

**PROPOSAL FOR SECTION 404 & 401
AUTHORIZATION**

for

**Nestle R&D Center, Inc.
Product Technology Center
Solon, Cuyahoga County, Ohio**

Prepared for:

**Nestle R&D Center, Inc.
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Solon, Ohio 44139**

Atwell, LLC Project No. 11002135

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1.0 INTRODUCTION & SITE HISTORY

Nestle R&D Center, Inc. (Applicant) is proposing to construct a global product technology center (PTC), referred to in this document as the Site. The Site is located south of Cannon Road, west of Interstate 422, and east of Hawthorn Parkway in Cuyahoga County, Solon, Ohio. The Site is approximately 16 acres in size and is mostly undeveloped land consisting of old field and forested land. The Site is adjacent to a 39 acre parcel currently used by Nestle for research, production, and administrative tasks.

The Applicant is proposing to construct a 92,865 square foot building in the central portion of the Site. The facility will also include a parking area with 178 spaces, access drives, shipping/receiving parking aprons, and two stormwater ponds. To facilitate the complete PTC design, approximately 11 acres of the 16 acre Site will be graded. As a result of the design three wetlands will be impacted. These impacts will total 2.98 acres.

This document was prepared by Atwell, LLC (Atwell) to address the proposed project in accordance with Section 404 Authorization from the United States Army Corps of Engineers, Buffalo District (ACOE) and for Section 401 Authorization from the Ohio Environmental Protection Agency (OEPA) for impacts to Waters of the United States in association with the project. This document also contains an alternative analysis as required by the ACOE for Section 404 Authorization and as required by the OEPA for Section 401 Water Quality Certifications (WQC).

In September 2011 Atwell conducted a wetland delineation, on behalf of the Applicant, on the 16 acre Site. Five wetlands totaling 3.62 acres identified on the subject site. The wetlands were evaluated as low quality emergent (Category 1) and moderate quality forested (Category 2). Wetlands were categorized using the Ohio Rapid Assessment Method (ORAM).

Following the delineation, in early October 2011, Atwell met with representatives of the ACOE Buffalo District, Orwell Field Office and the OEPA Northeast District Office. The ACOE and OEPA were represented by Ms. Chantelle Carroll and Mr. Joe Louceck, respectively. The purpose of this site visit was to conduct a pre-application meeting in which the wetland delineation survey boundaries were reviewed, the ORAM scoring forms were verified, and the overall goals of the project were discussed. This meeting also served to give the agencies an opportunity to see the site while the majority of summer vegetation was still visible. During this meeting Atwell stated that the Applicant wished to request a preliminary wetland determination for all features on-site. On April 27, 2012 the ACOE issued the preliminary wetland determination. A copy of the determination is included in the Appendices.

2.0 SITE DESCRIPTION

2.1 Location

The Site is located south of Cannon Road, west of Interstate 422, and east of Hawthorn Parkway in Cuyahoga County, Solon, Ohio. Refer to the *Site Location Map* is included in **Appendix I**. The Site is mostly undeveloped land consisting of old field and forested land. Historic aerial photographs and USGS Topographic Quadrangle maps indicate that the land was previously

residential (see **Appendix II**). A house was demolished on the northern portion of the Site in 2007.

2.2 Site Features

The subject site is a mixture of manicured lawn and young secondary growth woods. It is bordered to the north and west by residential and undeveloped forested areas and Interstate 422 to the east. Additionally, the Tinkers Creek Tributary is located offsite to the northeast of the Site and flows south along the eastern property line. The existing office, industrial, and business facilities are located south of the Site.

The topography of the site is relatively flat with gentle slopes generally falling from northeast to southwest. The general surface water flow direction of the site is from northeast to southwest. The Tinkers Creek Tributary (an intermittent stream) is located offsite to the east of the Site and generally flows south between the Site and Interstate 422. Approximately half of the site is open maintained lawn and open field and the other half is mostly undeveloped forest.

The USGS *Chagrin Falls, Ohio Quadrangle Map* (1964, photorevised 1984) indicates that the site ranges in elevation from 1,060 feet above mean sea level (msl) in the northeast to 1,050 feet above msl in the southwest corner of the Site. This map shows one open water area located in the northwestern corner of the Site as well as the above mentioned stream offsite to the east. Refer to the *Site Location Map* in **Appendix I**.

According to the *Soil Survey for Cuyahoga County, Ohio* (USDA-NRCS, 2009) the site contains two soil types. Refer to **Appendix I** for the *County Soil Survey*. These soil types include; Wadsworth silt loam 0 to 2 percent slopes (WaA) and Wadsworth silt loam, 2 to 6 percent slopes (WaB). These soils types are not listed as hydric soils. Refer to **Table 1** along with the hydric rating. No drainages, marsh symbols, or areas of open water are mapped for the site.

Table 1. County Soil Survey

Mapped Soil Unit	Hydric	Non-Hydric	Hydric Inclusions	Location of Hydric Inclusions
Wadsworth silt loam 0 to 2 percent slopes (WaA)	No	Yes	-	-
Wadsworth silt loam, 2 to 6 percent slopes (WaB)	No	Yes	-	-

2.3 Hydrologic Conditions

A hydric soil is “a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation” (USDA-SCS, 1985). Soils on-site are non-hydric according to the Natural Resource Conservation Service’s (NRCS) *County Hydric Soils List* (available online: <http://soils.usda.gov/use/hydric/>).

A review of the National Wetland Inventory (NWI) Map was conducted to determine the likely presence, location, size, and type of wetlands that may be located on the subject property. The

United States Fish and Wildlife Service (USFWS) generates the NWI map through aerial photograph interpretation. The *National Wetland Inventory Map* is included in **Appendix I**. The subject site is located on the *Chagrin Falls, Ohio Quadrangle*. The NWI map does not show any wetlands within the subject site.

The FEMA FIRM was reviewed for the site (FEMA, 2010). The majority of the Site is mapped in Zone AE, which are areas classified having a 1% annual chance of flooding. The western and northern portion of the Site is mapped in Zone X, which are areas not located within a FEMA floodplain. No drainageways, areas of open water or marsh symbols were mapped for the site. However, Tinkers Creek Tributary is shown just off the site to the northeast along Interstate 422. Refer to the *FEMA-FIRM* in **Appendix I**.

3.0 APPLICATION COORDINATIONS

Coordination with the USFWS and the Ohio Department of Natural Resources (ODNR) regarding potential impacts to threatened and endangered species and natural areas, as well as coordination with the State Historic Preservation Office (SHPO) regarding cultural resource issues is required prior to authorization of any activity under Section 404 of the Clean Water Act. In order to provide information regarding these requirements, a review of relevant information available from the USFWS, the Ohio Department of Natural Resources (ODNR) and the Ohio Historic Preservation Office (OHPO) has been conducted as described below.

3.1 Federally Listed Rare and Endangered Species

At Atwell's request, the USFWS provided written correspondence on October 27, 2011 regarding the potential for federally listed species on the site. Their letter indicated that the site area is not within the vicinity of Federal wilderness areas, wildlife refuge, or designated Critical Habitats. The USFWS did indicate the subject site lies within the range of the federally endangered species Indiana bat (*Myotis sodalis*) and approximately five miles from an area of known Indiana bat captures. It was recommended by the USFWS that some additional habitat information be collected in order to evaluate potential impacts. In an effort to provide the USFWS with more information, Atwell has asked the USFWS to conduct a site visit to make an on-site evaluation. Given the current forested habitat on-site, which is dominated by buckthorn, small elms, and maple, we believe the proposed site development is not likely to adversely affect the Indiana bat. If it is determined that suitable habitat is present, the Applicant proposes seasonal tree clearing prior to April 1.

The USFWS also indicated that the site is within range of the piping plover and Kirkland's warbler, a federally endangered species, and the bald eagle, a species protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. However, it was their determination that given the project type, location, and onsite habitat, none of these species are expected to be within the project area. A copy of the USFWS correspondence is included in **Appendix III**.

3.2 State Listed Rare and Endangered Species

The ODNR was contacted in early May 2012 for any information available concerning the presence of state listed endangered, threatened, and proposed species or their habitat for the project site. The ODNR was requested to provide information through a formal search of the Ohio Natural Heritage Database. As of the printing of this document, a response regarding our database request has not been received. When a response is received, a copy will be forwarded to the agencies for review. A copy of Atwell's original correspondence is included in **Appendix III**.

3.3 Archeological and Historical Records

In October 2011 Atwell contacted the OHPO in an effort to determine if any historic properties or archaeological resources existed on or near the Site. In late October a response was received. The response indicated that no archaeological sites or structures listed on the National Register of Historic Places were on or near the Site. Two buildings were identified as being listed on the Ohio Historic Inventory within one mile of the Site. These buildings, identified as CUY194727 and CUY0195327 are located northeast of the Site, across Interstate 422. Development of the project should not have an adverse effect on these two sites. A copy of the OHPO response is included in **Appendix II**.

4.0 WETLAND DELINATION

Atwell conducted a wetland delineation of the subject property on September 27th and 29th, 2011. The delineation identified five wetlands on the Site (Wetlands A-E) totaling approximately 3.76 acres. A portion of these wetlands are located along the western property boundary, and extend off-site. Total wetland acreage on-site is 3.13 acres. Refer to the *Wetland Survey Map, Wetland Delineation Data Forms, and Preliminary Jurisdictional Determination* provided in **Appendix IV**.

During the delineation areas identified as potential Waters of the U.S. and areas that exhibited all three indicators of wetlands were noted. Identification of potential wetlands required characterization of plant community types, identification of hydric soils, and identification hydrologic indicators for each community type.

For all potential wetland areas, dominant species in the tree, sapling, shrub, woody vine, and herb layers were determined for all potential jurisdictional areas, in accordance with the *1987 Wetlands Delineation Manual* and the *Northcentral and Northeast Region – Interim Version Regional Supplement*. Recorded vegetative data consisted of herbs with the greatest percentage of aerial cover within 5 feet of the plot center. Within a 30 foot radius of the plot center, saplings and shrubs with the greatest height, trees with the largest relative basal area, and woody vines with the greatest number of stems were recorded. Species within each of these layers were listed on data forms in order of dominance.

Soil data were collected using a 16 inch long shovel to a depth of approximately 24 inches to determine the presence of hydric soils. Soil matrix and mottle colors were identified using a Munsell Soil Color Chart (Macbeth, Revised 1992). Evidence of any hydric soil characteristics and evidence of the presence of wetland hydrology were also recorded.

The boundaries of areas in which all three wetland criteria were met were identified and measured in the field. Points at which dominant vegetation species changed from wetland to upland, where soils changed from hydric to non-hydric, or where indicators of wetland hydrology were no longer observed were noted. The characteristics of each community type were recorded on data forms and sample points were chosen to represent both an identified potential wetland and its surrounding upland community. Refer to *Wetland Delineation Data Forms* in as **Appendix IV**.

Wetland A is generally located in the center of the Site and consists of approximately 0.98 acres of forested wetland and approximately 1.78 acres of emergent wetland. Wetland B is an approximately 0.69 acre emergent wetland located along the western property line. Wetland C is an approximately 0.08 acre emergent wetland located in the southwestern portion of the Site. Wetland D consists of an approximately 0.06 acre emergent wetland located in the western portion of the subject property. Wetland E is located in the northwestern corner of the Site and consists of an approximately 0.03 acre emergent wetland. The source of hydrology for all Wetlands A-E appears to be precipitation and run-off from adjacent roads and upland areas.

Wetland A was evaluated as a moderate quality (Category 2) emergent/forested system dominated by invasive buckthorn and American elm. Wetlands B and D were assessed together using the Ohio Rapid Assessment Method (ORAM) due to their proximity and hydrologic connection. These wetlands were classified as Modified Category 2. Wetlands C and E were scored as Category 1 and a “Grey Area” Category 1 or 2, respectively. Refer to **Appendix V** for the ORAM data forms. **Table 2** below summarizes the attributes of the wetlands identified on the Site.

Table 2. Wetland Inventory Table

Description	Type	ORAM Score	Category	Acreage	Jurisdictional Status*
Wetland A	PEM/PFO	53	2	2.90	ACOE
Wetland B**	PEM	40.5	Mod. 2	0.69	ACOE
Wetland D				0.06	
Wetland C	PEM	29.5	1	0.08	ACOE
Wetland E	PEM	30.5	1 or 2	0.03	ACOE
Wetland Totals				3.62 Acres	

*Applicant is requesting a preliminary wetland determination from the ACOE.

**Wetlands B and D were assessed together using the ORAM due to their proximity and hydrologic connection.

5.0 REQUIRED AUTHORIZATION

The proposed impacts to Waters of the United States include wetland fill in excess of 0.5 acres. The proposed project does not meet the criteria for a Nationwide permit; therefore, for activities associated with the proposed impacts, the proposed project will require an Individual Section 404 permit from the ACOE and a Section 401 WQC from the Ohio EPA. An alternatives analysis is required for an Individual Section 404 permit and for a Section 401 WQC through the antidegradation review. Due to the comprehensive nature of the requirements of the

antidegradation review, a combined review is presented within *Sections 6.0 and 7.0* and it is intended to provide information for the purposes of both Section 404 and Section 401.

6.0 PROJECT ALTERNATIVES ANALYSES

The Applicant will construct a 92,865 square foot building in the central portion of the Site. The facility will also include a parking area with 178 spaces, access drives, and shipping/receiving parking aprons. Two stormwater ponds will be required to provide on-site water quality. These ponds will total 1.3 acres. To facilitate the complete PTC design, approximately 11 acres of the 16 acre Site will be graded. As a result of the design three wetlands will be impacted. Wetland A (2.90 acres) will be completely graded and filled by construction activities. The majority of Wetland C (0.06 acre) and a portion of Wetland D (0.02 acre) will be filled.

6.1 Project Alternative Analysis – U.S. Army Corps of Engineers

Off-Site Alternatives Analysis

The purpose of this project is to locate a commercial development, including a new Nestle Product Technology Center (PTC) on the existing Nestle Solon, Ohio campus. The applicant develops and launches innovative products based on cutting-edge technologies. It is imperative that the proposed PTC is in close proximity to the business and factory infrastructure in order to offer better and faster production and manufacturing processes.

A formal PTC/Research and Development facility comparative analysis was conducted by the Applicant prior to the selection of the Solon site. The Applicant provided the specific space requirements for this project. The analysis compared the site requirements to multiple offsite locations, including new builds and renovations, construction/move-in costs and operating cost analysis, zoning and local building requirements, and long term solutions.

As indicated in the 404(b) (1) guidelines, an alternative site is practicable if it is "...capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." The following is a listing of attributes that each alternative site has been evaluated against.

Development criteria for the PTC/Research and Development facility are as follows:

- Property can accommodate the full use of the required building square footage and parcel acreage
- Proximity to existing business and factory infrastructure
- Affordability of site
- Economic incentives
- Labor pool depth
- Property is zoned appropriately

The specific space requirements for the proposed PTC are an approximately 100,000 square foot building footprint, approximately 70,000 square feet for parking, approximately 255,000 square feet for landscaping, for a total of between 5 and 8 acres. Ten sites and four existing buildings within the metropolitan Chicago area were visited as part of the site selection process. Additionally, the existing Solon campus was toured for potential viable sites. Three of the Chicago sites and two sites located with the Solon Campus were then chosen for the alternative analysis. The five options are:

- Option 1 – 2501 Davey Road, Chicago
- Option 2 – 5115 Sedge Boulevard, Chicago
- Option 3 – 2501 Patriot Boulevard, Chicago
- Option 4 – Harper Expansion, Solon
- Option 5 – Harper New Build, Solon

Metropolitan Chicago was chosen for review because an existing PTC is currently located in that region. The Solon, Ohio region was reviewed because of the proximity of the existing Nestle campus facilities. Each of these sites is discussed below. Specifically, the reasons why each site is not considered a practicable alternative to Option 5 are discussed.

Option 1 – 2501 Davey Road, Chicago

2501 Davey Road is located within an existing business complex. This option offers an existing 103,000 square foot building built in 2000 and is the lowest cost option, however when lease costs are considered the cost will be roughly equal with Option 4 after two years. This space offers 280 parking spaces and bio-technology laboratory amenities. Construction and renovations will require converting an existing warehouse into the PTC Pilot Plant as well as new construction for the remainder of the Pilot Plant.

Option 2 – 5115 Sedge Boulevard, Chicago

5115 Sedge Boulevard is located within an existing business park. This option only offers 66,000 square feet of building and 160 parking spaces. Both the existing building and parking do not meet the minimum requirements for the proposed PTC. Therefore, the Applicant could utilize the existing office and lab space but would have to construct a new Pilot Plant. Additionally, this option is currently 100 percent occupied.

Option 3 – 2501 Patriot Boulevard, Chicago

This option is currently an improved but undeveloped lot within an existing business park. The available space ranges from 4 acres to 13.87 acres, which would accommodate a building ranging from 50,000 to 400,000 square feet. It is currently zoned for office, corporate headquarters, or research. This is the most expensive total cost site of the five options.

Option 4 – Harper Expansion, Solon

This option entails expanding the existing Harper building (adjacent to the south of the Site property) within the Nestle Solon campus. Expanding on the existing building would require the least amount of space compared to the other options. Amenities such as a cafeteria and gym are already offered on the campus. In addition to the renovation, a new office building would need to be constructed on land east of the existing Harper building. Over the long term this option is the lowest cost solution. However, renovating an older building for a facility such as the PTC can pose significant engineering and architectural challenges.

Option 5 (Preferred Site) – Harper Road New Build, Solon

The proximity of the PTC facility and the manufacturing processes is critical to creation and fostering of ideas and concepts, product/process development, product quality testing, and production and launches. The ideas and concepts include a cross function with the PTC, packaging, consumer research, marketing, operations, sales, and finance. The production and process development that takes place within the PTC reviews the raw materials access, factory infrastructure, and the transition from pilot to factory level operations. The product quality testing that will take place within the PTC will include sensory quality testing which involves internal cross functional teams as well as external sensory panels. In order to ensure premier quality and efficiencies it is imperative that the PTC is located within the Solon campus. The PTC staff is closely involved during the first months of production in the factories to make sure the new technology works. Without being located within the same general vicinity or corporate campus as the rest of the Nestle operation, efficiencies can quickly be lost and result in negative financial and product safety and quality impacts.

The applicant has analyzed their current facilities as well as the three locations in Chicago and has determined that building a new PTC facility within the existing Solon campus is the only viable option. Building to suit on land north of Option 4 will cost 10 to 20 percent more than renovating Option 4. However, new construction will produce a better result, offer less construction risk and, is a better investment for Nestle. The estimated cost for this option is higher than options 1 and 4 but lower than options 2 and 3.

6.2 Project Alternative Analysis – Ohio EPA

An analysis of the Preferred Design, Minimal Degradation, and Non-Degradation Alternatives is provided within the *Section 7.0*. Each alternative includes a discussion of the expected magnitude of the lowering of water quality associated with each scenario. As required by the Anti-Degradation Rule, the anticipated impact of the proposed lowering of water quality on aquatic life, wildlife, and the overall aquatic community structure and function is included. In addition, mitigative techniques are also discussed.

The sequence of the alternative analysis discussion follows the format of the Application for OEPA Section 401 WQC and the numbers following the heading titles correspond with those indicated on the application form.

7.0 ANTIDEGRADATION REVIEW

7.1 Description of the Work (10a)

7.1.1 Preferred Design

The Preferred Design Alternative will construct a 92,865 square foot building in the central portion of the Site. The facility will also include a parking area with 178 spaces, access drives, and shipping/receiving parking aprons. Two stormwater ponds will be required to provide on-site water quality. These ponds will total 1.3 acres. To facilitate the complete PTC design, approximately 11 acres of the 16 acre Site will be graded.

Wetland A (2.90 acres) will be completely graded and filled by construction activities. The majority of Wetland C (0.06 acre) and a portion of Wetland D (0.02 acre) will be filled. However, given the centralized location of these wetlands on the property, the triangular shape of the property, and the design requirements of the PTC, this is the most viable option. The Preferred Design plan is included in **Appendix VI**.

7.1.2 Minimal Degradation Alternative

The Minimal Degradation Alternative will construct a 92,865 square foot building in the mostly off the Site and to the southwest. The building will be off-site and west of the existing Nestle facility. The building would be in the existing employee parking lot, west of the existing building. The facility will also include a parking area with 191 spaces, access drives, and shipping/receiving parking aprons. One stormwater pond will be constructed to provide on-site water quality. The pond will total 0.64 acres. To facilitate the complete PTC design, approximately 10.5 acres will be disturbed and graded, with only a small amount of the disturbance acreage located on the Site property.

Approximately 0.07 acre of Wetland A, 0.06 acre of Wetland C and 0.02 acre of Wetland D will be graded and filled by construction activities. No other wetland impacts would be required. It should be noted that this alternative design would eliminate most of the employee parking at the existing Nestle facility. The Minimal Degradation Alternative plan is included in **Appendix VI**.

7.1.3 Non-Degradation Alternative

The Non-Degradation Alternative will construct a 92,865 square foot building, a parking area with 196 spaces, access drives, and shipping/receiving parking aprons in the southeast corner of the property. The majority of the facility will be located off the Site property, on the existing Nestle grounds. This design would encroach on the existing shipping/receiving/tractor trailer staging area and factory employee parking area. Only the access drive from Cannon Road, a small portion of the parking area, and small portions of the shipping/receiving apron will be located on Site. Two stormwater ponds will be required to provide on-site water quality. These ponds will total 0.84 acres. To facilitate the complete PTC design, approximately 8.8 acres of the 16 acre Site will be graded.

No wetlands will be impacted if this design alternative is implemented. The Non-Degradation Alternative plan is included in **Appendix VI**.

7.2 Magnitude of the Lowering of the Water Quality (10b)

No proposed Lowering of Water Quality is expected in any of the alternatives. The wetlands on-site appear to receive almost all hydrologic inputs from rainfall and have limited flow off-site. Wetland A, the largest wetland on the Site, is topographically lower than the remainder of the property as well as adjacent properties. Wetlands B, C, D, and E do not directly flow off-site but have a hydrologic connection to Wetland A via overland flow. Wetland A flows off-site to the south into the existing Nestle facility's perimeter stormwater ditch. The majority of the Site is located in the 100-year floodplain to Tinkers Creek Tributary, which flows south along Highway 422. However, given the topography along the western property boundary, drainage from the site does not enter the tributary.

7.2.1 Preferred Design

The Preferred Design will result in the discharge of fill material into 2.98 acres of wetlands. The wetlands to be impacted have been categorized as Category 2 (Wetland A), Modified Category 2 (Wetland D) and Category 1 (Wetland C). It is anticipated that implementation of the Preferred Design would not result in the loss of high quality aquatic or terrestrial resources.

The Preferred Design alternative will construct on-site detention basins meeting the state, local, and federal regulations for water quality. This basins will be designed to catch and hold the "first flush" discharge from the Site. This water quality design will filter large pollutants from the water, preventing them from entering the downstream waters. Currently, the overland flow achieves some filtering as it traverses the land, and flows through vegetated areas. This bio-retention system should improve the water quality before it leaves the Site. The detention basins will be constructed using littoral shelves and/or high marsh/low marsh plantings. The detention basin will undergo routine maintenance to ensure the viability of the wetland plantings and the integrity of the basin. The proposed Preferred Design Plan will control and discharge heavy rain flow events.

To compensate for unavoidable impacts to 2.98 acres wetlands, the Applicant will conduct off-site mitigation on the Chesney Property in Portage County, Aurora, Ohio. Mitigation on this property will occur by restoring, enhancing, and preserving 8 acres of prior-converted agricultural wetland and forested wetlands. The proposed mitigation is discussed in further detail within *Section 7.10*.

7.2.2 Minimal Degradation Alternative

The Minimal Degradation Alternative will result in the discharge of fill material into 0.15 acre of wetlands. The magnitude of the Lowering of Water Quality through the development of the property under the Minimal Degradation Alternative design would be similar to that proposed under the Preferred Design. A detention basin will be constructed along the southwestern property corner and on the existing Nestle facility.

7.2.3 Non-Degradation Alternative

No reduction of water quality would result through the Non-Degradation Alternative, as no waters would be filled under this plan. A detention basin will be constructed along the southern property line.

7.3 Technical Feasibility and Cost Effectiveness (10c)

7.3.1 Preferred Design

The three alternatives are all technically feasible in varying ways. The Preferred Development Alternative has the greatest technical feasibility given the requirements established for the PTC and the need to maintain the current facilities operations. This design minimizes impacts to the existing factories logistics and preserves the factories perimeter allowing for future expansion. The design also allows for future expansion of the PTC, which is an integral part of the Applicants long-range strategic planning. This design also provides a high profile view of the facility from Highway 422, showcasing the Applicants flagship facility. The design also provides convenient employee and visitor access.

The grading and drainage of the site, to accomplish any of the three alternatives, will be significant. The property is well positioned for commercial and industrial use; it is adjacent to a facility that will complement and benefit from the PTC; it has high visibility to regional roads; and is well situated on the local road network. The development of the PTC in Solon is crucial to the Applicants continued growth and success in Ohio. Designs other than the Preferred Design plan could jeopardize both the project in Ohio and the many positive economic benefits to the local community.

Although this design most likely has the highest construction costs, the benefit to the Applicants overall long-term operational needs far out-weigh these initial costs.

7.3.2 Minimal Degradation Alternative

The Minimal Degradation Alternative is the second most attractive site option. This design is technical feasible given the requirements established for the PTC and the need to maintain the current facilities operations. The design minimizes the impacts to wetlands, reducing the impacts from 2.90 acres to 0.15 acre. However, this design consumes the entire existing factory employee parking area, which poses a severe logistical problem, as there are currently no properties available for parking areas. The design also limits future expansion of the existing factory and the PTC, which is an integral part of the Applicants long-range strategic planning. Continuity of the existing campus is also diminished. The desired high profile visibility of the PTC from Highway 422 is also curtailed.

7.3.3 Non-Degradation Alternative

In order for this to be a viable option, high engineering and development costs and revenue losses would be required. In addition, the site is not optimal for this development. This design severely limits the existing factories expansion, encroaches on the employee parking area, and severely consumes existing shipping/receiving/tractor trailer staging areas. In addition, an existing on-site power substation would need to be relocated. This alternative design is feasible or practical.

7.4 Conservation Projects for Water Quality and Recreational Opportunities (10e)

7.4.1 Preferred Design

The ODNR and USFWS were contacted to inquire about such projects or programs. No such conservation projects are known for the local watershed. However, the mitigation proposed on the off-site Chesney property will greatly improve the Chagrin River watershed by directly having a positive effect on Sunny Lake. The benefits of the propose mitigation are presented in *Section 7.10*.

7.4.2 Minimal Degradation Alternative

Conservation projects for water quality and recreational opportunities associated with the Minimal Degradation Alternative are the same as those discussed under the Preferred Design.

7.4.3 Non-Degradation Alternative

Conservation projects for water quality and recreational opportunities associated with the Non-Degradation Alternative are the same as those discussed under the Preferred Design. However, the benefits of the mitigation on the Chesney Property will not be realized.

7.5 Water Pollution Control and Best Management Practices Costs (10f)

7.5.1 Preferred Design

The construction plans for the proposed project will include the use of site-appropriate Best Management Practices (BMPs) to manage the stormwater runoff during construction activities. BMPs would be implemented during the construction of any of the three alternatives. A stormwater pollution prevention plan will be designed and implemented under the State of Ohio's National Pollutant Discharge Elimination System (NPDES) program to minimize silt-laden runoff from the site during construction. The BMPs implemented throughout the construction process (i.e., silt fence, barrier bags, inlet protection, sediment ponds, and standpipes) will cost the project approximately \$150,000. These figures may be higher depending on the phasing of development and methods employed.

Detention basins will be utilized for the PTC facility. The outflow from this basin will be directed to the existing storm sewer system within the Nestle facility. The basins will provide water quality per the OEPA drawdown requirements. The bottom 3 to 5 feet of the pond will remain wet and consist of wetland plantings that are specific to stormwater basins.

All sediment controls that are utilized will be regularly inspected and maintained until the site has been permanently stabilized. The establishment of a vegetative cover will decrease erosion potential and assist the sediment controls installed during construction.

7.5.2 Minimal Degradation Alternative

The same BMPs proposed under the Preferred Design would be used during construction of the Minimal Degradation Alternative.

7.5.3 Non-Degradation Alternative

The same BMPs proposed under the Preferred Design would be used during construction of the Non-Degradation Alternative.

7.6 Impacts to Human Health & Overall Quality & Value of Water Resources (10g)

7.6.1 Preferred Design

No negative impacts to human health or the overall quality and value of the water resource will occur with the proposed alternatives. All three designs will aid in improving the quality of the receiving waters by construction of on-site detention.

7.6.2 Minimal Degradation Alternative

The Minimal Degradation Alternative is similar to the Preferred Design except for a reduction in the amount of wetland impacts. The remaining features are the same.

7.6.3 Non-Degradation Alternative

No impacts are expected to occur to human health or to the overall quality and value of the water resource due to implementation of the Non-Degradation Alternative.

7.7 Social and Economic Benefits to be Gained (10h)

7.7.1 Preferred Design

According to the 2010 Census data, the City of Solon had a population of 23,348. The median income of households in the City was \$54,395. The approximate type and percent of occupations within the City are as follows: 55.5% were management, professional, and related occupations; 10.7% were sales and office occupations; 10.7% were service occupations; 5.1 % were production, transportation, and material moving; 3.2% were construction, extraction, maintenance and repair occupations. The poverty rate for Solon was 3.1%.

This project, if constructed, will impact the community in a positive manner. The Applicant already is one of the top two businesses in the City and contributes substantially to the community in terms of economic, employment, and fiscal (including tax revenue) impacts.

7.7.2 Minimal Degradation Alternative

The economic and community benefits provided under the Minimal Degradation Alternative would be similar to those expected under the Preferred Design.

7.7.3 Non-Degradation Alternative

The economic and community benefits provided under the Non-Degradation Alternative would be similar to those expected under the Preferred Design.

7.8 Social and Economic Benefits to be Lost (10i)

7.8.1 Preferred Design

None of the alternatives will result in the loss of important social and economic benefits, or impact commercial or recreational uses. The property is privately owned and it is neither accessible to the general public nor adjacent to recreational resources. Moreover, the site's wetlands likely do not provide any important social or economic benefits, or commercial or recreational uses.

7.8.2 Minimal Degradation Alternative

The implementation of the Minimal Design is similar to that of the Preferred Design.

7.8.3 Non-Degradation Alternative

The implementation of the Non-degradation Alternative is similar to that of the Preferred Design.

7.9 Social and Economic Benefits to be Gained and Lost (10j)

7.9.1 Preferred Design

No adverse impacts to human health, water quality, or endangered and threatened species are anticipated as a result of implementation of any of these alternatives. Each of the three alternatives would be designed and constructed in accordance with federal, state, and local regulations that are meant to protect surface and ground water quality, human health, and the environment.

7.9.2 Minimal Degradation Alternative

Environmental benefits provided under the Minimal Degradation Alternative are generally as stated under the Preferred Design. This design alternative is not expected to be significantly more beneficial to water quality than the Preferred Design.

7.9.3 Non-Degradation Alternative

Environmental benefits under the Non-Degradation Alternative include the on-site preservation of all wetlands on the property. No resources would be impacted.

7.10 Proposed Mitigation Techniques (10k)

7.10.1 Preferred Design Alternatives – Wetland Mitigation

To compensate for unavoidable impacts to 2.89 acres of wetland, the Applicant will restore, enhance, and preserve 8-acres of prior converted agricultural wetland and forested wetland on a property known as the Chesney Property within the City of Aurora, Portage County, Ohio. **Appendix VII** includes mapping associated with the mitigation site. The information presented in this document regarding the Chesney Property was provided by the Chagrin River Watershed Partners.

The property is approximately 100 acres and includes a tributary to Sunny Lake as well the Sunny Lake outlet tributary to the Aurora Branch of the Chagrin River. The site contains a mixture of forest and agricultural areas. The site has the potential for up to two acres of wetland

restoration, two acres of enhancement, five acres of preservation, and two acres of forested vernal pool enhancement. In addition there is also 1.5 acres of buffer enhancement along on-site streams.

There are currently several types of wetlands on the property. Emergent wetlands onsite are located along streams and drainageways and are dominated by plant species such as *Typha latifolia*, *Phragmites australis* and *Acorus calamus*. Scrub-shrub wetlands are dominated by shrub dogwoods (*Cornus spp.*) and arrowwoods (*Viburnum spp.*). Forested wetlands onsite are seasonally inundated and dominated by sedges (*Carex spp.*) and manna grass (*Glyceria spp.*)

In general, wetland restoration and enhancement will be conducted by restoring and enhancing hydrology and vegetation. Hydric soils of Sebring (Sb) and Holly (Ho) are mapped for the wetland areas. To restore hydrology, drain tiles will be cut and drainage ditches will be blocked. Some minor grading and berming may be required. Planting activities will include planting containerized and bare root trees and shrubs and seeding a wetland seed mix. Enhancement activities will be accomplished by controlling the invasive species *Rhamnus frangula* and *Phragmites australis* by using herbicides and manual removal. Native vegetation will also be installed.

Specific details between the Applicant and the City of Aurora have not yet been finalized. During the review of this permit application by the agencies; Atwell will prepare a draft conceptual mitigation plan once an agreement has been finalized. The information provided below is presented to provide the most likely mitigation scenario. Although wetland design and plantings may change, the general concept of 8 acres of wetland mitigation onsite through restoration, enhancement, and preservation will not change.

Typical Restoration Techniques – Wetland

Wetland restoration will occur via improvements at the chosen mitigation site to recreate the hydrologic conditions conducive to a wetland environment. Agricultural activities have ceased and the mitigation design proposes to restore both surface and groundwater flow conditions to the pre-agriculture condition. Field tiles will be removed and some grading for embankments will be performed to capture surface runoff within the mitigation area. To promote the rapid re-vegetation of the mitigation area, significant planting of appropriate herbaceous and woody species will be performed.

Wetland restoration at the mitigation site will utilize existing topography and re-establish hydrology to the existing hydric soils. Evidence of a high groundwater table is demonstrated by frequently saturated and inundated soils. Taking simple steps to promote the hydrology within this area will allow for the conversion of this area to a wetland condition. Minimal proposed grading at the mitigation site is intended to promote shallow inundation of the site. Hydrologic goals are to allow the sufficient surface flow and groundwater conditions to support saturation of the mitigation site with slight seasonal inundation.

Typical Vegetation Plan – Wetland

The vegetation plan concept for the wetland area is to restore herbaceous and scrub-shrub wetland vegetation that will result in at least a Category 2 wetland at the end of five years. The areas will be planted with a variety of native and cold-hardy species. The herbaceous cover is designed to provide a dense cover of native plants across a variety of microtopographic features to reduce the chances of invasion by exotic species. **Table 4** and **Table 5** present proposed plantings for the wetland mitigation site. Final species selection will depend upon the City’s preference and availability at the time of planting. Planting will occur in the growing season following completion of any required soil disturbance activities.

Table 3. Proposed Species for Mitigation Wetland Planting

Botanical Name	Common Name	Indicator Status
Trees		
<i>Acer saccharinum</i>	Silver maple	FAC
<i>Carpinus caroliniana</i>	Blue beech	FAC
<i>Nyssa sylvatica</i>	Black gum	FAC
<i>Quercus bicolor</i>	Swamp white oak	FACW
<i>Quercus macrocarpa</i>	Bur Oak	FAC
<i>Quercus palustris</i>	Pin Oak	FACW
Shrubs		
<i>Alnus incana</i>	Speckled alder	FACW
<i>Alnus serrulata</i>	Hazel alder	OBL
<i>Aronia arbutifolia</i>	Red chokeberry	FACW
<i>Aronia melanocarpa</i>	Black chokeberry	FAC
<i>Cephalanthus occidentalis</i>	Buttonbush	OBL
<i>Cornus sericea</i>	Red-osier dogwood	FACW
<i>Ilex verticillata</i>	Winterberry	FACW
<i>Lindera benzoin</i>	Spicebush	FACW
<i>Physocarpus opulifolius</i>	Ninebark	FACW
<i>Salix discolor</i>	Pussywillow	FACW
<i>Sambucus canadensis</i>	Elderberry	FACW
<i>Viburnum cassinoides</i>	Withe rod	FACW
<i>Viburnum lentago</i>	Nannyberry	FAC
<i>Viburnum opulus</i> var. <i>Americana</i>	American cranberry bush	FACW
Herbs		
<i>Carex lupulina</i>	Hop sedge	OBL
<i>Carex lurida</i>	Bottlebrush sedge	OBL
<i>Carex scoparia</i>	Pointed broom sedge	FACW
<i>Elymus canadensis</i>	Canada wild rye	FACU
<i>Elymus riparius</i>	Riverbank wild rye	FACW
<i>Elymus virginicus</i>	Virginia wild rye	FACW

Table 4. Proposed Shade Species for Mitigation Wetland Planting

Botanical Name	Common Name	Indicator Status
<i>Herbs</i>		
<i>Carex grayii</i>	Gray's sedge	FACW
<i>Carex muskingumensis</i>	Muskingum sedge	OBL
<i>Carex squarrosa</i>	Squarrose sedge	FACW
<i>Bryophytes</i>		
<i>Osmunda cinnamomea</i>	Cinnamon fern	FACW
<i>Osmunda regalis</i>	Royal fern	OBL

Proposed Monitoring Plan - Wetland

The objective of a wetland monitoring program is to determine whether a mitigation site is attaining or is successfully developing wetland characteristics and jurisdictional status. Permanent quadrants will be established within the wetlands for vegetation and hydrology data collection. Monitoring will begin in the growing season following construction with at least two site visits per year. The first visit will be in May, followed by a second visit in late August or early September. Data collected in May of each year will include quantitative hydrology measurements. Surface water inundation or depth of soil saturation will be measured at permanent points associated with the vegetation sample points. The late summer site visit will be used to collect information on plant species composition, relative abundance and density. These data, along with the quantitative hydrology measurements and photo-documentation, will be collected at each of the permanent sample quadrants. Photographs of all sample quadrants will be taken for yearly comparisons. A Vegetation Index of Biotic Integrity (VIBI) will be conducted for the wetland during Year 3 and Year 5 of monitoring.

Annual monitoring reports will be provided to the ACOE and OEPA by December 31 of each of the five years for which the monitoring is conducted. These monitoring reports will provide information on the development of plant composition and cover, habitat development, and hydrologic conditions. Monitoring reports will also include a photographic documentation of the site from fixed positions, as well as, a discussion on whether the wetlands are meeting development goals. In addition, unacceptable development and/or other problems will be discussed, including details of any corrective actions that may have been necessary at the site.

Adaptive Management Plan

Adaptive management is a process of developing knowledge and continually improving project development by learning from previous projects and their performance. A typical monitoring plan for the mitigation wetlands, as described above, has been developed as part of the adaptive management plan. The monitoring plan provides a means of early identification of potential problems with the mitigation projects. The success of the mitigation project will be evaluated each year during the monitoring site visits. If the goals of the mitigation are not being achieved, then appropriate steps will be taken to amend these problems. All actions will be conducted in consultation with the City of Aurora, the Chagrin River Watershed Partners, the Applicant, the ACOE, and the OEPA.

Financial Assurances

At this time, the Applicant and the City of Aurora are negotiating specific financial responsibilities. What is known is that the Applicant will cover the costs for mitigation design, construction, and planting materials. The determination of the financially responsible party after construction during the monitoring period is currently in active negotiation. The details of the financial assurance agreement will be presented in the draft conceptual mitigation plan that will be submitted under separate cover.

7.10.2 Minimal Degradation Alternative – Wetland Mitigation

Mitigation for this alternative will involve the purchase of mitigation credits at an approved mitigation bank within the watershed.

7.10.3 Non-Degradation Alternative – Wetland and Stream Mitigation

There are no proposed impacts to the wetlands associated with the non-degradation alternative; therefore, mitigation is not required.

8.0 CONCLUSIONS

Nestle R&D Center, Inc. (Applicant) is proposing to construct a global product technology center located south of Cannon Road, west of Interstate 422, and east of Hawthorn Parkway in Cuyahoga County, Solon, Ohio. The Site is approximately 16 acres in size and is mostly undeveloped land consisting of old field and forested land. The Site is adjacent to a 39 acre parcel currently used by Nestle for research, production, and administrative tasks.

The Preferred Design includes the construction of a 92,865 square foot building in the central portion of the Site. The facility will also include a parking area with 178 spaces, access drives, shipping/receiving parking aprons, and two stormwater ponds. To facilitate the complete PTC design, approximately 11 acres of the 16 acre Site will be graded. As a result of the design three wetlands will be impacted. These impacts will total 2.98 acres.

To compensate for unavoidable impacts to 2.98 acres of wetland, the Applicant will restore, enhance, and preserve 8-acres of prior converted agricultural wetland and forested wetland on a property known as the Chesney Property within the City of Aurora, Portage County, Ohio.

The property is approximately 100 acres and includes a tributary to Sunny Lake as well the Sunny Lake outlet tributary to the Aurora Branch of the Chagrin River. The site contains a mixture of forest and agricultural areas. The site has the potential for up to two acres of wetland restoration, two acres of enhancement, five acres of preservation, and two acres of forested vernal pool enhancement. In addition there is also 1.5 acres of buffer enhancement along on-site streams.

9.0 CITATIONS

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APPENDIX I

Project Site Mapping

APPENDIX II

Historical Aerial Photographs and Historical USGS Maps

APPENDIX III

Agency Correspondence

APPENDIX IV

Wetland Survey Map, Wetland Delineation Forms and Preliminary Jurisdictional Determination

APPENDIX V

ORAM Data Forms

APPENDIX VI

Preferred, Minimal Degradation, and Non-Degradation Design Plans

APPENDIX VII

Off-Site Wetland Mitigation Maps

APPENDIX VIII

Project Site Photographs

APPENDIX IX

ACOE Section 404 Public Notice