



Anti-degradation Analysis

Royalton Place North Royalton, Cuyahoga County, Ohio

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Prepared for:
Royalton Place Ltd.
14300 Ridge Road, Suite 100
North Royalton, Ohio 44133

Prepared by:
Davey Resource Group
A Division of The Davey Tree Expert Company
1500 North Mantua Street
Kent, Ohio 44240
800-828-8312



Table of Contents

| | |
|---|----|
| 1.1 Project Description | 1 |
| 1.2 Avoidance | 4 |
| 1.3 Minimization | 8 |
| 1.4 Magnitude of the Proposed Lowering of Water Quality | 8 |
| 1.5 Technical Feasibility and Cost Effectiveness | 10 |
| 1.6 Economic Consideration..... | 11 |
| 1.7 Cumulative Impact | 11 |
| 1.8 Indirect Impacts..... | 12 |
| 1.9 Construction Storm Water Management Plans | 13 |
| 1.10 Post-Construction Storm Water Management Plans | 13 |

1.1 Project Description

This document was prepared in support of an application to the Ohio Environmental Protection Agency (Ohio EPA) for a 401 Water Quality Certification by Royalton Place Ltd (Applicant) for the Royalton Place project (Project) located north of State Route 82 in North Royalton, Cuyahoga County, Ohio.

The purpose of the Project is to construct an age restricted (age 55 and over) senior housing center with associated complimentary facilities, services, and businesses in order to create a mixed-use development that will function as a centralized senior community hub within the City of North Royalton. This development will serve the senior population of the City of North Royalton.

One of the additional objectives that would be met by implementing this project is the community need for senior housing as a result of the burgeoning senior population within the City of North Royalton. Over the past 15 years, the City of North Royalton has experienced a significant increase in its senior population. The City currently lacks affordable senior housing options and other services to accommodate such exponential growth. As stated in the 2014 City of North Royalton Master Plan (excerpt provided in Appendix D-1), the largest increase in population demographic between 2000 and 2010 was residents age 65 and older, which grew by 34%.

To address the needs of this growing population, the City of North Royalton has made senior housing and associated services a priority. There currently are a number of multi-family developments in North Royalton that provide a range of housing options for residents under 65, yet there are few low-maintenance, age-restricted or assisted living housing options for seniors. Older North Royalton residents who are interested in downsizing from a larger single-family home with a yard that requires considerable maintenance to a suitable housing environment that provides the types of amenities and fosters the social interaction desired by seniors are currently left without such options within the City.

To help facilitate the construction of age-restricted housing developments, the City of North Royalton has included senior housing in its Master Plan. This plan seeks to help guide future land use and development activities. As a result of this plan and recognition of the senior housing shortage, the City of North Royalton has re-zoned areas of the City as Senior Citizen District, which includes the Project site (Appendix D-2).

The Mayor and City Council of the City of North Royalton is in full support of the proposed Royalton Place project. In a letter dated September 11, 2015, Mayor Robert A. Stefanik stated that, “...*Royalton Place fulfills an important need for senior housing that will allow our seniors to remain in North Royalton, close to family and friends. We request that the Army Corps of Engineers... give prompt and favorable review of the....application for Royalton Place.*” A copy of Mayor Stefanik’s letter is provided in Appendix D-3.

A portion of the Project site is zoned General Business. As such, the Royalton Place site provides a unique opportunity for a development that affords seniors the ability to have commercial establishments and service providers within walking distance from their homes, as commercial zoning is included on the south of the project site. According to the North Royalton Master Plan, proposed Senior Citizen Districts should have easy access to commercial establishments, service providers, and other amenities, including: food; shopping; pharmacy; banks; public transportation; and open space/recreational facilities.

The Royalton Place Project site is located in close proximity to the North Royalton Town Center (0.85 mile to the east) and the South Park Mall in Strongsville (3.2 miles to the west). These shopping and dining destinations provide leisure activities for future residents of Royalton Place. To ensure health and wellness of its residents, emergency services are located within 0.5 mile of the site, providing for a fast response time.

Finally, the Royalton Place Project site is approximately 2.1 miles to the east of the Mill Stream Run Reservation operated by Cleveland Metroparks. Mill Stream Run Reservation provides opportunities for biking, hiking, fishing, and wildlife viewing. Royalton Place will also maintain a large portion of the site as open green space, providing similar opportunities for outdoor activities. Outdoor activities provide a myriad of benefits to the elderly, including:

- *Providing opportunities for physical activity:* moderate physical activity associated with outdoor recreation can minimize physiological changes associated with ageing and help delay or prevent the onset of chronic diseases (Singh 2002).
- *Exposure to outdoor natural elements:* extensive research has shown the restorative effects of the natural environment on health (Kaplan 1995).
- *Providing opportunities for social interaction with friends and neighbors:* outdoor open spaces invite more frequent use of the space by neighbors, thus fostering stronger social ties (Kuo et al. 1998).

The proposed development will include four apartment buildings, a recreational facility, and two commercial/retail buildings. Construction of this project will require additional on-site development, including the construction of parking, interior roads, utilities, and storm water management facilities.

The Preferred Design Alternative (PDA) includes the construction of four senior apartment buildings totaling 288 units, one recreational facility, a 6,000-square-foot commercial/retail building, and a 29,000-square-foot retail space to include 116 parking spaces. The development will incorporate required utilities, asphalt surface parking, and a storm water management area.

The PDA will permanently impact a total 0.012 acre of non-forested Category 1 wetland (Wetland C), 0.210 acre of forested Modified Category 2 wetland (Wetland D), and 2.325 acres of non-forested Modified Category 2 wetland (Wetland D). A total of 524 linear feet of Class I intermittent stream (83 linear feet Stream 2, 289 linear feet Stream 3, and 152 linear feet Stream 4) are proposed to be permanently filled or culverted under the PDA.

One of the additional objectives that would be met by implementing this project is the community need for senior housing as a result of the burgeoning senior population within the City of North Royalton. Over the past 15 years, the City of North Royalton has experienced a significant increase in its senior population. The City currently lacks affordable senior housing options and other services to accommodate such exponential growth. As stated in the 2014 City of North Royalton Master Plan, the largest increase in population demographic between 2000 and 2010 was residents age 65 and older, which grew by 34 percent.

The Minimal Degradation Alternative (MDA) includes the construction of four senior apartment buildings totaling 288 units, one recreational facility, a 6,000-square-foot commercial/retail building, and a 29,000-square-foot retail space to include 116 parking spaces. The development will incorporate required utilities, asphalt surface parking, and a storm water management area.

The MDA will permanently impact a total of 0.012 acre of non-forested Category 1 wetland (Wetland C), 0.180 acre of forested Modified Category 2 wetland (Wetland D), and 1.879 acres of non-forested Modified Category 2 wetland (Wetland D). A total of 429 linear feet of Class I intermittent stream (277 linear feet Stream 3 and 152 linear feet stream 4) will be permanently filled or culverted under the MDA.

Under the MDA, a small portion of Wetland D will be temporarily impacted in order to install a storm sewer to connect the commercial and retail area in the south of the site to the storm water management area located further north. Temporary impacts in this portion of Wetland D will total 0.0059 acre. Upon completion of installation of the storm sewer, the wetland will be returned to pre-construction contours. Similarly, a small length of Stream 2 (25 LF) will be temporarily impacted for a utility crossing. Upon completion of work, the stream will be returned to preconstruction contours.

The Non-Degradation Alternative (NDA) design includes the construction of one senior apartment building totaling 36 units, and a 9,000-square-foot retail space to include 45 parking spaces. The development will incorporate required utilities, asphalt surface parking, and a storm water management area. The NDA represents a plan that would result in no wetland or stream impacts. The required avoidance of impacts to the regulated wetlands and streams greatly limits the development options and significantly reduces the developable land on this site. As a result, the NDA renders the Applicant's project economically impracticable and does not meet the Project's purpose and need, specifically the number of senior housing units does not meet the housing needs of the expanding population of North Royalton residents over 65 years of age.

The minimal project objectives consist of the construction of an economically viable mixed-use development centered on a senior housing community within the Project boundary that meets the purpose and need of this project. In order to meet these objectives, further avoidance of wetlands and streams is not possible due to the location of the water resources and the requirements of the project.

The Applicant is planning to start the construction of the Royalton Place Project as soon as the permit is issued, with a completion date within one year of the start date. The off-site mitigation will be completed prior to the start of impacts to jurisdictional waters.

1.2 Avoidance

On-site Alternatives

The on-site alternatives were designed to minimize impacts to water resources to the maximum extent practicable while still meeting the Project's purpose. Complete avoidance of water resources under the PDA or MDA was not practicable; the NDA does not meet the purpose and need of the project.

Under the PDA, efforts to avoid water resources were accomplished through the careful siting and orientation of the senior apartment buildings, resulting in the majority of Stream 2 and the entirety of Stream 5, the highest quality stream on the Project site, being avoided.

Under the MDA a further reduction in impacts to water resources was realized through the use of three-sided box culverts and a retaining wall. Permanent impacts to Stream 2 were reduced by 83 LF through the use of a three-sided box culvert at the crossing associated with the internal road that runs between apartment buildings 3 and 4. Impacts to Wetland D and Stream 3 were reduced by 0.482 acre through the use of a retaining wall in the vicinity of the commercial/retail parking areas in the south of the site. The retaining wall allows for minimal grading around the footprint of the parking areas, thereby reducing impacts to the wetland. The use of retaining walls in other areas of the site was evaluated, but all other areas require greater clearance around structures to ensure access for emergency services.

Under the NDA, the Project was redesigned to fit the site without affecting water resources. However, implementing the Project under this layout with the required avoidance of impacts to regulated wetlands and streams greatly limits the development options and significantly reduces the developable land on this site. Although this design would avoid all water resources on the Project site, the NDA would not meet the core elements of the Project's purpose and need defined in Section 1.1 and renders the Applicant's project economically infeasible.

A no-build option would also result in no impacts to water resources; however, this would deprive the Applicant of any reasonable use of the site.

Off-site Alternatives

In addition to a thorough analysis of the project's on-site alternatives, an evaluation of off-site alternatives was completed to determine if other sites in North Royalton are available for sale that could practicably be obtained and developed with potentially less damage to the aquatic environment. The term practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. Information regarding the alternative sites is provided below.

Requirements

To determine the practicability of an off-site alternative, the alternative sites were evaluated using the following criteria as related to the project's purpose and need:

- 1) *Location*: must be in North Royalton and within a 2-mile radius of general amenities (as previously noted in the Project's need elements)
- 2) *Size*: site size must be a minimum of 24 acres to support the proposed project
- 4) *Zoning*: zoned for Senior Housing and General Business
- 5) *Potential presence of water resources*: includes wetland, streams, or ponds

- 6) *Financial costs*: allows the Applicant to achieve the goals of the Project in a financially feasible manner. Rezoning and/or installation of utilities would incur significant costs and time delays for the Applicant.

The proposed Project site currently meets each of these criteria. The alternative sites fail to meet some of the essential requirements and thus are not practicable alternatives for the Applicant.

Alternatives

The proposed Project site (Site 1) and alternative sites (Sites 2 and 3) are outlined below. As opposed to the Project Site, both of the alternative sites would require a significant added cost related to land acquisition and the requirement for rezoning to support the project. The alternative sites include Sprague Road (Site 2) and Margaret Drive (Site 3).

All of the sites are located in the City of North Royalton. Analyses of secondary source material, including recent aerial imagery, USFWS National Wetland Inventory, USEPA MyWATERS, and the Cuyahoga County Soil Survey, all indicate the potential presence of regulated waters on the alternative project sites.

Site 2 is located south of Sprague Road and bordered on the east by State Road in North Royalton. The acquisition cost for Site 2 is \$373,800. This site is surrounded primarily by residential areas with some commercial development in the general vicinity. Local amenities can be found within a 1-mile radius of this site. Big Creek, a perennial stream and tributary to the Cuyahoga River, flows through the center of the property. According to the Cuyahoga County Soil Survey, Orville silt loam, frequently flooded is mapped along Big Creek. Orville silt loam, frequently flooded is listed as non-hydric with hydric inclusions when occurring within depressions and old meander channels along streams. Wetlands likely occur along Big Creek at the base of the surrounding slopes in abandoned oxbows. A second unnamed stream flows through a portion of the eastern section of the parcel. Aerial imagery of the site shows evidence of logging within the northern portion of the site. Logging activities can result in soil compaction and can disturb the drainage patterns of a site, often leading to the development of jurisdictional wetlands. Site 2 is zoned solely as RI-A Single Family. Due to the site zoning, acquisition cost, and the presence of regulated aquatic resources across the property, Site 2 does not provide a practicable alternative for the Project.

Additionally, if the project was pursued at Site 2, potential impacts would occur within the Cuyahoga River basin in the Big Creek 12-digit watershed (HUC 04110002-06-03). According to the 2010 *Big Creek Watershed Balanced Growth Plan* prepared by Cuyahoga River Community Planning Organization in cooperation with Friends of Big Creek, the Big Creek watershed is extremely urbanized, with only approximately 6% undeveloped open space remaining in the watershed. Due to its urban nature, the *Big Creek Watershed Balanced Growth Plan* identified Priority Conservation Areas (PCA) for protection within the watershed. Due to their undeveloped nature, PCAs provide important water quality functions and values for Big Creek and the Cuyahoga River, a Great Lakes Area of Concern. Site 2 was identified as a PCA within the plan (Tract 15). Compared to the Project site, impacts to aquatic resources on Site 2 would have a disproportionately large effect in the Big Creek watershed in terms of its potential effects on flooding, erosion, and decreased water quality.

Site 3 is located west of Ridge Road and south of Margaret Drive in North Royalton. The acquisition cost is \$224,900. This site is surrounded by residential, industrial, and commercial land use. Local amenities are found within a 1.5-mile radius of this site. Site 3 is characterized by very steep grade. Based upon USGS Topographic mapping (Broadview Heights quadrangle) and available aerial imagery, a series of at least three high-gradient headwater streams flow through the site. These streams are likely of much higher ecological quality and value than what occurs on the Royalton Place site (due to the more intact forested buffer on Site 3, and the fact that the streams on the Royalton Place site developed primarily within wetlands, resulting in poor quality substrate for aquatic wildlife). Additionally, the stream channels on Site 3 are underlain by Brecksville silt loam, 25 to 70 percent slopes, a non-hydric soil with hydric inclusions that occur within narrow floodplains. Wetlands likely occur at the base of the surrounding slopes adjacent to the stream channels within this soil. Construction of the project on Site 3 would present logistical challenges due to increased engineering and site preparation issues associated with the steep grade across the property. Additional costs would also be incurred on Site 3 as it is not currently serviced by any utilities (sewer, water, gas, electric). This site is zoned solely as R-B Residential Single Family.

To attract businesses to commercial/retail spaces, access and visibility are key requirements. Excellent traffic corridors adjacent to and servicing a proposed site are necessary. These traffic corridors provide and promote ease of access to the site for prospective businesses and users, and facilitate the efficient transport of goods. The higher the level of access, the more attractive the site is to prospective users. Visibility is another essential element for a business to flourish. The property must have clear visibility from primary traffic corridors for the site to be considered viable. Businesses seek out readily visible sites for ease of identification, recognition and exposure.

The retail and commercial component of the Royalton Place development is a major part of the appeal of this development plan. With the lack of both access and visibility, Site 3 would make opening and operating a successful business nearly impossible in this location. Due to the site zoning, acquisition cost, lack of utilities, presence of regulated aquatic resources across the property, and lack of visibility, Site 3 does

If the Royalton Place development was not built, there would be multiple consequences for the developer, seniors in North Royalton, and the community at large. For the developer, there would be major financial impacts. These impacts include a loss of revenue from sales, rental revenue, as well as a significant amount of time, energy, and money that has already been spent on the planning, engineering and design of the Royalton Place development.

There would also be a major impact to seniors in North Royalton who are not only seeking housing, but a comprehensive community in which to reside. A portion of the Project site is zoned General Business. As such, the Royalton Place site provides a unique opportunity for a development that affords seniors the ability to have commercial establishments and service providers within walking distance from their homes, as commercial zoning is included on the south of the project site. According to the North Royalton Master Plan, proposed Senior Citizen Districts should have easy access to commercial establishments, service providers, and other amenities, including: food; shopping; pharmacy; banks; public transportation; and open space/recreational facilities. The North Royalton Place project is the only site that will fulfill this important need.

The City of North Royalton Master plan seeks to help guide future land use and development activities. As a result of this plan and recognition of the senior housing shortage, the City of North Royalton has re-zoned areas of the City as Senior Citizen District, which includes the Project site. If this project was not constructed, it would leave a major gap in the future land use planning the City of North Royalton. There would be a loss of tax revenue, a loss of potential senior residents, and a segment of the North Royalton community that would be force to move elsewhere due to a lack of transitional housing for seniors.

1.3 Minimization

The Applicant worked diligently throughout the design of the PDA to reduce the footprint of the North Royalton development in order to avoid and minimize impacts to water resources on the Project site while still meeting the Project's purpose and need. As designed, the Project will result in a total of 2.547 acres of permanent wetland impacts and 524 lf of stream, while avoiding a total of 2.534 acres of on-site wetland and 911lf of stream.

To further reduce the footprint and minimize impacts to water resources, the MDA as described in Section 1.1 was developed. As previously discussed in Section 1.2, the reduction in footprint from the PDA was achieved through the use of a three-sided box culvert at the crossing associated with the internal road that runs between apartment buildings 3 and 4, and the use of a retaining wall allowing for minimal grading around the footprint of the parking areas, thereby reducing impacts to the wetland. Although this design minimizes impacts to wetlands from 2.547 acre under the PDA to 2.065 acre under the MDA, and reduce stream impacts from 524 under the PDA to 454 under the MDA, it limits the full use of the site and increases the cost to the Applicant.

Utilizing the design features discussed in Section 1.5, the roadways, buildings, parking, and other site features were located to maintain existing natural drainage and minimize impacts to natural features as much as possible. In some cases avoidance of natural features were determined to be either economically infeasible or would result in an impractical design.

To further minimize impacts to water quality as a result of this project, the Applicant will adhere to all applicable City of North Royalton design standards for storm water controls. To ensure the wetlands and streams being avoided are not adversely impacted by the development activities, all necessary Best Management Practices (BMP) will be employed during construction.

1.4 Magnitude of the Proposed Lowering of Water Quality

The following water resource impacts are based on the PDA. Of the wetlands and streams within the project area, none of the resources or their characteristics are unique or rare within the locality or state. Both the wetlands and streams are of generally low ecological quality. The streams and wetlands on the project site receive run-off from developed areas within higher portions of the local watershed.

Stream Discussion:

Four intermittent streams totaling 1,435 linear feet are located on the Project Site. Many of the streams formed within wetlands on the site, resulting in poor quality substrate and low ecological assessment scores. The potential habitat values of the streams were assessed using the Headwater Habitat Evaluation Index (HHEI). These streams assessed within the range of Class I and II primary headwater habitat. The streams proposed to be impacted are all Class I; the Class II stream will be avoided. Class I streams have little or no aquatic life potential, except seasonally when flowing water is present for short time periods following precipitation.

A total of 524 linear feet of Class I intermittent stream is proposed to be permanently filled or culverted.

Stream 2 is an intermittent stream that totals 456 linear feet. This stream receives drainage from and flows through Wetland D. Dominant substrates within Stream 2 include clay and silt. Stream 2 received a score of 29 on the HHEI, placing it into Class I. A total of 83 linear feet of Stream 2 will be impacted as a result of this project.

Stream 3 is an intermittent stream that totals 400 linear feet. This stream receives drainage from Stream 4 and Wetland D. It discharges into a culvert that flows beneath York Road. Dominant substrates within Stream 3 include clay and silt. Stream 3 received a score of 29 on the HHEI, placing it into Class I. A total of 230 linear feet of stream 3 will be impacted as a result of this project.

Stream 4 is an intermittent stream that totals 152 linear feet. This stream receives drainage from Wetland D and flows into Stream 3 in the southwest portion of the project site. Dominant Substrates in Stream 4 include clay and silt. Stream 4 received a score of 19 on the HHEI, placing it into Class I. A total of 154 linear feet of Stream 4 will be impacted as a result of this project.

As previously mentioned, the streams on this site are not unique or rare within the locality or state. Based on the topography in Cuyahoga County, the streams found on the Project site are typical headwater streams for the area.

Streams 2, 3, and 4 are Class I, intermittent headwater streams. Due to the flow regime, poor substrate, and stormwater input from surrounding developments, the aquatic life potential of these streams is limited. Although, Filling or culverting the portions of the stream channels proposed to be impacted on the project site will result in a minimal, localized loss of habitat for aquatic organisms, impacts to aquatic life resulting from the project are anticipated to be minimal.

Because of the lack of perennial flow, potential impacts to stream biota, including fish and benthic macroinvertebrates are not anticipated as they are not found within these streams. As a result of the avoidance of the higher quality Class II stream onsite, the careful design of the development project, and the onsite BMPs, it is not anticipated that stream biota will be impacted and no noteworthy water quality degradation will occur.

To ensure receiving waters are not adversely impacted by the development activities, a number of Best Management Practices (BMP) will be employed during construction. These include but are not limited to: stabilized construction entrances and access roads, silt fencing, geotextile mats on steep grades, inlet protection, installation of sediment basins, phased development, minimization of the amount of soil exposed during construction activity, temporary stabilization of soils within 14 days of soil exposure, and establishing vegetation in drainage swales.

The streams proposed to be impacted are not currently used for commercial activities, entertainment, or tourism. Therefore, impacts on the economic value of these streams in relation to recreation, tourism, or commercial activities is not anticipated.

Wetland Discussion:

The functions and value of the wetlands on the Project site were evaluated using the Ohio Rapid Assessment Method (ORAM) for wetlands V.5.0. Two wetlands totaling 2.547 acres will be impacted in the development of this project.

The wetlands on this site are not locally or regionally scarce. The wetlands proposed to be impacted on the project site were assessed as a Category 1 and Modified Category 2 wetlands.

Category 1 wetlands are of the lowest ecological quality supporting minimal habitat, hydrological, recreational, and educational functions. Category 2 wetlands are considered general high quality waters that support moderate wildlife habitat, or hydrological, or recreational functions, and may be dominated by native species but generally without the presence of, or habitat for, rare threatened or endangered species.

Wetland C is a 0.012-acre emergent wetland located in the west of the project site. Wetland C received a score of 24.5 on the ORAM, placing it into Category 1. A total of 0.012 acres of Wetland C will be permanently impacted as a result of this project.

Wetland D is a 5.069-acre wetland located in the middle and south of the site. The majority of Wetland D is dominated by emergent vegetation, while small portions of the wetland in the south of the site are covered by a forested plan community. Wetland D received a score of 35 on the ORAM, placing it into the low range of Modified Category 2. A total of 2.547 acres of Wetland D will be impacted as a result of this project. The vast majority of Wetland D is dominated by *Phragmites australis* (common reed, FACW); a non-native invasive species that often forms monotypic stands in the wetlands it invades.

Because it is proposed to impact all of Wetland C, and a portion of Wetland D, there will be some habitat loss. However, Wetland C is seasonally saturated wetland with little habitat diversity and no significant connectivity to other water resources. Although a portion of Wetland D will lose some habitat features, a large amount of the portions of the wetland proposed to be impacted are areas dominated by *P. australis*; these areas provide only marginal habitat for wildlife, including amphibians and macroinvertebrates.

Due to the size and quality of the wetlands to be impacted, the proposed development activities are not expected to result in the elimination and/or significant decline of aquatic species. With the replacement of the aquatic function of these wetlands at a 2.0:1 (emergent) and 2.5:1 (forested) ratio within the watershed, there will be no overall decline in aquatic life or habitat. In fact, with the increase in wetland area provided by the mitigation, there will be an increase in overall wetland functions and values.

The wetlands on the Project Site are not currently used for commercial, recreation, or tourism activities. Due to the size, location, lack of access and quality of the wetlands, there is no economic value in regards to recreation, tourism, commercial activities, or aesthetic value.

1.5 Technical Feasibility and Cost Effectiveness

All three on-site alternatives are technically feasible and would require similar technology to implement. The resources necessary to implement the alternatives would also be similar and are available. The significant difference between the alternatives is in the economic and structural feasibility as explained below.

The estimated cost for the PDA is \$34,268,190. The PDA has been designed to minimize impacts to wetlands, streams, and overall surface water quality within the Project site, while still allowing a reasonable return on the Applicant's investment. The limitation of the water resource impacts was accomplished by the careful orientation of the apartment buildings on the Project site. For the unavoidable stream impacts, the Applicant proposes to use traditional culverts which are significantly less expensive than the three-sided box culverts. With the PDA there is also a reduction in cost as a result of not using a retaining wall to minimize impacts to on-site wetlands.

The cost to construct the MDA is \$35,213,760, an increase in approximately \$945,570 compared to the PDA.

The difference in cost is the result of the use of a three-sided box culvert at the crossing associated with the internal road that runs between apartment buildings 3 and 4. Impacts are also reduced through the installation of a retaining wall in the vicinity of the commercial/retail parking areas in the south of the site. The retaining wall allows for minimal grading around the footprint of the parking areas, thereby reducing impacts to the wetland. Although this would protect more of the on-site water resources, it will add significant additional costs to the project.

The NDA has a much smaller overall footprint which has been designed to totally avoid the stream and wetlands on the Project site. With the reduction in buildable area comes a decrease in the number of apartment buildings, retail space and parking, as well as the elimination of the recreational facility and commercial space. Even though the overall construction costs are reduced significantly with this alternative, the NDA would not meet the purpose and need for the Project, and the economic loss associated with the restriction on the use of this site makes this design cost prohibitive. Detailed construction costs for the NDA were not developed.

1.6 Economic Consideration

As part of this submission process, the Applicant completed a socioeconomic evaluation of both development costs and community economic benefits for the PDA, MDA, and NDA. Details regarding the socioeconomic analysis and the current socioeconomic state of Cuyahoga County are provided below.

The U.S. Census Bureau (<http://quickfacts.census.gov/qfd/states/39/39035.html>) reports that 1,259,828 people lived in Cuyahoga County in 2014. This is a 1.6% decrease from the population in 2010, when 1,280,106 people were reported to live in the county. From 2009 to 2013, the median household income in the county was \$43,804, which was less than the statewide median household income of \$48,306. The U.S. Census Bureau also reported that between 2009 and 2013, 18.3% of the people in Cuyahoga County lived below poverty level, above the statewide average of 15.8%. According to data published by the U.S. Bureau of Labor Statistics (April 2015), Cuyahoga County had an unemployment rate of 5.5%, which exceeded the Ohio unemployment rate of 5.2%. This project will provide much needed jobs within Cuyahoga County.

Development costs of the PDA are estimated to be \$34,268,190. This cost includes Construction materials (\$16,000,000), construction labor (\$18,000,000), and mitigation costs (\$268,190).

The Applicant estimates that the construction of the PDA will generate approximately 216 full-time construction jobs for three construction seasons at an average hourly wage of \$40/hour. Using a standard 40-hour work week, this translates to an average annual salary of \$83,200 per worker and a total payroll of approximately \$18,000,000 over the duration of the project. Once construction is complete, the Royalton Place development is anticipated to employ a total of 46 full-time workers, with a total estimated payroll of \$993,600. Annual taxes are estimated to provide revenue of \$1,919,964. This amount includes payroll, sales, property, and income taxes.

Development costs of the MDA are estimated to be \$35,213,760, an approximately 2.7% increase in cost over the PDA. This cost includes construction materials (\$16,500,000), construction labor (\$18,500,000), and mitigation costs (\$213,760).

The Applicant estimates that the construction of the MDA will generate approximately 222 full-time construction jobs for three construction seasons at an average hourly wage of \$40/hour. Using a standard 40-hour work week, this translates to an average annual salary of \$83,200 per worker and a total payroll of approximately \$18,500,000 over the duration of the project.

Once construction is complete, the Royalton Place development is anticipated to employ a total of 46 full-time workers, with a total estimated payroll of \$993,600. Annual taxes are estimated to provide revenue of \$1,919,964. This amount includes payroll, sales, property, and income taxes.

Development costs of the NDA are estimated to be \$3,500,000. This cost includes construction materials (\$1,500,000) and construction labor (\$2,000,000). No mitigation costs are associated with the NDA, as no impacts to aquatic resources will occur under this design alternative.

The Applicant estimates that the construction of the NDA will generate approximately 24 full-time construction jobs for three construction seasons at an average hourly wage of \$40/hour. Using a standard 40-hour work week, this translates to an average annual salary of \$64,800 per worker and a total payroll of approximately \$2,000,000 over the duration of the project. Once construction is complete, the Royalton Place development is anticipated to employ a total of 14 full-time workers, with a total estimated payroll of \$291,200. Annual taxes are estimated to provide revenue of \$519,432. This amount includes payroll, sales, property, and income taxes.

1.7 Cumulative Impact

In terms of past impacts affecting water quality within this watershed, it is assumed that impacts have taken place as residential, commercial, and industrial growth has occurred.

To address any potential current impacts to water quality under the PDA and MDA, the Applicant will adhere to all required storm water management regulations and appropriate BMPs. As a result, the development of the Project will not result any significant added impact to downstream water quality.

Future effects to water quality due to the development of the Project were assessed. Under the PDA two wetlands totaling 2.547 acres will be permanently impacted, with 2.534 acre (49.87%) of on-site wetland being avoided. Four streams totaling 524 lf will be permanently impacted, with 911 lf (63.48%) avoided. Under the MDA 2.065 acre of wetland will be permanently impacted, with 3.016 acres (59.35%) being avoided. Four streams totaling 454lf will be permanently impacted, with 981lf (68.36%) avoided.

To ensure minimal future impacts to water quality, the Applicant will be implementing a variety of storm water BMPs both during and post construction. Since the project will have minimal impacts to wetlands and has been designed to protect water quality to the greatest extent practicable, negative impacts to the watershed are not anticipated.

The completion of the project is not anticipated to drive significant future development in the area that could result in substantial future water quality impacts.

Since the NDA was designed to avoid all water resources, there are no associated cumulative impacts to water resources, as no impacts are proposed.

1.8 Indirect Impacts

Indirect impacts are not anticipated as a result of the development activities of the Royalton Place Project. As stated in greater detail in section 1.4 Magnitude of the Proposed Lowering of Water Quality, the proposed impacts will have minimal overall effect on habitat and aquatic species.

To further minimize on-site and off-site impacts both during and after construction, the Applicant will incorporate BMPs and other techniques necessary to maintain compliance with the federal Water Pollution Control Act, Ohio Water Pollution Control Act, and North Royalton Storm Water Management Ordinances for storm water discharges associated with construction activities.

Storm water management planning will address issues related to both water quantity and quality by incorporating appropriate techniques from the latest Ohio Rainwater and Land Development manual to maintain compliance with the applicable National Pollutant Discharge Elimination System permit.

1.9 Construction Storm Water Management Plans

Storm Water Pollution Prevention Plans (SWPPPs) will be developed as the facilities are developed. These plans will incorporate non-structural preservation methods, erosion prevention practices, sediment controls, runoff controls, post-construction storm water management, surface water protection, non-sediment pollution controls, and on-going maintenance plans. Post-construction BMPs may include infiltration basins, enhanced water quality swales, dry or wet extended detention basins, constructed wetlands, sand and/or other media filtration systems, bio-retention cells, pocket wetlands, vegetated filter strips, and/or other appropriate BMPs. Development planning will strive to maintain or enhance natural systems, limit impacts, and coordinate SWPPPs for the project.

A Notice of Intent (NOI) will be submitted to ensure the project will be in compliance with the conditions of the Ohio EPA Federal Section 402 National Pollution Discharge Elimination System General Permit for Construction. In addition, coordination with the township and/or Cuyahoga County Soil and Water Conservation District will be done to ensure the project is in compliance with local storm water requirements.

1.10 Post-Construction Storm Water Management Plans

For long-term management of the increased stormwater volume, the water on the site will drain to a retention basin on the west end of the site. This stormwater basin will manage runoff volume and moderate post construction peak flow to the receiving waters through soil percolation and controlled water storage. Trees and grass will be planted in association with the buildings and parking areas. The trees will slow rainfall by decreasing through flow and will provide shade, thus moderating water runoff temperature. Grass filter strips around parking lots and buildings will improve water quality of small sheet flows from the developed areas.

Work within waters of the United States will be performed during periods of low-flow or no-flow. The activity will not restrict or impede the passage of normal or high flows. Additionally, this activity will not disrupt the movement of aquatic life. No habitat for spawning occurs on this site, so no activities in spawning areas during spawning season will occur in the development of this site.

Upland buffer zones will be maintained to the maximum extent practicable around the perimeter of the avoided wetland and streams as part of the proposed development plan to protect the water resources from the development activities of the site.

All post construction BMPs will be designed to incorporate appropriate techniques from the latest Ohio Rainwater and Land Development Manual. Preparation of a SWPPP and submittal of a NOI is required for township and/or county approval of the development. Thus, no off-site impacts are anticipated with the development of this site as these measures will ensure that there will be no significant degradation of the receiving waters and the associated aquatic ecosystem.