
To: David De Angelis
Village of Elm Grove

From: Richard Klein, David Fowler
Stantec, Mequon WI

File: 193804481
Date: November 28, 2016

Reference: Summary of Underwood Creek Downtown Daylighting Project, Elm Grove WI

Downtown Elm Grove was subject to periodic flooding from Underwood Creek for many years. To reduce the risk of flooding, the Village undertook the Underwood Creek Flood Management Project, initiating preliminary engineering in 2003 and completing construction in 2007. The flood management project included the construction of a pond in Village Park to provide temporary storage of flood flows from Underwood Creek, the installation of a floodwater diversion tunnel around the downtown, the demolition of various buildings, and the restoration of natural floodplain at several locations along the creek. These features are shown in Exhibit 1. The project was successfully tested during the heavy June 2008 rainstorms, during which no downtown structures flooded.

Daylighting the section of Underwood Creek that currently flows beneath the Park & Shop parking lot was evaluated during preliminary engineering but was not included in the final recommended alternative. Daylighting involves restoring a creek that had been enclosed in a culvert at some point in the past to a natural, open channel condition. The Wisconsin Department of Natural Resources (WDNR), as a condition of the Chapter 30 permit they issued for the flood management project, required the Village to undertake the future daylighting of this creek segment. In accordance with that requirement, the Underwood Creek Downtown Daylighting Project (Project) proposes to daylight the 900 linear feet of Underwood Creek between Watertown Plank Road and Wall Street. The Project also provides an opportunity to complete a pedestrian trail extension through the downtown, connecting the north and south segments constructed previously. The layout of the existing channel through the downtown area is shown in Exhibit 2.

A conceptual preliminary engineering design was produced in 2003 for a new channel alignment along the east side of the parking lot. This 2003 conceptual layout is shown in Exhibit 3. Subsequently in 2016, the Village developed an updated alternative, using the former Canadian Pacific Railway spur corridor immediately east of the Park & Shop parking lot for a new Underwood Creek channel alignment. The components of this 2016 alternative are shown in Exhibit 4.

The Project will enhance the natural and aesthetic value of the stream corridor through the downtown. In addition, restoring the natural resource features of Underwood Creek and providing connections with the Village's existing trail system will enhance any proposed or planned development in downtown Elm Grove. This type of natural resource and trail enhancement has been used to good effect in many communities, including Cedarburg, Grafton, Thiensville and elsewhere, to promote economic development, pedestrian traffic, and community interest in their respective commercial centers.

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Exhibits 1 through 4 are briefly described below.

Exhibit 1: Underwood Creek 2005 Flood Management Project Features

Exhibit 1 shows the 2005-2007 Flood Management Project improvements. Excess soil from pond construction was used in Village Park to elevate and enhance various park areas. The Legion Drive flood storage area and flood water diversion tunnel work together to store and divert excess flood water from Underwood Creek around the downtown area. The Bluemound Road floodwater storage area increases flood water storage so that the flood risk is reduced downstream of the Village. The trail system that was constructed during the project and has been used by large numbers of village residents for recreation. The exhibit also shows the enclosed Underwood Creek channel culvert in the Village's downtown area.

Exhibit 2: Underwood Creek Downtown Area Existing Conditions

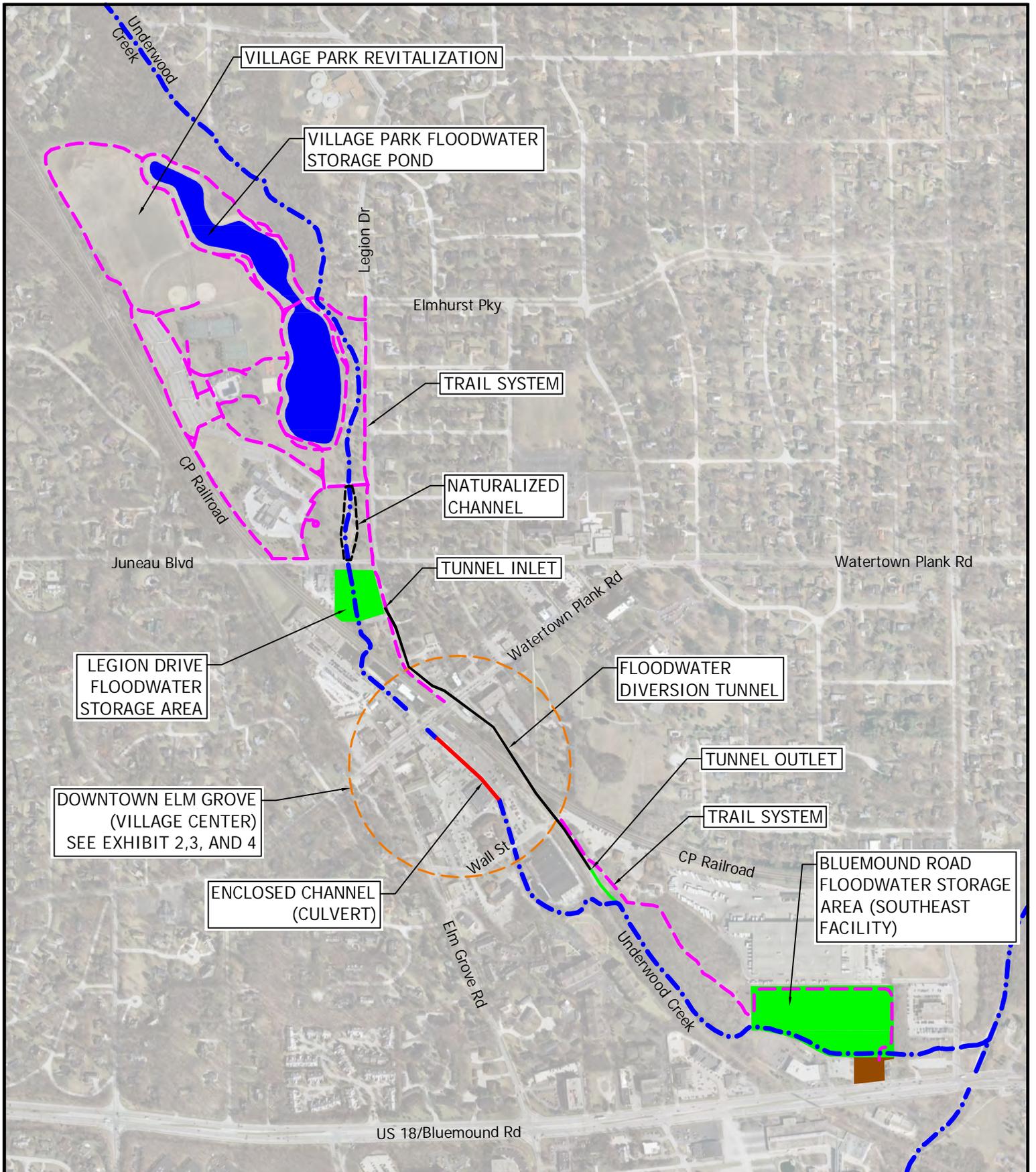
Exhibit 2 highlights the existing conditions in the Village's downtown area. The main features shown are the enclosed channel (to be taken out of service), the floodwater diversion tunnel, the existing stream channel, and the terminal points of the existing trail system on either end of the downtown area.

Exhibit 3: Underwood Creek 2003 Parking Lot Alignment Concept

Exhibit 3 shows the 2003 planning level layout proposed for daylighting Underwood Creek between Watertown Plank Road and Wall Street. Primary components in this alternative involve taking the culvert out of service and filling the channel, realigning Underwood Creek east of the existing channel, and constructing a new parking lot vehicular bridge.

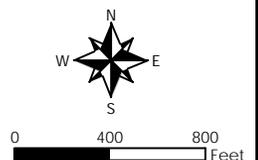
Exhibit 4: Underwood Creek Updated 2016 Railroad Alignment Concept

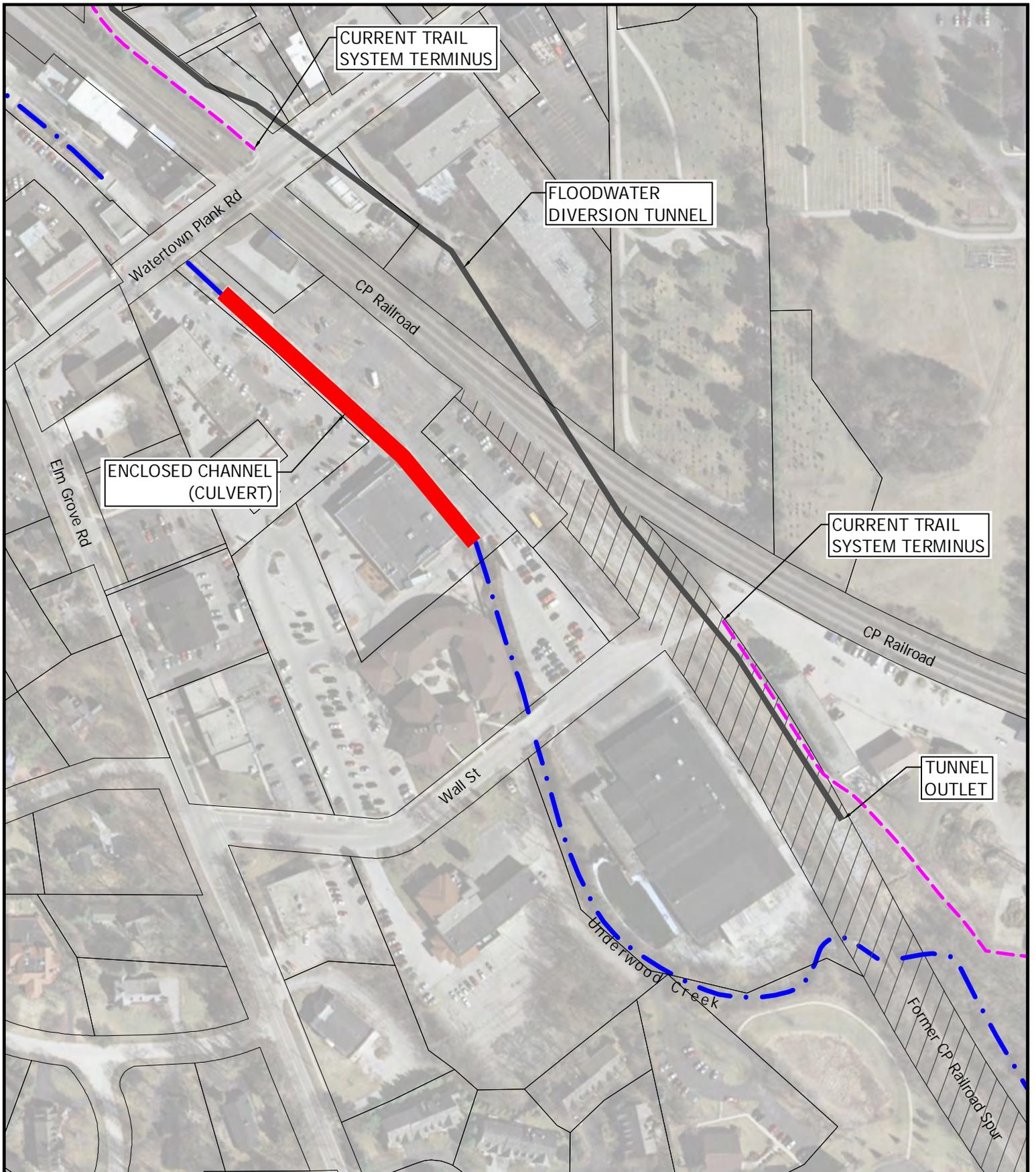
Exhibit 4 presents the updated conceptual channel realignment design that incorporates the availability of the Canadian Pacific Railway Right-of Way for use as a stream channel corridor. The exhibit shows the existing sections of open and enclosed channel that will be taken out of service, and sections of existing stream channel that will be retained as aquatic habitat and backwater flood storage area.



Notes
 1. Orthophotography: Waukesha WROC 18inch spring 2010

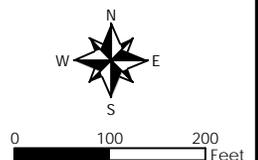
Underwood Creek 2005 Flood Management Project Features

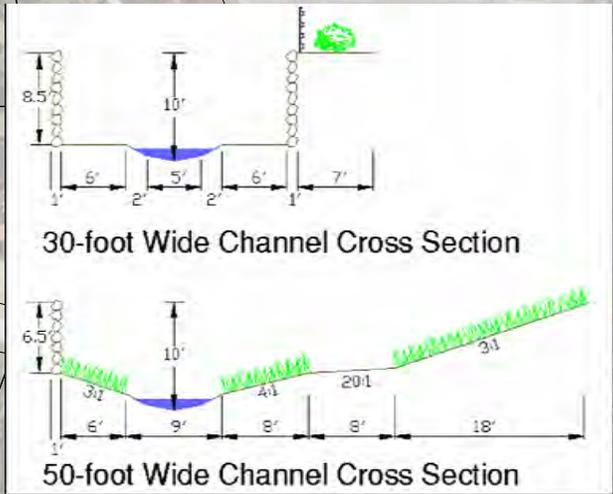
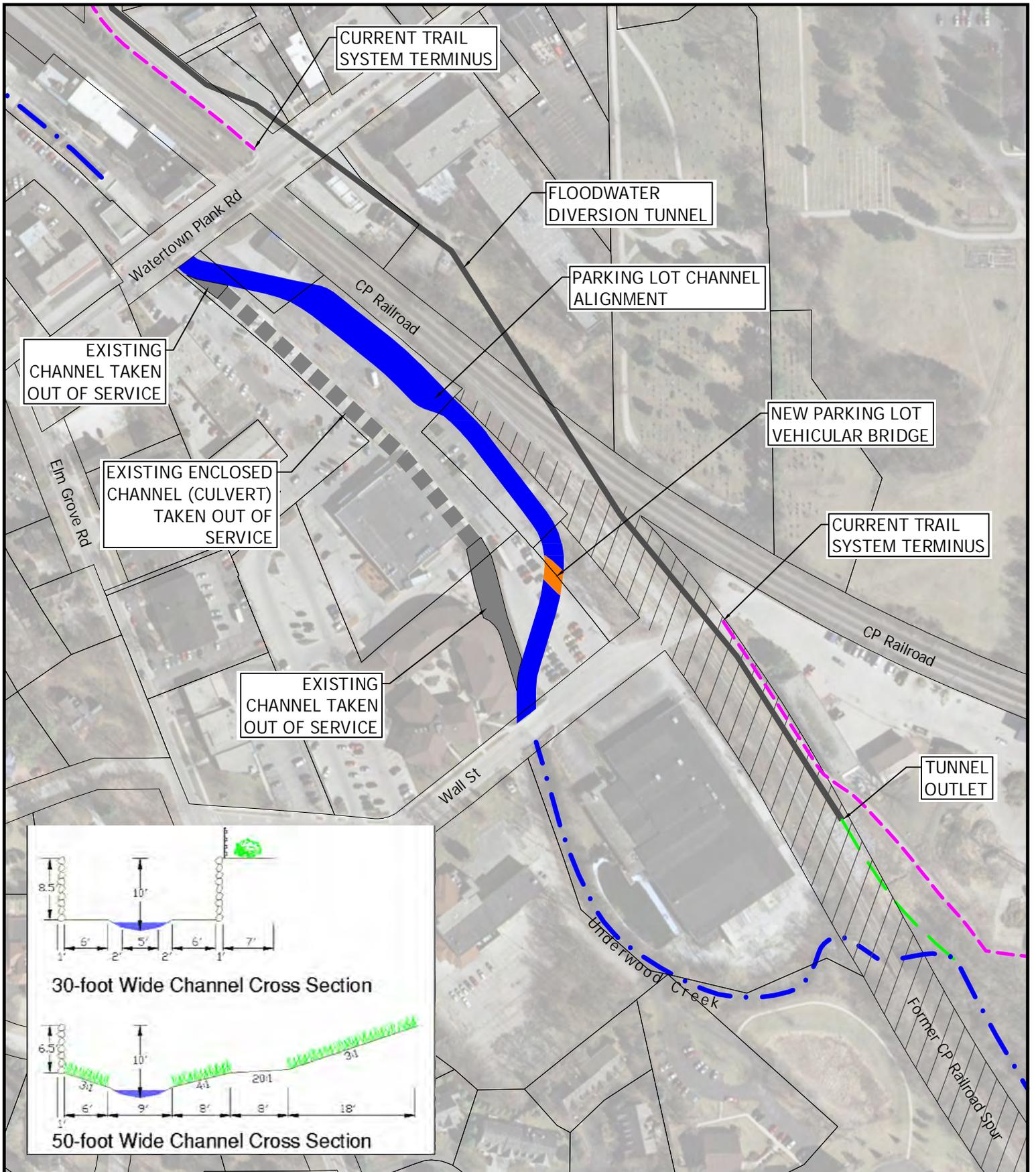




Notes
 1. Orthophotography: Waukesha WROC 18inch spring 2010

Underwood Creek Downtown Area Existing Conditions

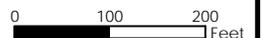


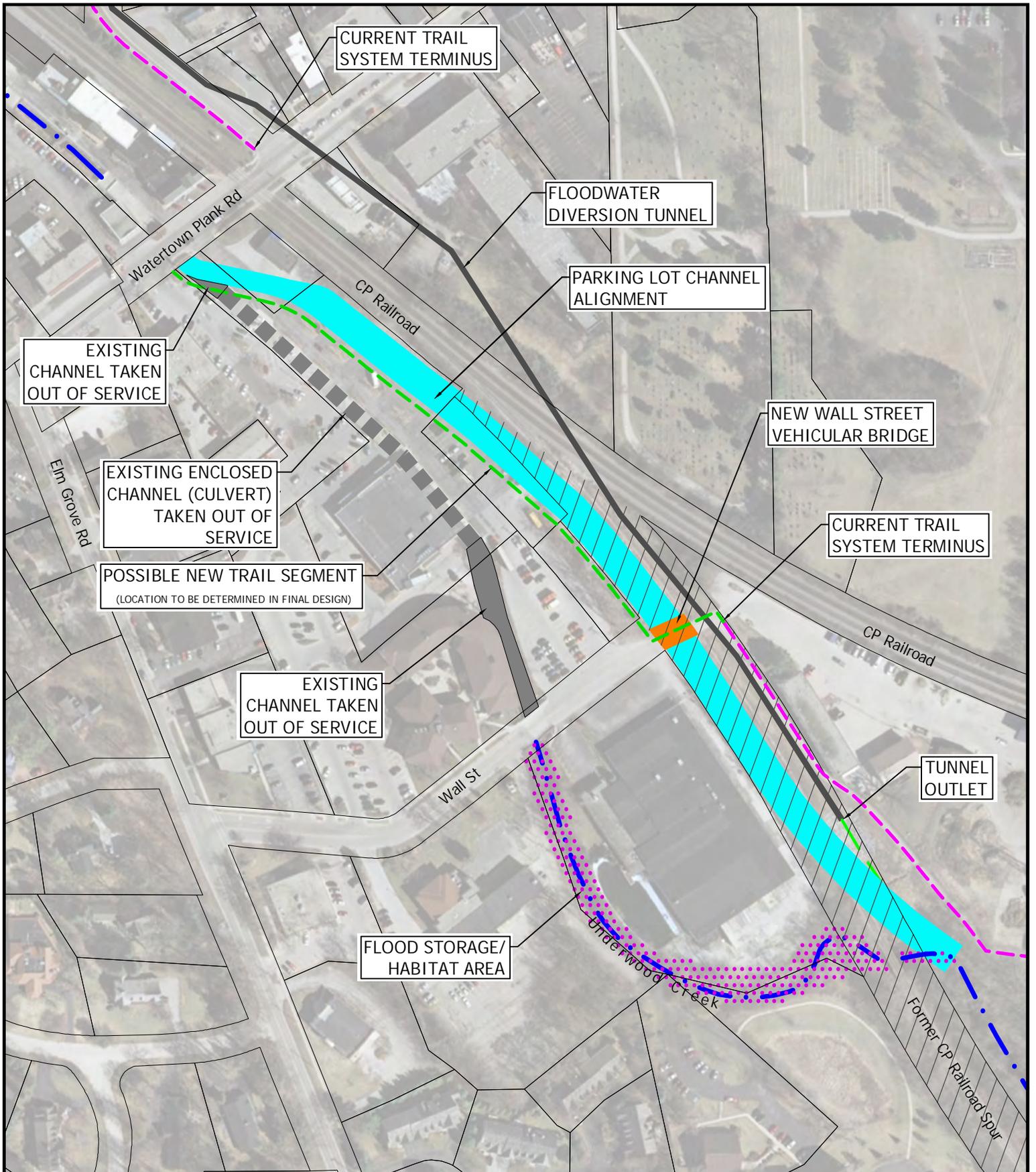


- Notes
1. Orthophotography: Waukesha WROC 18inch spring 2010
 2. Channel Cross Section: Village of Elm Grove Preliminary Engineering of Flood Control Alternatives, EarthTech October 14, 2003

Underwood Creek 2003 Parking Lot Alignment Concept

(Updated for new Watertown Plank Road bridge)





CURRENT TRAIL SYSTEM TERMINUS

FLOODWATER DIVERSION TUNNEL

PARKING LOT CHANNEL ALIGNMENT

EXISTING CHANNEL TAKEN OUT OF SERVICE

NEW WALL STREET VEHICULAR BRIDGE

EXISTING ENCLOSED CHANNEL (CULVERT) TAKEN OUT OF SERVICE

CURRENT TRAIL SYSTEM TERMINUS

POSSIBLE NEW TRAIL SEGMENT
(LOCATION TO BE DETERMINED IN FINAL DESIGN)

EXISTING CHANNEL TAKEN OUT OF SERVICE

TUNNEL OUTLET

FLOOD STORAGE/HABITAT AREA

Notes
1. Orthophotography: Waukesha WROC 18inch spring 2010

Underwood Creek Updated 2016 Railroad Alignment Concept

