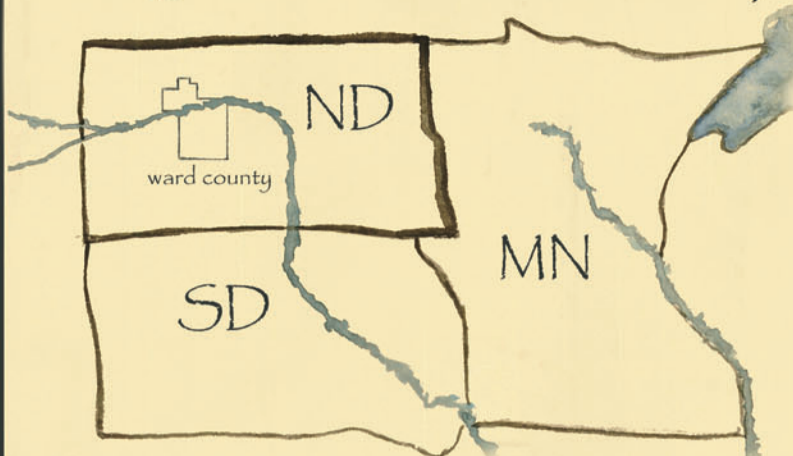


Regional Context Map



Local: The City of Minot rests in the central portion of Ward County. Minot acts as the county seat with approximately 42,000 people. An additional 8,000 individuals are 15 miles north of Minot on the Air Force Base.

Zoning Map: This map depicts the existing zoning on the eastern part of Minot, notice the large amount of residential housing within a reasonable distance of the proposed site location. This is an important factor in site design and project justification. School houses represent 2 elementary and 1 middle school that lie in close proximity. Concentric black rings are set at 1/2 mile increments.

Residential	
Commercial	
Industrial	
Green Space/Ag.	

An Industrial Landscape: The site portrays an emptiness, however adjacent land use depicts heavy usage. Large above ground storage tanks line the eastern boundary. To the south are the railroad tracks. In the southeast remnants of an old gravel pit operation can be seen. To the north is the Minot airport. Overhead are numerous power lines and large power line support structures.



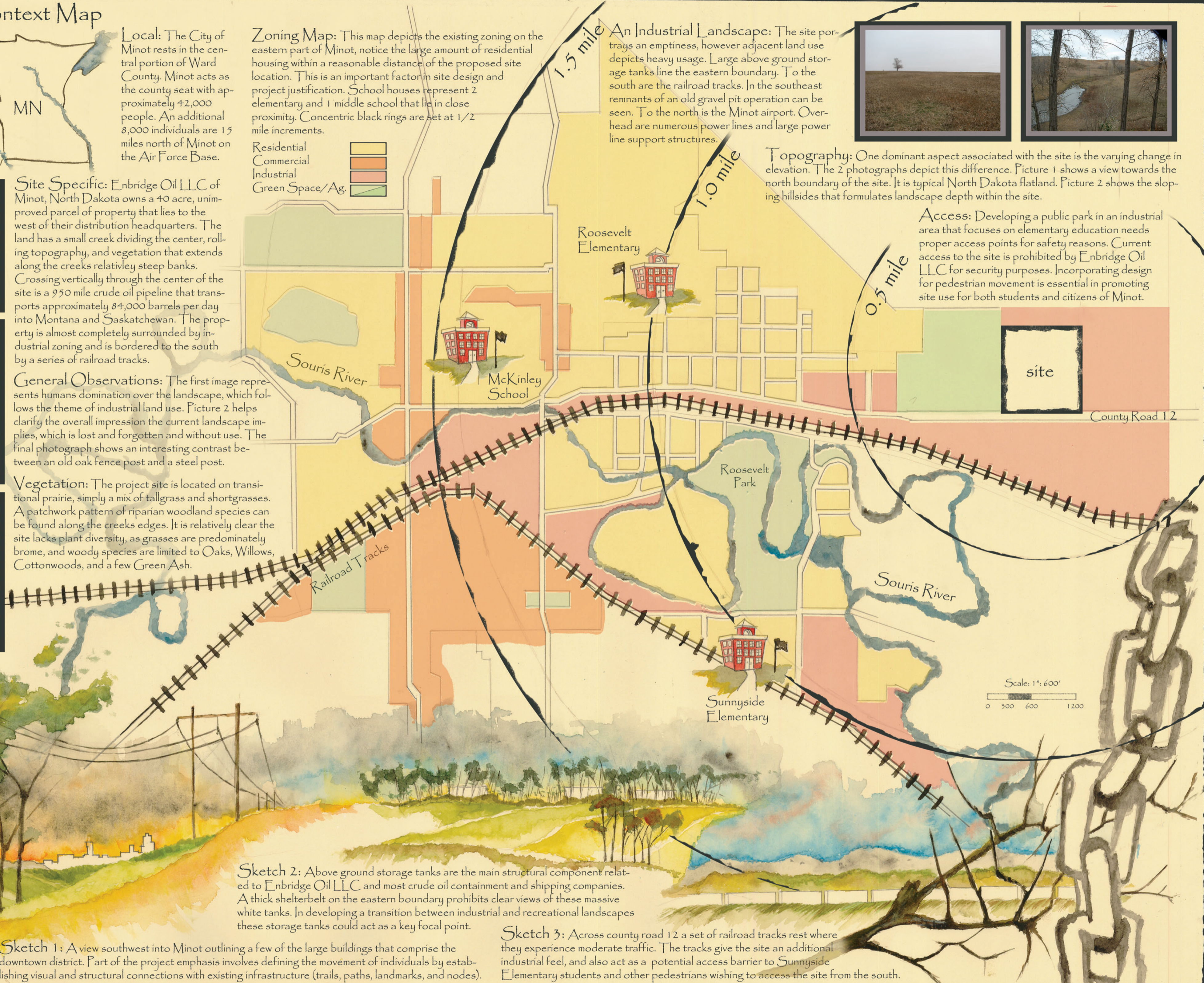
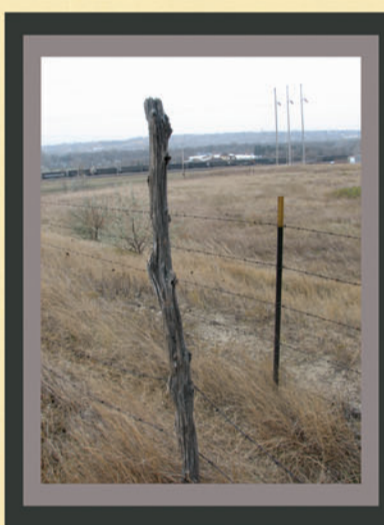
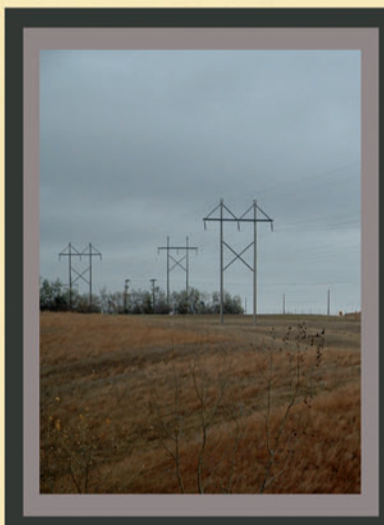
Topography: One dominant aspect associated with the site is the varying change in elevation. The 2 photographs depict this difference. Picture 1 shows a view towards the north boundary of the site. It is typical North Dakota flatland. Picture 2 shows the sloping hillsides that formulate landscape depth within the site.

Access: Developing a public park in an industrial area that focuses on elementary education needs proper access points for safety reasons. Current access to the site is prohibited by Enbridge Oil LLC for security purposes. Incorporating design for pedestrian movement is essential in promoting site use for both students and citizens of Minot.

Site Specific: Enbridge Oil LLC of Minot, North Dakota owns a 40 acre, unimproved parcel of property that lies to the west of their distribution headquarters. The land has a small creek dividing the center, rolling topography, and vegetation that extends along the creeks relatively steep banks. Crossing vertically through the center of the site is a 950 mile crude oil pipeline that transports approximately 84,000 barrels per day into Montana and Saskatchewan. The property is almost completely surrounded by industrial zoning and is bordered to the south by a series of railroad tracks.

General Observations: The first image represents humans domination over the landscape, which follows the theme of industrial land use. Picture 2 helps clarify the overall impression the current landscape implies, which is lost and forgotten and without use. The final photograph shows an interesting contrast between an old oak fence post and a steel post.

Vegetation: The project site is located on transitional prairie, simply a mix of tallgrass and shortgrasses. A patchwork pattern of riparian woodland species can be found along the creeks edges. It is relatively clear the site lacks plant diversity, as grasses are predominately brome, and woody species are limited to Oaks, Willows, Cottonwoods, and a few Green Ash.



Sketch 1: A view southwest into Minot outlining a few of the large buildings that comprise the downtown district. Part of the project emphasis involves defining the movement of individuals by establishing visual and structural connections with existing infrastructure (trails, paths, landmarks, and nodes).

Sketch 2: Above ground storage tanks are the main structural component related to Enbridge Oil LLC and most crude oil containment and shipping companies. A thick shelterbelt on the eastern boundary prohibits clear views of these massive white tanks. In developing a transition between industrial and recreational landscapes these storage tanks could act as a key focal point.

Sketch 3: Across county road 12 a set of railroad tracks rest where they experience moderate traffic. The tracks give the site an additional industrial feel, and also act as a potential access barrier to Sunnyside Elementary students and other pedestrians wishing to access the site from the south.

Project Vision: This project is centered on an idea for an outdoor educational facility that is directed for use by elementary age students. An interpretive, hands on approach to learning is used to highlight a variety of topics involving biology, ecology, and entomology. This project essentially examines the ability of industrial processes to co-exist with a more natural environment.

Project Objectives: The major elements that will be represented in this project have been considered based on their compatibility as potential learning opportunities.

- Environmental Educational Areas
- Establish Raptor Habitat
- Connection to Enbridge Oil LLC
- Exhibit transition between industrial and recreational zoning
- Present the importance of diversified zoning

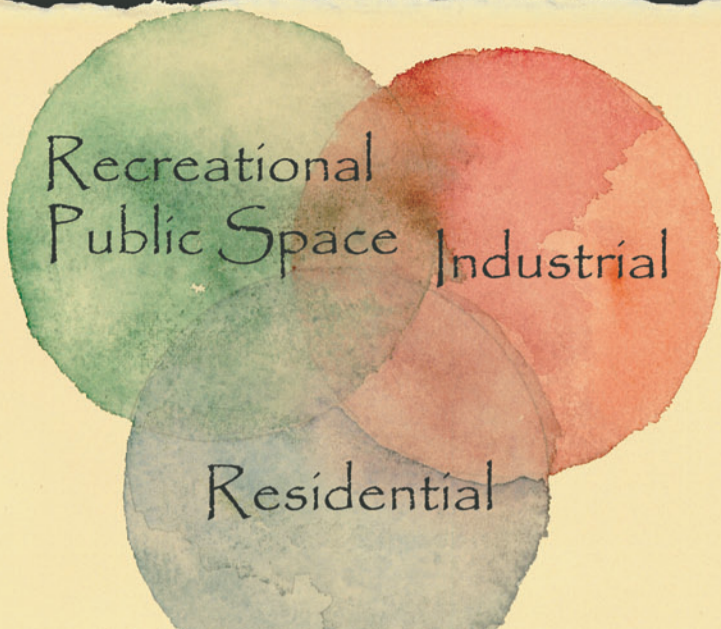
Environmental Education:

Biological Processes: These concepts will be predominantly broad in their overall focus. Identifying and illustrating the significance of food chains, water cycles, decomposition and erosion.



Invasive Plant - Salt Cedar

Entomology & Nature: The concepts in this category will be small in scale and more in-depth. Ideally the focus will rest on insects and the processes they endure throughout the seasonal change. This would include metamorphosis, over-wintering, and anatomy.



Bubble Diagram: The initial design idea of developing a recreational amenity for the City of Minot into an industrial zoned area. The design needed to take advantage of residential housing and limited educational opportunities for students in the immediate area.



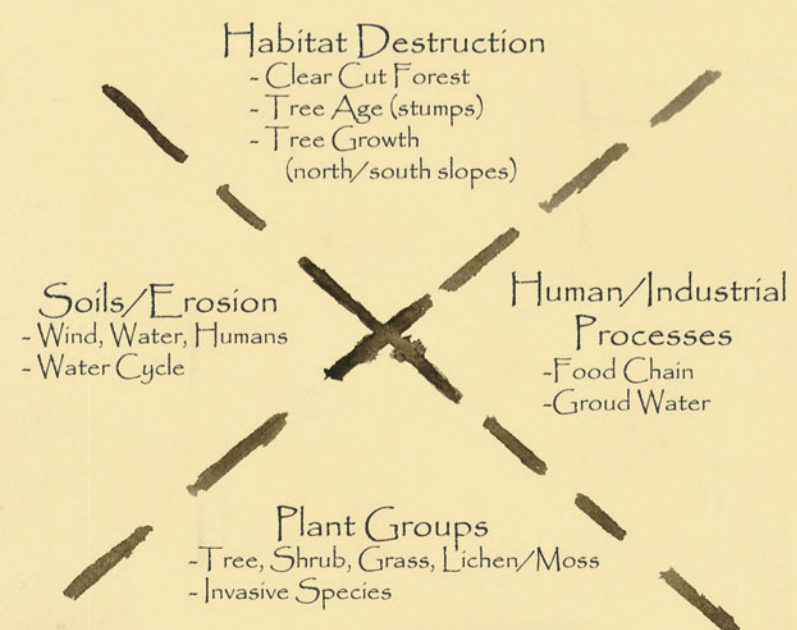
Water Cycle

Ecological Processes: Narrowing in scope, the ecological concepts implemented will explain issues that include habitat fragmentation, habitat destruction, ground water contamination, and invasive plants/animal species.



Milkweed Beetle

Where to find these areas?: The site has been split into four equal sized areas based upon criteria that included vegetation, topography, views, drainage, microclimates, overall landscape function, and design intent. The diagram to the left helps point out locations of the major study areas. Imagine this diagram is transparent over top of the masterplan drawing.



Plant Palette: The plant palette has been designed to work with the four seasons of the year and also coordinates with the previously diagrammed planning of the major environmental study areas. Each quarter of the site is represented by a certain season of the year (diagram to the right). This will include a general palette of woody tree species that display unique characteristics in the designated season. Additionally, one grass or forb will be utilized in the center/focal area of the site to draw attention to this location from the three main access points. The four quarters of the site are labeled to the right along with the grass or forb that will be used as a highlight. The proposed plants are intended to help diversify the existing site vegetation which lacks diversity.

Woody Plant Species: Winter plants were chosen based on shape, bark, and branch characteristics. Spring plants were introduced for their early leaf appearance. The fall plant species are characterized by color and landscape value. Summer plants are larger specimens and offer shade potential.

- Winter:**
- Ohio Buckeye *Aesculus glabra*
 - Paper Birch *Betula papyrifera*
 - Pekin Lilac *Syringa pekinensis*
 - Siberian Larch *Larix sibirica*

- Spring:**
- White Oak *Quercus alba*
 - Laurel Willow *Salix pentandra*
 - White Willow *Salix alba*
 - Amur Maple *Acer ginnala*

- Fall:**
- Sugar Maple *Acer saccharum*
 - Red Oak *Quercus rubra*
 - Quaking Aspen *Populus tremuloides*

- Summer:**
- Common Hackberry *Celtis occidentalis*
 - Green Ash *Fraxinus pennsylvanica*
 - Cottonwood *Populus deltoides*

Grasses/Forbs: The basic idea for these introductions is the color and a focus towards the center as described in the diagram on the right. The grasses and forbs that are listed below are typical transition prairie grasses and have a dull color in full bloom. The mix will help promote plant diversity and also create a contrast between the center and outer areas of the site. The seeding of forbs would be isolated and minimal so attention is left on the center area.

- Western Wheatgrass *Pascopyrum smithii*
- Junegrass *Koeleria macrantha*
- Indiangrass *Sorghastrum nutans*
- Switch Grass *Panicum virgatum*
- Buffalo Grass *Buchloe dactyloides*
- Prairie Cordgrass *Spartina pectinata*

- Prairie Wild Rose *Rosa arkansana*
- Black-eyed Susan *Rudbeckia hirta*
- Maximilian Sunflower *Helianthus maximiliani*
- Tall Blazing Star *Liatris pycnostachya*
- Prairie Smoke *Geum triflorum*
- Indian Paintbrush *Castilleja coccinea*
- Common Milkweed *Asclepias syriaca*
- Purple Prairie Clover *Petalostemum purpureum*



- Fall (red) - Little Bluestem *Schizachyrium scoparium*
- Spring (blue) - Big Bluestem *Andropogon gerardii*
- Summer (yellow) - Inland Saltgrass *Distichlis stricta*
- Winter (gray) - Buckbrush *Ceanothus cuneatus*

Plants for an Educational & Practical Purpose: Enbridge Oil LLC transports large amounts of crude oil through a pipeline beneath the site. A large aquifer can be found just south and west of the pipeline which supplies a majority of the fresh water used by Minot residents. These facts have been utilized to help inform site design and to help students realize the importance of industrial and human processes and how the impacts can be reduced by natural processes.

Although there is virtually no chance for a oil leak, the concept provided an interesting educational component that would be displayed to students.

Phytoremediation is a strategy used today that takes advantage of plants and their root structure to extract contaminants from the soil. When petroleum leaks into soil it is not very mobile. It adheres tightly to the components in the soil which gives the plant root time to extract a percentage of the contaminants. Alfalfa (*Medicago sativa*) is a forage plant that would be used as a visual buffer from the pipeline. Its roots grow and spread quickly which is an important quality for a remediation plant. Students would be informed about Alfalfa and other plants that can serve this function.

Bioindication is a second educational aspect that would be demonstrated in this location. These plants are chosen because they will react with a particular chemical in petroleum by either changing colors abruptly or causing immediate death. Rye grass (*Leymus triticoides*) will serve as the chosen grass for this site. Suppose a leak did occur, Rye grass would quickly show humans there were possible leaks in the pipeline and proper measures could quickly and effectively taken by the oil company.

Raptor Habitat: Planting a remediation and indicator species would serve two additional purposes. First the plants would identify the path of the pipeline and its approximate location. The plants also work together with raptor perches that follow the same path. The vertical object allows site visitors to further identify the pipeline path in seasons where alfalfa is not present.

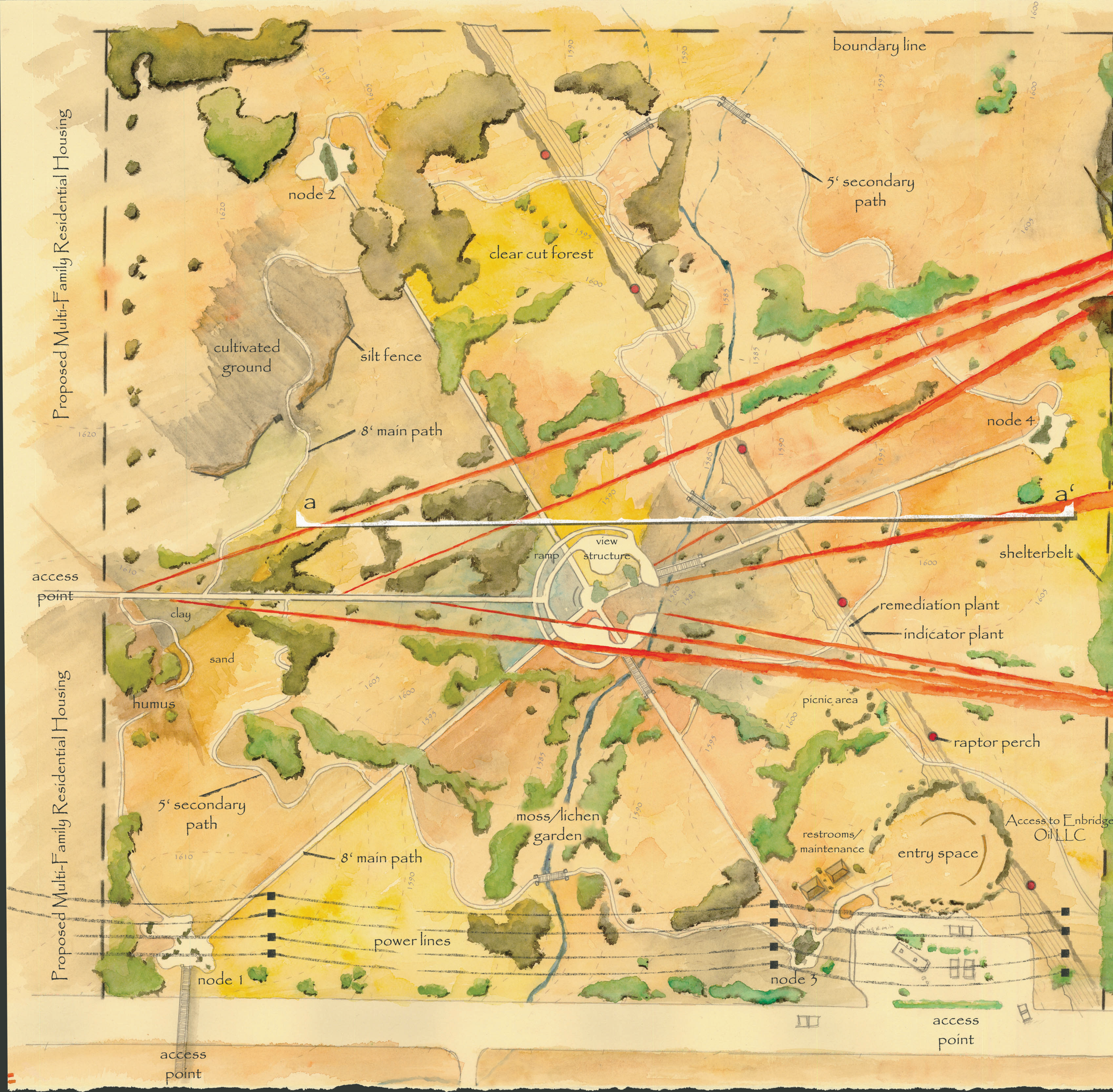
Where?: These plants are shown on the downward slope to the creek. This implies that the petroleum leak will follow the shortest possible path which is towards the creek.



Remediation Plant
Alfalfa (*Medicago sativa*)


Indicator Plant
Rye Grass (*Leymus triticoides*)

Rye Grass (*Leymus triticoides*)



Master plan: In many regards, elementary education is taught through the use of textbooks and indoor routine. Providing a site that promotes field study will help expand and excite developing minds in the outdoor environment. Site design and on-site interpretation will help guide the science based learning, as many students learn most effectively when they are presented with the freedom to explore the unknown.

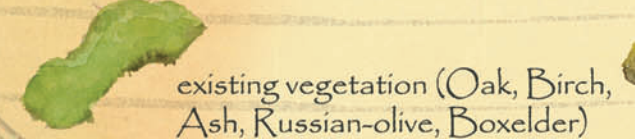
Industrial Views: The master plan was developed to create a transition between land uses. Views into adjacent properties were utilized as visual connections.

 views directed at above ground storage tanks.

Access Points: There are 3 main access points included on the master plan. Each access point corresponds visually to the center viewing structure, drawing visitors to this location. Access from the west will draw students and visitors from 1 elementary, 1 middle school, and the residential housing in the area. An access point in the southwest corner will attract site visitors from 1 elementary school and surrounding residential housing. The southeast access point will be intended for vehicular and school bus activity.

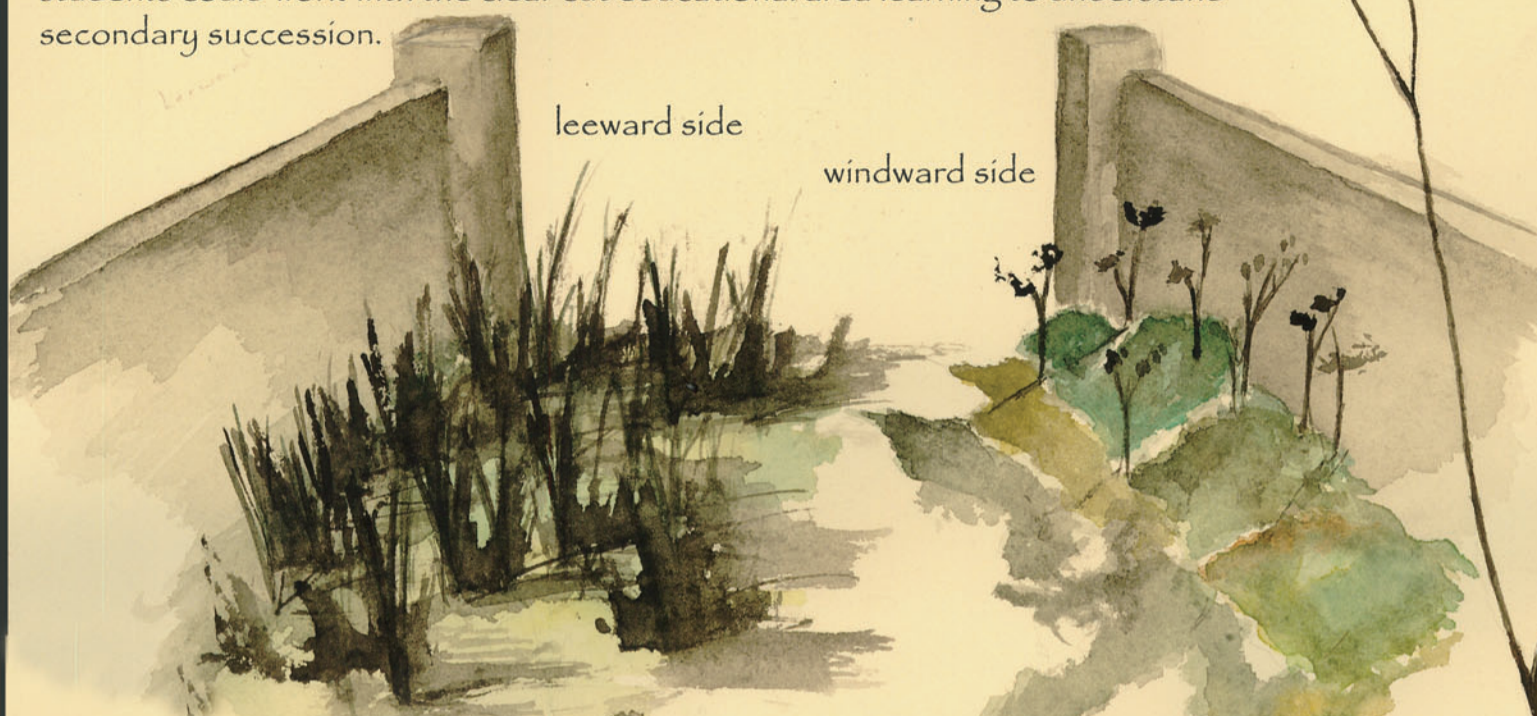
Nodes & Paths: Excluding the west access path, the 4 main 8' paths lead to 4 nodes. These establish points of interest that can be seen from the center viewing structure. Interactive activities in the nodes will correlate to the general concept in each study area (quarters shown on research board). They also help transition the secondary 5' paths into the larger 8' paths.

Vegetation: Existing site vegetation can be described as a patchwork pattern that follows the contours and the hydrologic path. The master plan is drawn to show both existing and proposed vegetation. The existing and proposed vegetation has also been used to frame the necessary views into the adjacent industrial processes.

 existing vegetation (Oak, Birch, Ash, Russian-olive, Boxelder)  proposed vegetation (see research board for plants)

Center Structure: The west access path will continue at an elevation of 1610 feet through the end of the viewing platform. Upon reaching the platform they will be directed either north or south. This will allow them visual contact with the nodes while continuing on their quest for the closest view of the industrial area.

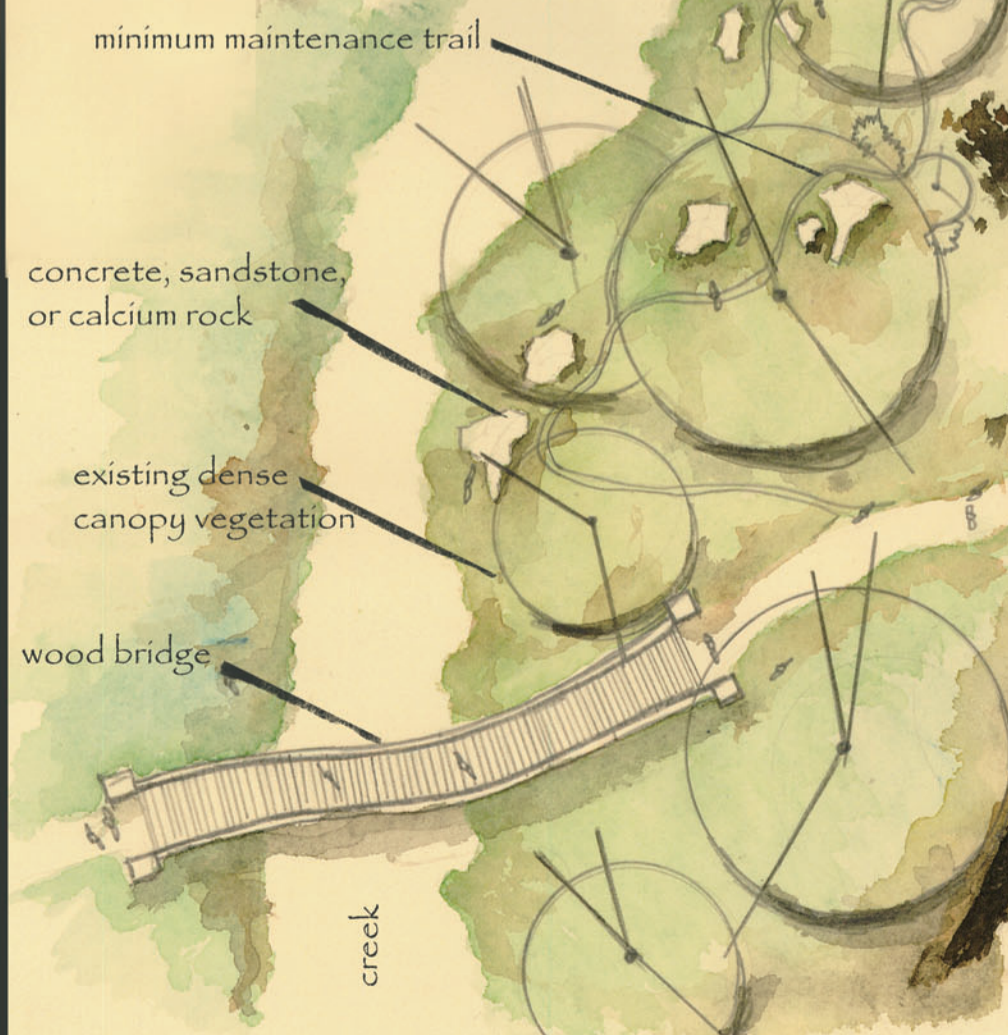
Educational Components: Rotating clockwise, the sketches describe various activities associated with the site. These activities are deliberately designed into the site. Many of these educational opportunities can be expanded and further developed based on the desired need of the educator. Although the park has been designed for elementary aged students, with a little creativity the components can be utilized by any grade level. For example: highschool science students could work with the clear cut educational area learning to understand secondary succession.



Wind Erosion: The above sketch shows the thin concrete wall which serves as a silt fence. Placement of the fence allows for northwest winds to sweep cultivated soil and dispose of it against the fence visually displaying the effects of wind erosion. The leeward side of the silt fence would contrast the windward side with plant growth and limited erosion.

Soil Samples: At this vertex where 3 soils come together each would be manipulated into a general soil type of humus, sand, and clay. Soil samples taken by students would be used to identify plant growth characteristics in different soil types. A bean plants growth is shown in the 3 types.

Moss/Lichen Garden: The southern quarter of the site focuses on the 4 different plant types. The common vegetation types including trees, shrubs, grasses/forbs will be present. A moss and lichen garden is also incorporated into this quarter. Its location is near the creek, and existing vegetation promotes a dark and wet climate needed to produce this plant group. Large concrete, sandstone, and calcium rocks are used as growth structures. The diversity in rocks will help establish a mix of plants, and also display different characteristics of each rock material.



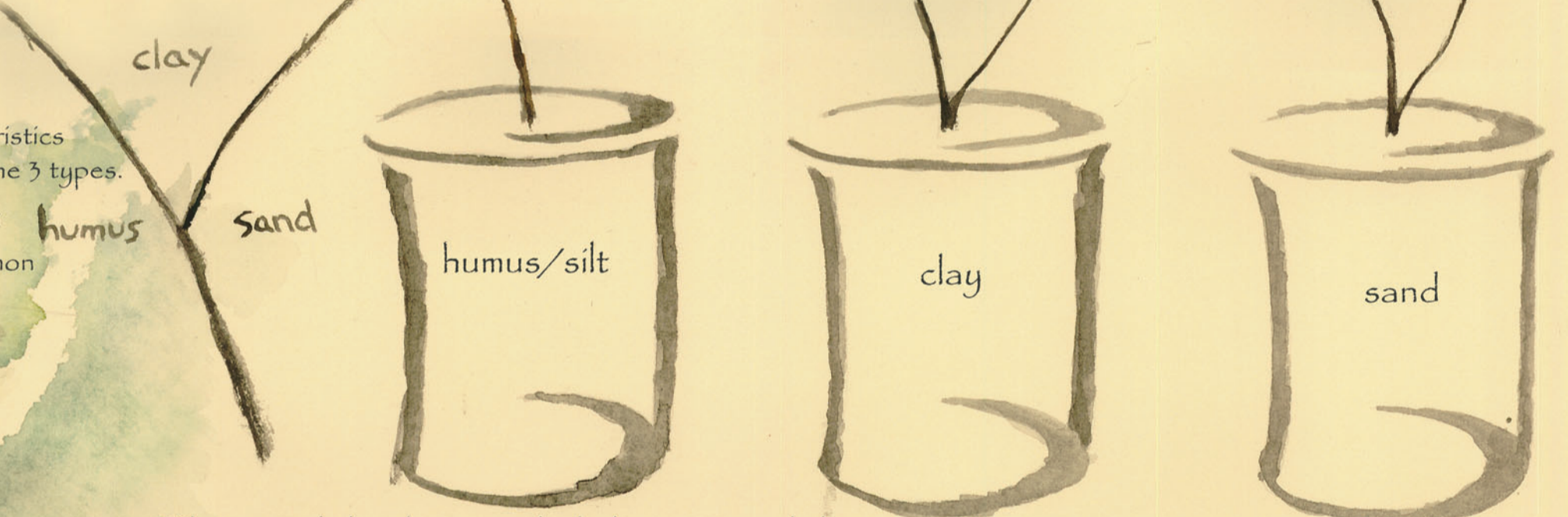
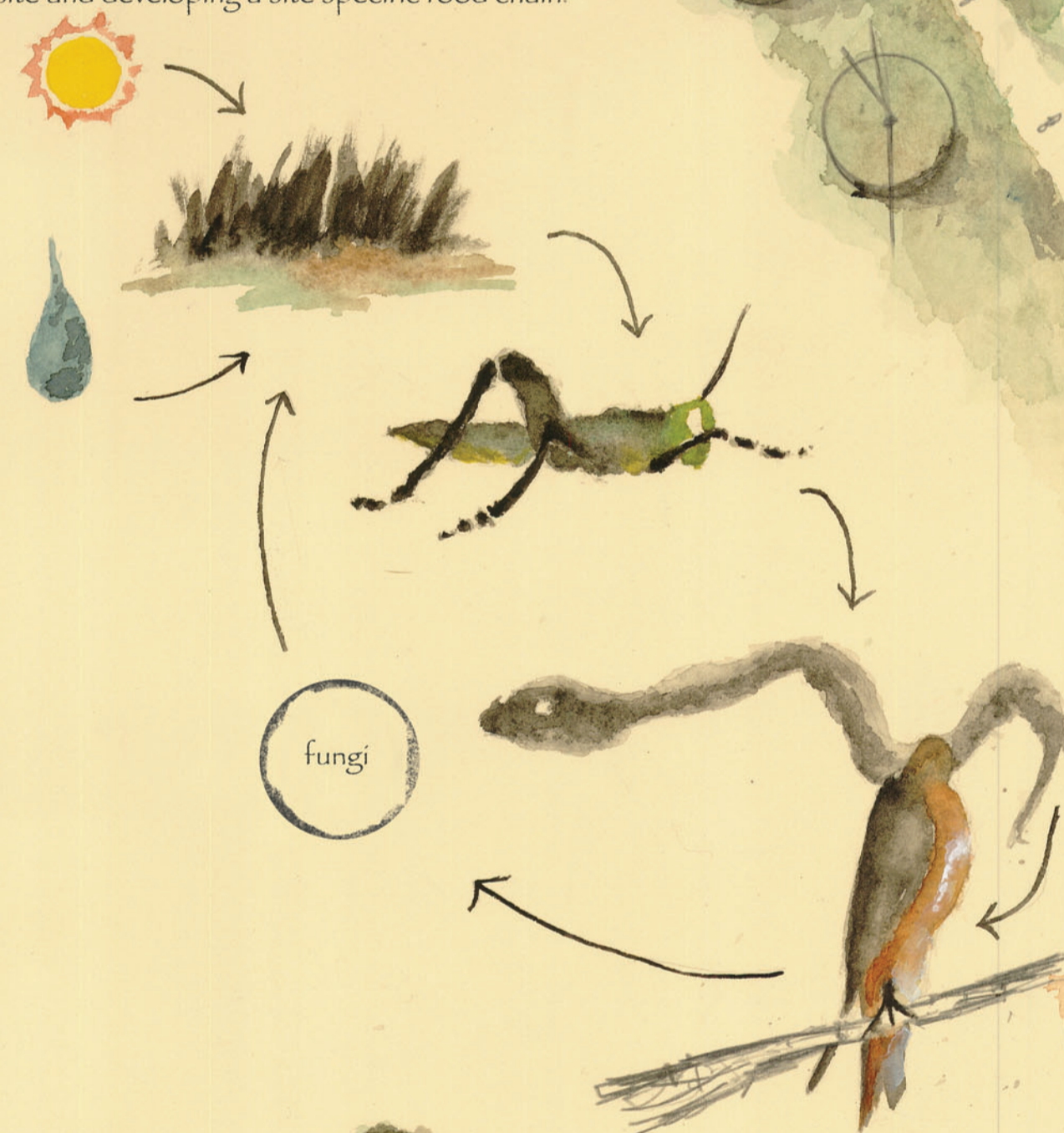
Cottonwood Stump

Habitat Destruction: After entering a thick, dense forest environment the visitor would then be immediately exposed to a completely open environment. Old growth cottonwood stumps would be the only feature present. The use of visual shock would be used to help convey the overall destruction caused by clear cutting forest timber.

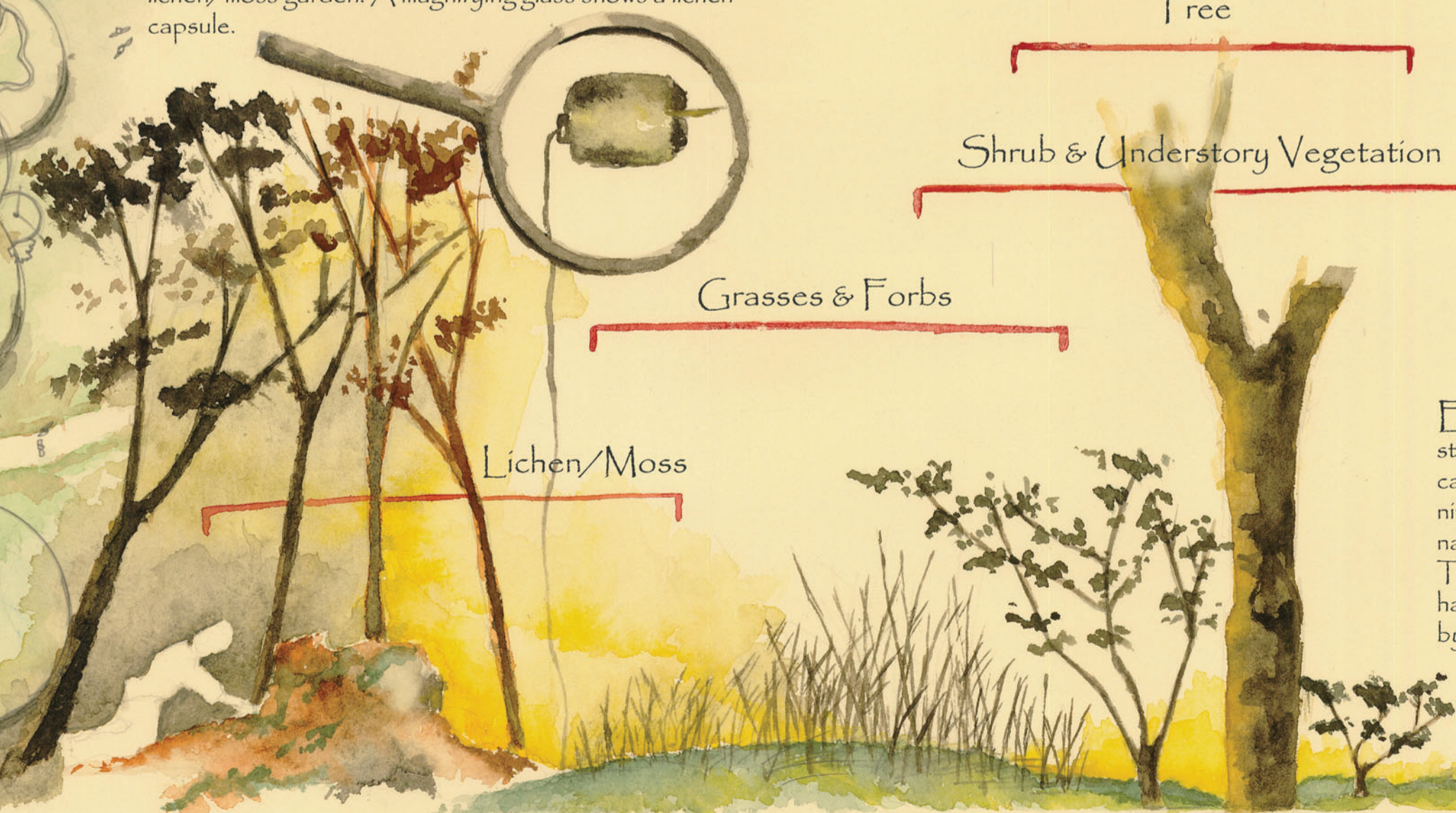
Habitat Creation: With raptor perches in close proximity this clear cut area establishes a unique niche environment for raptors. The open grassland creates sight lines, increases raptor habitat, and activity within the site.

Age of a Tree: Clear cut cottonwood stumps might be additionally utilized to teach students how to determine the age of a certain tree. Tree stump rings also speak history. They show flood years, dry years, diseased years along with a variety of other environmental factors.

Food Cycle: With a majority of the raptor perches in this quarter of the site, it works best to identify this biological cycle here. An educational activity could include drawing and identifying animals, insects, plants, or any aspect seen on site and developing a site specific food chain.



The section below shows an individual interacting with the lichen/moss garden. A magnifying glass shows a lichen capsule.



Entry: Beginning with the entry space students will receive a quick site overview. The location of the space allows educators the opportunity to point out certain aspects relating to human, nature, and industrial impacts on the landscape. This includes concepts on larger scales such as habitat fragmentation which is ultimately caused by road development.

Residential Development: Proposed multi-family residential development directly west of the site will phase out existing agricultural land. This development will basically be an extension of the single-family housing in the area. Residential population in close proximity to the site helps contribute a consistent base of site visitors. The three schools that lie within 1.5 miles of the site also play an important role in developing a user group.

Green Connections: With a sufficient base population to design around, these individuals need defined access routes to the site. The three proposed site access points on the master plan correspond to the proposed green connections displayed in the map below. The green connections are designed around routes students will take from the three schools. The connections are also collector routes for adjacent residential areas. A distinct boulevard vegetation pattern that can easily be followed will highlight each green connection path. A large tree followed by a medium sized tree, followed by a small tree visually shows the path of the green connection.

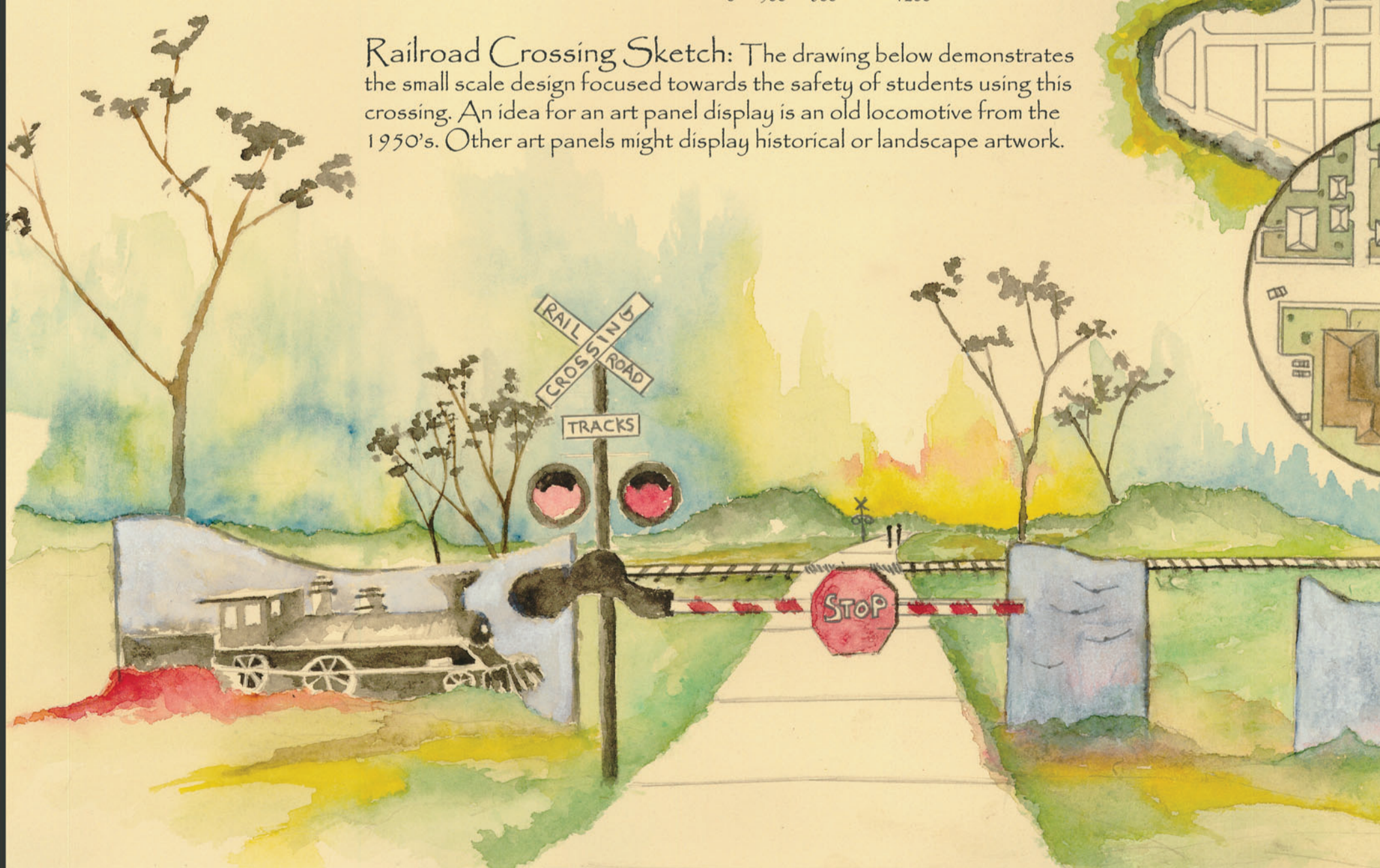
Riverbank Enhancement: Sunnyside elementary students and other residential site visitors follow a green connection path through Roosevelt Park. The Souris River bank is neatly kept within the boundaries of the park and completely unkept outside the park. Steep banks, washouts, erosion, limited vegetation, and poor sight lines are a majority of the concern. Implementing the green connections through these areas promotes incentives for repair and increased landscape enhancement. These enhancements will also alleviate safety concerns and create a pedestrian friendly green connection to the proposed public space.

Railroad Crossing: A major concern linking the schools to the site through green space was safety. Students accessing the site from the south connection would have to cross railroad tracks that experience moderate traffic. To safely cross the students and other individuals a pedestrian crossing is proposed on across the tracks. The crossing guard is designed on a smaller scale compared to the standard. The stop sign and rail would stand at eye level to a elementary aged student. Concrete art panels at a height of 4' block a large portion of a passing train. The art panels hold an elementary student's attention long enough to allow the train to pass without incident. Vegetation in the railroad crossing location would be limited allowing open views to the west and east. This accomodates the necessary space needed to visually identify an approaching train before the individual reaches the crossing guards.

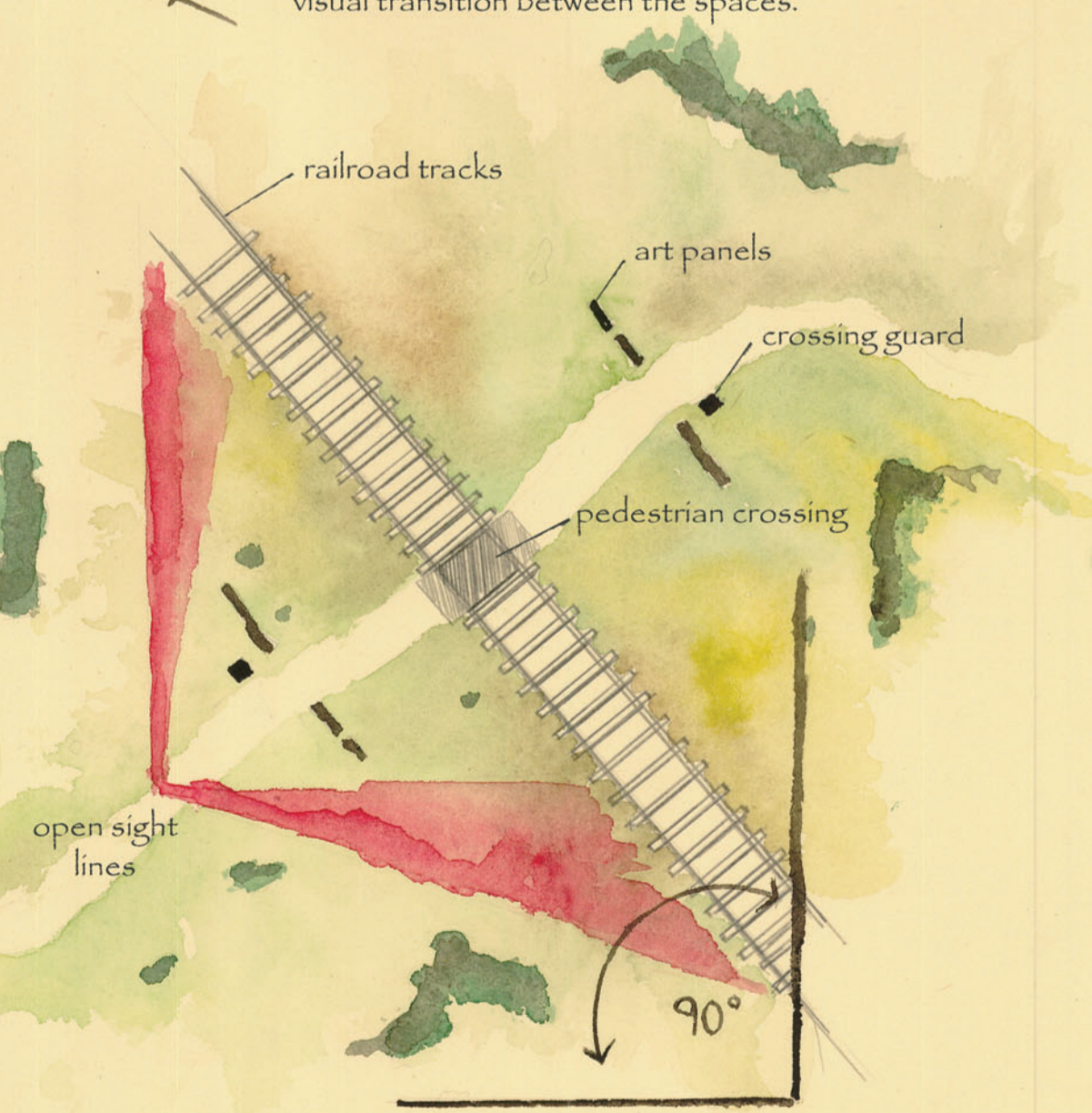


Residential Growth: The drawing above shows an example of a possible view into the proposed multi-family housing that is proposed in the undeveloped agricultural land to the west of the site. Looking over the ravine into the western hillside, apartment complexes and housing will be visible. Similar to the highlighted industrial views, the residential land uses will also be visible helping to create a visual transition between the spaces.

Railroad Crossing Sketch: The drawing below demonstrates the small scale design focused towards the safety of students using this crossing. An idea for an art panel display is an old locomotive from the 1950's. Other art panels might display historical or landscape artwork.



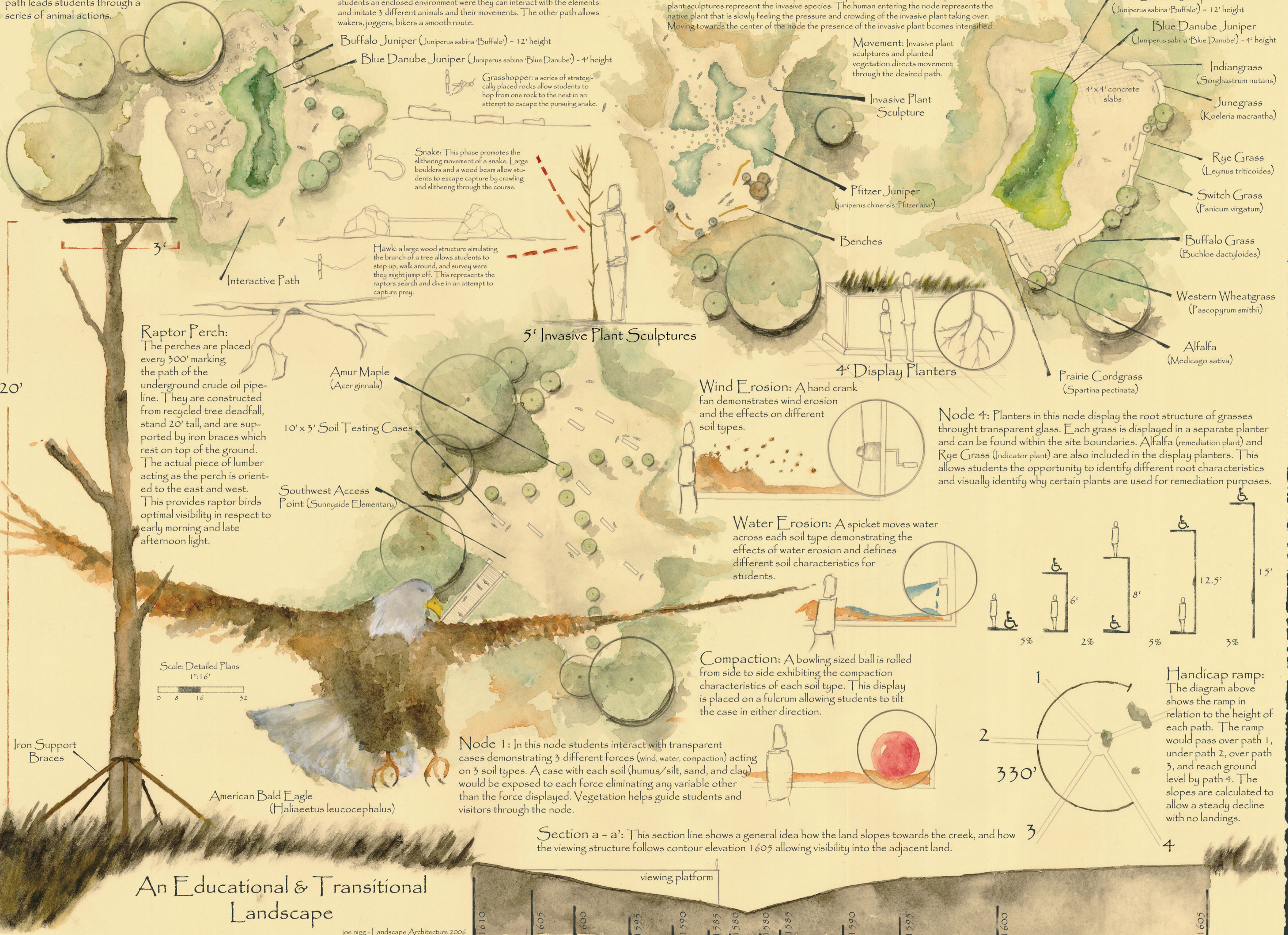
90 Degree Crossing: To establish proper sight lines and to control the crossing of individuals a 90 degree approach was designed. Limited use of vegetation helps establish open sight lines. A rubber grade crossing system is implemented to safely cross pedestrians, cyclists, and the people with disabilities.



Node 2: In an area where habitat is the focus, a path leads students through a series of animal actions.

The split in paths created by the 12' Buffalo Juniper provides elementary students an enclosed environment where they can interact with the elements and imitate 3 different animals and their movements. The other path allows walkers, joggers, bikers a smooth route.

Node 3: The interactive component in this quarter focuses on invasive species. Life size plant sculptures represent the invasive species. The human entering the node represents the native plant that is slowly feeling the pressure and crowding of the invasive plant taking over. Moving towards the center of the node the presence of the invasive plant becomes intensified.



An Educational & Transitional Landscape

joe nigg - Landscape Architecture 2006

Scale: Detailed Plans
1" = 16'
0 8 16 32

Iron Support Braces

American Bald Eagle
(*Haliaeetus leucocephalus*)

Amur Maple
(*Acer ginnala*)

10' x 3' Soil Testing Cases

Southwest Access Point
(Sunnyside Elementary)

Buffalo Juniper (*Juniperus sabina* 'Buffalo') - 12' height

Blue Danube Juniper (*Juniperus sabina* 'Blue Danube') - 4' height

Grasshopper: a series of strategically placed rocks allow students to hop from one rock to the next in an attempt to escape the pursuing snake.

Snake: This phase promotes the slithering movement of a snake. Large boulders and a wood beam allow students to escape capture by crawling and slithering through the course.

Hawk: a large wood structure simulating the branch of a tree allows students to step up, walk around, and survey where they might jump off. This represents the raptors search and dive in an attempt to capture prey.

5' Invasive Plant Sculptures

Movement: Invasive plant sculptures and planted vegetation directs movement through the desired path.

Invasive Plant Sculpture

Pfitzer Juniper
(*Juniperus chinensis* 'Pfitzeriana')

Benches

4' Display Planters

Wind Erosion: A hand crank fan demonstrates wind erosion and the effects on different soil types.

Water Erosion: A spicket moves water across each soil type demonstrating the effects of water erosion and defines different soil characteristics for students.

Compaction: A bowling sized ball is rolled from side to side exhibiting the compaction characteristics of each soil type. This display is placed on a fulcrum allowing students to tilt the case in either direction.

Node 1: In this node students interact with transparent cases demonstrating 3 different forces (wind, water, compaction) acting on 3 soil types. A case with each soil (humus/silt, sand, and clay) would be exposed to each force eliminating any variable other than the force displayed. Vegetation helps guide students and visitors through the node.

Section a - a': This section line shows a general idea how the land slopes towards the creek, and how the viewing structure follows contour elevation 1605 allowing visibility into the adjacent land.

Buffalo Juniper
(*Juniperus sabina* 'Buffalo') - 12' height

Blue Danube Juniper
(*Juniperus sabina* 'Blue Danube') - 4' height

Indiangrass
(*Sorghastrum nutans*)

Junegrass
(*Koeleria macrantha*)

Rye Grass
(*Leymus triticoides*)

Switch Grass
(*Panicum virgatum*)

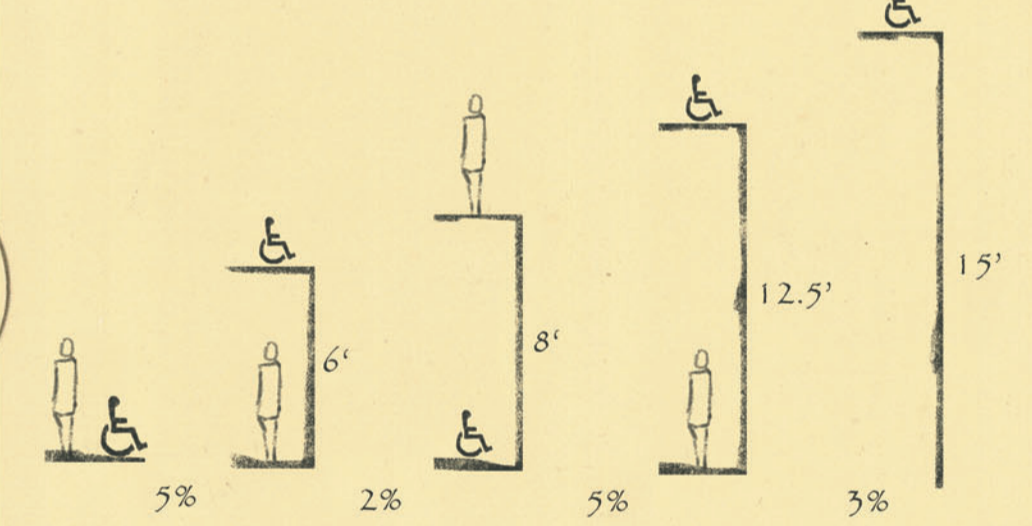
Buffalo Grass
(*Buchloe dactyloides*)

Western Wheatgrass
(*Pascopyrum smithii*)

Alfalfa
(*Medicago sativa*)

Prairie Cordgrass
(*Spartina pectinata*)

Node 4: Planters in this node display the root structure of grasses through transparent glass. Each grass is displayed in a separate planter and can be found within the site boundaries. Alfalfa (remediation plant) and Rye Grass (indicator plant) are also included in the display planters. This allows students the opportunity to identify different root characteristics and visually identify why certain plants are used for remediation purposes.



Handicap ramp: The diagram above shows the ramp in relation to the height of each path. The ramp would pass over path 1, under path 2, over path 3, and reach ground level by path 4. The slopes are calculated to allow a steady decline with no landings.

