

REQUEST FOR BOARD ACTION

Henderson County Board of Commissioners

Meeting Date: March 6, 2008

Subject: Water Line Extension –Hillandale Elementary
Sewer Line Extension

Attachments: Vicinity Map
Engineer’s Report
Project Summary
Project Map
County Review Sheet

Summary of Request:

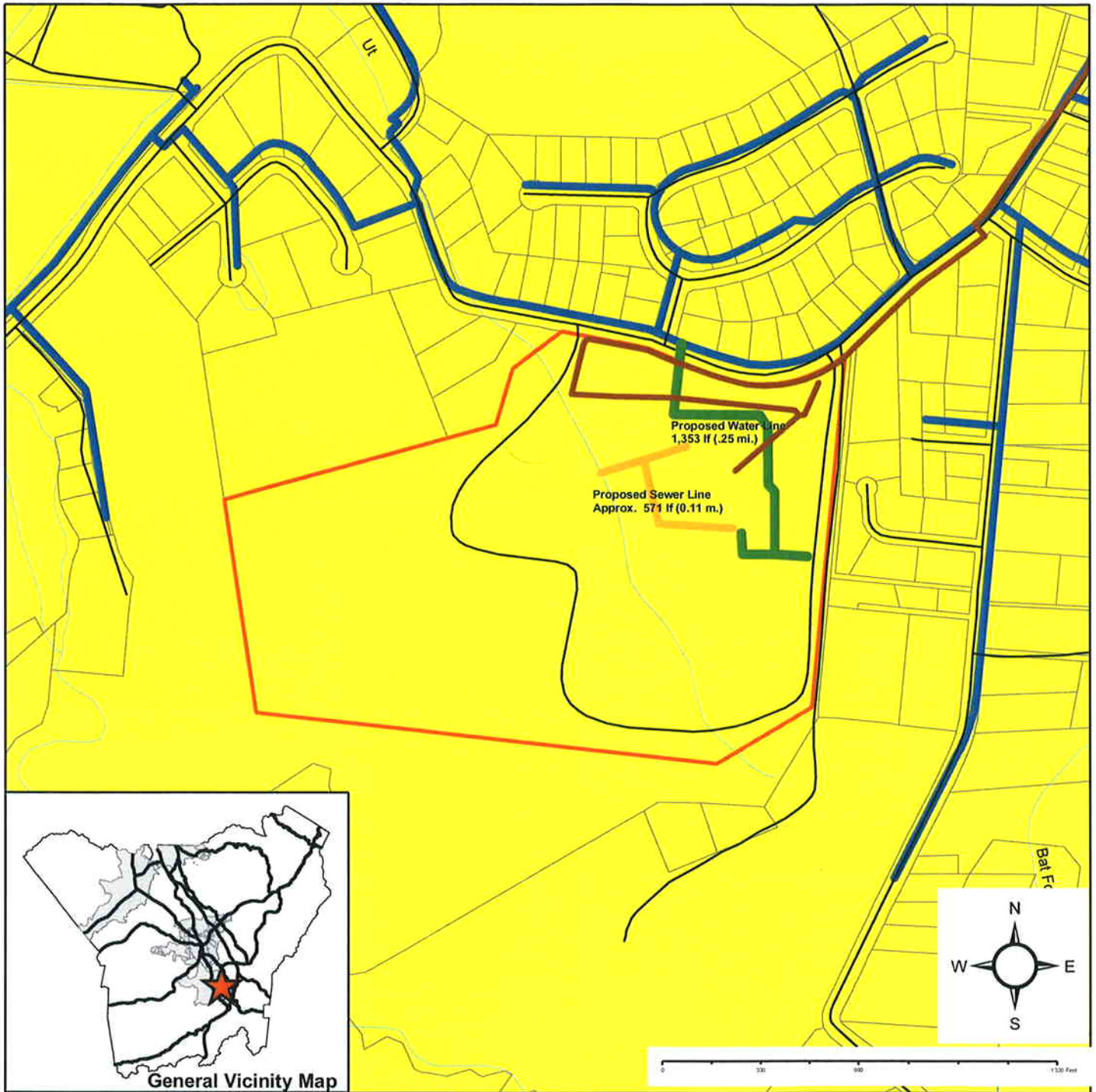
The City of Hendersonville has requested that the County comment on the proposed water and sewer line extension for Hillandale Elementary School. The proposed water line is 1,353 linear feet and includes 3 fire hydrant assemblies. The sewer line is approximately 575 linear feet. The projects’ location within the urban services area is consistent with the Henderson County 2020 Comprehensive Plan. A City of Hendersonville Project Summary Sheet, with backup documents and County Review Sheet with Staff comments, are attached for Board review and action.

Board Action Request:

Action by the Board of Commissioners is needed to either grant or deny this request. If the Board decides to approve the requested extension the following motion has been provided.

Suggested Motion:









I move that the Board approve the Hillandale water and sewer line extension and direct Staff to convey the County’s comments to the City of Hendersonville.



Hillandale Elementary

OWNER/DEVELOPER: Henderson County
 Board of Public Schools
 ZONING: R-1
 SEWER SYSTEM: Public

Legend

-  Proposed Sewer Line
-  Existing Hendersonville Sewer Line
-  Proposed Water Line
-  Existing Hendersonville Water Line
-  Streets
-  Official Blue Line Streams
-  Hillandale Elementary
-  Urban Services Area

Map Created by the Henderson County Planning Department on 2/20/2008
 See Master Plan for exact location of project.

** Engineer Indicates the presence of a sewer line near the existing creek.



 COPY

PROJECT NARRATIVE

TO: Lee Smith, Utilities Director
Water & Sewer Department
City of Hendersonville

FROM: Brian Dey, PE

DATE: Tuesday, January 29, 2008

SUBJECT: Hillandale Elementary School
PI 9906531
WATER UTILITY EXTENSION

RECEIVED
FEB 12 2008
City of Hendersonville
Water & Sewer Department

An extension of the existing water main(s) located along Blue Ridge Road and Preston Lane is required to provide water service to the above referenced project. This project is proposed to be an institutional development. The water extension will serve a total of one elementary school. The proposed site is currently owned and being developed by:

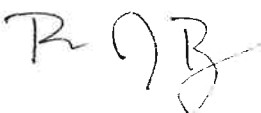
Henderson County Schools
Bo Caldwell, Senior Director for Facilities
414 Fourth Avenue West
Hendersonville, NC 28739-4261
Brian Dey, PE Project Manager
(704)-841-2588
bdey@mckimcreed.com

The sewer service for this project will be provided by City of Hendersonville.

At the present time, Stephen L Page, Ed D will be responsible for signing the Water Utility Extension Agreement (WUEA) with the City of Hendersonville.

The project will consist of installing 1322.78 linear feet of 8" CI350 DIP, 11.77 linear feet of 6' CI350 DIP, and 18.36 linear feet of 4" CI350 DIP. The project will also include three (3) fire hydrants and associated fittings. The flow rate is estimated to be 500 gpm at each fire hydrant. For more information regarding this proposed project see the accompanying preliminary plans.

This project is estimated to be completed 150 days after final grading has been completed, assuming favorable weather conditions. I, or an authorized representative of my company, will be observing and monitoring the progress of construction for this project. Should you have any questions, concerns or comments regarding this project please feel free to contact me.





Hillandale Elementary School

MC # 4099-0006

CALCULATIONS FOR:

Water Analysis

DATE: 02/08/08

REV:



MEMORANDUM

TO: City of Hendersonville
FROM: Weston Boles
DATE: February 7, 2008
RE: Technical Memorandum
Water Service Requirements
Hillandale Elementary School
M&C#: 040990006

The purpose of this Technical Memorandum is to confirm that the on-site improvements will adequately serve the both domestic water supply and fire flow requirements for the new Hillandale Elementary School. A summary of our analysis follows.

Existing Facilities

City of Hendersonville existing water facilities in this area include an 8-inch water main which is located along Blue Ridge Road. A 6-inch water main located along Preston Lane.

Henderson County Emergency Service supplied the following information regarding pressures and hydrant flow tests for a hydrant on Preston Lane. The flow test on Preston Lane is in front of the existing Hillandale Elementary School:

- * Static Pressure: 58 psi
- * Residual Pressure: 18 psi @ 712 gpm

Water System Demands

Water system demands have been calculated to be 208 gpm (peak domestic demand), with a fire flow of 500 gallons per minute. Based on these flows, the maximum demand during a fire condition would be 708 gpm.

The total daily demand is based on 800 students x 15 gallons per day per student for a volume of 12,000 gallons per day.

Hydraulic Analysis

We have prepared an analysis of the alternatives with Bentley WaterCAD hydraulic modeling software. Fire flow conditions are based on cement lined ductile iron pipe, having a Hazen Williams roughness coefficient or C-factor of 130 for the existing 8" water main, and a C-factor of 150 for the proposed 8" & 4" PVC water lines. These estimates are summarized below:

1. The available pressure at the new Hillandale Elementary School entrance is governed by the system static pressure of about 58 psi at a ground elevation of 2200 ft.
2. Under the peak domestic consumption with fire flow (708 gpm), the available residual pressure at the entrance to the new Hillandale Elementary School building, with a ground elevation of 2195 ft, is 30 psi and the available flow of 540.72 gpm.
3. Under the fire flow consumption of (500 gpm), the available residual pressure at the entrance to the new Hillandale Elementary School building, with a ground elevation of 2195 ft, is 30 psi and the and the available flow of 540.44 gpm.

Findings

Based on the hydraulic analysis performed by McKim & Creed, it appears that peak fire conditions can be met by the extension of an 8-inch water main to serve the new Hillandale Elementary School. Both peak domestic (208 gpm) and peak fire (500 gpm) demands can not, however, be met simultaneously.

**Scenario: Base
Fire Flow Analysis
Fire Flow Report**

| Label | Zone | Fire Flow Iterations | Fire Flow Balanced? | Satisfies Fire Flow Constraints? | Needed Fire Flow (gpm) | Available Fire Flow (gpm) | Total Flow Needed (gpm) | Total Flow Available (gpm) | Residual Pressure (psi) | Calculated Residual Pressure (psi) | Minimum Zone Pressure (psi) | Calculated Minimum Zone Pressure (psi) | Minimum Zone Junction | Minimum System Pressure (psi) | Calculated Minimum System Pressure (psi) | Minimum System Junction |
|-------|------|----------------------|---------------------|----------------------------------|------------------------|---------------------------|-------------------------|----------------------------|-------------------------|------------------------------------|-----------------------------|--|-----------------------|-------------------------------|--|-------------------------|
| J-1 | Zone | 2 | true | false | 708.00 | 560.21 | 708.00 | 560.21 | 30.00 | 30.01 | 30.00 | 32.17 | J-6 | N/A | -0.68 | PMP-1 |
| J-2 | Zone | 3 | true | false | 708.00 | 560.31 | 708.00 | 560.31 | 30.00 | 31.33 | 30.00 | 30.00 | J-1 | N/A | -0.68 | PMP-1 |
| J-3 | Zone | 3 | true | false | 708.00 | 556.32 | 708.00 | 556.32 | 30.00 | 30.43 | 30.00 | 30.00 | J-6 | N/A | -0.67 | PMP-1 |
| J-4 | Zone | 3 | true | false | 708.00 | 552.81 | 708.00 | 552.81 | 30.00 | 31.30 | 30.00 | 30.00 | J-6 | N/A | -0.66 | PMP-1 |
| J-5 | Zone | 3 | true | false | 708.00 | 548.15 | 708.00 | 548.15 | 30.00 | 30.87 | 30.00 | 30.00 | J-6 | N/A | -0.65 | PMP-1 |
| J-6 | Zone | 2 | true | false | 708.00 | 540.72 | 708.00 | 540.72 | 30.00 | 30.03 | 30.00 | 31.62 | J-5 | N/A | -0.64 | PMP-1 |

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02/08/08 01:36:16 PM

© Bentley Systems, Inc. Haestad Methods Solution Center Watertown, CT 06795 USA +1-203-755-1666

Project Engineer:
WaterCAD v7.0 [07.00.061.00]
Page 1 of 1

**Scenario : Base
Fire Flow Analysis
Fire Flow Report**

| Label | Zone | Fire Flow Iterations | Fire Flow Balanced? | Satisfies Fire Flow Constraints? | Needed Fire Flow (gpm) | Available Fire Flow (gpm) | Total Flow Needed (gpm) | Total Flow Available (gpm) | Residual Pressure (psi) | Calculated Residual Pressure (psi) | Minimum Zone Pressure (psi) | Calculated Minimum Zone Pressure (psi) | Minimum Zone Junction | Minimum System Pressure (psi) | Calculated Minimum System Pressure (psi) | Minimum System Junction |
|-------|------|----------------------|---------------------|----------------------------------|------------------------|---------------------------|-------------------------|----------------------------|-------------------------|------------------------------------|-----------------------------|--|-----------------------|-------------------------------|--|-------------------------|
| J-1 | Zone | 14 | true | true | 500.00 | 559.90 | 500.00 | 559.90 | 30.00 | 30.04 | 30.00 | 32.20 | J-6 | N/A | -0.68 | PMP-1 |
| J-2 | Zone | 15 | true | true | 500.00 | 560.31 | 500.00 | 560.31 | 30.00 | 31.33 | 30.00 | 30.00 | J-1 | N/A | -0.68 | PMP-1 |
| J-3 | Zone | 15 | true | true | 500.00 | 556.32 | 500.00 | 556.32 | 30.00 | 30.43 | 30.00 | 30.00 | J-6 | N/A | -0.67 | PMP-1 |
| J-4 | Zone | 15 | true | true | 500.00 | 552.81 | 500.00 | 552.81 | 30.00 | 31.30 | 30.00 | 30.00 | J-6 | N/A | -0.66 | PMP-1 |
| J-5 | Zone | 14 | true | true | 500.00 | 548.15 | 500.00 | 548.15 | 30.00 | 30.87 | 30.00 | 30.00 | J-6 | N/A | -0.65 | PMP-1 |
| J-6 | Zone | 13 | true | true | 500.00 | 540.44 | 500.00 | 540.44 | 30.00 | 30.06 | 30.00 | 31.65 | J-5 | N/A | -0.64 | PMP-1 |

**PROJECT SUMMARY
WATER UTILITY EXTENSION
Hillandale Elementary**

February 12, 2008

To: Honorable Mayor and Members of City of Council

From: Water & Sewer Department Staff

RE: STAFF RECOMMENDATION FOR ACCEPTANCE OF
WATER UTILITY EXTENSION AGREEMENT (WUEA)

This is a project to extend lines to provide water service to the **existing Hillandale Elementary School**. This project is located along **Blue Ridge Road**. This project is under the reviewing jurisdiction of **Henderson County** and is located within the **USA – Urban Services** planning area. This project **will not** involve an IBT (Interbasin Transfer) from the French Broad River Basin. The entire cost of the proposed water line extension is to be paid for by **Henderson County Schools**.

This project requires approximately **1,353** linear feet of water line sized as following:

| Approximate Length: | Description: |
|---------------------|--------------|
| 1,323 lf | 8" |
| 12 lf | 6" |
| 18 lf | 4" |

Fire Protection will be provided by the installation of **3** fire hydrant(s).

The Reviewing Jurisdiction, listed below, has completed their review of this utility extension request in regard to their adopted land use plan or in terms of its future impact on existing land uses for that local government.

Reviewing Jurisdiction: **Henderson County**

Approved Disapproved (See attached letter provided to the City by the Reviewing Jurisdiction)

Narrative Comments Provided: Yes No

Signing Official: _____
(Print)

Date: _____

Based on the above information, the Water & Sewer Department has the capacity to support this additional infrastructure and associated connections and hereby recommends approval of said project contingent upon final approval of construction plans and specifications by the Water & Sewer Department.

A motion is needed to approve and accept this project. Suggested wording for motion is as follows:

"I move to accept this Water Utility Extension Project and to authorize the City Manager to execute the associated Water Utility Extension Agreement on behalf of the City."

| | | | |
|------------------------------|-----------------------------------|--------------------------------------|-------------|
| Water and Sewer Department: | <input type="checkbox"/> Approved | <input type="checkbox"/> Disapproved | Date: _____ |
| Henderson Co. Commissioners: | <input type="checkbox"/> Approved | <input type="checkbox"/> Disapproved | Date: _____ |
| Hendersonville City Council: | <input type="checkbox"/> Approved | <input type="checkbox"/> Disapproved | Date: _____ |



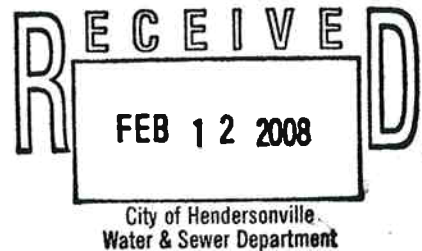
PROJECT NARRATIVE

TO: Lee Smith, Utilities Director
Water & Sewer Department
City of Hendersonville

FROM: Brian Dey, PE

DATE: Monday, February 11, 2007

SUBJECT: Hillandale Elementary School
PI 9906531
Sewer Utility Extension



An extension of the existing sewer main(s) located along Blue Ridge Road and Preston Lane is required to provide sewer service to the above referenced project. This project is proposed to be an institutional development. The sewer extension will serve a total of one elementary school generating an estimated 12,000-gallon per day of sanitary sewer for treatment by the City. The proposed site is currently owned and being developed by:

Henderson County Schools
Bo Caldwell, Senior Director for Facilities
414 Fourth Avenue West
Hendersonville, NC 28739-4261
Brian Dey, PE Project Manager
(704)-841-2588
bdey@mckimcreed.com

At the present time, Dr. Stephen L Page will be responsible for signing the Sewer Utility Extension Agreement (SUEA) with the City of Hendersonville.

The project will consist of 575.21 linear feet of SDR 35 PVC pipe. For more information regarding this proposed project see the accompanying preliminary plans.

This project is estimated to be completed 150 days after final grading has been completed, assuming favorable weather conditions. I, or an authorized representative of my company, will be observing and monitoring the progress of construction for this project. Should you have any questions, concerns or comments regarding this project please feel free to contact me.

R. O. B.

**HENDERSON COUNTY
REVIEW OF CITY WATER LINE EXTENSIONS**

Project Name: Hillandale Elementary School
 Size of Water Line (Main & Distribution Pipe Size): 1,353 linear feet with 3 fire hydrant assemblies
 County Staff Reviewing Extension: Rocky Hyder, Fire Marshal; Alexis Baker, Planner; Autumn Radcliff, Senior Planner

Has the project been reviewed under the **County Subdivision Regulations of the Land Development Code?** Yes No N/A
 Date reviewed: 2.19.08
 Action: _____
 Conditions: _____
 Comments: _____

Has the project been reviewed under the **County Manufactured Park Regulations of the Land Development Code?** Yes No N/A
 Date reviewed: _____
 Action: _____
 Conditions: _____
 Comments: _____

Has the project been reviewed under the **County Zoning Regulations (i.e. Special-Use or Conditional-Use Permit) of the Land Development Code?** Yes No N/A
 Date reviewed: _____
 Action: _____
 Conditions: _____
 Comments: _____

Is the project subject to **any other County Land Use Regulations?** Yes No N/A
 If yes, explain: _____

Does the project conform with the **2020 Henderson County Comprehensive Plan (CCP)?** Yes No N/A

Does the project have **adequate hydrant location and spacing?** Yes No N/A

Description of **hydrant type and thread:** Mueller Centurion – National Standard Thread
 Does the estimated flow rate (gpm) meet **fire protection standards?** Hydrant within 400 feet of any portion of the building Yes No N/A

BOARD OF COMMISSIONERS APPROVAL

Approved
 Not Approved
 Conditional Approval (See Comments)

Date of Board Review: _____
 Comments: _____

PROJECT SUMMARY
SEWER UTILITY EXTENSION
Hillandale Elementary -onsite

Insert Council Date

To: Honorable Mayor and Members of City Council

From: Water & Sewer Department Staff

RE: STAFF RECOMMENDATION FOR ACCEPTANCE OF
SEWER UTILITY EXTENSION AGREEMENT (SUEA)

This is a project to extend lines to provide sewer service to the **existing Hillandale Elementary School**. This project is located along **Blue Ridge Road**. This project is under the reviewing jurisdiction of **Henderson County** and is located within the **USA – Urban Services** planning area. The entire cost of the proposed sewer line extension is to be paid for by **Henderson County Public Schools**.

This project requires approximately **575.21** linear feet of sewer line sized as following:

Approximate Length: Description:
571 lf **“ PVC SDR 35**

Pump station required: Yes No.

The amount of wastewater generated by this project will be approximately **12,000** gallons per day.

The Reviewing Jurisdiction, listed below, has completed their review of this utility extension request in regard to their adopted land use plan or in terms of its future impact on existing land uses for that local government.

Reviewing Jurisdiction: **Henderson County**

Approved Disapproved (See attached letter provided to the City by the Reviewing Jurisdiction)

Narrative Comments Provided: Yes No

Signing Official: _____
(Print)

Date: _____

Based on the above information, the Water & Sewer Department has the capacity to support this additional infrastructure and associated connections and hereby recommends approval of said project contingent upon final approval of construction plans and specifications by the Water & Sewer Department.

A motion is needed to approve and accept this project. Suggested wording for motion is as follows:

“I move to accept this Sewer Utility Extension Project and to authorize the City Manager to execute the associated Sewer Utility Extension Agreement on behalf of the City.”

| | | | |
|------------------------------|-----------------------------------|--------------------------------------|-------------|
| Water and Sewer Department: | <input type="checkbox"/> Approved | <input type="checkbox"/> Disapproved | Date: _____ |
| Henderson Co. Commissioners: | <input type="checkbox"/> Approved | <input type="checkbox"/> Disapproved | Date: _____ |
| Hendersonville City Council: | <input type="checkbox"/> Approved | <input type="checkbox"/> Disapproved | Date: _____ |

**HENDERSON COUNTY
REVIEW OF CITY SEWER LINE EXTENSIONS**

Project Name: Hillandale Elementary

Size of Sewer Line: 571 linear feet PVC SDR 35

County Staff Reviewing Extension: Alexis Baker, Planner; Autumn Radcliff, Senior Planner

Has the project been reviewed under the **County Subdivision Regulations of the Land Development Code?** Yes No N/A

Date reviewed: 2.19.08

Action: _____

Conditions: _____

Comments: _____

Has the project been reviewed under the **County Manufactured Park Regulations of the Land Development Code?** Yes No N/A

Date reviewed: _____

Action: _____

Conditions: _____

Comments: _____

Has the project been reviewed under the **County Zoning Regulations (i.e. Special-Use or Conditional-Use Permit) of the Land Development Code?** Yes No N/A

Date reviewed: _____

Action: _____

Conditions: _____

Comments: _____

Is the project subject to **any other County Land Use Regulations?** Yes No N/A

If yes, explain: _____

Does the project conform with the **2020 Henderson County Comprehensive Plan (CCP)?** Yes No N/A

BOARD OF COMMISSIONERS APPROVAL

- Approved
 - Not Approved
 - Conditional Approval (See Comments)
- Date of Board Review: _____
- Comments: _____

