# Visual Landscape Management
# Integrated Visual Design of Larger Landscapes

RDI Resource Design Inc

Nadina Lake Photo by Jaret van der Giessen, Houston Forest Products 2007

Ken Fairhurst, R.P.F., RDI Resource Design Inc.
and
Ph.D. Candidate, Faculty of Forestry, University of British Columbia
presented February 14, 2008, Forest Operations Course

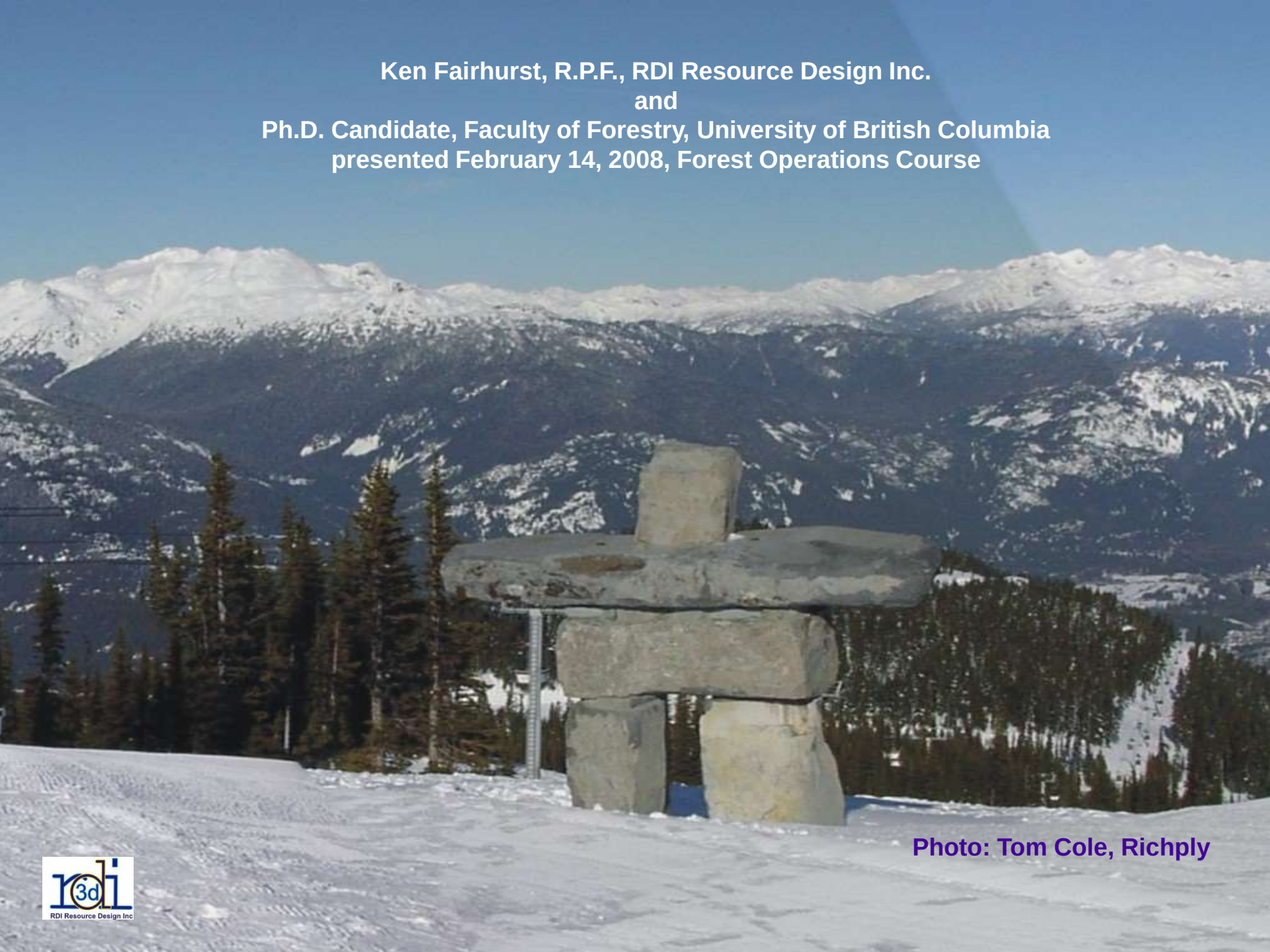

Photo: Tom Cole, Richply

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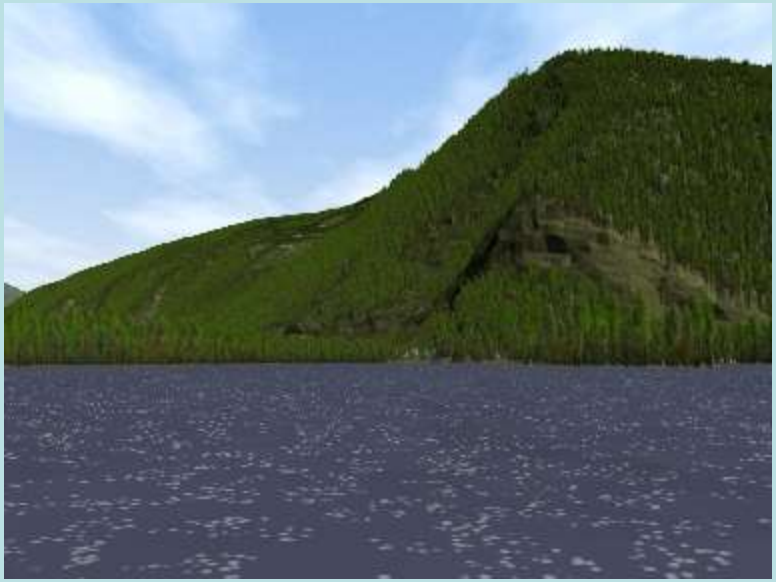
- Key VRM Procedures
  - Inventory and Analysis
  - Design and Assessment
  - Implementation and Monitoring



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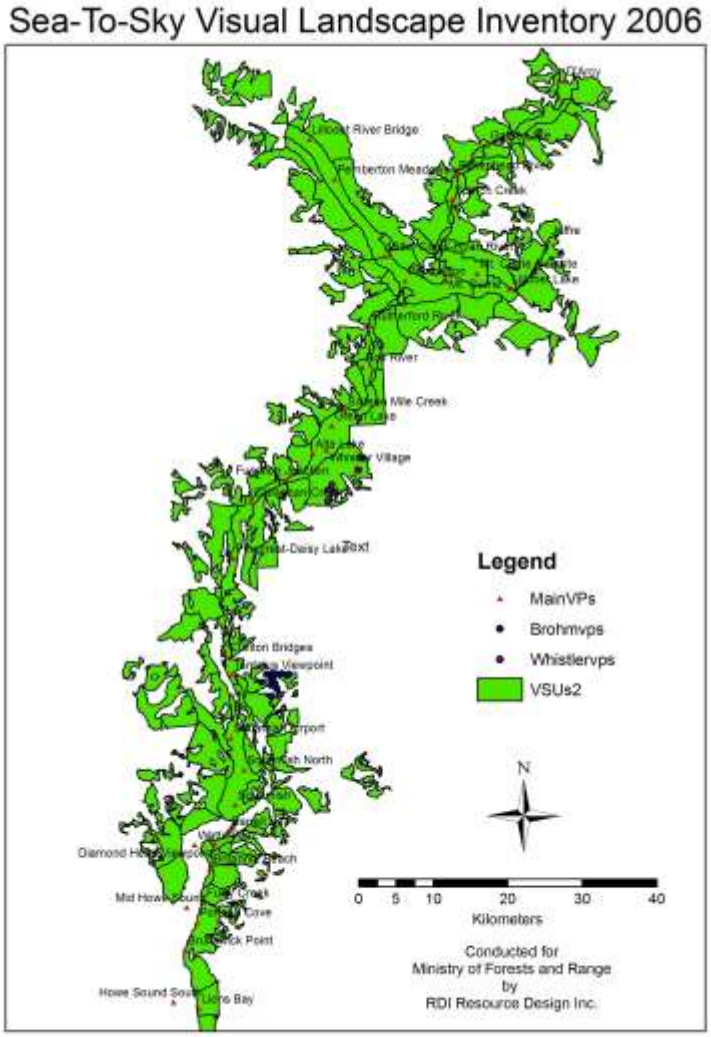
# Inventory and Analysis

- VSUs identified
- Rated for Sensitivity
- Assigned Visual Quality Objectives

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## Visual Sensitivity Unit Classification Form - Page 1

1. Forest District: DSQ — Ministry of Forests and Range
2. Rated by: K. B. Fairhurst — R D I Resource Design Inc, Forest and Land Planning Services
3. Date: 2006/02
4. Project: 2006-02: S2S Frontcountry Zone VLI Update
5. VSA #: 2. Westside Howe Sound Squamish - Tantalus Range
7. VSG #: 2.1 Westside Howe Sound - Tantalus Range - Woodfibre
8. Cross Mapsheet VSU # :
9. BCGS Map # 092G064 ##

| 6. VSU # | 201 |
|---|---|
| M | |
| M H | H M |
| 2 | PR |

VSU Label & Legend: EVC | VAC BR VC VR | VSC rVQC

*Electronic VSU Classification Form produced by RDI Resource Design Inc 2006 using MOFR 1997 Standard*

| Existing Visual | | | | | | | Scores | | Type | EVC Rationale: |
|---|---|---|---|---|---|---|---|---|---|---|
| 11 Scale of Existing Alteration | 0% | 0.1-1.5 | 1.6-7.0 | 7.1 - 18.0 | 18.1 - 30.0 | >30 | | 12 | | hydroline at base; pulp mill |
| EVC Initial Value | P | R | PR | M | MM | EM | | M | | upper blocks white in winter |
| 12 Influence of Visual Landscape Design | H | | M | | L | | N/A | Type: | 1 | Type of Alteration (TA) - see p. 3 and VLI Standards: 12 |
| 13 Influence of Site Disturbance | H | | M | | L | | N/A | | H | |
| 14 Influence of Vegetative Colour & Texture | H | | M | | L | | N/A | Type: | LB | Vegetative : influence type: see VLI Standards: 14 |
| 15 EVC Final Value | P | R | PR | M | MM | EM | | M | | enter final EVC value in VSU label (automatic on e-form) |

| Visual Absorption Capability (VAC) | | | | Scores | | Type | VAC Rationale |
|---|---|---|---|---|---|---|---|
| 16 Slope | H (3) | M (2) | L (1) | 1 | | | also SW and NE aspects |
| 17 Aspect | H (3) | M (2) | L (1) | 2 | | | (if N/A assign 0) |
| 18 Surface Variation | H (3) | M (2) | L (1) | 3 | | | |
| 19 Rock/Soil/Vegetative Variety | H (3) | M (2) | L (1) | 2 | Type: | M-C | Variety type: see VLI Standards: 19 |
| 20a VAC Initial Value | H (10-12) | M (7-9) | L (3-6) | 8 | | | select within range |
| 20b VAC Final Value | H (3) | M (2) | L (1) | 2 | M | | enter final VAC value in VSU label (automatic on e-form) |

| Biophysical Rating (BR) | | | | | | Type | BR Rationale: |
|---|---|---|---|---|---|---|---|
| 21 Slope | H (3) | M (2) | L (1) | 3 | | | |
| 22 Aspect | H (3) | M (2) | L (1) | 2 | | | (if N/A assign 0) |
| 23 Edge | H (3) | M (2) | L (1) | 3 | Edge Type | | A water / landform |
| 24 Topographic Variety | H (3) | M (2) | L (1) | 3 | Type: | H-C | Variety type: see VLI Standards: 24 |
| 25 Vertical Relief | H (3) | M (2) | L (1) | 3 | | | |
| 26 Vegetative Variety | H (3) | M (2) | L (1) | 3 | Type: | H-B | |
| BR Initial Value | H (15-18) | M (10-14) | L (5-9) | 17 | H | | select within range |
| (BR Modifying Factors - add only) | | | | | | | |
| 27 Influence of Rock/Soil | H | M | L | N/A | Type: | N/A | Type: see VLI Standards: 27 |
| 28 Influence of Water | H | M | L | N/A | Type: | H-A | Type: see VLI Standards: 28 |
| 29 Influence of Adjacent Scenery | H | M | L | N/A | | M | |
| 30 BR Final Value | H (3) | M (2) | L (1) | 3 | H | | enter final BR value in VSU label (automatic on e-form) |

Legend: L-A Type selector drop down; 1 Rating selector

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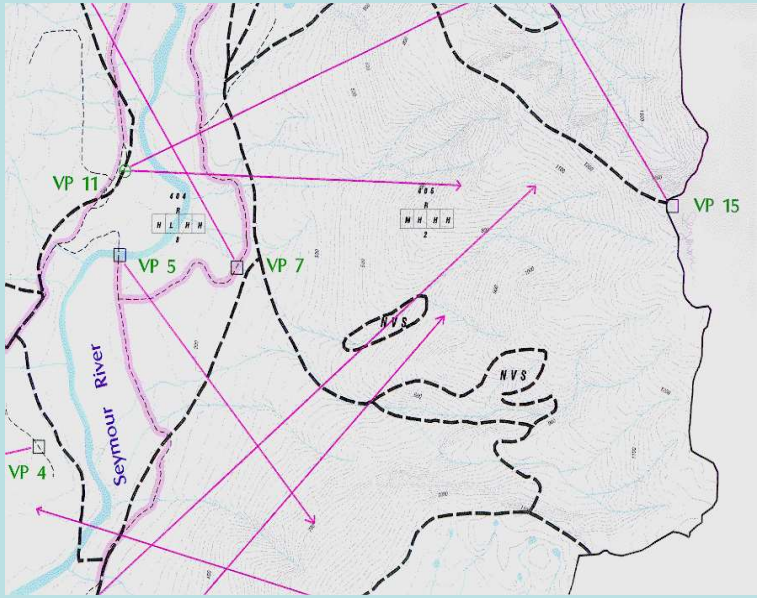
# Visual Landscape Inventory: Visual Sensitivity Unit Classification Form




**VLI provides the means to delineate, describe, and rate the visual landscape**

## Visual Sensitivity Unit Classification Form - Page 2

**Ministry of Forests and Range**

| VSU # | 201 |
|---|---|

*Electronic VSU Classification Form produced by RDI Resource Design Inc 2006 using MOFR 1997 Standard*

| Viewing Condition (VC) | | | | Scores | Type | VC Rationale: |
|---|---|---|---|---|---|---|
| 31 Viewing Distance | H (3) | M (2) | L (1) | 2 | | |
| 32 Viewing Frequency | H (3) | M (2) | L (1) | 3 VPs: | | 117-122 |
| 33 Viewing Duration | H (3) | M (2) | L (1) | 3 Type: | H-B | Duration: see VLI Standards: 33 |
| 34 Viewing Angle | H (3) | M (2) | L (1) | 3 | | |
| VC Initial Value | H (10-12) | M (7-9) | L (4-6) | 11 | | select within range |
| 35 VC Final Value | **H (3)** | **M (2)** | **L (1)** | **3** | **H** | enter final VC value in VSU label (automatic on e-form) |

| Viewer Rating (VR) | | | | Scores | | VR Rationale: |
|---|---|---|---|---|---|---|
| 36 Number of Viewers | H (3) | M (2) | L (1) | 3 Viewer #'s: | H-B | Viewer Numbers: see VLI Standards: 36 |
| 37 Viewer Expectations | H (3) | M (2) | L (1) | 2 Type: | M-B | See VLI Standards: 37 |
| VR Initial Value | H (6) | M (4-5) | L (2-3) | 5 | | select within range |
| 38 VR Final Value | **H (3)** | **M (2)** | **L (1)** | **2** | **M** | enter final VR value in VSU label (automatic on e-form) |

| Visual Sensitivity Class (VSC) Scores | | | | | | |
|---|---|---|---|---|---|---|
| Component Scores | BR | VC | VR | VAC | VSCi Score | VSC Score Formula |
| | 3 | 3 | 2 | 2 | 6 | BR+VC+VR-VAC=VSCi Score |

| Visual Sensitivity Class (VSC) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| using VSCi Score: | 8+ | 6 to 7 | 3 to 5 | 1 to 2 | 0 | 6 | | VSC Rationale: see page 4 |
| VSC Initial Value: | VSC 1 | VSC 2 | VSC 3 | VSC 4 | VSC 5 | 2 | | VSCi score from above |
| 39 VSC Final Value | VSC 1 | VSC 2 | VSC 3 | VSC 4 | VSC 5 | 2 | | enter VSCi value related to VSCi score above |
| | | | | | | | | select final VSC, enter rationale on page 4, enter final VSC value in VSU label (automatic on e-form) |

| Other (Optional) | | | | | Type | Other Rationale: |
|---|---|---|---|---|---|---|
| 40 Years to VEG | < 5 years | 5-10 years | > 10 years | N/A | N/A | See VLI Standards: 40 |
| 41 Visual Recovery | H | M | L | | M-A | See VLI Standards: 41 |
| 42 Reh./Enh. | RH | EH | N/A | N/A | | |

**Recommended Visual Quality Class (rVQC)**

43 rVQC

| VSC (final) | Typical Initial rVQC Range | | | | | rVQC Rationale: |
|---|---|---|---|---|---|---|
| | P | R | PR | M | MM | VSC: 2 |
| 1 | <------> | | | | | initial rVQC: PR |
| 2 | | <------> | | | | select initial rVQC within appropriate range in matrix |
| 3 | | | <------> | | | enter rationale for final rVQC selection on page 4 |
| 4 | | | | <------> | | |
| 5 | | | | <------> | | enter final rVQC value in VSU label (automatic on e-form) |
| | | | | | | Final rVQC: PR |

**Legend**

<------> indicates most common part of range for rVQC selection

< > indicates less common part of range for rVQC selection

lower-end (most restrictive) — upper-end (less restrictive)

*(terms apply both within a given VQC and across VQCs in VSC range)*

L-A Type selector drop down

1 Rating selector

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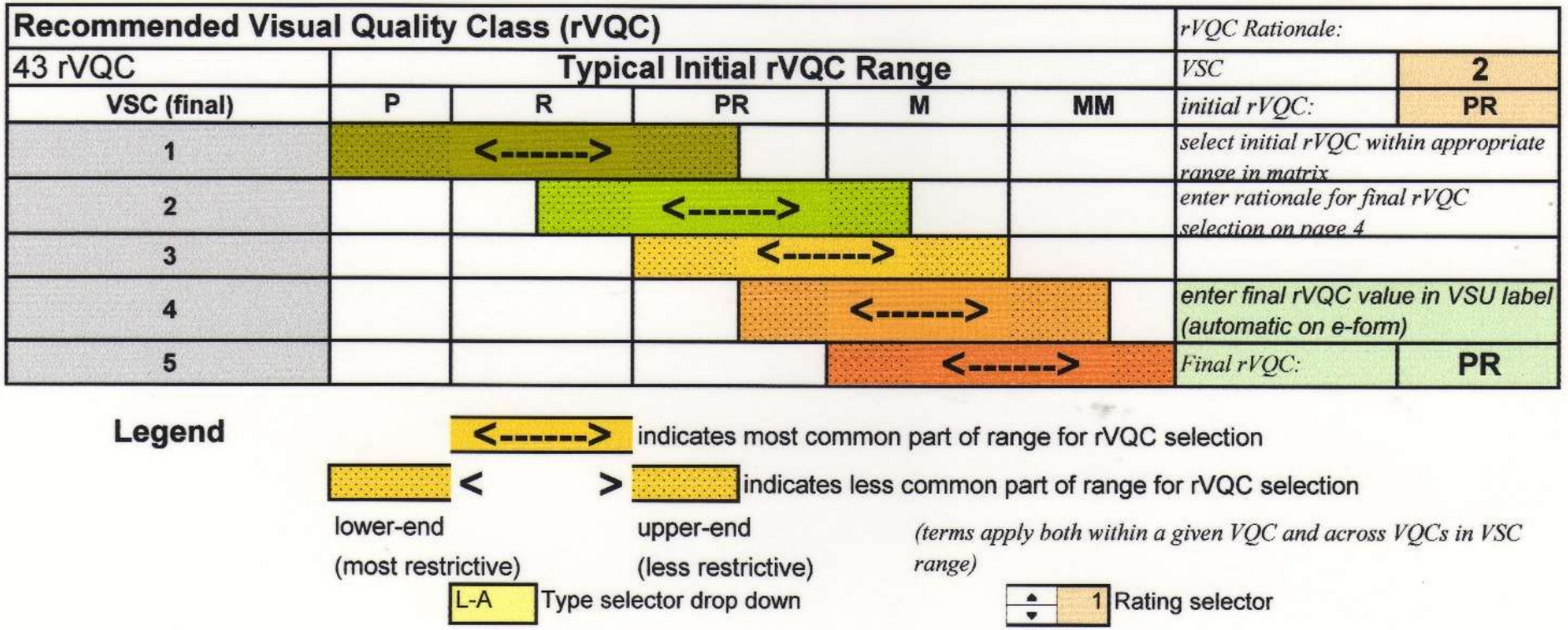
*the Forest and Range Practices Act (FRPA) identifies scenery as one of the 11 forest values to be managed and includes provisions to establish visual quality objectives (VQOs). The Minister or designate will establish VQOs.* ***rVQCs are just the first step.***

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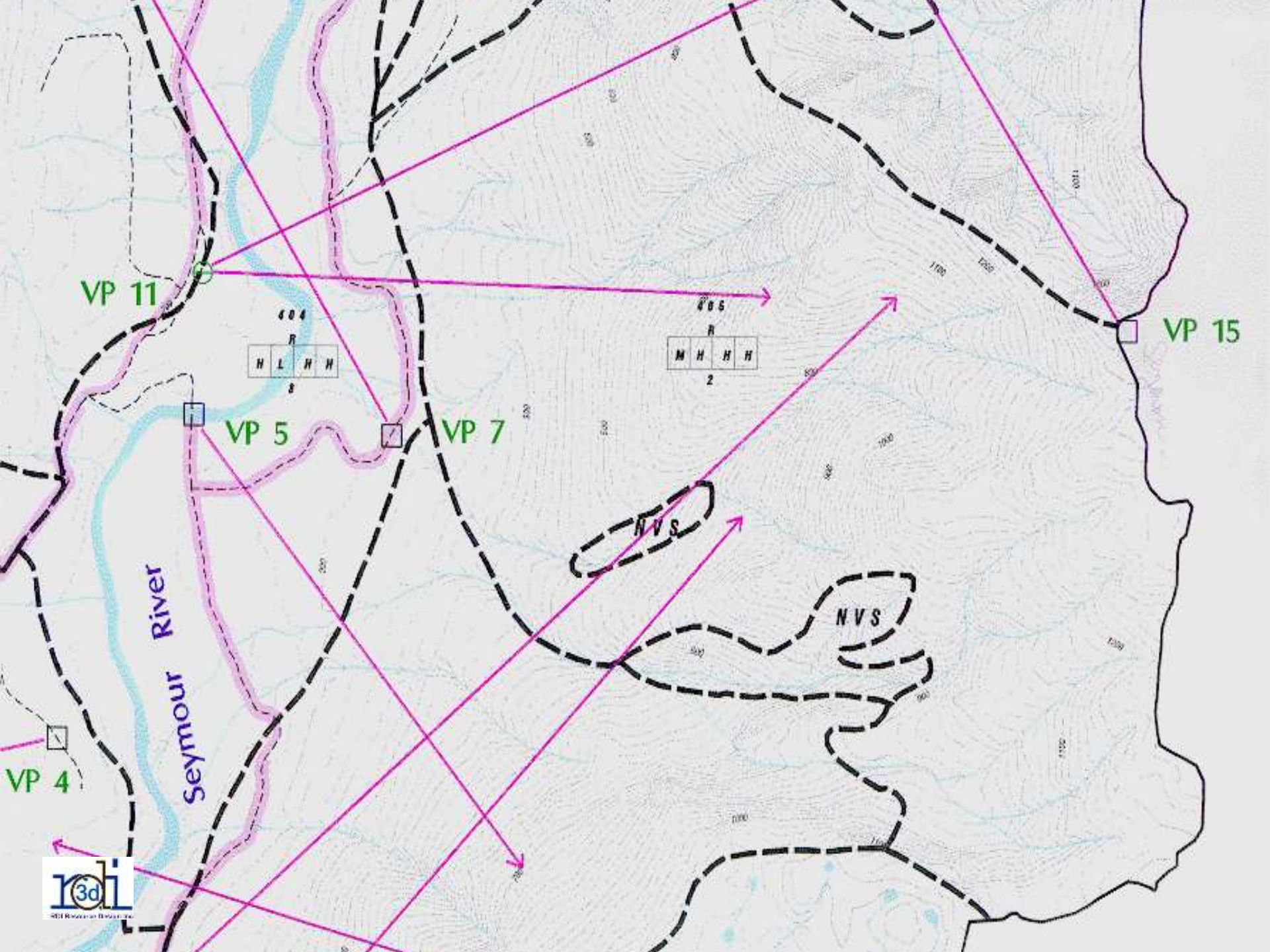
VP 11
VP 5
VP 7
VP 15
VP 4
NVS
NVS
Seymour River

# Visual Sensitivity Unit

- EVC – Existing Visual Condition
- VAC – Visual Absorption Capability
- BR – Biophysical rating
- VC – Viewing Condition
- VR – Viewer Rating
- VSC – Visual Sensitivity Class

**405**
**R**
**M H H H**
**2**

**VSU#**
**EVC**
**VAC BR VC VR**
**VSC**

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# Design and Assessment

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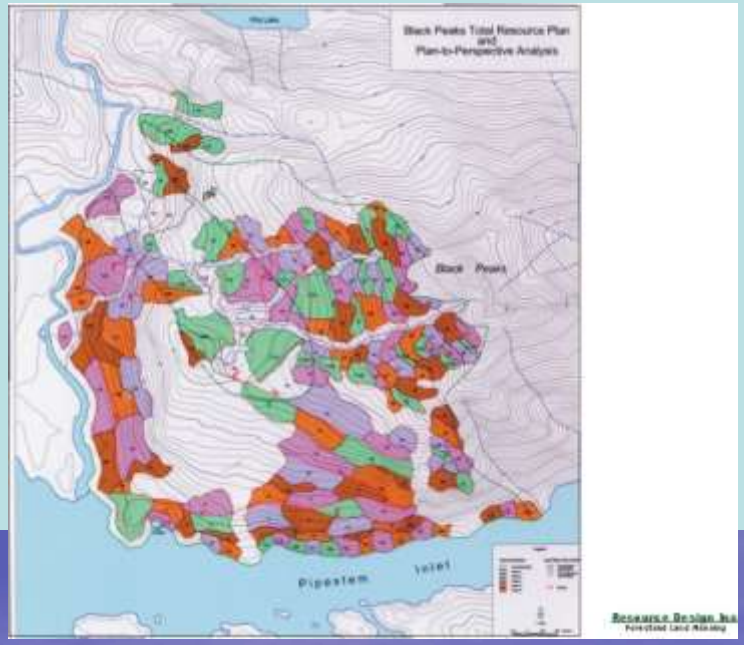


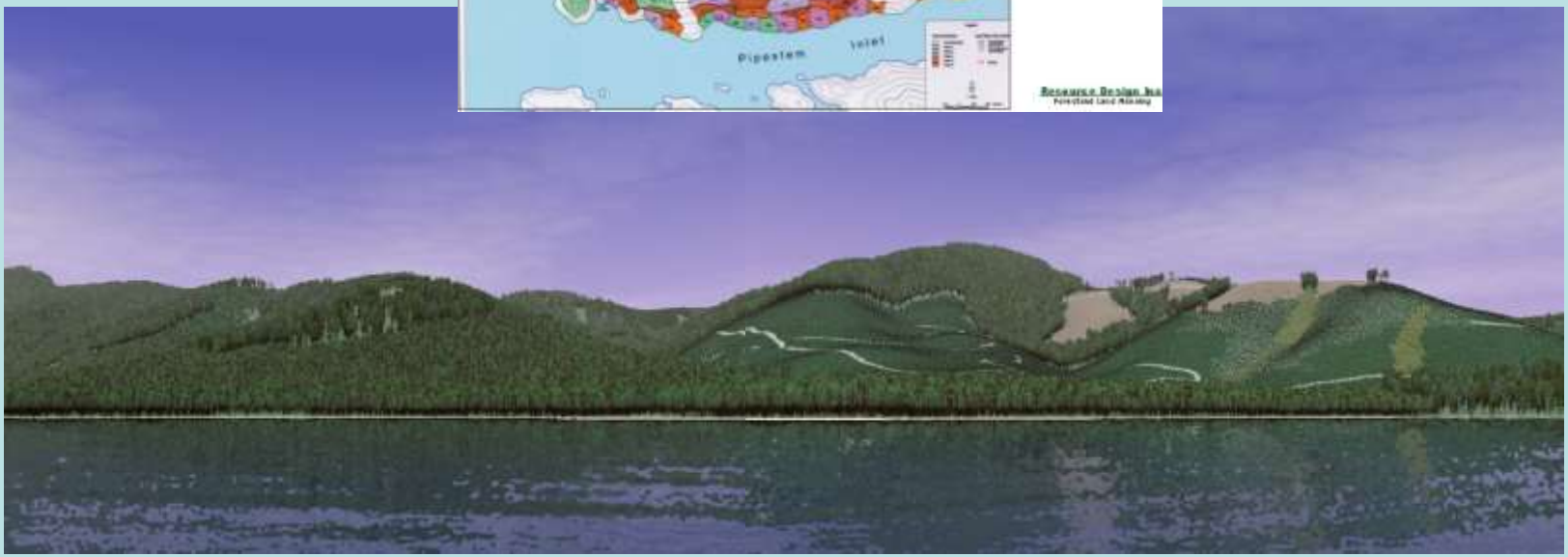

**Design plans are prepared as part of the Forest Stewardship Plan, signed by a Register Professional Forester; not submitted for review by agencies unless requested.**

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The evaluation is conducted at all important viewpoints. In addition, the existing non-visually effective greened-up (non-VEG) alterations within, and immediately adjacent to, the unit must be considered in this evaluation. Three variables are used to assess the visual simulation(s):

1. **Basic VQO definition**
2. **Visual design**
3. **Numerical assessment**

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1. **Basic VQO definition:** Does a proposed operation meet the basic visual quality objective definition?

2. **Visual design:** Does a proposed operation exhibit elements of good visual design?

3. **Numerical assessment**: In perspective view, what proportions of the landform or unit are represented by existing non-visually effective green-up alterations and a proposed operation?

   What percent volume or stems will be left in the block?
   What level of site disturbance will be present?

In order to receive approval, it is imperative that all existing and proposed operations meet the basic VQO definition and exhibit elements of good visual design. The numerical assessment should be used only as a yardstick to help determine into which class the cumulative alterations on a landscape fall.

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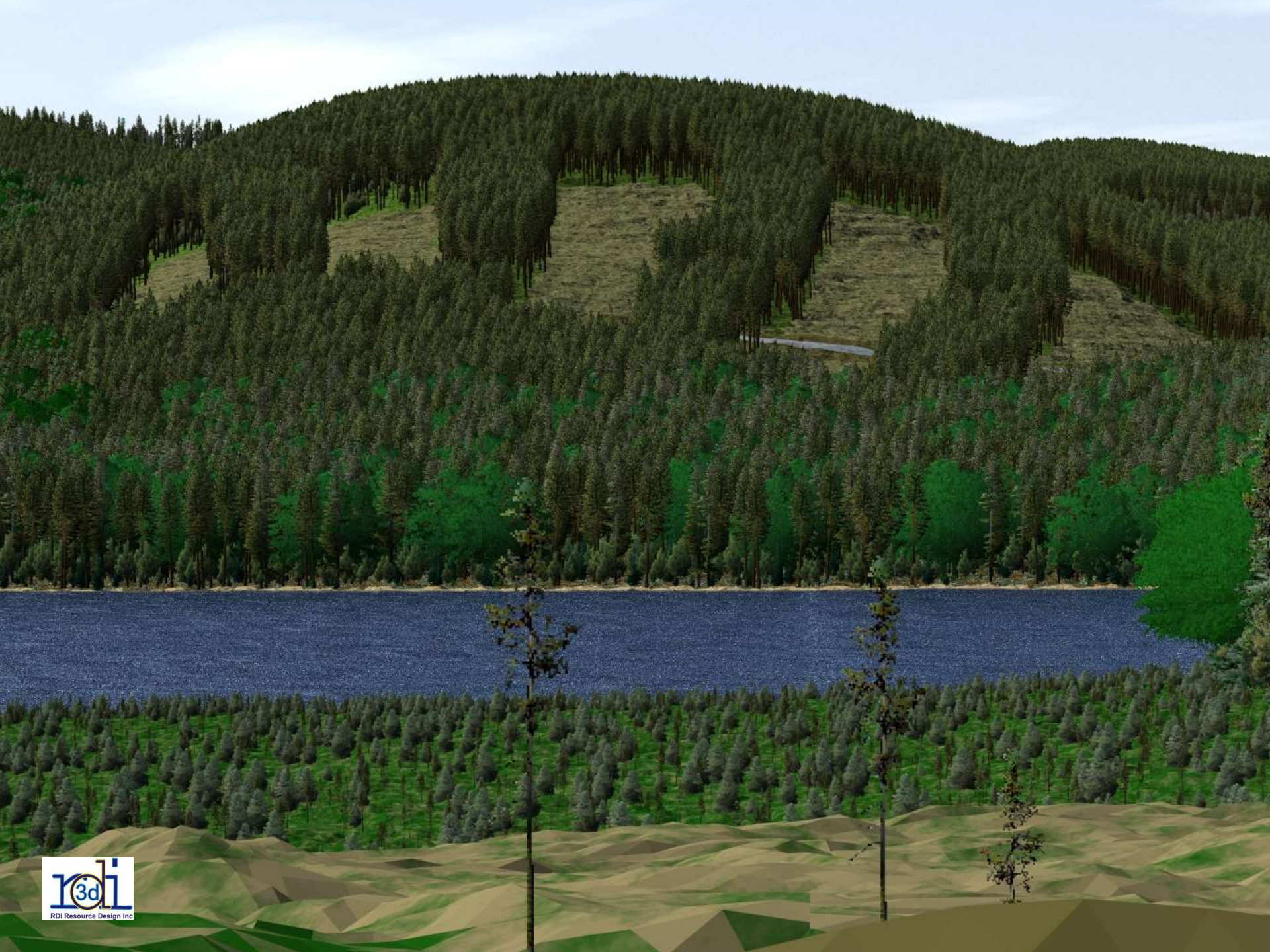
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## FOREST PLANNING AND PRACTICES REGULATION

### 1.1 Categories of Visually Altered Landscape

**P – Preservation: very small in scale, not easily distinguished**
**R – Retention: difficult to see, small in scale , natural appearance**
**PR – Partial Retention: easy to see, small to medium scale, natural shape**
**M – Modification: very easy to see, large scale and natural appearance or small but rectangular**
**MM – Maximum Modification: very large scale, rectilinear, may be both**

***See: Procedures for Effectiveness Evaluation of Visual Quality Management***

***http://www.for.gov.bc.ca/HFP/frep/repository/vis_procedure.pdf***

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# VQO Percent Alteration

Visual Quality Objective (VQ0)

| | |
|---|---|
| Preservation | 0 |
| Retention | 0–1.5 |
| Partial Retention | 1.6–7.0 |
| Modification | 7.1–18.0 |
| Maximum Modification | 18.1–30.0 |

Percentages apply to the visible green portion of the landscape in perspective view

Rock and permanent ice are excluded from the calculation.

Predictions based on percent alteration in perspective view.

Percent Alteration of Visual Landscape or Landform in non-vegetated state

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# Allowances and Exceptions

Forest Stewardship Plan Category of Alteration Definitions for Visual Quality

FSP Sections 4.6.1 to 4.6.5 address constraints affecting areas with the Categories of Alteration of Partial Retention and Modification. Sections 4.6.4 and 4.6.5 describe allowances and exceptions. These are discussed when assessing the definition, design, and percent alteration of the proposed alteration in relation to existing alteration in the following sections of the VIA.

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## Allowances and Exceptions

Section 4.6.4 allows for a road or cutblock within a Category of Alteration that may be rectilinear or geometric in shape or have angular characteristics and not appear natural in shape where and to the extent: (a) the cutblock or road borders a: (i) previously harvested cutblock in which stumps and course woody debris created by that harvesting are no longer visible from the viewpoint; (ii) road; (iii) structure; (iv) other disturbance; or (v) natural feature, that is rectilinear, geometric in shape, or otherwise does not appear natural; or (b) there is no other practicable option having regard to: (i) the size, topography or engineering constraints of the cutblock or road; or (ii) the safety of workers or road users.

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## Allowances and Exceptions (cont'd)

Section 4.6.5 provides exceptions where alternative characteristics are permitted. if (a)(i) the timber is under immediate threat from: (A) insects; (B) disease; or (C) decay due to blowdown; or (ii) it is not practicable to apply the result or strategy in Paragraph 4.6.2 to such harvesting or construction, the FSP holder (c) may design a road or cutblock consistent with characteristics of alteration different from those that would otherwise apply under Paragraph 4.6.2; and (d) will, if it applies subparagraph (c), design a road or cutblock to be consistent with the characteristics of alteration that, under Paragraph 4.6.2, apply to the **first Category of Alteration in the table in Paragraph 4.6.2 below** the Category of Alteration that would otherwise apply that will enable the harvesting of timber or road construction in a **practicable** manner.

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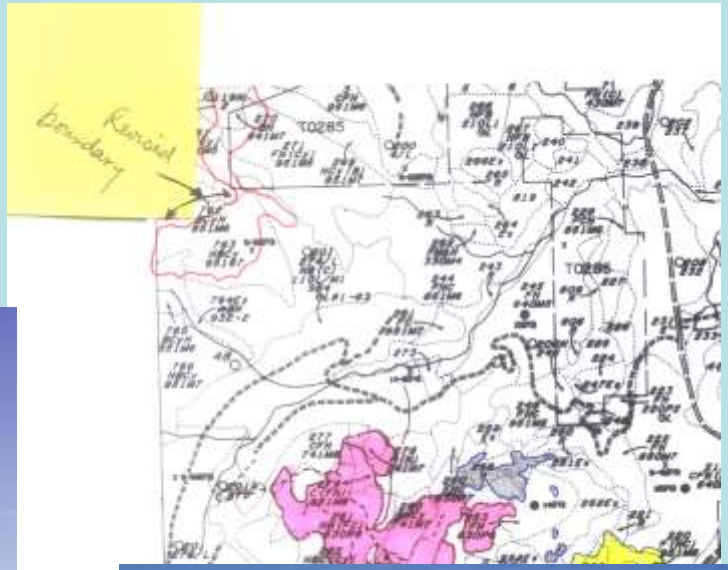
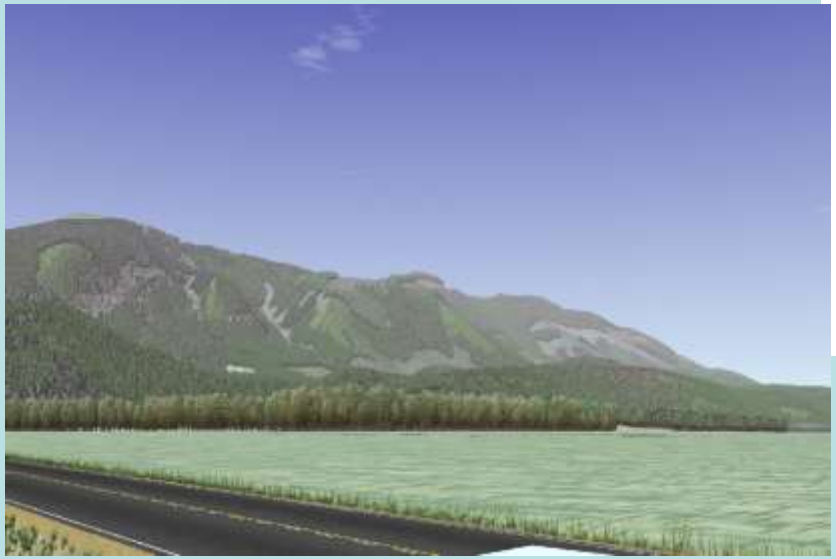
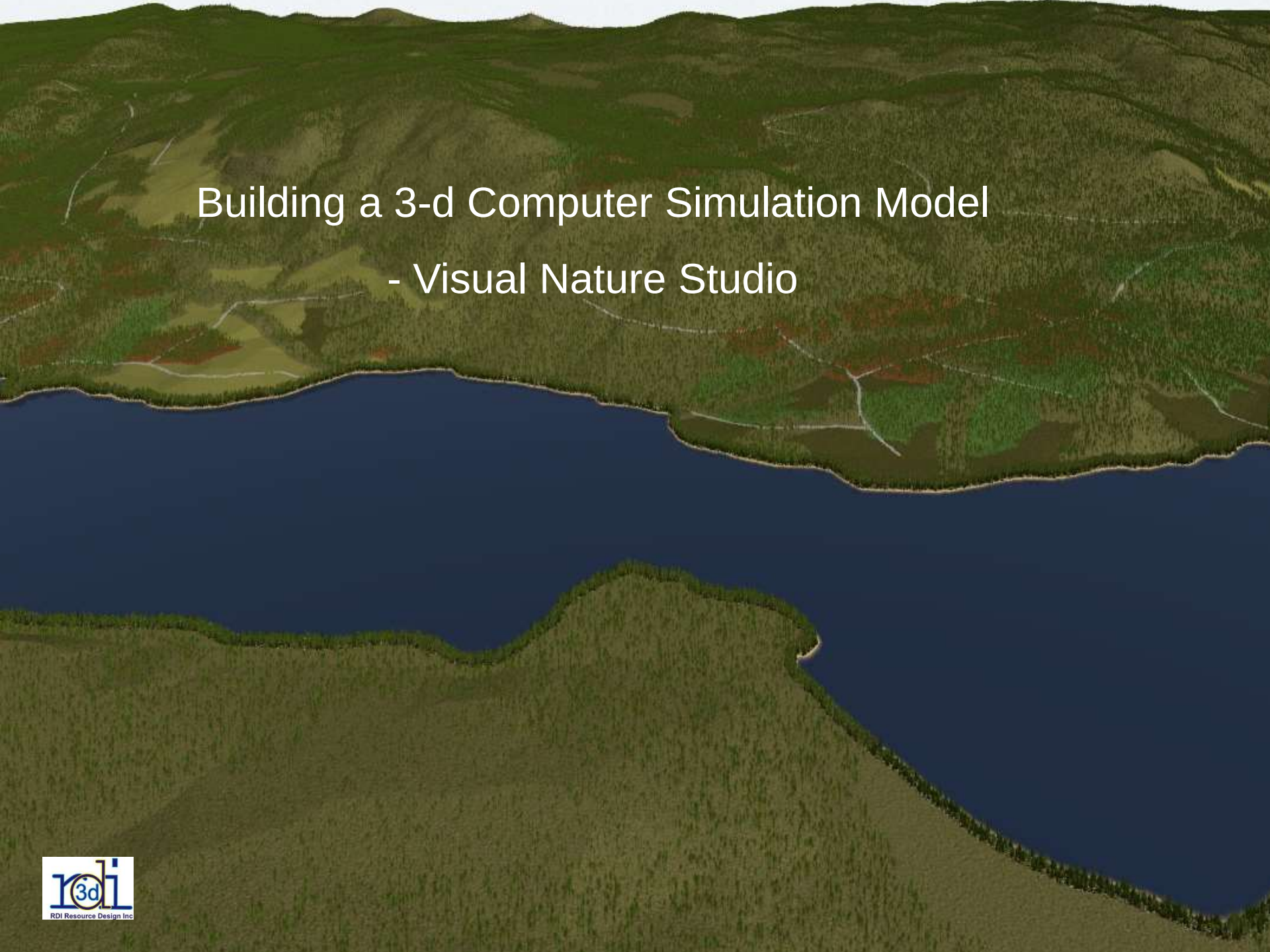
- Implementation and Monitoring



**Under FRPA, professional accountability is relied upon. Compliance and Enforcement staff review on-ground results.**


Building a 3-d Computer Simulation Model
- Visual Nature Studio
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# Integrated Visual Design Planning (IVDP)

- Integrated Visual Design is a BC Ministry of Forests and Range planning method for visually sensitive landscapes that incorporates environmental, operational and economic constraints and opportunities to sequentially plan a full rotation (at least 100 years) while meeting the visual Quality Objectives (VQOs) established for a Scenic Area.

more info at http://www.for.gov.bc.ca/hfp/publications/00040/FIA-Standards-Final.pdf

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# Nadina Lake Integrated Visual Design Plan Area

**Mountain Pine Beetle Invasion in Northern British Columbia**
**Expected Loss: of 14,000,000 hectares (32,000,000 acres)**

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# Nadina Lake Scenic Area IVDP

- **RDI used conventional ArcGIS to produce viewshed and times seen mapping, slope analysis, and environmental constraints and opportunities analyses.**

- **RDI further stratified the landscape based on cumulative apparency (visual risk) from a set of viewpoints using Ken Fairhurst's UBC Faculty of Forestry Ph.D. Dissertation Research Model called GEOptics.**

- **GEOptics, and all visual prediction simulations, modeled in Visual Nature Studio.**

- more info at www.GEOptics.com

# Innovative Approach to IVDP

- The GEOptics GIS layer is produced in Visual Nature Studio by producing cumulative surface illumination from light sources located at each key observation point.
- The greater the illumination, the greater the visual risk.
- GEOptics thereby accounts for much of the variability in how elements in the landscape are seen from multiple viewing locations.

more info at www.GEOptics.com

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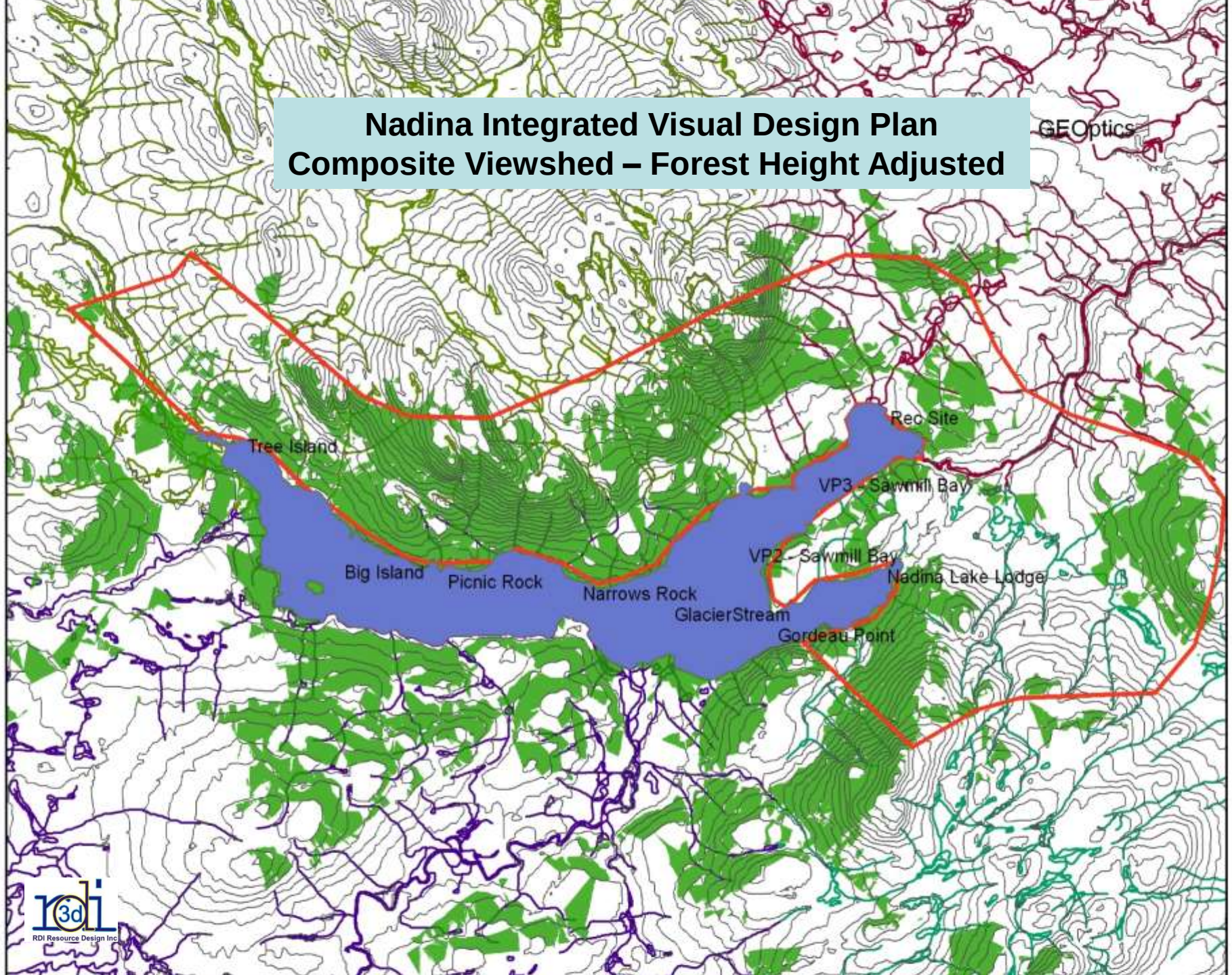
# Nadina Integrated Visual Design Plan
# Composite Viewshed – Forest Height Adjusted

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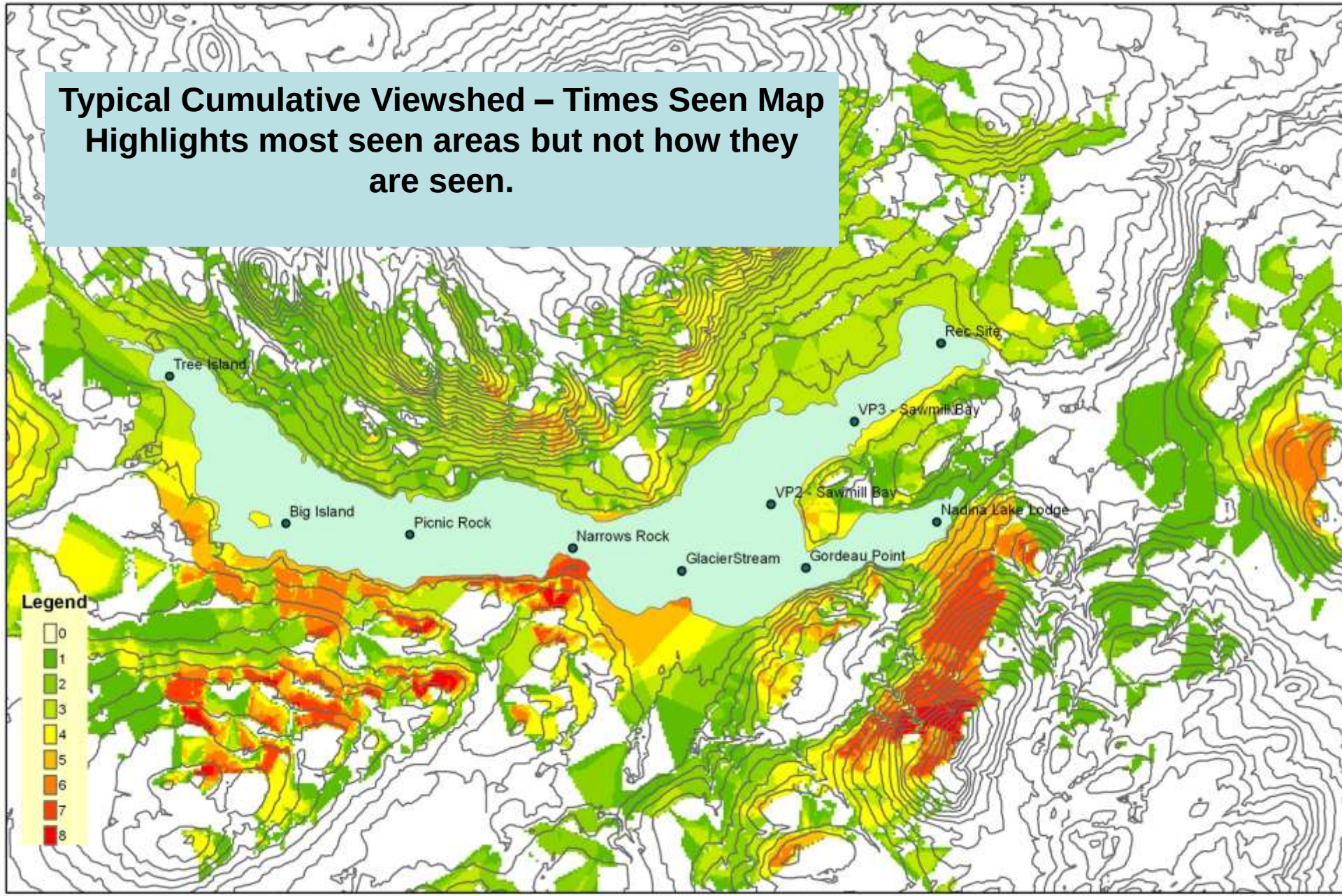
**Typical Cumulative Viewshed – Times Seen Map**
**Highlights most seen areas but not how they are seen.**




N

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Nadina Integrated Visual Design - Cumulative Viewshed (times seen)

Produced by:
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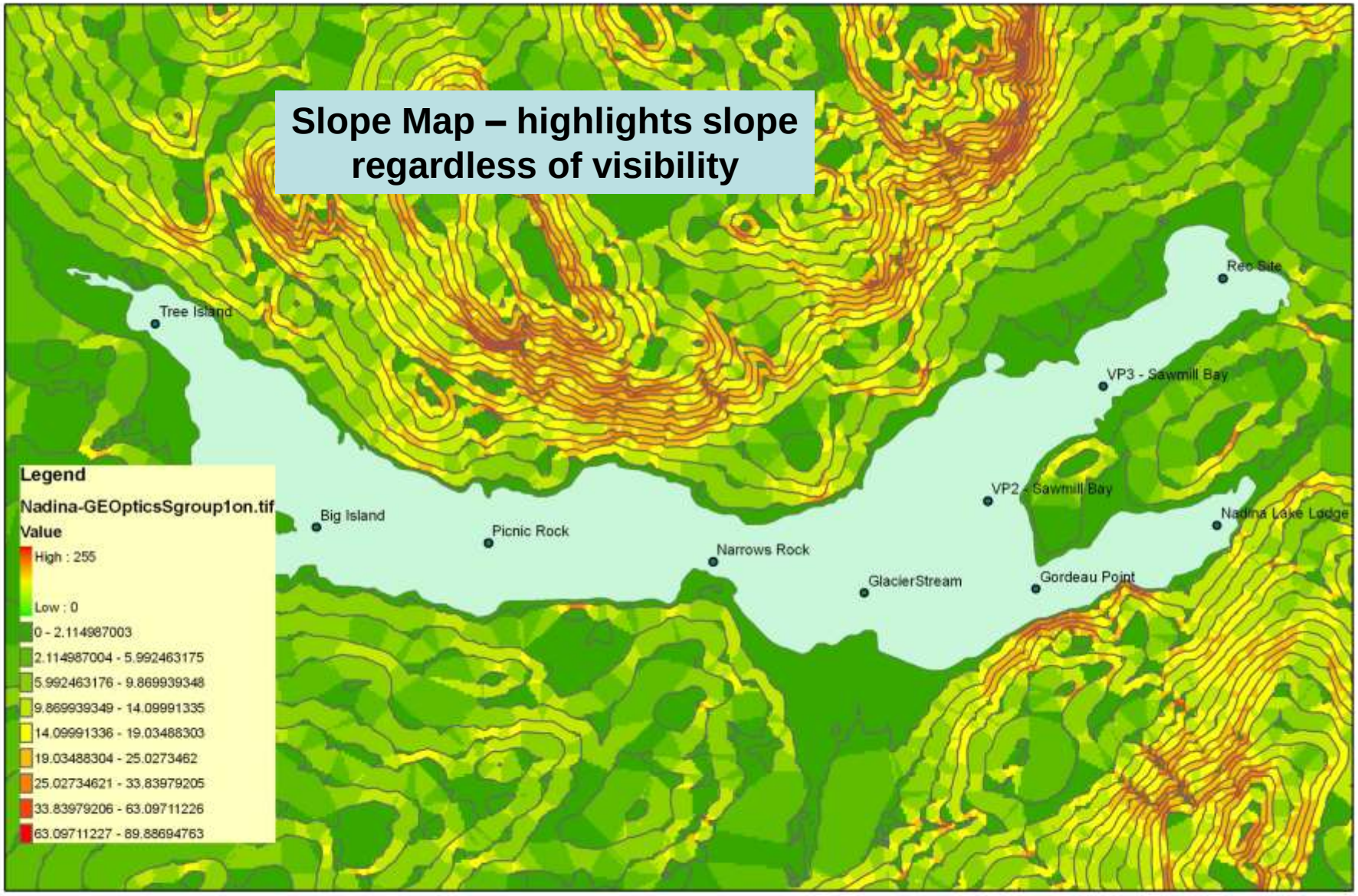


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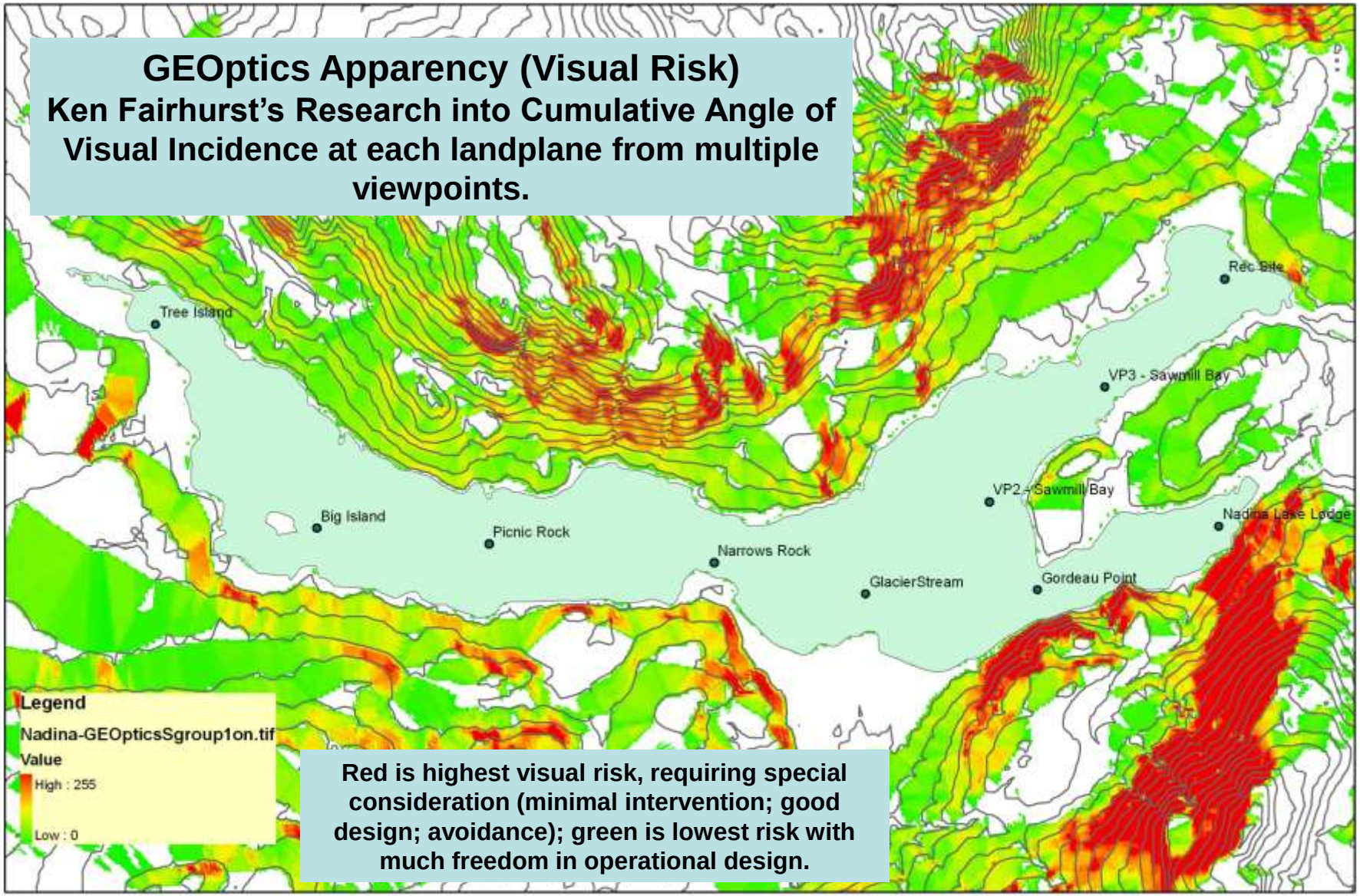
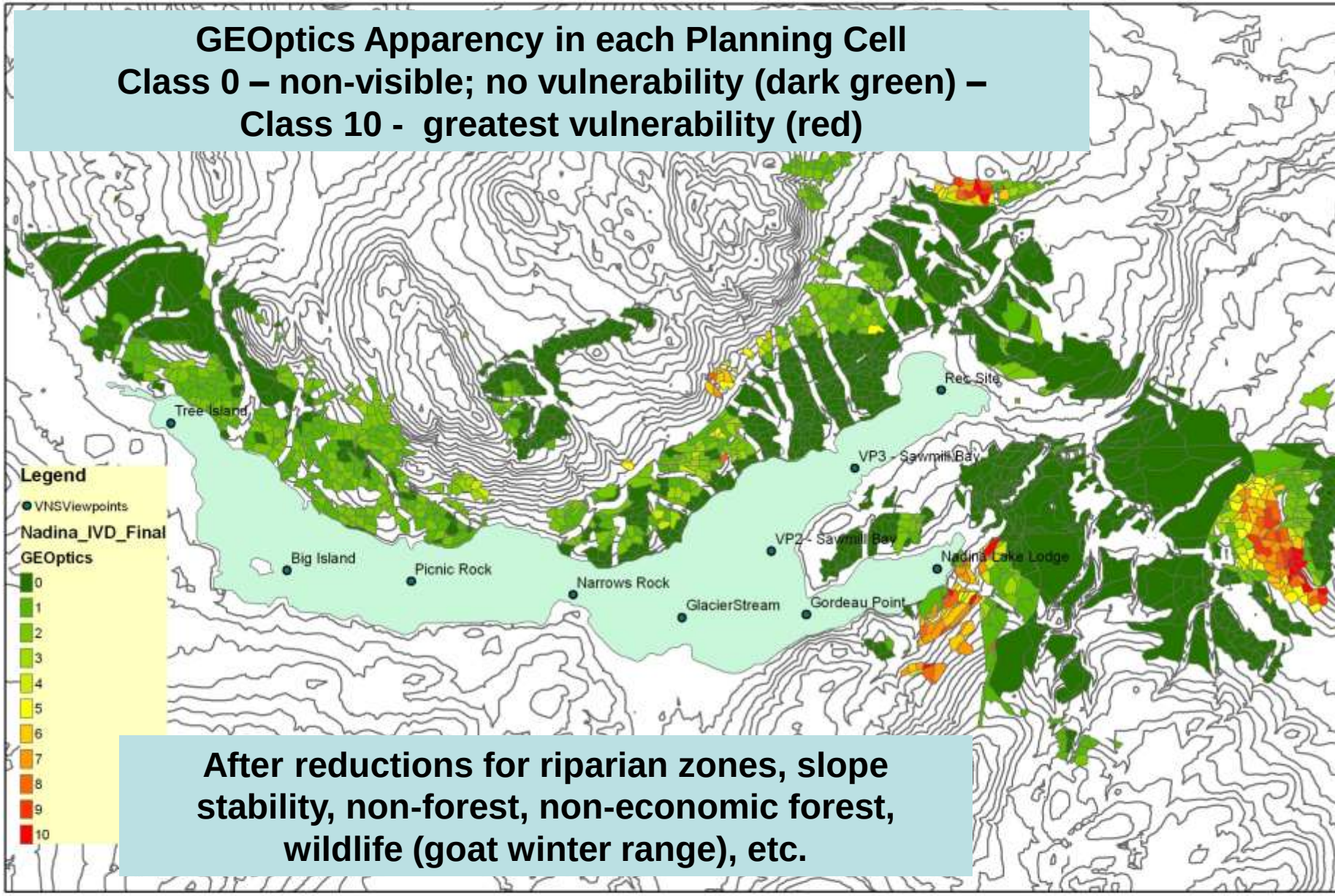
Nadina Integrated Visual Design - Slope Map (20m)

Produced by:
RDI Resource Design Inc
February 7 2007


GEOptics Apparency (Visual Risk)
Ken Fairhurst's Research into Cumulative Angle of Visual Incidence at each landplane from multiple viewpoints.
Tree Island
Rec Site
VP3 - Sawmill Bay
VP2 - Sawmill Bay
Nadina Lake Lodge
Big Island
Picnic Rock
Narrows Rock
GlacierStream
Gordeau Point
Legend
Nadina-GEOpticsSgroup1on.tif
Value
High : 255
Low : 0
Red is highest visual risk, requiring special consideration (minimal intervention; good design; avoidance); green is lowest risk with much freedom in operational design.
N
West Fraser Mills Ltd.
Nadina Integrated Visual Design - GEOptics Apparency Raster
Produced by:
RDI Resource Design Inc
February 7 2007

# GEOptics Apparency in each Planning Cell
# Class 0 – non-visible; no vulnerability (dark green) – Class 10 - greatest vulnerability (red)




**After reductions for riparian zones, slope stability, non-forest, non-economic forest, wildlife (goat winter range), etc.**

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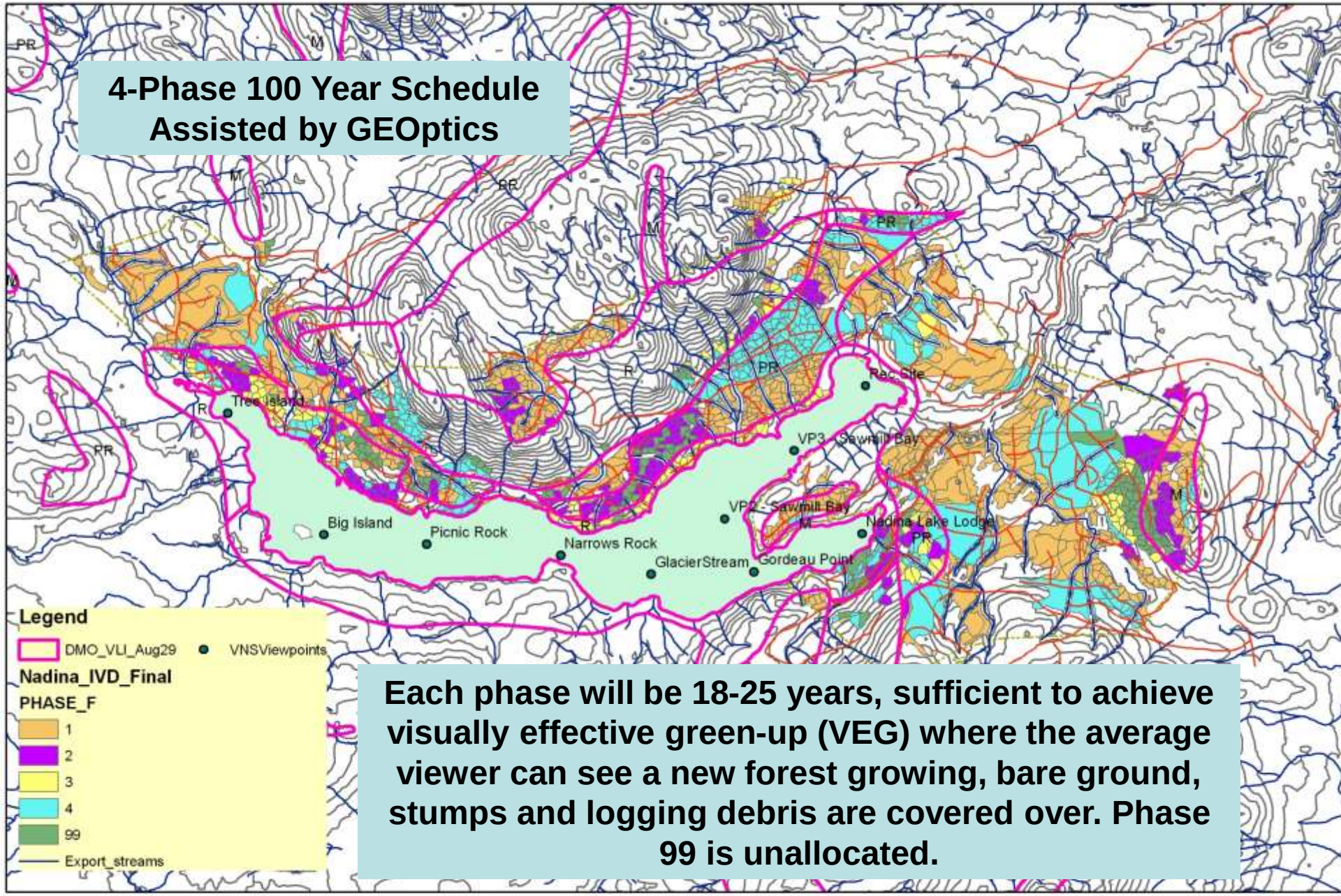
Nadina Integrated Visual Design - GEOptics Apparency by Planning Cell

Produced by:
RDI Resource Design Inc
February 5, 2007

# 4-Phase 100 Year Schedule Assisted by GEOptics




**Each phase will be 18-25 years, sufficient to achieve visually effective green-up (VEG) where the average viewer can see a new forest growing, bare ground, stumps and logging debris are covered over. Phase 99 is unallocated.**

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**Results**

In all, 1957 individual harvestable planning units comprising 2052 hectares (5071 acres@ 2.2 acres/hectare) were assigned to phases using visual design principles:

| Phase | Units | Area (ha.) | Volume (m3) | |
|---|---|---|---|---|
| 1 | 899 | 1006 | 265,905 | |
| 2 | 314 | 216 | 56,987 | |
| 3 | 195 | 159 | 44,606 | |
| 4 | 373 | 526 | 174,925 | |
| 99 | 176 | 145 | 43,079 | |
| Total | 1957 | 2052 | 585,502 | (1,381,668 mfbm) |

1MFBM = 2.3598 **m3**

Note: Phase 99 is unallocated.

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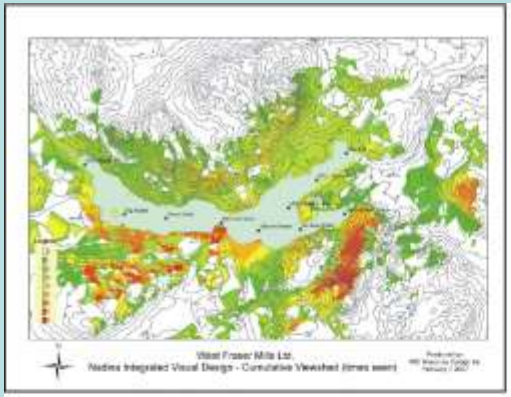
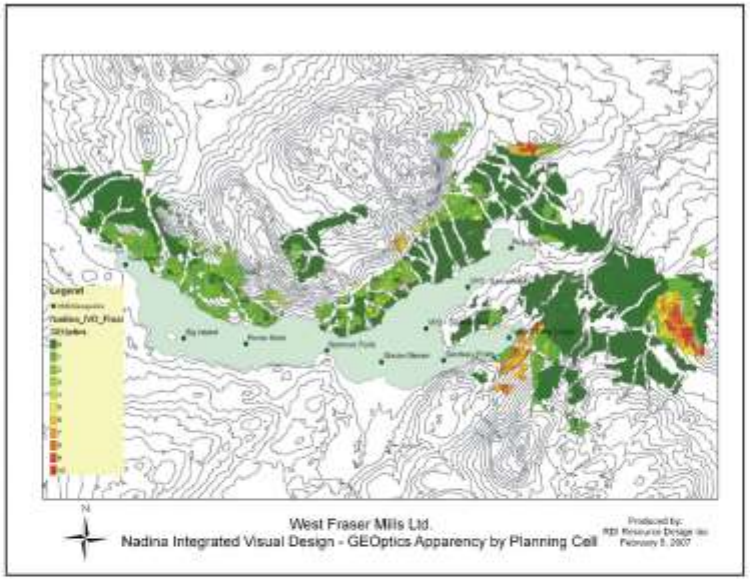
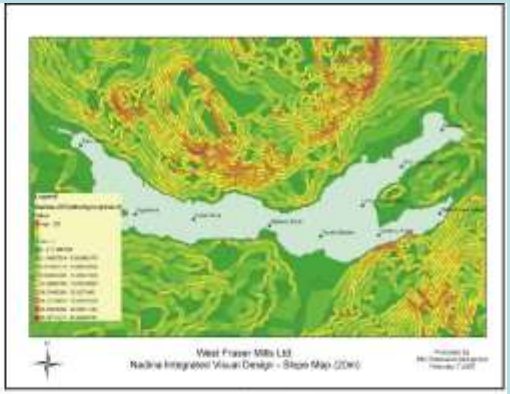
# Nadina Integrated Visual Design Plan

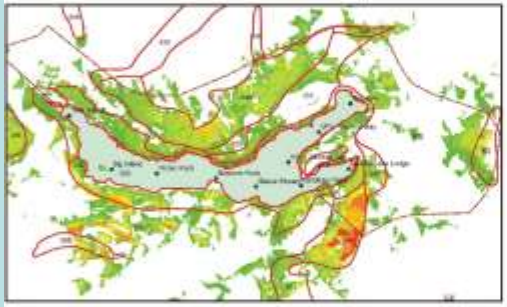


Viewshed - Times-seen Map



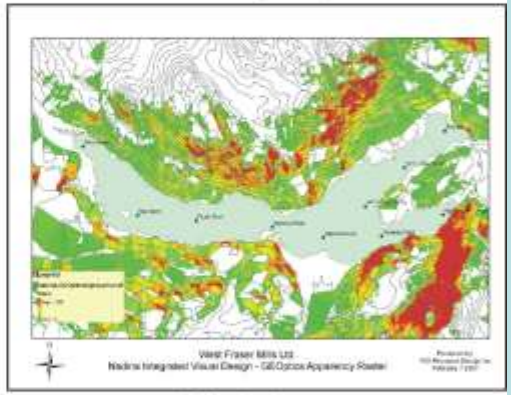
Slope Map



Viewshed - Times-seen Map - Forest Height Adjusted with VSU and Scenic Area Overlays

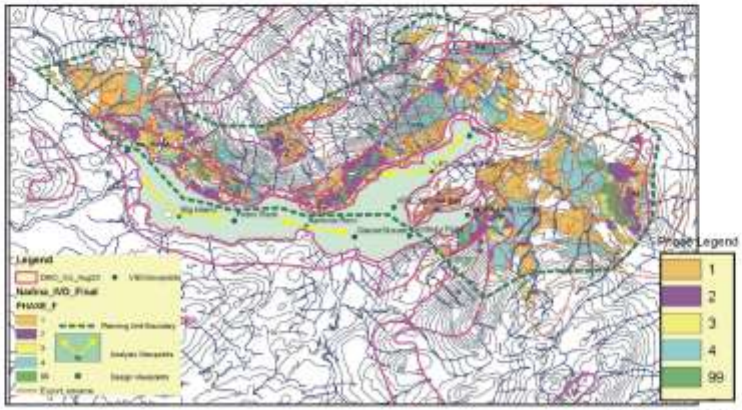
Composite viewshed analysis was conducted in ArcMap 9.1 3D Analyst. The representation provides a relative importance weighting based on the number of times each pixel is seen from the array of viewpoints which were assigned an elevation of 2m above lake level. The top viewshed was produced with bare terrain; the lower viewshed was adjusted for forest height. The adjusted viewshed can be compared with the Visual Sensitivity Units created in the Visual Landscape Inventory. The key units are:

358 (R) - shorezone around most of Nadina Lake
349 (R) - main north hill
351 (PR) - north-east flats in Sawmill Bay
348 (PR) - small north-east hill in Sawmill Bay
282 (M) - knoll on Gordeau Bay peninsula
280 (PR) - south-east portion of south hill, Gordeau Bay
285 (R) - south hill, Gordeau Bay
362 (M) - far east hill
363 (NVS) - area below 349, not visually sensitive
692 (NVS) - area below 349 and all other NVS



GEOptics Apparency

GEOptics Apparency is the term assigned to K.B. Fairhurst's Ph.D. Dissertation research model that gathers cumulative visual incidence angles from landscape control points. When each planning cell is classified by GEOptics rating (0-10), the relative visual vulnerability across the entire planning area is known. Class 0 has no apparency. Planning cells in this category may be scheduled at any time without influence on visual quality. As apparency increases, visual vulnerability increases, and meeting the VQO is more difficult, requiring detailed design and scheduling over time. Eight LCPs were used in the GEOptics analysis, covering all VNS viewpoints except Glacier Stream and Gordeau Point which were derived for additional plan checking after the GEOptics analysis was completed. More information about GEOptics is available at www.GEOptics.com




Nadina IVD Phases

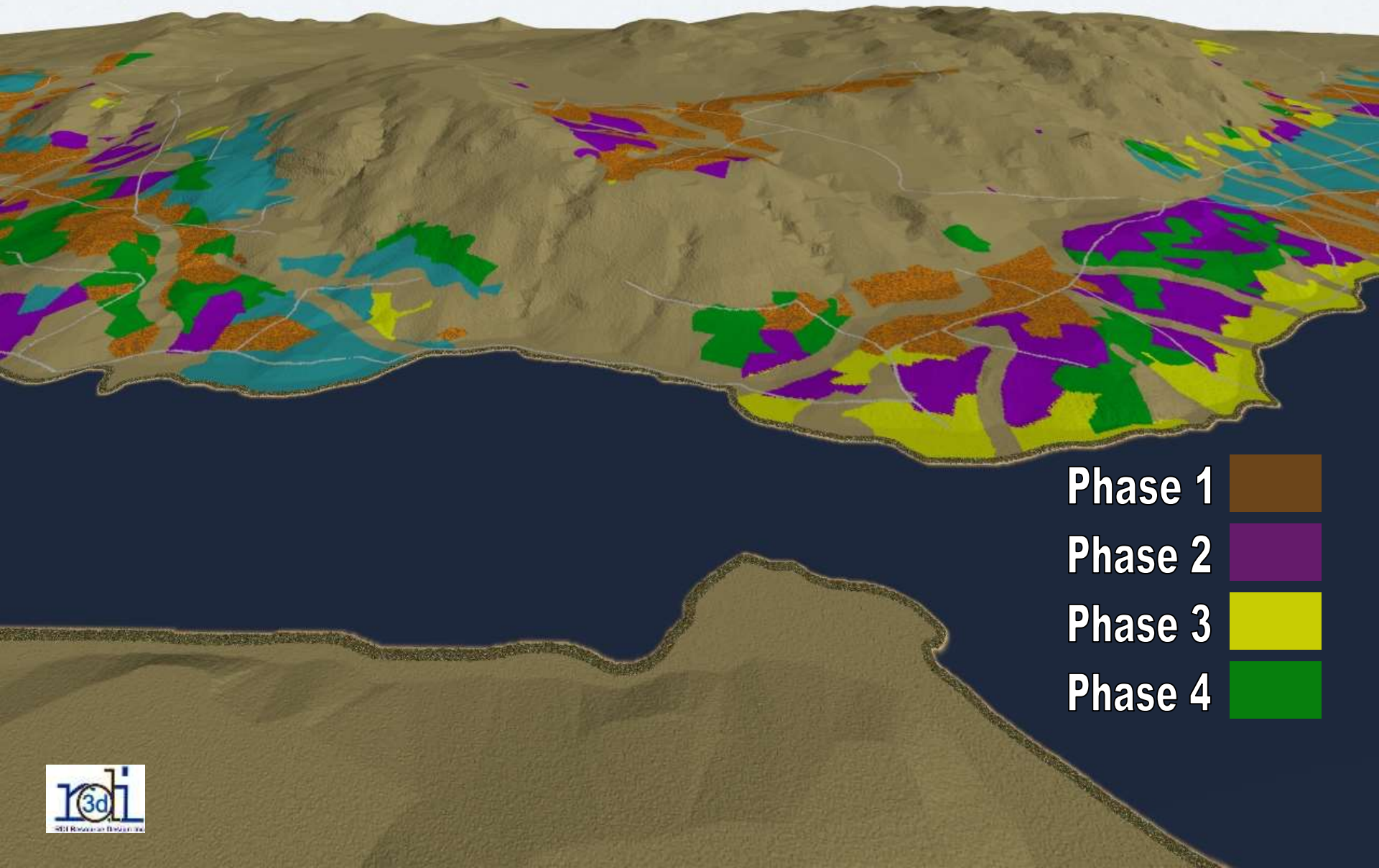
Contract No. FIA-IVD-06
February 21, 2007

Nadina Lake Integrated Visual Design Plan
Viewshed and GEOptics Analyses

3.

Produced for West Fraser Mills Ltd.
By RDI Resource Design Inc

# Nadina Integrated Visual Design Plan – Aerial Overview
# All Phases
**using Visual Nature Studio**



# Nadina Integrated Visual Design Plan – Aerial Overview with Green-up in Early Phases

**using Visual Nature Studio**

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# Nadina Integrated Visual Design Plan – Aerial Overview with Green-up in Early Phases

**using Visual Nature Studio**

# Nadina Integrated Visual Design Plan
## using Visual Nature Studio

**Phase 1**

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# Nadina Integrated Visual Design Plan
## using Visual Nature Studio

**Phase 2**

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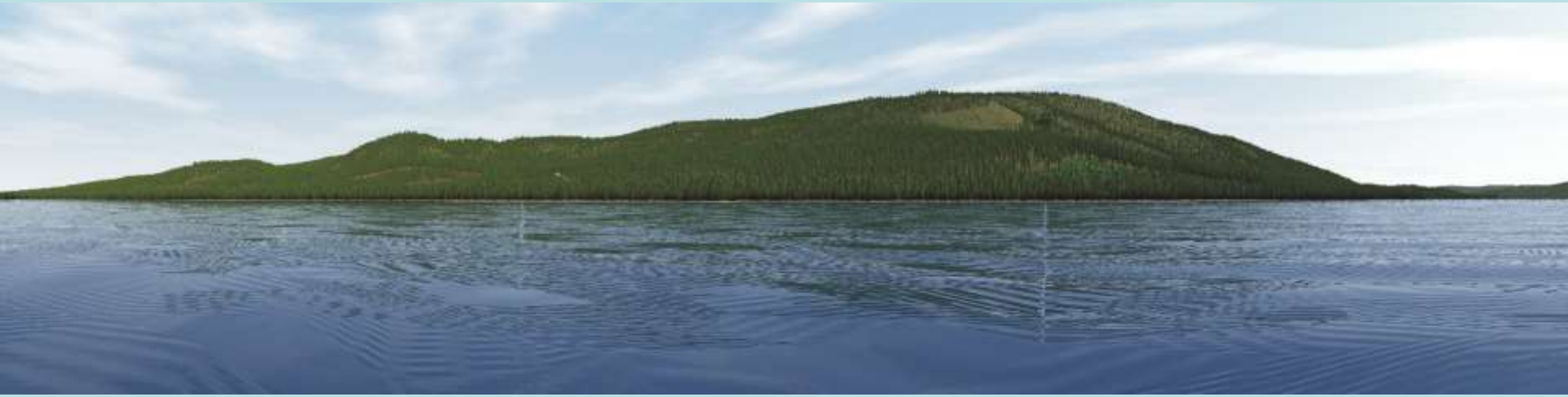
# Nadina Integrated Visual Design Plan
## using Visual Nature Studio



**Phase 3**

# Nadina Integrated Visual Design Plan
## using Visual Nature Studio

**Phase 4**

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## Meeting Visual Quality Objectives with GEOptics IVDP

Assisted by GEOptics, the Nadina 100 year plan succeeded in meeting the Visual Quality Objectives of Retention and Partial Retention in each and every Phase , according to BC Forest and Range Act Visual Quality Class Descriptions:

**Procedures**
**for**
**Effectiveness Evaluation**
**of**
**Visual Quality Management**

http://faculty.forestry.ubc.ca/sheppard/frst491/FRST491_2006_files/BCMOF-EffectivenessEvaluationProcedure.pdf

(See next frame for descriptions)

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**Table 1. Definition of Visual Quality Classes**

**P "preservation"**
the alteration is (a) very small in scale, and
(b) designed to be indistinguishable from the
pre-harvest landscape;

**R "retention“**
the alteration (a) is difficult to see,
(b) is small in scale, and
(c) has a design that mimics natural occurrences;

**PR "partial retention"**
the alteration (a) is easy to see,
(b) is small to moderate in scale, and
(c) has a design that appears natural and is not angular or geometric;

**M "modification"**
the alteration is very easy to see and is either (a) large in scale
with a design that is natural in its appearance, or
(b) small to moderate in scale but with a design that has some
angular characteristics.

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# Nadina Integrated Visual Design Plan
## using Visual Nature Studio


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# Nadina Integrated Visual Design Plan
## using Visual Nature Studio


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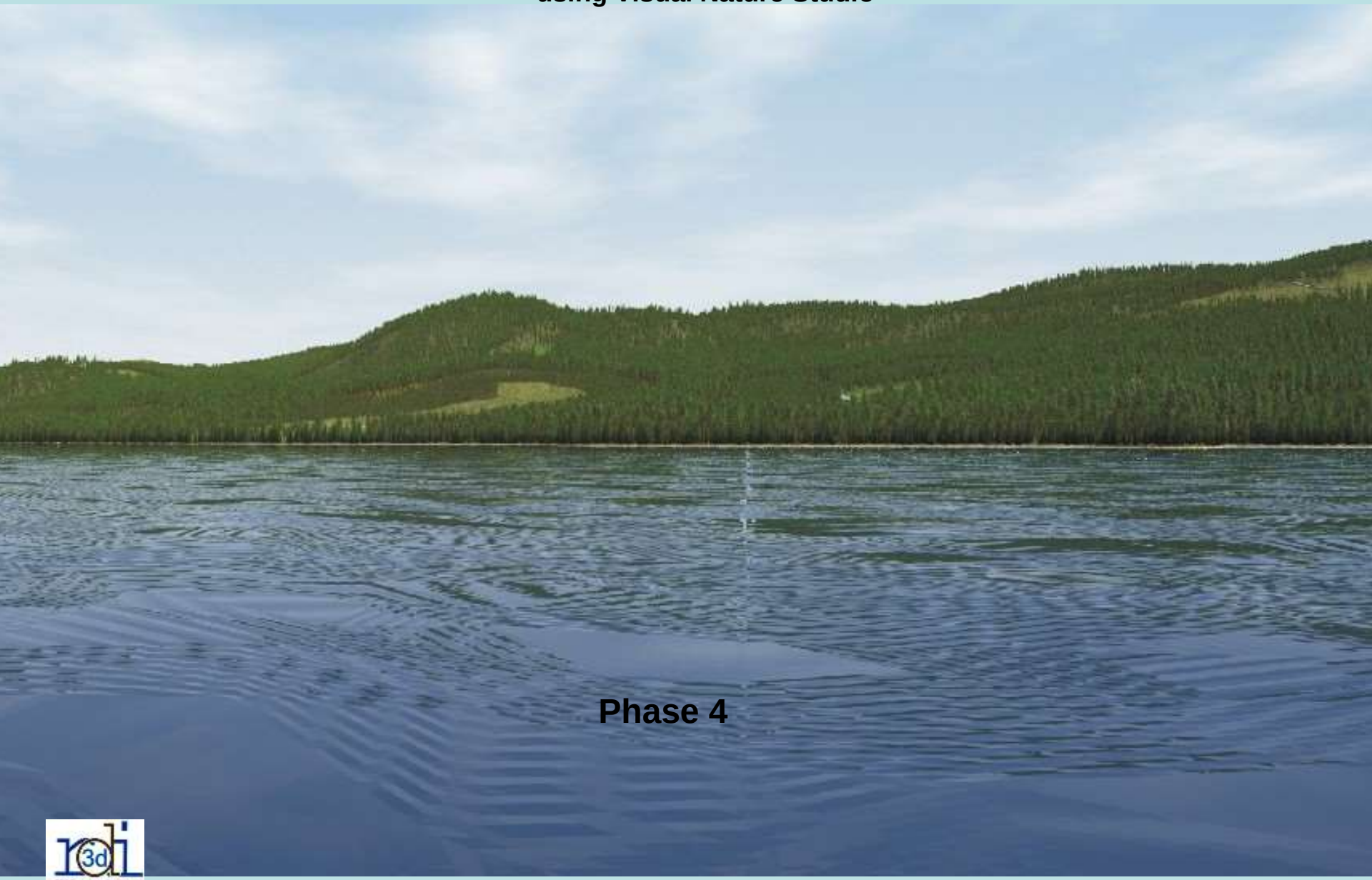
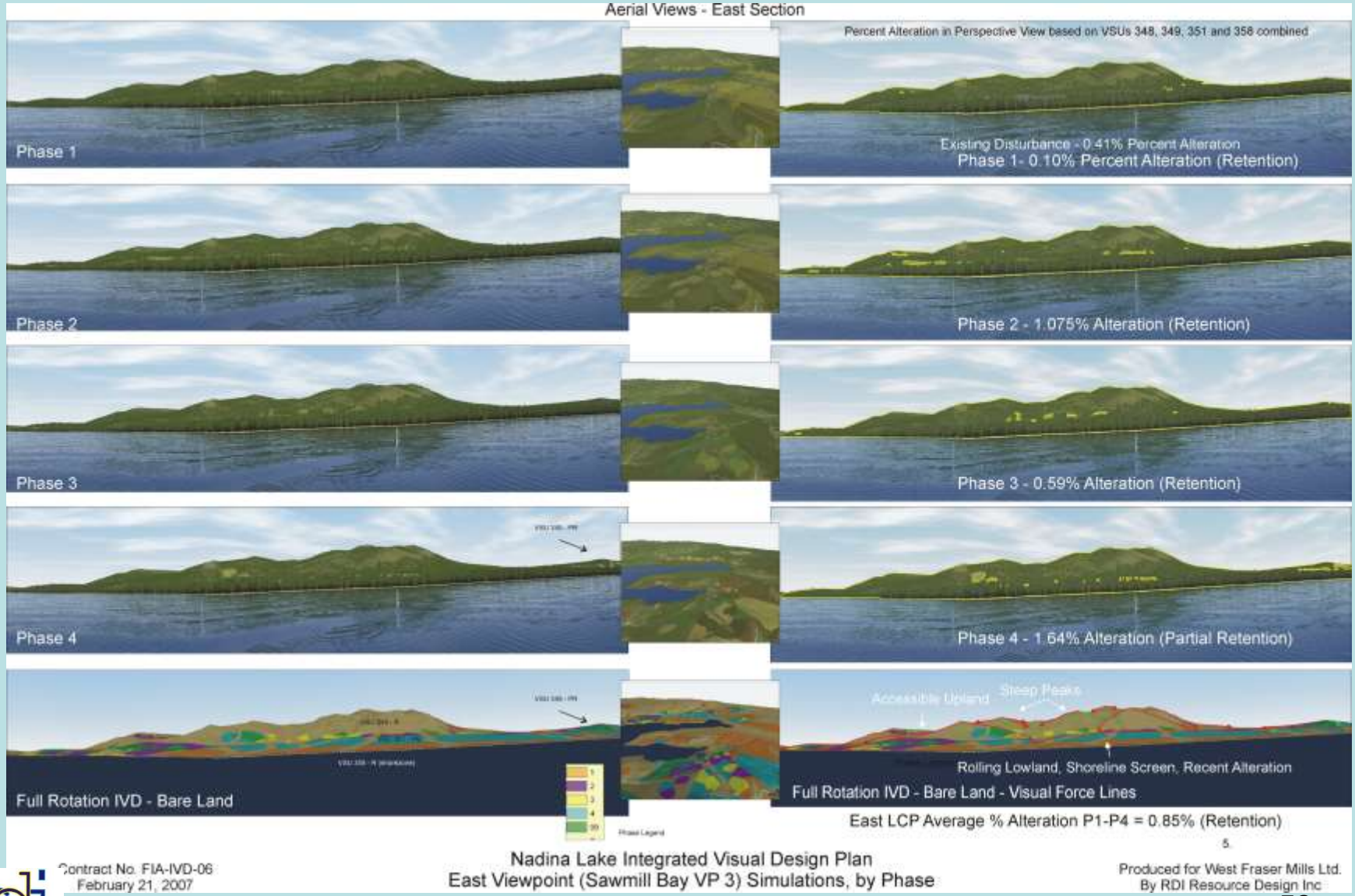
# Nadina Integrated Visual Design Plan

## using Visual Nature Studio

# Nadina Integrated Visual Design Plan
## using Visual Nature Studio



# Nadina Integrated Visual Design Plan

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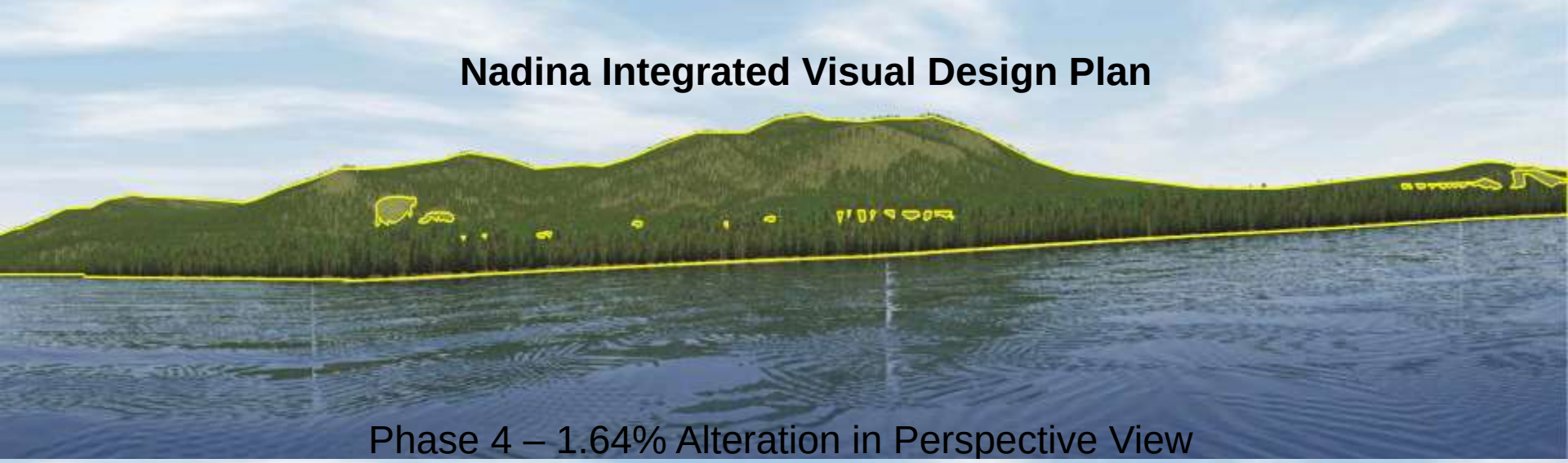
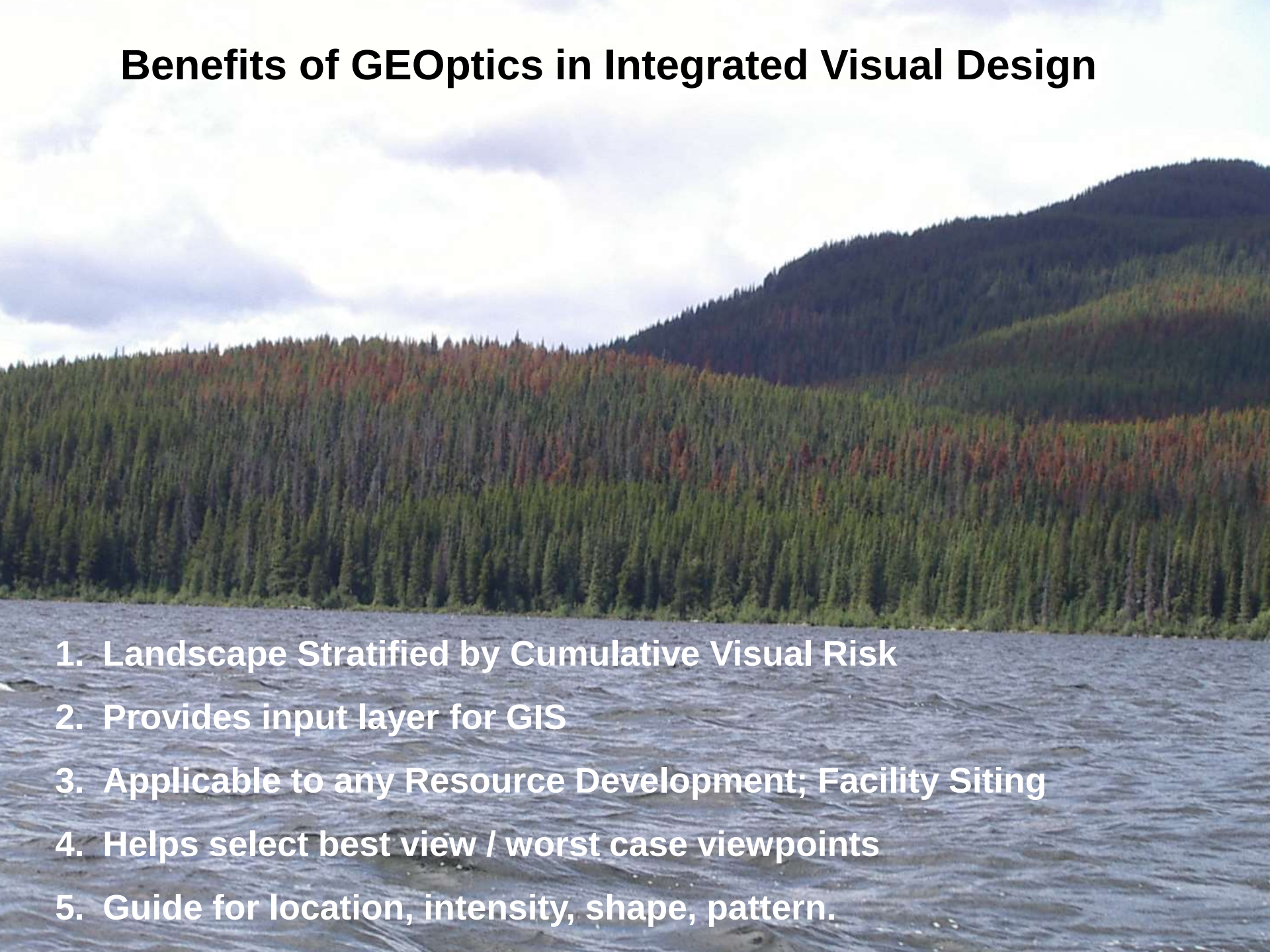
# Nadina Integrated Visual Design Plan



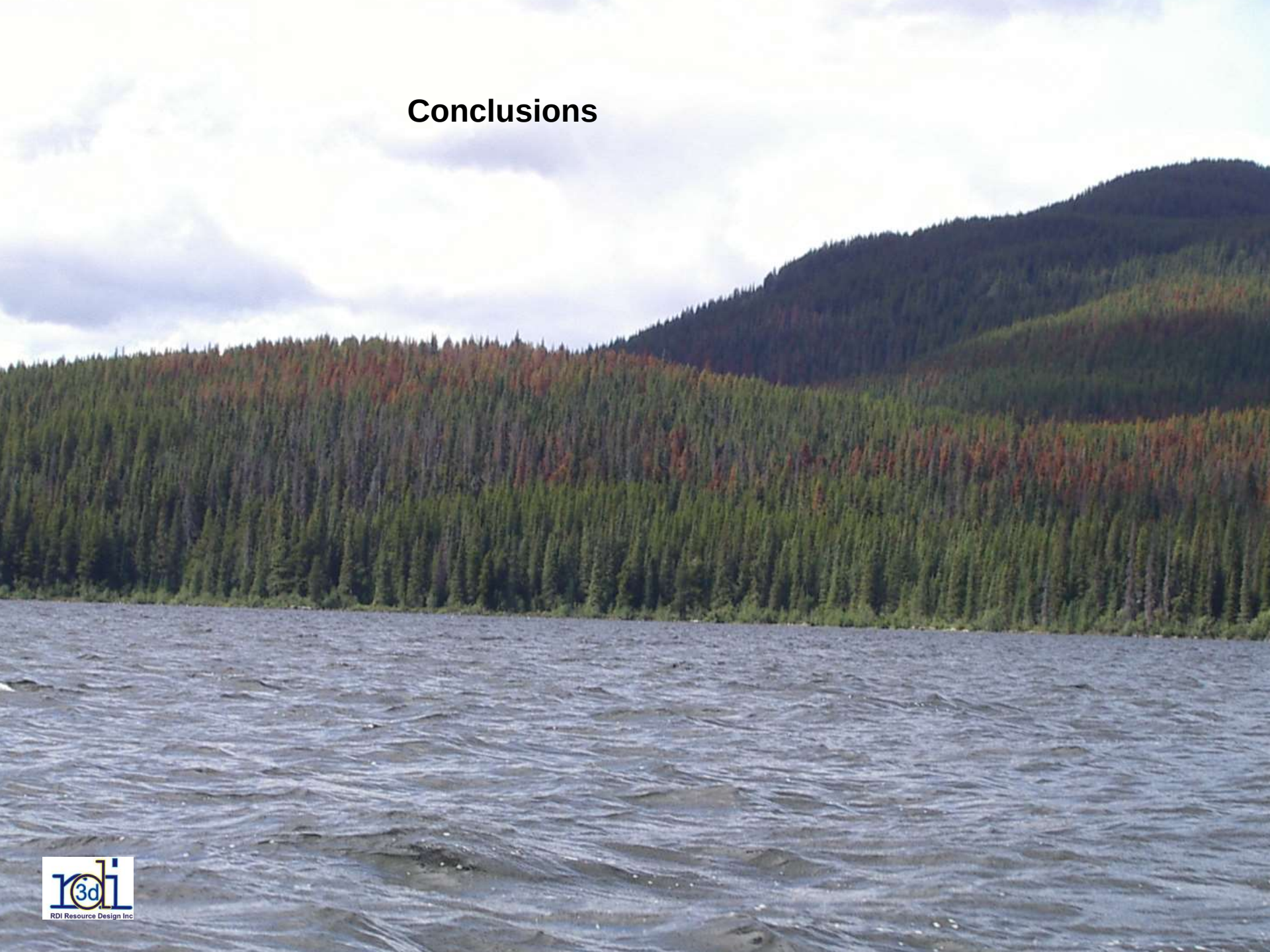
Phase 4 – 1.64% Alteration in Perspective View

# Benefits of GEOptics in Integrated Visual Design



1. Landscape Stratified by Cumulative Visual Risk
2. Provides input layer for GIS
3. Applicable to any Resource Development; Facility Siting
4. Helps select best view / worst case viewpoints
5. Guide for location, intensity, shape, pattern.

# Conclusions



- **Integrated Visual Design Planning supports Visual Quality Objectives over the long-term while meeting environmental, operational and economic objectives.**

- **GEOptics Landscape Apparency modeling provides cumulative visual risk assessment and rating for a full set of viewpoints.**

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# Glossary of VRM Terms

| | |
|---|---|
| **DTM** | **Digital terrain model** — a three-dimensional topographic model or simulation created by a computer using digital data such as TRIM. |
| **EVC** | **Existing Visual Condition** — is a component of the visual landscape inventory that represents the level of human-made landscape alteration caused by resource development activities in a visual sensitivity unit; expressed as visual quality classes. |
| **M** | **Modification** — is a visual condition or objective where activities are visually dominant, but have characteristics that appear natural |
| **MM** | **Maximum Modification** — is a visual condition or objective where activities are dominant and out of scale, but appear natural in the background |
| **non-VEG** | **Non-Visually Greened-up** — is the stage at which regeneration on a cutblock is not yet perceived by the public as a newly established forest; and forest cover on the cutblock is not of sufficient height to block stumps, logging debris, and bare ground from view; once VEG is achieved, an adjacent stand of timber is available for harvest. |
| **PR** | **Partial Retention** — is a visual condition or objective where activities are visible, but remain subordinate |
| **rVQC** | **Recommended Visual Quality Class** — is a specialist's recommendation describing the level of alteration that would be appropriate for a visual sensitivity unit; this recommendation considers visual and other resource values. |
| **VAC** | **Visual Absorption Capability** — is a component of the visual landscape inventory that rates the relative capacity of a landscape to absorb visual alterations and still maintain its visual integrity. |
| **VEG** | **Visually Effective Green-up** — is the stage at which regeneration on a cutblock is perceived by the public as a newly established forest; forest cover on the cutblock should be of sufficient height to block stumps, logging debris, and bare ground from view; once achieved, an adjacent stand of timber is available for harvest. |
| **VIA** | **Visual Impact Assessment** — is an assessment required under the Operational Planning Regulation or Forest Road Regulation that is carried out to demonstrate that timber harvesting operations or road work are consistent with the established visual quality objective for a scenic area. A visual impact assessment simulates, in perspective view, the visual effects on the landscape of proposed timber harvesting operations and road construction or modification operations. |

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# Glossary of VRM Terms (cont'd)

| | |
|---|---|
| **VLI** | **Visual Landscape Inventory** — is the identification, classification, and recording of the location and quality of visual resources; these non-forest resources may be problematic if not managed to the concepts, principles, and practices set out in the visual landscape management process. |
| **VQO** | **Visual Quality Objective** — is a resource management objective established by the district manager or contained in a higher-level plan; these objectives reflect the desired level of visual quality based on the physical characteristics and social concern for the area. |
| **VRM** | **Visual Resource Management** — is a planning and management process for visual values and resources. |
| **VSC** | **Visual Sensitivity Class** — is a component of the visual landscape inventory that rates the sensitivity of the landscape to visual alteration based on biophysical characteristics, as well as viewing and viewer-related factors. |
| **VSU** | **Visual Sensitivity Unit** — is a distinct topographical unit as viewed from one or more viewpoints; its delineation is based on the homogeneity of the landform and of biophysical elements. |
| | **Visual Force** — is an illusion or sensation of movement created by a static image, object, or position of a number of elements in the landscape. |
| | **Visual Force Analysis** — is an analysis of landform structure to identify primary, secondary, and tertiary ridge lines and hollows in the landscape for use in visual landscape design. |

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# Forestry 491 at UBC

Ken Fairhurst co-teaches Forestry 491, Visualization and Forest Design, with Dr. Stephen Sheppard. The course website is a substantial resource for Visual Resource Management research, literature, and case studies:

http://faculty.forestry.ubc.ca/sheppard/frst491/FRST491_2007.htm

Google search: FRST491


RDI is a full service consulting firm specializing in:

- Visual Landscape Systems Development
- Visual Landscape Inventory
- Integrated Visual Design / Total Resource Planning
- Visual Impact Assessment / Environmental Impact Assessment
- Information and Technology Transfer
- 3-D Visualization and Animation Applications
- Visual Landscape Research
- Contributions to VRM Development
- Visual Nature Studio Reseller
- Custom Visual Nature Studio Training

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