

November 19, 1993

Mr. Kelly P. Finn
Environmental Engineer
Industrial Programs Section
Bureau of Water
Kansas Department of Health & Environment
Forbes Field, Bldg. 740
Topeka, KS 66620-0001

Reference: Stormwater Application for Construction Activity
Reflection Ridge Development
PEC File No. 36-93004-2273

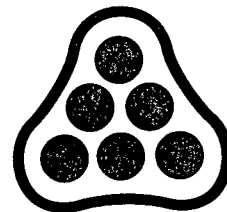
Dear Mr. Finn:

On behalf of Reflection Ridge, Inc., we hereby submit documentation relative to Reflection Ridge as requested in your letter to Mr. Marvin Schellenberg dated December 2, 1992. As you will recall, the submittal date was extended to November 30, 1993 in a letter from Ms. Marian Massoth of your office dated September 21, 1993.

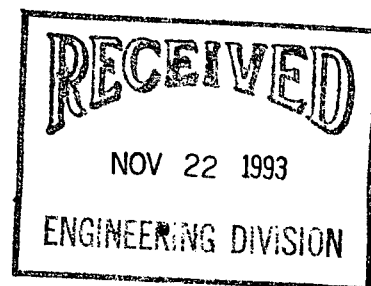
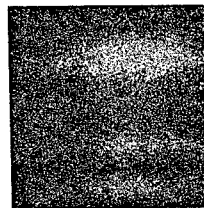
The documentation enclosed is as follows:

- Storm Water Pollution Prevention Plan (SWPPP) dated October 28, 1993, (10 pages including attachments). Please note the Developer's Statement is included as Attachment C to the SWPPP.
- Figure 1 Subdivision Plat of Reflection Ridge 6th Addition
- Figure 2 Drainage Plan of Reflection Ridge 6th Addition
- Figure 3 Detailed Drainage Plan of Reflection Ridge 6th Addition
- Figure 4 Subdivision Plat of Reflection Ridge 7th & 8th Addition
- Figure 5 Drainage Plan of Reflection Ridge 7th & 8th Addition
- Figure 6 Detailed Drainage Plan Reflection Ridge 7th Addition
- Figure 7 Detailed Drainage Plan Reflection Ridge 8th Addition

DIRECTORS: / D.E. MALTBIE, P.E. / W.H. KELTNER, P.E. / R.D. PLETCHER, P.E. / M.D. SCHOMAKER, P.E. / G.D. SCHOCK, P.E.
J.H. BAILEY, P.E., PH.D. / D.I. NORTON, P.E. / B.E. REMSBERG, P.E. / G.K. GREENWOOD, P.E. / D.E. HAGER, P.E.
ASSOCIATE DIRECTORS: / G.L. ADAMS, P.E.



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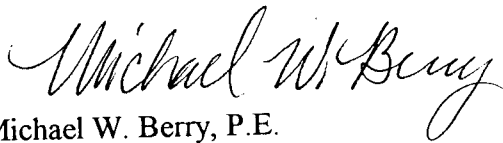
- Figure 8 Subdivision Plat of Reflection Ridge 9th Addition
- Figure 9 Detailed Drainage Plan of Reflection Ridge 9th Addition
- Figure 10 Map showing Phases 11 and 12. This area is currently vacant ground. Development planning is not yet complete.
- Figure 11 Subdivision Plat of Reflection Ridge Commercial
- Figure 12 Subdivision Plat of Reflection Ridge Commercial 2nd Addition
- Figure 13 Drainage Plan of Reflection Ridge Commercial 2nd Addition

Please note that Figures 1, 4, 8, 10, 11, and 12 depict the boundaries of the various phases; Figures 2, 5, 9, and 13 depict the contours of the natural ground as well as proposed storm sewer systems; and Figures 3, 6, 7, 9, and 13 show the elevations of the ground after construction.

We trust that this submittal completes your submittal requirements for the referenced property. Questions may be directed to Mr. Marvin Schellenberg, Vice President, Reflection Ridge, Inc., at 7926 West 21st Street, Wichita, Kansas 67212, phone (316) 721-2153. Technical questions may be directed to the undersigned at the address below, or by phone at (316) 262-2691.

Very truly yours,

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.



Michael W. Berry, P.E.
Manager
Land Development Division

MWB:ama

Encl: As noted

cc: Chris Breitenstein, P.E., City Engineer's Office w/SWPPP only
Marvin Schellenberg, Reflection Ridge, Inc., w/encl..

**STORM WATER POLLUTION
PREVENTION PLAN**

**REFLECTION RIDGE
DEVELOPMENT
WICHITA, KANSAS**

NOVEMBER 19, 1993

REFLECTION RIDGE DEVELOPMENT STORM WATER POLLUTION PREVENTION PLAN

I. SITE DESCRIPTION

A. Reflection Ridge is a residential, multi-zoned subdivision comprised of 550 acres. Phases 1 through 6 are developed and stabilized. The phases yet to be developed are as follows:

		Start	Complete
7th Phase	7th/8th Addn. (Phase II-N. of trees)	8/92	9/93
8th Phase	9th Addn.	3/93	9/93
9th Phase	6th Addn. (Phase II)	5/94	11/94
10th Phase	7th/8th Addn. (Phase III)	5/94	11/94
11th Phase	Parcel 1 C.U.P. (Along Tyler)	10/94	4/95
12th Phase	Parcel 2 C.U.P. (Along Tyler)	10/95	4/96
13th Phase	Office Park	10/89	10/96
14th Phase	Commercial	8/92	10/96

B. For each phase of the development, the sequence of activities relative to disturbing the soil are as follows:

1. Installation of sanitary sewer.
2. Installation of underground power facilities for the subdivision.
3. Installation of cable TV cables and equipment for the subdivision.
4. Installation of telephone cables and equipment for the subdivision.
5. Construction of water distribution system for the subdivision.
6. Construction of storm water sewers to drain the street improvements in the subdivision.
7. Grading and construction of streets and paving in the subdivision.
9. Installation of gas distribution system for the subdivision.

C. Summary of Areas.

<u>Phase</u>	<u>Total Area</u>	<u>Disturbed Area</u>
7th	20 Acres	15 Acres
8th	9 Acres	7 Acres
9th	18 Acres	14 Acres
10th	27 Acres	20 Acres
11th	7 Acres	5 Acres
12th	4 Acres	3 Acres
13th	12 Acres	9 Acres
14th	15 Acres	15 Acres

D. Soil Types/Impervious Area

The undeveloped runoff coefficient for the site ranges from 0.3 to 0.4. The estimated impervious area is 38% on residential lots and 85% on office and commercial lots. Golf Course and common areas are to remain pervious. Reference to the SCS Soil Survey Data indicates that the soils are sandy loam, silty loam, and loam.

E. Reference is made to the annotated drawings entitled "Drainage Plan". This map is a topographic site map which shows the proposed development in all its phases. On this site map, highlighted in orange, are all the areas of soil disturbance. Please note that after construction of all infrastructure and utility improvements are complete, all the area shaded in orange will be seeded and mulched as a stabilization measure. All areas not highlighted in orange will not be disturbed for the infrastructure and street improvements for the project.

These maps also depicts the drainage patterns and storm sewers for the proposed project. This includes detention ponds adjacent to Phase 8 and Phase 9 which serve as flood control structures to minimize the increase of runoff which results from urbanization. Drainage design calculations indicate that the 100 year discharge off the site after development will be less than that under existing conditions.

Reference is also made to drawings entitled "Detailed Drainage Plan." This drawing indicates the slopes of the site for each individual lot after development is complete.

- F. The receiving waters from this site include an unnamed tributary to Big Slough; City of Wichita, Sedgwick County storm sewer system(s) discharging to the Big Slough and an unnamed tributary to Westlink Tributary to Cowskin Creek.

To best of our knowledge, there are no wetland acres on the site.

II. CONTROLS

A. Construction Phase Controls.

1. **Stabilization Practice Controls.** Each phase is to be constructed in a similar manner. In the rear lot easement area, sanitary sewers, power, telephone, and cable TV are all constructed underground. Fourteen days after the last utility is constructed, this area will be seeded and mulched or otherwise stabilized, weather permitting.

Street pavement, water distribution, and gas distribution systems are all constructed in street rights-of-way. The street area, of course, receives paving which protects it from erosion. The area behind the curb will be seeded and mulched or otherwise stabilized 14 days after the last utility is constructed, weather permitting.

Storm sewers which discharge directly to receiving waters will be protected with silt fence at the upstream end and with rock riprap for velocity dissipation.

Rear yard easement areas contain sanitary sewer, power, telephone, and cable television facilities. These areas will be seeded and mulched or otherwise stabilized 14 days after utility construction is complete, weather permitting.

During home construction, builders will be required to institute BMPs as outlined in the Builders Requirements. (Appendix A Attached).

2. **Structural Practices.** Detention ponds were previously constructed in earlier phases of the development. Detailed design computations are available upon request.
3. **Storm Water Management.** The project incorporates several features which will minimize the runoff of pollutants after construction is complete. These include the following:
 - a. Seeding and mulching of disturbed areas along utility installation locations and along the street locations by the Developer.
 - b. Installation of sediment barriers (silt fence) at key discharge points into the ponds or receiving waters.

- c. For those lots under the ownership of the developer, each vacant lot will be seeded and mulched as weather conditions permit. In addition, after lots are sold to other parties, homebuilders will be required to stabilize the site during construction and homeowners will seed or sod each lot after construction as weather conditions permit.
- d. Regarding velocity dissipation devices, for each pipe discharging to either an open channel ditch or pond, there will be riprap installed at the outlet to dissipate the velocity to below erosive conditions.
- e. No quantitative data has been collected on adjacent development relative to the effectiveness of storm water control structures.

B. Other Controls.

1. Reflection Ridge lies within the city limits of Wichita, Kansas; therefore, all activities on the project will conform to waste disposal and sanitary sewer regulations as set forth by the City of Wichita. No septic sewer systems exist on site and none are anticipated as part of this development.
2. Construction vehicles are to stay on paved surfaces to the maximum extent practicable. Staging areas are to be surfaced with light type surfacing material. Haul roads, where used, shall be watered to minimize blowing dust.
3. The City of Wichita currently has no local sediment erosion control procedures above and beyond those required by the Kansas Department of Health and Environment.

III. OTHER PROVISIONS

A. Maintenance.

1. Turfed Areas. The primary stabilization measure on the project will be seeding. Maintenance on this measure will consist of periodic mowing and re-seeding and re-establishment of any areas where good turf cover does not develop.
2. Inlet Protection. Inlet protection measures will have the sediment removed and the device restored to its original condition whenever the accumulation of sediment reaches 1/3 to 1/2 the design height of the device. Filter fabric, when used, will be replaced immediately after it becomes clogged.
3. Rock Riprap. Stone riprap will be installed at outlet points from storm sewer systems and along the banks of the storm water detention ponds. Each site will be visually inspected on a regular basis and any sites where erosion occurs will be repaired in a timely manner as required.

4. Sediment Barrier (Silt Fence). These devices will have the sediment removed and the device restored to its original condition when sediment has reached 1/3 to 1/2 the bale height. All sediments removed shall be properly disposed of and sediment barriers shall be maintained in place until the drainage area is completely stabilized.
- B. Inspections. Storm water pollution prevention measures are to be periodically inspected and inspected after every storm. Repairs will be made as necessary to insure that the function of the device is maintained.
- C. Contractor/Subcontractor Identification. As outlined in Item I.B, there are several different stages of construction during the development. These construction projects are to be constructed under either contracts with the City of Wichita or by the various utility companies. The public improvements will be constructed under the competitive bid process. Therefore, it is impossible to identify who is responsible for the construction at this time.
- D. Non Storm Water Discharges. The following non storm water discharges are anticipated during the development of this site:
1. Discharges from fire fighting activities, if any.
 2. Fire hydrant flushings.
 3. Water line flushing and testing, including chlorination of the water line after its initial construction.
 4. Groundwater from construction sites and their dewatering activities.
 5. Foundation or footing drains.
 6. Irrigation water where required to establish turf areas.
 7. Exterior building wash down.
 8. Pavement wash waters.
 9. Air conditioning condensate.
- E. Material Management. The following materials are anticipated to be stockpiled on site during the construction of the infrastructure and the utility improvements:
1. PVC pipe for sanitary sewer and water line construction.

2. Cast iron castings for storm sewer and water line construction.
3. Reinforced concrete pipe for storm sewer construction.
4. Fabricated reinforcing steel bars to be used in construction of concrete structures.
5. Cables and equipment used for installation of cable television, power, and telephone.
6. Sand used for backfilling of trenches, leveling of bases, etc.
7. Crushed limestone used in the construction of pavement subbase.
8. Geosynthetic stabilization materials.

Best Management Practices to be instituted for City infrastructure construction are as follows:

1. The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements of the Federal, State or local health agencies.
2. All materials stored on site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure. Petroleum products will be stored in tightly sealed containers which are clearly labeled. On-site fuel storage areas shall be protected by containment dikes.
3. No materials or substances such as paints, petroleum products, solvents, detergents, concrete drum wash water or other liquids will be disposed of in the storm sewer system or into any drainage way.
4. Spills of toxic or hazardous materials will be reported to the appropriate state or city agency, regardless of size.
5. All waste materials will be collected and stored in a securely lidded metal dumpster until transported off site for disposal.
6. Work areas and/or Haul Roads shall be disced and/or watered as required to prevent blowing dust.
7. The Contractor's staging area and access route shall be located on stabilized surfaces. Minimum stabilization shall consist of KDOT Type B compaction and 2 inches of surfacing aggregate material similar to KDOT SA-1, 3, or X. Parking of company and/or employee vehicles on bare earth surfaces will not be

permitted. Stabilization of surfaces and their on-going maintenance shall be the Contractor's responsibility. The Developer will make available site(s) for use by the Contractor(s) for staging area(s).

8. Unless otherwise approved by the Engineer, on-site fueling of vehicles and equipment shall not be performed within 150 feet of any water body or drainage system inlet.
9. For all seeding and mulching work performed under this project, whether paid for under the bid item "Site Restoration" or performed under City of Wichita Administrative Regulation AR 78, application of fertilizers, herbicides or pesticides will be prohibited.
10. In the event dewatering is required, the Contractor shall develop a dewatering plan to minimize the amount of sediments discharged off site. This plan will be submitted to the Engineer for review and approval of the sediment control measures.

Best Management Practices for individual home construction are given in the attached Builders Requirements. (See Attachment A, Attached).

Restrictive covenants to be filed on the development will set forth certain measures to be taken by homeowners to protect the environment. These are given in the Restrictive Covenants (Attachment B) attached.

BUILDERS REQUIREMENTS

REFLECTION RIDGE

Pursuant to the provisions of the federal Clean Water Act, the Developer has applied to the Kansas Department of Health and Environment (KDHE) for a permit to discharge stormwater from this development under the National Pollution Discharge Elimination System (NPDES). The provisions of this program require the general contractor for home construction to institute certain Best Management Practices (BMPs) as he/she undertakes the work, in order to reduce the amount of pollutants, including construction debris and sediment, which ultimately discharge to the surface waters and/or groundwaters. The BMPs applicable to the Builder are outlined herein. Other NPDES permit responsibilities fall to the Developer, to City contractors, to other home building contractors, and to the ultimate homeowner.

BEST MANAGEMENT PRACTICES

During construction and until final seeding, the general contractor shall place hay bales secured by stakes or silt fence along the perimeter of the construction site next to the street curb or paved driveway.

Vehicles must be kept off all unpaved areas unless required by construction activity. Parking of vehicles is limited to the streets or paved driveways only.

All materials stored on-site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

No materials or substances such as paints, petroleum products, solvents, detergents, concrete drum wash water or other liquids will be disposed in the storm sewer system or other drainage ways.

Spills of toxic or hazardous material will be reported to the appropriate state or city agency, regardless of size.

All waste materials will be collected and stored in a securely lidded metal dumpster until transported off-site for disposal.

The Builder shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements of the federal, state and local health agencies.

NOTICE: The Builder will be required to sign the following statement:

I certify under penalty of law that I understand the terms and conditions of the Storm Water Pollution Prevention Plan (SWPPP) for Reflection Ridge, Wichita, Kansas, dated _____, 1993, relative to storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Name: _____

Title: _____

Date: _____

Company Name: _____

Address: _____

Phone Number: _____

Development: _____

The Builder is further required to obtain this certification from any subcontractors he/she may employ which are involved with construction activities which disturb the surface of the earth.

RESTRICTIVE COVENANTS

REFLECTION RIDGE

The property owner is hereby bound to the following requirements:

- i. No herbicides, pesticides or fertilizers will be applied to the earth's surface until vegetation has reached a good stand.
- ii. Subsequent to this establishment of vegetation, any application of herbicides, pesticides or fertilizers will be in strict accordance with EPA or KDHE requirements which may be in place at that time.
- iii. In the event a spill of toxic materials occurs on the property, the landowner will agree to contact the appropriate government agency and to clean up such spills in accordance with KDHE requirements.
- iv. No materials or substances such as paints, petroleum products, solvents, detergents, concrete drum wash water or other liquids will be disposed in the storm sewer system or into any drainage way.

**ATTACHMENT C
STORM WATER POLLUTION PREVENTION PLAN**

**REFLECTION RIDGE DEVELOPMENT
WICHITA, KANSAS**

DEVELOPER'S STATEMENT

I certify under penalty of law that I understand the terms and conditions of the Storm Water Pollution Prevention Plan (SWPPP) for Reflection Ridge Development to Wichita, Kansas, dated November 19, 1993, relative to storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Reflection Ridge, Inc.

By: Marvin Schellenberg
Marvin Schellenberg, Vice President

Date: 11/19/93

Address: 7926 W. 21st Street North, Wichita, KS 67205