

Project Description

In order to improve the existing stream condition, the proposed alignment was developed based on Natural Channel Design (NCD) principles. As the name implies, the goal of NCD is to restore a degraded stream by mimicking, as much as possible, the characteristics of a stable, "natural" system. Through the use of fluvial geomorphic principles, NCD seeks to achieve long-term stability given current as well as future flow rates. The restoration proposes to construct a stable cross section, create a stable planform geometry, and to provide a stable bed material to prevent future erosion.

Project Approach

A) Realign stream to add sinuosity and to move it away from severe erosion areas. In order to reduce the amount of grading as well as tree disturbance on site, the proposed alignment was located within the existing channel as much as possible. Install grade control structures to maintain thalweg and stream bed elevation. All grade controls would be constructed out of materials found on site. (See sheet 2)

B) Restore existing channel wherever necessary in order to create a continuous grade from west culvert to east culvert to ensure proper flow rates. Install grade control structures to maintain thalweg and stream bed elevation. All grade controls would be constructed out of materials found on site. (See sheet 2)

C) Plug abandoned portion of the existing channel and leave unfilled. Unfilled sections will be turned into oxbow wetlands. The oxbows will also function as extra flood storage, there by retaining more stormwater on site and relieving shear force pressure on existing severely eroding sections of channel. The oxbows wetlands would be seeded with a native wetland mix and planted with native trees and shrubs.

Conclusion

The existing stream channel on site is currently in a degraded state. The channel is actively down cutting, and eroding banks. NCD theories, techniques, and practices were employed and modified as necessary to develop the proposed alignment and to ensure long term stability in these hydrologic conditions. The design protocol employed at the site will provide an environmentally sound, aesthetically pleasing, and structurally stable stream restoration project.

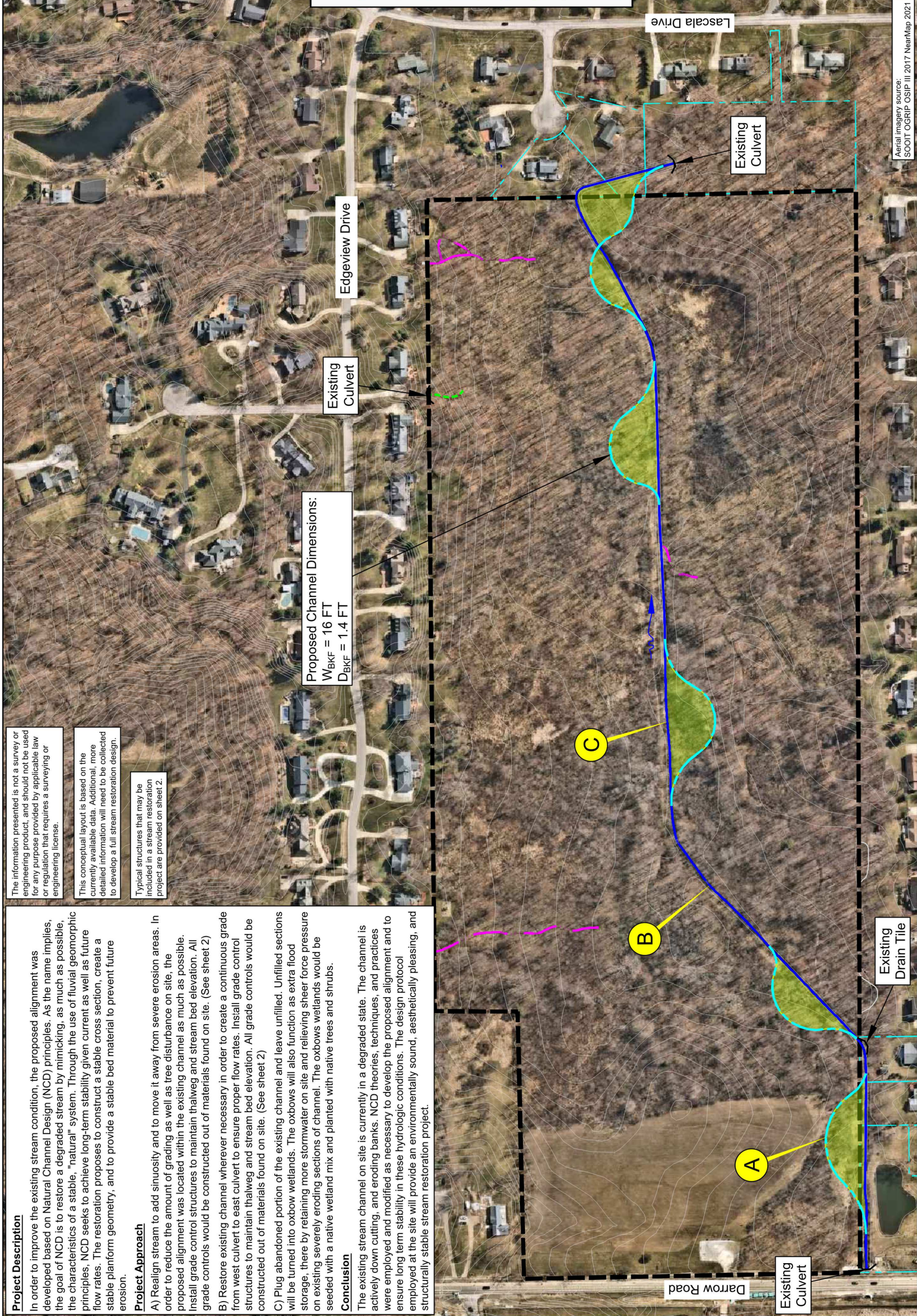
The information presented is not a survey or engineering product, and should not be used for any purpose provided by applicable law or regulation that requires a surveying or engineering license.

This conceptual layout is based on the currently available data. Additional, more detailed information will need to be collected to develop a full stream restoration design.

Typical structures that may be included in a stream restoration project are provided on sheet 2.

Proposed Channel Dimensions:

$W_{BKF} = 16 \text{ FT}$
 $D_{BKF} = 1.4 \text{ FT}$

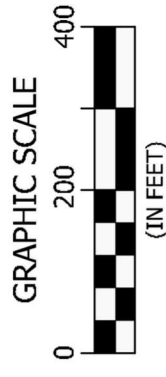


Aerial imagery source: SCOTT OGRIP-OSIP III 2017 NearMap 2021



NOTE: Wetlands sizes and stream lengths could change upon overlay of a boundary survey, especially where these features extend outside of or are in close proximity to the shown study limits. Wetlands acreage and stream lengths are calculated for the portion that occurs in the shown study limits.

- = Approximate study area
- = Property Boundary
- = Existing thalweg
- = Proposed centerline
- = Proposed oxbow wetlands
- = Existing intermittent stream
- = Existing ditch non-jurisdictional
- = Direction of flow
- = Existing wetlands



Prepared for:

City of Hudson

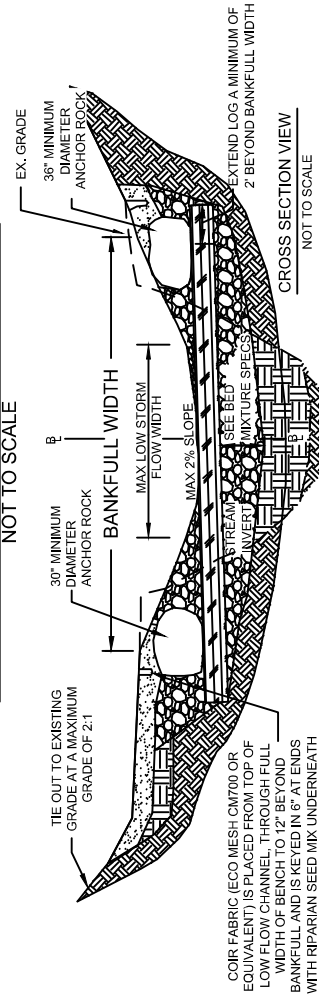
Darrow Road Park
 City of Hudson
 Summit County, Ohio

Data used to produce this map were collected on February 6, 2019, March 4, 2021

Map Sheet **1** of 2

IN-STREAM HABITAT LOG SILL

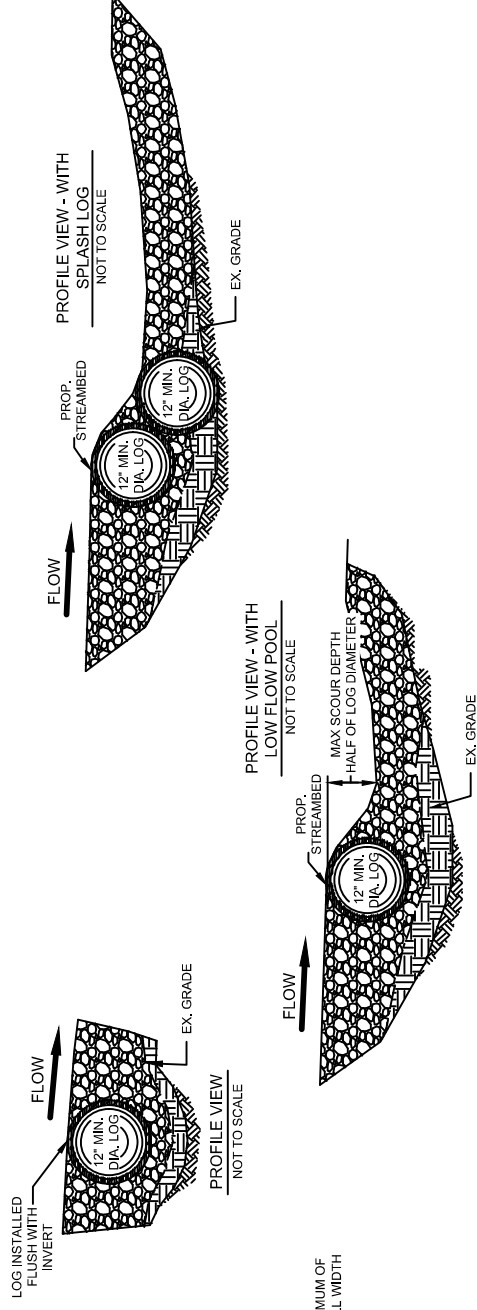
NOT TO SCALE



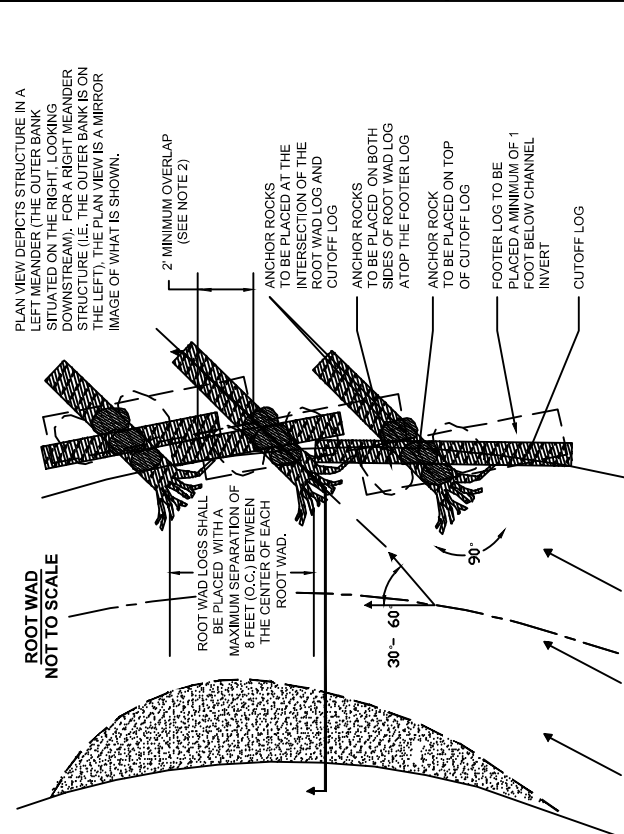
COIR FABRIC (ECO MESH CM700 OR EQUIVALENT) IS PLACED FROM TOP OF LOW FLOW CHANNEL, THROUGH FULL WIDTH OF BENCH TO 12" BEYOND BANKFULL AND IS KEYED IN 6" AT ENDS WITH RIPARIAN SEED MIX UNDERNEATH

EXTEND LOG A MINIMUM OF 2' BEYOND BANKFULL WIDTH

CROSS SECTION VIEW
NOT TO SCALE

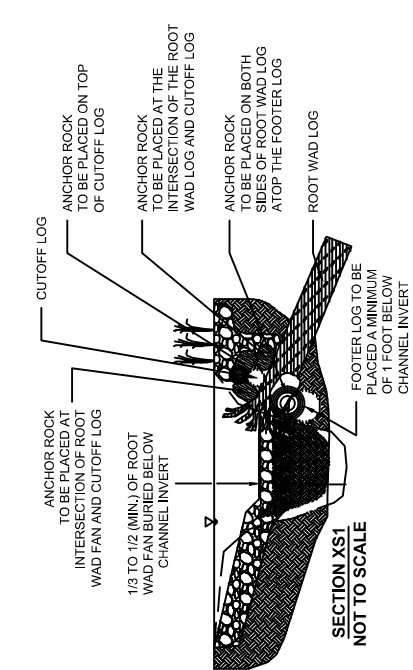


STRUCTURE DETAIL LEGEND	
	REINFORCED BED
	IN-SITU MATERIAL
	FILL MATERIAL
	TOPSOIL (3 INCH MIN.)
	FILTER FABRIC
	COIR MATTING
	STAKEOUT/WEIR POINT
	HEADER (TOP) ROCK
	WEIR ROCK
	FOOTER ROCK
	SPLASH ROCK



PLAN VIEW DEPICTS STRUCTURE IN A LEFT MEANDER (THE OUTER BANK SITUATED ON THE RIGHT LOOKING DOWNSTREAM). FOR A RIGHT MEANDER STRUCTURE (I.E. THE OUTER BANK IS ON THE LEFT), THE PLAN VIEW IS A MIRROR IMAGE OF WHAT IS SHOWN.

ROOT WAD LOGS SHALL BE PLACED WITH A MAXIMUM SEPARATION OF 8 FEET (O.C.) BETWEEN THE CENTER OF EACH ROOT WAD.
 ANCHOR ROCKS TO BE PLACED AT THE INTERSECTION OF THE ROOT WAD LOG AND CUTOFF LOG.
 ANCHOR ROCKS TO BE PLACED ON BOTH SIDES OF ROOT WAD LOG ATOP THE FOOTER LOG.
 ANCHOR ROCK TO BE PLACED ON TOP OF CUTOFF LOG.
 FOOTER LOG TO BE PLACED A MINIMUM OF 1 FOOT BELOW CHANNEL INVERT.
 CUTOFF LOG



ANCHOR ROCK TO BE PLACED AT TOP OF CUTOFF LOG.
 ANCHOR ROCK TO BE PLACED AT THE INTERSECTION OF THE ROOT WAD LOG AND CUTOFF LOG.
 ANCHOR ROCK TO BE PLACED ON BOTH SIDES OF ROOT WAD LOG ATOP THE FOOTER LOG.
 ROOT WAD LOG
 FOOTER LOG TO BE PLACED A MINIMUM OF 1 FOOT BELOW CHANNEL INVERT