Douglas Little League Field Site: Indianapolis, Indiana
Site Restoration Considerations: June 2007

I. Introduction

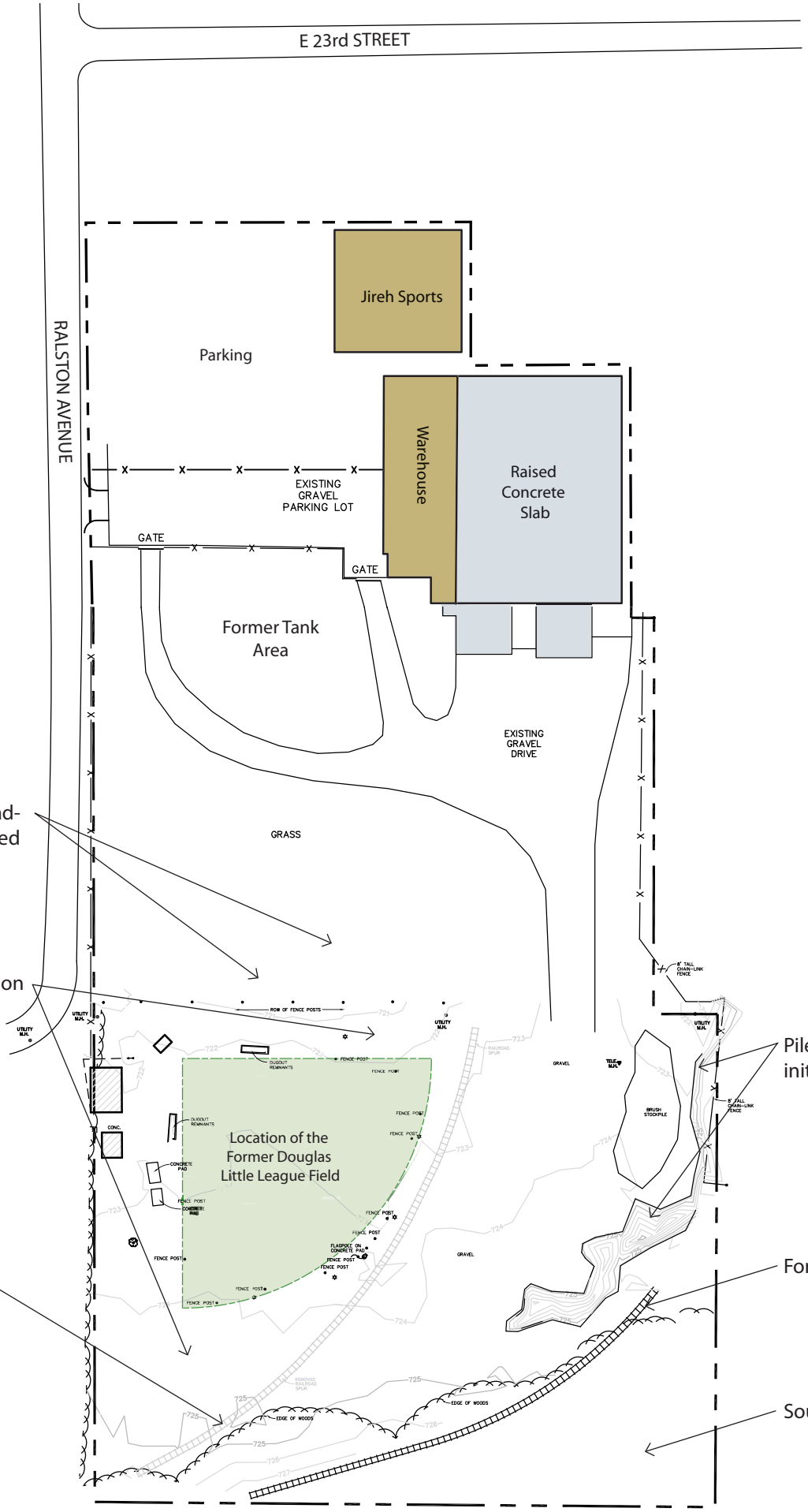
EPA contractor E² Inc. gathered information and conducted a site visit at the Douglas Little League Field site in May 2007 to determine how future land use considerations could help inform ongoing response activities at the site and the long-term effectiveness and permanence of the site's remedy.

EPA's primary responsibility at Superfund sites is to ensure the protection of human health and the environment. EPA's cleanup programs have also set a national goal of returning formerly contaminated sites to long-term, sustainable, and productive use. By engaging local stakeholders in a collaborative decision-making process about a site's future use, EPA can help ensure the long-term effectiveness and permanence of site remedies.

The May 2007 information gathering and site visit in Indianapolis indicated that community interest in the reuse of the southern portion of the site for a little league baseball field could provide an opportunity to integrate reuse and remedial considerations. Future land use considerations could inform existing response activities at no additional cost in time or resources to ensure the effectiveness and permanence of the site's remedy and that the site's remedy does not create unnecessary obstacles to the future use of the site. Most of the site property is currently owned by Jireh Sports, a non-profit, faith-based youth development center.

The cleanup of the southern portion of the site – a time-critical removal action – is ongoing and will be completed by early Summer 2007. Cleanup activities are funded by Exxon-Mobil and include the removal and replacement of lead-contaminated site soils with clean fill dirt, the placement of a fabric barrier under the clean fill dirt, and two feet of additional soil on top of the backfilled areas. The ground will be leveled and seeded to complete the response activities.

EPA contractor E² Inc. has developed this Site Restoration Considerations document to address the specific areas – including location, grading and drainage, soils and subsoils, compaction, seeding, and site surroundings – where reuse considerations could directly inform ongoing response activities at the site. Consideration and implementation of these considerations will need to happen rapidly, by early June 2007, to fit with the scheduled timeframe of the removal action and would involve coordination among multiple site stakeholders, including EPA Region 5, IDEM, Exxon-Mobil, and Jireh Sports.



Douglas Little League Field
Figure 1: Site Map

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Base map information provided by ERM.

II. Site Restoration Considerations: Little League Baseball Field

Field Location, Dimensions, and Orientation

The site is located at 2255 North Ralston Avenue in the city's Martindale-Brightwood neighborhood. A little league baseball field was located on the southern and southwestern portions of the site where response activities are currently taking place. Youth baseball games were played on the field from 1952 until 1994.

Figure 1 presents key site features, the location of response activities at the site, and the former location of the Douglas Little League field.

Little League Field Characteristics

Little League fields typically require approximately 60,000 square feet of space. The distance from the back of home plate to outfield fences is 200 feet and the distance between bases is 60 feet. These distances can vary, depending on players' ages and the division of youth baseball; Figure 2 below lists general dimensions for different youth baseball divisions. Where possible, baseball fields are oriented so that a line running from home plate to second base points east-northeast. With this orientation, batters avoid having to face the sun.

Response Activity Implications

Today, in terms of field location, dimensions, and orientation, a little league baseball field could once again be located on the southwestern portion of the site. A little league field could fit in the southwestern corner of the site and could be optimally oriented so that home plate faces east-northeast. In the future, this orientation would also mean that field lighting could be installed without creating negative nighttime lighting impacts for the adjacent neighborhood. Figure 3 provides an up-close illustration of the orientation and dimensions of a little league baseball field located at the site.

Figure 2: Youth Baseball Field Dimensions Table

Age Group	League Division	Left Field	Center Field	Right Field	Pitching Distance	Distance Between Bases	Space Requirement
Ages 17 and older	Big	321 ft.	400 ft.	321ft.	60 ft. 6 in.	90 ft.	115,000 sq. ft.
Ages 15-16	Senior	280 ft.	350 ft.	280 ft.	60 ft. 6 in.	90 ft.	90,000 sq. ft.
Ages 13-14	Junior	250 ft.	315 ft.	250 ft.	54 ft.	80 ft.	90,000 sq. ft.
Ages 11-12	Little or "Majors"	200 ft.	200 ft.	200 ft.	46 ft.	60 ft.	60,000 sq. ft.
Ages 7-11	Minor	200 ft.	200 ft.	200 ft.	46 ft.	60 ft.	60,000 sq. ft.
Ages 5-6	Tee-Ball	200 ft.	200 ft.	200 ft.	n/a	50 ft. or 60 ft.	60,000 sq. ft.

Figure 3: Little League Field Dimensions and Layout

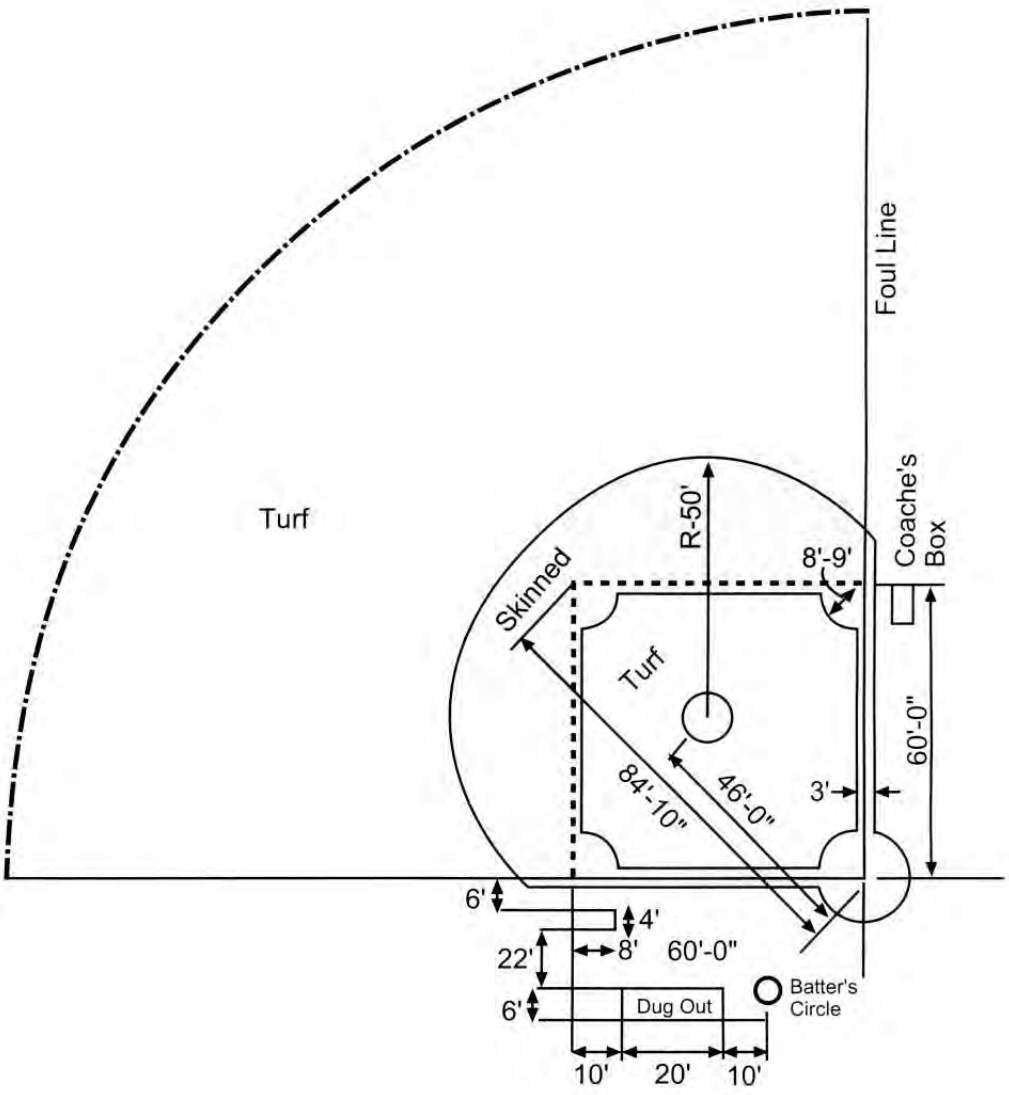
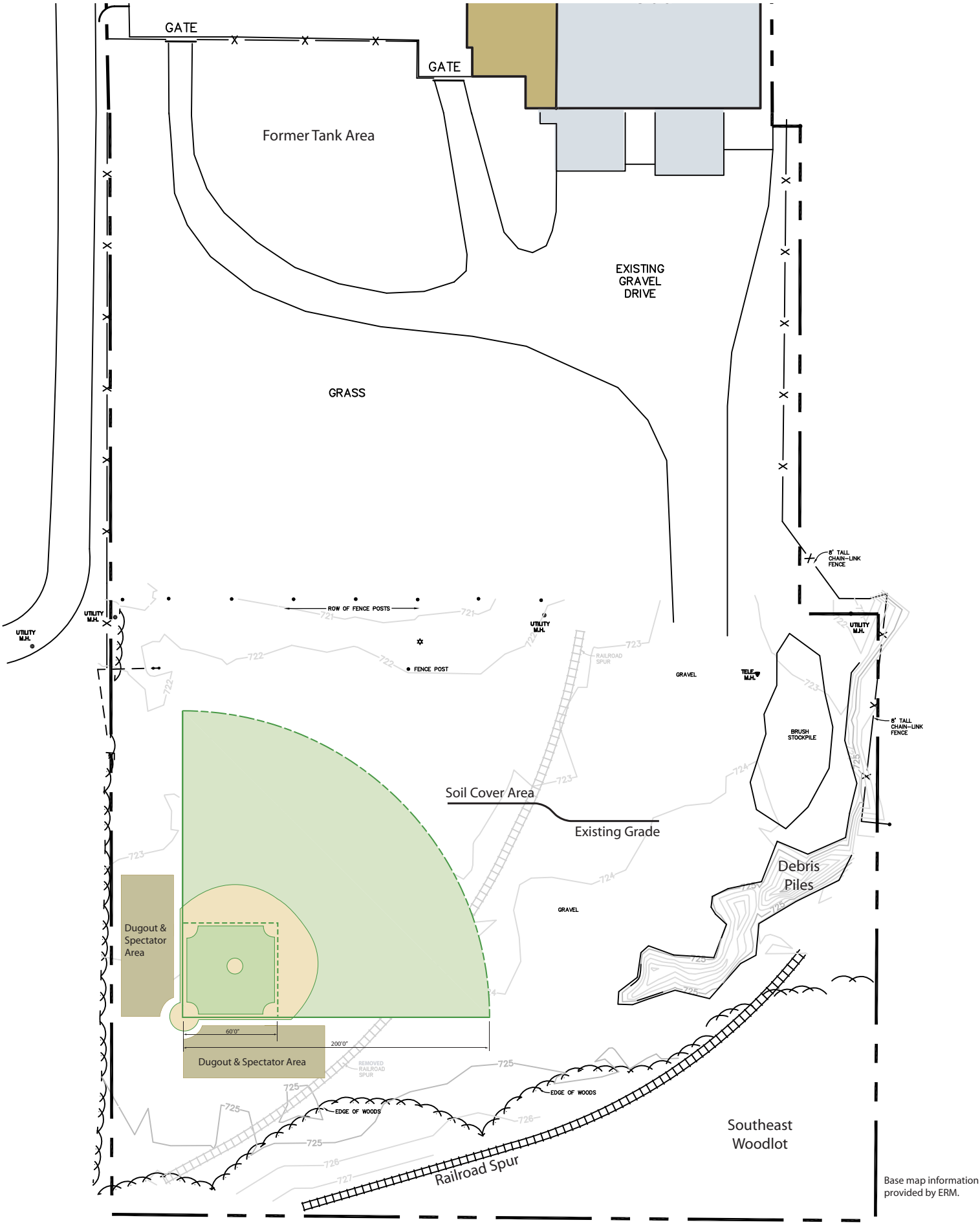


Figure 4 on the adjacent page illustrates how a little league field could fit in the southwestern corner of the site and could be optimally oriented so that home plate faces east-northeast



Douglas Little League Field
Figure 4: Possible Baseball Field Location

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Field Drainage and Grading

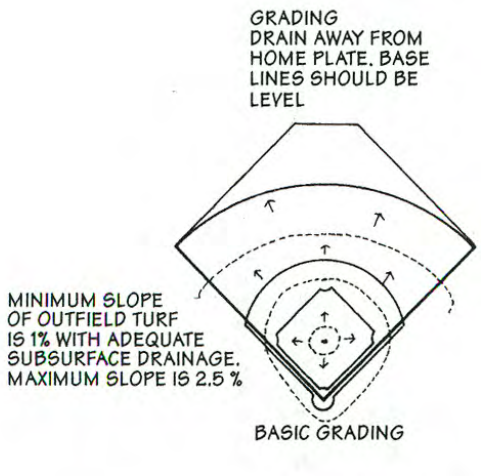
Little League Field Characteristics

Typical little league baseball field drainage patterns drain infield areas away from the pitchers mound and drain outfield areas away from infield areas. The orientation of the baseball field as illustrated in Figure 5 below would enable the field's drainage pattern to work with the site's original natural contours. The minimum slope of outfield turf is 1% with adequate subsurface drainage, while the maximum slope that still supports adequate drainage is 2.5%. Grading the site's soil cover area to maintain sheet flow to the north and not exceed a 2.5% slope would create optimal conditions for a little league baseball field to be located in the southwestern corner of the site.

Response Activity Implications

Baseball fields require a uniform, well-drained playing surface. Grading and positive drainage will be addressed as part of response activities at the site to ensure that the final topsoil cover is smooth, uniform, and well-drained. Given that the location of a little league baseball field on the southwest portion of the site would not require significant alterations to the site's surface area, it appears likely that site grading could follow the slope guidelines outlined in Figure 5 to ensure the protectiveness of the site's remedy and optimize conditions that would support the future location of a little league baseball field at the site.

Figure 5: Basic Grading Pattern



Soil and Subsoil

Little League Field Characteristics

Youth baseball fields are typically native-soil fields – fields established on top of existing local soils and subsoils. It is anticipated that the restoration of the Douglas Little League field site will include fill from a local source, which will result in the establishment of a native-soil field on the southern portion of the site.

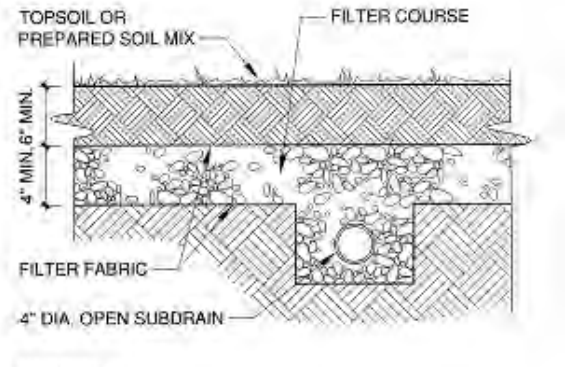
While native-soil fields adequately support baseball fields, additional steps could be taken during subgrade construction and rootzone preparation in the soil cover area to optimize the capacity of the area's soil and subsoil to support future recreational use. First, the incorporation of a layer of aggregate material between the compacted fill and topsoil could improve field drainage, as shown in Figure 6. Second, soil amendments could optimize the establishment of turf grass in the soil cover area. A soil test would determine which specific soil amendments would be most appropriate, as well as provide additional information about the soil's drainage capacity and capacity to support anticipated future traffic.

In the longer-term, there are also additional future use considerations related to soil and subsoil that parties interested in locating a little league baseball field at the site will need to keep in mind. Specifically, future site users may be interested in creating a skinned infield area, where base paths and the pitchers mound consist of sandy soil rather than turf grass. A skinned infield area is often created naturally, from foot traffic on base paths, as a field is used over time. If future site users are interested in creating an installed skinned infield area, Appendix A provides additional information.

Response Activity Implications

Youth baseball fields commonly require a native-soil field, which will be installed as part of restoration activities on the southern portion of the site. Local stakeholders could coordinate with Exxon-Mobil to determine if there might be additional opportunities to optimize field soil and subsoil conditions, including the incorporation of an aggregate material-drainage layer, soil testing, and soil amendments, to support the location of a baseball field in the southwestern corner of the site.

Figure 6: Cross-section Soil Profile
(sub-drain not needed for native-soil field)



Compaction

Little League Field Characteristics

Soil at new baseball fields needs to be compacted to ensure a uniform, well-drained playing surface. To optimize fill soil compaction for the location of a baseball field, fill soil should be placed in layers at depths of 6-12 inches and mechanically compacted with appropriate machinery to a density of 95%. Clay soils may require compaction using a sheeps-foot roller, as vibration may liquefy the soil. High-density compaction may require multiple passes (8-12 passes) for each layer (6”-12”).

Response Activity Implications

Compaction is needed to create a level playing field. As outlined in the Time Critical Removal Action Work Plan, compaction will also be conducted as part of response activities at the site to ensure that the final topsoil cover in the soil cover area is smooth, uniform, and settles evenly. Given that the location of a little league baseball field on the southwestern portion of the site would not require significant alterations to the site’s surface area, it appears likely that site compaction could follow the guidelines outlined above to ensure the protectiveness of the site’s remedy and optimize conditions that would support the future location of a little league baseball field at the site.

Seeding

Little League Field Characteristics

Baseball fields located in northern United States are typically seeded with a blend of cool season turfs, such as Bluegrass, fescues, and rye grasses. Coordination with a local agricultural extension office or the Indy Parks and Recreation Department would assist in determining the best grass or grasses to support a baseball field located in the southwestern corner of the Douglas Little League Field site.

Figure 7: Common Recreational Field Grasses and Mowing Height

Type of Grass	**Optimal Height (inches)**
Bluegrass	1 - 1.5
Tall Fescue	2
Zoysia	0.5 - 1
Bermuda	0.5 - 1

Response Activity Implications

The site's Time Critical Removal Action Work Plan includes plans to seed the soil cover area with a grass seed mixture, such as rye, fescue, and blue grass seed. The selection of a turf blend specifically designed for recreational uses could optimize the area's reuse as a little league baseball field.

III. Site Restoration Considerations: Adjacent Site Areas

The soil cover area, located in the southern portion of the Douglas Little League Field site, is the focus of the site's ongoing time-critical removal action and could also serve as the potential location of a new little league baseball field. Response activities in this portion of the site – soil removal, backfilling, and replacement – will also have future land use implications for surrounding areas of the site. This section of the document considers and addresses these broader land use implications. Figure 8 illustrates potential future recreational land use considerations for these surrounding areas of the site.

Soil Cover Area

Future Land Use Considerations

As part of the time-critical removal action, excavated areas will be backfilled and capped with an additional two feet of soil above the area's original grade. The change of grade between the

capped soil cover area and the existing grade of surrounding site areas to the north and east of the soil cover area could inadvertently create barriers to future recreational land uses located elsewhere on the site. Site owner Jireh Sports has developed a preliminary reuse plan for its property that includes a skate park, a soccer/lacrosse field, a running track, parking facilities, and a second baseball field.

Specifically, the backfilling and capping of the excavated area could result in an irregularly shaped plateau that could create a barrier to future site uses. The plateau could be irregularly shaped because of the fingers of lead-contaminated soil delineated north of the original baseball field's fence line. Accordingly, the remediation of these areas of the site could result in multiple smaller areas raised above the area's original surrounding grade, rather than the large level area that would be necessary for expanded recreational facilities at the site.

Response Activity Implications

To better accommodate future recreational uses at the site, the soil cover fingers and capped areas that will extend north of the fence could be connected to create a usable area. If the extent and coverage of these fingers are available, it would be possible to calculate the amount of additional fill needed to consolidate the fingers within a larger, contiguous raised area.

See Figure 8 which illustrates how a consolidated area could support expanded recreational opportunities like a soccer or lacrosse field that shares the outfield of the baseball field.

Debris Piles

Future Land Use Considerations

Several large piles of debris are located along the eastern edge of the site. If it remains on-site, this debris will not directly interfere with the location or operation of a baseball field on the southwestern portion of the site. However, the piles could pose a safety hazard to future site users, like children playing on the site, and would likely need to be fenced to restrict access. Any future land uses planned for the eastern portion of the site would require the removal of the debris piles.

Response Activity Implications

Given that the debris piles were created by initial site clearing activities for the time-critical removal action, do not provide any on-site benefits, and represent a potential safety hazard for future site users, site stakeholders could work together to remove or at minimum install fencing around the debris piles. The debris removal or fencing could be undertaken as part of ongoing response activities at the site or as an independent effort.

Former Rail Spur and Wooded Area

Future Land Use Considerations

The southeastern corner of the site is not being addressed by the time-critical removal action and is available for use. The area includes a former rail spur and is one of the few areas of the site that is partially forested. The area could host a range of recreational land uses. Some uses, like walking trails, environmental education areas, a ropes training course, or a climbing wall, would not require major changes to the area's existing conditions.

In the longer-term, this area could also be large enough to support a second baseball field. This field could be located adjacent to the field located in the southwest corner of the site, in the area now occupied by the debris piles. A specially designed baseball field could provide children with disabilities with opportunities to play baseball. On average, these special fields are smaller than little league fields and are comparable to the size of a tee-ball field.

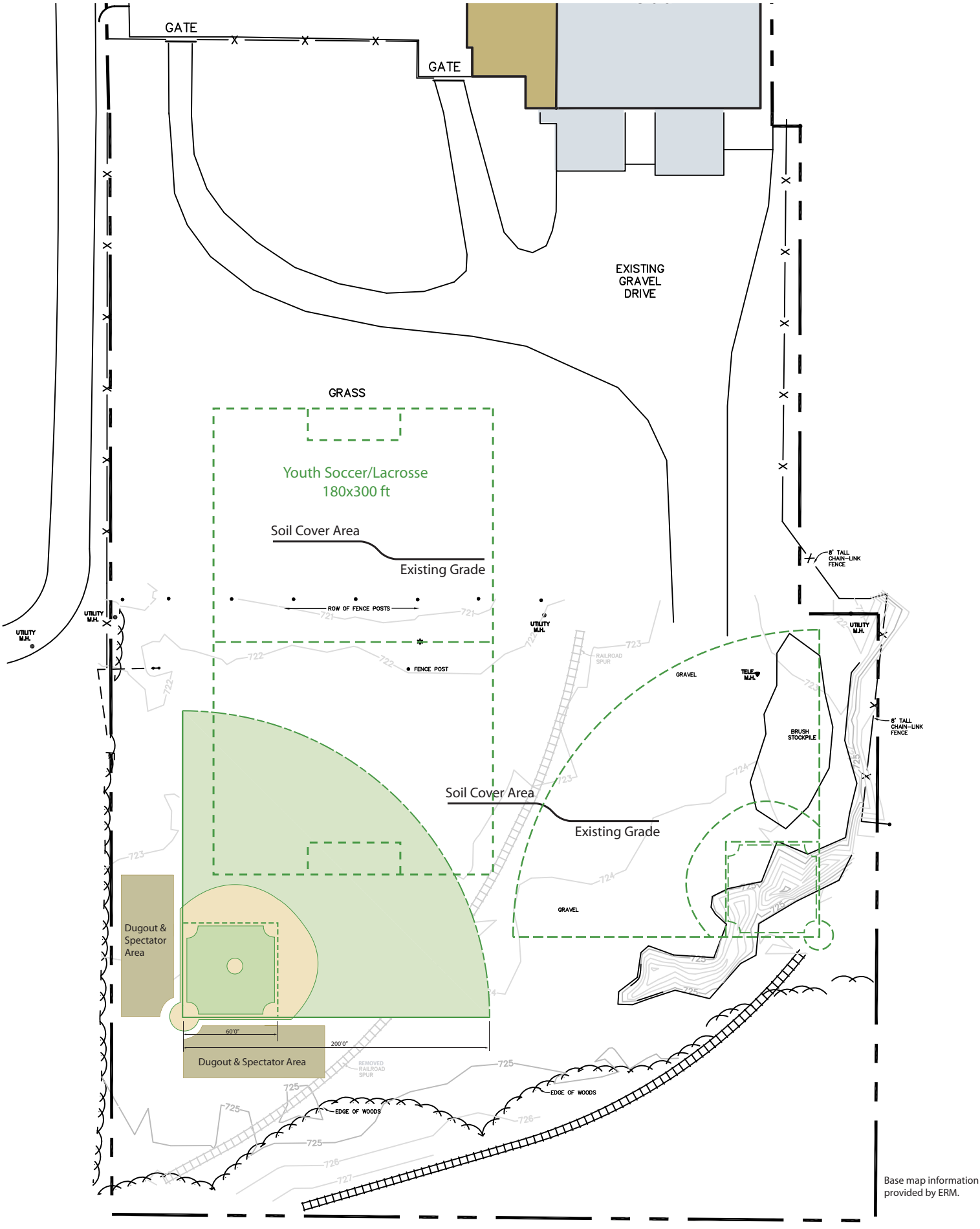
Figure 9: Youth Baseball Field Dimensions Table 2

Age Group	League Division	Left Field	Center Field	Right Field	Pitching Distance	Distance Between Bases	Space Requirement
Ages 5-6	Tee-Ball	200 ft.	200 ft.	200 ft.	n/a	50 ft. or 60 ft.	60,000 sq. ft.

Figure 8 on the adjacent page illustrates how a second baseball field designed for children with disabilities could be located on the eastern portion of the site.

Response Activity Implications

The installation of a second baseball field for children with disabilities in the eastern portion of the site would require removal of the debris piles. Given that the debris piles do not provide any on-site benefits and represent a potential safety hazard for future site users, site stakeholders could work together to remove the debris piles. The debris removal could be undertaken as part of ongoing response activities at the site or as an independent effort.



Base map information provided by ERM.

Douglas Little League Field

Figure 8: Possible Future Recreational Use Considerations

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Appendix A: Skinned Infield Information

Skinned infield dirt areas around the base paths of a baseball field consist of a base soil layer 3-6 inches deep and a top-dressing layer of sand 0.25-0.5 inches deep. A good base soil ideally will be composed of:

- 50-60 percent sand (higher amounts will contribute to soil mobility). Sand composed of rounded or spherical particles should be avoided since they tend to be unstable.
- 15-30 percent clay. This is the glue that binds the soil.
- The silt and clay give the mix firmness. If the mix contains too much silt and clay, compaction and hardness become a problem.
- 15-20 percent silt (higher amounts will make the field slick when wet and dusty when dry).

At the Douglas Little League Field site, it would be possible to work with the existing soil base layer, remove turf located along site basepaths, and topdress with the sand layer described above.

Appendix B: References

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Cook, Murray. *Baseball Field Maintenance: A General Guide for Fields of All Levels*. Baseball Tomorrow Fund, 2006. Available online at: mlbplayers.mlb.com/mlb/downloads/btf_field_maintenance_guide.pdf.

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For more information, please contact:

E² Inc.
2417 Northfield Road
Charlottesville, VA 22901
T: 434.975.6700 - F: 434.975.6701
www.e2inc.com