number of parameters. Items such as the location of development pressure in specific areas, aging facilities and/or facilities which are undersized, availability of funds, etc., all play a role in the timing of future improvements. Because of the factors involved, it is difficult to accurately predict the timing of future improvements, especially those which may occur far into the future. However, some locations within the Comprehensive Utilities Planning area are more likely to experience rapid development than others.

Because infrastructure needs can change with time, municipal utility system planning is a continuous process. Therefore, the longer term projections and improvements discussed in this Comprehensive Utilities Plan report should be reviewed, re-evaluated, and modified, as necessary, to assure the adequacy of future planning efforts. Proper future planning will help assure that utility infrastructure system expansion is coordinated and constructed in the most effective manner.

1.4 COMPREHENSIVE PLAN USE AND FUTURE REFERENCE

This Comprehensive Utilities Plan has been prepared as a tool to guide the Village of Sister Bay in the siting and sizing of future water, sanitary sewer and storm water infrastructure improvements. While the plan represents the current recommended expansion of the Sister Bay infrastructure systems to serve the

identified planning area, future changes in land use, water demands, or customer characteristics could substantially alter the implementation of the plan. For this reason, it is recommended that the Comprehensive Utilities Plan be periodically reviewed and updated using Village planning information to reflect the most current projections of Sister Bay area growth and development.

This Comprehensive Utilities Plan is a guidance document that details existing conditions and recommendations for the future. The recommendations are based on future conditions as perceived in 2006. Estimating future conditions requires making educated assumptions about unknown parameters. As the future unfolds, these assumptions may or may not prove to be correct. Accordingly, the recommendations are intended to be used for guidance purposes only, and are generally written in an "if, then" format. In other words, if the assumptions about the future are correct, and if the Village wishes to accomplish a certain goal by some future time, then a certain course of action is necessary in order to accomplish this goal. The course of action which is anticipated to be necessary is typically presented in the form of a recommendation.

The recommendations will be implemented over time. The schedule for implementation is driven by the pace of development. As development progresses and at the time of a development proposal, the Village should look to the current form of the Comprehensive Utilities Plan to initiate the recommendations that will best serve the future development that will fill in around the proposal at hand.

As time progresses, additional information will become available and events will shape the development of the Sister Bay area. The Village's Utilities Plan must be dynamic in response; it should be studied and used for Village infrastructure project planning and budgeting, but also adjusted to conform to the changes and knowledge that will come with time. Updates should be made on a regular basis. Due to the rapid rate of growth and development expected within the planning area, it is recommended that the Sister Bay Comprehensive Utilities Plan should be reviewed and updated (as necessary) every five years.

Finally, the limited hydraulic capacity of the northern portion of the Sister Bay distribution system does not lend itself to the easy siting of a new water tower. A tower located in the northern part of the existing service area would provide minimal benefits to the southern portion of the distribution system without significant transmission main improvements. Similarly, a new tower located in the southern part of the existing service area would provide minimal benefits to the northern portion of the distribution system without significant transmission main improvements.

7.1.3 Alternative 3 - Water Tower (Elevated Storage); Combined Pressure Zones

Alternative 3 is similar to Alternative 2, and involves construction of a new 250,000 gallon water tower in the northern or central part of the High Level Pressure Zone to address the existing and future system water storage deficiency. However, in addition to the added elevated storage, Alternative 3 would also eliminate the two pressure zone system operation, by combining both pressure zones into a single zone.

Combining the pressure zones into a single zone would require the following:

- Abandon the existing seven PRV stations located on the boundary between the pressure zones
- Open all closed water main isolation valves located on the existing pressure zone boundary
- Modify Well 1 pump equipment to allow well pump to operate against the additional 90+ feet of head
- Operate the existing Hwy 57 Standpipe as a ground reservoir

The primary advantages of this storage improvement alternative are the same as Alternative 2, (greater reliability, lower operating costs, simple system control operations), but also address the water storage turnover concerns of Alternative 2. The greater demand of the combined zones would significantly reduce turnover concerns. In addition, the weak system hydraulic concerns of the northern distribution system would be eliminated by combining the pressure zones, and significantly increased available fire flows throughout the central and northern system area. Operation and maintenance of the PRV stations would also be eliminated.

The Alternative 3 water tower is still recommended to be located in the northern or central part of the existing water service area (similar to Alternative 2), and would work in conjunction with the existing Jungwirth Water Tower to establish pressure for the entire water distribution system. The standpipe would no longer establish pressure for the system, but would need to be operated as a ground reservoir.

The primary disadvantage of combining the pressure zones into a single zone would be the increased normal operating pressure throughout the Main Zone distribution system area. Pressures would increase between 35 to 40 psi in the existing Main Zone service area. Pressures in the lowest lying areas along the Green Bay shoreline would be increased to between 95 and 100 psi; however, there may be isolated properties with pressures slightly above 100 psi. The higher available system pressures would generate significantly higher available fire flows throughout the existing Main Zone service area.

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7.1.4 Storage Alternative Evaluation

The three storage improvement alternatives were screened for feasibility. Each alternative plan was evaluated with respect to each other on the basis of functional water utility operational standards. The results of this initial screening are summarized in the table below. For the terminology used in the table, a "marginal" rating indicates that, although the alternative may meet minimum criteria, it is clearly inferior

Many of the transmission mains in the northern section of the future service area may not be constructed for many years. Therefore, to better understand the probable impacts of a second water tower serving the current water system, additional computer modeling of the existing water system was performed. Two other potential tower sites were also modeled to evaluate any significant differences on existing system pressures and fire flows using the two vs. one pressure zone approach. The anticipated hydraulic impacts to the current system are graphically illustrated in the figures in Appendix E.

As illustrated in the figures in Appendix E, there are no significant differences in anticipated water system pressures between the three different tower locations using either pressure zone approach. However, as illustrated previously in Figure 7-5, anticipated fire flows throughout the entire water system are all considerably higher using the combined pressure zone approach.

A new water tower located near the wastewater treatment plant will provide the following system benefits:

Minor changes to this word- it did not affect the page layout

- System pressures and fire flows in the LGSD No. 1 area would be increased.
- Elimination of pressure fluctuations in the LGSD No. 1 service area.
- Higher needed fire flows in high density and commercial development areas would be provided.
- Land acquisition and associated costs are eliminated. Land is available (Village-owned property).
- Site is in close proximity to largest system water mains.
- Site is very compatible with existing and proposed future distribution system hydraulics.
- Site is near areas with high fire protection needs and near future growth areas.
- Water tower aesthetics are compatible with surrounding land uses (park and wastewater plant buildings).
- There would be minimal impact of future tower maintenance activities on surrounding private property. Park open space adjacent to the wastewater treatment plant is ideal for construction and future maintenance of a water tower.

Therefore, based on these reasons, it is recommended that the Village construct the proposed new water tower on Village-owned park land adjacent to the wastewater treatment plant.

7.1.5.3 Water Storage Volume

Based on the supply and storage analysis performed for this study, the Water Utility needs an additional 250,000 gallons of storage or an additional 1,500 gpm of supply capacity (or a combination of both) to meet the projected system supply and storage needs by the end of the 2025 planning period. Implementing an additional 1,500 gpm of new supply capacity (3 new supply wells) is not a cost effective approach for meeting these projected requirements.

Providing all of the needed storage for the 20-year planning period in the new water tower is not recommended. Implementation of a new 250,000 gallon water tower will create significant operational problems in the winter months, when the overall system demand falls to below 150,000 gallons per day, while the Utility would be operating 400,000 gallons of elevated storage, plus the 100,000 gallons stored in the Standpipe. Tank water freezing problems due to lack of water turnover will be a major concern for

7.5.6 Water System Ordinance Review

As part of the analysis of future improvements, a review of the Village's existing water system regulations and ordinances was conducted. The purpose of this review was to identify any changes that could be made to the ordinances that would allow the Village to better implement the water system recommendations contained in this report.

Several documents were reviewed, including the Municipal Code of the Village of Sister Bay, and the Engineering Design Manual.

7.5.6.1 Municipal Code

The Municipal Code contains the essential rules and regulations pertaining to governance of the Village. The water system is discussed primarily in Chapter 54 (Land Division and Platting Code) and Chapter 62 (Utilities).

Minor changes to this paragraph - it did not affect the page layout

Section 54.106, Water Supply Facilities. This section covers spects of constructing water distribution system facilities in conjunction with development. Section 54.106 addresses these areas quite thoroughly, and only a few suggested additions are recommended:

1. Reference this Comprehensive Utilities Plan and its role in the development review process in Section 54.106. Although this plan is conceptual and schematic in nature, this plan should be an important tool for the Village in the development review process. The plan is intended to be used as a guide, for both developers and the Village, of an efficient and economic way to construct the future distribution system. Concept plans submitted by developers should be consistent with the "spirit" of the plan, whenever possible. This may not be possible in some cases, due to unique conditions and constraints that are not known at this time. However, where it is not possible to follow the concepts identified in the plan, the developer should document why the proposed deviation would be in the best interests of the Village. Similar to the Engineering Design Manual, this plan should be kept on file at the Village Administration Building, and should be open to inspection by the public during normal office hours.

2. Section 54.105 (k) (3) states that the Village will pay some portion of the oversizing costs for water main pipes that need to be oversized to accommodate future development. Paying for and carrying this oversizing cost will be one of the major challenges that the Village will face in the future.

Minor changes to this paragraph - it did not affect the page layout

Chapter 62 of the Municipal Code is entitled "Utilities", and it provides rules for the Village water and private wells and cross connection control. Chapter 62 is quite changes are needed. Section 62-7 (e) (2) identifies accommodating property owners in routing of water mains, and suggests looping of water mains "whenever possible". The Village should only approve dead-end water mains in very special circumstances – dead end water mains compromise public fire protection and distribution system water quality, and should not be allowed to be constructed unless there is a specific plan to loop the water main in the near-term future.

Table 9-2 and Figure 9-1 show the peak flow level of existing sewer pipes under current conditions in percent of maximum capacity. Table 9-2 lists the pipe segments in four categories. The categories include:

- Pipes at 25 – 50 percent of capacity
- Pipes at 50 – 75 percent of capacity
- Pipes at 75 – 100 percent of capacity
- Pipes over 100 percent of capacity

All other sewer pipe segments not listed in Table 9-2 were estimated to be below 25 percent of capacity.

The pipe segment between MH 15 and MH 13 represents a bottleneck in the collection system, as does the pipe segments on either side of this section. This affects everything upstream, including areas to the south and west. Additional development upstream of this pipe segment will be restricted unless improvements are completed to free up additional capacity. In the following chapter, a proposed diversion is described that would free up approximately 150 residential equivalent units (see Sections 10.1.1 and 10.2.6.3). Without implementing this diversion, additional development upstream of the bottleneck is not recommended. With the diversion, there would be approximately 150 units of development available upstream (south and west) of the bottleneck.

9.2.2 Lift Station and Force Main Capacity

Lift stations and force mains were also checked for capacity restrictions under existing conditions. The estimated peak flow coming to each station was checked against the pumping capacity which had been recorded during the test pumping activities. The peak flows were also checked against the force main capacities. In each case, the estimated peak flows were less than the lift station and force main capacities. This indicates that the existing lift station and force main systems appear to be adequately sized for peak flows under current conditions.

New paragraph added - it did not affect the page layout

low flow velocities and the sedimentation of solids which results in on-going sewer maintenance problems.

This sewer pipe segment will be difficult to repair without removing and replacing the settled sections of pipe. Due to the potential for further settlement, it is recommended that the entire segment from manhole to manhole be removed and replaced. This will allow inspection of the trench bottom prior to new pipe installation, to determine if the trench bottom needs additional treatment prior to installation of a new sewer pipe.

10.1.3 Sump Manholes

Several sanitary sewer system manholes were constructed without poured inverts, and currently act as sump manholes. During periods of low flow, wastewater solids drop out of suspension into these sumps, and the sumps need to be regularly cleaned. This is an unnecessary recurring system maintenance activity that can be eliminated with proper manhole construction.

Sump manholes are found in the following locations:

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- Sister Bluff Estates: MH 73 – MH 121, and MH 123 – MH 131
- North Spring Road: MH 220 – MH 228
- Pheasant Court: MH 198 – MH 204

The remedy for the sump manhole conditions is to pour concrete inverts into the manholes. The recommended improvement will require a contractor to temporarily bypass pump around the affected manholes, properly clean the sumps, pour new concrete inverts, and allow the concrete inverts to properly cure prior to removing the temporary bypass.

10.2 IMPROVEMENTS TO MEET FUTURE NEEDS

The remainder of this chapter discusses system improvements recommended to provide sewer service to the areas within the study planning boundary that are currently unsewered. The following discussion will include the methodology used, analysis conducted, results obtained, and proposed system improvement recommendations.

10.2.1 Computer Model of Future System

A hydraulic computer model of the future sanitary sewer system was developed to aid in capital improvement planning. This model was constructed similar to the existing sanitary sewer system model described in Section 9.1, but with a few differences. The primary difference between the existing system model and the future model was in the estimated future sewer flows. Instead of using aerial photography and current zoning maps to determine flows tributary to each manhole, the future model utilized the Planning Districts Map provided by the Village to estimate future flows. The Planning Districts Map is shown in Figure 2-1.

10.2.2 Flow Generation Rates

For the purposes of sizing sanitary sewer pipes to serve future development, it is prudent to be conservative when estimating future flows. Sewer pipes can typically have a useful life of 60 years or more, and there is a relatively small difference between the cost of larger pipe sizes, compared to the cost

Using the flow rates assumed in the this report, the maximum pumping rate of 150 gpm translates into approximately 150 single family homes. Although the minimum lot size for R-1 zoning is 20,000 square feet (approx. 0.5 acre), the amount of land typically attributed to each new lot is significantly more if roadways, ponding areas, and open spaces are also included. If the diversion is constructed, it is estimated that approximately 150 residential equivalent units of capacity would be available for development upstream of the Mill Road restriction. This would include areas to the south and west of the Mill Road location.

Figure 10-5 shows one option for serving the northeast part of Region H. The approximate sewer service boundary is shown based on the existing topography. Areas beyond the limits shown would be difficult to serve without additional lift stations. This option illustrates providing service to only the undeveloped land north of Hwy 57. The interim lift station is located near Northwoods Drive in the lowest part of the service area to save costs on sewer pipe. Pump northeast along Hwy 57 to MH 317.

Paragraph revised after this point - it did not affect the page layout

Planning level costs for the interim station are summarized in Table 10-4. The force main cost is based on an assumed 6 inch diameter force main, and contains a significant allowance for rock excavation, restoration and contingencies. A detailed feasibility study should be conducted to confirm the preliminary findings before any improvements are designed or constructed.

For the purposes of this cost estimate, it was assumed that the size of the lift station would be similar to the Fieldcrest Lift Station. A less costly grinder pump system was considered due to the smaller design flows, but it was determined that the flows could exceed the recommended threshold for a grinder pump. In addition, using a 100 gpm duplex station for each option would provide the Village with the most flexibility for providing sanitary sewer service to this developing area.

10.2.7 Impact of Future Expansion on Existing Facilities

The computer model was used to evaluate the impact to the existing system of adding the flows from proposed Regions A, B, C, D, E, F, G, H and I. Other than the issues already mentioned, the results of this analysis indicated that only a single sewer pipe segment would have a capacity restriction with the addition of these flows. The affected segment is an 8 inch pipe from MH 106 to MH 104 which has a very flat slope. The model results indicate that this pipe segment would significantly exceed its capacity due to the additional flows from the north. Accordingly, it is recommended that this segment be removed and replaced with a larger diameter sewer pipe prior to the full build-out of Regions A – D. The location of this pipe segment is shown in Figure 10-6.

10.3 RECOMMENDED SANITARY SEWER CAPITAL IMPROVEMENTS

10.3.1 Estimated Cost of Trunk Facilities to Address Existing Needs

The improvements to address existing deficiencies are shown in Figure 10-1 and summarized in Table 10-1. These improvements address three different types of deficiencies: potential future capacity restrictions, pipe settlements and sump manholes.

The estimated costs to address existing deficiencies are presented in Table 10-5. These are preliminary budget estimates only, and actual costs must be determined through the competitive bidding process. The costs are in 2006 dollars and include anticipated contingencies and indirect project costs.

10.3.5 Short-Term System Improvement Impacts on Utility Revenue Requirements

Table 10-9 summarizes the results of a preliminary analysis of the probable impact on Sewer Utility revenue requirements of implementing the recommended short-term capital improvements. The effect of the short-term improvements with respect to each revenue requirement category has been estimated.

Table 10-10 summarizes projected increases in the Sewer Utility's 2005 revenue requirements with the implementation of the proposed short-term improvements. The Sewer Utility's 2005 revenue requirements were obtained from a review of the Village's 2005 Sewer Rate Study (Revision 5). It is projected that the improvements would cause the Utility's annual revenue requirements to increase by $608,800 to approximately $994,810. This represents a 258 percent increase from the revenue requirements listed in the 2005 Sewer Rate Study report. The actual impact on sewer rates would need to be determined based on the Utility's revenues in the year the improvements were constructed.

10.3.6 Wastewater Collection System Ordinance Review

As part of the analysis of future improvements, a review of the Village's existing wastewater collection regulations and ordinances was conducted. The purpose of this review was to identify any changes that could be made to the ordinances that would allow the Village to better implement the collection system recommendations contained in this report.

Several documents were reviewed, including the Municipal Code of the Village of Sister Bay, and the Engineering Design Manual.

10.3.6.1 Municipal Code

The Municipal Code contains the essential rules and regulations pertaining to governance of the Village. The wastewater collection system is discussed primarily in Chapter 54 (Land Division and Platting Code) and Chapter 62 (Utilities).

Chapter 54 of the Municipal Code contains Section 54.105, Sanitary Sewerage System. This section covers the design, installation and cost recovery aspects of constructing sewer facilities in conjunction with development. Section 54.105 addresses these areas quite thoroughly, and only a few suggested additions are recommended:

Changes to #2 below - it did affect the page layout therefore the next page was also revised, note Page 10-23 is a table page

1. Reference this Comprehensive Utilities Plan and its role in the development review process in plan is conceptual and schematic in nature, this plan should be an in the development review process. The plan is intended to be used s and the Village, of an efficient and economic way to construct the future collection system. Concept plans submitted by developers should be consistent with the "spirit" of the plan, whenever possible. This may not be possible in some cases, due to unique conditions and constraints that are not known at this time. However, where it is not possible to follow the concepts identified in the plan, the developer should document why the proposed deviation would be in the best interests of the Village. This plan should be kept on file at the Village Hall, and should be open to inspection by the public during normal office hours.

2. Section 54.104 (k) (3) states that the Village will pay some portion of the oversizing costs for sewer pipes that need to be oversized to accommodate future development. Sewer connection fees are mentioned in 54.104 (m) and these fees may be a source of cost recovery for the

oversizing. Paying for and carrying this oversizing cost will be one of the major challenges that the Village will face in the future. Section 10.3.4 of the report discusses various options for financing of sewer improvements. In addition to the connection fees which are currently being used, the Village should consider the possibility of implementing some type of an impact fee or trunk area charge to help pay for the pipe oversizing. An impact fee study should be conducted to determine the best way to proceed.

Chapter 62 of the Municipal Code is entitled "Utilities", and it provides rules for the village sewer and water system, and the abandonment of private wells. Again, Chapter 62 is quite comprehensive and thorough, and only a few suggested additions are recommended:

1. Section 62-7 is the same as Section 54.105 (c) – (n), so the comments indicated above for Section 54.105 also apply to Section 62-7.

2. Sections 62-9 and 62-10 discuss Sewer User Charge System and the method of paying these charges. The Capital Improvement Plan contained in this Comprehensive Utilities Plan should be utilized to estimate costs for repair and replacement of existing facilities. The future costs for repair and replacement of existing facilities can be programmed into the rate structure in advance, and the user rates adjusted so that funds can be generated to complete the repairs. Although a complete rate study is outside the current scope of work for this Comprehensive Utilities Plan, it is recommended that the Village consider performing such a rate study as a next step toward implementing the planned improvements.

10.3.6.2 Engineering Design Manual

The Engineering Design Manual contains Chapter 6 that deals with sanitary sewer issues. The purpose of this chapter is to provide guidance to the designer regarding the Village's requirements for design of sanitary sewer facilities. Comments on this document are listed below:

1. The design flows listed in Section B.6 appear to be higher than what is normally used for the type of land use that is expected in Sister Bay. It is recommended that the average flows used in the Village be consistent with Tables 9-1 and 10-3 of this Comprehensive Utilities Plan.

2. Required easement widths for sanitary sewer are listed in Section C.5 as 25 feet, whereas required easement widths in Village Ordinance Sections 54.105 and 62-7 are listed as 30 feet. The 30 foot dimension is recommended.

3. It is recommended that the minimum slopes listed in Section C.6 be changed to match the slopes listed in the Recommended Standards for Wastewater Facilities (10-States Standards), current edition.

is the 2005 digital ortho photos available from Door County. Development taking place after that time must meet the new rules for post-construction storm water; typically to reduce TSS by 80 percent compared to loading with no-controls. In effect, the scope of the water quality study is limited to the currently developed area, since future development is required to meet other goals and is explicitly excluded by NR 151 language. SEH's analysis with SLAMM however does include the loadings generated by future development, but assumes that the future development will meet the 80 percent reduction rule of the law.

Two of Sister Bay's stated primary concerns are to reduce and prevent beach closings and to prevent ground water contamination. This analysis and recommendations are focused on surface water pollutant loadings using SLAMM as outlined in the requested scope of services. SEH has made recommendations that provide some level of protection for ground water and will reduce pollutant loadings to Green Bay. This in turn will reduce pollutants at beaches.

Paragraph completely changed- it did not affect the page layout

13.3 STORM WATER QUALITY STUDY METHODOLOGY

The water quality analysis uses information developed as described in Chapter 12 to input to the Source Loading and Management Model (SLAMM). SLAMM version 9.1 evaluates the TSS and Phosphorus loading generated by the developed condition. SLAMM is strictly a surface water model for developed areas only which evaluates pollutant loadings. It is intended for developed areas only and is not intended for agricultural or natural undeveloped conditions. It is not a hydrologic model.

NR 151 compares annual pollutant loading of developed areas for the "no-controls" condition to the "with controls" condition. This is different from the H&H comparison of "undeveloped" compared to "developed" since water quality considers <u>only</u> the developed condition. The no- controls pollutant loading establishes the baseline of comparison. No-controls is defined as when no Best Management Practices (BMPs) are employed in the model to mitigate runoff pollutant loading. The drainage system is assumed to be curb and gutter in good condition regardless of actual conditions. The drainage system control for Sister Bay supplies some level of TSS/P reduction through the shallow roadside ditches that function as swales, a recognized BMP control in SLAMM.

13.4 SURFACE WATER QUALITY ANALYSIS

13.4.1 Water Quality Analysis

SLAMM was used to create a model that quantifies pollutant loadings from outfalls identified during the system inventory. Pollutant loadings included the amount of TSS and Phosphorus in the water for three stages. These three stages include (1) baseline (without pollution controls); (2) drainage controls; and (3) recommended BMPs to obtain the target amount of pollutant removal.

The analysis will present the pollutant load:

1. coming off the landscape with no controls, regardless of destination for the existing conditions;
2. coming off the landscape with no controls regardless of destination for the future condition;
3. reaching the surface waters with no controls for the existing condition;
4. reaching the surface waters with drainage control for the existing condition.