

Draft Environmental Assessment
Cedar Rapids Animal Care and Control
Cedar Rapids, Iowa
FEMA 1763-DR-IA

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Abbreviations and Acronyms

ACM	Asbestos Containing Material
APE	Area of Potential Effect
BCA	Benefit / Cost Analysis
BFE	Base Flood Elevation
BMP	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
dB	Decibels
DFIRM	Digital Flood Insurance Rate Map
EA	Environmental Assessment
EHP	Environmental Planning and Historic Preservation
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GHG	Greenhouse Gases
GPN	Geographic Parcel Number
GPS	Global Positioning System
HMGP	Hazard Mitigation Grant Program
HPC	Historic Preservation Commission

Abbreviations and Acronyms continued

HUD	U.S. Department of Housing and Urban Development
IDNR	Iowa Department of Natural Resources
IHSEMD	Iowa Homeland Security and Emergency Management Division
KCC	Kirkwood Community College
LOMR	Letter of Map Revision
LTRC	Long-Term Recovery Committee
LUST	Leaking Underground Storage Tank
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OSA	Office of the State Archaeologist
RCRA	Resource Conservation and Recovery Act
RIO	Rebuild Iowa Office
SHPO	State Historic Preservation Office
SHFA	Special Hazard Flood Area
SHSI	State Historic Society of Iowa
SWPPP	Storm Water Pollution Prevention Plan
TEH	Total Extractable Hydrocarbons
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VMT	Vehicle Miles Traveled

1. INTRODUCTION

Cedar Rapids is the second largest city in the State of Iowa and is the county seat of Linn County. Cedar Rapids lies on both banks of the Cedar River. Between June 11, 2008 and June 13, 2008, the Cedar Rapids Animal Care and Control (further known as Animal Control Shelter) facility at 1401 Cedar Bend Lane SW in Cedar Rapids, Iowa, along with large portions of Cedar Rapids and the surrounding area experienced extensive damage from flooding of the Cedar River and its tributaries. On May 27, 2008, President Bush declared a major disaster in the State of Iowa (1763-DR-IA) pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, 42 U.S.C. Section 5121-5206. The incident period began on May 25, 2008 and closed August 13, 2008. Animal Control Shelter serves the cities of Cedar Rapids and Marion with a combined 2010 Decennial Census population of 161,094.

National Environmental Policy Act (NEPA) requires that Federal agencies evaluate the environmental effects of their Proposed and Alternative Actions before deciding to fund an action. The President's Council on Environmental Quality (CEQ) has developed a series of regulations for implementing the NEPA. These regulations are included in Title 40 of the Code of Federal Regulations (CFR), Parts 1500–1508. They require the preparation of an Environmental Assessment (EA) that includes an evaluation of alternative means of addressing the problem and a discussion of the potential environmental impacts of a proposed Federal action. An EA provides the evidence and analysis to determine whether the proposed Federal action will have a significant adverse effect on human health and the environment. An EA, as it relates to the FEMA program, must be prepared according to the requirements of the Stafford Act and 44 CFR, Part 10. This section of the Federal Code requires that FEMA take environmental considerations into account when authorizing funding or approving actions. This EA was conducted in accordance with both CEQ and FEMA regulations for NEPA and will address the environmental issues associated with the FEMA grant funding as applied towards the construction of a new animal control facility at the proposed site.

Executive Order (EO) 11988 (Floodplain Management) requires that Federal agencies assume a leadership role in avoiding direct or indirect support of development within the 100-year floodplain whenever there is a practicable alternative. Further, EO 11988 requires consideration of the 500-year floodplain for critical facilities such as hospitals and fire stations. Currently, the damaged facility is located within the floodway of the 100-year floodplain and subjected to repetitive flooding. Rather than repair the facility at its present location, FEMA and Cedar Rapids (Sub-Applicant) conducted a thorough review of the practicable alternatives to restoring the function of this non-critical facility at a location outside the 100-year floodplain and not subjected to repetitive flood damage.

2. PURPOSE AND NEED

Pursuant to Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1974 (42 U.S.C. 5172), as amended, the City of Cedar Rapids (aka “Sub-Applicant”) requested funding through FEMA’s Public Assistance Program. FEMA’s Public Assistance Program provides supplemental Federal disaster grant assistance to State, Tribal, and local governments, and certain types of Private Nonprofit Voluntary Agencies so that communities can respond to and recover from major disasters or emergencies. The Public Assistance Program has rules whereby eligible Sub-Applicants may choose to use eligible, though capped, recovery funds for alternate or improved projects that may be more beneficial to the Sub-Applicant than what existed prior to the disaster event.

Cedar River floodwaters completely inundated and severely damaged the Animal Control Shelter at 1401 Cedar Bend Lane SW in Cedar Rapids. The functional use of the 31.10 acres, 5,010 square foot facility was compromised and the facility was permanently closed. The facility, circa 1961, is owned and maintained by the Sub-Applicant, City of Cedar Rapids (GPN: 15322-26001-00000). The original facility function was waste water treatment until converted for animal care and control. Animal Control Shelter consists of four (4) structures: Main Building (GPS: 41.96199, -91.57838), Kennel Building (GPS: 41.96170, -91.57796), Cat Building (GPS: 41.96181, -91.57802), and West (aka Quarantine) Building (GPS: 41.96186, -91.57893). Main, Cat, and West buildings were eligible and approved for permanent relocation by FEMA.

Presently a temporary animal shelter is operated at 2109 North Towne Lane NE in Cedar Rapids. Animal Control Shelter annually cares, controls, and houses 3,000 animals from the cities of Cedar Rapids and Marion. Temporary shelter is located in an 8,676 square foot industrial warehouse facility (1.33 acres lot) in a commercial zone. This facility will be utilized until the permanent shelter is constructed.

The purpose of the improved project is to assist the citizens of Cedar Rapids and Linn County toward their recovery and return to normalcy from the 2008 flooding. FEMA’s Public Assistance Program will contribute eligible funding toward demolishing and debris removal of the original damaged facility and constructing a new Animal Control Shelter to restore and improve the pre-disaster animal care and control facility functions. Proposed site for the new Animal Control Shelter is on a vacant parcel (2.5 acres) located on the Kirkwood Community College (KCC) campus in Cedar Rapids. KCC site (GPS: 41.90611, -91.64722) is located on an unnamed road between 76th Avenue Drive SW to the south and Tower Road SW to the north. The site is adjacent to Washington Hall to the west, Mansfield Swine Education Center to the south, two waste water lagoons to the east, and vacant / open agricultural lands to the east of proposed site. The proposed improved project designs all facilities into one (1) building and increases the original facility footprint from 5,010 square feet to 16,000 square feet (13,800 square feet of usable space) and would integrate learning opportunities for KCC students with the addition of new classroom space for campus use.

Animal Control Shelter is not a critical facility by definition; however it does serve a vital community service for short-term and long-term animal care and control. Presently the original facility does not meet minimum flood protection levels to fulfill community needs during flooding events. The need is to relocate and replace facilities, equipment, and functions to a new site outside of the 100-year floodplain in order to restore local animal care and control functions to reduce the facility susceptibility from repetitive flood damage and ensure animal safety and welfare. If Animal Control Shelter is not relocated to a new permanent site, the long-term ability to shelter and care for wayward animals would be jeopardized.

3. ALTERNATIVES ANALYSIS

NEPA requires the investigation and evaluation of reasonable project alternatives as part of the project environmental review process. EO 11988 requires the investigation of practicable alternatives prior to Federal agencies taking actions that provide direct or indirect support of floodplain development. Inclusion of a No Action Alternative in the environmental analysis and documentation is required under NEPA. No Action Alternative is used to evaluate the effects of not providing eligible assistance for the project, thus providing a benchmark against which “action alternatives” may be evaluated. A number of alternatives were evaluated during the development of this proposed project and are defined in this section.

Three (3) key FEMA criteria are measured for the Alternatives proposed, considered, and dismissed. First, the facility is and would continue to be subjected to repetitive heavy damages from future flooding events. Second, the project approval is not barred by other provisions of Title 44 CFR (NFIP and EO 11988). And third, the overall project, including all costs, is cost effective to undertake. The facility has been determined to be substantially damaged. It is located in a Special Flood Hazard Area (SFHA) and would be subjected to repetitive damage. Approval is not barred by other provisions of Title 44 CFR. For the third condition, FEMA must approval the Sub-Applicant’s submitted Benefit / Cost Analysis (BCA) with full costs that support the cost effectiveness of the proposed site. BCA includes: costs for demolishing and removal of damaged structures; costs for elevating the newly constructed facility to the Base Flood Elevation (BFE) plus two (2) feet of freeboard; costs for engineering and permits / pre-construction requirements; costs for land acquisition, and costs for constructing a new facility. Furthermore, any funding is conditioned that the proposed site must meet all applicable historical and environmental requirements of 36 CFR, 44 CFR, relevant Federal Laws, Regulations, Statutes, and Executive Orders.

Upon approval of permanent relocation, the Sub-Applicant initiated a search for available sites. Sub-Applicant, City of Cedar Rapids, began search from a list of six (6) potential sites; three (3) of the six (6) sites identified had “fatal flaws” and were eliminated from further consideration. Identified “fatal flaws” consisted of inadequate property size, lack of public visibility, access issues, and neighborhood concerns. In addition to the key criteria listed in Section 3.3, the three (3) potential sites (Alternative 3, Alternative 4, and Alternative 5) were further evaluated on a set of four (4) specific criteria established by Sub-Applicant:

1. Property size: facility needs three (3) acres minimum
2. Close proximity to City Center and Emergency Shelter
3. Close proximity to main thoroughfares: InterState 380 and Highway 30
4. Site located outside the 100-year and 500-year floodplains

Proposed Action Alternative 2, preferred location, was not one of the original six (6) sites identified. Sub-Applicant stated that this site was selected because of its central location, accessibility, and cost effectiveness. Sub-Applicant indicated that Alternative sites 2, 3, 4, and 5 were all feasible locations; however, they provided FEMA documentation that Proposed Action Alternative 2 was the most cost effective and beneficial site for permanent relocation.

3.1 ALTERNATIVE 1 – NO ACTION

Inclusion of a No Action Alternative in the environmental analysis and documentation is required under NEPA. No Action Alternative is defined as maintaining the status quo with no FEMA funding for the Undertaking. No Action Alternative is used to evaluate the effects of not providing eligible assistance for the project, thus providing a benchmark against which “action alternatives” may be evaluated.

Under No Action Alternative 1, no FEMA grant funding would be applied towards the demolition and removal of the original damaged structure nor towards the construction of a new Animal Control Shelter. Original facility at 1401 Cedar Bend Lane would remain abandoned on site (Appendix A, Figure 14). FEMA also assumes that the Animal Control Shelter functions would remain at the temporary 2109 North Towne Lane NE, Cedar Rapids, Iowa post-flood location. Results of No Action Alternative 1, continuing the functions at the temporary facility beyond its planned transitory scope, would likely compromise effective long-term animal care and control for the City of Cedar Rapids and animal care for the City of Marion due to the limited facility capacity (8,676 square feet) and lot size (1.33 acres).

3.2 ALTERNATIVE 2 – PROPOSED ACTION

For Proposed Action Alternative 2, FEMA provides eligible funding towards demolition, debris removal, relocation, land acquisition, and new construction for a new Animal Control Shelter. Original damaged Animal Control Shelter at 1401 Cedar Bend Lane SW in Cedar Rapids would be demolished and the site would be returned to its natural condition.

Proposed location of the newly constructed facility would be on an unnamed road (GPS: 41.422, -91.3850) on a vacant site on the Kirkwood Community College (KCC) campus between 76th Avenue Drive SW and Tower Road SW. Proposed site is adjacent to Washington Hall to the west, Mansfield Swine Education Center to the south, two (2) waste water lagoons to the east, and vacant / open agricultural lands are located to the north of proposed site (Appendix A, Figure 15). Building 32, ICN 32A and 32B, Cedar Rapids / Linn County Solid Waste Agency are located to the northeast on the north side of Washington Hall. According to FEMA’s DFIRM (panel number 19113C0420D, dated April 5, 2010), the site is located in Unshaded Zone X outside of the 100-year and 500-year floodplains.

Proposed project encompasses all facilities into one (1) building and increases the original facility footprint from 5,010 square feet to 16,000 square feet (13,800 square feet of usable space). New building incorporates all the necessary elements for the shelter program for cats and dogs; including kennel, an adoption mall, cat colonies, surgical and clinical rooms, administrative offices, and a parking garage. Area of Potential Effects (APE) for the entire facility, grounds, and parking is less than three (3) acres (2.5 acres). Current property conditions are vacant, maintained with mixed vegetation; site was previously used for agriculture.

Sub-Applicant selected this KCC site for the overall community benefit and the opportunity to create a partnership between the City of Cedar Rapids and KCC’s Veterinary and Criminal Justice programs. Parcel land acquisition from KCC would be obtained at little cost in exchange for construction of 900 square feet of new classroom space for campus and student use. Proposed site’s geographical location is central for community access. It is located near major traffic arterials (InterState 380, Lincoln Highway / U.S. 30) to Cedar Rapids and Marion that affords convenient access for students, public, and volunteers. Sub-Applicant has stated that KCC would work with them on any future expansion issues. This site has greater residential density and accessibility than the remote 1401 Cedar Bend Lane SW location

Based upon environmental considerations authorized by all applicable Federal laws, regulations, and Executive Orders and criteria established by FEMA and Sub-Applicant, Proposed Action Alternative 2 is a practical alternative for eligible funding.

3.3 ALTERNATIVE 3 – JACOLYN DRIVE AND 16TH AVENUE SW

For Alternative 3, FEMA provides eligible funding towards demolition, debris removal, relocation, land acquisition, and new construction for a new Animal Control Shelter. Original damaged Animal Control Shelter complex at 1401 Cedar Bend Lane SW in Cedar Rapids would be demolished and returned to its natural condition.

FEMA assumes that if Alternative 3 is selected, then the proposed Animal Control Shelter facility would be substantially similar in design, function, and square footage as described in Proposed Action Alternative 2. However, FEMA also assumes that the overall square footage would be reduced based upon removal of 900 square foot classroom.

Proposed location of a newly constructed facility would be on a vacant lot at the intersection of Jacolyn Drive and 16th Avenue SW in Cedar Rapids (GPS: 41.574613, -91.435389; GPN: 13362-26001-00000). Site is divided into four (4) segments totaling 14.32 acres (2 acres, 1 acre, 1 acre, and 10.32 acres) (Appendix A, Figure 16). Sub-Applicant proposes to acquire six (6) acres (of 14.32 acres) at the southwest intersection of Jacolyn Drive and 16th Avenue SW. Site is zoned commercial. Across 16th Avenue SW (west of Jacolyn Drive) to northwest is a multifamily neighborhood and a fitness facility are located to the north, and vacant lot to northeast (east of Jacolyn Drive). To the east, west, and southwest of the parcel are large scale commercial / industrial land uses. Immediate parcels adjacent to the west and south are currently vacant. According to FEMA's DFIRM (panel number 19113C0405D, dated April 5, 2010), site is located in Unshaded Zone X outside of the 100-year and 500-year floodplains.

Sub-Applicant previously indicated that Jacolyn Drive / 16th Avenue SW site is a feasible location for the new Animal Control Shelter. Sub-Applicant provided FEMA documentation to establish that the site for Alternative 3 is not the most cost effective for permanent relocation. Nonetheless, based upon environmental considerations authorized by all applicable Federal laws, regulations, and Executive Orders, eligibility standards established by FEMA, and socioeconomic criteria provided by Sub-Applicant, Alternative 3 is a practical alternative for eligible funding.

3.4 ALTERNATIVE 4 – KIRKWOOD CAMPUS LOCATION

For Alternative 4, FEMA provides eligible funding towards demolition, debris removal, relocation, land acquisition, and new construction for a new Animal Control Shelter. Original damaged Animal Control Shelter complex at 1401 Cedar Bend Lane SW in Cedar Rapids would be demolished and returned to its natural condition.

FEMA assumes that if Alternative 4 is selected, then the proposed Animal Control Shelter facility would be substantially similar in design, function, and square footage as described in Proposed Action Alternative 2.

Proposed location of a newly constructed facility would be on vacant / agricultural land lot on the Kirkwood Community College (KCC) Campus off of 76th Avenue Drive SW in Cedar Rapids (GPS: 41.541976, -91.39623; GPN: 192112600100000). KCC site is located adjacent to Animal Health Technology Building to the east and the Transportation and Safety Training Building to the northwest (Appendix A, Figure 17) . Sub-Applicant proposes to acquire five (5) acres for facility. Across 76th Avenue Drive SW on the KCC campus is the Hotel at Kirkwood Center to

the southwest, the Iowa Equestrian Center to the southeast, and a vacant / open lot between those facilities. According to FEMA's DFIRM (panel number 19113CO420D dated, April 5, 2010), the site is located in Unshaded Zone X outside of the 100-year and 500-year floodplains. Vacant / open agricultural land lot is to the north and west, and the Horticulture / Floral Careers Building to northeast.

Sub-Applicant previously indicated that KCC site is a feasible location for the new Animal Control Shelter. Sub-Applicant provided FEMA documentation to establish that the site for Alternative 4 is not the most cost effective for permanent relocation. Nonetheless, based upon environmental considerations authorized by all applicable Federal laws, regulations, and Executive Orders, eligibility standards established by FEMA, and socioeconomic criteria provided by Sub-Applicant, Alternative 4 is a practical alternative for eligible funding.

3.5 Alternative 5 – Tech Park Lots 11 and 12

For Alternative 5, FEMA provides eligible funding towards demolition, debris removal, relocation, land acquisition, and new construction for a new Animal Control Shelter. Original damaged Animal Control Shelter complex at 1401 Cedar Bend Lane SW in Cedar Rapids would be demolished and returned to its natural condition.

FEMA assumes that if Alternative 5 is selected, then the proposed Animal Control Shelter facility would be substantially similar in design, function, and square footage as described in Proposed Action Alternative 2. However, FEMA also assumes that the overall square footage would be reduced based upon removal of 900 square foot classroom.

Proposed location of a newly constructed facility would encompass two (2) adjacent vacant lots in Technology Park, Lot 11 (805 Bell Drive SW; GPN: 19104-26008-00000) and Lot 12 (915 Bell Drive SW; GPN: 19104-02001-00000) in Cedar Rapids (GPS: 41.552551, -91.383871). Lot 11 (3.23 acres) and Lot 12 (2.57 acres; 5.80 acres total) are zoned for agricultural use (Appendix A, Figure 18). Surrounding parcels are vacant agricultural land. Buildings in the immediate vicinity include: commercial office complexes to the northwest, east, and south, and a residential mobile home community to the west. Thoroughfare US Highway 30 to the north, C Street SW to the east, and Bell Drive SW to the west ends in a cul-de-sac less than a quarter mile from Lots 11 and 12. According to FEMA's DFIRM (panel number 19113CO405D, dated April 5, 2010), the site is located in Unshaded Zone X outside the 100-year and 500-year floodplains.

Sub-Applicant previously indicated that Technology Park Lots 11 and 12 are feasible sites for the new Animal Control Shelter. Sub-Applicant provided FEMA documentation to establish that the site for Alternative 5 is not the most cost effective for permanent relocation. Nonetheless, based upon environmental considerations authorized by all applicable Federal laws, regulations, and Executive Orders, eligibility standards established by FEMA, and socioeconomic criteria provided by Sub-Applicant, Alternative 5 is a practical alternative for eligible funding.

3.6 OTHER ALTERNATIVES CONSIDERED AND DISMISSED

3.6.1 Rebuild Facility on Existing Site

Sub-Applicant considered and evaluated the alternative to demolition, debris removal of original facility, and reconstruction of a new Animal Control Shelter on the existing site, using mitigation measures to reduce future flood potential. This alternative would result in significant construction-related impacts, such as demolishing the original

facility complex and elevating the newly constructed facility to meet current codes and standards. Animal Control Shelter does not meet the definition of a “critical action” according to EO 11988 and 44 CFR Part 9. However constructing a new facility on the existing site would require the facility to be elevated to or protected to the 100-year flood level. This mitigation measure would provide additional flood protection for the newly constructed facility to the BFE plus two (2) feet of freeboard. BFE for this facility at the 100-year floodplain is 711.6 feet and 714.0 feet for the 500-year floodplain.

According to National Flood Insurance Program’s (NFIP) Historic Digital Flood Insurance Rate Map (DFIRM), panel number 1901870035B, dated December 15, 1982, the existing site was located in Zone A9 (elevation 711.6 feet) within the 100-year floodplain. Sub-Applicant applied and received a Letter of Map Revision (LOMR) on December 16, 2008 (case number 09-07-0130A), indicating the four (4) facilities have been removed from the SFHA and re-designated to a Zone B outside the 100-year floodplain yet within the 500-year floodplain.

However, revised DFIRM were issued in 2010 (panel number 19113C0430D, dated April 5, 2010), existing site is now located in Zone AE (elevation 711.6 feet) within the 100-year floodplain. This is a Special Hazard Flood Area (SHFA) and a regulatory floodway. A section of the property is still located in the NFIP regulatory floodway. According to the LOMR, “the NFIP regulatory floodway in that area must remain unobstructed in order to prevent unacceptable increases in base flood elevations. Therefore, no construction may take place in a NFIP regulatory floodway that may cause an increase in the base flood elevation, and any future construction or substantial improvement on the property remains subject to Federal, State / Commonwealth, and local regulations for floodplain management” (FEMA, 2008 LOMR 09-07-0130A). The mitigation measures proposed in this alternative, elevating the original facility on the existing site breaches the conditions of the NFIP and the LOMR.

Original Animal Control Shelter location is remote and not easily assessable from the city center. Existing site is located seven (7) miles from the city center in a secluded farmland area in Linn County along the Cedar River. Facility access becomes more difficult leaving the city center. Four (4) miles from city center, paved city streets become smaller country gravel roads that slowly wind along the Cedar River through the countryside. Existing site is in a regulatory floodway and is prone to flooding. Elevating the Animal Control Shelter to the 100-year floodplain level would pose considerable challenges for ensuring adequate ingress and egress for workers and patrons to fulfill animal care and control functions. Facility was completely inundated with floodwaters causing extensive damage. Access to the Animal Control Shelter during flooding events is difficult under the best circumstances. Elevating facility structures and / or other flood proofing measures to the 100-year flood level would make them virtual islands during future flood events equal to or exceeding the magnitude of 2008 flood.

Restoring the Animal Control Shelter on the existing site would also require that the Sub-Applicant to carry flood insurance on the building in perpetuity. The significant investment within the floodplain needed for this option when practicable alternatives are identified outside of the floodplain has demonstrated that this option is inconsistent with EO 11988 and 44 CFR Part 9. This option, initially less expensive than Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5, is determined not to be cost-effective over the facility lifespan. Deliberation of environmental considerations and extensive challenges to restore facility has rendered this alternative impractical and results in it being dismissed from further consideration.

4. SUMMARY OF IMPACTS AND MITIGATION

No Action Alternative 1, Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5, were evaluated in this EA and their impacts summarized in this section using the following scale. Impacts are assumed to be negative unless noted otherwise. Chapter Five has the potential impacts of the five (5) Alternatives described in greater detail.

- No Impact – no impacts are anticipated
- Negligible Impact – no discernible impacts are anticipated or are minimal and cannot be measured meaningfully
- Minor Impact – anticipated impacts are measurable, but are minor and within or below regulatory standards and / or are confined to the project site(s)
- Moderate Impact – anticipated impacts are measurable and / or have impacts that may extend beyond the project site(s), may require permitting, may require limited mitigation actions or coordination to minimize negative impacts
- Major Impact – anticipated impacts are readily measurable, have a regional impact, require mitigation to reduce impacts, and / or exceed existing regulatory standards; permanent changes to the resources would be expected

Table 4-1: Summary of Impacts and Mitigation.

Affected Environment	Impacts	Mitigation Measures / BMPs
Air Quality		
Alternative 1	No Impact	Not applicable.
Alternative 2	Minor to Moderate Impact (short term)	Construction best management practices (BMP) appropriate to site conditions and fugitive dust controls required to reduce short term impacts to negligible levels
Alternative 3		
Alternative 4		
Alternative 5		
Climate Change		
Alternative 1	No Impact	Not applicable.
Alternative 2	No to Negligible Impact	Salvage or recycling of uncontaminated building components and building debris is recommended
Alternative 3		
Alternative 4		
Alternative 5		
Water Quality		
Alternative 1	Minor to Moderate Impact. Decaying facility may leach hazardous substances into surface and ground water sources.	Sub-Applicant should take measures to minimize impacts from leaching hazardous contaminants
Alternative 2	Negligible to Moderate Impact	For ground disturbance of one (1) acre or more, a Storm Water Pollution Prevention Plan and NPDES permit are required
Alternative 3		
Alternative 4		
Alternative 5		
Wetlands		
Alternative 1	Minor to Moderate Impact. Decaying facility may leach toxic contaminants into nearby wetlands	Sub-Applicant should take measures to minimize impacts from leaching hazardous contaminants.
Alternative 2	No to Negligible Impact	Appropriate sediment and erosion control BMP for ground-disturbing activities is required.
Alternative 3		
Alternative 4		
Alternative 5		

Floodplain		
Alternative 1	Minor Impact. Decaying facility and repetitive flooding have harmful effects to downstream properties	Sub-Applicant should take measures to minimize impacts from leaching hazardous contaminants.
Alternative 2	No to Negligible Impact. Action moves facility out of 100-year / 500-year floodplains and reduces flooding potential.	Sub-Applicant must coordinate activities with local floodplain administrator.
Alternative 3		
Alternative 4		
Alternative 5		
Protected Species and Habitat		
Alternative 1	No Impact.	Not applicable.
Alternative 2	No to Negligible Impact.	If Bald eagle nest identified, work must take place 660 feet or more from nest or outside of nesting season.
Alternative 3		
Alternative 4		
Alternative 5		
Historic Structures		
Alternative 1	No Impact.	Not applicable.
Alternative 2		
Alternative 3		
Alternative 4		
Alternative 5		
Archaeology		
Alternative 1	No Impact.	Not applicable.
Alternative 2		In the event of unanticipated archaeological discoveries, work must immediately stop, site secured, and FEMA immediately notified. FEMA will consult with SHPO. Work cannot resume on site until FEMA/SHPO consultation is resolved and approval to resume work is given by IHSEMD.
Alternative 3		
Alternative 4		
Alternative 5		
Environmental Justice		
Alternative 1	Moderate Impact. Loss of educational opportunities perpetuates lower incomes and persons below poverty level.	Sub-Applicant should take measures to minimize negative impacts from missed socioeconomic opportunities.
Alternative 2	Moderate Impact. Gain of educational opportunities may increase incomes and elevate persons above poverty level.	Sub-Applicant should take measures to maximize positive impacts from increased socioeconomic opportunities.
Alternative 3	Moderate Impact. Loss of educational opportunities perpetuates lower incomes and persons below poverty level.	Sub-Applicant should take measures to minimize negative impacts from missed socioeconomic opportunities.
Alternative 4	Moderate Impact. Gain of educational opportunities may increase incomes and elevate persons above poverty level.	Sub-Applicant should take measures to maximize positive impacts from increased socioeconomic opportunities.
Alternative 5	Moderate Impact. Loss of educational opportunities perpetuates lower incomes and persons below poverty level.	Sub-Applicant should take measures to minimize negative impacts from missed socioeconomic opportunities.
Noise		
Alternative 1	No Impact.	Not applicable.
Alternative 2	Minor to Moderate Impact (short term).	Construction BMPs to reduce noise impacts from demolition and construction activities are required.
Alternative 3		
Alternative 4		
Alternative 5		
Radon		
Alternative 1	No Impact.	Not applicable.

Alternative 2	Minor Impact. Entire State of Iowa has an elevated potential for Radon levels.	Radon resistant construction techniques are recommended.
Alternative 3		
Alternative 4		
Alternative 5		
Demolition and Hazardous Substances		
Alternative 1	Minor to Moderate Impact. Decaying facility may leach hazardous substances into surface and ground water / soils.	Not applicable.
Alternative 2	Minor Impact. Demolition and debris removal has potential to expose building contaminants to air / soils / water.	Sub-Applicant is required to coordinate with the IDNR on the recommendations of their consultant on clean-up or containment needs and required to properly dispose of asbestos containing materials and lead paint where present in the remaining structure on the site in addition to any other hazardous materials; if unanticipated contamination is discovered during work, Sub-Applicant must contact the IDNR and stop work until the IDNR indicates no further assessment is needed of the discovery
Alternative 3		
Alternative 4		
Alternative 5		
Cumulative Impacts		
Alternative 1	Moderate Impact. Abandoned facility has potential dangers to human environment and susceptible to repetitive flooding. Missed socioeconomic opportunities from loss of additional learning space and no programmatic educational partnership.	Sub-Applicant should take measures to minimize negative impacts from leaving abandoned facility and the missed socioeconomic opportunities.
Alternative 2	Major Impact. Create adequate long-term animal care / control facilities. Reduce repetitive flooding. Gain of educational opportunities may increase incomes and elevate persons above poverty level.	Sub-Applicant should take measures to maximize positive impacts from new permanent facility, its functions, and increased socioeconomic opportunities.
Alternative 3	Moderate Impact. Create adequate long-term animal care / control facilities. Reduce repetitive flooding. Missed socioeconomic opportunities from loss of additional learning space and no programmatic educational partnership.	Sub-Applicant should take measures to maximize positive impacts from new permanent facility and functions, and minimize negative impacts from missed socioeconomic opportunities.
Alternative 4	Major Impact. Create adequate long-term animal care / control facilities. Reduce repetitive flooding. Gain of educational opportunities may increase incomes and elevate persons above poverty level.	Sub-Applicant should take measures to maximize positive impacts from new permanent facility, its functions, and increased socioeconomic opportunities.
Alternative 5	Moderate Impact. Create adequate long-term animal care / control facilities. Reduce repetitive flooding. Missed socioeconomic opportunities from loss of additional learning space and no programmatic educational partnership.	Sub-Applicant should take measures to maximize positive impacts from new permanent facility and functions, and minimize negative impacts from missed socioeconomic opportunities.

5. AFFECTED ENVIRONMENT AND IMPACTS

FEMA must evaluate the potential effects that proposed FEMA grant funded actions may have on existing environmental conditions. The environmental impacts of No Action Alternative 1, Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5 are analyzed.

Five (5) Alternatives are compared against each other to estimate potential environmental consequences of their selections using environmental and socioeconomic components. In addition, the proposed activity was evaluated against existing environmental documentation based on current and planned actions and information on anticipated future projects in order to determine the potential for cumulative impacts. Potential for significant environmental consequences was evaluated utilizing the context and intensity considerations as defined in CEQ regulations for implementing the procedural provisions of NEPA (40 CFR 1508.27).

5.1 PHYSICAL RESOURCES

5.1.1 Geology and Soils

Geologically, the sites for Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5 are located within the Wapsipinicon Group formation.

Sites for No Action Alternative 1, the Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5 are within Cedar Rapids city limits. Identified agricultural zoning site within city limits (i.e., Proposed Action Alternative 2, Alternative 4, and Alternative 5) are not subject to Farmland Protection Policy Act provisions to “...minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses...” (U.S. Government, 1981).

5.1.1.1 Alternative 1 – No Action

Following geological formations have been identified in the immediate area of the No Action Alternative 1: Scotch Grove Formation; Hopkinton, Blanding, Tete Des Morts, Mosalem formations; and LaPorte City formation. The soil types consist of Saude loam (2% to 5% slopes), Spillville-Sigglekov complex (0% to 2% slopes, frequently flooded Complex), and Orthents, loamy.

Under the No Action Alternative 1, FEMA would not fund demolition, debris removal, and new construction activities for Animal Control Shelter. No impact on geology. Potential exists for minor negative impacts on soils. Deteriorating abandoned facility poses threat of leaching of building containments into the soil, negatively effecting soil quality.

5.1.1.2 Alternative 2 – Proposed Action

According to U.S. Department of Agriculture (USDA), the Proposed Action Alternative 2 site has two (2) soil types, Floyd loam and Kenyon loam series. Floyd loam consists of somewhat poorly drained soils; loam, sandy clay loam, and sandy loam sediments (surface 0 to 80 inches deep) over subglacial till. Concave down-slope shape and linear across-slope shape. Slope properties are one (1) percent to four (4) percent. Kenyon loam consists of moderately well drained

soils; loam sediments (surface 0 to 80 inches deep) over subglacial till. Convex down-slope shape and convex across-slope shape. Slope properties range from two (2) percent to five (5) percent and from five (5) to nine (9) percent.

Based upon existing geological features and soil types, this location would be feasible for construction of the new Animal Control Shelter facility as proposed in scope of work. However, construction of the Animal Control Shelter would result in temporary disturbance of surface soils in project area. Implementation of Best Management Practices (BMP) identified in a Storm Water Pollution Prevention Plan (SWPPP), required by National Pollution Discharge Elimination System (NPDES) regulations (see 5.2.1), would minimize soil erosion / loss until construction is completed and site is permanently stabilized. Therefore, the Proposed Action Alternative 2 would have no significant impacts to geology and soils. Non-structural BMP may utilize the minimization of disturbance, preservation of natural vegetation and re-vegetation of exposed slopes and soils to minimize erosion and to stabilize slopes. BMP for structural erosion control include placing mulch or grass and covering stockpiles. BMP for structural sediment control include silt fencing and sediment traps. Sub-Applicant is required to coordinate with IDNR for all required NPDES permits as the project site is greater than 1 (one) acre in size (also see 5.7 Coordination and Permitting). Temporary ground disturbing activities would also be required for demolition and removal of existing damaged Animal Control Shelter. Site would return to natural condition.

See 5.5.4 Demolition and Hazardous Substances for additional discussion regarding potential soil contamination.

5.1.1.3 Alternative 3 – Jacolyn Drive and 16th Avenue SW

According to USDA, Alternative 3 site has four (4) soil types, Dinsdale silty clay loam, Klinger-Maxfield silty clay loams, Kenyon-Urban land complex, and Clyde-Floyd-Urban land complex series. Dinsdale silty clay loam consists of moderately well drained soils; silty clay loam and loam sediments (surface 0 inches to 60 inches deep), loess over subglacial till. Convex down-slope shape and convex across-slope shape. Slope properties are two (2) percent to five (5) percent. Klinger-Maxfield silty clay loams consist of somewhat poorly to poorly drained soils; silty clay loam and loam sediments (surface 0 inches to 60 inches deep), loess over subglacial till. Convex and concave down-slope shape and linear across-slope shape. Slope properties are two (2) percent to five (5) percent. Kenyon-Urban land complex consists of moderately well drained soils; loam sediments (surface 0 inches to 76 inches deep), loamy sediments over subglacial till. Convex down-slope shape and convex across-slope shape. Slope properties are two (2) percent to five (5) percent and from five (5) percent to nine (9) percent. Clyde-Floyd-Urban land complex consists of somewhat poorly drained to poorly drained soils; silty clay loam, clay loam, sandy loam, and loam sediments (surface 0 to 79 inches deep) and sandy clay loam, sandy loam, and loam sediments (surface 0 to 80 inches deep), both loamy sediments over subglacial till. Concave down-slope shape and linear across-slope shape. Slope properties range from zero (0) percent to five (5) percent.

Based upon existing geological features and soil types, this location would be feasible for construction of the new Animal Control Shelter facility as proposed in scope of work. However, construction of the Animal Control Shelter would result in temporary disturbance of surface soils in project area. Implementation of BMPs identified in SWPPP, required by NPDES regulations (see 5.2.1), would minimize soil erosion / loss until construction is completed and site is permanently stabilized. Therefore, Alternative 3 would have no significant impacts to geology and soils. Non-structural BMPs may utilize the minimization of disturbance, preservation of natural vegetation and re-vegetation of exposed slopes and soils to minimize erosion and to stabilize slopes. BMP for structural erosion control include placing mulch or grass and covering stockpiles. BMP for structural sediment control include silt fencing and sediment traps. Sub-Applicant is required to coordinate with IDNR for all required NPDES permits as the project site is greater than one (1) acre in size (also see 5.7

Coordination and Permitting). Temporary ground disturbing activities would also be required for demolition and removal of original damaged Animal Control Shelter. Site would return to natural condition. See 5.5.4 Demolition and Hazardous Substances for additional discussion regarding potential soil contamination.

5.1.1.4 Alternative 4 – Kirkwood Campus Location

According to USDA, Alternative 4 site has three (3) soil types, Kenyon loam, Colo silty clay loam, and Klinger-Maxfield silty clay loams. Kenyon loam consists of moderately well drained soils; loam sediments (surface 0 to 79 inches deep) over subglacial till. Convex down-slope shape and convex across-slope shape. Slope properties range from two (2) percent to five (5) percent. Colo silty clay loam consists of poorly drained soils; silty clay loam sediments (surface 0 to 60 inches deep), silty alluvium. Linear down-slope shape and linear across-slope shape. Klinger-Maxfield silty clay loams consist of somewhat poorly to poorly drained soils; silty clay loam and loam sediments (surface 0 to 60 inches deep), loess over subglacial till. Convex and concave down-slope shape and linear across-slope shape. Slope properties are two (2) percent to five (5) percent.

Based upon existing geological features and soil types, this location would be feasible for construction of the new Animal Control Shelter facility as proposed in scope of work. However, construction of the Animal Control Shelter would result in temporary disturbance of surface soils in project area. Implementation of BMPs identified in SWPPP, required by NPDES regulations (see 5.2.1), would minimize soil erosion / loss until construction is completed and site is permanently stabilized. Therefore, Alternative 4 would have no significant impacts to geology and soils. Non-structural BMPs may utilize the minimization of disturbance, preservation of natural vegetation and re-vegetation of exposed slopes and soils to minimize erosion and to stabilize slopes. BMP for structural erosion control include placing mulch or grass and covering stockpiles. BMP for structural sediment control include silt fencing and sediment traps. Sub-Applicant is required to coordinate with IDNR for all required NPDES permits as the project site is greater than 1 (one) acre in size (also see 5.7 Coordination and Permitting). Temporary ground disturbing activities would also be required for demolition and removal of original damaged Animal Control Shelter. Site would return to natural condition. See 5.5.4 Demolition and Hazardous Substances for additional discussion regarding potential soil contamination.

5.1.1.5 Alternative 5 – Tech Park Lots 11 and 12

According to USDA, Alternative 5 site has three (3) soil types, Kenyon loam, Clyde silty clay loam, and Dinsdale silty clay loam. Kenyon loam consists of moderately well drained and moderately eroded soils; loam sediments (surface 0 inches to 79 inches deep) over glacial till. Convex down-slope shape and convex across-slope shape. Slope properties range from five (5) percent to nine (9) percent. Clyde silty clay loam consists of poorly drained soils; silty clay loam, clay loam, sandy loam, and loam sediments (surface 0 inches to 79 inches deep) over glacial till. Concave down-slope shape and linear across-slope shape. Dinsdale silty clay loam consists of moderately well drained soils; silty clay loam and loam sediments (surface 0 to 60 inches deep), loess over subglacial till. Convex down-slope shape and convex across-slope shape. Slope properties are two (2) percent to five (5) percent.

Based upon existing geological features and soil types, this location would be feasible for construction of the new Animal Control Shelter facility as proposed in scope of work. However, construction of the Animal Control Shelter would result in temporary disturbance of surface soils in project area. Implementation of BMP identified in SWPPP, required by NPDES regulations (see 5.2.1), would minimize soil erosion / loss until construction is completed and site is permanently stabilized. Therefore, the Alternative 5 would have no significant impacts to geology and soils. Non-structural BMP may utilize the minimization of disturbance, preservation of natural vegetation and re-vegetation of exposed slopes and soils to

minimize erosion and to stabilize slopes. BMP for structural erosion control include placing mulch or grass and covering stockpiles. BMP for structural sediment control include silt fencing and sediment traps. Sub-Applicant is required to coordinate with IDNR for all required NPDES permits as the project site is greater than 1 (one) acre in size (also see 5.7 Coordination and Permitting). Temporary ground disturbing activities would also be required for demolition and removal of original damaged Animal Control Shelter. Site would return to natural condition. See 5.5.4 Demolition and Hazardous Substances for additional discussion regarding potential soil contamination.

5.1.2 Air Quality

1990 Clean Air Act, its amendments, and NEPA require that air quality impacts be addressed in the preparation of environmental documents. U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for six (6) “criteria” pollutants; carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂) and lead (Pb), and define the allowable concentrations that may be reached but not exceeded in a given time period to protect human health (primary standard) and welfare (secondary standard) with a reasonable margin of safety.

Primary and secondary standards for NAAQS have been established for most of the criteria pollutants which are detailed in Table 5-1. EPA is authorized to designate those locations that have not met the NAAQS as non-attainment and to classify these non-attainment areas according to their degree of severity. Attainment pertains to the compliance / violation of any of NAAQS for the six (6) criteria pollutants mentioned above. Each year, States are required to submit an annual monitoring network plan to EPA. The network plans provide for the creation and maintenance of monitoring stations, in accordance with EPA monitoring requirements specified in 40 CFR Part 58. State of Iowa’s most recent Monitoring Network Plan was approved by EPA Region 7 in December 2010. Linn County Public Health Department, Air Quality Division, is authorized by the EPA to implement and enforce the Clean Air Act and the county’s code on Air Quality. The Linn County Air Quality Division maintains a network of instruments and devices located throughout the Cedar Rapids metropolitan area to monitor ambient air. Nearest Air Quality Monitoring System location is at Kirkwood Community College in Cedar Rapids. As of August 30, 2011, no area within the State of Iowa is considered a non-attainment area for the six (6) criteria pollutants.

Table 5-1: National Ambient Air Quality Standards.

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide	9 ppm (10 mg/m ³)	8-hour	None	
	35 ppm (40 mg/m ³)	1-hour		
Lead	0.15 mg/m ³	Rolling 3-Month Average	Same as Primary	
Nitrogen Dioxide	53 ppb	Annual (Arithmetic Average)	Same as Primary	
	100 ppb	1-hour	None	
Particulate Matter (PM ₁₀)	150 mg/m ³	24-hour	Same as Primary	
Particulate Matter (PM _{2.5})	15 mg/m ³	Annual (Arithmetic Average)	Same as Primary	
	35 mg/m ³	24-hour	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour	Same as Primary	
	0.08 ppm (1997 std)	8-hour	Same as Primary	
	0.12 ppm	1-hour	Same as Primary	
Sulfur Dioxide	0.03 ppm (1971 std)	Annual (Arithmetic Average)	0.5 ppm	3-hour
	0.14 ppm (1971 std)	24-hour		
	75 ppb	1-hour	None	

Source: USEPA 2011a

5.1.2.1 Alternative 1 – No Action

Under the No Action Alternative 1, FEMA would not fund demolition, debris removal, and new construction activities for Animal Control Shelter. No impact to air quality beyond the existing conditions which are within regulatory standards.

5.1.2.2 Alternatives 2, 3, 4, and 5 – Proposed Action Alternative, Alternatives, and Mitigation Measures

Following actions are applicable for the Proposed Action Alternative 2, and Alternative 3, Alternative 4, and Alternative 5. Demolition, removal of the original facility and construction of the new Animal Control Shelter would require soil excavation, thereby short-term emissions of criteria pollutants are anticipated during the demolition and construction phases. Construction equipment and personal vehicles would generate exhaust emissions, including NO₂ and CO. For Animal Control Shelter, any incremental increase in vehicle emissions resulting from the existing dispersed temporary locations may be reduced.

Operation of motor vehicles on unpaved surfaces and the use of earthmoving equipment may also generate particulate matter. The moving and handling of soil during construction would increase the potential for emissions of fugitive dust; however, any deterioration of air quality would be a localized, short-term condition that would be discontinued upon

project completion and until disturbed soils are stabilized or permanently covered. Proposed action would require nine (9) months of construction and heavy equipment including; bulldozers, scrapers, and backhoes.

Construction activities would be required to minimize fugitive dust emissions through watering, controlling entrainment of dust by vehicles, and / or other measures to reduce the disturbance of particulate matter. Increases in ambient concentrations of the criteria pollutants resulting from heavy equipment would be minimal, Federal or State air quality attainment levels would likely not be exceeded. Proposed actions are not expected to have long-term adverse impacts on the air quality of the area.

Required mitigation measures for Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5 are the following:

- Construction activities would be required to minimize fugitive dust emissions through watering, controlling entrainment of dust by vehicles, and / or other measures to reduce the disturbance of particulate matter.
- During site preparation and construction, the contractor would:
 - Minimize land disturbance;
 - Suppress dust on traveled paths that are not paved through wetting, use of watering trucks, chemical dust suppressants, or other reasonable precautions to prevent dust from entering ambient air;
 - Cover trucks when hauling soil;
 - Minimize soil track-out by washing or cleaning truck wheels before leaving the construction site;
 - Stabilize the surface of soil piles; and
 - Create wind breaks.
- During site restoration, the contractor would:
 - Re-vegetate any disturbed land not used with native species in accordance with Executive Order 13112;
 - Remove unused material; and,
 - Remove soil piles via covered trucks.

5.1.3 Climate Change

Climate change encompasses changes in precipitation, sea level, temperature and other climatic variables including natural cycles and the climatic changes attributed to human actions on the environment. EPA identifies the climate change largely associated with human actions as “abrupt climate change” occurring over decades to distinguish it from that which occurs gradually over centuries or millennia. In 2010 the CEQ issued draft guidance for Federal agencies to consider climate change in NEPA documentation. Guidance uses the EPA-defined threshold for mandatory greenhouse gas (GHG) emission reporting of 25,000 metric tons per year as a level where NEPA documents determine whether a quantitative analysis is required. Threshold is equivalent to the energy needed to power 2,300 homes for a year or the emissions from 4,600 passenger vehicles per year (USEPA, 2009). FEMA has determined that the actions considered in this EA are incremental changes compared to the pre-disaster condition and the overall effects are expected to be significantly below

this threshold.¹ Majority of GHG emissions result from industry, heating and cooling of buildings, and automobile non-point sources.

Between 1958 and 2007 amounts of very heavy precipitation has increased by 31 percent in the Upper Midwest encompassing Michigan, Missouri, Minnesota, Illinois, Indiana, Ohio, Wisconsin, and Iowa. During the same period, the Upper Midwest experienced a 27 percent increase in the average number of days with heavy precipitation defined as the heaviest one (1) percent of all events. Heavy downpours currently occurring once every 20 years on average are projected to increase in frequency between 10 and 25 percent through the 2090s (USGCRP, 2009).

Average temperatures in the United States have increased more than two (2) degrees Fahrenheit in the last 50 years. Average temperatures in Iowa and portions of surrounding States are projected to increase by another four (4) to six (6) degrees, under low-emission models, or eight (8) to 10 degrees, under high-emission models, by the end of the century. Under current projections, Iowa can anticipate increases in flooding, heat waves, droughts, invasive plant and insect species, and insect-borne diseases (USGCRP, 2009). While data needed to predict specific events and the full range of climate impacts are still being developed, enough data is available to suggest that climatic events, such as severe storms, will be localized and will be increasingly unpredictable.

Embodied energy is a concept in measuring sustainability that has been used since the early-1970s to account for the energy, often in terms of carbon, invested into an existing material or structure. Another measure of sustainability is life-cycle or cradle-to-grave analysis which accounts for the extraction, manufacture, distribution, use, and eventual disposal of materials. While resources exist to quantify embodied energy or life cycle analysis, the calculations were not prepared by Sub-ApPLICANT for the options presented in this EA.

New construction, even with incorporation of energy efficient materials and design, typically involves more embodied energy than retention and retrofit of older buildings. Advanced materials such as electronic climate controls, solar panels, and engineered building products typically require more energy intensive manufacture and installation than traditional materials. An energy-efficient home would require 35 – 50 years to recover the amount of embodied energy in terms of carbon expended during construction. General Services Administration (GSA) found in 1999 that the operation costs of historic buildings were 27 percent lower than more modern buildings reflecting the higher quality materials, thicker walls, and passive energy features (Frey et al., 2008).

5.1.3.1 Alternative 1 – No Action

Under the No Action Alternative 1, FEMA would not fund demolition, debris removal, and new construction activities for Animal Control Shelter. No impact or change to the overall embodied energy is expected.

5.1.3.2 Alternatives 2, 3, 4, and 5 – Proposed Action Alternative and Alternatives

Following actions are applicable for Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5.

¹ Draft EA developed by consultants on behalf of FEMA Region X for the Veronia K-12 School Project includes a quantification of GHG. Calculation is included in draft EA and located on FEMA's website at; <http://www.fema.gov/library/viewRecord.do?id=4351>.

Sub-Applicant proposes to demolish, remove original damaged Animal Control Shelter and construct a new facility. Proposed building is 13,800 square feet (occupies 16,000 square feet) which is approximately 8,800 square feet larger than the original Animal Control Shelter (5,010 square feet). Increased square footage is anticipated to place all functions into one (1) structure and add a parking garage. Increase may also be offset depending on energy efficient design features; such features are not included in the preliminary plans received by FEMA. Increase in energy usage and embodied energy is anticipated to be a negligible to minor impact.

Salvage or recycling of unwanted and uncontaminated building components and demolition debris should be incorporated into the project to retain embodied energy invested in the components and materials, see 5.5.4 Demolition and Hazardous Substances for additional discussion.

5.2 WATER RESOURCES

5.2.1 Water Quality

Congress enacted the Federal Water Pollution Control Act in 1948 which was reorganized and expanded in 1972 and became known as the Clean Water Act (CWA) in 1977, as amended. CWA regulates discharge of pollutants into water with sections falling under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the EPA. Section 404 of the CWA establishes the USACE permit requirements for discharging dredged or fill materials into Waters of the United States and traditional navigable waterways. USACE regulation of activities within navigable waters is also authorized under the 1899 Rivers and Harbors Act. USACE jurisdiction extends to tributaries and wetlands where a “significant nexus” exists between the resources as articulated in two (2) recent Supreme Court decisions known as the SWANCC and Rapanos decisions. Under the National Pollution Discharge Elimination System (NPDES) the EPA regulates both point and non-point pollutant sources, including storm water and storm water runoff. Activities that disturb one acre of ground or more are required to apply for an NPDES permit through the Iowa Department of Natural Resources (IDNR) as authorized by the EPA. The Wild and Scenic Rivers Act is another regulatory framework related to water resources; however there are no designated wild and scenic rivers in the State of Iowa.

Majority of Cedar Rapids is located on the west side of the Cedar River and within the Middle Cedar watershed (HUC 7080205) which includes Vinton, Waterloo, and Cedar Falls upstream. Remainder of Cedar Rapids north of the Kirkwood Community College (KCC) campus is located in the Lower Cedar watershed (HUC 7080206) which extends to Columbus Junction to the southeast. Cedar River has a history of water impairment resulting from nutrient and pathogen contamination (USEPA, 2011d). Cedar Rapids is further regulated by NPDES with a Municipal Separate Storm Sewer System (MS4) individual or general permit. MS4 permits require the City to develop and maintain a storm water management program (SWMP) to reduce contamination of storm water and limit contamination discharges.

5.2.1.1 Alternative 1 – No Action

Under the No Action Alternative 1, FEMA would not fund demolition, debris removal, and new construction activities for Animal Control Shelter. Over time, deteriorating abandoned facility has the potential to minor to moderate (i.e., measurable) negative impacts on surface and ground water quality for Cedar River, surrounding wetlands, and ground water aquifers. Potential buildings contaminants may leach, infiltrate ground water, and wash into river waters and wetlands have detrimental effects upon the human environment, wildlife, and ambient ecological conditions.

5.2.1.2 Alternatives 2, 3, 4, and 5 – Proposed Action Alternative and Alternatives

Demolition, removal, and new construction of the Animal Control Shelter facility would disturb more than one (1) acre of ground for the amount of excavation required to ensure stabilized soils, utilities, and associated site work. Ground disturbing activities of one (1) acre or more require the Sub-Applicant to prepare a Storm Water Pollution Prevention Plan (SWPPP) and to obtain and comply with a NPDES permit from the IDNR (see 5.7 Coordination and Permits). All ground disturbing activities would require site and project appropriate sediment and erosion control Best Management Practices (BMP). Implementation of BMP and permit conditions would reduce the potential impact of this project to minor levels.

5.2.2 Wetlands

In addition to the CWA, Executive Order (EO) 11990 Protection of Wetlands requires Federal agencies to avoid, to the extent practicable, adverse impacts to wetlands. Under the CWA two types of authorization are available from the USACE for activities regulated under Section 404 of the Clean Water Act: general nationwide permits, which are issued for a specific category of similar activities and include nationwide permits defined in 33 CFR Part 30, and individual permits issued after review of the project, project alternative, and proposed mitigation.

1987 *Corps of Engineers Wetlands Delineation Manual* provides the technical guidelines in identifying and delineating wetlands. USACE's manual requires the presence of all three (3) parameters (greater than 50 percent dominance of hydrophytic vegetation, evidence of hydric soils, and presence of hydrologic indicators) for an area to be considered a wetland. U.S. Fish and Wildlife Service (USFWS) maintain the National Wetlands Inventory (NWI) maps including conventional maps, downloadable digital map data, dynamic online maps² and geographic information system (GIS) data. Federal actions within identified wetlands require the Federal agency conduct the Eight (8)-Step process, which like NEPA, requires the evaluation of alternatives prior to funding the action. FEMA's regulations on conducting the Eight (8)-Step processes are contained in 44 CFR Part 9.5.

5.2.2.1 Alternative 1 – No Action

Under the No Action Alternative 1, FEMA would not fund demolition, debris removal, and new construction activities for Animal Control Shelter. Over time, deteriorating abandoned facility has the potential for minor to moderate (i.e., measurable) negative impacts to surrounding wetlands. Potential buildings contaminants may leach and infiltrate wetlands have detrimental effects upon surface and ground water quality, wildlife, and the human environment.

5.2.2.2 Alternative 2 – Proposed Action

Demolition, removal, and new construction of Animal Control Shelter facility on proposed KCC site would have negligible impacts to wetlands. There are two (2) wastewater ponds (.57 and .33 acres) located less than 250 feet away. Both manmade wetlands are NWI designated freshwater ponds (i.e., PUBFx). Sediment and erosion control BMPs are required and an NPDES permit would be required for the one (1) acre or more of ground disturbance needed for the project (see 5.7 Coordination and Permits).

² U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Geospatial Wetlands Digital Data is available at; <http://www.fws.gov/wetlands/data/index.html>

5.2.2.3 Alternative 3 – Jacolyn Drive and 16th Avenue SW

Demolition, removal, and new construction of Animal Control Shelter facility on Jacolyn Drive site would have no direct impacts to wetlands. Nearest wetland (.37 acre) is 600 feet to the north across 16th Avenue SW. The manmade wetland is NWI designated freshwater pond (i.e., PUBF_x). Sediment and erosion control BMPs are required and an NPDES permit would be required for the one (1) acre or more of ground disturbance needed for the project (see 5.7 Coordination and Permits).

5.2.2.4 Alternative 4 – Kirkwood Campus Location

Demolition, removal, and new construction of Animal Control Shelter facility on alternative KCC site would have no direct impacts to wetlands. Nearest wetlands are the two (2) manmade wastewater ponds located at proposed KCC site more than 1,400 feet to the east. Sediment and erosion control BMPs are required and an NPDES permit would be required for the one (1) acre or more of ground disturbance needed for the project (see 5.7 Coordination and Permits).

5.2.2.5 Alternative 5 – Tech Park Lots 11 and 12

Demolition, removal, and new construction of Animal Control Shelter facility on 815 and 905 Bell Drive SW sites would have negligible impacts to wetlands. Nearest wetland (1.27 acres) is less than 80 feet to the east across Bell Drive SW. The manmade wetland is NWI designated freshwater pond (i.e., PUBG_h). Sediment and erosion control BMPs are required and an NPDES permit would be required for the one (1) acre or more of ground disturbance needed for the project (see 5.7 Coordination and Permits).

5.2.3 Floodplain

EO 11988 (Floodplain Management) requires that a Federal agency avoid direct or indirect support of development within the 100-year floodplain whenever there is a practicable alternative. FEMA uses Flood Insurance Rate Maps (FIRM) to identify the floodplains for the National Flood Insurance Program (NFIP). Federal actions within the 100-year floodplain, or 500-year floodplain for critical actions, require the Federal agency conduct the Eight-Step process. This process, like NEPA, requires the evaluation of alternatives prior to funding the action. FEMA's regulations on conducting the Eight (8)-Step processes are contained in 44 CFR Part 9.5. Cedar Rapids, Iowa is a participant in the NFIP with updated FIRMs promulgated in April of 2010. According to NFIP's Historic DFIRM (panel number 1901870035B, dated December 15, 1982), the existing site was located in Zone A9 (elevation 711.6 feet) within the 100-year floodplain. Sub-Applicant applied and received a Letter of Map Revision (LOMR) on December 16, 2008 (case number 09-07-0130A), indicating the four (4) facilities have been removed from the Special Hazard Flood Area (SFHA) and re-designated to a Zone B outside the 100-year floodplain yet within the 500-year floodplain. However, revised DFIRM was issued in 2010 (panel number 19113C0430D, dated April 5, 2010), the existing site is now located in Zone AE (elevation 711.6 feet) within the 100-year floodplain. This is a SHFA and a regulatory floodway.

5.2.3.1 Alternative 1 – No Action

Under the No Action Alternative 1, FEMA would not fund demolition, debris removal, and new construction activities for Animal Control Shelter. Over time, deteriorating facility has the potential for minor (i.e., measurable) negative impact on the floodplain. Repetitive flooding of abandoned facility would continue to pose threats for properties downstream.

5.2.3.2 Alternative 2 – Proposed Action

Demolition and removal of original Animal Control Shelter (located in the 100-year floodplain) would likely have beneficial impacts to the floodplain as Sub-Applicant intends to allow the site to return to its natural condition. New construction of Animal Control Shelter facility on proposed KCC site would have no impact to the floodplain. According to FEMA's DFIRM (panel number 19113CO420D, dated April 5, 2010), the site is located in Unshaded Zone X outside of the 100-year and 500-year floodplains. Use or future removal of this structure within the floodplain will need to be coordinated with the local floodplain administrator and comply with local floodplain regulations (see 5.7 Coordination and Permits).

5.2.3.3 Alternative 3 – Jacolyn Drive and 16th Avenue SW

Demolition and removal of original Animal Control Shelter (located in the 100-year floodplain) would likely have beneficial impacts to the floodplain as Sub-Applicant intends to allow the site to return to its natural condition. New construction of Animal Control Shelter facility on the Jacolyn Drive site would have no impact to the floodplain. According to FEMA's DFIRM (panel number 19113CO405D, dated April 5, 2010), the site is located in Unshaded Zone X outside of the 100-year and 500-year floodplains. Use or future removal of this structure within the floodplain will need to be coordinated with the local floodplain administrator and comply with local floodplain regulations (see 5.7 Coordination and Permits).

5.2.3.4 Alternative 4 – Kirkwood Campus Location

Demolition and removal of original Animal Control Shelter (located in the 100-year floodplain) would likely have beneficial impacts to the floodplain as Sub-Applicant intends to allow the site to return to its natural condition. New construction of Animal Control Shelter facility on the alternative KCC site would have no impact to the floodplain. According to FEMA's DFIRM (panel number 19113CO420D, dated April 5, 2010), the site is located in Unshaded Zone X outside of the 100-year and 500-year floodplains. Use or future removal of this structure within the floodplain will need to be coordinated with the local floodplain administrator and comply with local floodplain regulations (see 5.7 Coordination and Permits).

5.2.3.5 Alternative 5 – Tech Park Lots 11 and 12

Demolition and removal of original Animal Control Shelter (located in the 100-year floodplain) would likely have beneficial impacts to the floodplain as Sub-Applicant intends to allow the site to return to its natural condition. New construction of Animal Control Shelter facility on the 815 and 905 Bell Drive SW sites would have no impact to the floodplain. According to FEMA's DFIRM (panel number 19113CO405D, dated April 5, 2010), the site is located in Unshaded Zone X outside the 100-year and 500-year floodplains. Use or future removal of this structure within the floodplain will need to be coordinated with the local floodplain administrator and comply with local floodplain regulations (see 5.7 Coordination and Permits).

5.3 BIOLOGICAL RESOURCES

5.3.1 Protected Species and Habitat

1973 Endangered Species Act (ESA) establishes a Federal program to conserve, protect, and restore threatened or endangered plants and animals and their habitats. ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened or endangered species. Biological studies consisting of literature review, field reconnaissance, and map documentation were performed. A site visit was conducted on March 29, 2012.

All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species. Following the March 29, 2012 site visit, the following list and description of threatened and endangered species that may occur in Linn County was produced (Table 5-2). EO 13112 prohibits Federal agencies from funding, authorizing, or carrying out actions that are likely to cause or promote the introduction or spread of invasive species in the United States.

Bald eagle (*Haliaeetus leucocephalus*) has been removed from the Federal threatened and endangered species list however the species is still protected by *The Bald and Golden Eagle Act* and the *Migratory Bird Treaty Act of 1918*. USFWS recommends that any work be conducted at least 660 feet from an active nest. No Bald eagles or nests have been identified on the five (5) Alternative sites. Any vegetation clearing and all construction and landscaping activities must take place outside of the nesting season if work is closer to an active nest than the USFWS recommendation. Work may take place from August through mid-January which is outside of the nesting season.

Table 5-2: Federally Protected Species of Linn County, Iowa.

Common Name	Scientific Name	Status	Potential Occurrence at Site	Reason
Indiana bat	<i>Myotis sodalist</i>	Endangered	No	No habitat
Western prairie fringed orchid	<i>Platanthera praeclara</i>	Threatened	No	No habitat
Prairie bush clover	<i>Lespedeza leptostachya</i>	Threatened	No	No habitat

5.3.1.1 Alternative 1 – No Action

Under the No Action Alternative 1, FEMA would not fund demolition, debris removal, and new construction activities for Animal Control Shelter. No impact to threatened, endangered, or protected species expected.

5.3.1.2 Alternatives 2, 3, 4, and 5 – Proposed Action Alternative and Alternatives

Demolition of original Animal Control Shelter is not expected to impact protected species as there are no known species located at or in close proximity to the site. New construction of Animal Control Shelter facility on the proposed KCC site, Jacolyn Drive site, alternative KCC site, and Bell Drive SW sites are not expected to impact protected species as there are no known species located at or in close proximity to these sites.

5.4 Cultural Resources

In addition to review under NEPA, consideration of impacts to cultural resources is mandated under Section 106 of the National Historic Preservation Act (NHPA), as amended and implemented by 36 CFR Part 800. Requirements include the identification of significant cultural resources that may be impacted by the undertaking. Cultural resources are prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons.

Only those cultural resources determined to be potentially significant under NHPA are subject to protection from adverse impacts resulting from an undertaking. To be considered significant, a cultural resource must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the National Register of Historic Places (NRHP). The term “eligible for inclusion in the NRHP” includes all properties that meet the NRHP listing criteria, which are specified in the Department of Interior regulations Title 36, Part 60.4 and NRHP Bulletin 15. Sites not yet evaluated may be considered potentially eligible for inclusion in the NRHP and, as such, are afforded the same regulatory consideration as nominated properties. Whether prehistoric, historic, or traditional, significant cultural resources are referred to as “historic properties.”

For the purposes of this analysis, the term “Area of Potential Effects” (APE) as defined under cultural resources legislation, defines all historic properties that could be affected by each Alternatives’ actions and encompasses areas requiring ground disturbance (e.g. areas of grading, cut and fill, etc.) associated with the proposed Federal undertaking. For No Action Alternative 1, Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5 in this EA, the APE includes the flood affected site as well as each specific site proposed in each alternative for the replacement facility.

5.4.1 Historic Structures

FEMA has considered the potential for these alternatives to affect historic properties. Various sources were checked to determine if any previously identified historic properties are located within the APE for each Alternative proposed for this undertaking and to determine the potential for the APEs to contain previously unidentified historic properties. This review included the NRHP and National Historic Landmarks Databases, and the Office of the State Archaeologist’s (OSA) I-Sites GIS and Database, historic maps and aerial photographs available through the Iowa Geographic Map Server at Iowa State University and the University of Iowa Libraries’ Iowa Digital Library. FEMA has determined and the Iowa State Historic Preservation Office (SHPO) concurred that the flood damaged Animal Control Shelter, originally constructed in 1961 as a water pollution control facility with later additions from the 1980s, is not eligible for listing in the NRHP. Therefore for Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5 the demolition of the original facility does not constitute an adverse effect to historic structures.

5.4.1.1 Alternative 1 – No Action

No Action Alternative 1 would result in neither the demolition of the original facility nor the construction of a new facility in conjunction with a Federal undertaking; therefore Section 106 review would not apply.

5.4.1.2 Alternative 2 – Proposed Action

Proposed Action Alternative 2, Sub-Applicant’s preferred option, would require the demolition of the original facility and the construction of a new facility located within the KCC. As noted above, the original Animal Control Shelter is not eligible for listing in the NRHP. There are no standing structures at the proposed relocation site for Alternative 2, and all of the existing buildings surrounding the proposed facility site date from the 1970s and later. FEMA has consulted with the SHPO regarding this undertaking as Sub-Applicant’s preferred option. FEMA determined and the SHPO concurred that Alternative 2 would result in no effect to historic structures, see attached correspondence.

5.4.1.3 Alternative 3 – Jacolyn Drive and 16th Avenue SW

Alternative 3 would require the demolition of the original facility and the construction of a new facility located at the intersection of Jacolyn Drive and 16th Avenue SW. As noted above, the original Animal Control Shelter is not eligible for listing in the NRHP. There are no standing structures at the proposed relocation site for Alternative 3, and all of the existing buildings surrounding the proposed facility site date from the 1980s and later. Alternative 3 would result in no effect to historic standing structures, however should Alternative 3 be selected, FEMA must reopen consultation with the SHPO to address the change in project location, as the previous consultation was limited to the undertaking as presented in Alternative 2.

5.4.1.4 Alternative 4 – Kirkwood Campus Location

Alternative 4 would require the demolition of the original facility and the construction of a new facility located within the KCC on the north side of 76th Street, west of the site identified in Alternative 2. As noted above, the original Animal Control Shelter is not eligible for listing in the NRHP. There are no standing structures at the proposed relocation site for Alternative 4, and all of the existing buildings surrounding the proposed facility site date from the 1970s and later. This Alternative would result in no effect to historic standing structures however should Alternative 4 be selected FEMA must reopen consultation with the SHPO to address the change in project location, as the previous consultation was limited to the undertaking as presented in Alternative 2.

5.4.1.5 Alternative 5 – Tech Park Lots 11 and 12

Alternative 5 would require the demolition of the original facility and the construction of a new facility located along Bell Drive. As noted above, the original Animal Control Shelter is not eligible for listing in the NRHP. There are no standing structures at the proposed relocation site for Alternative 5, and all of the existing buildings surrounding the proposed facility site date from the 2000s and later. Alternative 5 would result in no effect to historic standing structures however should Alternative 5 be selected FEMA must reopen consultation with the SHPO to address the change in project location, as the previous consultation was limited to the Undertaking as presented in Alternative 2.

5.4.2 Archaeological Resources

FEMA has considered the potential for the Alternatives to affect archaeological resources. Various sources were checked to determine if any previously identified historic properties, including archeological sites are located within the APE of these Alternatives and to determine the potential for the APE to contain previously unidentified historic properties. This review included the NRHP and National Historic Landmarks Databases, and the OSA I-Sites GIS and Database, historic

maps and aerial photographs available through the Iowa Geographic Map Server at Iowa State University and the University of Iowa Libraries' Iowa Digital Library. According to the master inventory of archaeological sites in Iowa, no previously recorded archaeological sites are located within any of the APEs; however, some of the proposed Alternatives have higher levels of sensitivity than others. FEMA has determined and the SHPO concurred that demolition activities related to the removal of the damaged Animal Control Shelter are not likely to affect archaeological resources due to the low topography of the original facility, which is located within the regulatory floodway. Therefore for Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5 the demolition of the original facility should not constitute an adverse effect to archaeological resources.

5.4.2.1 Alternative 1 – No Action

Under No Action Alternative 1, no demolition activity would occur at the damaged Animal Control Shelter site nor would any construction activities would occur for the replacement facility, therefore no ground disturbing activities would occur, and no archeological resources would be affected with the selection of No Action Alternative 1.

5.4.2.2 Alternative 2 – Proposed Action

Proposed Action Alternative 2, Sub-Applicant's preferred option, would require the demolition of the original facility and the construction of a new facility located within the KCC campus. There are no previously identified archaeological sites within the APE of the proposed relocation site for Alternative 2. FEMA has consulted with the SHPO regarding this undertaking and the preferred option of Alternative 2. FEMA determined and the SHPO concurred that Proposed Action Alternative 2 would result in no effect to archaeological resources, as the site has low potential to yield archaeological deposits, and the site has been previously disturbed by the surrounding development, see attached correspondence.

For any post-review discoveries: in the event that any archaeological deposits (soils, features, or any other remnants of human activity) are uncovered during the undertaking, this project shall be halted, Sub-Applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. Sub-Applicant will inform IHSEMD immediately, will secure all archaeological findings and restrict access to the area. IHSEMD shall notify FEMA and FEMA will consult with the SHPO and the State Archaeologist of Iowa. Work in sensitive areas may not resume until consultations are completed or until an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards determines the extent and historical significance of the discovery. Work may not resume at or around the delineated archaeological deposit until the Sub-Applicant is notified by IHSEMD.

5.4.2.3 Alternative 3 – Jacolyn Drive and 16th Avenue SW

Alternative 3 would require the demolition of the original facility and the construction of a new facility located at the intersection of Jacolyn Drive and 16th Avenue SW. There are no previously identified archaeological sites within the APE of the proposed relocation site for Alternative 3. FEMA has assessed the potential for previously unidentified sites to be effected by this undertaking. According to the available resources, this site has low potential to yield archaeological deposits, there are no known archaeological sites within one (1) mile of the APE and a nearby archaeological investigation resulted in no archaeological sites identified, therefore FEMA would not likely require any archaeological investigation or monitoring in advance of construction for Alternative 3. Should Alternative 3 be selected, FEMA must reopen consultation with the SHPO to address the change in project location, as the previous consultation was limited to the undertaking as presented in Alternative 2.

For any post-review discoveries: in the event that any archaeological deposits (soils, features, or any other remnants of human activity) are uncovered during the undertaking, this project shall be halted, Sub-Applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. Sub-Applicant will inform IHSEMD immediately, will secure all archaeological findings and restrict access to the area. IHSEMD shall notify FEMA and FEMA will consult with the SHPO and the State Archaeologist of Iowa. Work in sensitive areas may not resume until consultations are completed or until an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards determines the extent and historical significance of the discovery. Work may not resume at or around the delineated archaeological deposit until the Sub-Applicant is notified by IHSEMD.

5.4.2.4 Alternative 4 – Kirkwood Campus Location

Alternative 4 would require the demolition of the original facility and the construction of a new facility located within the KCC on the north side of 76th Avenue Drive SW, west of the site identified in Alternative 2. There are no previously identified archaeological sites within the APE of the proposed relocation site for Alternative 4. FEMA has assessed the potential for previously unidentified archaeological sites to be effected by this undertaking. According to the available resources, Alternative 4 site has low potential to yield archaeological deposits, and the site has been previously disturbed by the surrounding development, therefore FEMA would not likely require any archaeological investigation or monitoring in advance of construction for Alternative 4. Should Alternative 4 be selected, FEMA must reopen consultation with the SHPO to address the change in project location, as the previous consultation was limited to the undertaking as presented in Alternative 2.

For any post-review discoveries: in the event that any archaeological deposits (soils, features, or any other remnants of human activity) are uncovered during the undertaking, this project shall be halted, Sub-Applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. Sub-Applicant will inform IHSEMD immediately, will secure all archaeological findings and restrict access to the area. IHSEMD shall notify FEMA and FEMA will consult with the SHPO and the State Archaeologist of Iowa. Work in sensitive areas may not resume until consultations are completed or until an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards determines the extent and historical significance of the discovery. Work may not resume at or around the delineated archaeological deposit until the Sub-Applicant is notified by IHSEMD.

5.4.2.5 Alternative 5 – Tech Park Lots 11 and 12

Alternative 5 would require the demolition of the original facility and the construction of a new facility located along Bell Drive SW. There are no previously identified archaeological sites within the APE of the proposed relocation site for Alternative 5. FEMA has assessed the potential for previously unidentified archaeological sites to be effected by this undertaking. According to the available resources, Alternative 5 site is within close proximity to previous archaeological investigations that resulted in the identification of both historic period and pre-historic period archaeological sites. Due to the general sensitivity of this area for the presence of archaeological deposits, FEMA would likely require an archaeological investigation in advance of construction activities for Alternative 5. All archaeological work must be performed in accordance with *The Guidelines for Archaeological Investigations in Iowa* (1999). If significant, intact archaeological sites (i.e. those considered eligible for listing in the National Register of Historic Places) are identified, FEMA would determine whether the undertaking would have an adverse effect on the archaeological site. An adverse effect would require the development of measures to avoid, minimize, or mitigate the effect to the archaeological site. Should this Alternative be selected, FEMA must reopen consultation with the SHPO to address the change in project

location and archaeological requirements as the previous consultation was limited to the undertaking as presented in Alternative 2.

For any post-review discoveries: in the event that any archaeological deposits (soils, features, or any other remnants of human activity) are uncovered during the undertaking, this project shall be halted, Sub-Applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. Sub-Applicant will inform IHSEMD immediately, will secure all archaeological findings and restrict access to the area. IHSEMD shall notify FEMA and FEMA will consult with the SHPO and the State Archaeologist of Iowa. Work in sensitive areas may not resume until consultations are completed or until an archaeologist who meets the Secretary of the Interior’s Professional Qualification Standards determines the extent and historical significance of the discovery. Work may not resume at or around the delineated archaeological deposit until the Sub-Applicant is notified by IHSEMD.

5.5 SOCIOECONOMIC CONSIDERATIONS

5.5.1 Environmental Justice

On February 11, 1994, President Clinton signed Executive Order (EO) 12898, “*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.*” This EO directs Federal agencies to focus attention on human health and environmental conditions in minority and / or low-income communities. Its goals are to achieve environmental justice, fostering non-discrimination in Federal programs that substantially affect human health or the environment, and to give minority or low-income communities greater opportunities for public participation in and access to public information on matters relating to human health and the environment. Also identified and addressed, as appropriate are, disproportionately high and adverse human health, or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.

Data used for this Environmental Justice analysis was taken from the 2010 Census (U.S. Census Bureau, 2010). Socioeconomic indicators consider the City of Cedar Rapids overall and five (5) Alternative areas within the census tract and block group designations. No Action Alternative 1 is located in Census Tract 107, Block Group 3 of Linn County. Proposed Action Alternative 2, Alternative 4 and Alternative 5 are located in Census Tract 30.02, Block Group 1 of Linn County. Alternative 3 is located in Census Tract 10.03, Block Group 4 of Linn County.

Table 5-3: 2010 Population Demographics for Cedar Rapids and Five (5) Alternatives.
 Alternatives include their Census Tract and Block Group statistics for proposed project locations.

Location or <u>Alternative #</u> Census Tract # Block Group #	<u>City of Cedar Rapids</u>	<u>No Action Alternative 1</u> Census Tract 107 Block Group 3	<u>Proposed Action Alternative 2</u> <u>Alternative 4</u> <u>Alternative 5</u> Census Tract 30.02 Block Group 1	<u>Alternative 3</u> Census Tract 10.03 Block Group 4
2010 Population	126,326	2,406	3,642	1,841
Housing Units	57,217	927	1,633	895
Median Household Size	2.29	2.59	2.23	2.05

Population Under 18 Years Old	23.5%	30.3%	20.4%	21.4%
Population Over 65 Years Old	13.1%	8.7%	6.5%	17.3%
Percent Minority Population	14.0%	2.4%	7.2%	23.7%
Percent White	86.0%	97.6%	92.8%	76.3%
Percent African-American	5.6%	0.4%	2.2%	14.5%
Percent Asian	2.2%	0.5%	1.2%	0.7%
Percent Hispanic or Latino	3.3%	1.8%	2.4%	11.0%

Sub-Applicant selected the proposed KCC site for a greater community benefit and to create a partnership between Cedar Rapids and KCC. Proposed site's geographical location improves community access, enhances community services, and does not displace residents for project development. Census Tract 30.02 / Block Group 1 encompasses Proposed Action Alternative 2, Alternative 4, and Alternative 5 have greater residential density and housing units than Census Tract 107 / Block Group 3 (i.e., No Action Alternative 1) and Census Tract 10.03 / Block Group 4 (i.e., Alternative 3) (Table 5-3). Proposed site in Census Tract 10.03 / Block Group 4 for Alternative 3 has greater minority concentration yet has a smaller overall population compared to Census Tract 107 / Block Group 3 and Census Tract 10.03 / Block Group 4. Proposed area, Census Tract 30.02 / Block Group 1, for Proposed Action Alternative 2 may ultimately serve a greater minority population and capacity due to the educational opportunities and facilities afforded by virtue of KCC partnership (i.e., additional classroom space, student access, and program partnership) and will not be available at Alternative 3 and Alternative 5.

Table 5-4: 2010 Median Household Income and Poverty Demographics for Cedar Rapids and Five (5) Alternatives. Alternatives include their Census Tract statistics for proposed project locations.

Location or Alternative # Census Tract #	City of Cedar Rapids	No Action Alternative 1 Census Tract 107	Proposed Action Alternative 2 Alternative 4 Alternative 5 Census Tract 30.02	Alternative 3 Census Tract 10.03
Median Household Income	\$49,298	\$81,569	\$32,270	\$32,439
Percent Persons Below Poverty Level (± Margin of Error)	12.0% (1%)	2.4% (1.3%)	28.3% (5.1%)	25.4% (6.3%)

Source: U.S. Census Bureau, 2010.

2010 annual median household income for Cedar Rapids is 49,298 dollars and the percentage of estimated persons below poverty level is 12 percent. Proposed Action Alternative 2, Alternative 3, Alternative 4 and Alternative 5 have nearly identical median household incomes and percentage of persons below poverty level. Census Tract 107 for No Action Alternative 1 has nearly three (3) times the median income and less than a tenth (1/10) of persons below poverty than Census Tracts 30.02 and 10.03 (Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5). However

this discrepancy is likely because Census Tract 107 is a large rural tract that includes the City of Ely, Iowa, which has a significantly higher median household income. Census Tract 30.02, which has KCC, has a large density of student residents which may account for the smaller median household income and persons below the poverty level compared to the City of Cedar Rapids.

Table 5-5: Population Statistics 1980 through 2010.

Jurisdiction	1980	1990	2000	2010
Iowa	2,913,808	2,776,755	2,926,324	3,046,355
Linn County	169,775	168,767	191,701	211,226
City of Cedar Rapids	110,243	108,772	120,758	126,326

Source: U.S. Census Bureau, 2010.

5.5.1.1 Alternative 1 – No Action

Under the No Action Alternative 1, FEMA would not fund demolition, removal, and new construction activities for Animal Control Shelter. This result would have a detrimental socioeconomic impact upon the community overall due to the loss of new classroom space and improved student learning opportunities as designed in Proposed Action Alternative 2. Missed educational opportunities and resulting loss of potential learning and earning opportunities would have a detrimental socioeconomic affect upon the community and individuals’ abilities to rise above poverty level.

5.5.1.2 Alternative 2 – Proposed Action

Construction of new Animal Control Shelter at Proposed Action Alternative 2 site located on the KCC campus would have a positive socioeconomic impact upon the community. Community at large, but especially KCC students, would benefit from the additional classroom space and learning facilities provided through the construction of the new Animal Control Shelter as designed in Proposed Action Alternative 2. Additional classroom space would service community members that have lower incomes and fall below poverty level providing individuals with opportunities to learn and develop skills to increase future incomes and rise above poverty level.

5.5.1.3 Alternative 3 – Jacolyn Drive and 16th Avenue SW

Construction of new Animal Control Shelter at Alternative 3 site located on the KCC campus would have a positive impact upon the community for animal care and control functions. However, FEMA assumes that the classroom facilities and learning opportunities designed for the Proposed Action Alternative 2 and Alternative 4 sites would not exist at Alternative 3. Missed educational opportunities and resulting loss of potential learning and earning opportunities would have a detrimental socioeconomic affect upon the community and individuals’ abilities to rise above poverty level.

5.5.1.4 Alternative 4 – Kirkwood Campus Location

Construction of new Animal Control Shelter at Alternative 4 site also located on the KCC campus would also have a positive socioeconomic impact upon the community. FEMA assumes that a new Animal Control Shelter would have a similar or identical design as it is planned in Proposed Action Alternative 2. Community and KCC students would benefit from the additional classroom space and learning facilities provided through the construction of the new Animal Control Shelter. Additional classroom space would service community members that have lower incomes and fall below poverty

level providing individuals with opportunities to learn and develop skills to increase future incomes and rise above poverty level.

5.5.1.5 Alternative 5 – Tech Park Lots 11 and 12

Construction of new Animal Control Shelter at Alternative 5 site located on the KCC campus would have a positive impact upon the community for animal care and control functions. However, FEMA assumes that the classroom facilities and learning opportunities designed for the Proposed Action Alternative 2 and Alternative 4 sites would not exist at Alternative 5. Missed educational opportunities and resulting loss of potential learning and earning opportunities would have a detrimental socioeconomic affect upon the community and individuals' abilities to rise above poverty level.

5.5.2 Noise

Consideration of the human health and welfare impacts of uncontrolled noise resulted in the 1972 Noise Control Act; however EPA does not have regulatory authority governing noise in local communities. In 1982, the EPA shifted Federal noise control policy and transferred the primary responsibility of regulating noise to State and local governments. 1972 Noise Control Act and 1978 Quiet Communities Act were not rescinded by Congress and remain in effect.

Term “noise” is considered unwanted or nuisance sound and is typically measured in decibels (dB). Day-night average sound level (Ldn) is the 24-hour average sound level, in dB, obtained after the addition of 10 dB to the sound levels occurring between 10 p.m. and 7 a.m. and is used by agencies for estimating sound impacts and establishing guidelines for compatible land uses. U.S. Department of Housing and Urban Development (HUD) regulations set acceptable noise levels at 65 Ldn or less (24 CFR Part 51). U.S. Environmental Protection Agency (EPA) identifies a 24-hour exposure level of 70 decibels (dB) as the level of environmental noise which will prevent any measurable hearing loss over a lifetime. Likewise, levels of 55 dB outdoors and 45 dB indoors are identified as preventing activity interference and annoyance (e.g., spoken conversation, sleeping, working, recreation). Levels represent averages of acoustic energy over long periods of time such as eight (8) hours or 24 hours rather than single events. Table 5-6, below, presents some common construction equipment with their estimated noise levels and levels at various distances. Noise regulations take into account sensitive receptors which are populations or land uses that may be impacted to a greater extent by increases in ambient noise levels. Sensitive receptors generally include museums, libraries, day care centers, schools, hospitals, and places of worship, among others.

According to the Cedar Rapids Municipal Code 56.02, any noise measured over 65 dB at any time within a commercial district is prohibited; motor vehicles or combination of vehicles with gross weight rating of 10,000 pounds or more that produce noise measured at 90 dB are prohibited in speed zones of 35 MPH or less; and all other vehicles that produce noise at 80 dB are prohibited in the same areas. The City also prohibits “loud and raucous noise in the vicinity of any residence or hospital which causes unreasonable distress to the occupants thereof” (62.01, Code 2011).

Table 5-6: Estimated Sound Levels for Construction Equipment and Attenuation at Various Distances.

Equipment	Typical Noise Level (dBA) at 50 ft. from Source ¹	Estimate at 100 ft.	Estimate at 200 ft.	Estimate at 500 ft.	Estimate at 1,000 ft.
Air Compressor	81	75	69	61	55
Backhoe	80	74	68	60	54
Concrete Mixer	85	79	73	65	59
Dozer	85	79	73	65	59
Generator	81	75	69	61	55
Loader	85	79	73	65	59
Paver	89	83	77	69	63
Pneumatic Tool	85	79	73	65	59
Pump	76	70	64	56	50
Saw	76	70	64	56	50
Shovel	82	76	70	62	56
Truck	88	82	76	68	62

Source: FHWA 2006

5.5.2.1 Alternative 1 – No Action

Under No Action Alternative 1, FEMA would not fund demolition, removal, and new construction activities for Animal Control Shelter. No impact to ambient noise levels within the proposed project area or the surrounding community.

5.5.2.2 Alternative 2 – Proposed Action

Proposed Action Alternative 2 would result in temporary increases in noise levels in the vicinity of the Kirkwood Community College (KCC) and 76th Avenue Drive SW for the construction of the proposed project. Construction activities would require approximately nine (9) months of construction and the use of heavy equipment. Proposed Action site is located on KCC campus, the closest residential neighborhoods are more than a half-mile to the west (Rolling Ridge Drive SW and Prairie Hawk Drive SW), and more than a half-mile to the east, farmsteads on 76th Avenue Drive SW and C Street SW. The greatest noise disturbance would be to administrative and academic buildings on KCC campus. Best Management Practices (BMP) to minimize noise impacts to the two (2) sensitive noise receptors are required. According to the Center for Environmental Excellence by the American Association of State Highway and Transportation Officials (AASHTO), BMPs for noise reduction include (AASHTO 2009);

- Early and frequent communication with the public;
- Planning noisier activities and equipment usage for mid-morning to mid-afternoon;
- Planning site access and staging to minimize or eliminate “back-up alarm” noise;
- Limiting equipment on site to only what is necessary;
- Imposing seasonal limitation on construction noise as spring and fall are critical times when windows are left open in residential areas;
- Using newer, “low-noise” models of equipment;

- Limiting construction activities to daylight hours;
- And, shift work to weekends rather than weeknights.

Once construction activities are completed, noise levels should return to pre-project levels. Applying BMPs for construction noise reduction is expected to minimize the short-term adverse impacts of the project. FEMA has determined that the proposed action is expected to have no long-term adverse impacts on the noise quality of the area. Demolition of original Animal Control Shelter would likely have minor noise disturbance on residential neighborhoods; it is located in an isolated area with the nearest farmstead more than half-mile away.

5.5.2.3 Alternative 3 – Jacolyn Drive and 16th Avenue SW

Alternative 3 would result in temporary increases in noise levels in the vicinity of the Jacolyn Drive and 16th Avenue SW for the construction of the proposed project. Construction activities would require approximately nine (9) months of construction and the use of heavy equipment. Site is located next to three (3) commercial / industrial facilities to the east, west and south. However there are several residential neighborhoods to the north directly across 16th Avenue SW; the closest is an apartment complex located approximately 300 feet away from site. Noise disturbance would likely affect neighborhood residents on 16th Avenue SW and those on Jacolyn Drive across 16th Avenue SW to the northeast and northwest. BMPs should be utilized to minimize noise impacts to residential neighborhoods.

5.5.2.4 Alternative 4 – Kirkwood Campus Location

Alternative 4 would result in temporary increases in noise levels in the vicinity of the KCC and 76th Avenue Drive SW for the construction of the proposed project. Construction activities would require approximately nine (9) months of construction and the use of heavy equipment. Site is also located on the KCC campus, the closest residential neighborhoods are a quarter-mile to the west (Rolling Ridge Drive SW and Prairie Hawk Drive SW), and nearly a mile to the east, farmsteads on 76th Avenue Drive SW and C Street SW. Noise disturbance potentially would affect neighborhood residents on Rolling Ridge Drive SW and Prairie Hawk Drive SW and administrative and academic buildings on KCC campus. BMPs should be utilized to minimize noise impacts to residential neighborhoods and KCC campus.

5.5.2.5 Alternative 5 – Tech Park Lots 11 and 12

Alternative 5 would result in temporary increases in noise levels in the vicinity of Bell Drive SW for the construction of the proposed project. Construction activities would require approximately nine (9) months of construction and the use of heavy equipment. Site is located next to three (3) commercial / office complexes to the east, north, and south less than 1,000 feet away. There are several residential neighborhoods directly to the west; the closest is a large mobile home community located a quarter-mile from site. Noise disturbance would likely affect neighborhood residents in mobile home community and office complexes on Bell Drive SW. BMPs should be utilized to minimize noise impacts to residential neighborhoods.

5.5.3 Radon

Radon (Rn) is a naturally occurring radioactive gas that is produced by the decay of uranium found within soil, rocks, and groundwater that accumulates in enclosed spaces such as the lowest level of buildings. EPA currently considers residential Radon exposure at or above 4.0 pico Curies per liter (pCi/L) as a public health risk as an additional risk factor for

development of lung cancer. The EPA provides a map for each county in the U.S. which shows the potential for elevated indoor Radon levels, with Zone 1 having the highest potential for predicted average indoor screening levels greater than 4.0 pCi/L. According to the EPA's Map of Radon Zones, Linn County and the entire State of Iowa is mapped within Zone 1 (EPA, 2011b). Actual levels of Radon can vary significantly from property to property, even within areas with high potential for elevated radon levels. Radon testing is the only way to determine actual radon levels within an enclosed space such as the lowest floor of a structure.

5.5.3.1 Alternative 1 – No Action

Under the No Action Alternative 1, FEMA would not fund demolition, removal, and new construction activities for Animal Control Shelter. There would be no impact.

5.5.3.2 Alternatives 2, 3, 4, and 5 – Proposed Action Alternative and Alternatives

Demolition, debris removal, and new construction activities increase potential for encountering elevated concentrations of Radon gas at the site and within the proposed building following construction. Project design should incorporate Radon-resistant construction appropriate to the site, actual Radon levels, and overall project design as practicable. Exact levels of Radon present at the site can only be determined by site-specific testing. Radon-resistant construction techniques may vary for different foundations and site requirements, but in general include five (5) key concepts:

- Gas Permeable Layer – Usually a four (4) inch layer of clean gravel used beneath the slab or flooring system to allow soil-gas to move freely.
- Plastic Sheeting – Polyethylene sheeting is placed on top of the gas permeable layer and under the slab to help prevent migration of the soil gas from entering the facility.
- Vent Pipe – A PVC pipe runs from the gas permeable layer up through the structure to the roof to safely vent radon above the facility.
- Junction Box – An electrical junction box is installed in case an electrical venting fan is needed later.
- Sealing and Caulking – Openings in the concrete foundation are sealed to prevent soil gas from entering the facility.

5.5.4 Demolition and Hazardous Substances

Demolition and removal of original damaged Animal Control Shelter at 1401 Cedar Bend Lane and construction of a new facility is proposed. Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5 sites for new construction are located on vacant / agricultural land that does not require the demolition of any existing structures nor includes significant site alteration. Demolition activities are regulated by Federal, State, and local laws ranging from local permits to licensure to appropriate disposal.

Hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), are defined as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may; (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or; (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of or otherwise managed.” Hazardous materials and wastes are regulated in Iowa by a combination of Federal and State laws. Federal regulations governing the assessment and disposal of hazardous wastes include RCRA, the RCRA Hazardous and Solid Waste Amendments, Comprehensive

Environmental Response, Compensation and Liability Act (CERCLA), Solid Waste Act, and the Toxic Substances Control Act.

Iowa Department of Natural Resources (IDNR) requires that structures be tested for asbestos containing material prior to demolition. Original Animal Control Shelter was constructed in 1961 and may contain asbestos, lead paint, and other toxic materials. If asbestos testing is not conducted, all debris or demolition material must be disposed of as if asbestos containing materials (ACM). IDNR requires at least 10 days notice prior to renovation, repairs, or demolition of asbestos contaminated structures. Cost of disposing ACM is significantly higher; in the Cedar Rapids area it is nearly three (3) times as expensive to dispose as uncontaminated debris as referenced in a recent article in the *Cedar Rapids Gazette* (Gazette, 2012).

5.5.4.1 Alternative 1 – No Action

Under the No Action Alternative 1, FEMA would not fund demolition, debris removal, and new construction activities for Animal Control Shelter. Over time, deteriorating abandoned facility has the potential for minor to moderate (i.e., measurable) negative impacts to surrounding ecology. Potential buildings' contaminants (i.e., hazardous substance) may leach and infiltrate ground and surface waters and soils and have detrimental effects upon the human environment, water quality and wildlife.

5.5.4.2 Alternatives 2, 3, 4, and 5 – Proposed Action Alternative and Alternatives

For Proposed Action Alternative 2, Alternative 3, Alternative 4, and Alternative 5, Sub-Applicant proposes to demolish and remove the original damaged Animal Control Shelter and construct a new improved facility at a new location outside the 100-year floodplain. Demolition work must comply with all Federal, State, and local abatement and disposal requirements for materials containing asbestos, lead paint and/or hazardous materials.

IDNR requires that structures be tested for asbestos containing material prior to demolition. If testing is not conducted, all debris or demolition materials must be disposed of as if it contained asbestos. Contact IDNR Field Office #1 (563) 927-2640 for details or visit <http://www.iowaworkforce.org/labor/asbestos.htm>. Sub-Applicant will issue any required demolition permits to its selected contractors who will be required to abide by any associated conditions. In the event that soil and / or groundwater contamination is discovered during demolition activities, the IDNR should be contacted. Sub-Applicant is responsible for ensuring that all waste, including hazardous waste, ACM, and lead paint, generated by the remaining demolition and construction activities must comply with Federal, State, and local laws governing the removal and disposition of hazardous materials.

Demolition activities should use BMPs to prevent the release of erosion and sedimentation to storm sewers and adjacent parcels. Non-structural BMPs may utilize the minimization of disturbance, preservation of natural vegetation, or pollution prevention / good housekeeping practices. Structural erosion control BMPs include the placement of mulch or grass, covering of stockpiles, silt fencing, inlet protection, check dams and sediment traps. The project must use BMPs that are appropriate to the project. Regular inspections and maintenance of BMPs should be performed periodically and after major rainfall events.

5.6 CUMULATIVE IMPACTS

Council for Environmental Quality regulations for implementing NEPA requires an assessment of cumulative effects during the decision-making process for Federal projects. Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR Part 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taken over time. Sub-Applicant is engaged in numerous flood recovery projects including property acquisitions, residential and public building demolitions, relocation of public buildings, restoration of flood-impacted public facilities, and a City-desired flood protection system on both sides of the river. Cumulative effects are considered for the five (5) Alternatives.

Under the No Action Alternative 1, no FEMA grant funding would be provided to demolish and remove original damaged Animal Control Shelter. For Proposed Action Alternative 2, Alternative 3, Alternative 4 and Alternative 5, FEMA would provide eligible funding for the demolition, removal of original damaged Animal Control Shelter, land acquisition, and construction of a new facility at a new location outside the 100-year floodplain. Demolition and removal of the original damaged Animal Control Shelter would eliminate the potential dangers to humans, wildlife, and ecological functions associated with the remnants of 50-year old facility complex deteriorating alongside the Cedar River. Demolition would incrementally increase the amount of construction and demolition waste entering the local landfill along with debris from numerous other demolition activities.

5.6.1 Alternative 1 – No Action

Under No Action Alternative 1, the original damaged Animal Control Shelter would remain in the 100-year floodplain and be subjected to repetitive flooding. Abandoned facility would continue to deteriorate and pose increasing danger to human environment, surface and ground water quality, surrounding park and natural habitat and wildlife. Shelter functions would continue at the undersized temporary facility. Long-term animal care and control functions for the community would be compromised due to the limited animal sheltering capacities. This alternative may overlook the rare occasion to positively impact socioeconomic considerations represented in Proposed Action Alternative 2 and Alternative 4 due to the loss of new classroom space and missed student learning opportunities for economic advancement.

5.6.2 Alternative 2 – Proposed Action

Construction of the new Animal Control Shelter at Proposed Action Alternative 2 KCC site is the most cost effective for reconstruction due to minimal cost of land acquisition, saving the Sub-Applicant, Federal, and State tax payers money. Proposed site is outside the 100-year and 500-year floodplains significantly reducing flooding potential. Larger designed shelter would be a long-term animal care and control solution for the community. Footprint of facility may increase over time. Sub-Applicant has expressed the potential for expanding the facility and grounds at this location as need dictates. Positive socioeconomic impact would occur for the community with the selection of this KCC site. Proposed Cedar Rapids / KCC partnership and new classroom facilities for KCC use would benefit the community. Additional learning facilities would provide individuals new opportunities to learn, develop fresh skills, increase future incomes, and rise above poverty level. Small increase in noise and traffic would be expected in vicinity of KCC campus near unnamed road and 76th Avenue Drive SW resulting in minor impact on commuters and local residents.

5.6.3 Alternative 3 – Jacolyn Drive and 16th Avenue SW

Construction of the new Animal Control Shelter at Alternative 3 Jacolyn Drive is not as cost effective for reconstruction as Proposed Action Alternative 2 due to costs of land acquisition, increasing the overall costs to Sub-Applicant, Federal, and State tax payers. Proposed site is outside the 100-year and 500-year floodplains significantly reducing flooding potential. Larger designed shelter would be a long-term animal care and control solution for the community. Small increase in noise and traffic would be expected on Jacolyn Drive and 16th Avenue SW resulting in minor impact on commuters, businesses, and local residents. This alternative may overlook the rare occasion to positively impact socioeconomic considerations represented in Proposed Action Alternative 2 and Alternative 4 due to the loss of new classroom space and missed student learning opportunities for economic advancement.

5.6.4 Alternative 4 – Kirkwood Campus Location

Construction of the new Animal Control Shelter at the Alternative 4 KCC site is not as cost effective for reconstruction as Proposed Action Alternative 2 due to costs of land acquisition, increasing the overall costs to Sub-Applicant, Federal, and State tax payers. Proposed site is outside the 100-year and 500-year floodplains and would significantly reduce flooding potential. Larger designed shelter would be a long-term animal care and control solution for the community. Positive socioeconomic impact would occur for the community with the selection of the alternative KCC site. Proposed Cedar Rapids / KCC partnership and new classroom facilities for KCC use would benefit the community. Additional learning facilities would provide individuals new opportunities to learn, develop fresh skills, increase future incomes, and rise above poverty level. Small increase in noise and traffic would be expected on 76th Avenue Drive SW and KCC campus near 76th Avenue Drive SW resulting in minor impact on commuters and local residents.

5.6.5 Alternative 5 – Tech Park Lots 11 and 12

Construction of the new Animal Control Shelter at Alternative 5 Bell Drive SW sites is not as cost effective for reconstruction as Proposed Action Alternative 2 due to costs of land acquisition, increasing the overall costs to Sub-Applicant, Federal, and State tax payers. Proposed site is outside the 100-year and 500-year floodplains significantly reducing flooding potential. Larger designed shelter would be a long-term animal care and control solution for the community. Small increase in noise and traffic would be expected on Bell Drive SW and C Street SW resulting in minor impact on commuters, businesses and local residents. This alternative may overlook the rare occasion to positively impact socioeconomic considerations represented in Proposed Action Alternative 2 and Alternative 4 due to the loss of new classroom space and missed student learning opportunities for economic advancement.

5.7 COORDINATION AND PERMITS

Under any of the alternatives, work that disturbs one acre or more of ground must have a SWPPP developed and NPDES permit from the IDNR. Sediment and erosion control BMPs must be implemented. Any work located in the floodplain will need to be coordinated with the local floodplain administrator and must comply with local floodplain regulations. The City of Cedar Rapids will issue any required building and demolition permits to its selected contractors who will be required to abide by any associated conditions according to local standard processes. For all alternatives that result in an adverse effect to identified historic properties, resolution of adverse effects to fulfill FEMA’s section 106 responsibilities would be required.

If contamination in excess of reporting requirements is met, work must stop, the site must be stabilized, and the IDNR must be contacted at Field Office #1 (563-927-2640). Work within the sensitive area cannot resume until IDNR clean-up or containment requirements are met and IDNR personnel indicate that no further assessment is needed at the site of the discovery. Sub-Applicant must ensure compliance with all Federal, State, and local laws regarding proper removal and disposal of asbestos containing materials and lead paint.

In the event that any archaeological deposits (soils, features, or any other remnants of human activity) are uncovered during the undertaking, this project shall be halted, Sub-Applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. Sub-Applicant will inform IHSEMD immediately, will secure all archaeological findings and restrict access to the area. Iowa Homeland Security and Emergency Management Department (IHSEMD) shall notify FEMA and FEMA will consult with the Iowa State Historical Preservation Officer and the State Archaeologist of Iowa. Work in sensitive areas may not resume until consultations are completed or until an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards determines the extent and historical significance of the discovery. Work may not resume at or around the delineated archaeological deposit until the Sub-Applicant is notified by IHSEMD.

6. CONCLUSION

Draft EA evaluated potentially significant resources that could be affected. Evaluation resulted in identification of no unmitigated significant impacts associated with the resources of climate, historic, cultural, geology and soils, floodplains, wetlands and water resources, biological resources, and environmental justice. Obtaining and implementing permit requirements along with appropriate Best Management Practices and mitigation measures will avoid or minimize any negative effects associated with the alternatives considered in this EA to below the level of a significant impact. Should no significant impacts be identified during the public comment period, FEMA recommends that a Finding of No Significant Impact (FONSI) to the human or natural environment be issued for the Proposed Action Alternative 2, Alternative 3, Alternative 4 and Alternative 5.

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7.2 REFERENCES

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