

Stormwater Retrofit Opportunities in Somerset County, MD

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Introduction

Somerset County is located on Maryland's Eastern Shore and is Maryland's southernmost county. The Chesapeake Bay borders the County on the west, and several "necks" extend into the Bay, bordered by the Wicomico River, the Manokin River, the Big Annemessex River and the Pocomoke River. The County has more than 600 miles of shoreline along the Bay and its tributaries.

The County is primarily rural in nature. According to the Maryland Dept. of Planning, in 2010 approximately nine percent (9%) of the County was developed, while 40% was forested; 27% was wetlands; and 24% was farmland. As indicated by the land use figures, population is relatively low. The 2010 Census indicated there were 26,470 residents in the County, and although population has slowly been increasing over the last several decades, it's interesting to note that the County's population was 24,155 in the year 1890 – only 2,300 less than what existed in 2010. There are two municipalities in the County – the City of Crisfield (est. pop. 2,700) and the Town of Princess Anne (est. pop. 2,300).

Beginning in April of 2011, the County created a "Local Team" to develop a Phase II Watershed Implementation Plan that would be incorporated into the State's Plan to address nutrients entering the Chesapeake Bay's watershed. The County submitted its Draft Plan prior to the State's Nov. 18, 2011, deadline, with strategies geared toward meeting the 2025 targets for the Septic and Urban sectors. The Septic sector strategies meet the target loads, but the Urban sector strategies fell short, as there was a lack of individuals with expertise in stormwater management and environmental planning on the Local Team to identify appropriate strategies and projects that could be pursued. The Plan is currently being revised to identify appropriate strategies in a general way, however, the County identified a need for assistance with identification of specific projects to meet the 2025 targets.

A local government technical assistance award was provided to the County from the National Fish and Wildlife Foundation. The award enabled the County to work directly with the Center for Watershed Protection (CWP) to identify stormwater retrofit opportunities within the urban areas of the County. In particular, field staff were to look for opportunities on public lands and institutional properties in the County, especially in the City of Crisfield and Town of Princess Anne where stormwater management retrofit opportunities were thought to exist.

The primary challenge for stormwater retrofitting, particularly on the lower eastern shore, is the limited relief available at most potential stormwater BMP locations. Several of the BMPs involve the use of an underdrain, which requires several feet of elevation drop to outlet the drain. Additionally, there is potential for high water tables in many areas, which may limit the applicability of infiltration practices to control stormwater due to the risk of potential groundwater contamination, especially from "hotspot" sites.

A desktop assessment was conducted to pre-identify potentially suitable sites for stormwater retrofitting. Through this assessment, 52 sites were pre-identified for field crews to visit.

During the field assessment, 46 concepts were developed at 24 sites. From the 46 concepts that were identified, brief write-ups are provided for 16 projects that were determined to be the most feasible, cost effective and beneficial for the County to meet urban load reduction targets for their WIP. Field assessments and discussions with County staff highlighted the fact that, because the County is so rural, even in the urban areas, much of the impervious cover is currently “disconnected.” That is, stormwater runoff from these impervious sites flows to pervious areas and either infiltrates, evapotranspires or is otherwise already “treated.” Installing stormwater practices at these sites does not make sense and a recommendation is made to the County that they begin to document and account for the impervious cover that is currently disconnected. A site disconnection form, to be used in the evaluation of whether a building or impervious is currently disconnected, is provided in Attachment C.

Project Activities

Justification

Stormwater retrofits are structural stormwater management practices that can be used to address existing stormwater management problems within a watershed. These practices are installed in upland areas to capture and treat stormwater runoff before it is delivered to the storm drainage system, and ultimately, river systems. They are an essential element of a holistic watershed restoration program because they can help improve water quality, increase groundwater recharge, provide channel protection, and control overbank flooding. Without using stormwater retrofits to address existing problems and to help establish a stable, predictable hydrologic regime by regulating the volume, duration, frequency, and rate of stormwater runoff, the success of many other watershed restoration strategies -- such as stream stabilization, reduced erosion, and aquatic habitat enhancement -- will be threatened. In addition to the stormwater management benefits they offer, stormwater retrofits can be used as demonstration projects, forming visual centerpieces that can be used to help educate residents and build additional interest in watershed restoration.

Desktop Assessment

This project began with a desktop assessment of potential retrofit sites, based upon procedures outlined in Schueler et al (2007). The desktop assessment involved analysis of an aerial photo of the watershed in combination with other Geographic Information System (GIS) layers, such as topographic contours, utilities, and parcel boundaries. Using this data, CWP selected sites to visit during field work. Selected sites included:

- Public properties
- Institutional properties (schools and churches)
- Large commercial properties (typically greater than 1 acre)

Field Investigation and Training

Field work was conducted on August 30 and 31, 2012 to assess the existing conditions and retrofit suitability of all of the sites highlighted during the desktop assessment. Of the initial list of 52 sites, 39 were visited, 24 were suitable for retrofits at various levels, and two additional sites were added based on county staff input. In all, 46 concepts were developed.

A Retrofit Reconnaissance Inventory (RRI) field form was used to evaluate retrofit opportunities at candidate sites. Field crews look specifically at drainage patterns, the amount of impervious cover, available space, and other site constraints when developing concepts for a site. It should be noted that the pre-identified sites represent only a portion of the potential retrofit opportunities in the County. A more thorough search will likely yield more retrofit opportunities. The presence of county staff during site visits allowed training opportunities and will make future site identification and selection more streamlined.

Water Quality and Pollutant Removal Calculations

A water quality volume (WQ_v), or the storage needed to capture and treat the runoff volume for 90% of the average annual rainfall, was calculated for each retrofit drainage area. This volume captures high pollutant loads in the “first-flush” of stormwater runoff from all rainfall events. The WQ_v was calculated for each proposed retrofit as follows:

$$WQ_v = [(P)(R_v)(A)] / 12$$

Where WQ_v = water quality volume (acre-feet)

P = design storm runoff depth (1 inch)

R_v = 0.05 + 0.009(I), where (I) is the percent impervious cover of the site

A = site drainage area (acres)

This volume reflects the water quality design volume defined in Chapter 2 of the Maryland Stormwater Design Manual (MDE, 2009), and is used to assess each retrofit’s sizing and pollutant removal potential.

Nutrient load reductions for nitrogen, phosphorus, and total suspended solids (TSS), were calculated based upon several factors:

- The expected nutrient loading to the practice, which is derived from event mean concentrations (EMCs) for nitrogen (2.0 mg/L), phosphorus (0.27 mg/L), and total suspended solids (59 mg/L) (Schueler, et al. 2007)
- Estimated pollutant removal percentages for full-sized practices (designed to treat the WQ_v) (Hirschman, et al. 2008)
- Adjustments to the pollutant removal percentages based upon the % of the WQ_v that a proposed retrofit treats. (An undersized practice will treat less of the annual rainfall, and therefore provide a smaller nutrient load reduction. However, the relationship is not linear due to rainfall variability; smaller rain events happen more frequently, so even “undersized” practices can treat a significant portion of annual rainfall.)

At each site where a stormwater retrofit appeared feasible, photographs were taken, and an RRI form was filled out with the information necessary to develop the retrofit designs. All of the information gathered in the field was then reviewed for accuracy and consistency, and organized into a site catalog. Summary maps of all the potential retrofit sites are included in Attachment B.

Cost Estimates

Planning level cost estimates were developed for each proposed retrofit. The per cubic foot cost estimates for each type of practice were adapted mainly from *Costs of Stormwater Management Practices in Maryland Counties* (King and Hagan, 2011), although information from

CWP's *Urban Stormwater Retrofit Practices Manual* (Schueler et al. 2007) and professional judgment were utilized as well to refine the estimates for certain proposed retrofits.

Findings

The field investigation showed that shallow drained systems, infiltration systems (where groundwater is not too high), and in-line wetlands are the primary suitable retrofit practices in Somerset County. These practices are particularly appropriate due to the sandy nature of many of the soils in the area. Wetlands used in situations where groundwater is high or where soils are tight could provide substantial nutrient

Sandy soils with high infiltration rates appear to make up much of the County, which makes infiltration-based retrofits a viable option in many locations (if there is suitable depth between surface and groundwater elevation). Infiltration retrofits can be implemented in many locations that are unsuitable for other practices (such as filters or bioretention), as there is no need to connect an underdrain to the storm sewer system. Less infrastructure installation makes infiltration-based practices less costly as well. A basic infiltration test should be part of the next stage of design for most of the practices identified, in order to determine if infiltration will be feasible.

It appears that in some parts of the County, the water table is very shallow – two feet or less below existing grade. Several types of retrofit practices (infiltration, filters, bioretention, etc.) require several feet of depth, and are therefore inappropriate in high water table conditions. Water table elevations should be checked for sites that proceed to the next stage of design to ensure the proposed practices' feasibility.

A total of 46 preliminary retrofit concepts were developed at 24 of the sites (Attachment C). Multiple concepts were developed for several of the sites and are indicated by a letter after the site number (i.e., RRI-19B). There were no concepts developed for several sites that were either already disconnected, had adequate stormwater management or had significant site constraints such as access or feasibility. Scanned copies of the concept sheets for the identified projects are provided in Attachment D.

The following retrofit concepts were identified:

- 14 bioretention facilities;
- 10 dry swales;
- 4 wet swales;
- 4 impervious cover removal projects;
- 3 rain gardens;
- 3 rain tanks/cisterns;
- 2 constructed wetlands;
- 2 soil amendments;

- 1 infiltration;
- 1 rooftop disconnection;
- 1 stormwater planter; and
- 1 wet pond conversion.

All of the projects identified have the potential to treat 48.8 acres of drainage (approximately 22 acres of impervious cover), providing the following pollutant load reductions:

- 134 lbs/year of total nitrogen;
- 18 lbs/year of total phosphorus; and
- 4,841 lbs/yr of total suspended solids.

The estimated project cost for all of the identified projects is \$875,000.

Projects were prioritized based on cost per pound of nitrogen reduced, overall feasibility and best professional judgment regarding the appropriateness for the project to meet the County's overall WIP strategies. Additionally, to facilitate alignment between grant opportunities and assessed projects, they were grouped based on total annual nitrogen removal and sorted based on cost per pound of nitrogen removed (Attachment B). Brief write-ups are provided in the following section for several of the projects including all of the prioritized projects.

In addition, the following general findings and recommendation are provided for the County's consideration:

- Vegetation in many roadside ditches appears to be controlled via chemical spraying (Figure 1). Herbicide use should be avoided in roadside ditches where possible and mechanical methods used instead. In addition to the potential pollution contribution from chemical sprays, ditches are left exposed and have the potential to become sources of sediment and phosphorus.
- Many opportunities for tree planting were noted. Planting trees is a very cost effective practice and creditable strategy for meeting Watershed Implementation Plan targets. Maintenance of the plantings is necessary and County staff noted this as an issue with past plantings so further strategy is needed in this regard. Sites where tree planting may be effective are: Washington High School, Somerset County Board of Education, the Vo-Tech facility, Manokin Manor Nursing Home, the green space to the northeast of Ocean Highway and Manokin Avenue, Civic Center on Crisfield Lane, and the USDA facility on Park Lane.
- The following sites were not called out specifically for projects but had maintenance concerns to be addressed:
 - Great Hope Golf Course – A stormwater wet pond at this location has very poor pool water quality (Figures 2a and 2b). The buffer around the pond has been

mowed and grass clippings were dumped into the pond. Provide education to the property owner and employees regarding proper management measures and good housekeeping procedures for stormwater ponds.

- Northeast intersection of Ocean Highway and Manokin Avenue – Runoff currently runs to a low spot, which is very close to an open body of water connected to the Manokin River. A proposed forebay armored with stone would reduce erosion and may provide some treatment before delivery to the river. Further investigation would need to be done to work near this sensitive area to ensure adequate space and functionality of any proposed practice.
- Food Lion Stormwater Pond (north of the intersection of Ocean Highway and Mt. Vernon Road) – there is a stormwater pond at this location and there was no apparent influent pipe. The parking lot associated with Food Lion, which is adjacent to the pond seems to be routed to a ditch south of the pond. Although drainage configuration is unknown, there is a large area with which to work.
- McDonalds Stormwater Pond (north of the intersection of Ocean Highway and Mt. Vernon Road) – This dry pond is to the east of McDonalds and is already functioning well serving approximately 0.93 ac. There was substantial build-up of sediments in the inflow path, which shows that it is functioning. The inlet could be cleaned, which may limit costs of cleaning the inflow pipe in the future. There is also the possibility of excavating this pond slightly deeper to provide a treatment volume or to install an infiltration practice on the opposite side from the inlet pipe.
- Near 11847 Somerset Avenue (across Somerset Avenue from the Princess Anne Chamber of Commerce building) – Existing pond northeast of the intersection of Somerset Avenue and Water Street. This existing pond is full of sediment from previous construction activities. Sediment could be cleaned out to restore functionality.



Figure 1. Chemical sprays used to control vegetation in a ditch at the Sheriff's Office.



(a)

(b)

Figure 2. (a) Stormwater pond at the Great Hope Golf Course with significant algae build-up, mowed buffers and bank erosion. (b) Grass clippings dumped into stormwater pond.



Figure 3. Dry pond associated with McDonalds on Mt. Vernon Road requiring maintenance. Sediment build up shows it is working as designed.



Figure 4. Pond near 11847 Somerset Avenue. Sediment is built up limiting water storage and sediment removal effectiveness.

Project Write-ups

SITE RRI-31: Crisfield High School, 210 North Somerset Avenue, Crisfield



Left: Location of where dry swale would begin below the rear school parking lot.



Right: Continuation of dry swale with red arrow showing direction of drainage.

Proposed Retrofit:

Excavate a dry drainage swale to convey runoff below the rear school parking lot. It appears that there is a natural dry channel just past the soft ball outfield which could be retrofitted. There is adequate room (approximate 500 feet by 15 feet) and additional room for flat side slopes to prevent injuries from students. This area is extremely flat and it does not appear that the existing drainage swale has a positive outlet which might allow for complete infiltration.

SITE RRI-46: Winona Marina, Deal Island



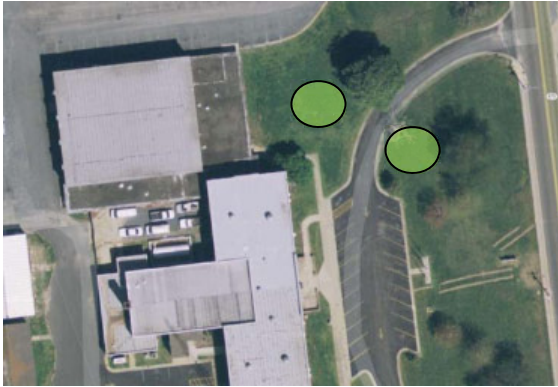
Left: Wetland adjacent to drainage ditch alongside Deal Island Road across from Manokin Trail.

Right: General area of wetlands

Proposed Retrofit:

Excavate the western side of the drainage ditch along Deal Island Road across from the Manokin Trail to construct created wetlands. There is at least 300 feet of length along the road and 150 feet to the western side for excavation. Side slopes can be 2:1 or 3:1 as there is plenty of room. A water control structure would be placed on the downstream side of the wetlands to regulate water level. Note this area is extremely flat and the contours do not accurately reflect the site drainage which is in the direction of the red arrow in the picture to the right.

SITE RRI-23: Somerset Office Complex – 11916 Somerset Ave, Princess Anne



Left: View of potential bioretention areas A (left) and B (right). Photograph from Google Maps.

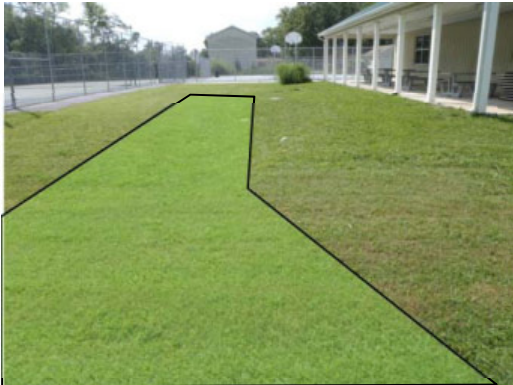


Right: Proposed dry swale (Practice C). Photograph from Google Maps.

Proposed Retrofit:

Practice A, a bioretention area (20 feet by 20 feet) can treat runoff from a portion of the parking lot as well as directing the downspouts from a portion of the roof to the practice. A detailed survey would need to be done to determine exactly where excess overflow would drain, but it would likely follow the same path as roof runoff currently follows. The underdrain can be tied into a grate drain in the parking lot directly north of the proposed practice. Practice B, a bioretention area (15 feet by 15 feet) can treat runoff from a portion of the parking lot. Excess runoff will surface flow to the street to the east and the underdrain can outlet to the street. Exact fall available would need to be measured to finalize any design. Practice C, a dry swale (8 feet by 100 feet) can treat runoff from a portion of the parking lot as well as roof runoff from two large buildings. There is only about 1.5 feet of fall to the bottom of the ditch into which this practice would drain, but an underdrain would be added to allow for additional water volume treatment.

SITE RRI-48: Garland Hayward Youth Center – 30660 Hampden Ave, Princess Anne



Top Left: Proposed dry swale (Practice A). Photograph taken from the west side of the Youth Center parking lot looking north.

Top Right: Primary drainage ditch for both practice A and B. Photograph taken from the southwest entrance to the youth center looking east.

Bottom Left: Upper portion of proposed dry swale (Practice B). Photograph taken from the northeast corner of the Youth Center building looking south.

Bottom Right: Lower portion of proposed dry swale (Practice B). Photograph taken from the northeast corner of the Youth Center building looking east.

Proposed Retrofit:

Install a dry swale (4 feet by 50 feet) (Practice A) in a small median between the parking lot and the walking trail to the west of the parking lot. There is an abundance of room at this location, however, the drainage area is small and all turf grass. This location is a shallow grass swale now that drains to a yard inlet on the south end of the property. Excess runoff and the swale

underdrain would be routed to this yard drain. Practice B would be a dry swale (6 feet by 160 feet) treating runoff from half the roof of the building and a large portion of the tennis court runoff with little impact on utilities. Excess runoff would overflow to the existing ditch and the underdrain would exit at the existing ditch.

SITE RRI-21: Police Station – 11780 Beckford Ave, Princess Anne



Top Left: View of potential bioretention area (Practice A). Photograph taken from the northwest corner of the police station looking west.

Top Right: Potential bioretention area receiving runoff from Mansion Street to the south (Practice B). Photograph taken from north of the intersection of Mansion Street and Manokin Avenue looking south.

Bottom: Locations of potential practices. Photograph from Google Maps.

Proposed Retrofit:

There is a large project rehabbing the stream and putting in a bioretention area already planned. The practices suggested here may be additional projects. Practice A consists of installing a bioretention area (25 feet by 25 feet) on the northwest corner of the police station.

This is an area that already receives runoff and could have an underdrain installed and routed to the river. Practice B consists of installing a bioretention area (20 feet by 25 feet). This location receives water via an underground pipe. The underdrain associated with this practice can be routed to the river. Practice C was not included in the practice calculations, but could be a potential spot for a small forebay to reduce erosion associated with high velocity water entering the river at this location.

SITE RRI-100: Manokin River Park – 11840 Somerset Ave, Princess Anne



Left: Proposed bioretention. Photograph taken from the park access drive off of Broad Street looking north.



Right: Practice drainage area. Photograph taken from the park access drive off of Broad Street looking south.

Proposed Retrofit:

Install a bioretention area (12 feet by 50 feet) at the bottom of the access drive. There is currently a speed bump to direct water to the turf area so no additional flow routing would be needed. The practice underdrain would outlet at the river and excess runoff would overflow to the current flow path.

SITE RRI-33b: Woodson Elementary, 281 Woodson School Road, Crisfield



Left: Wet swale along Woodson School Road



Right: Interconnecting wet swale (A) with excavated wetlands (B)

Proposed Retrofit:

Excavate to widen banks of existing wet ditch system along Woodson School Road assuring that side slopes are at least 1:1. A water control structure would be placed on the side to the east of the school entrance (red arrow). On the east side of the school entrance, there appears to be substantial surface area (approximately 100 feet by 200 feet) between the existing ditch and the school parking area which can be excavated for additional storage. The water control structure would most likely regulate elevations throughout the entire interconnecting ditch network not shown on the plans but surrounding the north and east perimeter of the school grounds.

SITE RRI-45: Deal Island School, Deal Island



Top Left Figure – Area where two swales emerge as a possible gravel wetlands. Red arrows show two flow paths.

Right Figure – Dry swale along school entrance showing flow path (red arrow) and yard inlet

Bottom right – Aerial view showing where two dry swales connect to a gravel wetland. Red arrow depicts the flow path

Proposed Retrofit:

Install dry swale in ditch between Lola Wheatley Road and playing field and in ditch between school entrance and playing field. Where the two ditches intersect, it might be possible to install a gravel wetlands. There is a storm drain overflow where the two ditches meet which would be used to regulate the flow downstream. There appears to at least 500 hundred feet of length available although the width is constrained to approximately 10 feet.

SITE RRI-22: Public Library – 11767 Beechwood St, Princess Anne



Top Left: View of potential bioretention area. Photograph taken from the parking lot to the south of the library looking east.

Top Right: A portion of the drainage area. Photograph taken from the southeast corner of the parking lot looking north.

Bottom Left: Receiving vegetated channel (eroding). Photograph taken from the southeast corner of the parking lot looking east.

Proposed Retrofit:

Install a bioretention area (20 feet by 30 feet) in the southeast corner of the library parking lot. Excess runoff will overflow into the existing vegetated waterway. The underdrain will outlet on the side of the hill to the east of the practice into a natural area. There should be no utility conflicts at this location, however, the two to three parking stalls that are currently being flooded when it rains would need to be removed.

SITE RRI-25: Three Lower Counties Medical and Dental Center – 12137 Elm St, Princess Anne



Left: Potential bioretention area. Photograph taken from the proposed practice location (north of the medical center) looking west.

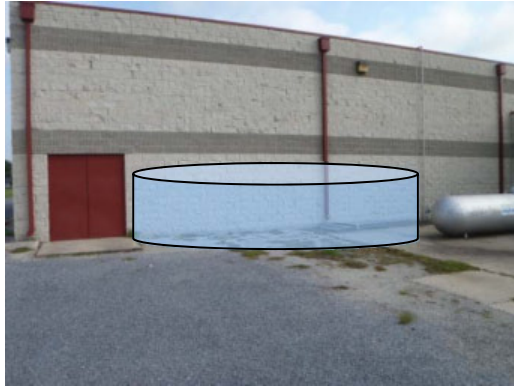


Right: Portion of the drainage area. Photograph taken from the proposed practice looking southwest.

Proposed Retrofit:

Install a bioretention area (12 feet by 110 feet) to treat runoff from a parking lot and portion of roof runoff from the medical center. Excess runoff will overflow to an existing grate drain to the north of the practice and the underdrain can tie into the same drain. This water will ultimately flow to a stormwater pond associated with some newer commercial development to the north of this site. The only utility conflict apparent would be the presence of street lights.

SITE RRI-49: Civic Center – 11837 Crisfield Ln, Princess Anne



Top Left: Proposed bioretention (Practice A). Photograph taken from the northeast parking lot of the Civic Center looking southeast.

Top Right: Proposed bioretention (Practice B). Photograph taken from the southeast parking lot of the Civic Center looking east.

Bottom Left: Ditch that drains practice A and B. Photograph taken from the southeast entrance of the Civic Center looking north.

Bottom Right: Proposed cistern (Practice C). Photograph taken from the southwest corner of the Civic Center building looking north.

Proposed Retrofit:

Install two identically sized bioretention areas (25 feet by 30 feet), which will drain to the existing drainage ditch and receive runoff from a portion of the parking lot as well as the front portion of the Civic Center building. These facilities would have to be fairly shallow with only about 6 inches of ponding and 12 inches of treatment media. Practice B has a conflicting building sprinkler system, which could easily be avoided with appropriate practice placement.

A cistern (Practice C) could be installed on the southwest corner of the Civic Center building to capture runoff from the three downspouts on the wall. The cistern water could be used to water the ball field, or moisten the tractor pull track (just west of this location) during competitions. Before installation, a water use plan should be done to ensure the water volume can be effectively utilized.

SITE RRI-8A-D: Washington High School – 10902 Old Princess Anne Rd, Princess Anne



Top Left: View of potential dry swale (Practice A). Photograph taken from north entrance of the school looking north.

Top Right: Basketball court to be removed or replaced with permeable pavement (Practice B).

Bottom Left: View of potential linear constructed wetland (Practice C). Photograph west end of existing ditch, looking east.

Bottom Right: Open space with turf that could be planted with trees (Practice D).

Proposed Retrofit:

Several stormwater retrofit opportunities are available at the Washington High School. These projects have the potential to provide direct, interactive educational benefits to students by engaging them in design, construction and monitoring aspects of the individual projects. In the north end of the school, adjacent to CN Baughan Rd, a dry swale (8 feet by 200 feet) can be installed to treat a small parking lot and small amount of rooftop runoff (Practice A). To the west, an unused basketball court could be removed (Practice B) or, if anticipated use is expected, it could be replaced with a permeable asphalt basketball court. In the south end of the property, a linear wetland (10 feet by 200 feet) or wet swale could be installed to treat half of a large parking lot as well as some adjacent agricultural land (Practice C). Multiple

opportunities for tree planting exist on the property, particularly in turf areas on the east end of the property (Practice D). It was noted that past plantings at this site have failed so a maintenance plan should be developed for any practices with plantings installed.

SITE RRI-30: Somerset County Roads Department – Sign Post Rd and Charles Layfield Rd, Westover



Top: View of potential cistern. Photograph taken from Sign Post Rd looking east into site.

Proposed Retrofit:

Install cisterns to capture rooftop rainwater. Use water for fleet vehicle washing and maintenance. This project could be a demonstration project for rainwater harvesting and re-use. Place and size cisterns based on input from County staff for best use. Four-1500 gallon cisterns could be installed that would treat 86% of the water quality volume. Some downspouts would need to be blocked to direct the appropriate amount of flow to the cisterns.

SITE RRI-1 A-E: Somerset County Health Department – 8920 Sign Post Rd, Westover



Top Left: View of potential bioretention (Practice A). Photograph taken from south end of lot looking north.

Top Right: Existing conditions: Parking lot failure, slumping into ditch.

Bottom Left: Potential bioretention area (Practice C). Photograph taken from south end of lot looking north.

Bottom Right: Stormwater planters to be installed on the south side of the building (Practice D).

Proposed Retrofit:

Several stormwater retrofit opportunities are available at the Somerset County Health Department. Improvements are currently being made to building interiors but no exterior improvements beyond landscaping are planned. Existing conditions at the site include sediment accretion in the parking lot, parking lot failure via slumping into a ditch, undermining of powerlines due to lot failure and areas of bare soil. The site is adjacent to a community garden and therefore the variety of stormwater projects would also serve as demonstration and educational opportunities for the community. One or more bioretentions (15 feet by 75 feet) can be installed in front of the primary lot (Practice A). Another bioretention (20 feet by 90 feet) can be installed in front of the north parking lot (Practice E). A final bioretention (10 feet by 20 feet) can be installed in the south lot by removing one to two parking stalls to install the practice (Practice C). The practices can overflow into the existing ditch, likewise, practice

undertrains can outlet to the ditches as well. A cistern (Practice B) can be installed in front of the building and used for landscaping adjacent to the building. Finally, stormwater planters are proposed on the south side of the building (Practice D).

SITE RRI-29A b: Crisfield City Hall, 19 W Main St, Crisfield



Rooftop disconnection (Retrofit A) in grassy area behind Public Works Maintenance Shed.



Right: Area for impervious area removal in front of City Hall (Retrofit B)

Left: Area adjacent to Police Department Building.

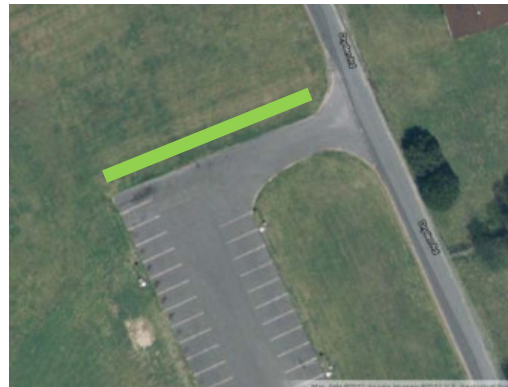
Proposed Retrofit:

Retrofit A, includes the disconnection and rerouting of the roof leaders from the anterior side of the building to the rear of the building where the runoff can be discharged to the reconnection area in back of the building. The volume of runoff from the roof area will have to be computed for the 1.0 inch storm so that a temporary storage structure (e.g., rain barrel or cistern) can collect the runoff from the rooftop. Likewise, the overflow from the cistern will have to be discharged in a non-erosive manner (e.g., level spreader, French drain) to the disconnection area. The soil in the disconnection area should be inspected for infiltration and may have to be deep tilled and augmented to promote infiltration.

Retrofit B includes impervious cover removal for the removal of approximately 0.14 acres of impervious cover in two areas – one adjacent to City Hall and 1 adjacent to the Police Department. While the area is

not large, the opportunity for public education through signage would be great. In addition to the impervious cover removal, the soils would have to be augmented and possibly deep tilled to promote infiltration. Plantings could include a variety of native ornamentals.

SITE RRI-09: Greenwood Elementary School – 11412 Dryden Road, Princess Anne



Left: View of potential rain garden area (Practice A). Photograph taken from the northeast corner of the school near the parking lot looking west.

Right: Potential bioretention area receiving runoff from parking lot (Practice B). Photograph from Google Maps and includes the parking lot to the northeast of the school.

Proposed Retrofit:

Install a rain garden (Practice A) (20 feet by 20 feet) on the north side of the school that would collect water from downspouts on this end of the building. This is a flat area so only minor earthwork would be needed to route the downspout water to the rain garden. Although a long distance (~200 feet), an underdrain could be installed and drained to a ditch north of the site. This could be used as part of an outdoor classroom. Install a bioretention area (Practice B) (12 feet by 150 feet) on the north end of the parking lot. This practice would receive sheet flow from the parking lot (including a new parking lot section not shown in the picture above). The underdrain from this system could also be directed to the ditch north of the site. There is potential to tie the underdrains from practice A and B together to minimize pipe requirements. There is approximately 4 to 5 feet of drop between the practices and the drainage ditch.

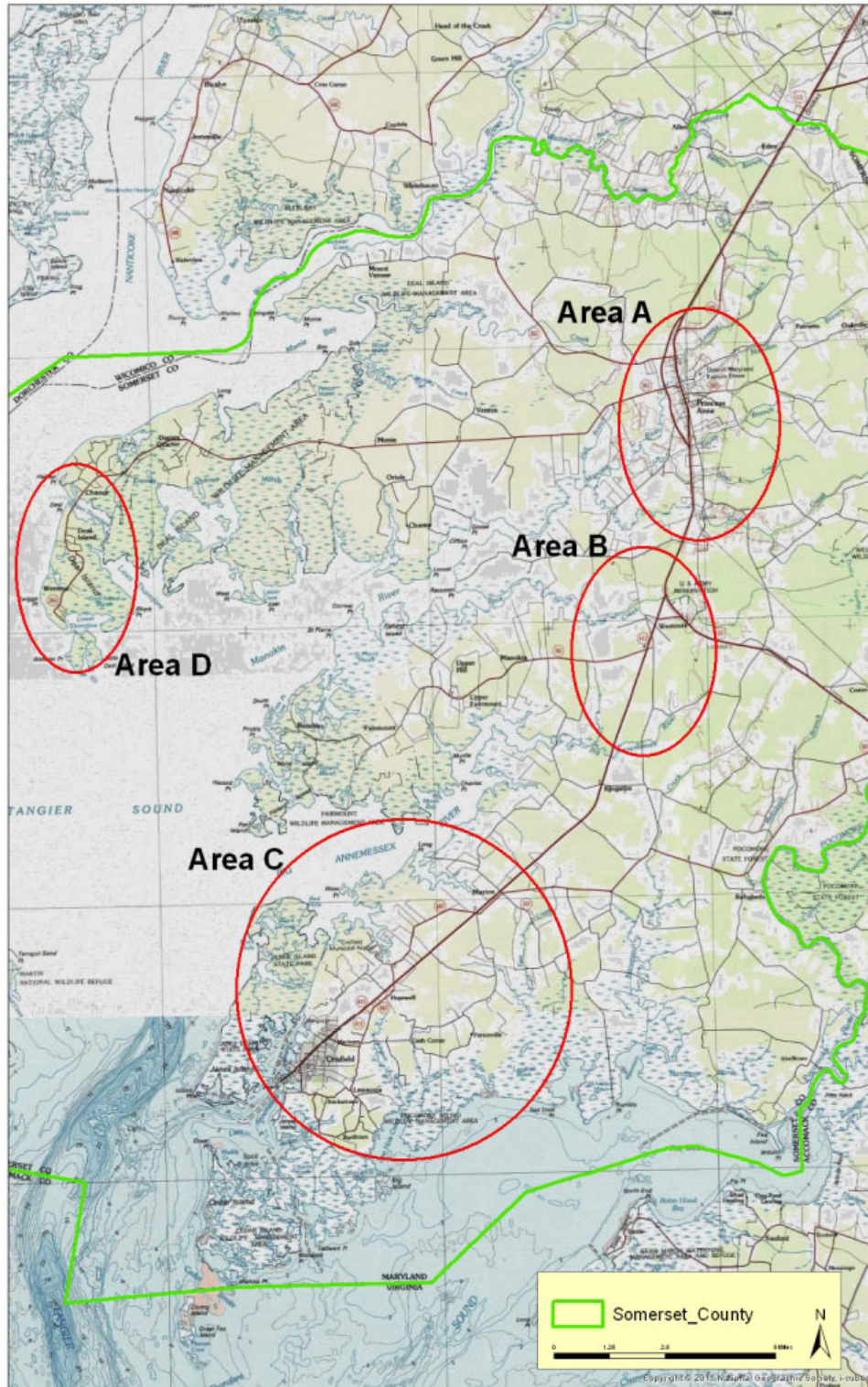
References

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Schueler, T., Hirschman, D., Novotney, M., and J. Zielinski. 2007. *Urban Stormwater Retrofit Practices Version 1.0. Manual 3 in the Urban Subwatershed Restoration Manual Series*. Center for Watershed Protection. Ellicott City, MD.

Attachment A. Maps.



Map 1. Somerset County overview depicting 4 areas visited for field assessments.



Map 2. Area A. Stormwater retrofit opportunities in Princess Anne.



Map 3. Area B. Stormwater retrofit opportunities in Westover.



Map 4. Area C. Stormwater retrofit opportunities in Crisfield.



Map 5. Area D. Stormwater retrofit opportunities on Deal Island.

Attachment B. Project Site List, Volume Computations and Expected Pollutant Load Reductions.*Total Nitrogen (TN) Removal Greater than 5.0 lb/yr*

Investigator	Site ID	Location	Retrofit Concept	Drainage Area (ac)	Impervious Cover (%)	% WQv Treated	Cost	TN Removal (lb/yr)	TP Removal (lb/yr)	TSS Removal (lb/yr)	Cost per pound of nitrogen reduced
BPS	RRI_31	Crisfield HS	Dry Swale	3.63	30	29%	\$14,700	6.4	0.82	224.00	\$2,287.97
BPS	RRI_50c	Airport	Dry Swale	7.42	15	24%	\$14,700	6.9	0.89	242.04	\$2,117.47
LAL/DP/TL	RRI_08A	Washington HS	Dry Swale	1.21	90	32%	\$14,767	6.1	0.78	212.45	\$2,423.23
LAL/DP/TL	RRI_13B	Board of Education / Vo-Tech	Dry Swale	3.32	50	34%	\$24,981	10.0	1.28	348.55	\$2,498.71
BPS	RRI_46	Winona Marina	Constructed Wetland	3.00	40	167%	\$52,177	5.9	1.59	347.57	\$8,857.07
LAL/GP	RRI_1A	Somerset County Health Department	Bioretention	0.52	90	123%	\$69,891	5.0	0.58	162.31	\$13,893.18
RDC/BC	RRI_09B	Greenwood Elementary School	Bioretention	0.68	90	99%	\$73,836	6.2	0.72	199.03	\$11,969.71

Total Nitrogen (TN) Removal Between 2.0 and 5.0 lb/yr

Investigator	Site ID	Location	Retrofit Concept	Drainage Area (ac)	Impervious Cover (%)	% WQv Treated	Cost	TN Removal (lb/yr)	TP Removal (lb/yr)	TSS Removal (lb/yr)	Cost per pound of nitrogen reduced
RDC/BC	RRI_18A	Somerset County USDA	Infiltration	1.07	75	12%	\$5,796	2.4	0.36	92.55	\$2,430.98
RDC/BC	RRI_23C	Somerset Office Complex (County Offices)	Dry Swale	0.69	95	26%	\$7,308	3.3	0.42	115.68	\$2,202.57
RDC/BC	RRI_17	Sanitary Facility (Waste Water Treatment Plant)	Soil Amendments	0.74	100	27%	\$7,324	3.4	0.47	101.66	\$2,125.24
RDC/BC	RRI_48B	Princess Ann Rec Park - Youth Center	Dry Swale	0.48	85	45%	\$7,654	2.6	0.34	92.00	\$2,900.56
BPS	RRI_33a1	Woodson Elementary School	Wet Swale	1.37	75	33%	\$8,400	2.7	0.29	127.33	\$3,113.76
BPS	RRI_45	Deal Island HS	Dry Swale	4.68	20	20%	\$9,631	4.9	0.62	170.66	\$1,967.54
LAL/DP/TL	RRI_08C	Washington HS	Constructed Wetland	1.92	40	49%	\$9,705	2.5	0.68	148.43	\$3,857.49

Investigator	Site ID	Location	Retrofit Concept	Drainage Area (ac)	Impervious Cover (%)	% WQv Treated	Cost	TN Removal (lb/yr)	TP Removal (lb/yr)	TSS Removal (lb/yr)	Cost per pound of nitrogen reduced
LAL/DP/TL	RRI_3B	Somerset County Sheriff's Office	Dry Swale	2.00	40	27%	\$9,866	4.4	0.56	154.03	\$2,233.11
RDC/BC	RRI_100	Manokin River Park - Northwest of True Value	Rain Garden	0.38	95	60%	\$9,997	3.0	0.35	97.12	\$3,321.24
BPS	RRI_33b2	Woodson Elementary School	Wet Swale	1.88	75	35%	\$11,958	3.8	0.41	177.78	\$3,174.78
LAL/DP/TL	RRI_3A	Somerset County Sheriff's Office	Dry Swale	1.25	35	74%	\$14,904	3.8	0.48	130.78	\$3,973.34
LAL/GP	RRI_30	Somerset County Roads Department	Rain Tank/Cistern	0.27	100	86%	\$16,842	3.0	0.41	89.32	\$5,562.66
LAL/DP/TL	RRI_08B	Washington HS	Impervious Cover Removal	0.22	100	100%	\$21,172	2.7	0.36	78.37	\$7,969.29
LAL/GP	RRI_51A	Sarah Peyton E.S.	Bioretention	0.30	95	76%	\$26,192	2.6	0.30	84.59	\$9,990.48
RDC/BC	RRI_21A	Police Station	Bioretention	0.27	90	99%	\$28,627	2.4	0.28	77.49	\$11,919.23
RDC/BC	RRI_22	Public Library	Bioretention	0.57	80	54%	\$29,904	3.7	0.43	120.55	\$8,004.12
LAL/GP	RRI_51C	Sarah Peyton E.S.	Impervious Cover Removal	0.38	100	100%	\$36,570	4.6	0.62	135.37	\$7,969.29
LAL/DP/TL	RRI_13A	Board of Education / Vo-Tech	Bioretention	1.65	10	127%	\$37,217	2.6	0.30	84.59	\$14,195.67
RDC/TJL	RRI_25	Three Lower Counties Medical and Dental Center	Bioretention	0.38	100	102%	\$46,578	3.8	0.44	123.52	\$12,167.24
LAL/GP	RRI_1E	Somerset County Health Department	Bioretention	0.21	90	379%	\$86,903	2.7	0.31	87.18	\$32,161.79

Total Nitrogen (TN) Removal Less than or Equal to 2.0 lb/yr

Investigator	Site ID	Location	Retrofit Concept	Drainage Area (ac)	Impervious Cover (%)	% WQv Treated	Cost	TN Removal (lb/yr)	TP Removal (lb/yr)	TSS Removal (lb/yr)	Cost per pound of nitrogen reduced
RDC/BC	RRI_48A	Princess Ann Rec Park - Youth Center	Dry Swale	0.43	0	98%	\$938	0.2	0.02	6.82	\$4,798.09
LAL/GP	RRI_51B	Sarah Peyton E.S.	Rain Garden	0.25	80	10%	\$948	0.6	0.07	18.37	\$1,664.88
BPS	RRI_29b	Crisfield City Hall	Rooftop Disconnection	0.20	100	100%	\$966	0.8	0.11	55.52	\$1,231.38

Investigator	Site ID	Location	Retrofit Concept	Drainage Area (ac)	Impervious Cover (%)	% WQv Treated	Cost	TN Removal (lb/yr)	TP Removal (lb/yr)	TSS Removal (lb/yr)	Cost per pound of nitrogen reduced
BPS	RRI_33b1	Woodson Elementary School	Wet Swale	1.59	75	12%	\$3,355	1.5	0.17	72.94	\$2,171.19
LAL/GP	RRI_1B	Somerset County Health Department	Rain Tank/Cistern	0.05	100	116%	\$4,200	0.6	0.08	18.15	\$6,825.14
RDC/BC	RRI_18B	Somerset County USDA	Soil Amendments	0.87	20	65%	\$4,914	1.4	0.19	41.96	\$3,454.89
BPS	RRI_33a2	Woodson Elementary School	Wet Swale	0.76	75	36%	\$5,037	1.6	0.17	73.25	\$3,245.75
BPS	RRI_29a	Crisfield City Hall	Impervious Cover Removal	0.05	100	100%	\$5,197	0.7	0.09	19.24	\$7,969.29
RDC/TJL	RRI_49C	Civic Center	Rain Tank/Cistern	0.08	100	92%	\$5,250	0.9	0.12	26.68	\$5,805.87
LAL/GP	RRI_1C	Somerset County Health Department	Bioretention	0.15	100	33%	\$5,999	1.0	0.11	31.81	\$6,084.58
RDC/BC	RRI_23B	Somerset Office Complex (County Offices)	Bioretention	0.05	100	104%	\$6,127	0.5	0.06	16.01	\$12,343.90
RDC/BC	RRI_09A	Greenwood Elementary School	Rain Garden	0.13	100	109%	\$6,448	1.3	0.15	41.94	\$4,960.41
LAL/DP/TL	RRI_5	Great Hope Golf Course	Wet Pond	1.96	10	131%	\$9,117	1.5	0.33	72.44	\$6,188.22
BPS	RRI_29a	DeWayne Head Start	Impervious Cover Removal	0.14	100	100%	\$13,473	1.7	0.23	49.87	\$7,969.29
RDC/BC	RRI_23A	Somerset Office Complex (County Offices)	Bioretention	0.19	70	100%	\$16,604	1.4	0.16	44.49	\$12,041.25
LAL/GP	RRI_1D	Somerset County Health Department	Stormwater Planters	0.12	100	90%	\$19,837	1.2	0.14	37.58	\$17,032.10
RDC/BC	RRI_49A	Civic Center	Bioretention	0.45	40	91%	\$21,116	1.9	0.22	60.40	\$11,279.17
RDC/BC	RRI_49B	Civic Center	Bioretention	0.49	40	82%	\$21,116	2.0	0.23	64.71	\$10,528.15
RDC/BC	RRI_21B	Park Southwest of Police Station	Bioretention	0.34	55	102%	\$24,112	2.0	0.23	63.84	\$12,185.58

Attachment C. Site Disconnection Form

WATERSHED/SUBSHED:				DATE: ____/____/____		ASSESSED BY:				
Address:										
SURVEY REACH ID:			TIME: ____:____AM/PM		PHOTO ID: (Camera-Pic #) /#					
SITE ID: SDA-____			LAT ____° ____' ____" LONG ____° ____' ____" LMK ____				GPS: (Unit ID):			
Impervious Area Assessed: <input type="checkbox"/> Building <input type="checkbox"/> Parking Lot <input type="checkbox"/> Other impervious Area: _____										
BUILDING ASSESSMENT	TOTAL ROOF AREA (Sq Ft): _____		SKETCH AND NUMBER DOWNSPOUT LOCATIONS:							
	NUMBER OF DOWNSPOUTS ON BUILDING: _____									
	PERVIOUS AREA FERTILIZED? <input type="checkbox"/> Yes <input type="checkbox"/> No									
	Section I. Rooftop Disconnection Determination									
	Downspout #	Distance between downspout outlet and impervious area, stream, ditch, or underground stormwater network > 12 feet? Yes/No	Slope <5% away from building? Yes/No	Receiving area 10 feet from impervious area? Yes/No	Draining to high permeability soils? Yes/No	Downspout Disconnected? Yes (answer yes to all previous) – <i>Complete Section II below</i> No (answer no to any previous)	Drainage area As % of Total Roof Area - for Disconnected Downspouts			
	1					<input type="checkbox"/> Yes <input type="checkbox"/> No				
	2					<input type="checkbox"/> Yes <input type="checkbox"/> No				
	3					<input type="checkbox"/> Yes <input type="checkbox"/> No				
	4					<input type="checkbox"/> Yes <input type="checkbox"/> No				
	5					<input type="checkbox"/> Yes <input type="checkbox"/> No				
6					<input type="checkbox"/> Yes <input type="checkbox"/> No					
7					<input type="checkbox"/> Yes <input type="checkbox"/> No					
8					<input type="checkbox"/> Yes <input type="checkbox"/> No					
9					<input type="checkbox"/> Yes <input type="checkbox"/> No					
10					<input type="checkbox"/> Yes <input type="checkbox"/> No					
Total %										
Area Disconnected (sq ft) – Multiply Total % by Total Roof Area										
Section II. Additional Credit Determination (For Disconnected Downspouts Only)										
	Type of Receiving Pervious Area (swale, turf, forest, ag field)	Condition of Receiving Area (Excellent, Good, Fair, Poor)	Size of Receiving Pervious Area (sq ft)	Disconnection Flow Path Distance (ft) (Check appropriate distance)						
				15	30	45	60	75		
1										
2										
3										
4										
5										

IMPERVIOUS AREA ASSESSMENT	IMPERVIOUS AREA (Sq Ft): _____		SKETCH AND NUMBER LOCATIONS ASSESSED: 						
	SALT USED IN WINTER? <input type="checkbox"/> YES <input type="checkbox"/> NO								
	NUMBER OF RECEIVING AREAS: _____								
	RECEIVING AREA FERTILIZED? <input type="checkbox"/> Yes <input type="checkbox"/> No								
	Section I. Impervious Area Disconnection Determination								
	Impervious Area #	Distance between flow outlet and impervious area, stream, ditch, or underground stormwater network > 12 feet? Yes/No	Receiving Area slope <5%? Yes/No	Draining to high permeability soils? Yes/No	Area Disconnected? Yes (answer yes to all previous) – <i>Complete Section II below</i> No (answer no to any previous)			Drainage area as % of Total Impervious Area - for Disconnected Areas	
	1				<input type="checkbox"/> Yes <input type="checkbox"/> No				
	2				<input type="checkbox"/> Yes <input type="checkbox"/> No				
	3				<input type="checkbox"/> Yes <input type="checkbox"/> No				
	4				<input type="checkbox"/> Yes <input type="checkbox"/> No				
5				<input type="checkbox"/> Yes <input type="checkbox"/> No					
6				<input type="checkbox"/> Yes <input type="checkbox"/> No					
7				<input type="checkbox"/> Yes <input type="checkbox"/> No					
8				<input type="checkbox"/> Yes <input type="checkbox"/> No					
9				<input type="checkbox"/> Yes <input type="checkbox"/> No					
10				<input type="checkbox"/> Yes <input type="checkbox"/> No					
Total %									
<i>Area Disconnected (sq ft):</i> Multiply Total % by Total Impervious Area									
Section II. Additional Credit Determination (For Disconnected Impervious Areas Only)									
	Type of Receiving Pervious Area (swale, turf, forest, ag field)	Condition of Receiving Area (Excellent, Good, Fair, Poor)	Size of Receiving Pervious Area (sq ft)	Disconnection Flow Path Distance (ft) (Check appropriate distance)					
				15	30	45	60	75	
1									
2									
3									
4									
5									

Attachment D. Scanned Retrofit Reconnaissance Investigation (RRI) Forms.

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: <u>RRI-1 A-E</u>	
DATE: <u>8-31-12</u>	ASSESSED BY: <u>Lori/Gary</u>		CAMERA ID:		PICTURES: <u>45-5064</u>
GPS ID:	LMK ID:		LAT:		LONG:
SITE DESCRIPTION					
Name: <u>Somerset Co. Health Dept. Behavioral Health</u>					
Address: <u>8928 Sign Post Rd.</u>					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: <u>*Property owned by County, occupied by Health Dept.</u>					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop					
<input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area \approx <u>A) 0.52 B) 0.05 C) 0.15 D) 0.12 E) 0.21</u>					
Imperviousness \approx <u>A) 90 B) 100 C) 100 D) 100 E) 90</u>					
Impervious Area \approx <u>A) 0.41 B) 0.05 C) 0.15 D) 0.12 E) 0.19</u>					
Notes:					
Drainage Area Land Use:					
<input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional - <u>onsite</u>					
<input type="checkbox"/> SFH (< 1 ac lots) <input checked="" type="checkbox"/> Industrial - <u>across street</u>					
<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related					
<input type="checkbox"/> Townhouses <input type="checkbox"/> Park					
<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped					
<input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<ul style="list-style-type: none"> • Sheet flow from parking lot across grassy area to roadside ditch • sediment accretion in parking stalls • parking lot slumping into ditch in several locations • erosion around telephone pole 					
Existing Head Available and Points Where Measured:					
<u>~40' from parking lot to to ditch; elevation drop of ~3' - grass edge to ditch bottom</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

A) 1623 cf
 B) 172 cf
 C) 517 cf
 D) 414 cf
 E) 656 cf

Retrofit Volume Computations - Available Storage:

A)
 B)
 C)
 D)
 E)

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: Rain Barrels, planters/landscaping

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- A) Grass swales from parking lot to convey water to bioretention; to be sized based on drainage area (no problem w/ land area)
 B) - possible ~~rain barrels~~ at southern end of hlds. (Landscape)
 C) - perhaps eliminate 1 parking space + install bioretention (scouring occurring along ditch)
 D) Bioretention between car pool parking lot and roadside ditch - ~~to~~ south end of property
 E) ~~NOTE~~: Perhaps add planters on south side of hlds. adjacent to parking lot
 *NOTE: Scouring along parking area near telephone pole - pavement @ parking space collapsing

SITE CONSTRAINTS

Adjacent Land Use:

- ☐ Residential ☐ Commercial ☐ Institutional
☒ Industrial ☐ Transport-Related ☐ Park
☒ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use?

☐ Yes ☒ No

If Yes, Describe:

Access:

☒ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☐ Unknown

Yes

Possible

- ☐ Sewer
☐ Water
☐ Gas
☐ Cable
☒ Electric
☒ Electric to Streetlights
☐ Overhead Wires
☐ Other: _____

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- ☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable

Other factors: _____

Soils:

Soil auger test holes:

☐ Yes ☒ No

Evidence of poor infiltration (clays, fines):

☐ Yes ☒ No

Evidence of shallow bedrock:

☐ Yes ☒ No

Evidence of high water table (gleying, saturation):

☐ Yes ☒ No

DESIGN OR DELIVERY NOTES

- (A) size for D.A.
- sediment build-up in lot > practice will help treat
 - trees present but enough space so no likely impacts
 - slumping & impacts to telephone pole & parking lot

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

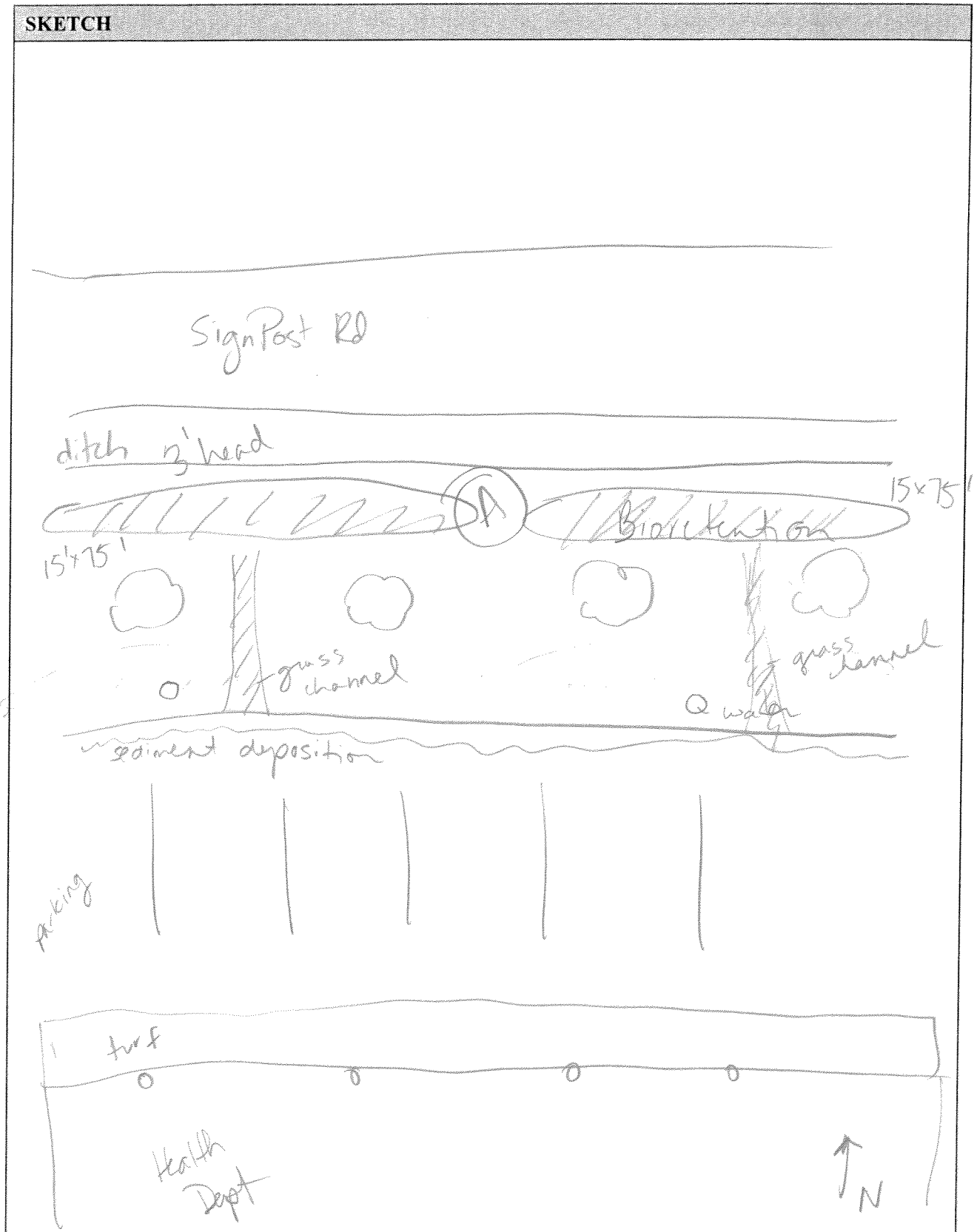
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

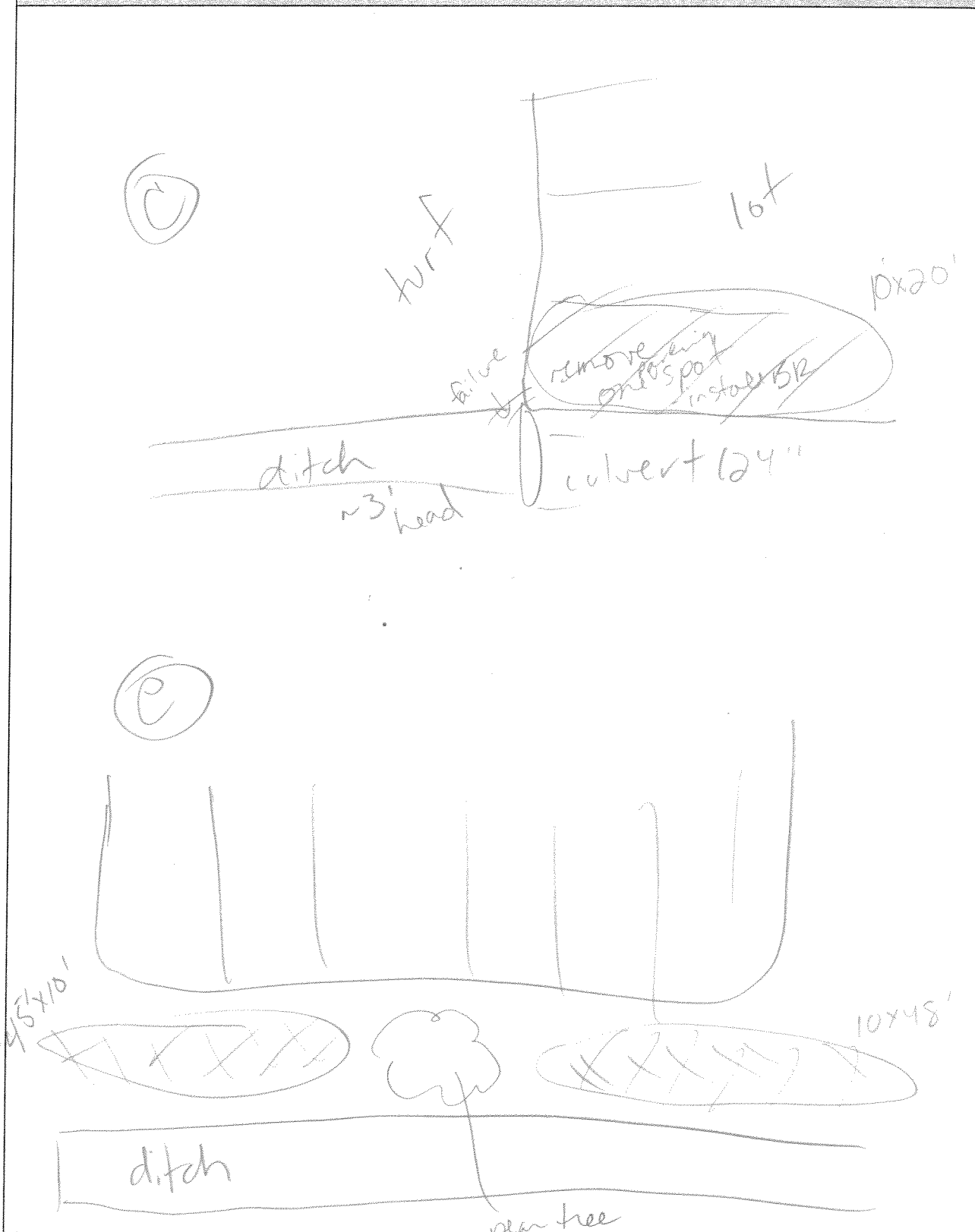
IF YES, TYPE(S): _____

☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE

SKETCH



SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

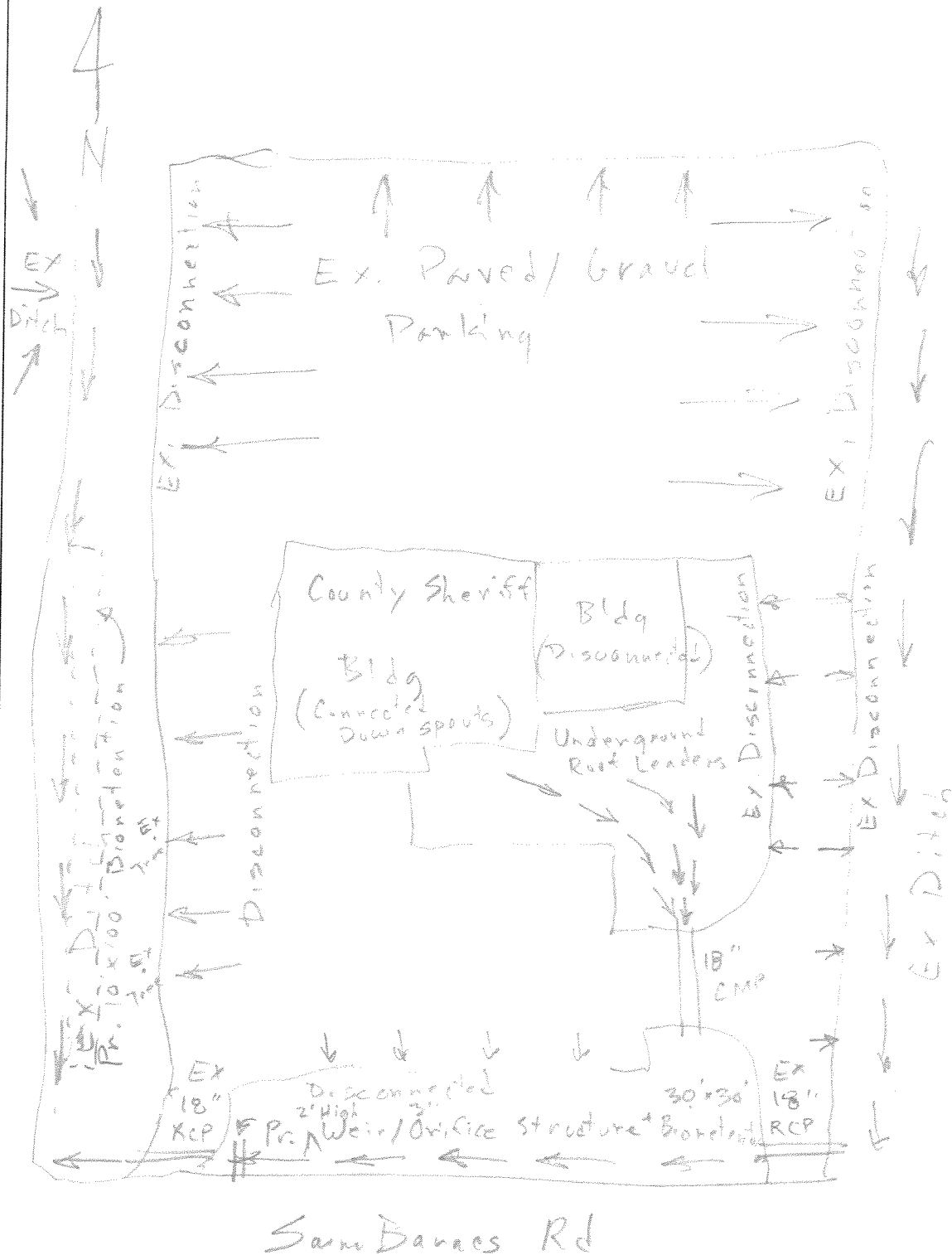
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> MAYBE
If YES, TYPE(S): _____			

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: <u>RRI 3 A-B</u>	
DATE: <u>8/3/12</u>		ASSESSED BY: <u>WHL JHL DEP</u>		PICTURES: <u>21-30</u>	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Somerset Co. Slurry</u>					
Address: <u>30426 Sam Becher Rd</u>					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop					
<input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input checked="" type="checkbox"/> Other: <u>turf lag</u>					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential		
Impervious Area ≈ _____			<input type="checkbox"/> Institutional		
Notes:			<input type="checkbox"/> SFH (< 1 ac lots)		
			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input type="checkbox"/> Other: <u>ag</u>		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>Sheet flow to ditch at SW corner</u>					
<u>bldg connected, outlet unknown</u>					
Existing Head Available and Points Where Measured:					
<u>A - 3ft at SW corner to bottom</u>					
<u>B - 3' - turf to ditch bottom</u>					

PROPOSED RETROFIT																												
Purpose of Retrofit: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input type="checkbox"/> Other: _____																												
Retrofit Volume Computations - Target Storage: 	Retrofit Volume Computations - Available Storage: 																											
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input checked="" type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other: _____																												
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <div style="font-family: cursive; font-size: 1.2em; padding: 10px;"> grass swale to dry swale facility, wet top A. weir/staircase structure upstream of 18" RCP (optional) 10.0' x 100.0' 18" deep linear, parallel to lot B. dry swale 2' deep 10' x 100' </div>																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input checked="" type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Describe:	Access: <input type="checkbox"/> No Constraints Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input checked="" type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other: _____</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
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<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										
Soils: Soil auger test holes: <u>NA</u> Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input type="checkbox"/> No																												

SKETCH



DESIGN OR DELIVERY NOTES

- notify maintenance of spraying
in ditches
- may impact ^{adjacent} private property?

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|--|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE

Unique Site ID: RR.115

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: wet pond retrofit

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

• add forebay ^{-each inlet} & low flow channel, wetland plants
 • no man / add buffer

SITE CONSTRAINTS

Adjacent Land Use:

- ☐ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☒ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☒ No Constraints
☐ Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☒ None
☐ Unknown

Yes

Possible

- | | | |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Sewer |
| <input type="checkbox"/> | <input type="checkbox"/> | Water |
| <input type="checkbox"/> | <input type="checkbox"/> | Gas |
| <input type="checkbox"/> | <input type="checkbox"/> | Cable |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric to Streetlights |
| <input type="checkbox"/> | <input type="checkbox"/> | Overhead Wires |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- | | |
|-----------------------------------|--|
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |

Other factors: _____

Soils:

Soil auger test holes:

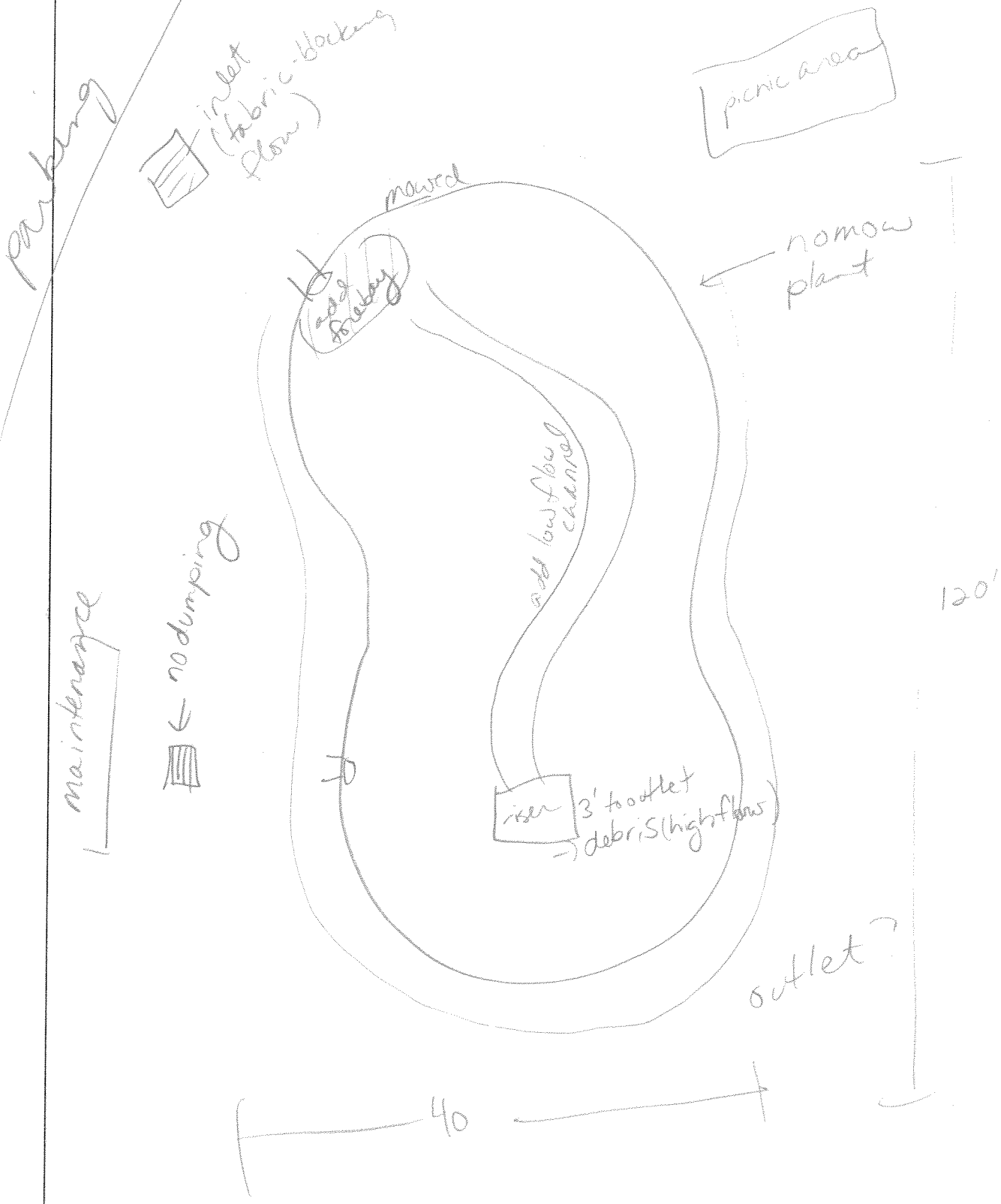
Evidence of poor infiltration (clays, fines):

Evidence of shallow bedrock:

Evidence of high water table (gleying, saturation):

- ☐ Yes ☐ No
☐ Yes ☐ No
☐ Yes ☐ No
☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

Lee Simms

- will be replacing riser/outlet
- will add aerator
- next 12 mo.

- No mowing edge of pond
- No dumping grass clippings in pond or inlets
- Wash vehicles away from pond

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE

POND RETROFIT CHECKLIST

(Check the existing type of pond)

- ☐ regional flood control or detention pond
- ☐ dry stormwater detention pond
- ☐ dry extended detention pond
- ☒ wet stormwater detention pond
- ☐ "modern" stormwater quality pond

RR1-5

(Check the following existing conditions)

- ☐ landlocked and cannot be accessed by construction equipment
- ☐ excessive trash
- ☐ evidence of geese
- ☐ woody growth
- ☐ invasive species
- ☐ low flow channel
- ☐ internal flow path (short or long)
- ☐ single or multiple cells
- ☐ single or multiple inlets
- ☐ inlet elevation(s)
- ☐ condition of pond inlet(s)
- ☒ multiple outlets
- ☒ condition of pond-outlet structure (clogged, damaged, no trash rack, safety issues)
- ☐ condition of emergency spillway
- ☐ condition of dam or embankment (seepage, settlement, sloughing, animal burrows)
- ☐ evidence of sediment deposition
- ☐ evidence of erosion within pond
- ☐ upstream of pond (headwater effects)
- ☐ downstream of pond (scour problems)

add buffer
no mow
no dumping of
grass clippings

(Check possible retrofit strategies)

- ☐ Excavate pond bottom (to provide storage)
 - ☐ pond bottom is flat and dry with no evidence of standing water
 - ☐ soils auger showed no presence of hydric soils
 - ☐ no evidence of utilities in pond bottom
- ☐ Raise embankment
 - ☐ there is available space at toe of embankment for wider footprint
 - ☐ compare new embankment elevation with pond inlet pipe elevation (for tailwater problems)
- ☐ Trade storage
 - ☐ riser has multiple outlets (may indicate storage for 2 to 25 year storms, storage can be converted to provide water quality treatment)
- ☒ Modify pond riser
 - ☐ dry pond has large diameter ^{high} low flow outlet (can be constricted by attaching orifice plate or installing weir)
 - ☒ if concrete riser, more weir capacity needed to pass overbank and extreme storms
- ☒ Modify internal design
 - ☒ install forebay (make sure there is access road for heavy equipment)
 - ☒ extend internal flow path
 - ☒ add wetland elements

RR1-5

POND RETROFIT CHECKLIST

(Check possible alternative restoration practices)

- ☒ Tree planting within acceptable portions of the pond and its buffer (to deter geese)
- ☒ Planting wetland species in pond benches
- ☒ Notify owner to perform maintenance tasks to restore pond function
- ☐ Include pond in a local Adopt-a-Pond program

Computing the Retrofit Storage Volume

The **water quality target volume** can be determined using the following equation:

$$V_t = P/12 * R_v * DA$$

Where: V_t = Target storage volume (acre feet)
 P = Target rainfall depth (in inches for the 90% storm)
 R_v = Runoff coefficient = $0.05 + 0.009 (IC)$
 DA = Drainage area (acres)
 12 = Conversion factor (inches to feet)

To calculate **channel protection target volume**, use the following equation:

$$V_t = P/12 * IC/100 * DA * 0.6$$

Where: V_t = Target storage volume (acre feet)
 P = 1-year 24-hour storm depth (inches)
 IC = Impervious cover (%)
 DA = Drainage area (acres)
 12 = Conversion factor (inches to feet)
 0.6 = Pond routing factor

Computing Available Retrofit Storage

For ponds and wetlands, use the following simplified equation to estimate available storage:

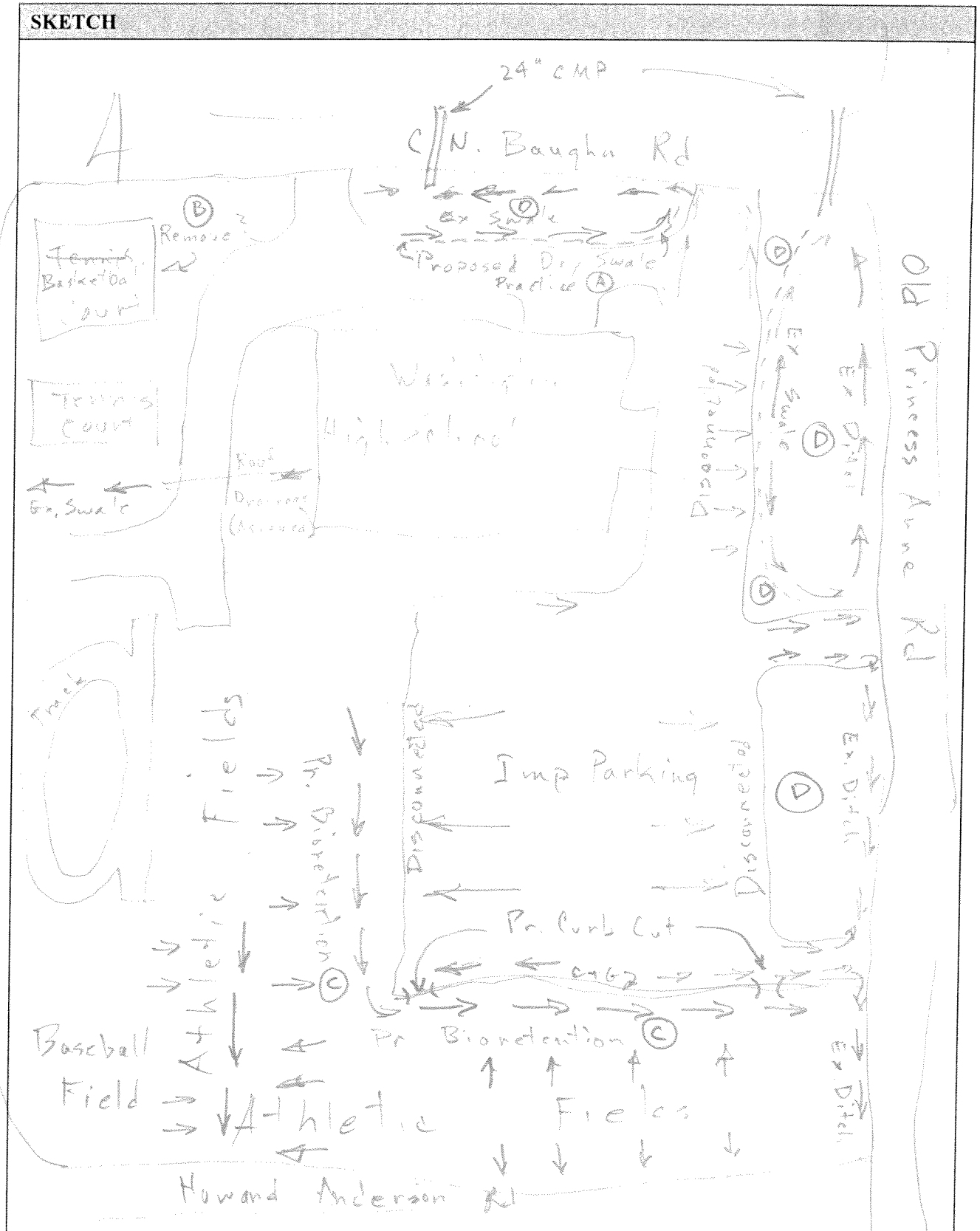
$$V_{av} = 2/3 * d * SA$$

Where: V_{av} = Available storage at the site (acre-feet)
 SA = Surface area of the facility (acres)
 d = Estimated max depth (feet)
 $2/3$ = Average volume factor

WATERSHED:		SUBWATERSHED: <u>Manokin River</u>		UNIQUE SITE ID: <u>RRI 8-A</u> <u>B-C</u>	
DATE: <u>8/30/12</u>		ASSESSED BY: <u>LAH</u> <u>DL DEF</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Washington High School</u>					
Address:					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID:					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other:					
On-Site					
<input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop					
<input checked="" type="checkbox"/> Small Parking Lot <input checked="" type="checkbox"/> Small Impervious Area <u>tennis court</u>					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other:					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional		
Impervious Area ≈ _____			<input type="checkbox"/> Industrial		
Notes:			<input type="checkbox"/> SFH (< 1 ac lots)		
			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Park		
			<input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Other:		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance: <u>D. grass areas</u>					
<u>A sheet flow to swale</u>					
<u>B - unused basket ball court</u>					
<u>C - sheet flow to ditch on east side of bldg -</u>					
<u>partial to ditch at S. end of parking lot</u>					
<u>also portion of athletic field</u>					
Existing Head Available and Points Where Measured:					
<u>A edge of parking area 1 1/2 ft -</u>					
<u>B - NA</u>					
<u>C. 2 ft - turf to ditch bottom</u>					
<u>D. NA</u>					

PROPOSED RETROFIT																												
Purpose of Retrofit: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input type="checkbox"/> Other: _____																												
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Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <div style="font-family: cursive; font-size: 1.2em;"> <p>A - dry swale</p> <p>B - remove basketball court? checked with school</p> <p>C - long linear wetland, depending on drainage area</p> <p>D - tree planting in grassy area in front of school and between athletic fields</p> </div>																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input checked="" type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Describe:	Access: <input checked="" type="checkbox"/> No Constraints Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input checked="" type="checkbox"/> None <i>away from poles</i> <input type="checkbox"/> Unknown <table style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Yes</th> <th style="text-align: left;">Possible</th> <th></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other: _____</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____
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Soils: Soil auger test holes: <i>NA</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input type="checkbox"/> No																												

SKETCH



DESIGN OR DELIVERY NOTES

Check w/ school about removing basketball and/or tennis courts.
 'past plantings have failed - need discussion on maintenance

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Manokin</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>09 A, B</u>	
DATE: <u>8/30</u>		ASSESSED BY: <u>RDC/BC</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Greenwood elementary School</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop					
<input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential		
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			<input type="checkbox"/> Industrial		
			<input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Park		
			<input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
<p>B) Sheet flow off parking lot to grass</p> <p>A) gutter connected to ? cannot set rate downspouts to bioretention</p>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Head Available and Points Where Measured:					
<p>A) This would rely on infiltration there is no place to outlet</p> <p>B) could outlet to the ditch to the north ~ 6' drop.</p>					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☒ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention A, B
☐ Filtering Practice ☒ Infiltration ☐ Swale ☒ Other: disconnection

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

A) install a bioretention / rain garden on the north end of the school to catch rooftop runoff and use as a "living classroom"

B) install a bioretention area on the north end of the north parking lot. Drain this practice to the ditch.

SITE CONSTRAINTS**Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

☒ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☐ Unknown

Yes Possible

- ☐ Sewer
☐ Water
☐ Gas
☐ Cable
☐ Electric
☒ Electric to Streetlights
☐ Overhead Wires
☐ Other: _____

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

Other factors: _____

Soils:

Soil auger test holes:

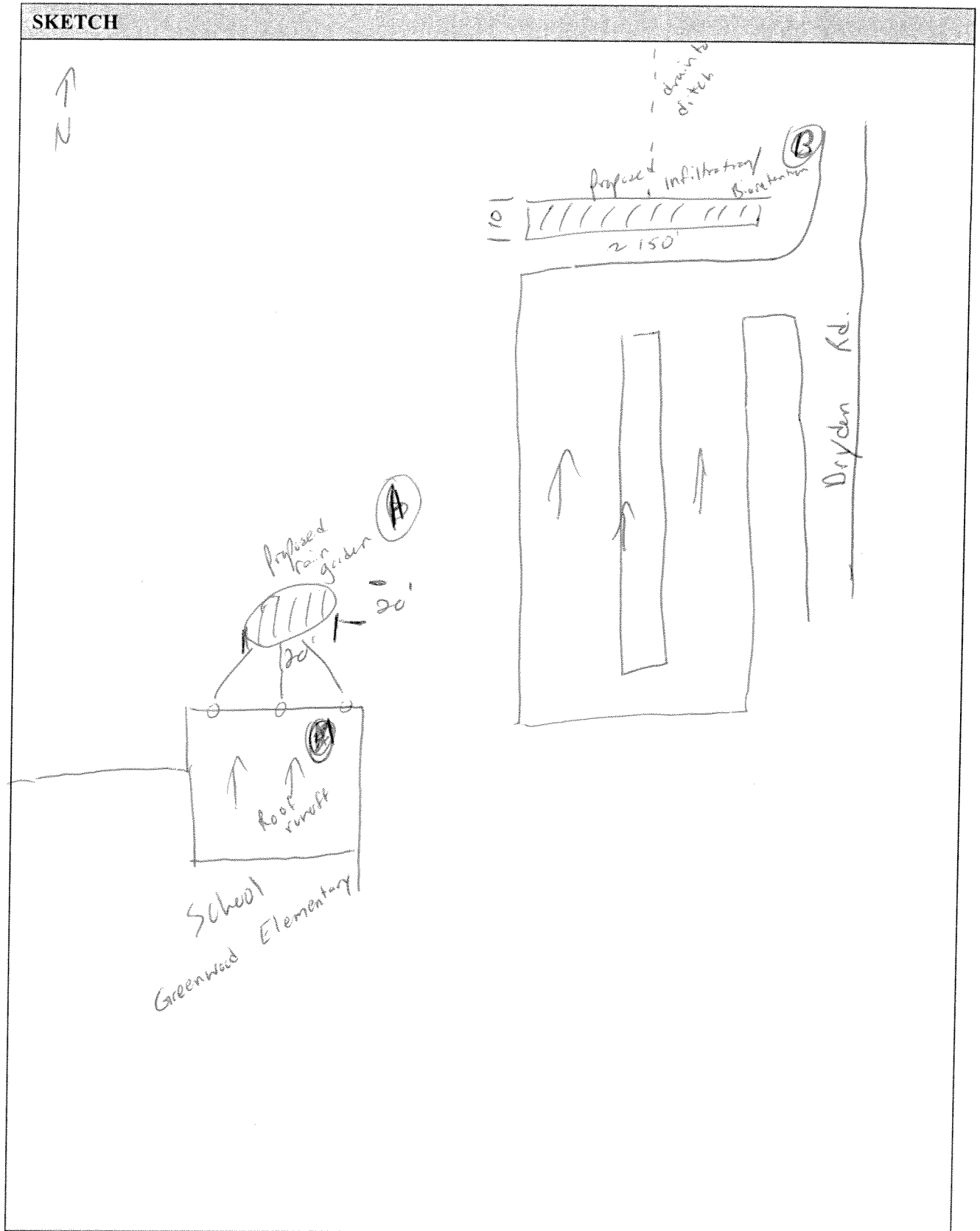
Evidence of poor infiltration (clays, fines):

Evidence of shallow bedrock:

Evidence of high water table (gleying, saturation):

- ☐ Yes ☐ No
☐ Yes ☐ No
☐ Yes ☐ No
☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

- Entire site is disconnected.
- = plenty of space for outdoor classroom type activities

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES ☐ NO ☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES ☐ NO ☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES ☐ NO ☐ MAYBE

IF YES, TYPE(S): _____

* plant trees all around site

POND RETROFIT CHECKLIST

RR1-12

(Check possible alternative restoration practices)

- ☐ Tree planting within acceptable portions of the pond and its buffer (to deter geese)
- ☐ Planting wetland species in pond benches
- ☐ Notify owner to perform maintenance tasks to restore pond function
- ☐ Include pond in a local Adopt-a-Pond program

Computing the Retrofit Storage Volume

The **water quality target volume** can be determined using the following equation:

$$V_t = P/12 * R_v * DA$$

Where: V_t = Target storage volume (acre feet)
 P = Target rainfall depth (in inches for the 90% storm)
 R_v = Runoff coefficient = $0.05 + 0.009 (IC)$
 DA = Drainage area (acres)
 12 = Conversion factor (inches to feet)

To calculate **channel protection target volume**, use the following equation:

$$V_t = P/12 * IC/100 * DA * 0.6$$

Where: V_t = Target storage volume (acre feet)
 P = 1-year 24-hour storm depth (inches)
 IC = Impervious cover (%)
 DA = Drainage area (acres)
 12 = Conversion factor (inches to feet)
 0.6 = Pond routing factor

Computing Available Retrofit Storage

For ponds and wetlands, use the following simplified equation to estimate available storage:

$$V_{av} = 2/3 * d * SA$$

Where: V_{av} = Available storage at the site (acre-feet)
 SA = Surface area of the facility (acres)
 d = Estimated max depth (feet)
 $2/3$ = Average volume factor

POND RETROFIT CHECKLIST

(Check the existing type of pond)

- ☐ regional flood control or detention pond
- ☐ dry stormwater detention pond
- ☐ dry extended detention pond
- ☒ wet stormwater detention pond
- ☐ "modern" stormwater quality pond

(Check the following existing conditions)

- ☐ landlocked and cannot be accessed by construction equipment
- ☐ excessive trash
- ☐ evidence of geese
- ☐ woody growth
- ☐ invasive species
- ☐ low flow channel
- ☐ internal flow path (short or long)
- ☒ single or multiple cells
- ☐ single or multiple inlets
- ☐ inlet elevation(s)
- ☐ condition of pond inlet(s)
- ☐ multiple outlets
- ☐ condition of pond outlet structure (clogged, damaged, no trash rack, safety issues)
- ☐ condition of emergency spillway
- ☐ condition of dam or embankment (seepage, settlement, sloughing, animal burrows)
- ☐ evidence of sediment deposition
- ☐ evidence of erosion within pond
- ☐ upstream of pond (headwater effects)
- ☐ downstream of pond (scour problems)

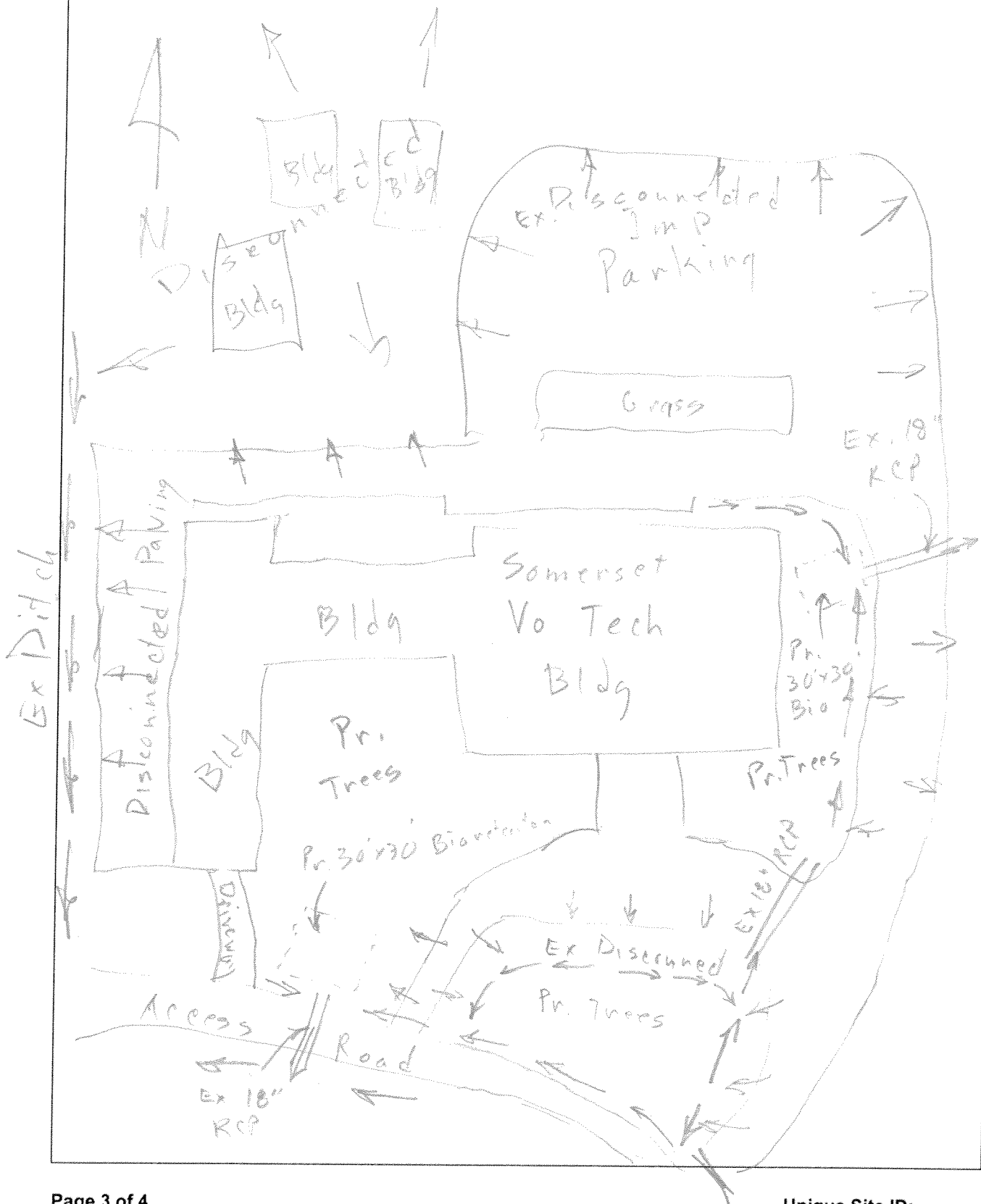
(Check possible retrofit strategies)

- ☐ Excavate pond bottom (to provide storage)
 - ☐ pond bottom is flat and dry with no evidence of standing water
 - ☐ soils auger showed no presence of hydric soils
 - ☐ no evidence of utilities in pond bottom
- ☐ Raise embankment
 - ☐ there is available space at toe of embankment for wider footprint
 - ☐ compare new embankment elevation with pond inlet pipe elevation (for tailwater problems)
- ☐ Trade storage
 - ☐ riser has multiple outlets (may indicate storage for 2 to 25 year storms, storage can be converted to provide water quality treatment)
- ☒ Modify pond riser *add low flow orifice / 2 stage riser*
 - ☒ ~~dry pond has large diameter low flow outlet (can be constricted by attaching orifice plate or installing weir)~~
 - ☐ if concrete riser, more weir capacity needed to pass overbank and extreme storms
- ☒ Modify internal design
 - ☒ ~~install~~ forebay (make sure there is access road for heavy equipment) *raise forebay*
 - ☐ extend internal flow path
 - ☐ add wetland elements

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: <u>RRI-13-A</u> +B	
DATE: <u>8/30/12</u>	ASSESSED BY: <u>LA, DP</u>	CAMERA ID:		PICTURES: <u>39-44</u>	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>Board of Education - V. Lech</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input checked="" type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input checked="" type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW	<input type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape		
<input type="checkbox"/> Other: _____		<input type="checkbox"/> Underground	<input type="checkbox"/> Other: _____		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential		
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots)		
Notes:			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input checked="" type="checkbox"/> Institutional		
			<input type="checkbox"/> Industrial		
			<input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Park		
			<input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>sheetflow to ditch system</u>					
Existing Head Available and Points Where Measured:					
<u>a) 2' - road surface to bottom of pipe</u>					
<u>b) assume 2' to bottom of inlet</u>					

PROPOSED RETROFIT																												
Purpose of Retrofit: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input type="checkbox"/> Other: _____																												
Retrofit Volume Computations - Target Storage: 	Retrofit Volume Computations - Available Storage: 																											
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input checked="" type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other: _____																												
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <div style="font-family: cursive; font-size: 1.2em;"> <p>A - Bioretention 30x30 at SW corner + clear culvert</p> <p>B - Dry Swale 10x250' at NE corner + clear culvert in gutter</p> <p>confirm Bldg Drainage</p> </div>																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input checked="" type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Describe:	Access: <input checked="" type="checkbox"/> No Constraints Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other: _____</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										
Soils: Soil auger test holes: NA <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input type="checkbox"/> No																												

SKETCH



DESIGN OR DELIVERY NOTES

• confirm building drainage - east part draining to ditch, unsure of west

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

- | | | |
|------------------------------|-----------------------------|--------------------------------|
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |

WATERSHED: <u>Manokin</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>17</u>	
DATE: <u>8/30</u>		ASSESSED BY: <u>KOC/BG</u>		CAMERA ID:	
PICTURES: <u>56-58</u>		GPS ID:		LMK ID:	
LAT:		LONG:			
SITE DESCRIPTION					
Name: <u>Sanitary Facility</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input checked="" type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area \approx _____			Drainage Area Land Use:		
Imperviousness \approx _____ %			<input type="checkbox"/> Residential		
Impervious Area \approx _____			<input checked="" type="checkbox"/> Institutional		
Notes:			<input type="checkbox"/> SFH (< 1 ac lots)		
			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input type="checkbox"/> Industrial		
			<input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Park		
			<input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
<u>Sheet flow to swale</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>Water sheet / show flows to swale on north end of parking lot.</u>					
Existing Head Available and Points Where Measured:					
<u>NA.</u>					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☒ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

amend soils in current swale to provide treatment

SITE CONSTRAINTS**Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☒ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☐ Unknown

Yes

Possible

- | | | |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Sewer |
| <input type="checkbox"/> | <input type="checkbox"/> | Water |
| <input type="checkbox"/> | <input type="checkbox"/> | Gas |
| <input type="checkbox"/> | <input type="checkbox"/> | Cable |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric to Streetlights |
| <input type="checkbox"/> | <input type="checkbox"/> | Overhead Wires |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- | | |
|-----------------------------------|---------------------------------------|
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |

Other factors: _____

Soils:

Soil auger test holes:

- ☐ Yes ☐ No

Evidence of poor infiltration (clays, fines):

- ☐ Yes ☐ No

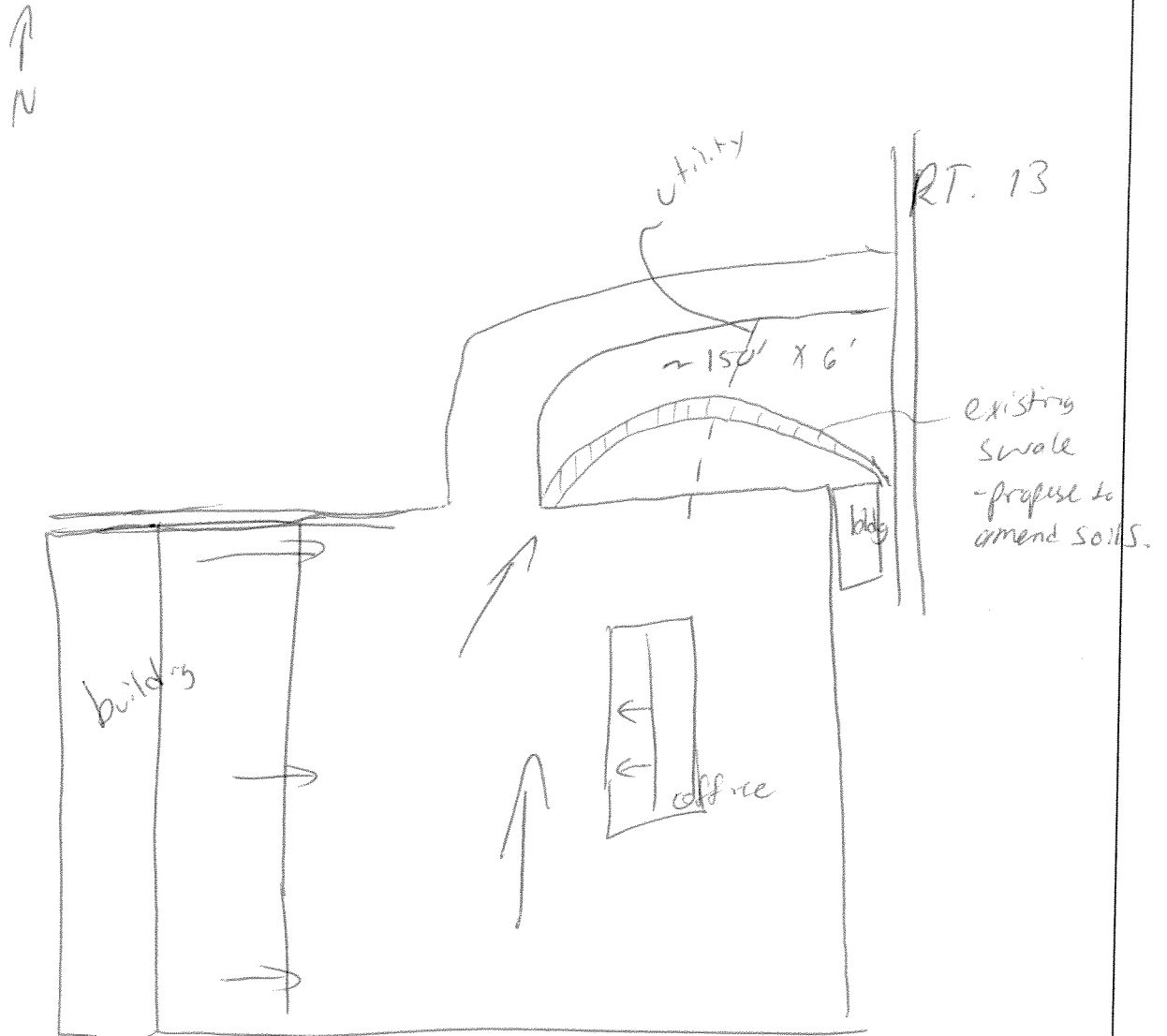
Evidence of shallow bedrock:

- ☐ Yes ☐ No

Evidence of high water table (gleying, saturation):

- ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <i>Manakin</i>		SUBWATERSHED:		UNIQUE SITE ID: <i>18</i>	
DATE: <i>8/30</i>		ASSESSED BY: <i>RDC/BC</i>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <i>USDA service center</i>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input checked="" type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input checked="" type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional		
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots) <input checked="" type="checkbox"/> Industrial		
Notes:			<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Townhouses <input type="checkbox"/> Park		
			<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe: <i>Small pond + swales</i> <i>buildings is disconnected</i>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Head Available and Points Where Measured: <i>A ~ 1.5' - 2'</i> <i>B ~ 4' or so drop to swale</i>					

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☒ Swale *A* ☒ Other: *pond retrofit A*

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

A: dig pond deeper with possible amended soils to treat runoff - infiltration practice in bottom of pond.
B: amended soils

SITE CONSTRAINTS

Adjacent Land Use:

- ☐ Residential ☐ Commercial ☒ Institutional
☒ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☒ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☒ Unknown

Yes

Possible

- | | | |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Sewer |
| <input type="checkbox"/> | <input type="checkbox"/> | Water |
| <input type="checkbox"/> | <input type="checkbox"/> | Gas |
| <input type="checkbox"/> | <input type="checkbox"/> | Cable |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric to Streetlights |
| <input type="checkbox"/> | <input type="checkbox"/> | Overhead Wires |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- | | |
|-----------------------------------|---------------------------------------|
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |

Other factors: _____

Soils:

Soil auger test holes:

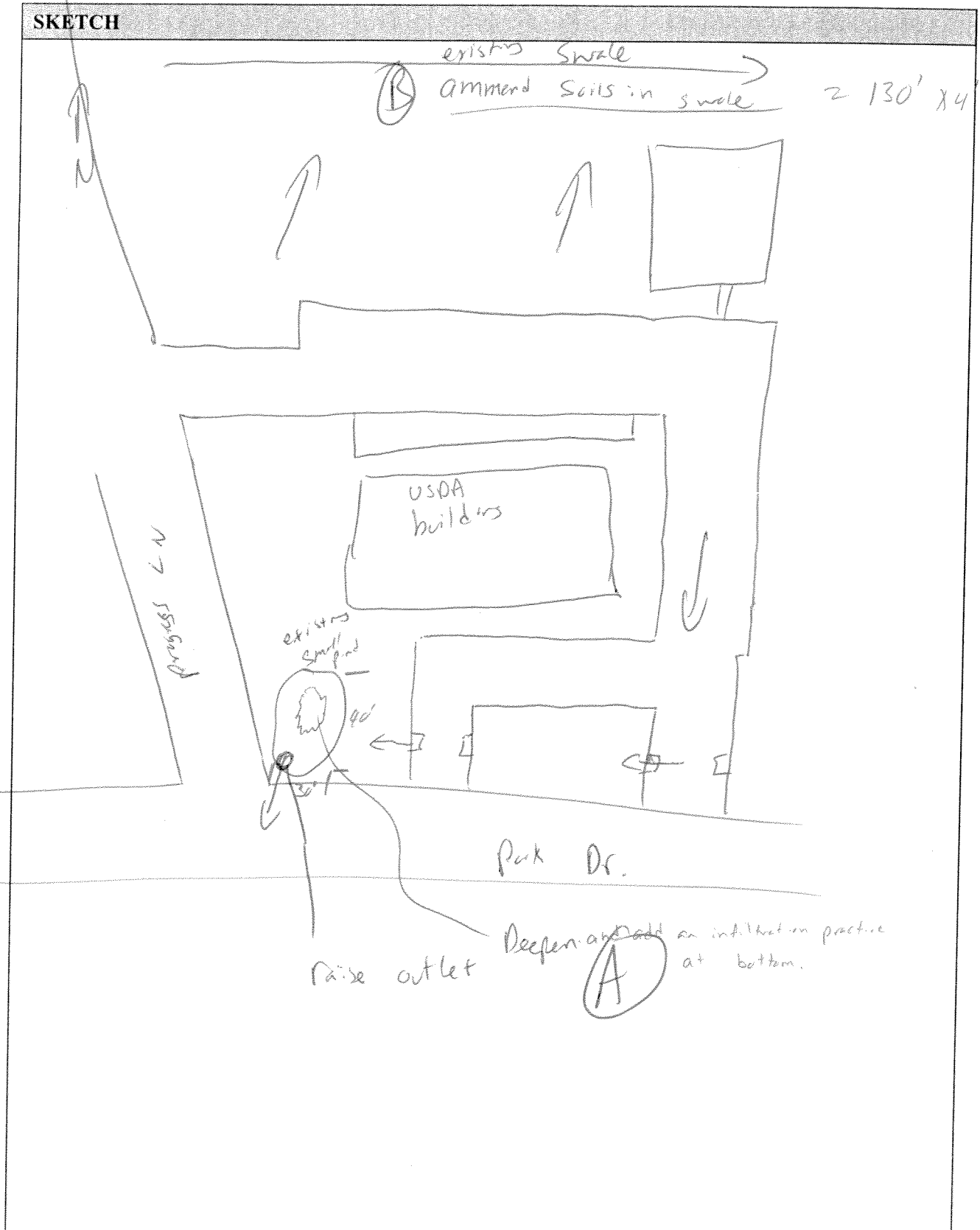
Evidence of poor infiltration (clays, fines):

Evidence of shallow bedrock:

Evidence of high water table (gleying, saturation):

- | | |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

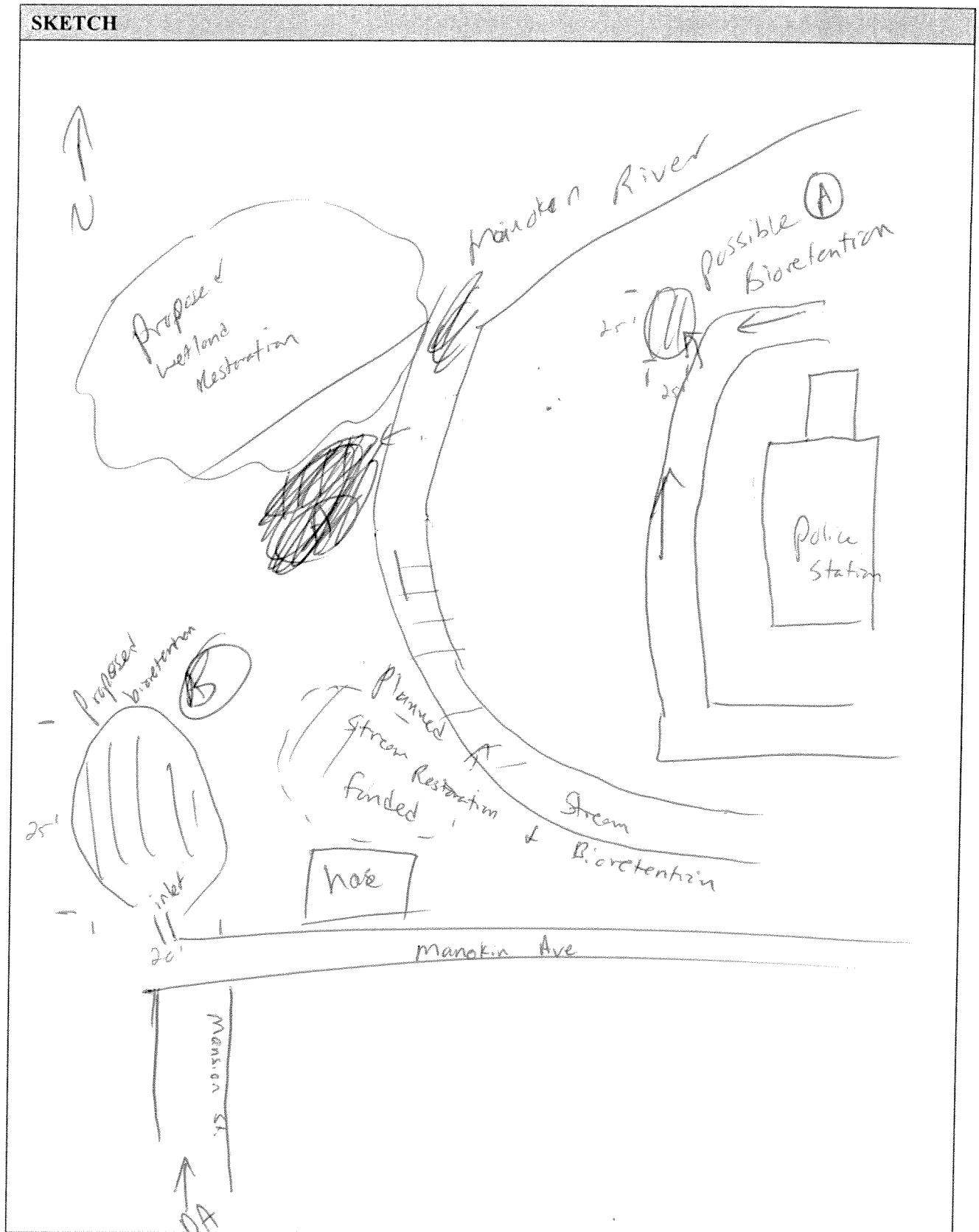
☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Mandarin</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>21</u>	
DATE: <u>8/30</u>		ASSESSED BY: <u>RDC/BC</u>		CAMERA ID:	
PICTURES: <u>7-14</u>		GPS ID:		LMK ID:	
LAT:		LONG:			
SITE DESCRIPTION					
Name: <u>Police Station</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> Storage <input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert <input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input type="checkbox"/> Other: _____ </div> <div style="width: 48%;"> On-Site <input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop <input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input type="checkbox"/> Other: _____ </div> </div>					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____			Drainage Area Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Institutional <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
<u>A) gravel lot</u> <u>B) street piped to grass area</u> <u>C) street shallow flow to grass area</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Head Available and Points Where Measured:					

PROPOSED RETROFIT																												
Purpose of Retrofit: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input type="checkbox"/> Other: _____																												
Retrofit Volume Computations - Target Storage: 	Retrofit Volume Computations - Available Storage: 																											
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input checked="" type="checkbox"/> Bioretention (A,B) <input type="checkbox"/> Filtering Practice <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input checked="" type="checkbox"/> Other: <u>forebay (C)</u>																												
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <div style="font-family: cursive; font-size: 1.2em;"> A) capture water in Bioretention B) " " C) route water through forebay </div>																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Institutional A <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Describe:	Access: <input type="checkbox"/> No Constraints Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; width: 10%;">Yes</th> <th style="text-align: left; width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other: _____</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										
Soils: Soil auger test holes: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input type="checkbox"/> No																												

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES ☐ NO ☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

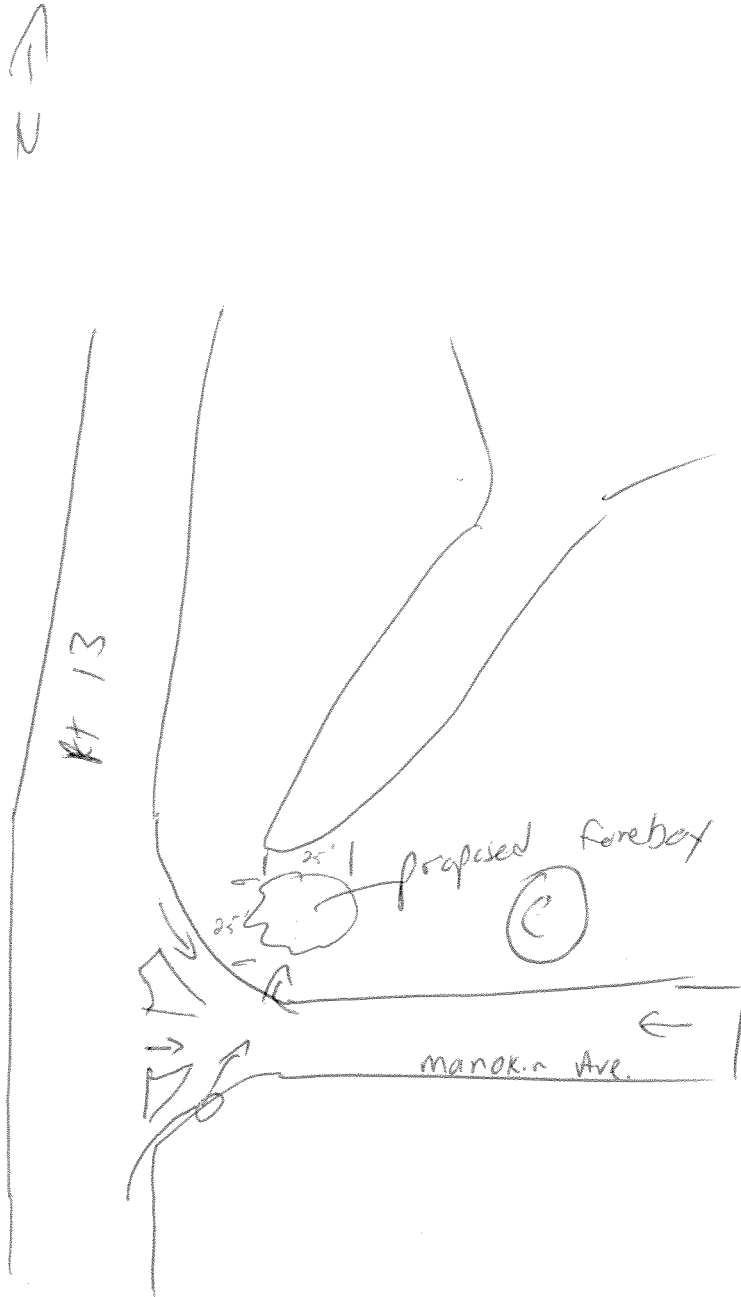
☐ YES ☐ NO ☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES ☐ NO ☐ MAYBE

IF YES, TYPE(S): _____

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS**SITE CANDIDATE FOR FURTHER INVESTIGATION:****IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):****IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):**

IF YES, TYPE(S): _____

☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE

WATERSHED: <u>Marokín</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>22</u>	
DATE: <u>8/30</u>		ASSESSED BY: <u>RAC/BC</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Public Library</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Storage <input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert <input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input type="checkbox"/> Other: _____ </div> <div style="width: 45%;"> On-Site <input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop <input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input type="checkbox"/> Other: _____ </div> </div>					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____			Drainage Area Land Use: <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes: _____					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe: <div style="text-align: center; font-size: 1.2em;">Curb + gutter</div>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance: <div style="text-align: center; font-size: 1.2em;">~ runoff from roofs is piped to parking lot - parking lot is graded to south east before entering a grass swale / heavily vegetated channel, which is eroded.</div>					
Existing Head Available and Points Where Measured: <div style="text-align: center; font-size: 1.2em;">as much as needed → on side of hill.</div>					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

SITE CONSTRAINTS**Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☒ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☒ None
☐ Unknown

Yes Possible

- ☐ Sewer
☐ Water
☐ Gas
☐ Cable
☐ Electric
☐ Electric to Streetlights
☐ Overhead Wires
☐ Other: _____

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- ☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable

Other factors: _____

Soils:

Soil auger test holes:

- ☐ Yes ☐ No

Evidence of poor infiltration (clays, fines):

- ☐ Yes ☐ No

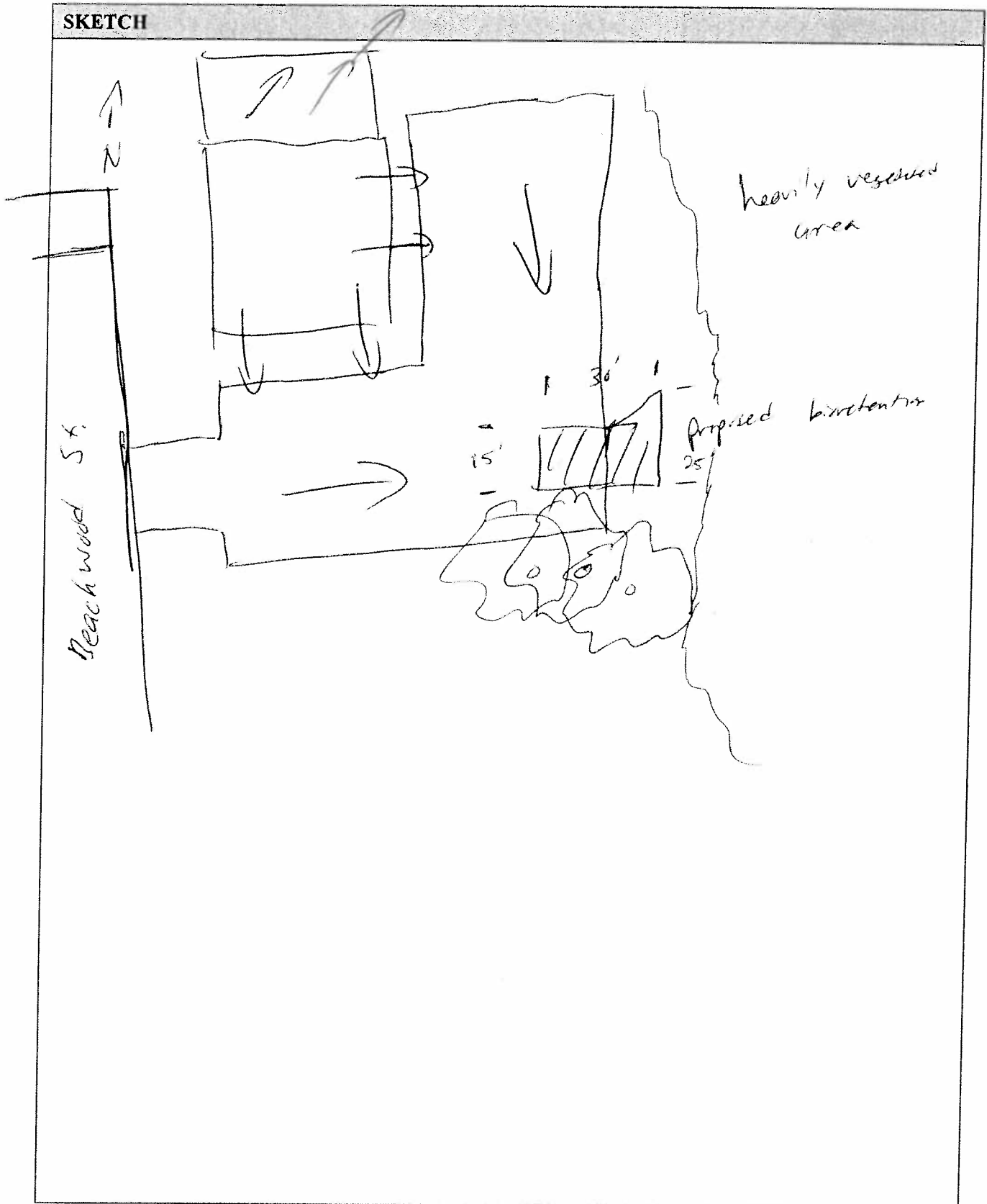
Evidence of shallow bedrock:

- ☐ Yes ☐ No

Evidence of high water table (gleying, saturation):

- ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

- Must remove 2-3 parking stalls
 - already filled with sediments

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

- | | | |
|------------------------------|-----------------------------|--------------------------------|
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |

WATERSHED: <u>Monahan</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>RRI 23 A, B, C</u>	
DATE: <u>8/30/12</u>	ASSESSED BY: <u>WOL/BC</u>	CAMERA ID: <u>Orange</u>	PICTURES: <u>from Google</u>		
GPS ID:	LMK ID:	LAT:	LONG:		
SITE DESCRIPTION					
Name: <u>Somerset office complex</u>					
Address: <u>11916 Somerset Ave.</u>					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop					
<input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area \approx _____			Drainage Area Land Use:		
Imperviousness \approx _____ %			<input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional		
Impervious Area \approx _____			<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial		
Notes:			<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Townhouses <input type="checkbox"/> Park		
			<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
A, B - discharge to street					
C - discharge to ditch					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
A, B) sheet flow / shallow concentrated flow to gutters & street					
C) sheet flow + roof flow to grass swale					
Existing Head Available and Points Where Measured:					
A) needs to be verified \sim 5' to street grate inlet in North parking lot					
B) \sim 2.5' to street					
B) discharge to ditch					
C) \sim 1.5' drop to bottom of ditch					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:**SITE CONSTRAINTS****Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☒ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☒ Unknown

Yes Possible

- ☐ Sewer
☐ Water
☐ Gas
☐ Cable
☐ Electric
☐ Electric to Streetlights
☐ Overhead Wires
☐ Other: _____

Potential Permitting Factors:

Dam Safety Permits Necessary

- ☐ Probable ☐ Not Probable

Impacts to Wetlands

- ☐ Probable ☐ Not Probable

Impacts to a Stream

- ☐ Probable ☐ Not Probable

Floodplain Fill

- ☐ Probable ☐ Not Probable

Impacts to Forests

- ☐ Probable ☐ Not Probable

Impacts to Specimen Trees

- ☐ Probable ☐ Not Probable

How many? _____

Approx. DBH _____

Other factors: _____

Soils:

Soil auger test holes:

- ☐ Yes ☐ No

Evidence of poor infiltration (clays, fines):

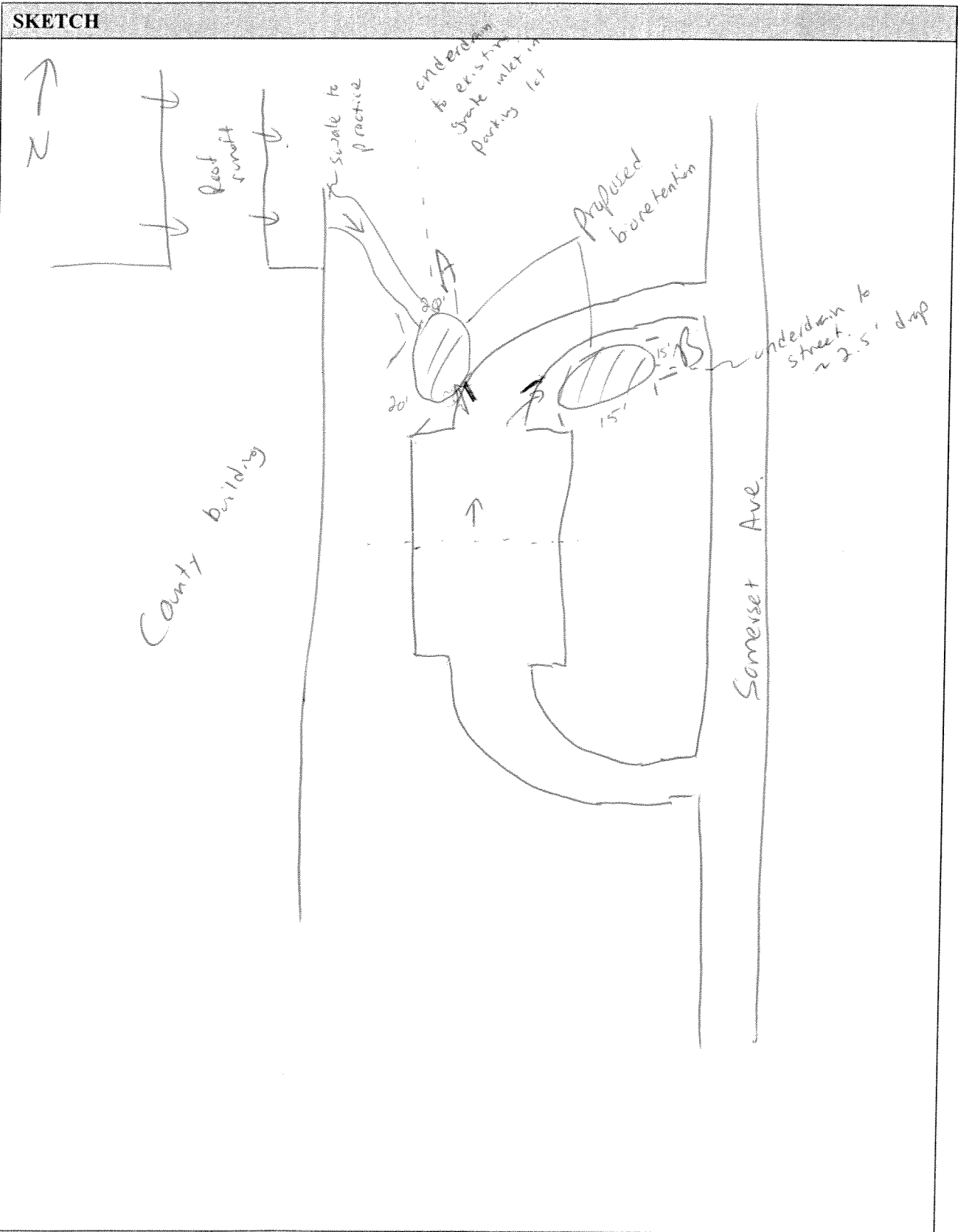
- ☐ Yes ☐ No

Evidence of shallow bedrock:

- ☐ Yes ☐ No

Evidence of high water table (gleying, saturation):

- ☐ Yes ☐ No



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

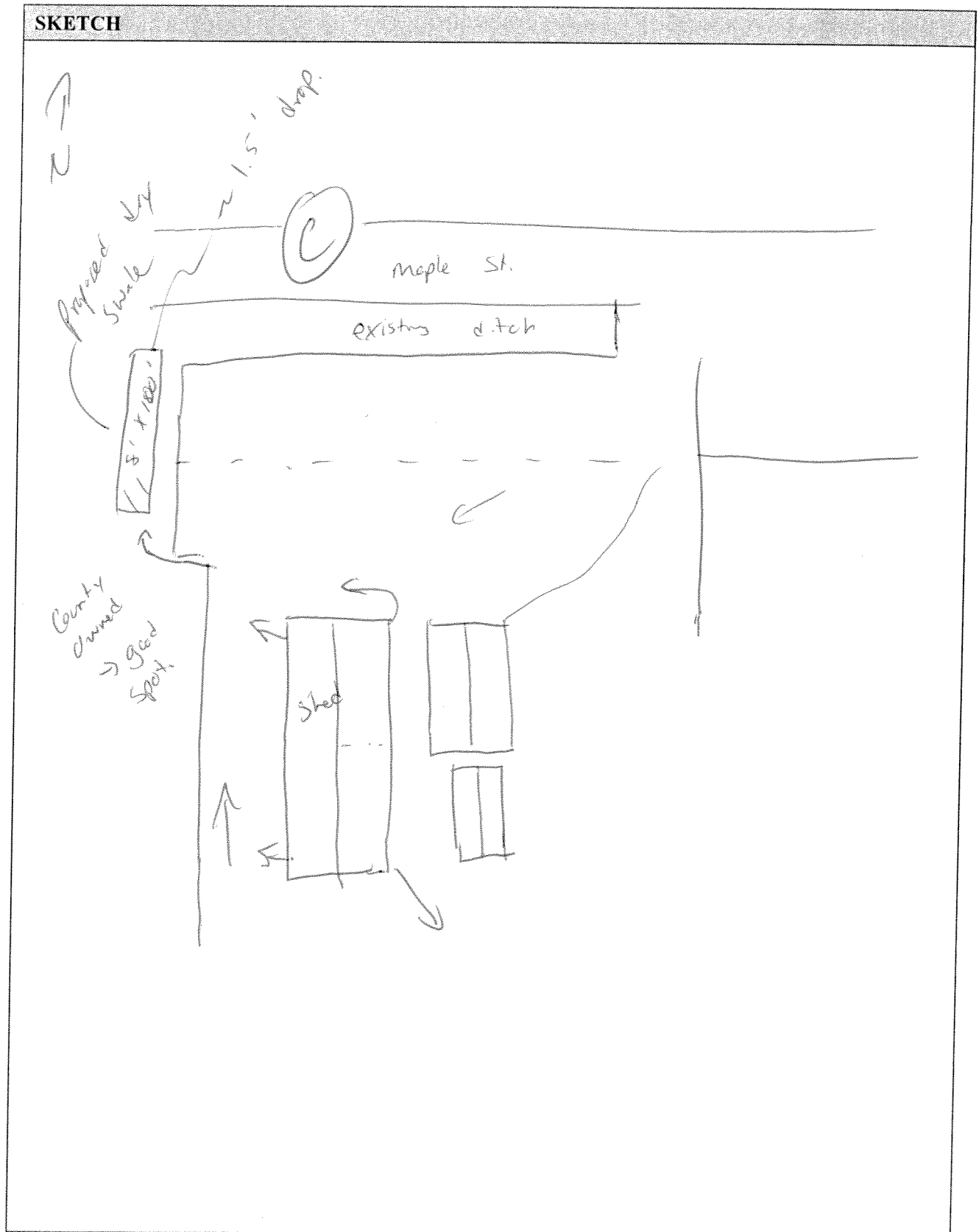
☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Manokin</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>RRI_25</u>	
DATE: <u>8/31</u>		ASSESSED BY: <u>RDC/TSL</u>		CAMERA ID:	
PICTURES: <u>6-6-69</u>		GPS ID:		LMK ID:	
LAT:		LONG:			
SITE DESCRIPTION					
Name: <u>Three Lower Counties Medical & Dental Center</u>					
Address: _____					
Ownership: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Storage <input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert <input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input type="checkbox"/> Other: _____ </div> <div style="width: 45%;"> On-Site <input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop <input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input type="checkbox"/> Other: _____ </div> </div>					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____			Drainage Area Land Use: <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: <u>sheet flow to grass area</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Head Available and Points Where Measured: <u>~ 3' - 1' drop from grass surface to catch basin</u> <u>flush with parking lot.</u> <u>- catch basin ~ 2' deep</u>					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Bioretention
collecting sheet flow from
parking lot + roof

SITE CONSTRAINTS**Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☐ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☒ Unknown

Yes

Possible

- | | | |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Sewer |
| <input type="checkbox"/> | <input type="checkbox"/> | Water |
| <input type="checkbox"/> | <input type="checkbox"/> | Gas |
| <input type="checkbox"/> | <input type="checkbox"/> | Cable |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric to Streetlights |
| <input type="checkbox"/> | <input type="checkbox"/> | Overhead Wires |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

Potential Permitting Factors:

- | | | |
|------------------------------|-----------------------------------|---------------------------------------|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Impacts to a Stream | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |

How many? _____

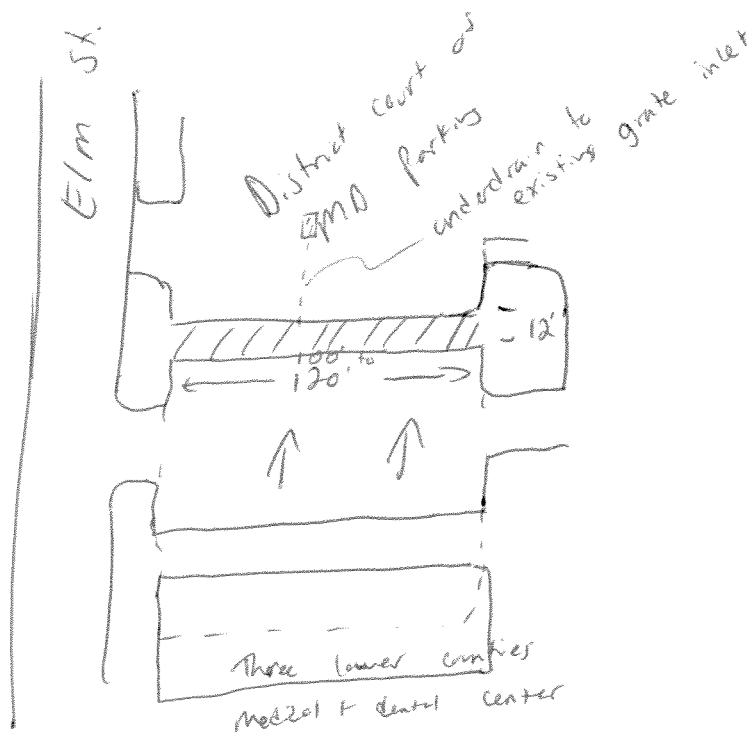
Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Manokin</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>27</u>	
DATE: <u>8/31</u>		ASSESSED BY: <u>RJC/TSL</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>McDonalds</u>					
Address: _____					
Ownership: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage <input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert <input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input type="checkbox"/> Other: _____			On-Site <input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop <input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input type="checkbox"/> Other: _____		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____			Drainage Area Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Institutional <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe:					
<p style="text-align: center;">- wet pond from upstream flows into dry pond tied to McDonalds</p>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Head Available and Points Where Measured:					
<p style="text-align: center;">existing dry pond (NA)</p>					

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☒ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☒ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- retrofit the ~~pond~~ dry pond by additional excavation
 - clean current dry pond to enhance functionality

SITE CONSTRAINTS

Adjacent Land Use:

- ☐ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

☐ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☒ None
☐ Unknown

Yes Possible

- ☐ Sewer
☐ Water
☐ Gas
☐ Cable
☐ Electric
☐ Electric to Streetlights
☐ Overhead Wires
☐ Other: _____

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- ☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable

Other factors: _____

Soils:

Soil auger test holes:

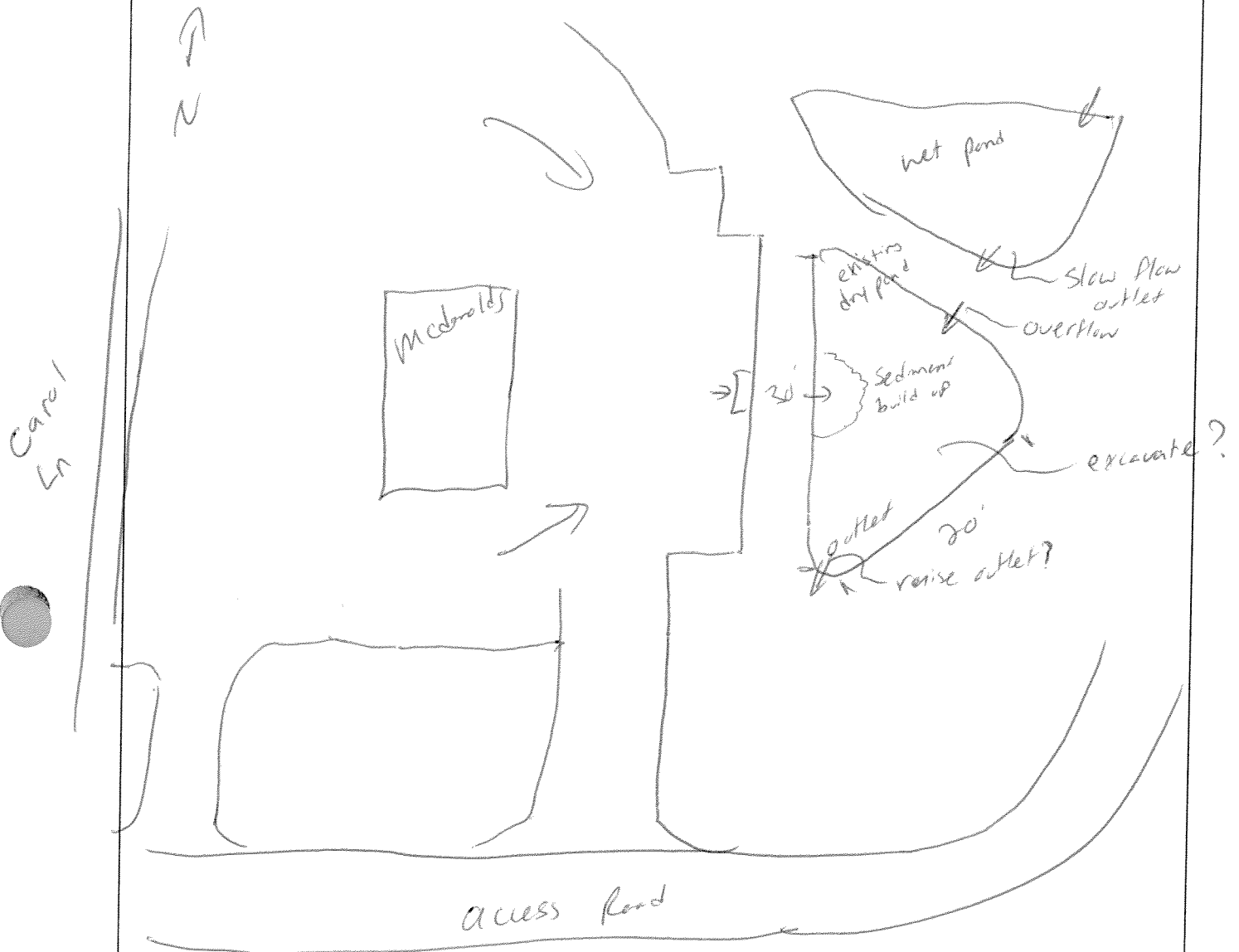
Evidence of poor infiltration (clays, fines):

Evidence of shallow bedrock:

Evidence of high water table (gleying, saturation):

- ☐ Yes ☐ No
☐ Yes ☐ No
☐ Yes ☐ No
☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- ☐ Confirm property ownership
- ☐ Confirm drainage area
- ☐ Confirm drainage area impervious cover
- ☐ Confirm volume computations
- ☐ Complete concept sketch

- ☐ Obtain existing stormwater practice as-builts
- ☐ Obtain site as-builts
- ☐ Obtain detailed topography
- ☐ Obtain utility mapping
- ☐ Confirm storm drain invert elevations
- ☐ Confirm soil types

☐ Other: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

☐ YES

☐ NO

☐ MAYBE

☐ YES

☐ NO

☐ MAYBE

☐ YES

☐ NO

☐ MAYBE

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: <u>RRI 28</u>	
DATE: <u>8/31/12</u>		ASSESSED BY: <u>Lori Gary</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Marokha Manor Nursing Home</u>					
Address: <u>Cristfield Lane, Princess Anne</u>					
Ownership: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional		
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial		
			<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Townhouses <input type="checkbox"/> Park		
			<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible					
If Yes, Describe: <u>Guttering, downspouts, sheet flow</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>Nursing home, very few trees, roadside ditches, downspouts, 1 storm pond</u>					
Existing Head Available and Points Where Measured:					
<u>A. 2' from ground @ bldg. to bottom of road side ditch</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

A. Area along north side of bldg, along Sharon Dr., grassed area slopes down to roadside ditches - collect roof rainwater from downspouts; plant more trees too 10-15' x 75'

SITE CONSTRAINTS

Adjacent Land Use:

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☒ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☒ None
☒ Unknown

Yes

Possible

- | | | |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Sewer |
| <input type="checkbox"/> | <input type="checkbox"/> | Water |
| <input type="checkbox"/> | <input type="checkbox"/> | Gas |
| <input type="checkbox"/> | <input type="checkbox"/> | Cable |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric to Streetlights |
| <input type="checkbox"/> | <input type="checkbox"/> | Overhead Wires |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

Potential Permitting Factors:

- Dam Safety Permits Necessary
 Impacts to Wetlands
 Impacts to a Stream
 Floodplain Fill
 Impacts to Forests
 Impacts to Specimen Trees

- | | |
|-----------------------------------|--|
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |

How many? _____

Approx. DBH _____

Other factors: _____

Soils:

Soil auger test holes:

☐ Yes ☐ No

Evidence of poor infiltration (clays, fines):

☐ Yes ☐ No

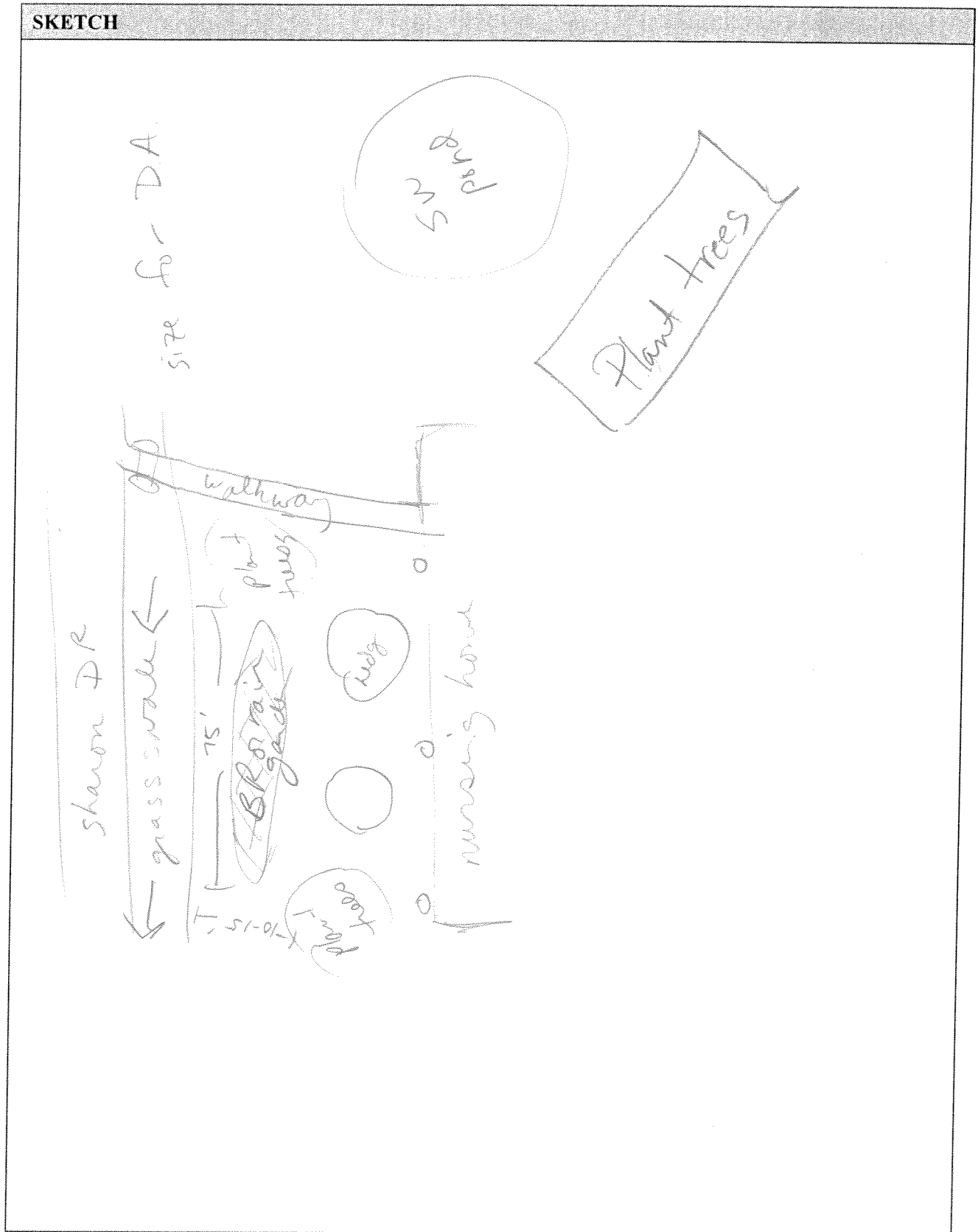
Evidence of shallow bedrock:

☐ Yes ☐ No

Evidence of high water table (gleying, saturation):

☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

- Existing stormwater pond - may be able to direct flow from adjacent County roads into pond (Sharon Dr + Edgemoor Terr)
- Pond seems over designed for amount of surface draining to it

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: <u>RR 29</u>	
DATE:	ASSESSED BY: <u>BTS</u>	CAMERA ID:		PICTURES: <u>29-1-29a</u>	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>Crisfield City Hall</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input checked="" type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential		
Impervious Area ≈ <u>2335 sq ft</u>			<input type="checkbox"/> SFH (< 1 ac lots)		
Notes: <u>IC removal</u>			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input type="checkbox"/> Institutional		
			<input type="checkbox"/> Industrial		
			<input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Park		
			<input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>Heavily used City Hall - DPW maintenance yard.</u>					
Existing Head Available and Points Where Measured:					
<u>No head available</u>					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☐ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☒ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

NA

Retrofit Volume Computations - Available Storage:

NA

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

There are 2 black top areas near the entrance to City Hall that serve no purpose & can be removed. Area = 2335 square feet combined

SITE CONSTRAINTS**Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☐ No Constraints
 Constrained due to

- ☒ Slope ☐ Space
☒ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☒ Unknown

Yes

Possible

- ☐ ☒ Sewer
☐ ☒ Water
☐ ☒ Gas
☐ ☒ Cable
☐ ☒ Electric
☐ ☐ Electric to Streetlights
☐ ☐ Overhead Wires
☐ ☐ Other: _____

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- ☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable

Other factors: _____

Soils:

Soil auger test holes:

Evidence of poor infiltration (clays, fines):

Evidence of shallow bedrock:

Evidence of high water table (gleying, saturation):

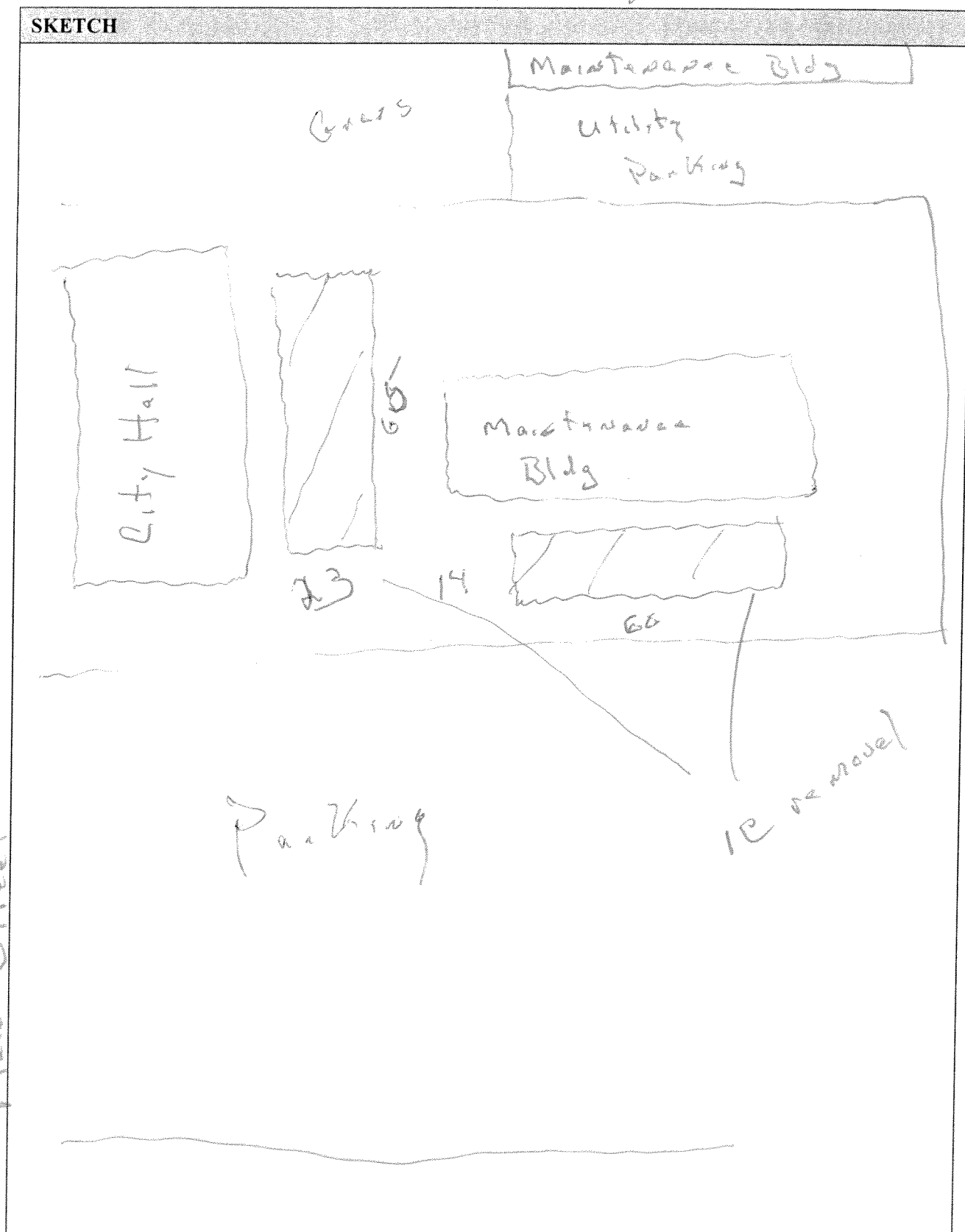
☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No

NA

← HZ

IC Removal

SKETCH



DESIGN OR DELIVERY NOTES

Simple IC removal

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

County staff said IC removal was feasible

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☒ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID:	
DATE:		ASSESSED BY:		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Crisfield City Hall</u>					
Address: _____					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input checked="" type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area \approx <u>0.20 acre</u>					
Imperviousness \approx <u>80</u> %					
Impervious Area \approx <u>7000 sq ft.</u>					
Notes: <u>retrofit in large grassy area behind maintenance bldg.</u>					
Drainage Area Land Use: <u>Maintenance yard</u>					
<input type="checkbox"/> Residential <input type="checkbox"/> Institutional					
<input type="checkbox"/> SFH (< 1 ac lots) <input checked="" type="checkbox"/> Industrial					
<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related					
<input type="checkbox"/> Townhouses <input type="checkbox"/> Park					
<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped					
<input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<p>DPW - Public Utilities Maintenance yard. Little or no storm drain because there is no relief. There is a large grassed area between City Hall & Storage Building. Roof leaders would have to be redirected. Site is either candidate for bracketation if topo shows enough head to a street outlet. The alternative is simple disconnection w/ soil augmentation.</p>					
Existing Head Available and Points Where Measured:					
Unknown, probably not enough					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: Disconnection

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Divert roof drains from Maintenance building & City hall
 to level spreader & onto grassed area. Possibly amend
 soil. Cisterns can be used below downspouts.
 Possible perforated pipe level spreader
 We will need clarification on the MDE specs which
 state the maximum flow path can only be 75.0 ft.

SITE CONSTRAINTS**Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☒ Institutional
☒ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe:

Access:

☒ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☒ Unknown

Yes Possible

- ☐ Sewer
☐ Water
☐ Gas
☐ Cable
☐ Electric
☐ Electric to Streetlights
☐ Overhead Wires
☐ Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☒ Not Probable
 Impacts to Wetlands ☐ Probable ☒ Not Probable
 Impacts to a Stream ☐ Probable ☒ Not Probable
 Floodplain Fill ☐ Probable ☒ Not Probable
 Impacts to Forests ☐ Probable ☒ Not Probable
 Impacts to Specimen Trees ☐ Probable ☒ Not Probable

How many? _____

Approx. DBH _____

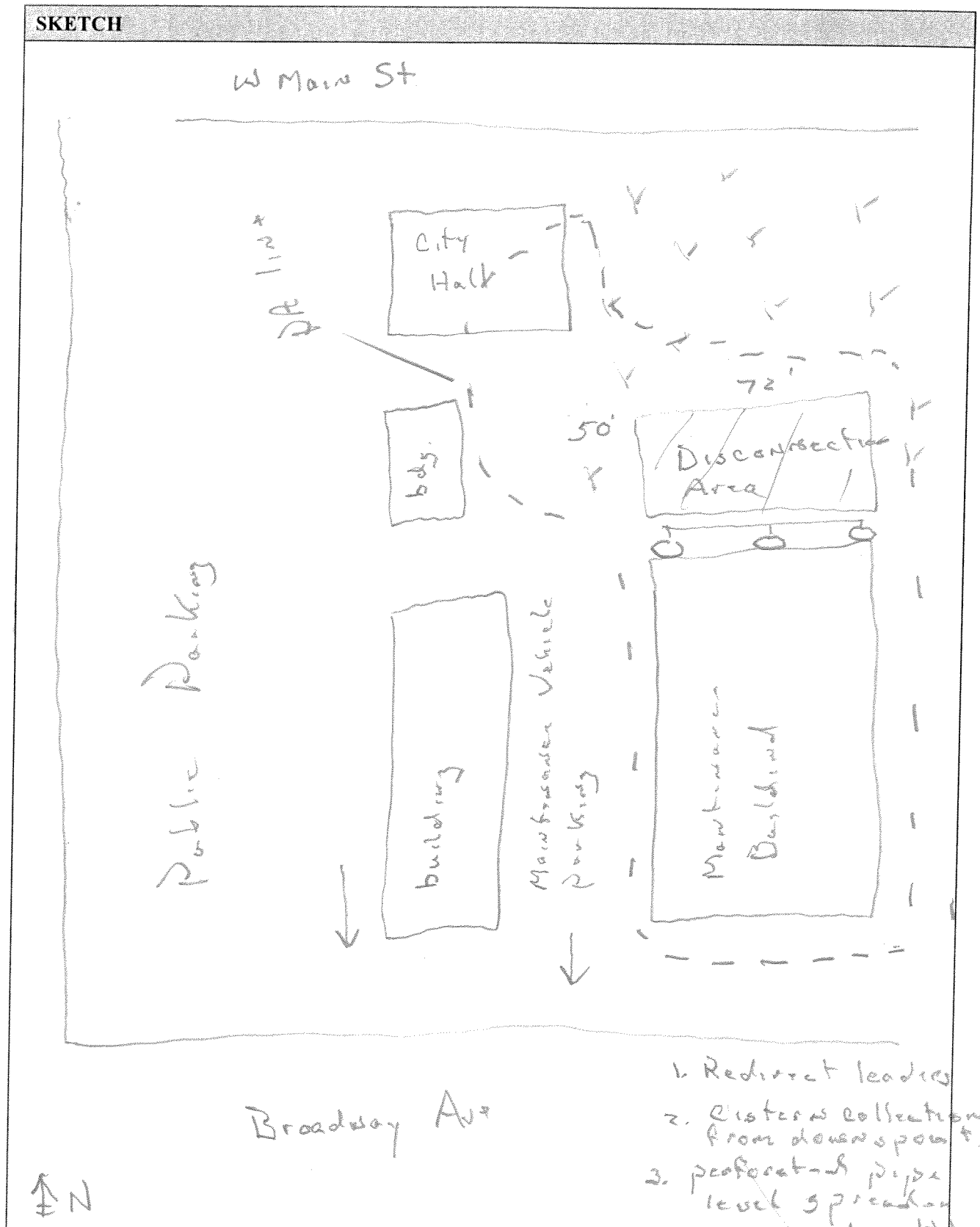
Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

NA

SKETCH



DESIGN OR DELIVERY NOTES

See preceding page.

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Need to verify whether we can redirect entire building because of 75' flow path spec in MD regs.

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES ☐ NO ☒ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES ☐ NO ☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

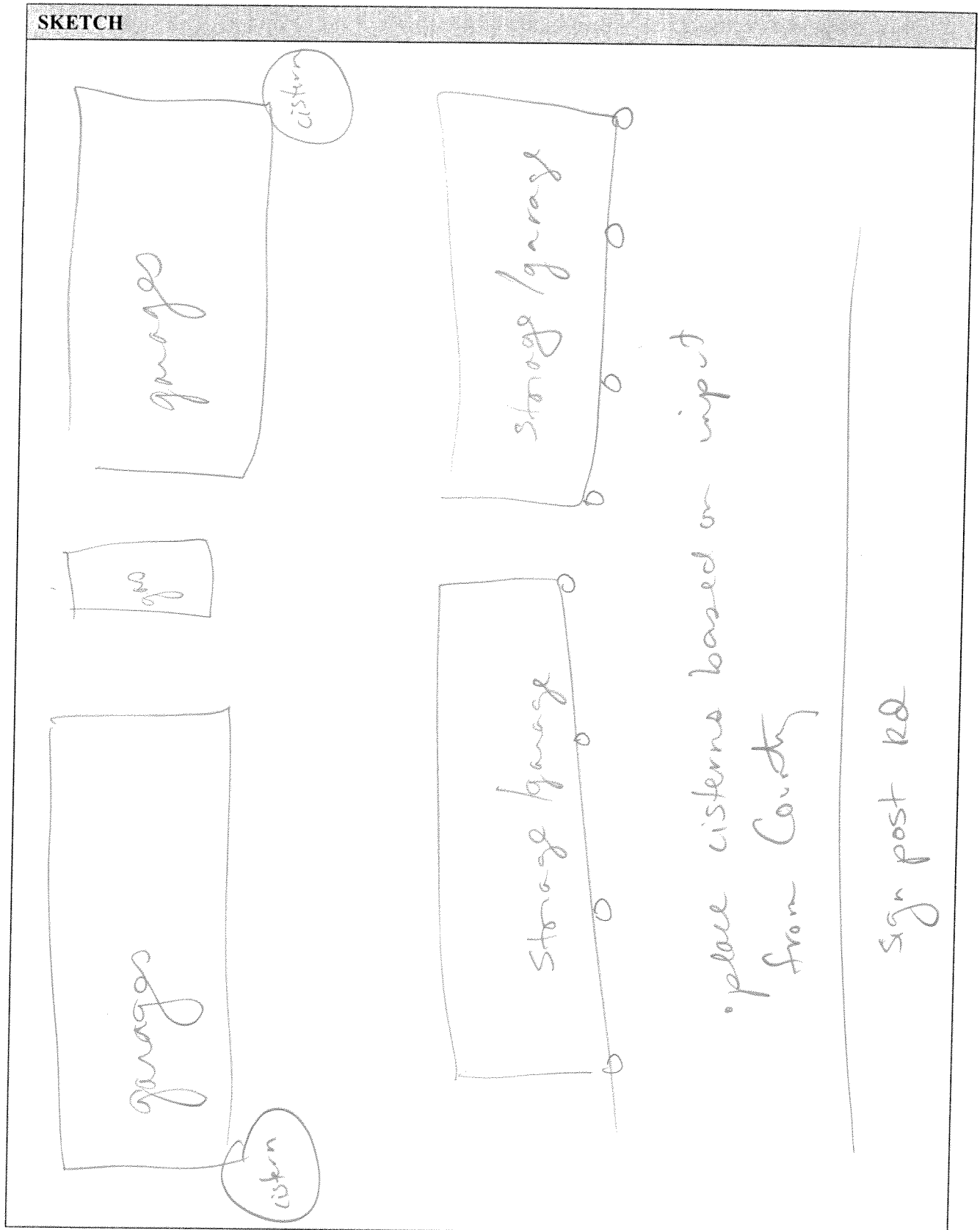
☐ YES ☐ NO ☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: <u>RRI-30</u>	
DATE: <u>8/31/12</u>		ASSESSED BY: <u>Lori/Gary</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Somerset Co. Roads Dept.</u>					
Address: <u>Sign Post Rd</u>					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID:					
Proposed Retrofit Location:					
Storage <input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert <input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input type="checkbox"/> Other:			On-Site <input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop <input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input type="checkbox"/> Other:		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area \approx <u>0.27 ac</u> Imperviousness \approx <u>100</u> % Impervious Area \approx <u>0.27 ac</u>			Drainage Area Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Institutional <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Other: <u>Co. Roads Facility; Vehicle Storage, et</u>		
Notes:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>① Gutters + downspouts on bldgs, sheet flow across grassed areas + gravel areas to roadside ditches</u>					
Existing Head Available and Points Where Measured:					
<u>n/a</u>					

PROPOSED RETROFIT																												
Purpose of Retrofit: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input type="checkbox"/> Other: _____																												
Retrofit Volume Computations - Target Storage: <div style="font-family: cursive; font-size: 1.2em;"> 931 cf = 7000 gallons = 114 (1500 gallon) cisterns </div>	Retrofit Volume Computations - Available Storage: <div style="font-family: cursive; font-size: 1.2em;"> 802 cf </div>																											
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input checked="" type="checkbox"/> Other: <u>Rainwater capture</u>																												
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <div style="font-family: cursive; font-size: 1.2em;"> • Install cisterns to capture rainwater from maintenance buildings. Re-use water for vehicle washing & irrigation (if needed) • Size for roof area </div>																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input checked="" type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Describe:	Access: <input checked="" type="checkbox"/> No Constraints Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; width: 10%;">Yes</th> <th style="text-align: left; width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other: _____</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										
Soils: Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

SKETCH



DESIGN OR DELIVERY NOTES

• use rainwater for vehicle washing
 • Size cisterns for drainage area

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

- | | | |
|------------------------------|-----------------------------|--------------------------------|
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: 31	
DATE: 8-30-12	ASSESSED BY: BPS	CAMERA ID:		PICTURES: 31-1 - 31-4	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>Crossfield High School</u>					
Address: _____					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: <u>in field</u>					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ <u>1/2 acre 3.6</u>			Drainage Area Land Use:		
Imperviousness ≈ <u>50 30</u> %			<input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional <u>school</u>		
Impervious Area ≈ <u>10990 sq ft</u>			<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial		
Notes:			<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Townhouses <input type="checkbox"/> Park		
			<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>A large part of rear parking area drains to a dry ditch w/ no apparent outlet.</u>					
Existing Head Available and Points Where Measured:					
<u>TBD</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☒ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

TBD

Retrofit Volume Computations - Available Storage:

TBD

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☒ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- 1) Determine outfall location and head differential
- 2) Grade ditch to create storage & to place soil media
- 3) Include pre-treatment cell

30' x 250' long

SITE CONSTRAINTS

Adjacent Land Use:

- ☐ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

☒ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☒ Unknown

Yes

Possible

- ☐ Sewer unlikely
☐ Water but need
☐ Gas to be checked
☐ Cable
☐ Electric
☐ Electric to Streetlights
☐ Overhead Wires
☐ Other: _____

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- ☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable
☐ Probable ☒ Not Probable

Other factors: _____

Soils:

Soil auger test holes:

☐ Yes ☐ No

Evidence of poor infiltration (clays, fines):

☐ Yes ☐ No

Evidence of shallow bedrock:

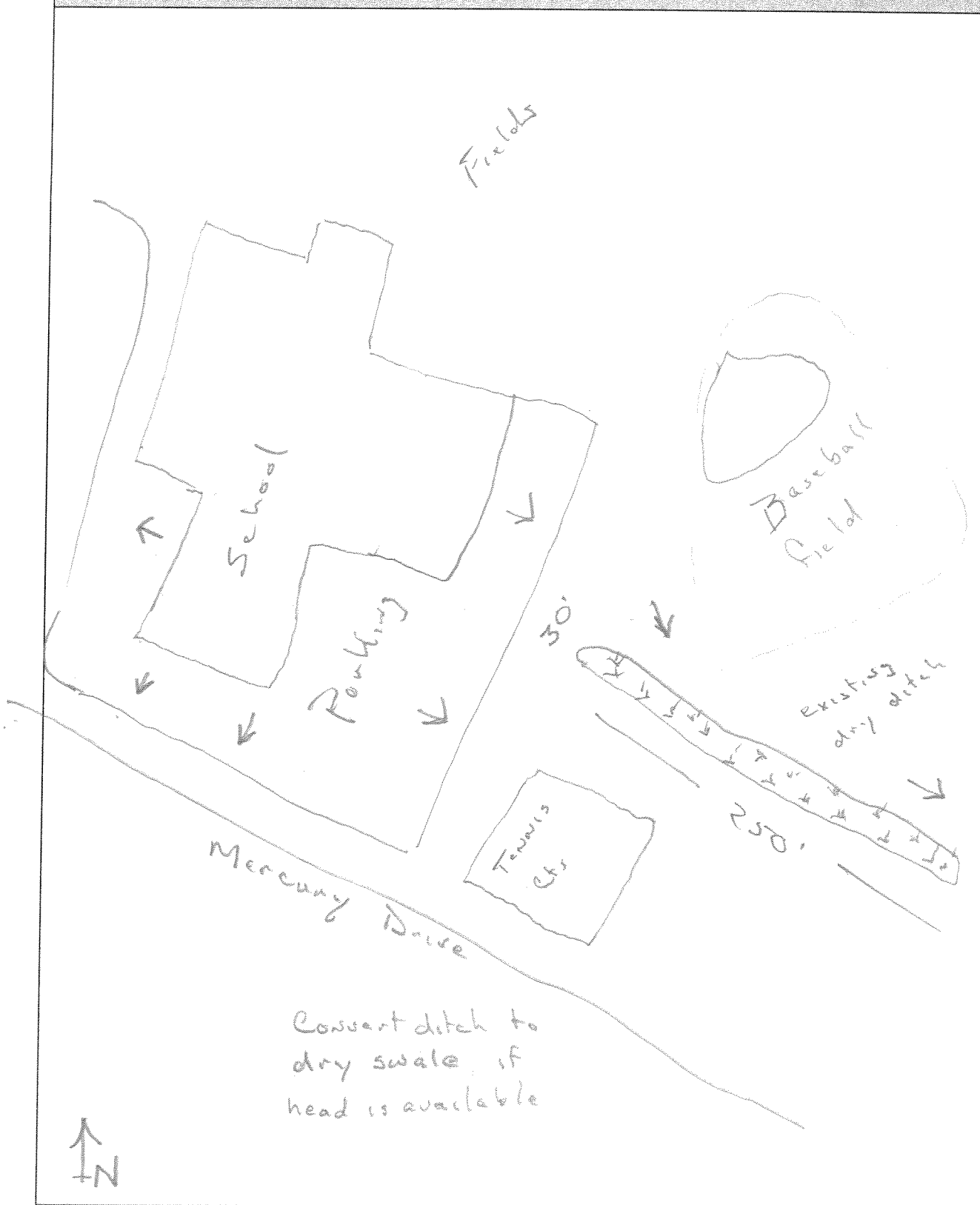
☐ Yes ☐ No

Evidence of high water table (gleying, saturation):

☐ Yes ☐ No

Crisfield HS

SKETCH



DESIGN OR DELIVERY NOTES

The swale might come into play during baseball games
Need topo.

Also possible take credit for IC
disconnection if nothing else

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input checked="" type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

The Key is topo & drainage outlet

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

☐ YES

☐ NO

☐ MAYBE

☐ YES

☐ NO

☐ MAYBE

☐ YES

☐ NO

☐ MAYBE

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID:	
DATE: 8-30-12	ASSESSED BY: BPS	CAMERA ID:		PICTURES: 33-1-338	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>Weldon Elementary</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage <input type="checkbox"/> Existing Pond <input checked="" type="checkbox"/> Above Roadway Culvert <input type="checkbox"/> Below Outfall <input checked="" type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input type="checkbox"/> Other: _____			On-Site <input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop <input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input checked="" type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input type="checkbox"/> Other: _____		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area \approx <u>3.5 acres</u> Imperviousness \approx <u>80</u> % Impervious Area \approx <u>2.75 acres</u>			Drainage Area Land Use: <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes: <u>The impervious cover from roof & lots drain to ditch which can be controlled</u>					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible If Yes, Describe: _____					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance: <u>The entire school system drains to road side ditches on 3 sides</u>					
Existing Head Available and Points Where Measured: <u>approximately 2-3 ft free board above baseflow elevation</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- ☐ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

TBD

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Provide water control structures to ditches.
 Redirect drainage from ditch along rear access road
 to ditch along Woodson School Rd
 Excavate & create SW treatment wetlands along
 ditch beside Woodson School Rd

SITE CONSTRAINTS

Adjacent Land Use:

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☒ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☒ No Constraints
 Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☒ None
☐ Unknown

Yes Possible

- | | | |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Sewer |
| <input type="checkbox"/> | <input type="checkbox"/> | Water |
| <input type="checkbox"/> | <input type="checkbox"/> | Gas |
| <input type="checkbox"/> | <input type="checkbox"/> | Cable |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric to Streetlights |
| <input type="checkbox"/> | <input type="checkbox"/> | Overhead Wires |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- | | |
|--|---------------------------------------|
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input checked="" type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |

Other factors: _____

Soils:

Soil auger test holes:

Evidence of poor infiltration (clays, fines):

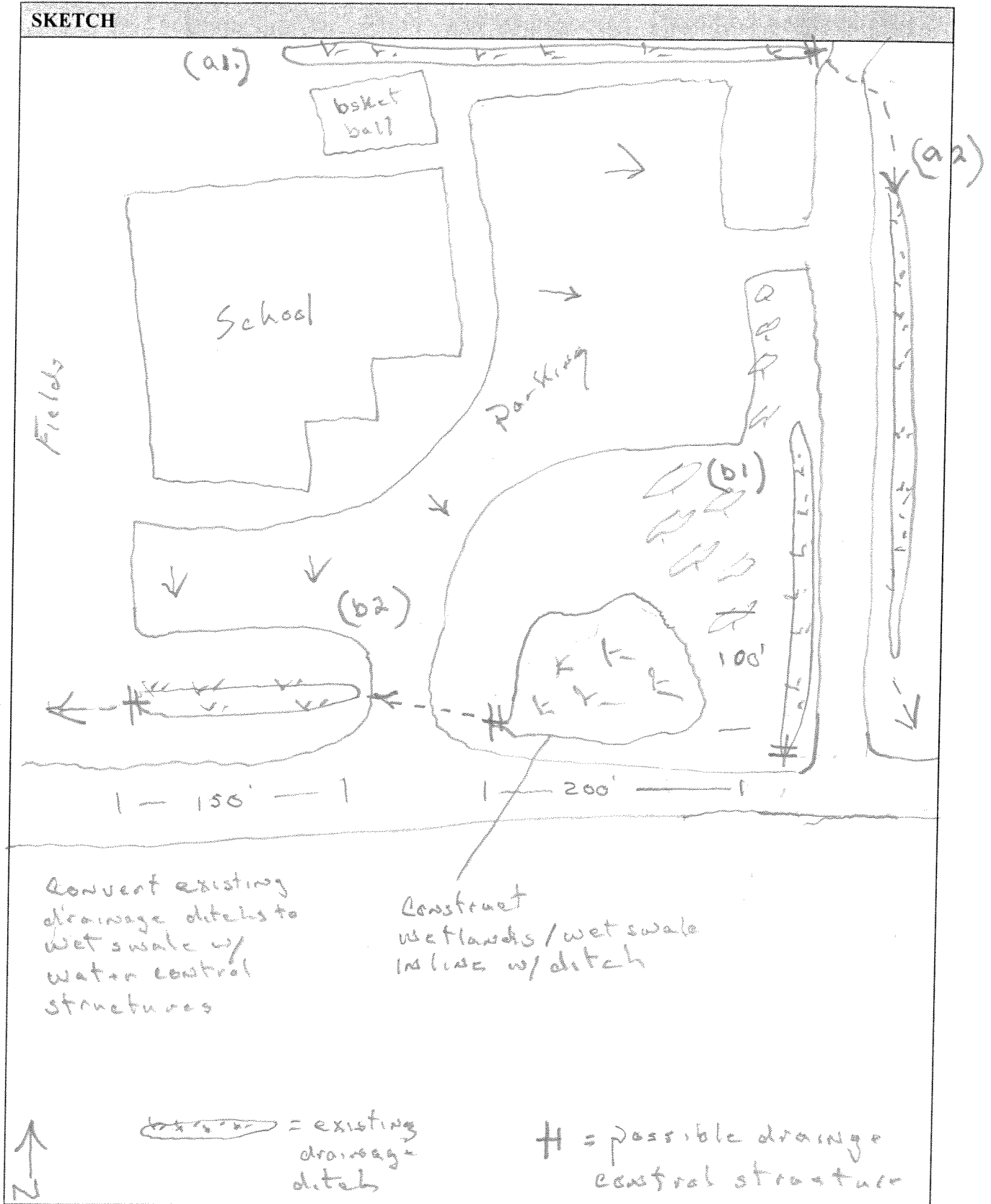
Evidence of shallow bedrock:

Evidence of high water table (gleying, saturation):

- | | |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |

NA

SKETCH



DESIGN OR DELIVERY NOTES

1. Need to verify DAI's
2. Determine hydraulics
 - a. upstream storage
3. Drainage diversion feasibility study to max drainage

* Need clarification on difference between water control structure & wet swale design & crediting

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input checked="" type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

The school may not want to pond water because of West Nile concerns

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE☐ YES☐ NO☐ MAYBE

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: 34	
DATE: 8-30-12	ASSESSED BY: BPS	CAMERA ID:		PICTURES: 34-1 - 34-3	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: DeWayne Head Street					
Address:					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID:					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input checked="" type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other:					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other:					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ 6100 sq ft			Drainage Area Land Use:		
Imperviousness ≈ 100% %			<input type="checkbox"/> Residential <input type="checkbox"/> Institutional		
Impervious Area ≈ 6100 sq ft			<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial		
Notes: Underutilized roadway > 30' one lane can be removed			<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Townhouses <input type="checkbox"/> Park		
			<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Commercial <input type="checkbox"/> Other:		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
There are few if any storm drains. There is an opportunity to remove 6100 sq ft of Asbury Ave along the school.					
Existing Head Available and Points Where Measured:					
NA					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☒ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

NA

Retrofit Volume Computations - Available Storage:

NA

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: IC removal

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Remove parking lane
 Provide community access for buses
 Soil augmentation.
 Plant w/ soil or low maintenance shrubs

SITE CONSTRAINTS**Adjacent Land Use:**

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☐ No Constraints
 Constrained due to
☐ Slope ☐ Space
☒ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☒ Unknown

- | Yes | Possible | |
|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Sewer |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Water |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Gas |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Cable |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Electric |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Electric to Streetlights |
| <input type="checkbox"/> | <input type="checkbox"/> | Overhead Wires |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☒ Not Probable
 Impacts to Wetlands ☐ Probable ☒ Not Probable
 Impacts to a Stream ☐ Probable ☒ Not Probable
 Floodplain Fill ☐ Probable ☒ Not Probable
 Impacts to Forests ☐ Probable ☒ Not Probable
 Impacts to Specimen Trees ☐ Probable ☒ Not Probable

How many? _____

Approx. DBH _____

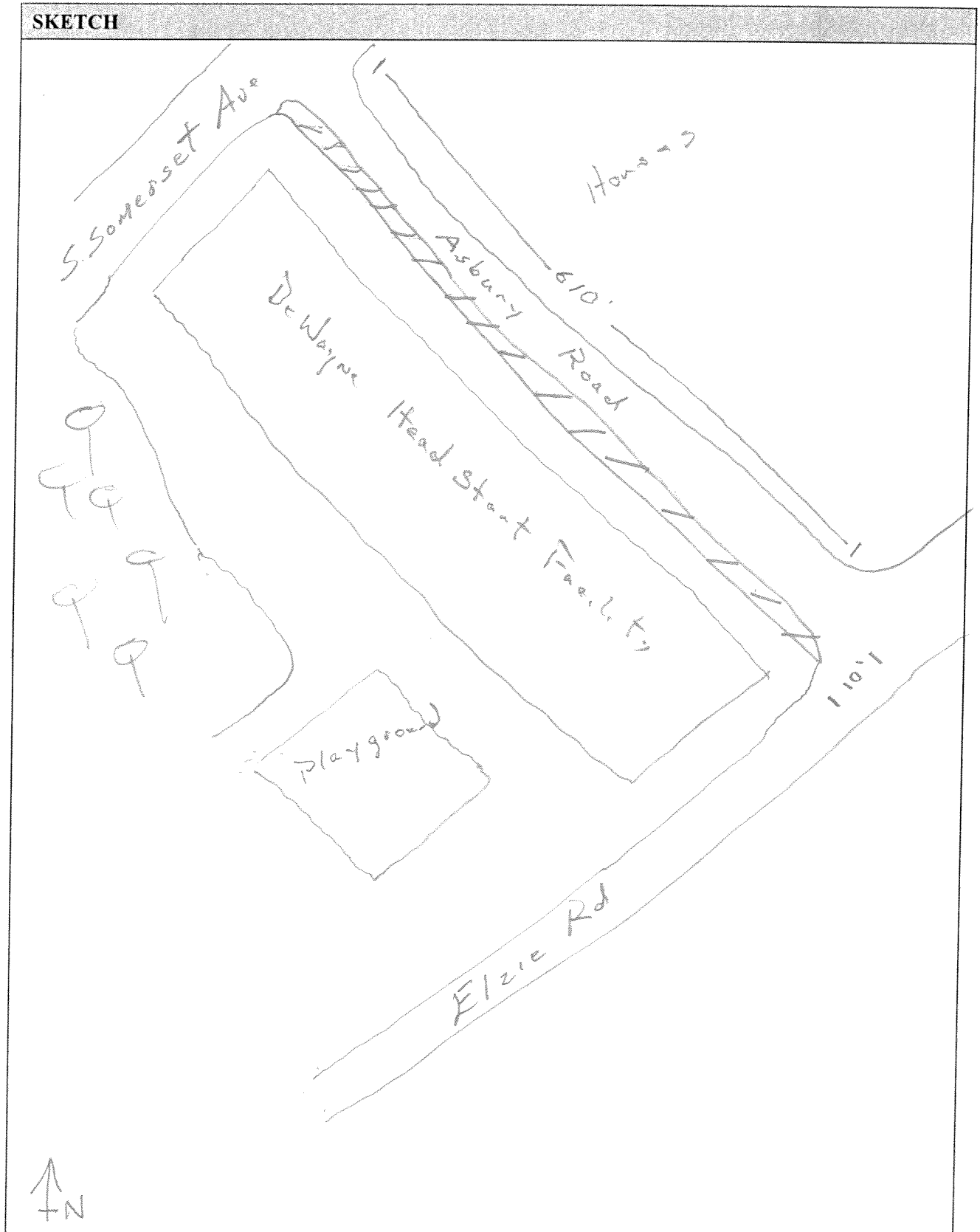
Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

NA

SKETCH



DESIGN OR DELIVERY NOTES

1. Check utilities
2. Remove IC
3. Replace curb
4. Add walkways to existing sidewalk
5. Amend soil
6. Plant w/ turf or shrubs
7. Check for possible disconnection opportunities from roof top

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input checked="" type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Will require neighborhood buy-in.
 Landscaping plan recommended
 Buses park in this area.

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: <u>145-45</u>	
DATE:	ASSESSED BY: <u>DP. BPS</u>	CAMERA ID:		PICTURES: <u>415-1 - 415-4</u>	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>Deal Island Elementary School</u>					
Address: _____					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW	<input type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape		
<input type="checkbox"/> Other: _____		<input type="checkbox"/> Underground	<input type="checkbox"/> Other: _____		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area \approx <u>3-5 acres</u>			Drainage Area Land Use:		
Imperviousness \approx <u>25%</u> <u>20%</u>			<input type="checkbox"/> Residential		
Impervious Area \approx _____			<input type="checkbox"/> SFH (< 1 ac lots)		
Notes: <u>A lot of off-site drainage possible. Appears as if building drains to front</u>			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input type="checkbox"/> Institutional		
			<input type="checkbox"/> Industrial		
			<input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Park		
			<input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>School parking & roof top scuppers & playing field drain to a dry ditch system</u>					
Existing Head Available and Points Where Measured:					
<u>2 ft. approximately</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

100 x 20 x 2 = 4000 cu ft

Retrofit Volume Computations - Available Storage:

300 x 10 x 3 = 9000 cu ft

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☒ Swale - GW ☐ Other: gravel wetlands

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Convert ditch along playing field of ditch along parking lot between playing field into gravel wetlands and dry swale

SITE CONSTRAINTS

Adjacent Land Use:

- ☐ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: school

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☐ No Constraints
 Constrained due to
☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☐ Unknown

Yes

Possible

- ☐ Sewer
☐ Water
☐ Gas
☐ Cable
☐ Electric
☐ Electric to Streetlights
☐ Overhead Wires
☐ Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☒ Not Probable
 Impacts to Wetlands ☐ Probable ☒ Not Probable
 Impacts to a Stream ☐ Probable ☒ Not Probable
 Floodplain Fill ☐ Probable ☒ Not Probable
 Impacts to Forests ☐ Probable ☒ Not Probable
 Impacts to Specimen Trees ☐ Probable ☒ Not Probable

How many? _____

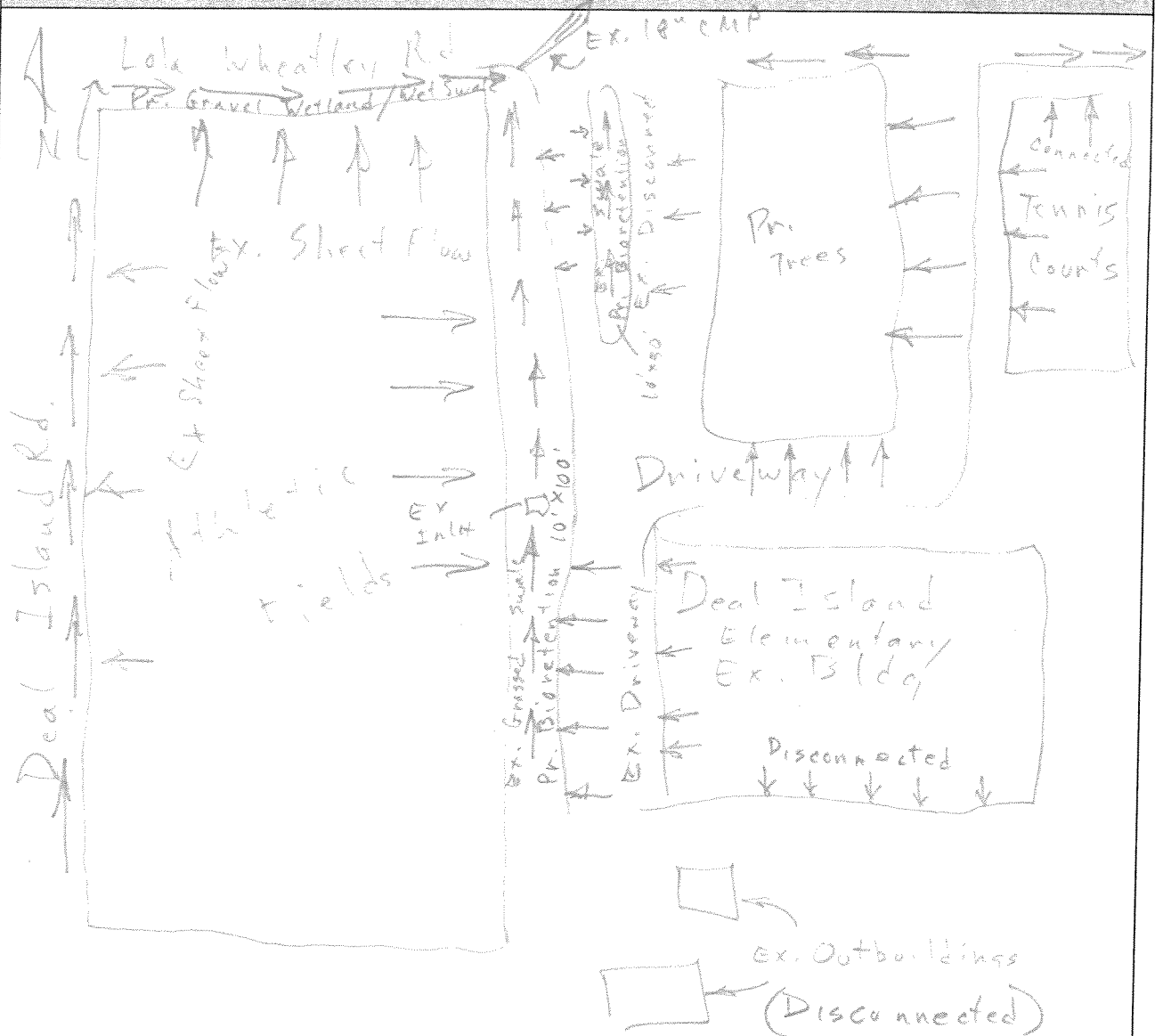
Approx. DBH _____

Other factors: _____

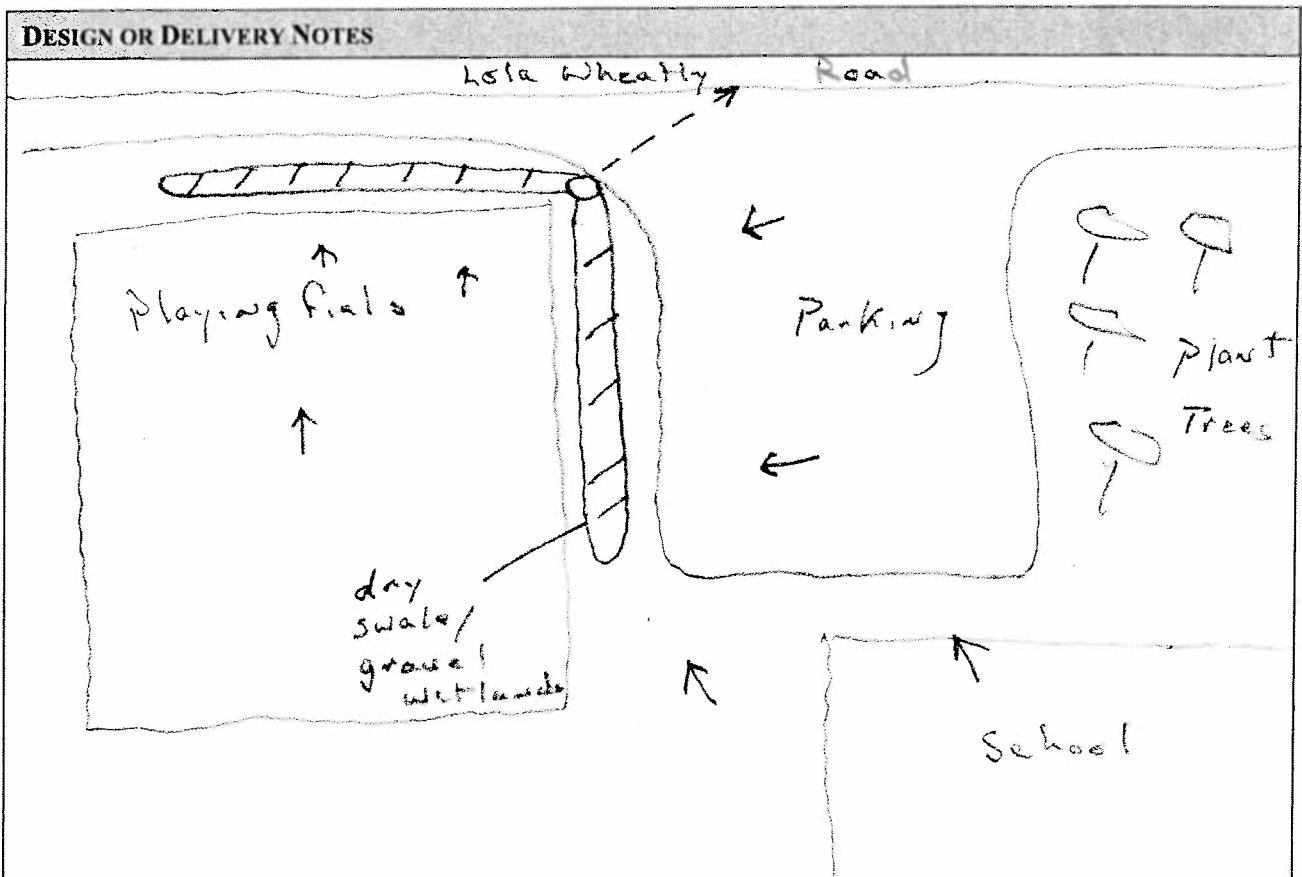
Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES



FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- ☐ Confirm property ownership
- ☒ Confirm drainage area
- ☒ Confirm drainage area impervious cover
- ☒ Confirm volume computations
- ☒ Complete concept sketch

- ☐ Obtain existing stormwater practice as-builts
- ☐ Obtain site as-builts
- ☐ Obtain detailed topography
- ☐ Obtain utility mapping
- ☐ Confirm storm drain invert elevations
- ☐ Confirm soil types

☐ Other: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Need to revisit to determine whether dry or wet swale would work best

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

☒ YES

☐ NO

☐ MAYBE

☐ YES

☐ NO

☐ MAYBE

☐ YES

☐ NO

☐ MAYBE

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: 46	
DATE:	ASSESSED BY: BPS	CAMERA ID:		PICTURES: 46-1 - 46-3	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>WENONA MARINA</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: <u>Field</u>					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area \approx <u>3-5 acres</u>					
Imperviousness \approx <u>40</u> % <u>407</u>					
Impervious Area \approx <u>2.4 - 4.4 acres</u>					
Notes: <u>Assuming</u>					
Drainage Area Land Use:					
<input type="checkbox"/> Residential <input type="checkbox"/> Institutional					
<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial					
<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related					
<input type="checkbox"/> Townhouses <input type="checkbox"/> Park					
<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped					
<input type="checkbox"/> Commercial <input type="checkbox"/> Other: <u>Marina</u>					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance: <u>Marina parking and buildings drain to existing ditch</u>					
Existing Head Available and Points Where Measured: <u>None</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

up to 2 acre feet,
possibly more

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Excavate area along existing drainage ditch to create an in-line wetlands

SITE CONSTRAINTS

Adjacent Land Use:

- ☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: Marina

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☐ No Constraints
 Constrained due to
☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☐ Unknown

Yes

Possible

- ☐ ☒ Sewer
☐ ☒ Water
☐ ☒ Gas
☐ ☒ Cable
☐ ☒ Electric
☐ ☐ Electric to Streetlights
☐ ☐ Overhead Wires
☐ ☐ Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☐ Not Probable
 Impacts to Wetlands ☒ Probable ☐ Not Probable
 Impacts to a Stream ☐ Probable ☐ Not Probable
 Floodplain Fill ☐ Probable ☐ Not Probable
 Impacts to Forests ☐ Probable ☐ Not Probable
 Impacts to Specimen Trees ☐ Probable ☐ Not Probable

How many? _____

Approx. DBH _____

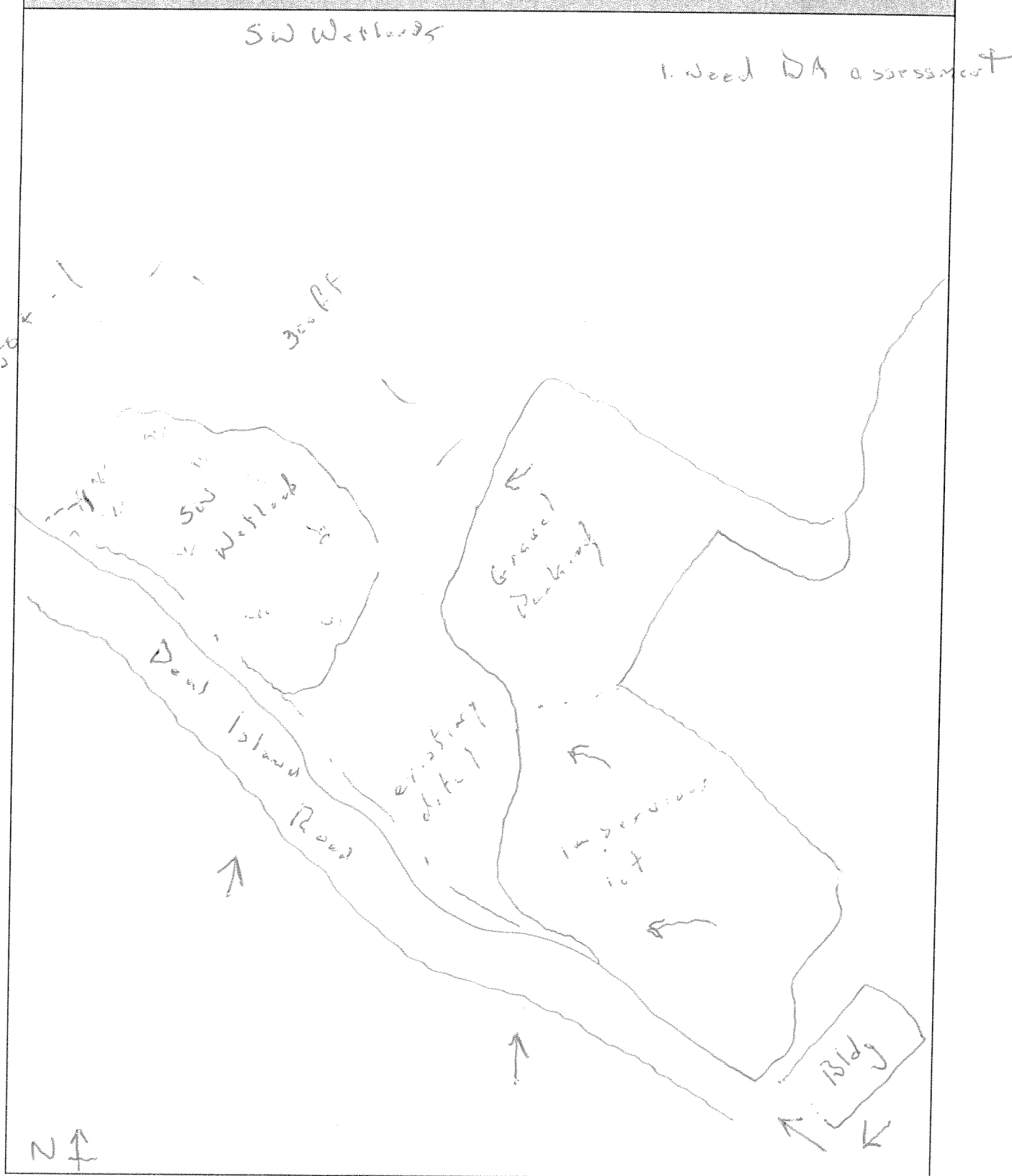
Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

Wenona Marsh

SKETCH



DESIGN OR DELIVERY NOTES

There is ample area for storage.
 Homes across the street might object to standing water

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input checked="" type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input checked="" type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS**SITE CANDIDATE FOR FURTHER INVESTIGATION:****IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):****IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):**

IF YES, TYPE(S): _____

- | | | |
|---|-----------------------------|--------------------------------|
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |
| <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> MAYBE |

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: 47	
DATE: 8/30		ASSESSED BY:		CAMERA ID:	
GPS ID:		LMK ID:		PICTURES: 26-28	
GPS ID:		LMK ID:		LAT:	
GPS ID:		LMK ID:		LONG: N 6 29-31	
SITE DESCRIPTION					
Name: <u>Princess Ann Industrial Park</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input checked="" type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential		
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots)		
Notes:			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input type="checkbox"/> Institutional		
			<input type="checkbox"/> Industrial		
			<input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Park		
			<input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe: <div style="text-align: center; font-size: 2em;">N/A.</div>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<p><i>This is a site that will be developed in doing a city is interested in central plan Regional SW to make development easier. Thoughts?</i></p>					
Existing Head Available and Points Where Measured:					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☐ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:**SITE CONSTRAINTS****Adjacent Land Use:**

- ☐ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:☐ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☐ None
☐ Unknown

Yes Possible

- ☐ ☐ Sewer
☐ ☐ Water
☐ ☐ Gas
☐ ☐ Cable
☐ ☐ Electric
☐ ☐ Electric to Streetlights
☐ ☐ Overhead Wires
☐ ☐ Other: _____

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- ☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable

Other factors: _____

Soils:

Soil auger test holes:

☐ Yes ☐ No

Evidence of poor infiltration (clays, fines):

☐ Yes ☐ No

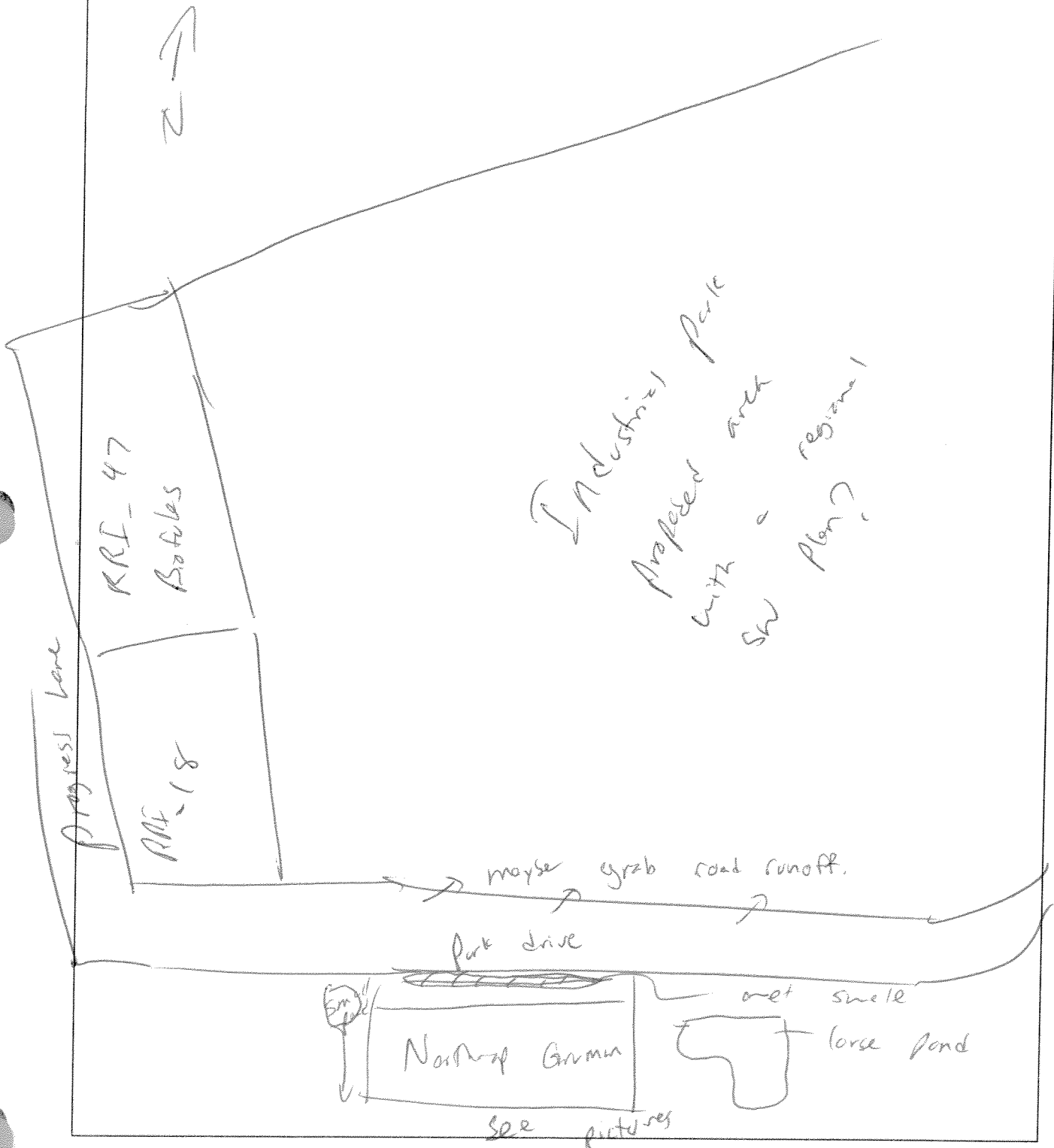
Evidence of shallow bedrock:

☐ Yes ☐ No

Evidence of high water table (gleying, saturation):

☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: 48	
DATE:		ASSESSED BY: RDC/AB		CAMERA ID:	
PICTURES: 15-25		LAT:		LONG:	
GPS ID:		LMK ID:		LONG:	
SITE DESCRIPTION					
Name: <u>Princes Ann Rec Park</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage <input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert <input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input type="checkbox"/> Other: _____			On-Site <input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop <input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input checked="" type="checkbox"/> Other: <u>park</u>		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____			Drainage Area Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Institutional <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input checked="" type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe: <div style="text-align: center;">Swales A</div>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Head Available and Points Where Measured: A) ≈ 1.5' B) ≈ 2'					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention *dry swale*
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

*Ret two Dry Swales in to
convey water to ditch*

SITE CONSTRAINTS**Adjacent Land Use:**

- ☒ Residential ☐ Commercial ☒ Institutional
☐ Industrial ☐ Transport-Related ☒ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

☐ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☒ None
☐ Unknown

Yes Possible

- ☐ Sewer
☐ Water
☐ Gas
☐ Cable
☒ Electric *to*
☐ Electric to Streetlights
☐ Overhead Wires
☐ Other: _____

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

- ☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable
☐ Probable ☐ Not Probable

Other factors: _____

Soils:

Soil auger test holes:

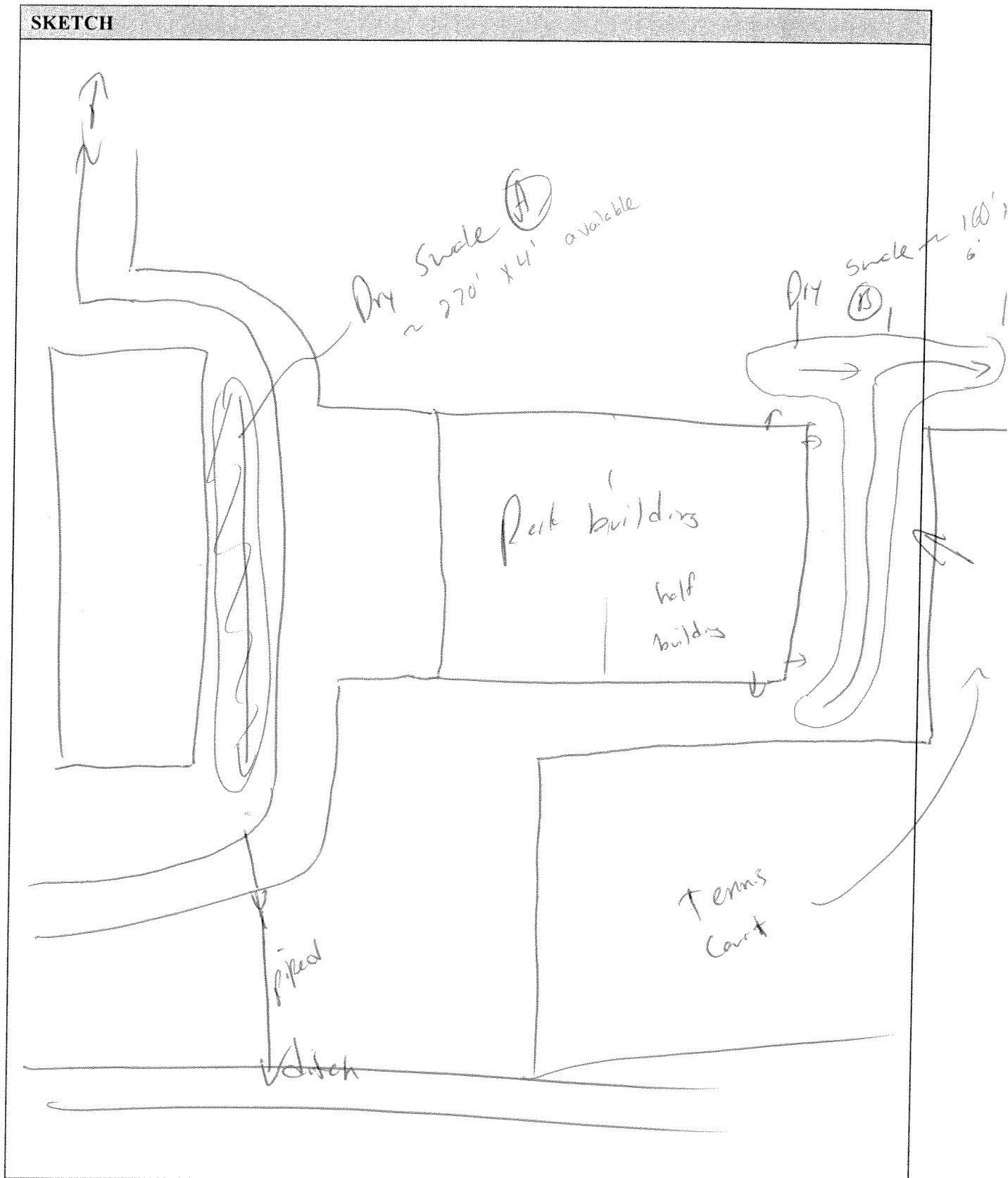
Evidence of poor infiltration (clays, fines):

Evidence of shallow bedrock:

Evidence of high water table (gleying, saturation):

- ☐ Yes ☐ No
☐ Yes ☐ No
☐ Yes ☐ No
☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

two separate Dry Swales
outletting to ditch

Capture parking area and
building

* buildings are disconnected

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

☐ YES

☐ NO

☐ MAYBE

☐ YES

☐ NO

☐ MAYBE

☐ YES

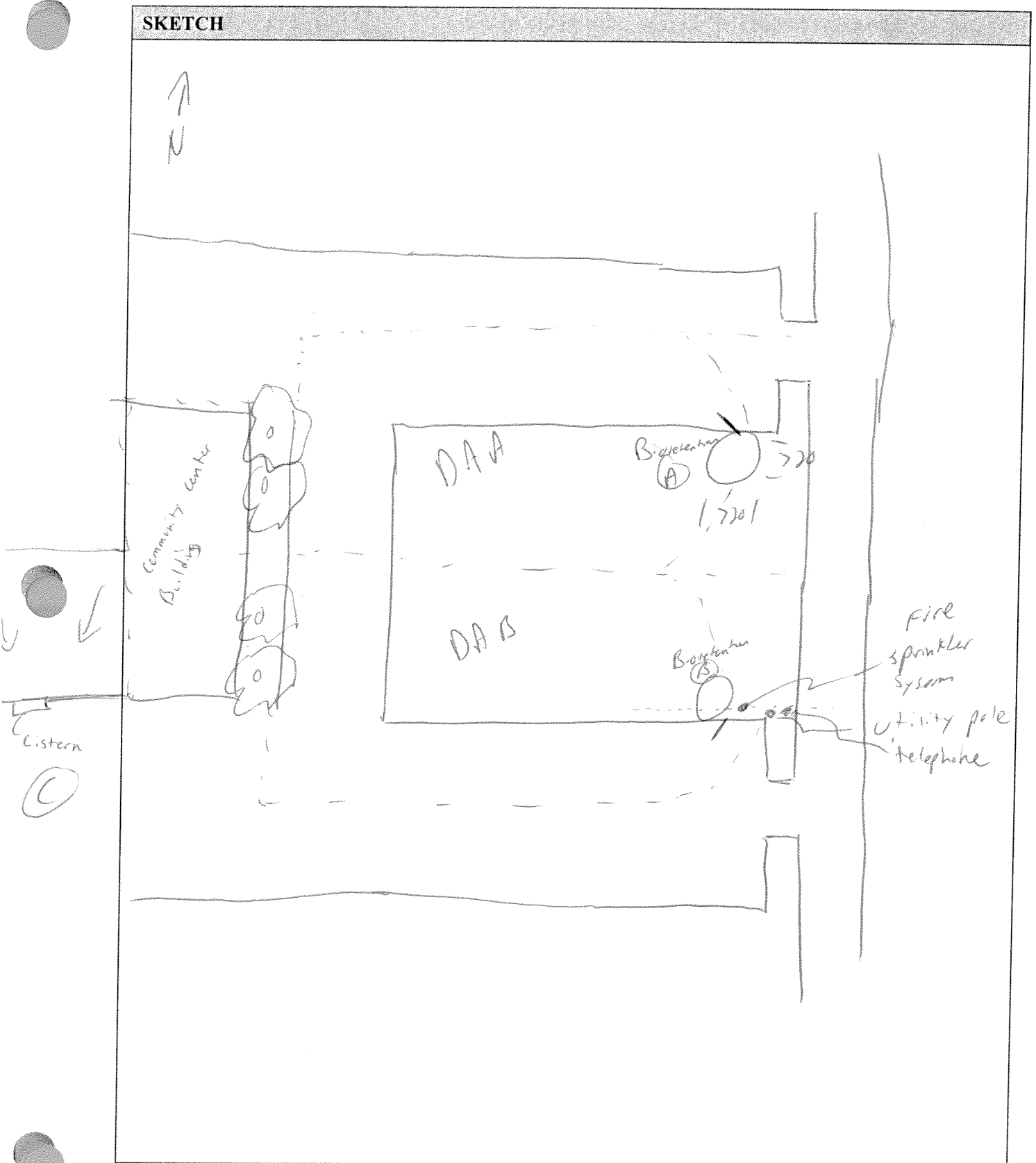
☐ NO

☐ MAYBE

WATERSHED: <u>Manokin</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>49</u>	
DATE: <u>8/30</u>		ASSESSED BY: <u>RDC/BC/TJ</u>		CAMERA ID:	
PICTURES: <u>49-55</u>		GPS ID:		LMK ID:	
LAT:		LONG:			
SITE DESCRIPTION					
Name: <u>Civic Center</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage <input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert <input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input type="checkbox"/> Other: _____			On-Site <input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop <input checked="" type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input type="checkbox"/> Other: _____		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____			Drainage Area Land Use: <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: <u>Sheet flow to ditch</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Head Available and Points Where Measured:					
<u>A+B ~ 1.5'</u> <u>C - NA</u>					

PROPOSED RETROFIT																			
Purpose of Retrofit: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input checked="" type="checkbox"/> Other: _____																			
Retrofit Volume Computations - Target Storage: 	Retrofit Volume Computations - Available Storage: 																		
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input checked="" type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input checked="" type="checkbox"/> Other: <u>Cistern</u>																			
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <div style="font-family: cursive;"> <p>- install two bioretention areas that mirror each other on the north and south entrances (A, B)</p> <p>- install a cistern on the southwest corner of community center to capture roof runoff. This can be a large capacity cistern and can be used to wet the tractor pull track, water existing landscaping, or water ball field.</p> </div>																			
SITE CONSTRAINTS																			
Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input checked="" type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Describe:	Access: <input checked="" type="checkbox"/> No Constraints Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																		
Conflicts with Existing Utilities: <input type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Yes</th> <th style="text-align: left;">Possible</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> b</td> <td><input type="checkbox"/> Sewer</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> Water</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> Gas</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> Cable</td> </tr> <tr> <td><input checked="" type="checkbox"/> b</td> <td><input type="checkbox"/> Electric</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> Electric to Streetlights</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> Other: _____</td> </tr> </tbody> </table>	Yes	Possible	<input checked="" type="checkbox"/> b	<input type="checkbox"/> Sewer	<input type="checkbox"/>	<input type="checkbox"/> Water	<input type="checkbox"/>	<input type="checkbox"/> Gas	<input type="checkbox"/>	<input type="checkbox"/> Cable	<input checked="" type="checkbox"/> b	<input type="checkbox"/> Electric	<input type="checkbox"/>	<input type="checkbox"/> Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/> Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/> Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____
Yes	Possible																		
<input checked="" type="checkbox"/> b	<input type="checkbox"/> Sewer																		
<input type="checkbox"/>	<input type="checkbox"/> Water																		
<input type="checkbox"/>	<input type="checkbox"/> Gas																		
<input type="checkbox"/>	<input type="checkbox"/> Cable																		
<input checked="" type="checkbox"/> b	<input type="checkbox"/> Electric																		
<input type="checkbox"/>	<input type="checkbox"/> Electric to Streetlights																		
<input type="checkbox"/>	<input type="checkbox"/> Overhead Wires																		
<input type="checkbox"/>	<input type="checkbox"/> Other: _____																		
Soils: Soil auger test holes: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input type="checkbox"/> No																			

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS**SITE CANDIDATE FOR FURTHER INVESTIGATION:****IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):****IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):**

IF YES, TYPE(S): _____

<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> MAYBE
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> MAYBE
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> MAYBE

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: 50a-b	
DATE: 8-30-12		ASSESSED BY: BS		CAMERA ID:	
GPS ID:		LMK ID:		PICTURES: 50a-50d	
		LAT:		LONG:	
SITE DESCRIPTION					
Name: Airport					
Address:					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID:					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other:					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other:					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area \approx 5-10 acres					
Imperviousness \approx 20 %					
Impervious Area \approx					
Drainage Area Land Use:					
<input type="checkbox"/> Residential <input type="checkbox"/> Institutional					
<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial					
<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related					
<input type="checkbox"/> Townhouses <input type="checkbox"/> Park					
<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped					
<input type="checkbox"/> Commercial <input type="checkbox"/> Other:					
Notes: Need topo. potentially large DA. Need more time to inspect					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Airport runway and maintenance shed. Drained by semi dry ditches. All appear to be IC disconnected					
Existing Head Available and Points Where Measured: 3 feet possibly below maintenance area					

PROPOSED RETROFIT																												
Purpose of Retrofit: <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input type="checkbox"/> Other: _____																												
Retrofit Volume Computations - Target Storage: <div style="font-size: 1.5em; text-align: center;">TBD</div>	Retrofit Volume Computations - Available Storage: <div style="font-size: 1.5em; text-align: center;">TBD</div>																											
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other: _____																												
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>RR1a. Bioretention</p> <p>1) Forebay needed - possible hotspot for oil</p> <p>2) Might be simpler as a wet swale or wetland</p> </div> <div style="width: 45%;"> <p>Wet Swale</p> <p>1) Water control structure</p> <p>2) Level & design</p> <p>3) Consider disconnection depending on distance between runway & ditch</p> </div> </div>																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Describe: _____	Access: <input checked="" type="checkbox"/> No Constraints Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input checked="" type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other: _____</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Wetlands <input checked="" type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										
Soils: Soil auger test holes: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input type="checkbox"/> No																												

RRI

Unique Site ID: 50

DESIGN OR DELIVERY NOTES

Need better topo
 Runway 1C discover how
 possible soil amendments between
 runway and ditches as an alternative

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input checked="" type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
- ☐ Other: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

County staff said the airport might be
 sold due to low volume of traffic

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☒ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____

*Need to find status of school-active?

Retrofit Reconnaissance Investigation

RRI

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: RRI-51A-C	
DATE: 8/31/12		ASSESSED BY: Lori/Gary		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: Sarah Peyton Elementary School					
Address: Hudson Corner Rd.					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID:					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other:					
On-Site					
<input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input checked="" type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other:					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area \approx A-0.3ac, B-0.25ac, C-0.38ac					
Imperviousness \approx A-95%, B-80%, C-100%					
Impervious Area \approx A-0.285ac, B-0.2ac, C-0.38					
Notes:					
Drainage Area Land Use:					
<input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional					
<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial					
<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related					
<input type="checkbox"/> Townhouses <input type="checkbox"/> Park					
<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped					
<input type="checkbox"/> Commercial <input type="checkbox"/> Other:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible					
If Yes, Describe:					
some existing swales					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Several existing swales in rear of property; roadside ditches in front					
Practice A - some erosion around site + staining on lot					
Existing Head Available and Points Where Measured:					
A) 1/2' from culvert pipe - ground to pipe invert					
B) n/a					

PROPOSED RETROFIT

Purpose of Retrofit:

☒ Water Quality☐ Demonstration / Education☐ Recharge☐ Repair☐ Channel Protection☐ Other: _____☐ Flood Control

Retrofit Volume Computations - Target Storage:

A) 986 cf
 B) 699 cf
 C) 1310 cf

Retrofit Volume Computations - Available Storage:

A)
 B)
 C) 1310 cf

Proposed Treatment Option:

☐ Extended Detention☐ Filtering Practice☐ Wet Pond☐ Infiltration☐ Created Wetland☐ Swale☒ Bioretention☒ Other: Rain Garden

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

A) in rear of property, circular area between driveways - create bioretention facility - Level 2
 grassed ~~to determine~~ (670 ft²) curb cut to collect rooftop runoff from school bldg. to the west into this facility

B) Rain garden in courtyard to collect rooftop runoff 10' x 25'

C) impervious cover removal for parking lot

SITE CONSTRAINTS

Adjacent Land Use:

☒ Residential☐ Commercial☐ Institutional☐ Industrial☐ Transport-Related☐ Park☒ Undeveloped☐ Other: _____Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☒ No

If Yes, Describe: _____

Access:

☒ No Constraints

Constrained due to

☐ Slope☐ Utilities☐ Structures☐ Other: _____☐ Space☐ Tree Impacts☐ Property Ownership

Conflicts with Existing Utilities:

☐ None☒ Unknown

Yes

Possible

☐☐☐☐☐☐☐☐☐☒☐☐☐☐☐☐☐

Sewer

Water

Gas

Cable

Electric

Electric to Streetlights

Overhead Wires

Other: _____

possible grease trap
 adjacent? should not
 be affected

Potential Permitting Factors:

Dam Safety Permits Necessary

Impacts to Wetlands

Impacts to a Stream

Floodplain Fill

Impacts to Forests

Impacts to Specimen Trees

How many? _____

Approx. DBH _____

☐ Probable☐ Probable☐ Probable☐ Probable☐ Probable☐ Probable☐ Probable☒ Not Probable☒ Not Probable☒ Not Probable☒ Not Probable☒ Not Probable☒ Not Probable

Other factors: _____

Soils:

Soil auger test holes:

Evidence of poor infiltration (clays, fines):

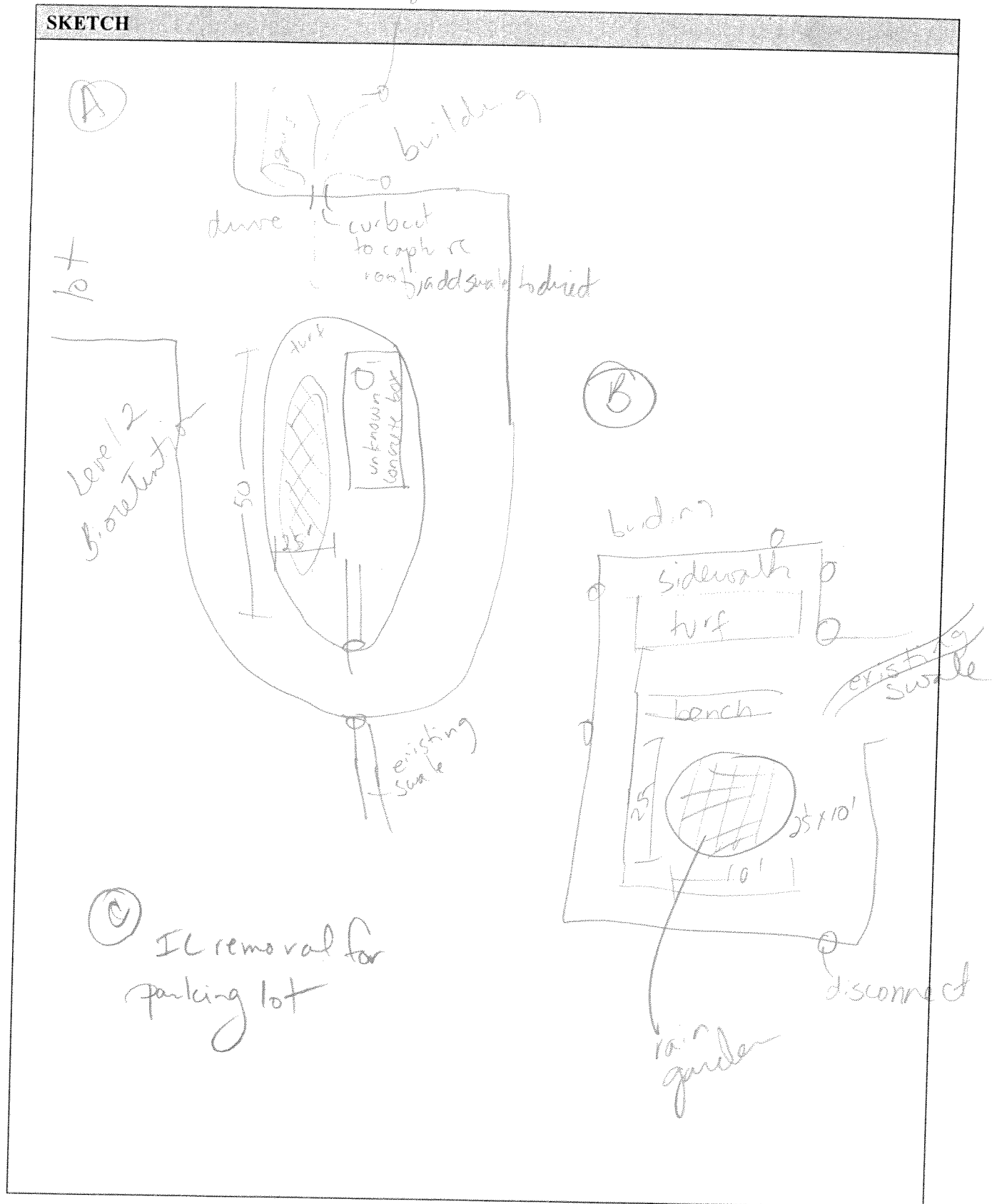
Evidence of shallow bedrock:

Evidence of high water table (gleying, saturation):

☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No☐ Yes ☐ No

Did not check

SKETCH



DESIGN OR DELIVERY NOTES

Ⓐ concrete box - check use (grease trap?)

- Not sure if school is active; if only used for adult education classes, check on IL removal for Ⓒ

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

IF YES, TYPE(S): _____

<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> MAYBE
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> MAYBE
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> MAYBE

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: <u>RRE-100</u>	
DATE: <u>8/20</u>	ASSESSED BY: <u>RAC</u>		CAMERA ID:		PICTURES: <u>1-6</u>
GPS ID:	LMK ID:		LAT:		LONG:
SITE DESCRIPTION					
Name: <u>Drive Valve / Manakin Park</u>					
Address: _____					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage <input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert <input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input type="checkbox"/> Other: _____					
On-Site <input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop <input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____			Drainage Area Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Institutional <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input checked="" type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: <u>disconnection to natural area</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Head Available and Points Where Measured:					
NA					

PROPOSED RETROFIT**Purpose of Retrofit:**

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☒ Demonstration / Education ☐ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:**Retrofit Volume Computations - Available Storage:****Proposed Treatment Option:**

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:**SITE CONSTRAINTS****Adjacent Land Use:**

- ☐ Residential ☒ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☒ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

☐ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☒ None
☐ Unknown

Yes Possible

- ☐ Sewer
☐ Water
☐ Gas
☐ Cable
☐ Electric
☐ Electric to Streetlights
☐ Overhead Wires
☐ Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary ☐ Probable ☐ Not Probable
 Impacts to Wetlands ☐ Probable ☐ Not Probable
 Impacts to a Stream ☐ Probable ☐ Not Probable
 Floodplain Fill ☐ Probable ☐ Not Probable
 Impacts to Forests ☐ Probable ☐ Not Probable
 Impacts to Specimen Trees ☐ Probable ☐ Not Probable

How many? _____

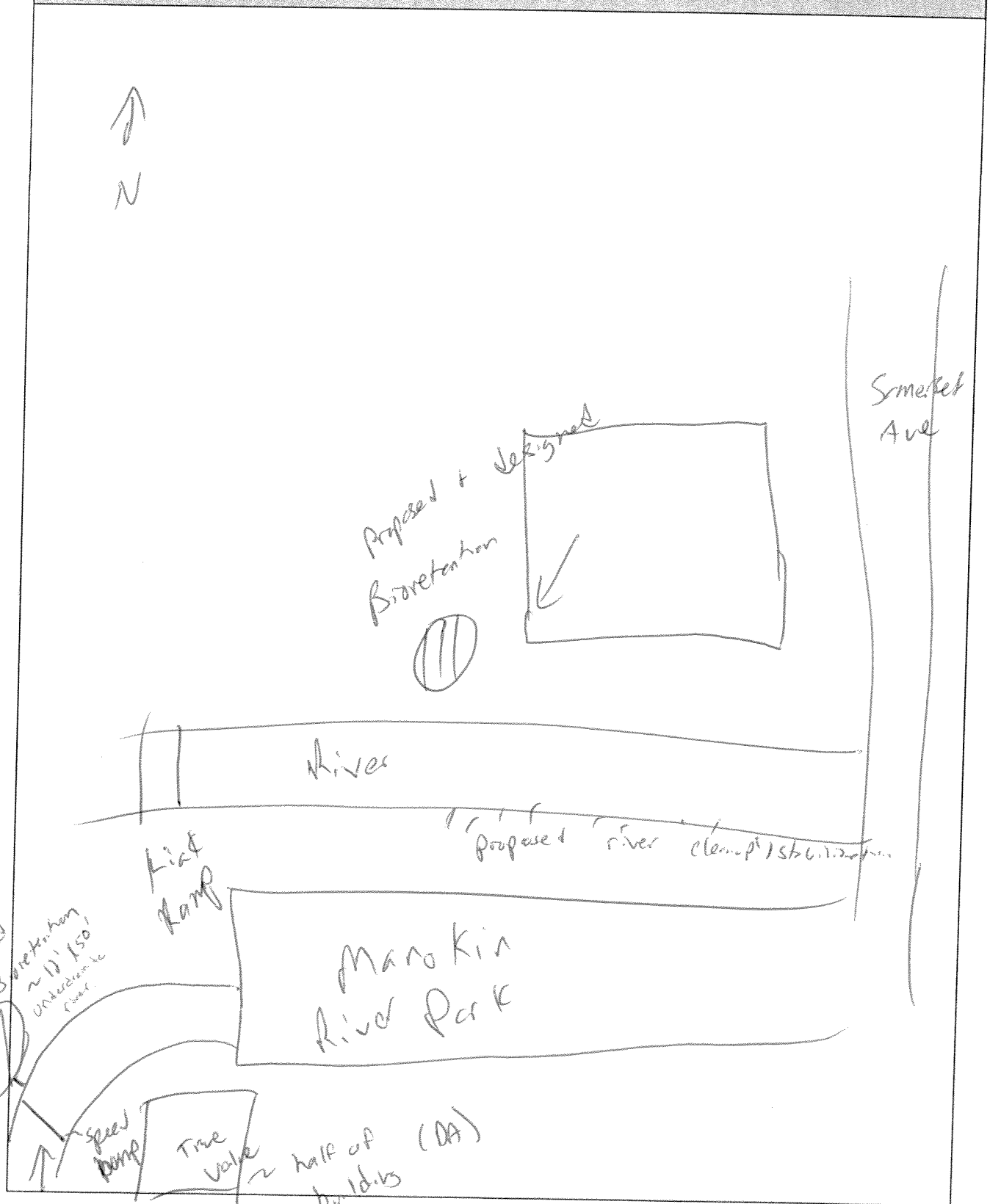
Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES

This is a current drainage problem
 - already put in a speed bump to
 direct water into natural area
 - need to confirm DA

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

If YES, TYPE(S): _____

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: 101	
DATE: 8/31		ASSESSED BY: RDC		CAMERA ID:	
GPS ID:		LMK ID:		PICTURES: 64-66	
GPS ID:		LMK ID:		LAT:	
GPS ID:		LMK ID:		LONG:	
SITE DESCRIPTION					
Name: <u>SW Pond</u>					
Address: <u>Front Street + Somerset Ave.</u>					
Ownership: <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage <input checked="" type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert <input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input type="checkbox"/> Other: _____					
On-Site <input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop <input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____			Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes: need to see plans to estimate → underground					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe: <div style="text-align: center; margin-top: 20px;">Storm Water Pond</div>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
Existing Head Available and Points Where Measured:					

PROPOSED RETROFIT

Purpose of Retrofit:

- ☒ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☒ Repair ☐ Other: _____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

- ☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: pond cleanup

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

This pond was setup to collect construction sediment
 → can be cleaned out to restore function

SITE CONSTRAINTS

Adjacent Land Use:

- ☐ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☐ Other: _____

Possible Conflicts Due to Adjacent Land Use? ☐ Yes ☐ No

If Yes, Describe:

Access:

- ☒ No Constraints

Constrained due to

- ☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other: _____

Conflicts with Existing Utilities:

- ☒ None
☐ Unknown

Yes

Possible

- | | | |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Sewer |
| <input type="checkbox"/> | <input type="checkbox"/> | Water |
| <input type="checkbox"/> | <input type="checkbox"/> | Gas |
| <input type="checkbox"/> | <input type="checkbox"/> | Cable |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric to Streetlights |
| <input type="checkbox"/> | <input type="checkbox"/> | Overhead Wires |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

Potential Permitting Factors:

- | | | |
|------------------------------|-----------------------------------|---------------------------------------|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Impacts to a Stream | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input type="checkbox"/> Probable | <input type="checkbox"/> Not Probable |

How many? _____

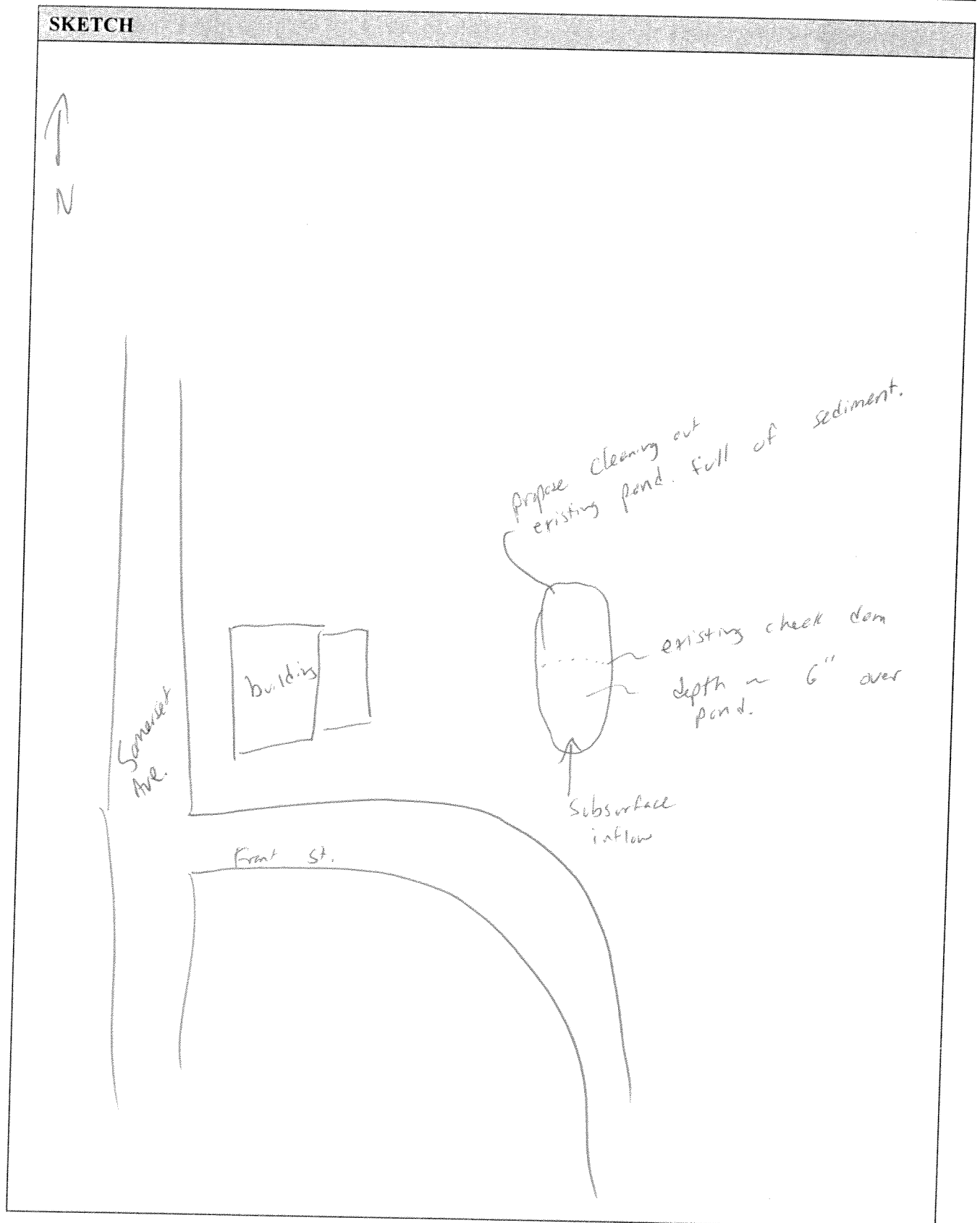
Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: ☐ Yes ☐ No
 Evidence of poor infiltration (clays, fines): ☐ Yes ☐ No
 Evidence of shallow bedrock: ☐ Yes ☐ No
 Evidence of high water table (gleying, saturation): ☐ Yes ☐ No

SKETCH



DESIGN OR DELIVERY NOTES**FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT**

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: _____ | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:

☐ YES☐ NO☐ MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

☐ YES☐ NO☐ MAYBE

IF YES, TYPE(S): _____