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NARRATIVE

August 18, 2023

CITY OF
New Britain
CONNECTICUT

PROTECT Resilience Improvement Grant
Allen Street Narrative



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1.0 BASIC PROJECT INFORMATION

The City of New Britain is submitting the Allen Street Phase II Drainage Improvements and Reconstruction Project to Federal Highway Administration (FHWA) for a Resilience Improvement Grant from the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT).

1.1 Applicant

The City of New Britain is the applicant for a Resilience Improvement Grant for a highway project. The City of New Britain is categorized as a unit of local government. The point of contact is City Engineer Robert Trottier, who has experience with numerous federal-aid highway program funds under title 23, U.S.C. See Table 1 for specific federal-aid highway projects from the last four years with over \$45M:

Table 1. Federal-Aid Highway Projects

Year	Project Number	Project Name	Funding Amount	Funding Source
2023	88-201	Beeline Trail Phase 2 & 3	\$16M (split between New Britain & Plainville)	USDOT RAISE Grant
2023		Osgood Park Reconstruction	\$10M	American Rescue Plan Act (ARPA)
2023	88-195	Stanley Loop Trail	\$3.7M	FHWA Transportation Alternatives (TA)
2022	88-198	Beeline Trail	In Design	FHWA TA
2021	88-192	Traffic Signal Modernization	\$2.8M	FHWA Community Multiscale Air Quality (CMAQ)
2021	88-194	Main at Lafayette Safety Project	\$0.7M	FHWA Local Road Accident Reduction Program (LRARP)
2020	88-193	Beehive Bridge	\$7.5M Construction \$1.92M Grant	Federal Transit Administration (FTA) Bus Livability Grant
2019	88-185	Hart Street Reconstruction	\$2.5M	FHWA Surface Transportation Program (STP) Urban
2019	88-183	Complete Streets Ph 3	\$4.2M	FHWA STP Urban and FHWA Transportation, Community, and System Preservation (TCSP)

The City of New Britain does not have a Resilience Improvement Plan; however, the project is identified in the Capital Region Council of Governments (CRCOG) 2019 – 2024 Capitol Region Natural Hazards

Mitigation Plan. The Allen Street Project is listed as a high priority project with the goal of minimizing the impact of natural hazards on physical buildings and infrastructure.

1.2 Location

Allen Street a two-lane bi-directional roadway with an east-west orientation that is one of New Britain's major corridors connecting residents in the western part of the City to Route 9 to the east. Allen Street is classified by Connecticut Department of Transportation (CTDOT) as an urban major collector between Farmington Avenue and Stanley Street. Allen Street is a classified by CTDOT as an urban minor arterial between Stanley Street (State Route 71) and East Street. Between Stanley Street and East Street, Allen Street is State Route 175. See attached Location Map.

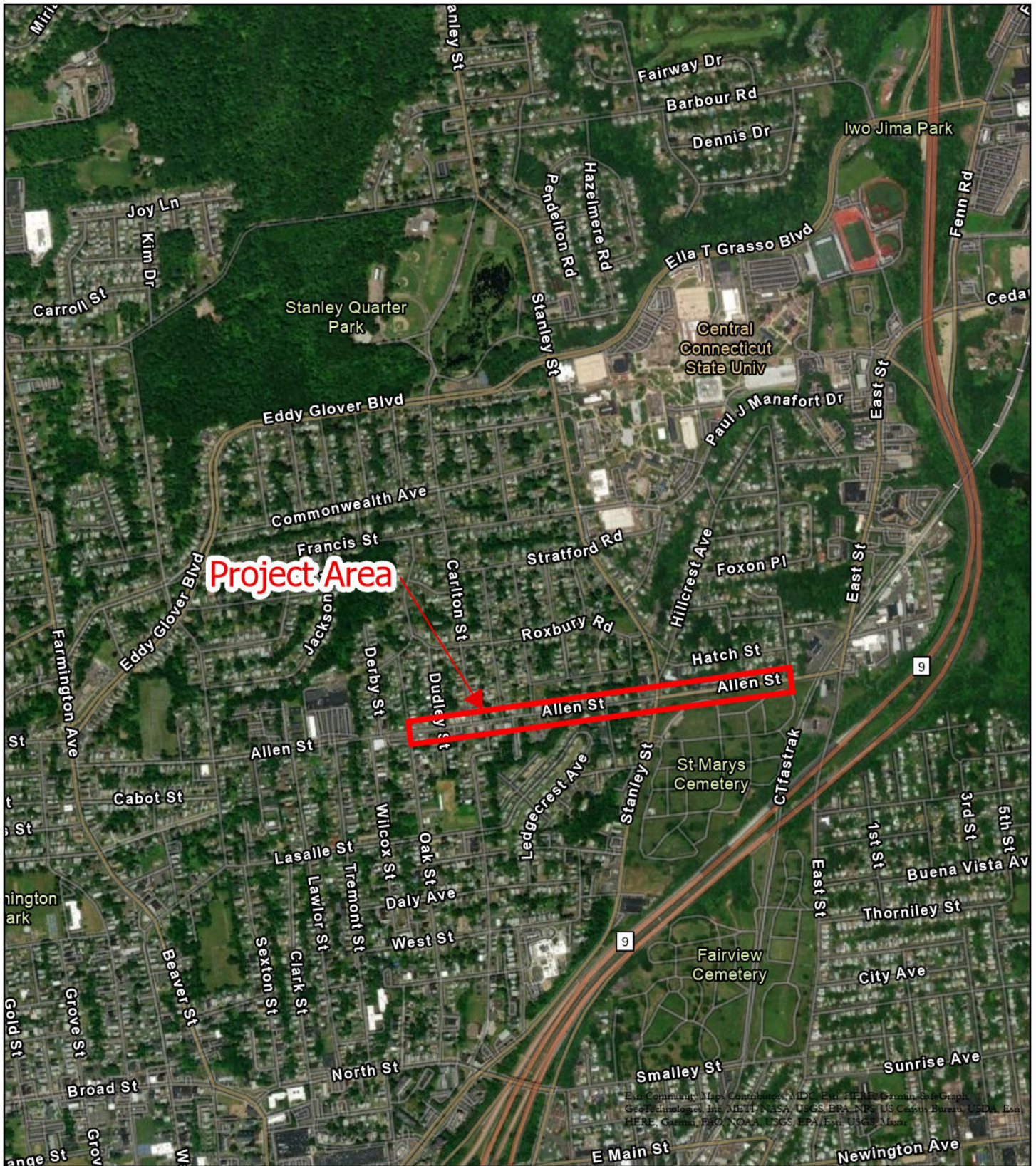
Allen Street is within multiple zones including neighborhood business, two family, multi family houses and single family. Businesses include food markets, restaurants, pharmacy, and professional services such as car maintenance and electricians. The Project is located within a disadvantaged community based on Climate and Economic Justice, but the project is not located within a Transportation Disadvantaged Census tract. Allen Street is in a FEMA Zone X according to the FEMA FIRM Maps 09003C0491F and 09003C0492F. Both maps were effective on 9/26/2008.

1.3 Project Description

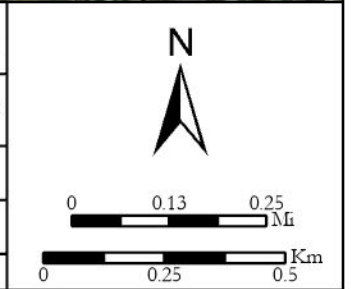
Cardinal Engineering Associates designed Allen Street Drainage Improvements and Reconstruction in 2013. The Allen Street Project includes storm drainage, sanitary sewer, and roadway improvements on Allen Street between Farmington Avenue and Beacon Street. The existing storm sewer on Allen Street flows from west to east and ultimately discharges into Piper Brook (west of Route 9). Phase I of the Allen Street Project between Farmington Street and Oak Street was completed. Phase II of the project between Oak Street and Beacon Street was designed up to semi-final plans. The City plans to complete final design, bid the project and start construction in Spring 2024 pending funding.

The storm and sanitary improvements are needed to correct periodic back-ups and roadway flooding in the vicinity of Stewart Street and to replace the undersized and aging systems, which are over 100 years old. Severe flooding occurs approximately every year, and the roadway must be closed to traffic due to the depth of flow. This flooding also caused damage to private properties. Furthermore, sanitary sewer lines are inundated with stormwater inflow after storms, which causes sanitary sewer backups into residential homes.

The improvements include approximately 2,400 feet of full depth reconstruction between Oak Street and Stanley Street. Additional improvements include reconstructing curbs, sidewalks, and driveway aprons, which will be impacted during excavation and installation of the sewers. Sections of the existing storm and sewer mains are over 17 feet deep and located in areas with ledge. Approximately 1,200 feet of roadway will receive a mill and overlay between Stanley Street and Beacon Street to restore the roadway after excavation and installation of the storm and sewer sewers.



<p>FIGURE 1: LOCATION MAP</p> <p>ALLEN STREET - NEW BRITAIN, CT</p> <p>Weston & Sampson</p>	<p>DRAWN BY:</p> <p>LEC</p>
	<p>REFERENCE:</p> <p>NA</p>
<p>Coordinate System: NAD 1983 2011 StatePlane Connecticut FIPS 0600 Ft US</p>	<p>DATE:</p> <p>8/18/2023</p>
	<p>PROJECT #:</p>



2.0 GRANT FUNDS, SOURCES AND USES OF ALL PROJECT FUNDING

The project will be paid for by the PROTECT grant, the City of New Britain, and CTDOT. The total cost of the Allen Street Project is around \$7M, and the estimated cost of items required to install drainage and sanitary improvements is calculated to be \$5.25M. The construction budget is reported in 2023 dollars while the Benefit Cost Analysis (BCA) was reported in 2021 dollars. 80% of the project (\$4.2M) will be covered by the PROTECT grant while the remaining 20% (\$1.05M) will be covered by non-federal sources. The City of New Britain will fund the project through its Stormwater Utility. CTDOT will cover the cost of the full depth reconstruction on the state road portion of Allen Street. Refer to Appendix A for details about the project cost in 2020 dollars.

3.0 MERIT CRITERIA

The Allen Street Phase II Project meets the eight required merit criteria described below.

3.1 Vulnerability and Risk

The Allen Street Phase II Project provides improvements to the storm sewer system, which will reduce potential flooding. Over the last 18 years, storms producing over 1.5-inches of precipitation have caused Allen Street to flood. See Table 2 for more information.

Table 2. Historic Storms

Rainfall Event Date	Precipitation
October 15, 2005	Over 12 inches
July 21, 2010	12 to 18 inches
November 2, 2013	4 to 8 inches
April 16, 2018	Over 2 inches
October 2, 2018	Over 2 inches
September 1 -2, 2021	5 inches
July 3 - 4, 2023	4 inches
July 14, 2023	1.6 inches

The proposed improvements include increasing pipe sizes and installing additional catch basins and double grate catch basins. The additional catch basins will help reduce the gutter spread along the roadway while the larger pipes will convey the 10-year storm (5.27 inch over 24 hours) and prevent stormwater from surcharging out storm structures. The sanitary sewer will be replaced with proposed 18" PVC pipes. A backflow valve will be placed on a home that has experienced multiple sanitary sewer backups.

Allen Street has historically experienced extreme rain events, which have resulted in flooding and sanitary sewer backups. This project will improve the storm sewer system, which will reduce the amount flooding caused by exposure to storm events.

3.2 Criticality to Community

Allen Street is an urban major collector between Oak Street and Stanley Street. Allen Street (State Route 175) is an urban minor arterial between Stanley Street and Beacon Street. Land use along Allen Street includes businesses and residential buildings including single-family, multi-family, and apartments. Allen Street connects residents from western New Britain to Route 9. Central Connecticut State University is located north of Allen Street.

The Average Annual Daily Traffic (AADT) on Allen Street and Stanley Street was calculated in 2021. The COVID-19 pandemic may have impacted the traffic counts. The AADT values from the CTDOT Traffic Monitoring Data are listed below:

- Allen Street between Trenton Street and Stanley Street has an AADT of 7000.
- Allen Street (175-E) between Stanley Street and East Street has an AADT of 7500.
- Stanley Street (71-N) between Allen Street and Francis Street has an AADT of 6800.

3.3 Design Elements

The proposed storm sewer was designed to convey a 10-year design storm in accordance with the CTDOT Drainage Manual. The Rational Method was used to calculate design flows.

The Autodesk Program AutoCAD Civil 3D Hydraflow Storm Sewers was used to model the proposed storm and sanitary sewers. Open Channel Flow Module Version 3.43 (c) Haestad Methods, Inc. was used to analyze the existing pipes downstream of the project.

The project includes the planting of 18 shade trees and 25 ornamental trees. Additional, green infrastructure was not proposed due to ROW limitations and density of utilities in the roadway.

The City of New Britain will maintain the storm and sanitary systems. In accordance with the City's Municipal Separate Storm Sewer Systems (MS4) Annual Report, the street will be swept at least once annually. The catch basins will be inspected and cleaned in accordance with the City's catch basin cleaning program.

3.4 Public Engagement, Partnerships and Collaboration

For the Allen Street Project, public involvement has included communication with impacted property owners. The City of New Britain plans to hold a public involvement meeting once commitment of funding is received. Additionally, the City of New Britain has a system for residents to submit maintenance requests to City infrastructure called SeeClickFix <<https://seeclickfix.com/new-britain>>.

3.5 Equity and Justice

Approximately 69% of the buildings (calculated based on the number of family units or apartments per parcel) adjacent to the Project Area are within a disadvantaged community according to the Climate and Economic Justice Screening Tool. The following census tract areas are adjacent to the Project Area:

- 09003416200
- 09003416300
- 09003417200

The Project will reduce nuisance and extreme flooding, which impacts residents and business owners on Allen Street. Flooding prevents residents from traveling to jobs and businesses from opening.

3.6 Climate Change and Sustainability

The project includes the planting of 18 shade trees and 25 ornamental trees. The inclusion of trees reduces impervious areas. Trees also provide storm water treatment.

3.7 Schedule and Budget

The engineering design is in the semi-final stage, and construction is anticipated to start in Spring 2024, pending funding. It is anticipated that the entire project will take approximately 2 years (with two construction seasons) to complete from contract execution to project close out. The anticipated schedule is as follows in Table 3.

Table 3. Schedule

Project Milestone	Duration	Task
Contract Execution	2 months	This task consists of completing any needed tasks associated with the PROTECT Grant Award process.
Bidding and Award	2 months	The City will advertise the Project and accept bids. The City will award the Project to the lowest bid pending review of Contractor.
Construction	16 months excluding winter shutdown (2 seasons)	Stake out the project limits. Coordinate required utility relocations. Excavate limits of proposed storm and sanitary sewer and install sewer pipes and structures in accordance with the plans. Backfill trenches and install temporary pavement at the end of each day. After the sewers are installed, roads will be paved and painted.
Project Closeout	2 months	The Project Site will be cleaned, inspected, and as-built drawings will be prepared.
Total Time	20 months	

The project budget is \$4.55M. A more detailed cost estimate for construction can be seen Appendix A.

3.8 Innovation

The Allen Street Phase II Project includes complete street concepts to provide access to vehicles, bikes, and pedestrians. Sidewalks will be improved to meet ADA standard. Bike lanes will be provided along both sides of the street.

The City of New Britain will match the funding through funds raised by the stormwater utility. New Britain is one of two municipalities in Connecticut that have implemented a stormwater utility to generate direct, stable funding for stormwater management.

4.0 ECONOMIC ANALYSIS

The City of New Britain does not have a Resilience Improvement Plan; therefore, a Benefit Cost Analysis (BCA) is included.

4.1 Benefit Cost Analysis Narrative

The Allen Street Drainage Improvements and Reconstruction, Phase II project is a storm drainage and sanitary sewer improvement project on Allen Street between Oak Street and Beacon Street. The improvements include approximately 2,400 feet of full depth reconstruction between Oak Street and Stanley Street. Approximately 1,200 feet of roadway will receive a mill and overlay between Stanley Street and Beacon Street. The benefits and costs of the project were analyzed through a benefit-cost analysis (BCA) in accordance with USDOT's recommended methodology. Table 4 summarizes the benefits and cost of the analysis. It is anticipated that the Allen Street project will provide transportation, stormwater runoff, social and prevented damages benefits that will exceed the project costs with a BCA of 1.14.

Table 4. Benefits and Project Costs

Benefit Description	Allen Street Benefit Value (7% Discount Rate)
Travel Time Savings	\$ 383,688.76
Social Benefits	\$ 519,607.93
Relocation Savings	\$ 14,383.14
Prevented Property Damage	\$ 2,641,564.53
Wastewater Services	\$ 103,774.46
Residual Value	\$ 599,308.44
Total Project Benefits	\$ 4,262,327.25
Project Costs	
Total Project Costs	\$ 3,825,270.40
Benefit Cost Ratio	1.11

The BCA assumes that the project will be constructed in 2024 and benefits will begin in 2025 after construction is completed. All benefits and costs were adjusted to 2021 dollars per the USDOT recommendations for FY 2023 applications. The recommended USDOT discount rate of 7% was applied to all cost and benefits. The following sections further describe each benefit and cost, as well as the methodology and assumptions used.

4.2 Project Benefits

The majority of the project benefits are related to the reduction in stormwater runoff and the associated damages caused by excessive runoff generated by storm events. The USDOT does not currently have

a recommended methodology to quantify the benefits from stormwater runoff reduction. The Federal Emergency Management Agency (FEMA) methodology was used to quantify the benefits associated with stormwater runoff. The benefits were determined by valuing the historical damages before mitigation during five damage years and six historic events where excessive runoff within the roadway was documented. Based on the five damage years the FEMA BCA methodology produces an automated Annualized Recurrence Interval for each damage year. The annualized recurrence intervals for the five damage years were used in this BCA analysis to annualize the benefits. Damage years occurred between 2005 and 2021 and were annualized based on a 20-year analysis interval from 2004 to 2023. 2004 was used as the start of the analysis based on when Allen Street was last repaved.

A total of seven storm events were used for the analysis. On October 15, 2005, there was a county wide storm event resulting in over a foot of water reported in flooded basements. Data was provided from the National Centers for Environmental Information. On July 21, 2010, there was a flood that produced up to and over a foot of floodwater within the City. On Corbin Avenue near the project area there was between 12 to 18 inches of floodwater traveling along the roadway. On November 2, 2013, a smaller storm event occurred resulting in four to eight inches of water along roadways. On April 16, 2018 and October 2, 2018, two separate storm events occurred with over 2 inches of recorded precipitation for each event. On September 1 - 2, 2021 where a combined total of about 5 inches of precipitation fell. The final storm event on July 3-4, 2023 produced 4 inches of recorded precipitation.

4.2.1 Value of Travel Time Savings

The impact area of this project is Allen Street. Allen Street has many intersecting streets within the project limits, which are all effected by the periodic flooding that occurs. This means that a flood on Allen Street could lead to impassable roads and damages on the intersecting streets. When determining the level of use of Allen Street, the volume of traffic on Allen Street and the volume of traffic on Stanley Street were considered. Stanley Street is a state-owned roadway and is the only significant roadway within the project limits; therefore, it was selected to be included in the analysis. The volume of the roadways was determined using the State's Department of Transportation Traffic Monitoring Station Viewer. Daily counts from 2021 were utilized. It should be noted that the most recent counts are from 2021, which may have been affected by COVID-19. There were a recorded AADT of 6,800 on Stanley Street at the intersection of Allen Street and an AADT of 7,500 on Allen Street at that same intersection. A total of 14,300 one-way trips were estimated.

Two different detours had to be evaluated: a closure affecting Stanley Street and a closure affecting Allen Street. A closure on Allen Street would cause a vehicle trip to increase by 2.8 miles (approximately 8 minutes). A closure on Stanley Street would cause a vehicle trip to increase by 4.1 miles (approximately 12 minutes). For each closure it is assumed that intersecting streets would also be impassable and were therefore avoided. Using Table A-3 Travel Time Savings in Appendix A of the USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs a value of \$18.80 per person hour for all purposes was selected to represent the loss of road usage during flood events. It was assumed based on storm data that the roadway floods at least once a year; therefore, it was estimated that the road would only flood for one day. The prevented detours and therefore time savings discounted at 7% is 0.48M.

4.2.2 Relocation

During the 2018 damage year an entire apartment complex was flooded leading to the evacuation of all of the residents and temporary relocation. The apartment complex that flooded left approximately 33

residents temporarily without housing. Based on the average rental costs within the area at that time the monthly rent was estimated to be \$1400 (2018\$). This cost was inflated to 2021\$, multiplied by 33 residents and annualized based on the FEMA automated annualized recurrence interval. The prevented relocation was discounted at 7% for a total of 14K.

4.2.3 *Social Benefits*

The mental stress and loss of work productivity associated with roadway closures and property flooding was estimated using the FEMA standard value for estimating social benefits. Based on the FEMA methodology social benefits were only applied once at a value of \$2,443/person for mental stress and anxiety and \$8,736/person for lost productivity. A total of 33 people in the 2018 apartments floods lost productivity and another 12 people were assumed to have a loss of productivity as well based on the residential housing in the nearby proximity to the apartment complex. For mental stress and anxiety 100 residents were assumed based on the stress experienced from those nearby the routine flooding areas worried about their property flooding in addition to those in the 50 in flood zone. The prevented social damages discounted at 7% is 0.52M.

4.2.4 *Prevented Property Damage*

Repetitive flooding along Allen Street has led to repetitive residential property damage. Property damage has been documented in the form of receipts, photos and residential accounts. The residential damage for each damage year was estimated on the basis of the \$5,000 claim that was paid by the City to an Allen Street resident as a result of the 2005 storm event. For 2005 it was assumed that 100 residents also had \$8,000 worth of damage. In 2010 the storm events were smaller than 2005 and the damage per household was assumed to be \$2500. In 2013 the smallest event occurred therefore only \$1000 in damage per residential household. In 2018 multiple large events occurred leading to flooding and \$8000 per residential household was assumed for damages for the year per household. The storm event led to the relocation of 33 apartments due extension damage from roadway flooding. Finally in 2021 and 2023 it was assumed that the storm events were similar to the 2010 event. The total prevented property damage discounted to 7% is 2.6M.

4.2.5 *Wastewater*

As the Allen Street area grows so does the need for increased wastewater capacity and improvements to the aging system. The current system causes backups within homes and loss of use during frequent storm events. FEMA BCA guidance for loss of wastewater services were used in this analysis. FEMA sets the standard value of wastewater services at \$60 per day. It was assumed that there are 200 customers who utilized wastewater connected to Allen Street, and they lose service a combined one day a year with the current under capacity system. The discounted value at 7% is 0.1M

4.2.6 *Residual Value*

The project is expected to have a 50-yr useful life based on the FEMA standard value for roads, major drainage systems, and wastewater systems. This BCA analyzes the benefits and cost over a 20-year period, there is a residual value of 20 years of useful life. The BCA guidance recommends a straight-line depreciation over the useful life of the project component. The remaining useful life value discounted at 7% is \$0.5 M.

4.3 Project Costs

4.3.1 Capital Costs

The capital costs for the project are based on an estimate developed by Cardinal Engineering during the project design. The project is expected to be constructed during a 2-yr period and begin in 2024. The capital cost discounted at 7% is \$3.8M.

4.3.2 Operations and Maintenance Costs

The project will require annual maintenance including catch basin cleaning within the project and surrounding upstream watershed as well as and periodic cleanings after heavy rainfall. A mill and overlay will be required at least once in the useful life of the project. Additionally, maintenance includes regular sewer rodding due to high grease levels in the area. The City of New Britain projects that the regular operation and maintenance cost for the project will be approximately \$10,000 per year. The operation and maintenance costs discounted at 7% total \$86K.

5.0 FHWA PRIORITY CONSIDERATIONS

5.1 Exceptional Benefits under Merit Criteria #5 (Equity and Justice40)

Per the USDOT Equitable Transportation Community data compiled for the Justice40 initiative, the five census tracts immediately surrounding the project area on Allen Street are home to about 16,000 residents, of which 86% are burdened by transportation costs and 75% exceed HUD's recommended housing cost burden limit of 30% of income. The Allen Street project will advance the Justice40 initiative's goal to direct infrastructure funding to communities most impacted by climate change, pollution, and environmental hazards. The Allen Street neighborhood's aging housing stock (over 76% built pre-1980) and proximity to high volume roads experiencing congestion (69% of the area roads are considered high volume) strain the neighborhood economy and decrease quality of life for an already vulnerable population. The Allen Street project will improve storm water infrastructure, reduce flooding and overflow, and in turn improve traffic patterns and relieve homeowners and property owners from costly repairs and insurance premiums.

5.2 Workforce Development, Job Quality and Wealth Creation

Allen Street is one of New Britain's main east-west travel corridors, linking the City's East Side and Route 9 to Farmington Ave and the most densely populated residential neighborhoods near Downtown and Broad Street. Allen Street is a busy commercial corridor, with shops, restaurants, and shopping that serves the needs of neighborhood and City residents in general. The street's aging infrastructure, including storm water, presents a crisis for residents during every high rainfall event, presenting property and business owners significant costs for damages. Additionally, high rainfall events that overburden the infrastructure cause flooding, generating traffic delays and preventing vehicle and pedestrian access to businesses. Relieving the Allen Street corridor of the flooding problems will allow for uninterrupted travel and access to businesses for area residents. The execution of the project will result in creation of temporary construction jobs, while improvement of access to businesses and curbing costs associated with flooding damages will allow business expansion and reprogramming of funds for hiring and business operations.

5.3 Construction Readiness

The Allen Street project will be performed entirely in City of New Britain Right of Way, requiring no property takings or easements. The project plans developed by Cardinal are in semi-final stage. The plans will be progressed to final design, and then the project will go out to bid. Test pits are required before construction begins to verify utility locations.

5.4 Funding Needs

The City of New Britain's annual budget does not allow for the allocation of the over \$3.55M necessary to perform the Allen Street storm water infrastructure project and the project cannot be phased. The City would require multiple allocations across multiple fiscal years in order to accumulate the funding to complete the project, while the state of the infrastructure is already at a crisis level.

APPENDIX A

Project Cost Estimate

Construction Cost Estimate
 ALLEN STREET PHASE 2 | NEW BRITAIN

Major and Minor Contract Items

Item No.	Item	Unit	Quantity	Unit \$	Participating	Total Cost
0202000A	EARTH EXCAVATION	CY	7500	\$20.20	P	\$ 151,500.00
0202120A	ROCK EXCAVATION (NO EXPLOSIVES)	CY	375	\$80.00	P	\$ 30,000.00
0202451A	TEST PITS	CY	30	\$100.00	P	\$ 3,000.00
0202529	CUT BITUMINOUS CONCRETE PAVEMENT	LF	9200	\$2.40	P	\$ 22,080.00
0205003A	TRENCH EXCAVATION (0-12' DEEP) - SANITARY	CY	3050	\$23.60	P	\$ 71,980.00
0205003A	TRENCH EXCAVATION (0-12' DEEP) - STORM	CY	6800	\$23.60	P	\$ 160,480.00
0205004A	TRENCH EXCAVATION (0-OVER 12' DEEP) - SANITARY	CY	880	\$70.40	P	\$ 61,952.00
0205004A	TRENCH EXCAVATION (0-OVER 12' DEEP) - STORM	CY	835	\$70.40	P	\$ 58,784.00
0205006A	ROCK IN TRENCH EXCAVATION - SANITARY	CY	390	\$145.00	P	\$ 56,550.00
0205006A	ROCK IN TRENCH EXCAVATION - STORM	CY	750	\$145.00	P	\$ 108,750.00
0209001	FORMATION OF SUBGRADE	SY	5800	\$3.00	P	\$ 17,400.00
0210820	WATER POLLUTION CONTROL	EST	5000	\$1.00	P	\$ 5,000.00
0212003	SUBBASE	CY	2900	\$43.60	P	\$ 126,440.00
0213011A	GRANULAR FILL	CY	4000	\$52.60	P	\$ 210,400.00
0304002A	PROCESSED AGGREGATE BASE	CY	1900	44.2	P	\$ 83,980.00
0404100	BITUMINOUS CONCRETE PATCHING - FULL DEPTH	SY	570	\$40.00	P	\$ 22,800.00
0404101	BITUMINOUS CONCRETE PATCHING - PARTIAL DEPTH	SY	3000	\$40.00	P	\$ 120,000.00
0404102	BITUMINOUS CONCRETE PATCHING - FULL DEPTH - STATE	SY	950	\$50.00	P	\$ 47,500.00
0406236	MATERIAL FOR TACK COAT	GAL	1230	\$5.60	P	\$ 6,888.00
0406270A	MILLING OF BITUMINOUS CONCRETE	SY	3800	\$16.00	P	\$ 60,800.00
0406441	SUPERPAVE 0.375"	TON	410	\$114.60	P	\$ 46,986.00
0406442	SUPERPAVE 0.50"	TON	2350	\$122.60	P	\$ 288,110.00
0406999A	ASPHALT ADJUSTMENT COST	EST	1	\$2,000.00	P	\$ 2,000.00
0506001	CONCRETE FOR STEPS AND COPINGS	CY	20	\$1,300.00	P	\$ 26,000.00
0507001A	TYPE "C" CATCH BASIN	EA	16	\$3,349.40	P	\$ 53,590.40
0507022A	TYPE "C" DOUBLE CATCH BASIN GRATE TYPE II	EA	2	\$5,594.00	P	\$ 11,188.00
0507480A	(STORM) TEE MANHOLE	EA	7	\$2,000.00	P	\$ 14,000.00
0507685A	(STORM) MANHOLE TYPE II, 6' DIAMETER	EA	5	\$3,200.00	P	\$ 16,000.00
0507687A	(STORM) MANHOLE TYPE II, 5' DIAMETER	EA	1	\$2,000.00	P	\$ 2,000.00
0507693A	(STORM) MANHOLE TYPE II, 7' DIAMETER	EA	2	\$3,000.00	P	\$ 6,000.00
0507758A	RESET MANHOLE (STORM)	EA	4	\$896.00	P	\$ 3,584.00
0507771A	RESET CATCH BASIN	EA	8	\$1,133.00	P	\$ 9,064.00
0507899A	OFFSET CATCH BASIN TYPE "A"	EA	1	\$4,000.00	P	\$ 4,000.00
0601000	CLASS A CONCRETE	CY	10	\$672.00	P	\$ 6,720.00
0651001A	BEDDING MATERIAL - SANITARY	CY	1225	\$52.20	P	\$ 63,945.00
0651001A	BEDDING MATERIAL - STORM	CY	4520	\$52.20	P	\$ 235,944.00
0651012A	15" REINFORCED CONCRETE PIPE (STORM)	LF	450	\$56.80	P	\$ 25,560.00
0651021A	48" REINFORCED CONCRETE PIPE (STORM)	LF	1075	\$205.00	P	\$ 220,375.00
0651022A	54" REINFORCED CONCRETE PIPE (STORM)	LF	310	\$225.00	P	\$ 69,750.00
0651023A	60" REINFORCED CONCRETE PIPE (STORM)	LF	700	\$378.00	P	\$ 264,600.00
0651089A	60" X 38" RCP ELLIPTICAL (STORM)	LF	110	\$200.00	P	\$ 22,000.00
0651091A	76" X 48" RCP ELLIPTICAL (STORM)	LF	400	\$200.00	P	\$ 80,000.00
0651365A	(STORM) SEWER CONNECTION	LF	150	\$50.00	P	\$ 7,500.00
0651527A	ABANDON PIPE IN PLACE	CY	5	\$37.00	P	\$ 185.00
0651996A	60" RCP TO 48" RCP REDUCER	EA	1	\$2,500.00	P	\$ 2,500.00
0651997A	54" RCP TO 48" RCP REDUCER	EA	1	\$2,500.00	P	\$ 2,500.00
0651998A	TRANSITION SECTION 76" X 48" RCP ELLIPTICAL TO 60" RCP ECCENTRIC ADAPTOR	EA	1	\$2,500.00	P	\$ 2,500.00
0651999A	TRANSITION SECTION 76" X 48" RCP ELLIPTICAL TO 54" RCP ECCENTRIC ADAPTOR	EA	1	\$2,500.00	P	\$ 2,500.00
0751711A	6" PVC UNDERDRAIN	LF	3300	\$26.20	P	\$ 86,460.00
0921032A	TEXTURED CONCRETE BERM	SF	1600	\$26.60	P	\$ 42,560.00
0939001	SWEEPING FOR DUST CONTROL	HR	100	\$84.40	P	\$ 8,440.00
0942001	CALCIUM CHLORIDE FOR DUST CONTROL	TON	5	\$693.80	P	\$ 3,469.00
0943001	WATER FOR DUST CONTROL	M-GAL	600	\$24.60	P	\$ 14,760.00
0944002	FURNISHING AND PLACING TOPSOIL	SY	3300	\$6.80	P	\$ 22,440.00
0950005A	TURF ESTABLISHMENT	SY	3300	\$1.60	P	\$ 5,280.00
0969062A	CONSTRUCTION FIELD OFFICE ,MEDIUM	MO	24	\$3,100.00	P	\$ 74,400.00
0970006A	TRAFFIC PERSON (MUNICIPAL POLICE OFFICER)	EST	1	\$300,000.00	P	\$ 300,000.00
1206023A	REMOVAL AND RELOCATION OF EXISTING SIGNS	LS	1	\$3,000.00	P	\$ 3,000.00
1210101	4" WHITE EPOXY RESIN PAVEMENT MARKINGS	LF	7200	\$0.40	P	\$ 2,880.00
1210102	4" YELLOW EPOXY RESIN PAVEMENT MARKINGS	LF	7200	\$0.40	P	\$ 2,880.00
1210105	EPOXY RESIN PAVEMENT MARKINGS, SYMBOLS, AND LEGENDS	S.F	2200	\$4.40	P	\$ 9,680.00
1220011A	CONSTRUCTION SIGNS- TYPE III REFLECTIVE SHEETING	S.F	200	\$24.20	P	\$ 4,840.00
1302053A	REPLACE CURB BOX	EA	18	\$215.00	P	\$ 3,870.00
1303399A	SERVICE CONNECTION (WATER MAIN)	EA	35	\$36.60	P	\$ 1,281.00
1401054A	HANDLING SANITARY SEWAGE (SANITARY SEWER)	LS	1	\$15,000.00	P	\$ 15,000.00
1401630A	(SANITARY) CHIMNEY	VLF	150	\$200.00	P	\$ 30,000.00
1401637A	(SANITARY) SEWER CONNECTION	LF	900	\$60.00	P	\$ 54,000.00
1401647A	(SANITARY) CLEAN-OUT	EA	2	\$1,000.00	P	\$ 2,000.00

1401980A	8" POLYVINYL CHLORIDE PIPE (SANITARY SEWER)	LF	20	\$58.00	P	\$ 1,160.00	
1401984A	18" POLYVINYL CHLORIDE PIPE (SANITARY SEWER)	LF	1950	\$140.00	P	\$ 273,000.00	
1403001A	SANITARY MANHOLE TYPE I	EA	1	\$6,660.00	P	\$ 6,660.00	
1403007A	SANITARY DOGHOUSE MANHOLE	EA	1	\$7,000.00	P	\$ 7,000.00	
1403011A	SANITARY MANHOLE TYPE II MODIFIED INSIDE DROP	EA	3	\$2,500.00	P	\$ 7,500.00	
1403094A	SANITARY MANHOLE TYPE II, 5' DIAMETER	EA	4	\$2,500.00	P	\$ 10,000.00	
1403501A	RESET MANHOLE (SANITARY)	EA	4	\$1,141.40	P	\$ 4,565.60	
1408605A	BACKFLOW VALVE	EA	1	\$1,500.00	P	\$ 1,500.00	
1500210A	RESET MANHOLE (TELEPHONE)	EA	2	\$1,400.00	P	\$ 2,800.00	
A	Major Items Subtotal					P	\$ 3,916,811
B	Minor Items Subtotal		5	% of Line "A"		\$ 195,841	
C	Major and Minor Items Subtotal (A + B)						\$ 4,112,652
	Other Item Allowances						
	M & P of Traffic		2	% of Line "C"		\$ 82,253	
	Mobilization		4	% of Line "C"		\$ 164,506	
	Construction Staking		1	% of Line "C"		\$ 41,127	
D	Other Items Subtotal						\$ 287,886
E	CONTRACT SUBTOTAL (C + D)						\$ 4,400,538
F	Engineering Design						\$ 152,410
G	TOTAL CONTRACT COST ESTIMATE (E + F) (Rounded to nearest \$1000)						\$ 4,553,000